# TraDemGen

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TraDemGen aims at providing a clean API, and the corresponding C++ implementation, able to generate demand for travel solutions (e.g., from JFK to PEK on 25-05-2009) according to characteristics (e.g., Willingness-To-Pay, preferred airline, etc). TraDemGen mainly targets simulation purposes. N

TraDemGen makes an extensive use of existing open-source libraries for increased functionality, speed and accuracy. In particular the Boost (*C++ Standard Extensions*) library is used.

The TraDemGen library originates from the department of Operational Research and Innovation at Amadeus, Sophia Antipolis, France. TraDemGen is released under the terms of the GNU Lesser General Public License (LGPLv2.1) for you to enjoy.

TraDemGen should work on GNU/Linux, Sun Solaris, Microsoft Windows (with Cygwin, MinGW/MSYS, or Microsoft Visual C++ .NET) and Mac OS X operating systems.

**Note**

(N) - The TraDemGen library is **NOT** intended, in any way, to be used by airlines for production systems. If you want to report issue, bug or feature request, or if you just want to give feedback, have a look on the right-hand side of this page for the preferred reporting methods. In any case, please do not contact Amadeus directly for any matter related to TraDemGen.

# 2 People

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- Debian: Emmanuel Bastien ebastien@users.sourceforge.net (N)

**Note**

(N) - Amadeus employees.

# 3 Coding Rules

In the following sections we describe the naming conventions which are used for files, classes, structures, local variables, and global variables.

## 3.1 Default Naming Rules for Variables

Variables names follow Java naming conventions. Examples:

- `lNumberOfPassengers`
- `lSeatAvailability`

## 3.2 Default Naming Rules for Functions

Function names follow Java naming conventions. Example:

- `int myFunctionName (const int& a, int b)`

### 3.3 Default Naming Rules for Classes and Structures

Each new word in a class or structure name should always start with a capital letter and the words should be separated with an under-score. Abbreviations are written with capital letters. Examples:

- `MyClassName`
- `MyStructName`

### 3.4 Default Naming Rules for Files

Files are named after the C++ class names.

Source files are named using `.cpp` suffix, whereas header files end with `.hpp` extension. Examples:

- `FlightDate.hpp`
- `SegmentDate.cpp`

### 3.5 Default Functionality of Classes

All classes that are configured by input parameters should include:

- default empty constructor
- one or more additional constructor(s) that takes input parameters and initializes the class instance
- setup function, preferably named `'setup'` or `'set_parameters'`

Explicit destructor functions are not required, unless they are needed. It shall not be possible to use any of the other member functions unless the class has been properly initiated with the input parameters.

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#### 4.1.1 Version 2.1, February 1999

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```

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```

```
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   b) Give prominent notice with the combined library of the fact
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   ```

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To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```
    <one line to give the library's name and a brief idea of what it does.>
    Copyright (C) <year>  <name of author>

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    modify it under the terms of the GNU Lesser General Public
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```

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

```
  Yoyodyne, Inc., hereby disclaims all copyright interest in the
  library 'Frob' (a library for tweaking knobs) written by James Random Hacker.

  <signature of Ty Coon>, 1 April 1990
  Ty Coon, President of Vice
```

That's all there is to it!

Source

# 5 Documentation Rules

## 5.1 General Rules

All classes in TraDemGen should be properly documented with Doxygen comments in include (`.hpp`) files. Source (`.cpp`) files should be documented according to a normal standard for well documented C++ code.

An example of how the interface of a class shall be documented in TraDemGen is shown here:

```
/*!
 * \brief Brief description of MyClass here
 *
 * Detailed description of MyClass here. With example code if needed.
 */
class MyClass {
public:
  //! Default constructor
  MyClass(void) { setup_done = false; }

  /*!
```

```
   * \brief Constructor that initializes the class with parameters
   *
   * Detailed description of the constructor here if needed
   *
   * \param[in] param1 Description of \a param1 here
   * \param[in] param2 Description of \a param2 here
   */
  MyClass(TYPE1 param1, TYPE2 param2) { setup(param1, param2); }

  /*!
   * \brief Setup function for MyClass
   *
   * Detailed description of the setup function here if needed
   *
   * \param[in] param1 Description of \a param1 here
   * \param[in] param2 Description of \a param2 here
   */
  void setup(TYPE1 param1, TYPE2 param2);

  /*!
   * \brief Brief description of memberFunction1
   *
   * Detailed description of memberFunction1 here if needed
   *
   * \param[in]     param1 Description of \a param1 here
   * \param[in]     param2 Description of \a param2 here
   * \param[in,out] param3 Description of \a param3 here
   * \return Description of the return value here
   */
  TYPE4 memberFunction1(TYPE1 param1, TYPE2 param2, TYPE3 &param3);

private:

  bool _setupDone;         /*!< Variable that checks if the class is properly
                                initialized with parameters */
  TYPE1 _privateVariable1; //!< Short description of _privateVariable1 here
  TYPE2 _privateVariable2; //!< Short description of _privateVariable2 here
};
```

## 5.2 File Header

All files should start with the following header, which include Doxygen's `\file`, `\brief` and `\author` tags, `$Date$` and `$Revisions$` CVS tags, and a common copyright note:

```
/*!
 * \file
 * \brief Brief description of the file here
 * \author Names of the authors who contributed to this code
 * \date Date
 *
 * Detailed description of the file here if needed.
 *
 * ----------------------------------------------------------------------------
 *
 * TraDemGen - C++ Simulated Revenue Accounting (RAC) System Library
 *
 * Copyright (C) 2009-2011  (\see authors file for a list of contributors)
 *
 * \see copyright file for license information
 *
 * ----------------------------------------------------------------------------
 */
```

## 5.3 Grouping Various Parts

All functions must be added to a Doxygen group in order to appear in the documentation. The following code example defines the group `'my_group'`:

```
/*!
 * \defgroup my_group Brief description of the group here
 *
 * Detailed description of the group here
*/
```

The following example shows how to document the function `myFunction` and how to add it to the group `my_group`:

```
/*!
 * \brief Brief description of myFunction here
 * \ingroup my_group
 *
 * Detailed description of myFunction here
 *
 * \param[in] param1 Description of \a param1 here
 * \param[in] param2 Description of \a param2 here
 * \return Description of the return value here
 */
TYPE3 myFunction(TYPE1 param1, TYPE2 &param2);
```

# 6 Main features

A short list of the main features of TraDemgEn is given below sorted in different categories. Many more features and functions exist and for these we refer to the reference documentation.

## 6.1 Demand generation

The demand can be generated thanks to two relatively advanced pieces of algorithm, both following a sequential principle. That is, the `events` (booking requests) are generated one after the other, sequentially, rather than being generated all at once at the beginning of the process (e.g., a simulation).

The two sequential methods are:

- 'Intuitive' method. The booking period is sliced in `intervals`, where the arrival rate of events (booking requests) is known for each of those intervals, say $\lambda_i$. The inter-arrival process then follows an `exponential law`. That is, the final number of booking requests follows a `Non homogeneous Poisson distribution`. With that method, the `variance` of that `distribution` is therefore equal to the `mean`.
- 'Advanced' method. The process uses `order statistics` in order to mimic the behaviour of `uniform distributions` projected onto the know arrival pattern of events. With that method, the final number of booking requests is first drawn, following any probability distribution (e.g., `normal`, `Gamma`, `Beta` or even Weibull law) with any required standard deviation. Then, each booking request is drawn in sequence:
  - according to a mere `uniform distribution`,
  - and projected onto the known booking arrival pattern.

## 6.2 Other features

- CSV input file parsing
- Memory handling

# 7 Make a Difference

**Do not ask what TraDemGen can do for you. Ask what you can do for TraDemGen.**

You can help us to develop the TraDemGen library. There are always a lot of things you can do:

- Start using TraDemGen
- Tell your friends about TraDemGen and help them to get started using it
- If you find a bug, report it to us. Without your help we can never hope to produce a bug free code.
- Help us to improve the documentation by providing information about documentation bugs
- Answer support requests in the TraDemGen discussion forums on SourceForge. If you know the answer to a question, help others to overcome their TraDemGen problems.
- Help us to improve our algorithms. If you know of a better way (e.g. that is faster or requires less memory) to implement some of our algorithms, then let us know.
- Help us to port TraDemGen to new platforms. If you manage to compile TraDemGen on a new platform, then tell us how you did it.
- Send us your code. If you have a good TraDemGen compatible code, which you can release under the LGPL, and you think it should be included in TraDemGen, then send it to us.
- Become an TraDemGen developer. Send us an e-mail and tell what you can do for TraDemGen.

# 8 Make a new release

## 8.1 Introduction

This document describes briefly the recommended procedure of releasing a new version of TraDemGen using a Linux development machine and the SourceForge project site.

The following steps are required to make a release of the distribution package.

## 8.2 Initialisation

Clone locally the full `Git project`:

```
cd ~
mkdir -p dev/sim
cd ~/dev/sim
git clone git://trademgen.git.sourceforge.net/gitroot/trademgen/trademgen trademgengit
cd trademgengit
git checkout trunk
```

## 8.3 Release branch maintenance

Switch to the release branch, on your local clone, and merge the latest updates from the trunk. Decide about the new version to be released.

```
cd ~/dev/sim/trademgengit
git checkout releases
git merge trunk
```

Update the version in the various build system files, replacing the old version numbers by the correct ones:

```
vi CMakeLists.txt
vi autogen.sh
vi README
```

Update the version, add some news in the `NEWS` file, add a change-log in the `ChangeLog` file and in the RPM specification files:

```
vi NEWS
vi ChangeLog
vi trademgen.spec
```

## 8.4 Commit and publish the release branch

Commit the new release:

```
cd ~/dev/sim/trademgengit
git add -A
git commit -m "[Release 0.5.0] Release of the 0.5.0 version of TraDemGen."
git push
```

## 8.5 Create distribution packages

Create the distribution packages using the following command:

```
cd ~/dev/sim/trademgengit
git checkout releases
rm -rf build && mkdir -p build
cd build
export INSTALL_BASEDIR=/home/user/dev/deliveries
export LIBSUFFIX_4_CMAKE="-DLIB_SUFFIX=64"
cmake -DCMAKE_INSTALL_PREFIX=${INSTALL_BASEDIR}/trademgen-0.5.0 \
 -DWITH_STDAIR_PREFIX=${INSTALL_BASEDIR}/stdair-stable \
 -DWITH_AIRRAC_PREFIX=${INSTALL_BASEDIR}/airsched-stable \
 -DWITH_AIRRAC_PREFIX=${INSTALL_BASEDIR}/airrac-stable \
 -DWITH_RMOL_PREFIX=${INSTALL_BASEDIR}/rmol-stable \
 -DWITH_RMOL_PREFIX=${INSTALL_BASEDIR}/airinv-stable \
 -DWITH_RMOL_PREFIX=${INSTALL_BASEDIR}/simfqt-stable \
 -DCMAKE_BUILD_TYPE:STRING=Debug -DINSTALL_DOC:BOOL=ON \
 ${LIBSUFFIX_4_CMAKE} ..
make check && make dist
make install
```

This will configure, compile and check the package. The output packages will be named, for instance, `trademgen-0.5.0.tar.gz` and `trademgen-0.5.0.tar.bz2`.

## 8.6 Upload the HTML documentation to SourceForge

In order to update the Web site files, either:

- `synchronise them with rsync and SSH`: Upload the just generated HTML (and PDF) documentation onto the `SourceForge Web site`.

  ```
  cd ~/dev/sim/trademgengit/build
  git checkout releases
  rsync -aiv ${INSTALL_BASEDIR}/trademgen-0.5.0/share/doc/trademgen-0.5.0/html/ \
   your_sf_user,trademgen@web.sourceforge.net:htdocs/
  ```

  where `-aiv` options mean:

  - `-a`: archive/mirror mode; equals `-rlptgoD` (no `-H`, `-A`, `-X`)
  - `-v`: increase verbosity
  - `-i`: output a change-summary for all updates
  - Note the trailing slashes (/) at the end of both the source and target directories. It means that the content of the source directory (`doc/html`), rather than the directory itself, has to be copied into the content of the target directory.

- or use the `SourceForge Shell service`.

## 8.7 Generate the RPM packages

Optionally, generate the RPM package (for instance, for `Fedora`/`RedHat`):

```
cd ~/dev/sim/trademgengit/build
git checkout releases
make dist
```

To perform this step, rpm-build, rpmlint and rpmdevtools have to be available on the system.

```
cp ../trademgen.spec ~/dev/packages/SPECS \
  && cp trademgen-0.5.0.tar.bz2 ~/dev/packages/SOURCES
cd ~/dev/packages/SPECS
rpmbuild -ba trademgen.spec
cd ~/dev/packages
rpmlint -i SPECS/trademgen.spec SRPMS/trademgen-0.5.0-1.fc16.src.rpm \
  RPMS/noarch/trademgen-* RPMS/i686/trademgen-*
```

### 8.8 Update distributed change log

Update the `NEWS` and `ChangeLog` files with appropriate information, including what has changed since the previous release. Then commit and push the changes into the `TraDemGen's Git repository`.

### 8.9 Create the binary package, including the documentation

Create the binary package, which includes HTML and PDF documentation, using the following command:

```
cd ~/dev/sim/trademgengit/build
git checkout releases
make package
```

The output binary package will be named, for instance, `trademgen-0.5.0-Linux.tar.bz2`. That package contains both the HTML and PDF documentation. The binary package contains also the executables and shared libraries, as well as C++ header files, but all of those do not interest us for now.

### 8.10 Upload the files to SourceForge

Upload the distribution and documentation packages to the SourceForge server. Check `SourceForge help page on uploading software`.

### 8.11 Make a new post

- submit a new entry in the `SourceForge project-related news feed`
- make a new post on the `SourceForge hosted WordPress blog`
- and update, if necessary, `Trac tickets`.

### 8.12 Send an email on the announcement mailing-list

Finally, you should send an announcement to `trademgen-announce@lists.sourceforge.net` (see `https://lists.sourceforge.net/lists/listinfo/trademgen-announce` for the archives)

## 9 Installation

### 9.1 Table of Contents

## 9.2 Fedora/RedHat Linux distributions

Note that on Fedora/RedHat Linux distributions, RPM packages are available and can be installed with your usual package manager. For instance:

```
yum -y install trademgen-devel trademgen-doc
```

RPM packages can also be available on the SourceForge download site.

## 9.3 TraDemGen Requirements

TraDemGen should compile without errors or warnings on most GNU/Linux systems, on UNIX systems like Solaris SunOS, and on POSIX based environments for Microsoft Windows like Cygwin or MinGW with MSYS. It can be also built on Microsoft Windows NT/2000/XP/Vista/7 using Microsoft's Visual C++ .NET, but our support for this compiler is limited. For GNU/Linux, SunOS, Cygwin and MinGW we assume that you have at least the following GNU software installed on your computer:

- GNU Autotools:
  - autoconf,
  - automake,
  - libtool,
  - make, version 3.72.1 or later (check version with 'make –version')
- GCC - GNU C++ Compiler (g++), version 4.3.x or later (check version with 'gcc –version')
- Boost - C++ STL extensions, version 1.35 or later (check version with 'grep "define BOOST_LIB_VERSION" /usr/include/boost/version.hpp')
- MySQL - Database client libraries, version 5.0 or later (check version with 'mysql –version')
- SOCI - C++ database client library wrapper, version 3.0.0 or later (check version with 'soci-config –version')

Optionally, you might need a few additional programs: Doxygen, LaTeX, Dvips and Ghostscript, to generate the HTML and PDF documentation.

We strongly recommend that you use recent stable releases of the GCC, if possible. We do not actively work on supporting older versions of the GCC, and they may therefore (without prior notice) become unsupported in future releases of TraDemGen.

## 9.4 Basic Installation

Briefly, the shell commands `./cmake .. && make install` should configure, build and install this package. The following more-detailed instructions are generic; see the `README` file for instructions specific to this package. Some packages provide this `INSTALL` file but do not implement all of the features documented below. The lack of an optional feature in a given package is not necessarily a bug. More recommendations for GNU packages can be found in the info page corresponding to "Makefile Conventions: (standards)Makefile Conventions".

The `cmake` shell script attempts to guess correct values for various system-dependent variables used during compilation. It uses those values to create a `Makefile` in each directory of the package. It may also create one or more `.h` files containing system-dependent definitions. Finally, it creates a `CMakeCache.txt` cache file that you can refer to in the future to recreate the current configuration, and files `CMakeFiles` containing compiler output (useful mainly for debugging `cmake`).

It can also use an optional file (typically called `config.cache` and enabled with `--cache-file=config.cache` or simply `-C`) that saves the results of its tests to speed up reconfiguring. Caching is disabled by default to prevent problems with accidental use of stale cache files.

If you need to do unusual things to compile the package, please try to figure out how 'configure' could check whether to do them, and mail diffs or instructions to the address given in the `README` so they can be considered for the next release. If you are using the cache, and at some point `config.cache` contains results you don't want to keep, you may remove or edit it.

The file `CMakeLists.txt` is used to create the `Makefile` files.

The simplest way to compile this package is:

1. `cd` to the directory containing the package's source code and type `./cmake ..` to configure the package for your system. Running `cmake` is generally fast. While running, it prints some messages telling which features it is checking for.
2. Type `make` to compile the package.
3. Optionally, type `make check`to run any self-tests that come with the package, generally using the just-built uninstalled binaries.
4. Type 'make install' to install the programs and any data files and documentation. When installing into a prefix owned by root, it is recommended that the package be configured and built as a regular user, and only the 'make install' phase executed with root privileges.
5. You can remove the program binaries and object files from the source code directory by typing 'make clean'. To also remove the files that 'configure' created (so you can compile the package for a different kind of computer), type 'make distclean'. There is also a 'make maintainer-clean' target, but that is intended mainly for the package's developers. If you use it, you may have to get all sorts of other programs in order to regenerate files that came with the distribution.
6. Often, you can also type 'make uninstall' to remove the installed files again. In practice, not all packages have tested that uninstallation works correctly, even though it is required by the GNU Coding Standards.

## 9.5 Compilers and Options

Some systems require unusual options for compilation or linking that the 'cmake' script does not know about. Run './cmake -help' for details on some of the pertinent environment variables.

You can give 'cmake' initial values for configuration parameters by setting variables in the command line or in the environment. Here is an example:

```
./cmake CC=c99 CFLAGS=-g LIBS=-lposix
```

**See Also**

Defining Variables for more details.

## 9.6 Compiling For Multiple Architectures

You can compile the package for more than one kind of computer at the same time, by placing the object files for each architecture in their own directory. To do this, you can use GNU 'make'. 'cd' to the directory where you want the object files and executables to go and run the 'configure' script. 'configure' automatically checks for the source code in the directory that 'configure' is in and in '..'. This is known as a "VPATH" build.

With a non-GNU 'make', it is safer to compile the package for one architecture at a time in the source code directory. After you have installed the package for one architecture, use 'make distclean' before reconfiguring for another architecture.

On MacOS X 10.5 and later systems, you can create libraries and executables that work on multiple system types-known as "fat" or "universal" binaries-by specifying multiple '-arch' options to the compiler but only a single '-arch' option to the preprocessor. Like this:

```
./configure CC="gcc -arch i386 -arch x86_64 -arch ppc -arch ppc64" \
            CXX="g++ -arch i386 -arch x86_64 -arch ppc -arch ppc64" \
            CPP="gcc -E" CXXCPP="g++ -E"
```

This is not guaranteed to produce working output in all cases, you may have to build one architecture at a time and combine the results using the 'lipo' tool if you have problems.

## 9.7 Installation Names

By default, 'make install' installs the package's commands under '/usr/local/bin', include files under '/usr/local/include', etc. You can specify an installation prefix other than '/usr/local' by giving 'configure' the option '-prefix=P-REFIX', where PREFIX must be an absolute file name.

You can specify separate installation prefixes for architecture-specific files and architecture-independent files. If you pass the option '-exec-prefix=P-REFIX' to 'configure', the package uses PREFIX as the prefix for installing programs and libraries. Documentation and other data files still use the regular prefix.

In addition, if you use an unusual directory layout you can give options like '-bindir=DIR' to specify different values for particular kinds of files. Run 'configure -help' for a list of the directories you can set and what kinds of files go in them. In general, the default for these options is expressed in terms of '${prefix}', so that specifying just '-prefix' will affect all of the other directory specifications that were not explicitly provided.

The most portable way to affect installation locations is to pass the correct locations to 'configure'; however, many packages provide one or both of the following shortcuts of passing variable assignments to the 'make install' command line to change installation locations without having to reconfigure or recompile.

The first method involves providing an override variable for each affected directory. For example, 'make install prefix=/alternate/directory' will choose an alternate location for all directory configuration variables that

were expressed in terms of '${prefix}'. Any directories that were specified during 'configure', but not in terms of '${prefix}', must each be overridden at install time for the entire installation to be relocated. The approach of makefile variable overrides for each directory variable is required by the GNU Coding Standards, and ideally causes no recompilation. However, some platforms have known limitations with the semantics of shared libraries that end up requiring recompilation when using this method, particularly noticeable in packages that use GNU Libtool.

The second method involves providing the 'DESTDIR' variable. For example, 'make install DESTDIR=/alternate/directory' will prepend '/alternate/directory' before all installation names. The approach of 'DESTDIR' overrides is not required by the GNU Coding Standards, and does not work on platforms that have drive letters. On the other hand, it does better at avoiding recompilation issues, and works well even when some directory options were not specified in terms of '${prefix}' at 'configure' time.

## 9.8 Optional Features

If the package supports it, you can cause programs to be installed with an extra prefix or suffix on their names by giving 'cmake' the option '-program-prefix=P-REFIX' or '-program-suffix=SUFFIX'.

Some packages pay attention to '-enable-FEATURE' options to 'configure', where FEATURE indicates an optional part of the package. They may also pay attention to '-with-PACKAGE' options, where PACKAGE is something like 'gnu-as' or 'x' (for the X Window System). The 'README' should mention any '-enable-' and '-with-' options that the package recognizes.

For packages that use the X Window System, 'configure' can usually find the X include and library files automatically, but if it doesn't, you can use the 'configure' options '-x-includes=DIR' and '-x-libraries=DIR' to specify their locations.

Some packages offer the ability to configure how verbose the execution of 'make' will be. For these packages, running './configure -enable-silent-rules' sets the default to minimal output, which can be overridden with 'make V=1'; while running './configure -disable-silent-rules' sets the default to verbose, which can be overridden with 'make V=0'.

## 9.9 Particular systems

On HP-UX, the default C compiler is not ANSI C compatible. If GNU CC is not installed, it is recommended to use the following options in order to use an ANSI C compiler:

```
./configure CC="cc -Ae -D_XOPEN_SOURCE=500"
```

and if that doesn't work, install pre-built binaries of GCC for HP-UX.

On OSF/1 a.k.a. Tru64, some versions of the default C compiler cannot parse its '<wchar.h>' header file. The option '-nodtk' can be used as a workaround. If GNU CC is not installed, it is therefore recommended to try

```
./configure CC="cc"
```

and if that doesn't work, try

```
./configure CC="cc -nodtk"
```

On Solaris, don't put '/usr/ucb' early in your 'PATH'. This directory contains several dysfunctional programs; working variants of these programs are available in '/usr/bin'. So, if you need '/usr/ucb' in your 'PATH', put it *after* '/usr/bin'.

On Haiku, software installed for all users goes in '/boot/common', not '/usr/local'. It is recommended to use the following options:

```
./cmake -DCMAKE_INSTALL_PREFIX=/boot/common
```

## 9.10 Specifying the System Type

There may be some features 'configure' cannot figure out automatically, but needs to determine by the type of machine the package will run on. Usually, assuming the package is built to be run on the *same* architectures, 'configure' can figure that out, but if it prints a message saying it cannot guess the machine type, give it the '–build=TYPE' option. TYPE can either be a short name for the system type, such as 'sun4', or a canonical name which has the form CPU-COMPANY-SYSTEM

where SYSTEM can have one of these forms:

- OS
- KERNEL-OS

  See the file 'config.sub' for the possible values of each field. If 'config.sub' isn't included in this package, then this package doesn't need to know the machine type.

  If you are *building* compiler tools for cross-compiling, you should use the option '–target=TYPE' to select the type of system they will produce code for.

  If you want to *use* a cross compiler, that generates code for a platform different from the build platform, you should specify the "host" platform (i.e., that on which the generated programs will eventually be run) with '–host=TYPE'.

## 9.11 Sharing Defaults

If you want to set default values for 'configure' scripts to share, you can create a site shell script called 'config.site' that gives default values for variables like 'CC', 'cache_file', and 'prefix'. 'configure' looks for 'PREFIX/share/config.site' if it exists, then 'PREFIX/etc/config.site' if it exists. Or, you can set the 'CONFIG_SITE' environment variable to the location of the site script. A warning: not all 'configure' scripts look for a site script.

## 9.12 Defining Variables

Variables not defined in a site shell script can be set in the environment passed to 'configure'. However, some packages may run configure again during the build, and the customized values of these variables may be lost. In order to avoid this problem, you should set them in the 'configure' command line, using 'VAR=value'. For example:

```
./configure CC=/usr/local2/bin/gcc
```

causes the specified 'gcc' to be used as the C compiler (unless it is overridden in the site shell script).

Unfortunately, this technique does not work for 'CONFIG_SHELL' due to an Autoconf bug. Until the bug is fixed you can use this workaround:

```
CONFIG_SHELL=/bin/bash /bin/bash ./configure CONFIG_SHELL=/bin/bash
```

## 9.13 'cmake' Invocation

'cmake' recognizes the following options to control how it operates.

- '-help', '-h' print a summary of all of the options to 'configure', and exit.
- '-help=short', '-help=recursive' print a summary of the options unique to this package's 'configure', and exit. The 'short' variant lists options used only in the top level, while the 'recursive' variant lists options also present in any nested packages.
- '-version', '-V' print the version of Autoconf used to generate the 'configure' script, and exit.
- '-cache-file=FILE' enable the cache: use and save the results of the tests in FILE, traditionally 'config.cache'. FILE defaults to '/dev/null' to disable caching.
- '-config-cache', '-C' alias for '-cache-file=config.cache'.
- '-quiet', '-silent', '-q' do not print messages saying which checks are being made. To suppress all normal output, redirect it to '/dev/null' (any error messages will still be shown).
- '-srcdir=DIR' look for the package's source code in directory DIR. Usually 'configure' can determine that directory automatically.
- '-prefix=DIR' use DIR as the installation prefix.

  **See Also**

  Installation Names for more details, including other options available for fine-tuning the installation locations.

- '-no-create', '-n' run the configure checks, but stop before creating any output files.

'cmake' also accepts some other, not widely useful, options. Run 'cmake -help' for more details.

The 'cmake' script produces an ouput like this:

```
cmake -DCMAKE_INSTALL_PREFIX=/home/user/dev/deliveries/trademgen-99.99.99 -DLIB_SUFFIX=64 -DCMAKE_BUILD_TYPE:S
-- The C compiler identification is GNU
-- The CXX compiler identification is GNU
-- Check for working C compiler: /usr/lib64/ccache/gcc
-- Check for working C compiler: /usr/lib64/ccache/gcc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working CXX compiler: /usr/lib64/ccache/c++
-- Check for working CXX compiler: /usr/lib64/ccache/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Requires Git without specifying any version
-- Current Git revision name: 4856624ea4978b3b2bfe26cb6702cce0be531084 trunk
-- Requires PythonLibs-2.6
```

```
-- Found PythonLibs: /usr/lib64/libpython2.7.so (Required is at least version "2.6")
-- Found PythonLibs 2.7
-- Requires Boost-1.41
-- Boost version: 1.46.0
-- Found the following Boost libraries:
--   program_options
--   date_time
--   iostreams
--   serialization
--   filesystem
--   unit_test_framework
--   python
-- Found Boost version: 1.46.0
-- Found BoostWrapper: /usr/include (Required is at least version "1.41")
-- Requires MySQL without specifying any version
-- Using mysql-config: /usr/bin/mysql_config
-- Found MySQL: /usr/lib64/mysql/libmysqlclient.so
-- Found MySQL version: 5.5.14
-- Requires SOCI-3.0
-- Using soci-config: /usr/bin/soci-config
-- SOCI headers are buried
-- Found SOCI: /usr/lib64/libsoci_core.so (Required is at least version "3.0")
-- Found SOCIMySQL: /usr/lib64/libsoci_mysql.so (Required is at least version "3.0")
-- Found SOCI with MySQL back-end support version: 3.0.0
-- Requires StdAir-0.35
-- Found StdAir version: 0.36.2
-- Requires Doxygen without specifying any version
-- Found Doxygen: /usr/bin/doxygen
-- Found DoxygenWrapper: /usr/bin/doxygen
-- Found Doxygen version: 1.7.4
-- Had to set the linker language for 'trademgenlib' to CXX
-- Had to set the linker language for 'pytrademgenlib' to CXX
-- Test 'TrademgenTest' to be built with 'DemandGenerationTestSuite.cpp'
--
-- ============================================================
-- ----------------------------------
-- ---     Project Information    ---
-- ----------------------------------
-- PROJECT_NAME ................... : trademgen
-- PACKAGE_PRETTY_NAME ............ : TraDemGen
-- PACKAGE ........................ : trademgen
-- PACKAGE_NAME ................... : TRADEMGEN
-- PACKAGE_BRIEF .................. : C++ Simulated Travel Demand Generation Library
-- PACKAGE_VERSION ................ : 99.99.99
-- GENERIC_LIB_VERSION ............ : 99.99.99
-- GENERIC_LIB_SOVERSION .......... : 99.99
--
-- ----------------------------------
-- ---     Build Configuration    ---
-- ----------------------------------
-- Modules to build ............... : trademgen
-- Libraries to build/install ..... : trademgenlib;pytrademgenlib
-- Binaries to build/install ...... : trademgen;trademgen_with_db;pytrademgen.py
-- Modules to test ................ : trademgen
-- Binaries to test ............... : TrademgenTesttst
--
-- * Module ....................... : trademgen
--   + Layers to build ............ : .;basic;bom;factory;command;service
--   + Dependencies on other layers :
--   + Libraries to build/install . : trademgenlib;pytrademgenlib
--   + Executables to build/install : trademgen;trademgen_with_db;pytrademgen.py
--   + Tests to perform ........... : TrademgenTesttst
--
-- BUILD_SHARED_LIBS .............. : ON
-- CMAKE_BUILD_TYPE ............... : Debug
--  * CMAKE_C_FLAGS ............... :
--  * CMAKE_CXX_FLAGS ............. : -Wall -Werror
--  * BUILD_FLAGS ................. :
--  * COMPILE_FLAGS ............... :
-- CMAKE_MODULE_PATH .............. : /home/user/dev/sim/trademgen/trademgengithub/config/
-- CMAKE_INSTALL_PREFIX ........... : /home/user/dev/deliveries/trademgen-99.99.99
--
-- * Doxygen:
```

```
--   - DOXYGEN_VERSION ..... : 1.7.4
--   - DOXYGEN_EXECUTABLE ..... : /usr/bin/doxygen
--   - DOXYGEN_DOT_EXECUTABLE ..... : /usr/bin/dot
--   - DOXYGEN_DOT_PATH ..... : /usr/bin
--
-- ---------------------------------
-- --- Installation Configuration ---
-- ---------------------------------
-- INSTALL_LIB_DIR ..... : /home/user/dev/deliveries/trademgen-99.99.99/lib64
-- INSTALL_BIN_DIR ..... : /home/user/dev/deliveries/trademgen-99.99.99/bin
-- INSTALL_INCLUDE_DIR ..... : /home/user/dev/deliveries/trademgen-99.99.99/include
-- INSTALL_DATA_DIR ..... : /home/user/dev/deliveries/trademgen-99.99.99/share
-- INSTALL_SAMPLE_DIR ..... : /home/user/dev/deliveries/trademgen-99.99.99/share/trademgen/samples
-- INSTALL_DOC ..... : ON
--
-- ---------------------------------
-- ---   Packaging Configuration  ---
-- ---------------------------------
-- CPACK_PACKAGE_CONTACT ..... : Denis Arnaud <denis_arnaud - at - users dot sourceforge dot net>
-- CPACK_PACKAGE_VENDOR ..... : Denis Arnaud
-- CPACK_PACKAGE_VERSION ..... : 99.99.99
-- CPACK_PACKAGE_DESCRIPTION_FILE . : /home/user/dev/sim/trademgen/trademgengithub/README
-- CPACK_RESOURCE_FILE_LICENSE .... : /home/user/dev/sim/trademgen/trademgengithub/COPYING
-- CPACK_GENERATOR ..... : TBZ2
-- CPACK_DEBIAN_PACKAGE_DEPENDS ... :
-- CPACK_SOURCE_GENERATOR ..... : TBZ2;TGZ
-- CPACK_SOURCE_PACKAGE_FILE_NAME . : trademgen-99.99.99
--
-- ---------------------------------
-- ---     External libraries    ---
-- ---------------------------------
--
-- * Python:
--   - PYTHONLIBS_VERSION ..... : 2.7
--   - PYTHON_LIBRARIES ..... : /usr/lib64/libpython2.7.so
--   - PYTHON_INCLUDE_PATH ..... : /usr/include/python2.7
--   - PYTHON_INCLUDE_DIRS ..... : /usr/include/python2.7
--   - PYTHON_DEBUG_LIBRARIES ..... :
--   - Python_ADDITIONAL_VERSIONS . :
--
-- * Boost:
--   - Boost_VERSION ..... : 104600
--   - Boost_LIB_VERSION ..... : 1_46
--   - Boost_HUMAN_VERSION ..... : 1.46.0
--   - Boost_INCLUDE_DIRS ..... : /usr/include
--   - Boost required components .. : program_options;date_time;iostreams;serialization;filesystem;unit_test_f
--   - Boost required libraries ... : optimized;/usr/lib64/libboost_iostreams-mt.so;debug;/usr/lib64/libboost_
--
-- * MySQL:
--   - MYSQL_VERSION ..... : 5.5.14
--   - MYSQL_INCLUDE_DIR ..... : /usr/include/mysql
--   - MYSQL_LIBRARIES ..... : /usr/lib64/mysql/libmysqlclient.so
--
-- * SOCI:
--   - SOCI_VERSION ..... : 3.0.0
--   - SOCI_INCLUDE_DIR ..... : /usr/include/soci
--   - SOCIMYSQL_INCLUDE_DIR ..... : /usr/include/soci
--   - SOCI_LIBRARIES ..... : /usr/lib64/libsoci_core.so
--   - SOCIMYSQL_LIBRARIES ..... : /usr/lib64/libsoci_mysql.so
--
-- * StdAir:
--   - STDAIR_VERSION ..... : 0.36.2
--   - STDAIR_BINARY_DIRS ..... : /home/user/dev/deliveries/stdair-0.36.2/bin
--   - STDAIR_EXECUTABLES ..... : stdair
--   - STDAIR_LIBRARY_DIRS ..... : /home/user/dev/deliveries/stdair-0.36.2/lib64
--   - STDAIR_LIBRARIES ..... : stdairlib;stdairuicllib
--   - STDAIR_INCLUDE_DIRS ..... : /home/user/dev/deliveries/stdair-0.36.2/include
--   - STDAIR_SAMPLE_DIR ..... : /home/user/dev/deliveries/stdair-0.36.2/share/stdair/samples
--
-- Change a value with: cmake -D<Variable>=<Value>
-- ============================================================
--
-- Configuring done
```

```
-- Generating done
-- Build files have been written to: /home/user/dev/sim/trademgen/trademgengithub/build
```

It is recommended that you check if your library has been compiled and linked properly and works as expected. To do so, you should execute the testing process 'make check'. As a result, you should obtain a similar report:

```
[  0%] Built target hdr_cfg_trademgen
[ 94%] Built target trademgenlib
[100%] Built target TrademgenTesttst
Scanning dependencies of target check_trademgentst
Test project /home/user/dev/sim/trademgen/trademgengithub/build/test/trademgen
    Start 1: TrademgenTesttst
1/1 Test #1: TrademgenTesttst .................   Passed    0.37 sec

100% tests passed, 0 tests failed out of 1

Total Test time (real) =  10.82 sec
[100%] Built target check_trademgentst
Scanning dependencies of target check
[100%] Built target check
```

Check if all the executed tests PASSED. If not, please contact us by filling a bug-report.

Finally, you should install the compiled and linked library, include files and (optionally) HTML and PDF documentation by typing:

```
make install
```

Depending on the PREFIX settings during configuration, you might need the root (administrator) access to perform this step.

Eventually, you might invoke the following command

```
make clean
```

to remove all files created during compilation process, or even

```
cd ~/dev/sim/trademgengit
rm -rf build && mkdir build
cd build
```

to remove everything.

# 10 Linking with TraDemGen

## 10.1 Table of Contents



## 10.2 Introdution

There are two convenient methods of linking your programs with the TraDemGen library. The first one employs the 'pkg-config' command (see http://pkgconfig.freedesktop.org/), whereas the second one uses 'trademgen-config' script. These methods are shortly described below.

## 10.3 Using the pkg-config command

'pkg-config' is a helper tool used when compiling applications and libraries. It helps you insert the correct compiler and linker options. The syntax of the 'pkg-config' is as follows:

```
pkg-config <options> <library_name>
```

For instance, assuming that you need to compile an TraDemGen based program 'my_prog.cpp', you should use the following command:

```
g++ `pkg-config --cflags trademgen` -o my_prog my_prog.cpp `pkg-config --libs
      trademgen`
```

For more information see the 'pkg-config' man pages.

## 10.4 Using the trademgen-config script

TraDemGen provides a shell script called trademgen-config, which is installed by default in '$prefix/bin' ('/usr/local/bin') directory. It can be used to simplify compilation and linking of TraDemGen based programs. The usage of this script is quite similar to the usage of the 'pkg-config' command.

Assuming that you need to compile the program 'my_prog.cpp' you can now do that with the following command:

```
g++ `trademgen-config --cflags` -o my_prog_opt my_prog.cpp `trademgen-config --
      libs`
```

A list of 'trademgen-config' options can be obtained by typing:

```
trademgen-config --help
```

If the 'trademgen-config' command is not found by your shell, you should add its location '$prefix/bin' to the PATH environment variable, e.g.:

```
export PATH=/usr/local/bin:$PATH
```

## 10.5 M4 macro for the GNU Autotools

A M4 macro file is delivered with TraDemGen, namely 'trademgen.m4', which can be found in, e.g., '/usr/share/aclocal'. When used by a 'configure' script, thanks to he 'AM_PATH_TraDemGen' macro (specified in the M4 macro file), the following Makefile variables are then defined:

- 'TraDemGen_VERSION' (e.g., defined to 0.23.0)
- 'TraDemGen_CFLAGS' (e.g., defined to '-I${prefix}/include')
- 'TraDemGen_LIBS' (e.g., defined to '-L${prefix}/lib -ltrademgen')

## 10.6 Using TraDemGen with dynamic linking

When using static linking some of the library routines in TraDemGen are copied into your executable program. This can lead to unnecessary large executables. To avoid having too large executable files you may use dynamic linking instead. Dynamic linking means that the actual linking is performed when the program is executed. This requires that the system is able to locate the shared TraDemGen library file during your program execution. If you install the TraDemGen library using a non-standard prefix, the 'LD_LIBRARY_PATH' environment variable might be used to inform the linker of the dynamic library location, e.g.:

```
export LD_LIBRARY_PATH=<TraDemGen installation prefix>/lib:$LD_LIBRARY_PATH
```

# 11 Test Rules

This section describes how the functionality of the TraDemGen library should be verified. In the `'test/trademgen'` subdirectory, test source files are provided. All functionality should be tested using these test source files.

## 11.1 The Test Source Files

Each new TraDemGen module/class should be accompanied with a test source file. The test source file is an implementation in C++ that tests the functionality of a function/class or a group of functions/classes called test suites. The test source file should test relevant parameter settings and input/output relations to guarantee correct functionality of the corresponding classes/functions. The test source files should be maintained using version control and updated whenever new functionality is added to the TraDemGen library.

The test source file should print relevant data to a standard output that can be used to verify the functionality. All relevant parameter settings should be tested.

The test source file should be placed in the `'test/trademgen'` subdirectory and should have a name ending with `'TestSuite.cpp'`.

## 11.2 The Reference File

Consider a test source file named `'YieldTestSuite.cpp'`. A reference file named `'YieldTestSuite.ref'` should accompany the test source file. The reference file contains a reference printout of the standard output generated when running the test program. The reference file should be maintained using version control and updated according to the test source file.

## 11.3 Testing TraDemGen Library

One can compile and execute all test programs from the `'test/trademgen'` sub-directory by typing:

```
% make check
```

after successful compilation of the TraDemGen library.

# 12 Users Guide

## 12.1 Table of Contents

## 12.2 Introduction

The TraDemGen library contains classes for yield rule management. This document does not cover all the aspects of the TraDemGen library. It does however explain the most important things you need to know in order to start using TraDemGen.

## 12.3 Get Started

### 12.3.1 Get the TraDemGen library

### 12.3.2 Build the TraDemGen project

To run the configuration script the first time, go to the top directory (where the TraDemGen package has been unpacked), and issue either of the following two commands, depending on whether the TraDemGen project has been checked out from the Subversion repository or downloaded as a tar-ball package from the Sourceforge Web site:

- `./autogen.sh`
- `./configure`

### 12.3.3 Build and Run the Tests

### 12.3.4 Install the TraDemGen Project (Binaries, Documentation)

## 12.4 Exploring the Predefined BOM Tree

TraDemGen predefines a BOM (Business Object Model) tree specific to the airline IT arena.

### 12.4.1 Demand Stream Engine BOM Tree

- TRADEMGEN::DemandStream

## 12.5 Extending the BOM Tree

# 13 Supported Systems

## 13.1 Table of Contents

## 13.2 Introdution

This page is intended to provide a list of TraDemGen supported systems, i.e. the systems on which configuration, installation and testing process of the TraDemGen library has been sucessful. Results are grouped based on minor release number. Therefore, only the latest tests for bug-fix releases are included. Besides, the information on this page is divided into sections dependent on the operating system.

Where necessary, some extra information is given for each tested configuration, e.g. external libraries installed, configuration commands used, etc.

If you manage to compile, install and test the TraDemGen library on a system not mentioned below, please let us know, so we could update this database.

## 13.3 TraDemGen 3.10.x

### 13.3.1 Linux Systems

#### 13.3.1.1 Fedora Core 4 with ATLAS

- **Platform**: Intel Pentium 4
- **Operating System**: Fedora Core 4 (x86)
- **Compiler**: g++ (GCC) 4.0.2 20051125
- **TraDemGen release**: 3.10.0
- **External Libraries**: From FC4 distribution:
    - `fftw3.i386-3.0.1-3`
    - `fftw3-devel.i386-3.0.1-3`
    - `atlas-sse2.i386-3.6.0-8.fc4`
    - `atlas-sse2-devel.i386-3.6.0-8.fc4`
    - `blas.i386-3.0-35.fc4`
    - `lapack.i386-3.0-35.fc4`
- **Tests Status**: All tests PASSED
- **Comments**: TraDemGen configured with:

```
% CXXFLAGS="-O3 -pipe -march=pentium4" ./configure
```

- **Date**: March 7, 2006
- **Tester**: Tony Ottosson

#### 13.3.1.2 Gentoo Linux with ACML

- **Platform**: AMD Sempron 3000+
- **Operating System**: Gentoo Linux 2006.0 (x86 arch)
- **Compiler(s)**: g++ (GCC) 3.4.5
- **TraDemGen release**: 3.10.1
- **External Libraries**: Compiled and installed from portage tree:
  - `sci-libs/acml-3.0.0`
- **Tests Status**: All tests PASSED
- **Comments**: BLAS and LAPACK libs set by using the following system commands:

```
% eselect blas set ACML
% eselect lapack set ACML
```

  TraDemGen configured with:

```
% export CPPFLAGS="-I/usr/include/acml"
% ./configure --with-blas="-lblas"
```

- **Date**: March 31, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.1.3 Gentoo Linux with ATLAS

- **Platform**: Intel Pentium M Centrino
- **Operating System**: Gentoo Linux 2006.0 (x86)
- **Compiler**: g++ (GCC) 3.4.5
- **TraDemGen release**: 3.10.1
- **External Libraries**: Compiled and installed from portage tree:
  - `sci-libs/fftw-3.1`
  - `sci-libs/blas-atlas-3.6.0-r1`
  - `sci-libs/lapack-atlas-3.6.0`
- **Tests Status**: All tests PASSED
- **Comments**: BLAS and LAPACK libs set by using the following system commands:

```
% eselect blas set ATLAS
% eselect lapack set ATLAS
```

  TraDemGen configured with:

```
% ./configure --with-blas="-lblas"
```

- **Date**: March 31, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.1.4 Gentoo Linux with MKL

- **Platform**: Intel Pentium M Centrino
- **Operating System**: Gentoo Linux 2006.0 (x86 arch)
- **Compiler**: g++ (GCC) 3.4.5
- **TraDemGen release**: 3.10.0
- **External Libraries**: Intel Math Kernel Library (MKL) 8.0.1 installed manually in the following directory: `/opt/intel/mkl/8.0.1`
- **Tests Status**: All tests PASSED
- **Comments**: TraDemGen configured using the following commands:

```
% export LDFLAGS="-L/opt/intel/mkl/8.0.1/lib/32"
% export CPPFLAGS="-I/opt/intel/mkl/8.0.1/include"
% ./configure
```

- **Date**: February 28, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.1.5 Gentoo Linux with NetLib's BLAS and LAPACK

- **Platform**: Intel Pentium M Centrino
- **Operating System**: Gentoo Linux 2006.0 (x86)
- **Compiler**: g++ (GCC) 3.4.5
- **TraDemGen release**: 3.10.1
- **External Libraries**: Compiled and installed from portage tree:
  - `sci-libs/fftw-3.1`
  - `sci-libs/blas-reference-19940131-r2`
  - `sci-libs/cblas-reference-20030223`
  - `sci-libs/lapack-reference-3.0-r2`
- **Tests Status**: All tests PASSED
- **Comments**: BLAS and LAPACK libs set by using the following system commands:

```
% blas-config reference
% lapack-config reference
```

  TraDemGen configured with:

```
% ./configure --with-blas="-lblas"
```

- **Date**: March 31, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.1.6 Red Hat Enterprise Linux with TraDemGen External

- **Platform**: Intel Pentium 4
- **Operating System**: Red Hat Enterprise Linux AS release 4 (Nahant Update 2)
- **Compiler**: g++ (GCC) 3.4.4 20050721 (Red Hat 3.4.4-2)
- **TraDemGen release**: 3.10.0
- **External Libraries**: BLAS, CBLAS, LAPACK and FFTW libraries from TraDemGen External 2.1.1 package
- **Tests Status**: All tests PASSED
- **Date**: March 7, 2006
- **Tester**: Erik G. Larsson

#### 13.3.1.7 SUSE Linux 10.0 with NetLib's BLAS and LAPACK

- **Platform**: Intel Pentium 4 CPU 3.20GHz (64-bit)
- **Operating System**: SUSE Linux 10.0 (x86_64)
- **Compiler(s)**: g++ (GCC) 4.0.2
- **TraDemGen release**: 3.10.0
- **External Libraries**: BLAS, LAPACK and FFTW libraries installed from OpenSuse 10.0 RPM repository:
  - `blas-3.0-926`
  - `lapack-3.0-926`
  - `fftw3-3.0.1-114`
  - `fftw3-threads-3.0.1-114`
  - `fftw3-devel-3.0.1-114`
- **Tests Status**: All tests PASSED
- **Comments**: TraDemGen configured with:

```
% export CXXFLAGS="-m64 -march=nocona -O3 -pipe"
% ./configure --with-lapack="/usr/lib64/liblapack.so.3"
```

- **Date**: March 1, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.1.8 SUSE Linux 10.0 with MKL

- **Platform**: Intel Pentium 4 CPU 3.20GHz (64-bit)
- **Operating System**: SUSE Linux 10.0 (x86_64)
- **Compiler(s)**: g++ (GCC) 4.0.2
- **TraDemGen release**: 3.10.0
- **External Libraries**: Intel Math Kernel Library (MKL) 8.0.1 installed manually in the following directory: `/opt/intel/mkl/8.0.1`
- **Tests Status**: All tests PASSED
- **Comments**: TraDemGen configured with:

```
% export CXXFLAGS="-m64 -march=nocona -O3 -pipe"
% export LDFLAGS="-L/opt/intel/mkl/8.0.1/lib/em64t"
% export CPPFLAGS="-I/opt/intel/mkl/8.0.1/include"
% ./configure
```

- **Date**: March 1, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.2 Windows Systems

##### 13.3.2.1 Microsoft Windows XP with Cygwin

- **Platform**: AMD Sempron 3000+
- **Operating System**: Microsoft Windows XP SP2, Cygwin 1.5.19-4
- **Compiler(s)**: g++ (GCC) 3.4.4 (cygming special)
- **TraDemGen release**: 3.10.1
- **External Libraries**: Installed from Cygwin's repository:
  - `fftw-3.0.1-2`
  - `fftw-dev-3.0.1-1`
  - `lapack-3.0-4`
- **Tests Status**: All tests PASSED
- **Comments**: Only static library can be built. TraDemGen configured with:

```
% ./configure
```

- **Date**: March 31, 2006
- **Tester**: Adam Piatyszek (ediap)

##### 13.3.2.2 Microsoft Windows XP with Cygwin and ATLAS

- **Platform**: AMD Sempron 3000+
- **Operating System**: Microsoft Windows XP SP2, Cygwin 1.5.19-4
- **Compiler(s)**: g++ (GCC) 3.4.4 (cygming special)
- **TraDemGen release**: 3.10.1
- **External Libraries**: Installed from Cygwin's repository:
  - `fftw-3.0.1-2`
  - `fftw-dev-3.0.1-1`

  ATLAS BLAS and LAPACK libraries from TraDemGen External 2.1.1 package configured using:

```
% ./configure --enable-atlas --disable-fftw
```

- **Tests Status**: All tests PASSED
- **Comments**: Only static library can be built. TraDemGen configured with:

```
% export LDFLAGS="-L/usr/local/lib"
% ./configure
```

- **Date**: March 31, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.2.3 Microsoft Windows XP with Cygwin and ACML

- **Platform**: AMD Sempron 3000+
- **Operating System**: Microsoft Windows XP SP2, Cygwin 1.5.19-4
- **Compiler(s)**: g++ (GCC) 3.4.4 (cygming special)
- **TraDemGen release**: 3.10.2
- **External Libraries**: ACML version 3.1.0 (`acml3.1.0-32-win32-g77.exe`) installed into a default directory, i.e. `"c:\Program Files\AMD\acml3.1.0"`
- **Tests Status**: All tests PASSED
- **Comments**: Only static library can be built. TraDemGen configured with:

```
% export LDFLAGS="-L/cygdrive/c/Progra~1/AMD/acml3.1.0/gnu32/lib"
% export CPPFLAGS="-I/cygdrive/c/Progra~1/AMD/acml3.1.0/gnu32/include"
% ./configure --enable-debug
```

- **Date**: May 15, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.2.4 Microsoft Windows XP with MinGW, MSYS and ACML

- **Platform**: AMD Sempron 3000+
- **Operating System**: Microsoft Windows XP SP2, MinGW 5.0.2, MSYS 1.0.10
- **Compiler(s)**: g++ (GCC) 3.4.4 (mingw special)
- **TraDemGen release**: 3.10.2
- **External Libraries**: ACML version 3.1.0 (`acml3.1.0-32-win32-g77.exe`) installed into a default directory, i.e. `"c:\Program Files\AMD\acml3.1.0"`
- **Tests Status**: All tests PASSED
- **Comments**: Only static library can be built. TraDemGen configured with:

```
% export LDFLAGS="-L/c/Progra~1/AMD/acml3.1.0/gnu32/lib"
% export CPPFLAGS="-I/c/Progra~1/AMD/acml3.1.0/gnu32/include"
% ./configure --enable-debug
```

- **Date**: May 15, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.2.5 Microsoft Windows XP with MinGW, MSYS and TraDemGen External

- **Platform**: AMD Sempron 3000+
- **Operating System**: Microsoft Windows XP SP2, MinGW 5.0.2, MSYS 1.0.10
- **Compiler(s)**: g++ (GCC) 3.4.4 (mingw special)
- **TraDemGen release**: 3.10.5
- **External Libraries**: BLAS, CBLAS, LAPACK and FFTW libraries from TraDemGen External 2.2.0 package
- **Tests Status**: All tests PASSED
- **Comments**: Only static library can be built. TraDemGen configured with:

```
% export LDFLAGS="-L/usr/local/lib"
% export CPPFLAGS="-I/usr/local/include"
% export CXXFLAGS="-Wall -O3 -march=athlon-tbird -pipe"
% ./configure --disable-html-doc
```

- **Date**: August 11, 2006
- **Tester**: Adam Piatyszek (ediap)

#### 13.3.2.6 Microsoft Windows XP with MS Visual C++ and Intel MKL

- **Platform**: AMD Sempron 3000+
- **Operating System**: Microsoft Windows XP SP2
- **Compiler(s)**: Microsoft Visual C++ 2005 .NET
- **TraDemGen release**: 3.10.5
- **External Libraries**: Intel Math Kernel Library (MKL) 8.1 installed manually in the following directory: "`C:\-Program Files\Intel\MKL\8.1`"
- **Tests Status**: Not fully tested. Some TraDemGen based programs compiled and run with success.
- **Comments**: Only static library can be built. TraDemGen built by opening the "`win32\trademgen.-vcproj`" project file in MSVC++ and executing "`Build -> Build Solution`" command from menu.
- **Date**: August 11, 2006
- **Tester**: Adam Piatyszek (ediap)

### 13.3.3 Unix Systems

#### 13.3.3.1 SunOS 5.9 with TraDemGen External

- **Platform**: SUNW, Sun-Blade-100 (SPARC)
- **Operating System**: SunOS 5.9 Generic_112233-10
- **Compiler(s)**: g++ (GCC) 3.4.5
- **TraDemGen release**: 3.10.2
- **External Libraries**: BLAS, CBLAS, LAPACK and FFTW libraries from TraDemGen External 2.1.1 package. The following configuration command has been used:

```
% export CFLAGS="-mcpu=ultrasparc -O2 -pipe -funroll-all-loops"
% ./configure
```

- **Tests Status**: All tests PASSED
- **Comments**: TraDemGen configured with:

```
% export LDFLAGS="-L/usr/local/lib"
% export CPPFLAGS="-I/usr/local/include"
% export CXXFLAGS="-mcpu=ultrasparc -O2 -pipe"
% ./configure --enable-debug
```

- **Date**: May 15, 2006
- **Tester**: Adam Piatyszek (ediap)

# 14 TraDemGen Supported Systems (Previous Releases)

## 14.1 TraDemGen 3.9.1

## 14.2 TraDemGen 3.9.0

## 14.3 TraDemGen 3.8.1

# 15 Tutorials

## 15.1 Table of Contents



## 15.2 Introduction

This page contains some tutorial examples that will help you getting started using StdAir. Most examples show how to construct some simple business objects, i.e., instances of the so-named Business Object Model (BOM).

### 15.2.1 Preparing the StdAir Project for Development

The source code for these examples can be found in the `batches` and `test/stdair` directories. They are compiled along with the rest of the `StdAir` project. See the User Guide (Users Guide) for more details on how to build the `StdAir` project.

## 15.3 Build a Predefined BOM Tree

A few steps:

- Instanciate the BOM Root Object
- Instanciate the (Airline) Inventory Object
- Link the Inventory Object with the BOM Root

### 15.3.1 Instanciate the BOM Root Object

First, a BOM root object (i.e., a root for all the classes in the project) is instantiated by the `stdair::STDAIR_ServiceContext` context object, when the `stdair::STDAIR_Service` is itself instantiated. The corresponding `StdAir` type (class) is `stdair::BomRoot`.

In the following sample, that object is named `ioBomRoot`, and is given as input/output parameter of the `stdair::CmdBomManager::buildSampleBom()` method:

#### 15.3.2 Instanciate the (Airline) Inventory Object

An airline inventory object can then be instantiated. Let us give it the "BA" airline code (corresponding to `British Airways`) as the object key. That is, an object (let us name it `lBAKey`) of type (class) `stdair::InventoryKey` has first to be instantiated.

Thanks to that key, an airline inventory object, i.e. of type (class) `stdair::Inventory`, can be instantiated. Let us name that airline inventory object `lBAInv`.

#### 15.3.3 Link the Inventory Object with the BOM Root

Then, both objects have to be linked: the airline inventory object (`stdair::Inventory`) has to be linked with the root of the BOM tree (`stdair::BomRoot`). That operation is as simple as using the `stdair::FacBomManager::addToListAndMap()` method:

#### 15.3.4 Build Another Airline Inventory

Another airline inventory object, corresponding to the Air France (`Air France`) company, is instantiated the same way:

See the corresponding full program (cmd_bom_manager_cpp) for more details.

#### 15.3.5 Dump The BOM Tree Content

From the `BomRoot` (of type `stdair::BomRoot`) object instance, the list of airline inventories (of type `stdair::Inventory`) can then be retrieved...

... and browsed:

See the corresponding full program (bom_display_cpp) for more details.

#### 15.3.6 Result of the Tutorial Program

When the `stdair.cpp` program is run (with the `-b` option), the output should look like:

See the corresponding full program (batch_stdair_cpp) for more details.

## 15.4 Extend the Pre-Defined BOM Tree

Now that we master how to instantiate the pre-defined StdAir classes, let us see how to extend that BOM.

#### 15.4.1 Extend an Airline Inventory Object

For instance, let us assume that some (IT) provider (e.g., you) would like to have a specific implementation of the `Inventory` object. The corresponding class has just to extend the `stdair::Inventory` class:

The STL containers have to be defined accordingly too:

See the full class definition (test_archi_inv_hpp) and implementation (test_archi_inv_cpp) for more details.

#### 15.4.2 Build the Specific BOM Objects

The BOM root object (`stdair::BomRoot`) is instantiated the classical way:

Then, the specific implementation of the airline inventory object (`myprovider::Inventory`) can be instantiated the same way as a standard Inventory (`stdair::Inventory`) would be:

Then, the specific implementation of the airline inventory object (`myprovider::Inventory`) is linked to the root of the BOM tree (`stdair::BomRoot`) the same way as the standard Inventory (`stdair::Inventory`) would be:

Another specific airline inventory object is instantiated the same way:

From the `BomRoot` (of type `stdair::BomRoot`) object instance, the list of specific airline inventories (of type `stdair::Inventory`) can then be retrieved...

... and browsed:

#### 15.4.3 Result of the Tutorial Program

When this program is run, the output should look like:

See the corresponding full program (StandardAirlineITTestSuite_cpp) for more details.

# 16 Command-Line Test to Demonstrate How To Use TraDemGen elements

```
 */
// ////////////////////////////////////////////////////////////////////
// Import section
// ////////////////////////////////////////////////////////////////////
// STL
#include <sstream>
#include <fstream>
#include <map>
#include <cmath>
// Boost Unit Test Framework (UTF)
#define BOOST_TEST_DYN_LINK
#define BOOST_TEST_MAIN
#define BOOST_TEST_MODULE DemandGenerationTest
#include <boost/test/unit_test.hpp>
// StdAir
#include <stdair/stdair_basic_types.hpp>
#include <stdair/basic/BasConst_General.hpp>
#include <stdair/basic/BasLogParams.hpp>
#include <stdair/basic/BasDBParams.hpp>
#include <stdair/basic/BasFileMgr.hpp>
#include <stdair/basic/ProgressStatusSet.hpp>
#include <stdair/bom/EventStruct.hpp>
#include <stdair/bom/EventQueue.hpp>
#include <stdair/bom/BookingRequestStruct.hpp>
#include <stdair/service/Logger.hpp>
// TraDemGen
#include <trademgen/TRADEMGEN_Service.hpp>
#include <trademgen/bom/DemandStreamKey.hpp>
#include <trademgen/config/trademgen-paths.hpp
      >

namespace boost_utf = boost::unit_test;

// (Boost) Unit Test XML Report
std::ofstream utfReportStream ("DemandGenerationTestSuite_utfresults.xml");

struct UnitTestConfig {
  UnitTestConfig() {
    boost_utf::unit_test_log.set_stream (utfReportStream);
    boost_utf::unit_test_log.set_format (boost_utf::XML);
    boost_utf::unit_test_log.set_threshold_level (boost_utf::log_test_units);
    //boost_utf::unit_test_log.set_threshold_level
       (boost_utf::log_successful_tests);
  }

  ~UnitTestConfig() {
  }
};

// Specific type definitions
typedef std::pair<stdair::Count_T, stdair::Count_T> NbOfEventsPair_T;
typedef std::map<const stdair::DemandStreamKeyStr_T,
                 NbOfEventsPair_T> NbOfEventsByDemandStreamMap_T;


// ///////////////// Main: Unit Test Suite ///////////////

// Set the UTF configuration (re-direct the output to a specific file)
BOOST_GLOBAL_FIXTURE (UnitTestConfig);

// Start the test suite
BOOST_AUTO_TEST_SUITE (master_test_suite)


BOOST_AUTO_TEST_CASE (trademgen_simple_simulation_test) {

  // Seed for the random generation
  const stdair::RandomSeed_T lRandomSeed = stdair::DEFAULT_RANDOM_SEED;

// Input file name
  const stdair::Filename_T lInputFilename (STDAIR_SAMPLE_DIR "
      /demand01.csv");

  // Check that the file path given as input corresponds to an actual file
  const bool doesExistAndIsReadable =
    stdair::BasFileMgr::doesExistAndIsReadable (lInputFilename);
  BOOST_CHECK_MESSAGE (doesExistAndIsReadable == true,
                       "The '" << lInputFilename
                       << "' input file can not be open and read");

  // Output log File
  const stdair::Filename_T lLogFilename ("DemandGenerationTestSuite.log");

  // Set the log parameters
```

```
std::ofstream logOutputFile;
// open and clean the log outputfile
logOutputFile.open (lLogFilename.c_str());
logOutputFile.clear();

// Initialise the TraDemGen service object
const stdair::BasLogParams lLogParams (stdair::LOG::DEBUG, logOutputFile);
TRADEMGEN::TRADEMGEN_Service trademgenService (
    lLogParams, lRandomSeed);

// Create the DemandStream objects, and insert them within the BOM tree
BOOST_CHECK_NO_THROW (trademgenService.parseAndLoad (lInputFilename));

NbOfEventsByDemandStreamMap_T lNbOfEventsMap;
lNbOfEventsMap.insert (NbOfEventsByDemandStreamMap_T::
                       value_type ("SIN-HND 2010-Feb-08 Y",
                                   NbOfEventsPair_T (1, 10)));
lNbOfEventsMap.insert (NbOfEventsByDemandStreamMap_T::
                       value_type ("SIN-HND 2010-Feb-09 Y",
                                   NbOfEventsPair_T (1, 10)));
lNbOfEventsMap.insert (NbOfEventsByDemandStreamMap_T::
                       value_type ("SIN-BKK 2010-Feb-08 Y",
                                   NbOfEventsPair_T (1, 10)));
lNbOfEventsMap.insert (NbOfEventsByDemandStreamMap_T::
                       value_type ("SIN-BKK 2010-Feb-09 Y",
                                   NbOfEventsPair_T (1, 10)));
// Total number of events, for all the demand streams: 3
stdair::Count_T lRefExpectedNbOfEvents (40);

// Retrieve the expected (mean value of the) number of events to be
// generated
const stdair::Count_T& lExpectedNbOfEventsToBeGenerated =
  trademgenService.getExpectedTotalNumberOfRequestsToBeGenerated();

BOOST_CHECK_EQUAL (lRefExpectedNbOfEvents,
                   std::floor (lExpectedNbOfEventsToBeGenerated));

BOOST_CHECK_MESSAGE (lRefExpectedNbOfEvents ==
                     std::floor (lExpectedNbOfEventsToBeGenerated),
                     "Expected total number of requests to be generated: "
                     << lExpectedNbOfEventsToBeGenerated
                     << " (=> "
                     << std::floor (lExpectedNbOfEventsToBeGenerated)
                     << "). Reference value: " << lRefExpectedNbOfEvents);

// Generate the date time of the requests with the statistic order method.
stdair::DemandGenerationMethod lDemandGenerationMethod (
    stdair::DemandGenerationMethod::STA_ORD);

const stdair::Count_T& lActualNbOfEventsToBeGenerated =
  trademgenService.generateFirstRequests(lDemandGenerationMethod);

// DEBUG
STDAIR_LOG_DEBUG ("Expected number of events: "
                  << lExpectedNbOfEventsToBeGenerated << ", actual: "
                  << lActualNbOfEventsToBeGenerated);

// Total number of events, for all the demand streams: 40
const stdair::Count_T lRefActualNbOfEvents (40);
BOOST_CHECK_EQUAL (lRefActualNbOfEvents, lActualNbOfEventsToBeGenerated);

BOOST_CHECK_MESSAGE (lRefActualNbOfEvents == lActualNbOfEventsToBeGenerated,
                     "Actual total number of requests to be generated: "
                     << lExpectedNbOfEventsToBeGenerated
                     << " (=> "
                     << std::floor (lExpectedNbOfEventsToBeGenerated)
                     << "). Reference value: " << lRefActualNbOfEvents);

const bool isQueueDone = trademgenService.isQueueDone();
BOOST_REQUIRE_MESSAGE (isQueueDone == false,
                       "The event queue should not be empty. You may check "
                       << "the input file: '" << lInputFilename << "'");

stdair::Count_T idx = 1;
while (trademgenService.isQueueDone() == false) {

  // Get the next event from the event queue
  stdair::EventStruct lEventStruct;
  stdair::ProgressStatusSet lPPS = trademgenService.popEvent (lEventStruct);

  // DEBUG
  STDAIR_LOG_DEBUG ("Poped event: '" << lEventStruct.describe() << "'.");

  // Extract the corresponding demand/booking request
  const stdair::BookingRequestStruct& lPoppedRequest =
    lEventStruct.getBookingRequest();
```

```
    // DEBUG
    STDAIR_LOG_DEBUG ("Poped booking request: '"
                      << lPoppedRequest.describe() << "'.");

    // Retrieve the corresponding demand stream
    const stdair::DemandGeneratorKey_T& lDemandStreamKey =
      lPoppedRequest.getDemandGeneratorKey();

    // Check that the number of booking requests to be generated are correct
    const NbOfEventsByDemandStreamMap_T::iterator itNbOfEventsMap =
      lNbOfEventsMap.find (lDemandStreamKey);
    BOOST_REQUIRE_MESSAGE (itNbOfEventsMap != lNbOfEventsMap.end(),
                           "The demand stream key '" << lDemandStreamKey
                           << "' is not expected in that test");

    const NbOfEventsPair_T& lNbOfEventsPair = itNbOfEventsMap->second;
    stdair::Count_T lCurrentNbOfEvents = lNbOfEventsPair.first;
    const stdair::Count_T& lExpectedTotalNbOfEvents = lNbOfEventsPair.second;

    // Assess whether more events should be generated for that demand stream
    const bool stillHavingRequestsToBeGenerated = trademgenService.
      stillHavingRequestsToBeGenerated (lDemandStreamKey, lPPS,
                                        lDemandGenerationMethod);

    if (lCurrentNbOfEvents == 1) {
      const stdair::ProgressStatus& lDemandStreamProgressStatus =
        lPPS.getSpecificGeneratorStatus();
      const stdair::Count_T& lNbOfRequests =
        lDemandStreamProgressStatus.getExpectedNb();

      BOOST_CHECK_EQUAL (lNbOfRequests, lExpectedTotalNbOfEvents);
      BOOST_CHECK_MESSAGE (lNbOfRequests == lExpectedTotalNbOfEvents,
                           "[" << lDemandStreamKey
                           << "] Total number of requests to be generated: "
                           << lNbOfRequests << "). Expected value: "
                           << lExpectedTotalNbOfEvents);
    }

    // DEBUG
    STDAIR_LOG_DEBUG ("=> [" << lDemandStreamKey << "][" << lCurrentNbOfEvents
                      << "/" << lExpectedTotalNbOfEvents
                      << "] is now processed. "
                      << "Still generate events for that demand stream? "
                      << stillHavingRequestsToBeGenerated);

    // If there are still events to be generated for that demand stream,
    // generate and add them to the event queue
    if (stillHavingRequestsToBeGenerated == true) {
      const stdair::BookingRequestPtr_T lNextRequest_ptr =
        trademgenService.generateNextRequest (lDemandStreamKey,
                                              lDemandGenerationMethod);
      assert (lNextRequest_ptr != NULL);

      const stdair::Duration_T lDuration =
        lNextRequest_ptr->getRequestDateTime()
        - lPoppedRequest.getRequestDateTime();
      BOOST_REQUIRE_GT (lDuration.total_milliseconds(), 0);
      BOOST_REQUIRE_MESSAGE (lDuration.total_milliseconds() > 0,
                             "[" << lDemandStreamKey
                             << "] The date-time of the generated event ("
                             << lNextRequest_ptr->getRequestDateTime()
                             << ") is lower than the date-time "
                             << "of the current event ("
                             << lPoppedRequest.getRequestDateTime() << ")");

      // DEBUG
      STDAIR_LOG_DEBUG ("[" << lDemandStreamKey << "][" << lCurrentNbOfEvents
                        << "/" << lExpectedTotalNbOfEvents
                        << "] Added request: '" << lNextRequest_ptr->describe()
                        << "'. Is queue done? "
                        << trademgenService.isQueueDone());

      // Keep, within the dedicated map, the current counters of events
       updated.
      ++lCurrentNbOfEvents;
      itNbOfEventsMap->second = NbOfEventsPair_T (lCurrentNbOfEvents,
                                                  lExpectedTotalNbOfEvents);
    }

    // Iterate
    ++idx;
  }
  // Compensate for the last iteration
  --idx;
  //
  BOOST_CHECK_EQUAL (idx, lRefActualNbOfEvents);
  BOOST_CHECK_MESSAGE (idx == lRefActualNbOfEvents,
```

```
                      "The total actual number of events is "
                      << lRefActualNbOfEvents << ", but " << idx
                      << " events have been generated");

  trademgenService.reset();

  // DEBUG
  STDAIR_LOG_DEBUG ("End of the simulation");

  // Close the log file
  logOutputFile.close();
}

// End the test suite
BOOST_AUTO_TEST_SUITE_END()

/*!
```

# 17 Namespace Index

## 17.1 Namespace List

Here is a list of all namespaces with brief descriptions:



# 18 Class Index

## 18.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

std::basic_fstream< char >
std::basic_fstream< wchar_t >
std::basic_ifstream< char >
std::basic_ifstream< wchar_t >
std::basic_ios< char >
std::basic_ios< wchar_t >
std::basic_iostream< char >
std::basic_iostream< wchar_t >
std::basic_istream< char >
std::basic_istream< wchar_t >
std::basic_istringstream< char >
std::basic_istringstream< wchar_t >
std::basic_ofstream< char >
std::basic_ofstream< wchar_t >
std::basic_ostream< char >
std::basic_ostream< wchar_t >
std::basic_ostringstream< char >
std::basic_ostringstream< wchar_t >
std::basic_string< char >
std::basic_string< wchar_t >
std::basic_stringstream< char >
std::basic_stringstream< wchar_t >

# 19 Class Index

## 19.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

# 20 File Index

## 20.1 File List

Here is a list of all files with brief descriptions:

# 21 Namespace Documentation

## 21.1 stdair Namespace Reference

Forward declarations.

### Classes

- struct CategoricalAttribute

  *Class modeling the distribution of values that can be taken by a categorical attribute.*

### 21.1.1 Detailed Description

Forward declarations.

## 21.2 TRADEMGEN Namespace Reference

### Namespaces

- namespace DemandParserHelper

### Classes

- struct DefaultMap
- struct CategoricalAttributeLite

  *Class modeling the distribution of values that can be taken by a categorical attribute.*
- struct ContinuousAttribute
- struct ContinuousAttributeLite

  *Class modeling the distribution of values that can be taken by a continuous attribute.*
- struct DemandCharacteristics

  *Class modeling the characteristics of a demand type.*
- struct DemandDistribution

  *Class modeling the distribution of a demand type.*

- class DictionaryManager

  *Class wrapper of dictionary business methods.*
- struct RandomGenerationContext
- struct FlagSaver
- class BomDisplay

  *Utility class to display TraDemGen objects with a pretty format.*
- class DemandStream

  *Class modeling a demand stream.*
- struct DemandStreamKey
- struct DemandStruct
- class DBManager
- class DemandManager

  *Utility class for Demand and DemandStream objects.*
- class DemandParser

  *Class wrapping the parser entry point.*
- class DemandFileParser
- struct DBParams
- class FacTRADEMGENServiceContext

  *Factory for creating the TraDemGen service context instance.*
- struct Trademgener
- class TRADEMGEN_ServiceContext

  *Class holding the context of the Trademgen services.*
- struct TRADEMGEN_Abstract
- class TrademgenGenerationException
- class DemandInputFileNotFoundException
- class IndexOutOfRangeException
- class TRADEMGEN_Service

  *class holding the services related to Travel Demand Generation.*

### Typedefs

- typedef char char_t
- typedef boost::spirit::classic::file_iterator < char_t > iterator_t
- typedef boost::spirit::classic::scanner < iterator_t > scanner_t
- typedef boost::spirit::classic::rule < scanner_t > rule_t
- typedef boost::spirit::classic::int_parser < unsigned int, 10, 1, 1 > int1_p_t
- typedef boost::spirit::classic::uint_parser < unsigned int, 10, 2, 2 > uint2_p_t
- typedef boost::spirit::classic::uint_parser < unsigned int, 10, 1, 2 > uint1_2_p_t
- typedef boost::spirit::classic::uint_parser < unsigned int, 10, 1, 3 > uint1_3_p_t

- typedef boost::spirit::classic::uint_parser < unsigned int, 10, 4, 4 > uint4_p_t
- typedef boost::spirit::classic::uint_parser < unsigned int, 10, 1, 4 > uint1_4_p_t
- typedef boost::spirit::classic::chset < char_t > chset_t
- typedef boost::spirit::classic::impl::loop_traits < chset_t, unsigned int, unsigned int >::type repeat_p_t
- typedef boost::spirit::classic::bounded < uint2_p_t, unsigned int > bounded2_p_t
- typedef boost::spirit::classic::bounded < uint1_2_p_t, unsigned int > bounded1_2_p_t
- typedef boost::spirit::classic::bounded < uint1_3_p_t, unsigned int > bounded1_3_p_t
- typedef boost::spirit::classic::bounded < uint4_p_t, unsigned int > bounded4_p_t
- typedef boost::spirit::classic::bounded < uint1_4_p_t, unsigned int > bounded1_4_p_t
- typedef ContinuousAttributeLite < stdair::FloatDuration_T > ContinuousFloatDuration_T
- typedef ContinuousFloatDuration_T::ContinuousDistribution_T ArrivalPatternCumulativeDistribution_T
- typedef CategoricalAttributeLite < stdair::AirportCode_T > POSProbabilityMass_T
- typedef POSProbabilityMass_T::ProbabilityMassFunction_T POSProbabilityMassFunction_T
- typedef CategoricalAttributeLite < stdair::ChannelLabel_T > ChannelProbabilityMass_T
- typedef ChannelProbabilityMass_T::ProbabilityMassFunction_T ChannelProbabilityMassFunction_T
- typedef CategoricalAttributeLite < stdair::TripType_T > TripTypeProbabilityMass_T
- typedef TripTypeProbabilityMass_T::ProbabilityMassFunction_T TripTypeProbabilityMassFunction_T
- typedef CategoricalAttributeLite < stdair::DayDuration_T > StayDurationProbabilityMass_T
- typedef StayDurationProbabilityMass_T::ProbabilityMassFunction_T StayDurationProbabilityMassFunction_T
- typedef CategoricalAttributeLite < stdair::FrequentFlyer_T > FrequentFlyerProbabilityMass_T

- typedef FrequentFlyerProbabilityMass_T::ProbabilityMassFunction_T FrequentFlyerProbabilityMassFunction_T
- typedef ContinuousAttributeLite < stdair::IntDuration_T > PreferredDepartureTimeCumulativeDistribution_T
- typedef PreferredDepartureTimeCumulativeDistribution_T::ContinuousDistribution_T PreferredDepartureTimeContinuousDistribution_T
- typedef ContinuousAttributeLite < stdair::PriceValue_T > ValueOfTimeCumulativeDistribution_T
- typedef ValueOfTimeCumulativeDistribution_T::ContinuousDistribution_T ValueOfTimeContinuousDistribution_T
- typedef ContinuousAttributeLite < stdair::RealNumber_T > CumulativeDistribution_T
- typedef CumulativeDistribution_T::ContinuousDistribution_T FRAT5Pattern_T
- typedef stdair::Probability_T DictionaryKey_T
- typedef std::list< DemandStream * > DemandStreamList_T
- typedef std::map< const stdair::MapKey_T, DemandStream * > DemandStreamMap_T
- typedef std::list< std::string > DBParamsNameList_T
- typedef boost::shared_ptr < TRADEMGEN_Service > TRADEMGEN_ServicePtr_T

**Functions**

- stdair::BaseGenerator_T DEFAULT_BASE_GENERATOR (stdair::DEFAULT_RANDOM_SEED)
- stdair::UniformGenerator_T DEFAULT_UNIFORM_GENERATOR (DEFAULT_BASE_GENERATOR, DEFAULT_UNIFORM_REAL_DISTRIBUTION)

**Variables**

- const POSProbabilityMassFunction_T DEFAULT_POS_PROBALILITY_MASS
- const stdair::FloatDuration_T DEFAULT_LAST_LOWER_BOUND_ARRIVAL_PATTERN = -1
- const FRAT5Pattern_T DEFAULT_FRAT5_PATTERN = DefaultMap::createFRAT5Pattern()
- const double DEFAULT_MAX_ADVANCE_PURCHASE = 330.0
- const stdair::UniformDistribution_T DEFAULT_UNIFORM_REAL_DISTRIBUTION
- stdair::BaseGenerator_T DEFAULT_BASE_GENERATOR
- stdair::UniformGenerator_T DEFAULT_UNIFORM_GENERATOR

### 21.2.1 Typedef Documentation

#### 21.2.1.1 typedef char TRADEMGEN::char_t

Definition at line 31 of file BasParserTypes.hpp.

#### 21.2.1.2 typedef boost::spirit::classic::file_iterator<char_t> TRADEMGEN::iterator_t

Definition at line 35 of file BasParserTypes.hpp.

#### 21.2.1.3 typedef boost::spirit::classic::scanner<iterator_t> TRADEMGEN::scanner_t

Definition at line 36 of file BasParserTypes.hpp.

#### 21.2.1.4 typedef boost::spirit::classic::rule<scanner_t> TRADEMGEN::rule_t

Definition at line 37 of file BasParserTypes.hpp.

#### 21.2.1.5 typedef boost::spirit::classic::int_parser<unsigned int, 10, 1, 1> TRADEMGEN::int1_p_t

1-digit-integer parser

Definition at line 45 of file BasParserTypes.hpp.

#### 21.2.1.6 typedef boost::spirit::classic::uint_parser<unsigned int, 10, 2, 2> TRADEMGEN::uint2_p_t

2-digit-integer parser

Definition at line 48 of file BasParserTypes.hpp.

#### 21.2.1.7 typedef boost::spirit::classic::uint_parser<unsigned int, 10, 1, 2> TRADEMGEN::uint1_2_p_t

Up-to-2-digit-integer parser

Definition at line 51 of file BasParserTypes.hpp.

#### 21.2.1.8 typedef boost::spirit::classic::uint_parser<unsigned int, 10, 1, 3> TRADEMGEN::uint1_3_p_t

Up-to-3-digit-integer parser

Definition at line 54 of file BasParserTypes.hpp.

#### 21.2.1.9 typedef boost::spirit::classic::uint_parser<unsigned int, 10, 4, 4> TRADEMGEN::uint4_p_t

4-digit-integer parser

Definition at line 57 of file BasParserTypes.hpp.

#### 21.2.1.10 typedef boost::spirit::classic::uint_parser<unsigned int, 10, 1, 4> TRADEMGEN::uint1_4_p_t

Up-to-4-digit-integer parser

Definition at line 60 of file BasParserTypes.hpp.

#### 21.2.1.11 typedef boost::spirit::classic::chset<char_t> TRADEMGEN::chset_t

character set

Definition at line 63 of file BasParserTypes.hpp.

#### 21.2.1.12 typedef boost::spirit::classic::impl::loop_traits<chset_t, unsigned int, unsigned int>::type TRADEMGEN::repeat_p_t

(Repeating) sequence of a given number of characters: repeat_p(min, max)

Definition at line 69 of file BasParserTypes.hpp.

#### 21.2.1.13 typedef boost::spirit::classic::bounded<uint2_p_t, unsigned int> TRADEMGEN::bounded2_p_t

Bounded-number-of-integers parser

Definition at line 72 of file BasParserTypes.hpp.

#### 21.2.1.14 typedef boost::spirit::classic::bounded<uint1_2_p_t, unsigned int> TRADEMGEN::bounded1_2_p_t

Definition at line 73 of file BasParserTypes.hpp.

#### 21.2.1.15 typedef boost::spirit::classic::bounded<uint1_3_p_t, unsigned int> TRADEMGEN::bounded1_3_p_t

Definition at line 74 of file BasParserTypes.hpp.

#### 21.2.1.16 typedef boost::spirit::classic::bounded<uint4_p_t, unsigned int> TRADEMGEN::bounded4_p_t

Definition at line 75 of file BasParserTypes.hpp.

#### 21.2.1.17 typedef boost::spirit::classic::bounded<uint1_4_p_t, unsigned int> TRADEMGEN::bounded1_4_p_t

Definition at line 76 of file BasParserTypes.hpp.

#### 21.2.1.18 typedef ContinuousAttributeLite<stdair::FloatDuration_T> TRADEMGEN::ContinuousFloatDuration_T

Type definition for the continuous distribition of the duration (as a float number).

Definition at line 19 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.19 typedef ContinuousFloatDuration_T::ContinuousDistribution_T TRADEMGEN::ArrivalPattern-CumulativeDistribution_T

Type definition for the arrival pattern cumulative distribution.

Definition at line 22 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.20 typedef CategoricalAttributeLite<stdair::AirportCode_T> TRADEMGEN::POSProbabilityMass_T

Define the point-of-sale probablity mass.

Definition at line 25 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.21 typedef POSProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::POSProbabilityMass-Function_T

Define the probability mass function type of point-of-sale.

Definition at line 28 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.22 typedef CategoricalAttributeLite<stdair::ChannelLabel_T> TRADEMGEN::ChannelProbabilityMass_T

Define the booking channel probablity mass.

Definition at line 31 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.23 typedef ChannelProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::Channel-ProbabilityMassFunction_T

Define the probability mass function type of booking channel.

Definition at line 34 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.24 typedef CategoricalAttributeLite<stdair::TripType_T> TRADEMGEN::TripTypeProbabilityMass_T

Define the trip type probablity mass.

Definition at line 37 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.25 typedef TripTypeProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::TripType-ProbabilityMassFunction_T

Define the probability mass function type of trip type.

Definition at line 40 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.26 typedef CategoricalAttributeLite<stdair::DayDuration_T> TRADEMGEN::StayDurationProbability-Mass_T

Define the stay duration probablity mass.

Definition at line 43 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.27 typedef StayDurationProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::StayDurationProbabilityMassFunction_T

Define the probability mass function type of stay duration.

Definition at line 46 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.28 typedef CategoricalAttributeLite<stdair::FrequentFlyer_T> TRADEMGEN::FrequentFlyerProbabilityMass_T

Define the frequent flyer probablity mass.

Definition at line 49 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.29 typedef FrequentFlyerProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::FrequentFlyerProbabilityMassFunction_T

Define the probability mass function type of frequent flyer.

Definition at line 52 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.30 typedef ContinuousAttributeLite<stdair::IntDuration_T> TRADEMGEN::PreferredDepartureTimeCumulativeDistribution_T

Define the preferred departure time cumulative distribution.

Definition at line 55 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.31 typedef PreferredDepartureTimeCumulativeDistribution_T::ContinuousDistribution_T TRADEMGEN::PreferredDepartureTimeContinuousDistribution_T

Define the preferred departure time continuous distribution.

Definition at line 58 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.32 typedef ContinuousAttributeLite<stdair::PriceValue_T> TRADEMGEN::ValueOfTimeCumulativeDistribution_T

Define the value of time cumulative distribution.

Definition at line 61 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.33 typedef ValueOfTimeCumulativeDistribution_T::ContinuousDistribution_T TRADEMGEN::ValueOfTimeContinuousDistribution_T

Define the value of time continuous distribution.

Definition at line 64 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.34 typedef ContinuousAttributeLite<stdair::RealNumber_T> TRADEMGEN::CumulativeDistribution_T

Define the FRAT5 pattern type.

Definition at line 67 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.35 typedef CumulativeDistribution_T::ContinuousDistribution_T TRADEMGEN::FRAT5Pattern_T

Definition at line 68 of file DemandCharacteristicsTypes.hpp.

#### 21.2.1.36 typedef stdair::Probability_T TRADEMGEN::DictionaryKey_T

Dictionary key.

Definition at line 16 of file DictionaryManager.hpp.

#### 21.2.1.37 typedef std::list<DemandStream*> TRADEMGEN::DemandStreamList_T

Define the airline feature list.

Definition at line 16 of file DemandStreamTypes.hpp.

#### 21.2.1.38 typedef std::map<const stdair::MapKey_T, DemandStream*> TRADEMGEN::DemandStreamMap_T

Define the airline feature map.

Definition at line 22 of file DemandStreamTypes.hpp.

#### 21.2.1.39 typedef std::list<std::string> TRADEMGEN::DBParamsNameList_T

List of names for a given (geographical) dbparams.

Definition at line 17 of file DBParams.hpp.

#### 21.2.1.40 typedef boost::shared_ptr<TRADEMGEN_Service> TRADEMGEN::TRADEMGEN_ServicePtr_T

(Smart) Pointer on the TraDemGen service handler.

Definition at line 15 of file TRADEMGEN_Types.hpp.

### 21.2.2 Function Documentation

#### 21.2.2.1 stdair::BaseGenerator_T TRADEMGEN::DEFAULT_BASE_GENERATOR ( stdair::DEFAULT_RANDOM_SEED )

Default base generator.

#### 21.2.2.2 stdair::UniformGenerator_T TRADEMGEN::DEFAULT_UNIFORM_GENERATOR ( DEFAULT_BASE_GENERATOR , DEFAULT_UNIFORM_REAL_DISTRIBUTION )

Default uniform variate generator.

### 21.2.3 Variable Documentation

#### 21.2.3.1 const POSProbabilityMassFunction_T TRADEMGEN::DEFAULT_POS_PROBALILITY_MASS

**Initial value:**

```
DefaultMap::createPOSProbMass()
```

Default name for the TRADEMGEN_Service. Default PoS probability mass.

Default PoS probability mass.

Definition at line 16 of file BasConst.cpp.

#### 21.2.3.2 const stdair::FloatDuration_T TRADEMGEN::DEFAULT_LAST_LOWER_BOUND_ARRIVAL_PATTERN = -1

Default last lower bound of daily rate interval in arrival pattern.

Definition at line 35 of file BasConst.cpp.

Referenced by TRADEMGEN::DemandStream::generateTimeOfRequestPoissonProcess().

#### 21.2.3.3 const FRAT5Pattern_T TRADEMGEN::DEFAULT_FRAT5_PATTERN = DefaultMap::createFRAT5Pattern()

Default FRAT5 pattern.

Definition at line 38 of file BasConst.cpp.

#### 21.2.3.4 const double TRADEMGEN::DEFAULT_MAX_ADVANCE_PURCHASE = 330.0

Default MAX Advance Purchase.

Definition at line 75 of file BasConst.cpp.

#### 21.2.3.5 const stdair::UniformDistribution_T TRADEMGEN::DEFAULT_UNIFORM_REAL_DISTRIBUTION

Default random uniform real distribution.

Definition at line 81 of file BasConst.cpp.

#### 21.2.3.6 stdair::BaseGenerator_T TRADEMGEN::DEFAULT_BASE_GENERATOR

Default base generator. Just here to initialise objects (e.g., stdair::RandomGeneration) with default generator. They are then replaced by a generator, for which the state can better be tracked/stored.

#### 21.2.3.7 stdair::UniformGenerator_T TRADEMGEN::DEFAULT_UNIFORM_GENERATOR

Default uniform generator. Just here to initialise objects (e.g., stdair::RandomGeneration) with default generator. They are then replaced by a generator, for which the state can better be tracked/stored.

## 21.3 TRADEMGEN::DemandParserHelper Namespace Reference

**Classes**

- struct ParserSemanticAction
- struct storePrefDepDateRangeStart
- struct storePrefDepDateRangeEnd
- struct storeDow
- struct storeOrigin
- struct storeDestination
- struct storePrefCabin
- struct storeDemandMean
- struct storeDemandStdDev
- struct storePosCode
- struct storePosProbMass
- struct storeChannelCode
- struct storeChannelProbMass
- struct storeTripCode
- struct storeTripProbMass
- struct storeStayCode
- struct storeStayProbMass
- struct storeFFCode
- struct storeFFProbMass
- struct storePrefDepTime
- struct storePrefDepTimeProbMass
- struct storeWTP
- struct storeTimeValue
- struct storeTimeValueProbMass
- struct storeDTD
- struct storeDTDProbMass
- struct doEndDemand
- struct DemandParser

### Functions

- repeat_p_t airline_code_p (chset_t("0-9A-Z").derived(), 2, 3)
- bounded1_4_p_t flight_number_p (uint1_4_p.derived(), 0u, 9999u)
- bounded4_p_t year_p (uint4_p.derived(), 2000u, 2099u)
- bounded2_p_t month_p (uint2_p.derived(), 1u, 12u)
- bounded2_p_t day_p (uint2_p.derived(), 1u, 31u)
- repeat_p_t dow_p (chset_t("0-1").derived().derived(), 7, 7)
- repeat_p_t airport_p (chset_t("0-9A-Z").derived(), 3, 3)
- bounded1_2_p_t hours_p (uint1_2_p.derived(), 0u, 23u)
- bounded2_p_t minutes_p (uint2_p.derived(), 0u, 59u)
- bounded2_p_t seconds_p (uint2_p.derived(), 0u, 59u)
- chset_t cabin_code_p ("A-Z")
- chset_t passenger_type_p ("A-Z")
- chset_t ff_type_p ("A-Z")
- repeat_p_t class_code_list_p (chset_t("A-Z").derived(), 1, 26)
- bounded1_3_p_t stay_duration_p (uint1_3_p.derived(), 0u, 999u)

### Variables

- int1_p_t int1_p
- uint2_p_t uint2_p
- uint1_2_p_t uint1_2_p
- uint1_3_p_t uint1_3_p
- uint4_p_t uint4_p
- uint1_4_p_t uint1_4_p
- int1_p_t family_code_p

#### 21.3.1 Function Documentation

##### 21.3.1.1 repeat_p_t TRADEMGEN::DemandParserHelper::airline_code_p ( chset_t("0-9A-Z").derived() , 2 , 3 )

Airline Code Parser: repeat_p(2,3)[chset_p("0-9A-Z")]

##### 21.3.1.2 bounded1_4_p_t TRADEMGEN::DemandParserHelper::flight_number_p ( uint1_4_p. *derived()*, 0u , 9999u )

Flight Number Parser: limit_d(0u, 9999u)[uint1_4_p]

##### 21.3.1.3 bounded4_p_t TRADEMGEN::DemandParserHelper::year_p ( uint4_p. *derived()*, 2000u , 2099u )

Year Parser: limit_d(2000u, 2099u)[uint4_p]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

##### 21.3.1.4 bounded2_p_t TRADEMGEN::DemandParserHelper::month_p ( uint2_p. *derived()*, 1u , 12u )

Month Parser: limit_d(1u, 12u)[uint2_p]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

##### 21.3.1.5 bounded2_p_t TRADEMGEN::DemandParserHelper::day_p ( uint2_p. *derived()*, 1u , 31u )

Day Parser: limit_d(1u, 31u)[uint2_p]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

#### 21.3.1.6 repeat_p_t TRADEMGEN::DemandParserHelper::dow_p ( chset_t("0-1").derived().derived() , 7 , 7 )

DOW (Day-Of-the-Week) Parser: repeat_p(7)[chset_p("0-1")]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

#### 21.3.1.7 repeat_p_t TRADEMGEN::DemandParserHelper::airport_p ( chset_t("0-9A-Z").derived() , 3 , 3 )

Airport Parser: repeat_p(3)[chset_p("0-9A-Z")]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

#### 21.3.1.8 bounded1_2_p_t TRADEMGEN::DemandParserHelper::hours_p ( uint1_2_p. *derived(),* 0u , 23u )

Hour Parser: limit_d(0u, 23u)[uint2_p]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

#### 21.3.1.9 bounded2_p_t TRADEMGEN::DemandParserHelper::minutes_p ( uint2_p. *derived(),* 0u , 59u )

Minute Parser: limit_d(0u, 59u)[uint2_p]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

#### 21.3.1.10 bounded2_p_t TRADEMGEN::DemandParserHelper::seconds_p ( uint2_p. *derived(),* 0u , 59u )

Second Parser: limit_d(0u, 59u)[uint2_p]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

#### 21.3.1.11 chset_t TRADEMGEN::DemandParserHelper::cabin_code_p ( "A-Z" )

Cabin code parser: chset_p("A-Z")

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

#### 21.3.1.12 chset_t TRADEMGEN::DemandParserHelper::passenger_type_p ( "A-Z" )

Passenger type parser: chset_p("A-Z")

#### 21.3.1.13 chset_t TRADEMGEN::DemandParserHelper::ff_type_p ( "A-Z" )

Frequent flyer type parser: chset_p("A-Z")

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

#### 21.3.1.14 repeat_p_t TRADEMGEN::DemandParserHelper::class_code_list_p ( chset_t("A-Z").derived() , 1 , 26 )

Class Code List Parser: repeat_p(1,26)[chset_p("A-Z")]

#### 21.3.1.15 bounded1_3_p_t TRADEMGEN::DemandParserHelper::stay_duration_p ( uint1_3_p. *derived(),* 0u , 999u )

Stay duration Parser: limit_d(0u, 999u)[uint3_p]

Referenced by TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition().

### 21.3.2 Variable Documentation

#### 21.3.2.1 int1_p_t TRADEMGEN::DemandParserHelper::int1_p

1-digit-integer parser

Definition at line 450 of file DemandParserHelper.cpp.

#### 21.3.2.2 uint2_p_t TRADEMGEN::DemandParserHelper::uint2_p

2-digit-integer parser

Definition at line 453 of file DemandParserHelper.cpp.

#### 21.3.2.3 uint1_2_p_t TRADEMGEN::DemandParserHelper::uint1_2_p

Up-to-2-digit-integer parser

Definition at line 456 of file DemandParserHelper.cpp.

#### 21.3.2.4 uint1_3_p_t TRADEMGEN::DemandParserHelper::uint1_3_p

Up-to-3-digit-integer parser

Definition at line 459 of file DemandParserHelper.cpp.

#### 21.3.2.5 uint4_p_t TRADEMGEN::DemandParserHelper::uint4_p

4-digit-integer parser

Definition at line 462 of file DemandParserHelper.cpp.

#### 21.3.2.6 uint1_4_p_t TRADEMGEN::DemandParserHelper::uint1_4_p

Up-to-4-digit-integer parser

Definition at line 465 of file DemandParserHelper.cpp.

#### 21.3.2.7 int1_p_t TRADEMGEN::DemandParserHelper::family_code_p

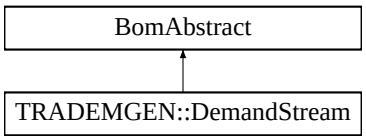
Family code parser

Definition at line 507 of file DemandParserHelper.cpp.

# 22 Class Documentation

## 22.1 BomAbstract Class Reference

Inheritance diagram for BomAbstract:




The documentation for this class was generated from the following file:

- trademgen/bom/DemandStream.hpp

## 22.2 TRADEMGEN::BomDisplay Class Reference

Utility class to display TraDemGen objects with a pretty format.

`#include <trademgen/bom/BomDisplay.hpp>`

#### Static Public Member Functions

- static std::string csvDisplay (const stdair::EventQueue &)
- static void csvDisplay (std::ostream &, const DemandStream &)

### 22.2.1 Detailed Description

Utility class to display TraDemGen objects with a pretty format.

Definition at line 26 of file BomDisplay.hpp.

### 22.2.2 Member Function Documentation

#### 22.2.2.1 std::string TRADEMGEN::BomDisplay::csvDisplay ( const stdair::EventQueue & *iEventQueue* ) [static]

Recursively display (dump in the underlying output log stream) the objects of the BOM tree.

**Parameters**

| | |
|---|---|
| *std::ostream&* | Output stream in which the BOM tree should be logged/dumped. |
| *const* | stdair::EventQueue& Root of the BOM tree to be displayed. |

Definition at line 43 of file BomDisplay.cpp.

#### 22.2.2.2 void TRADEMGEN::BomDisplay::csvDisplay ( std::ostream & *oStream,* const DemandStream & *iDemandStream* ) [static]

Recursively display (dump in the underlying output log stream) the objects of the BOM tree.

**Parameters**

| | |
|---|---|
| *std::ostream&* | Output stream in which the BOM tree should be logged/dumped. |
| *const* | DemandStream& Root of the BOM tree to be displayed. |

Definition at line 80 of file BomDisplay.cpp.

References TRADEMGEN::DemandStream::display().

The documentation for this class was generated from the following files:

- trademgen/bom/BomDisplay.hpp
- trademgen/bom/BomDisplay.cpp

## 22.3 stdair::CategoricalAttribute< T > Struct Template Reference

Class modeling the distribution of values that can be taken by a categorical attribute.

`#include <trademgen/basic/CategoricalAttribute.hpp>`

#### Public Types

- typedef std::map< T, DictionaryKey_T > ProbabilityMassFunction_T
- typedef std::map < DictionaryKey_T, T > InverseCumulativeDistribution_T

#### Public Member Functions

- const T & getValue (const Probability_T &iCumulativeProbability) const
- const std::string displayProbabilityMassFunction () const
- const std::string displayInverseCumulativeDistribution () const
- CategoricalAttribute (const ProbabilityMassFunction_T &iProbabilityMassFunction)
- CategoricalAttribute ()
- CategoricalAttribute (const CategoricalAttribute &iCategoricalAttribute)
- virtual ~CategoricalAttribute ()
- void determineInverseCumulativeDistributionFromProbabilityMassFunction ()

### 22.3.1 Detailed Description

**template<typename T>struct stdair::CategoricalAttribute< T >**

Class modeling the distribution of values that can be taken by a categorical attribute.

Definition at line 21 of file CategoricalAttribute.hpp.

### 22.3.2 Member Typedef Documentation

#### 22.3.2.1 template<typename T > typedef std::map<T, DictionaryKey_T> stdair::CategoricalAttribute< T >::ProbabilityMassFunction_T

Define the probability mass function type.

Definition at line 28 of file CategoricalAttribute.hpp.

#### 22.3.2.2 template<typename T > typedef std::map<DictionaryKey_T, T> stdair::CategoricalAttribute< T >::InverseCumulativeDistribution_T

Define the inverse cumulative distribution type.

Definition at line 33 of file CategoricalAttribute.hpp.

### 22.3.3 Constructor & Destructor Documentation

#### 22.3.3.1 template<typename T > stdair::CategoricalAttribute< T >::CategoricalAttribute ( const ProbabilityMassFunction_T & *iProbabilityMassFunction* ) [inline]

Main constructor.

Definition at line 129 of file CategoricalAttribute.hpp.

References stdair::CategoricalAttribute< T >::determineInverseCumulativeDistributionFromProbabilityMassFunction().

#### 22.3.3.2 template<typename T > stdair::CategoricalAttribute< T >::CategoricalAttribute ( ) [inline]

Default constructor.

Definition at line 137 of file CategoricalAttribute.hpp.

#### 22.3.3.3 template<typename T > stdair::CategoricalAttribute< T >::CategoricalAttribute ( const CategoricalAttribute< T > & *iCategoricalAttribute* ) [inline]

Copy constructor.

Definition at line 142 of file CategoricalAttribute.hpp.

References stdair::CategoricalAttribute< T >::determineInverseCumulativeDistributionFromProbabilityMassFunction().

#### 22.3.3.4 template<typename T > virtual stdair::CategoricalAttribute< T >::~CategoricalAttribute ( ) [inline], [virtual]

Destructor.

Definition at line 150 of file CategoricalAttribute.hpp.

### 22.3.4 Member Function Documentation

#### 22.3.4.1 template<typename T > const T& stdair::CategoricalAttribute< T >::getValue ( const Probability_T & *iCumulativeProbability* ) const [inline]

Get value from inverse cumulative distribution.

Definition at line 67 of file CategoricalAttribute.hpp.

References stdair::CategoricalAttribute< T >::displayInverseCumulativeDistribution().

#### 22.3.4.2 template<typename T > const std::string stdair::CategoricalAttribute< T >::displayProbabilityMassFunction ( ) const [inline]

Display probability mass function.

Definition at line 91 of file CategoricalAttribute.hpp.

#### 22.3.4.3 template<typename T > const std::string stdair::CategoricalAttribute< T >::displayInverseCumulativeDistribution ( ) const [inline]

Display inverse cumulative distribution.

Definition at line 111 of file CategoricalAttribute.hpp.

Referenced by stdair::CategoricalAttribute< T >::getValue().

#### 22.3.4.4 template<typename T > void stdair::CategoricalAttribute< T >::determineInverseCumulativeDistributionFromProbabilityMassFunction ( ) [inline]

Determine inverse cumulative distribution from probability mass function (initialisation).

Definition at line 157 of file CategoricalAttribute.hpp.

Referenced by stdair::CategoricalAttribute< T >::CategoricalAttribute().

The documentation for this struct was generated from the following file:

- trademgen/basic/CategoricalAttribute.hpp

## 22.4 TRADEMGEN::CategoricalAttributeLite< T > Struct Template Reference

Class modeling the distribution of values that can be taken by a categorical attribute.

`#include <trademgen/basic/CategoricalAttributeLite.hpp>`

### Public Types

- typedef std::map< T, stdair::Probability_T > ProbabilityMassFunction_T

#### Public Member Functions

- const T & getValue (const stdair::Probability_T &iCumulativeProbability) const
- bool checkValue (const T &iValue) const
- const std::string displayProbabilityMass () const
- CategoricalAttributeLite (const ProbabilityMassFunction_T &iValueMap)
- CategoricalAttributeLite ()
- CategoricalAttributeLite (const CategoricalAttributeLite &iCAL)
- CategoricalAttributeLite & operator= (const CategoricalAttributeLite &iCAL)
- virtual ~CategoricalAttributeLite ()

### 22.4.1 Detailed Description

template<typename T>struct TRADEMGEN::CategoricalAttributeLite< T >

Class modeling the distribution of values that can be taken by a categorical attribute.

Definition at line 27 of file CategoricalAttributeLite.hpp.

### 22.4.2 Member Typedef Documentation

#### 22.4.2.1 template<typename T> typedef std::map<T, stdair::Probability_T> TRADEMGEN::CategoricalAttributeLite< T >::ProbabilityMassFunction_T

Type for the probability mass function.

Definition at line 33 of file CategoricalAttributeLite.hpp.

### 22.4.3 Constructor & Destructor Documentation

#### 22.4.3.1 template<typename T> TRADEMGEN::CategoricalAttributeLite< T >::CategoricalAttributeLite ( const ProbabilityMassFunction_T & *iValueMap* ) [inline]

Main constructor.

Definition at line 95 of file CategoricalAttributeLite.hpp.

#### 22.4.3.2 template<typename T> TRADEMGEN::CategoricalAttributeLite< T >::CategoricalAttributeLite ( ) [inline]

Default constructor.

Definition at line 103 of file CategoricalAttributeLite.hpp.

#### 22.4.3.3 template<typename T> TRADEMGEN::CategoricalAttributeLite< T >::CategoricalAttributeLite ( const CategoricalAttributeLite< T > & *iCAL* ) [inline]

Copy constructor.

Definition at line 109 of file CategoricalAttributeLite.hpp.

#### 22.4.3.4 template<typename T> virtual TRADEMGEN::CategoricalAttributeLite< T >::~CategoricalAttributeLite ( ) [inline], [virtual]

Destructor.

Definition at line 128 of file CategoricalAttributeLite.hpp.

### 22.4.4 Member Function Documentation

#### 22.4.4.1 template<typename T> const T& TRADEMGEN::CategoricalAttributeLite< T >::getValue ( const stdair::Probability_T & *iCumulativeProbability* ) const [inline]

Get value from inverse cumulative distribution.

Definition at line 41 of file CategoricalAttributeLite.hpp.

Referenced by TRADEMGEN::DemandStream::generateChannel(), TRADEMGEN::DemandStream::generateFrequentFlyer(), TRADEMGEN::DemandStream::generateStayDuration(), TRADEMGEN::DemandStream::generateTripType(), and TRADEMGEN::DemandCharacteristics::getPOSValue().

#### 22.4.4.2 template<typename T> bool TRADEMGEN::CategoricalAttributeLite< T >::checkValue ( const T & *iValue* ) const [inline]

Check if a value belongs to the value list.

Definition at line 61 of file CategoricalAttributeLite.hpp.

Referenced by TRADEMGEN::DemandCharacteristics::checkPOSValue().

#### 22.4.4.3 template<typename T> const std::string TRADEMGEN::CategoricalAttributeLite< T >::displayProbabilityMass ( ) const [inline]

Display probability mass function.

Definition at line 76 of file CategoricalAttributeLite.hpp.

Referenced by TRADEMGEN::DemandCharacteristics::describe(), TRADEMGEN::DemandStream::display(), and TRADEMGEN::CategoricalAttributeLite< stdair::TripType_T >::getValue().

#### 22.4.4.4 template<typename T> CategoricalAttributeLite& TRADEMGEN::CategoricalAttributeLite< T >::operator= ( const CategoricalAttributeLite< T > & *iCAL* ) [inline]

Copy operator.

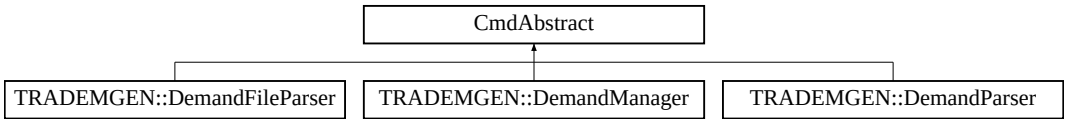
Definition at line 118 of file CategoricalAttributeLite.hpp.

The documentation for this struct was generated from the following file:

- trademgen/basic/CategoricalAttributeLite.hpp

## 22.5 CmdAbstract Class Reference

Inheritance diagram for CmdAbstract:




The documentation for this class was generated from the following file:

- trademgen/command/DemandParser.hpp

## 22.6 TRADEMGEN::ContinuousAttribute< T > Struct Template Reference

`#include <trademgen/basic/ContinuousAttribute.hpp>`

#### Public Types

- typedef std::multimap< T, DictionaryKey_T > ContinuousDistribution_T
- typedef std::multimap < DictionaryKey_T, T > ContinuousInverseDistribution_T

#### Public Member Functions

- const T getValue (const stdair::Probability_T &iCumulativeProbability) const
- const std::string displayCumulativeDistribution () const
- const std::string displayInverseCumulativeDistribution () const
- ContinuousAttribute ()
- ContinuousAttribute (const ContinuousDistribution_T &iCumulativeDistribution)
- ContinuousAttribute (const ContinuousAttribute &iContinuousAttribute)
- virtual ~ContinuousAttribute ()
- void determineInverseCumulativeDistributionFromCumulativeDistribution ()

### 22.6.1 Detailed Description

**template<class T>struct TRADEMGEN::ContinuousAttribute< T >**

Class modeling the distribution of values that can be taken by a continuous attribute.

Definition at line 21 of file ContinuousAttribute.hpp.

### 22.6.2 Member Typedef Documentation

#### 22.6.2.1 template<class T > typedef std::multimap<T, DictionaryKey_T> TRADEMGEN::ContinuousAttribute< T >::ContinuousDistribution_T

Definition at line 26 of file ContinuousAttribute.hpp.

#### 22.6.2.2 template<class T > typedef std::multimap<DictionaryKey_T, T> TRADEMGEN::ContinuousAttribute< T >::ContinuousInverseDistribution_T

Definition at line 27 of file ContinuousAttribute.hpp.

### 22.6.3 Constructor & Destructor Documentation

#### 22.6.3.1 template<class T > TRADEMGEN::ContinuousAttribute< T >::ContinuousAttribute ( ) [inline]

Constructor by default

Definition at line 113 of file ContinuousAttribute.hpp.

#### 22.6.3.2 template<class T > TRADEMGEN::ContinuousAttribute< T >::ContinuousAttribute ( const ContinuousDistribution_T & *iCumulativeDistribution* ) [inline]

Constructor

Definition at line 116 of file ContinuousAttribute.hpp.

References TRADEMGEN::ContinuousAttribute< T >::determineInverseCumulativeDistributionFromCumulativeDistribution().

#### 22.6.3.3 template<class T > TRADEMGEN::ContinuousAttribute< T >::ContinuousAttribute ( const ContinuousAttribute< T > & *iContinuousAttribute* ) [inline]

Copy constructor

Definition at line 122 of file ContinuousAttribute.hpp.

#### 22.6.3.4 template<class T > virtual TRADEMGEN::ContinuousAttribute< T >::~ContinuousAttribute ( ) [inline], [virtual]

Destructor

Definition at line 128 of file ContinuousAttribute.hpp.

### 22.6.4 Member Function Documentation

#### 22.6.4.1 template<class T > const T TRADEMGEN::ContinuousAttribute< T >::getValue ( const stdair::Probability_T & *iCumulativeProbability* ) const [inline]

Get value from inverse cumulative distribution.

Definition at line 52 of file ContinuousAttribute.hpp.

References TRADEMGEN::DictionaryManager::keyToValue(), and TRADEMGEN::DictionaryManager::valueToKey().

#### 22.6.4.2 template<class T > const std::string TRADEMGEN::ContinuousAttribute< T >::displayCumulativeDistribution ( ) const [inline]

Display cumulative distribution

Definition at line 83 of file ContinuousAttribute.hpp.

References TRADEMGEN::DictionaryManager::keyToValue().

#### 22.6.4.3 template<class T > const std::string TRADEMGEN::ContinuousAttribute< T >::displayInverseCumulativeDistribution ( ) const [inline]

Display inverse cumulative distribution

Definition at line 99 of file ContinuousAttribute.hpp.

References TRADEMGEN::DictionaryManager::keyToValue().

#### 22.6.4.4 template<class T > void TRADEMGEN::ContinuousAttribute< T >::determineInverseCumulativeDistributionFromCumulativeDistribution ( ) [inline]

Determine inverse cumulative distribution from cumulative distribution (initialisation).

Definition at line 132 of file ContinuousAttribute.hpp.

Referenced by TRADEMGEN::ContinuousAttribute< T >::ContinuousAttribute().

The documentation for this struct was generated from the following file:

- trademgen/basic/ContinuousAttribute.hpp

## 22.7 TRADEMGEN::ContinuousAttributeLite< T > Struct Template Reference

Class modeling the distribution of values that can be taken by a continuous attribute.

`#include <trademgen/basic/ContinuousAttributeLite.hpp>`

#### Public Types

- typedef std::map< T, stdair::Probability_T > ContinuousDistribution_T

#### Public Member Functions

- const T getValue (const stdair::Probability_T &iCumulativeProbability) const
- const double getDerivativeValue (const T iKey) const
- const T getUpperBound (const T iKey) const
- const std::string displayCumulativeDistribution () const
- ContinuousAttributeLite (const ContinuousDistribution_T &iValueMap)
- ContinuousAttributeLite (const ContinuousAttributeLite &iCAL)
- ContinuousAttributeLite & operator= (const ContinuousAttributeLite &iCAL)
- virtual ~ContinuousAttributeLite ()

### 22.7.1 Detailed Description

**template<typename T>struct TRADEMGEN::ContinuousAttributeLite< T >**

Class modeling the distribution of values that can be taken by a continuous attribute.

Definition at line 26 of file ContinuousAttributeLite.hpp.

### 22.7.2 Member Typedef Documentation

#### 22.7.2.1 template<typename T> typedef std::map<T, stdair::Probability_T> TRADEMGEN::ContinuousAttributeLite< T >::ContinuousDistribution_T

Type for the probability mass function.

Definition at line 32 of file ContinuousAttributeLite.hpp.

### 22.7.3 Constructor & Destructor Documentation

#### 22.7.3.1 template<typename T> TRADEMGEN::ContinuousAttributeLite< T >::ContinuousAttributeLite ( const ContinuousDistribution_T & *iValueMap* ) [inline]

Constructor.

Definition at line 157 of file ContinuousAttributeLite.hpp.

#### 22.7.3.2 template<typename T> TRADEMGEN::ContinuousAttributeLite< T >::ContinuousAttributeLite ( const ContinuousAttributeLite< T > & *iCAL* ) [inline]

Copy constructor.

Definition at line 165 of file ContinuousAttributeLite.hpp.

#### 22.7.3.3 template<typename T> virtual TRADEMGEN::ContinuousAttributeLite< T >::~ContinuousAttributeLite ( ) [inline], [virtual]

Destructor.

Definition at line 184 of file ContinuousAttributeLite.hpp.

#### 22.7.4 Member Function Documentation

##### 22.7.4.1 template<typename T> const T TRADEMGEN::ContinuousAttributeLite< T >::getValue ( const stdair::Probability_T & *iCumulativeProbability* ) const [inline]

Get value from inverse cumulative distribution.

Definition at line 39 of file ContinuousAttributeLite.hpp.

Referenced by TRADEMGEN::DemandStream::generateTimeOfRequestPoissonProcess(), TRADEMGEN::DemandStream::generateTimeOfRequestStatisticsOrder(), TRADEMGEN::DemandStream::generateValueOfTime(), and TRADEMGEN::DemandStream::generateWTP().

##### 22.7.4.2 template<typename T> const double TRADEMGEN::ContinuousAttributeLite< T >::getDerivativeValue ( const T *iKey* ) const [inline]

Get the value of the derivative function in a key point.

Definition at line 82 of file ContinuousAttributeLite.hpp.

Referenced by TRADEMGEN::DemandStream::generateTimeOfRequestPoissonProcess().

##### 22.7.4.3 template<typename T> const T TRADEMGEN::ContinuousAttributeLite< T >::getUpperBound ( const T *iKey* ) const [inline]

Get the upper bound.

Definition at line 116 of file ContinuousAttributeLite.hpp.

Referenced by TRADEMGEN::DemandStream::generateTimeOfRequestPoissonProcess().

##### 22.7.4.4 template<typename T> const std::string TRADEMGEN::ContinuousAttributeLite< T >::displayCumulativeDistribution ( ) const [inline]

Display cumulative distribution.

Definition at line 135 of file ContinuousAttributeLite.hpp.

Referenced by TRADEMGEN::DemandCharacteristics::describe().

##### 22.7.4.5 template<typename T> ContinuousAttributeLite& TRADEMGEN::ContinuousAttributeLite< T >::operator= ( const ContinuousAttributeLite< T > & *iCAL* ) [inline]

Copy operator.

Definition at line 174 of file ContinuousAttributeLite.hpp.

The documentation for this struct was generated from the following file:

- trademgen/basic/ContinuousAttributeLite.hpp

## 22.8 TRADEMGEN::DBManager Class Reference

`#include <trademgen/command/DBManager.hpp>`

#### Static Public Member Functions

- static void updateAirlineInDB (stdair::DBSession_T &, const stdair::AirlineStruct &)
- static bool retrieveAirline (stdair::DBSession_T &, const stdair::AirlineCode_T &, stdair::AirlineStruct &)
- static void prepareSelectStatement (stdair::DBSession_T &, stdair::DBRequestStatement_T &, stdair::AirlineStruct &)
- static bool iterateOnStatement (stdair::DBRequestStatement_T &, stdair::AirlineStruct &, const bool iShouldDoReset)

#### 22.8.1 Detailed Description

Class building the Business Object Model (BOM) from data retrieved from the database.

Definition at line 20 of file DBManager.hpp.

#### 22.8.2 Member Function Documentation

##### 22.8.2.1 void TRADEMGEN::DBManager::updateAirlineInDB ( stdair::DBSession_T & *ioSociSession,* const stdair::AirlineStruct & *iAirline* ) [static]

Update the fields of the database row corresponding to the given BOM object.

Definition at line 121 of file DBManager.cpp.

##### 22.8.2.2 bool TRADEMGEN::DBManager::retrieveAirline ( stdair::DBSession_T & *ioSociSession,* const stdair::AirlineCode_T & *iAirlineCode,* stdair::AirlineStruct & *ioAirline* ) [static]

Retrieve, from the (MySQL) database, the row corresponding to the given BOM code, and fill the given BOM object with that retrieved data.

Definition at line 157 of file DBManager.cpp.

References iterateOnStatement().

##### 22.8.2.3 void TRADEMGEN::DBManager::prepareSelectStatement ( stdair::DBSession_T & *ioSociSession,* stdair::DBRequestStatement_T & *ioSelectStatement,* stdair::AirlineStruct & *ioAirline* ) [static]

Prepare (parse and put in cache) the SQL statement.

Definition at line 24 of file DBManager.cpp.

##### 22.8.2.4 bool TRADEMGEN::DBManager::iterateOnStatement ( stdair::DBRequestStatement_T & *ioStatement,* stdair::AirlineStruct & *ioAirline,* const bool *iShouldDoReset* ) [static]

Iterate on the SQL statement.

The SQL has to be already prepared. const bool Tells whether the Airline object should be reset.

Definition at line 97 of file DBManager.cpp.

Referenced by retrieveAirline().

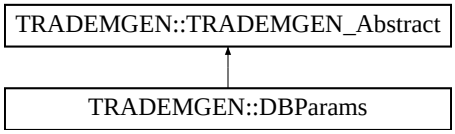
The documentation for this class was generated from the following files:

- trademgen/command/DBManager.hpp
- trademgen/command/DBManager.cpp

## 22.9 TRADEMGEN::DBParams Struct Reference

`#include <trademgen/DBParams.hpp>`

Inheritance diagram for TRADEMGEN::DBParams:



#### Public Member Functions

- std::string getUser () const
- std::string getPassword () const
- std::string getHost () const
- std::string getPort () const
- std::string getDBName () const
- void setUser (const std::string &iUser)
- void setPassword (const std::string &iPasswd)
- void setHost (const std::string &iHost)
- void setPort (const std::string &iPort)
- void setDBName (const std::string &iDBName)
- bool check () const
- void toStream (std::ostream &ioOut) const
- void fromStream (std::istream &)
- std::string toShortString () const
- std::string toString () const
- DBParams (const std::string &iDBUser, const std::string &iDBPasswd, const std::string &iDBHost, const std::string &iDBPort, const std::string &iDBName)
- virtual ~DBParams ()

### 22.9.1 Detailed Description

Structure modelling a (geographical) dbparams.

Definition at line 21 of file DBParams.hpp.

### 22.9.2 Constructor & Destructor Documentation

#### 22.9.2.1 TRADEMGEN::DBParams::DBParams ( const std::string & *iDBUser,* const std::string & *iDBPasswd,* const std::string & *iDBHost,* const std::string & *iDBPort,* const std::string & *iDBName* ) [inline]

Main Constructor.

Definition at line 119 of file DBParams.hpp.

#### 22.9.2.2 virtual TRADEMGEN::DBParams::~DBParams ( ) [inline], [virtual]

Default Constructor. Default copy constructor. Destructor.

Definition at line 132 of file DBParams.hpp.

### 22.9.3 Member Function Documentation

#### 22.9.3.1 std::string TRADEMGEN::DBParams::getUser ( ) const [inline]

Get the database user name.

Definition at line 25 of file DBParams.hpp.

#### 22.9.3.2 std::string TRADEMGEN::DBParams::getPassword ( ) const [inline]

Get the database user password.

Definition at line 30 of file DBParams.hpp.

#### 22.9.3.3 std::string TRADEMGEN::DBParams::getHost ( ) const [inline]

Get the database host name.

Definition at line 35 of file DBParams.hpp.

#### 22.9.3.4 std::string TRADEMGEN::DBParams::getPort ( ) const [inline]

Get the database port number.

Definition at line 40 of file DBParams.hpp.

#### 22.9.3.5 std::string TRADEMGEN::DBParams::getDBName ( ) const [inline]

Get the database name.

Definition at line 45 of file DBParams.hpp.

#### 22.9.3.6 void TRADEMGEN::DBParams::setUser ( const std::string & *iUser* ) [inline]

Set the database user name.

Definition at line 52 of file DBParams.hpp.

#### 22.9.3.7 void TRADEMGEN::DBParams::setPassword ( const std::string & *iPasswd* ) [inline]

Set the database password.

Definition at line 57 of file DBParams.hpp.

#### 22.9.3.8 void TRADEMGEN::DBParams::setHost ( const std::string & *iHost* ) [inline]

Set the database host name.

Definition at line 62 of file DBParams.hpp.

#### 22.9.3.9 void TRADEMGEN::DBParams::setPort ( const std::string & *iPort* ) [inline]

Set the database port number.

Definition at line 67 of file DBParams.hpp.

#### 22.9.3.10 void TRADEMGEN::DBParams::setDBName ( const std::string & *iDBName* ) [inline]

Set the database name.

Definition at line 72 of file DBParams.hpp.

#### 22.9.3.11 bool TRADEMGEN::DBParams::check ( ) const [inline]

Check that all the parameters are fine.

Definition at line 80 of file DBParams.hpp.

#### 22.9.3.12 void TRADEMGEN::DBParams::toStream ( std::ostream & *ioOut* ) const [inline], [virtual]

Dump a structure into an output stream.

**Parameters**

| | |
|---|---|
| *ostream&* | the output stream. |

Implements TRADEMGEN::TRADEMGEN_Abstract.

Definition at line 93 of file DBParams.hpp.

References toString().

#### 22.9.3.13 void TRADEMGEN::DBParams::fromStream ( std::istream & ) [inline], [virtual]

Read a structure from an input stream.

**Parameters**

| | |
|---|---|
| *istream&* | the input stream. |

Implements TRADEMGEN::TRADEMGEN_Abstract.

Definition at line 99 of file DBParams.hpp.

#### 22.9.3.14 std::string TRADEMGEN::DBParams::toShortString ( ) const [inline]

Get a short display of the DBParams structure.

Definition at line 103 of file DBParams.hpp.

#### 22.9.3.15 std::string TRADEMGEN::DBParams::toString ( ) const [inline], [virtual]

Get the serialised version of the DBParams structure.

Implements TRADEMGEN::TRADEMGEN_Abstract.

Definition at line 110 of file DBParams.hpp.

Referenced by toStream().

The documentation for this struct was generated from the following file:

- trademgen/DBParams.hpp

## 22.10 TRADEMGEN::DefaultMap Struct Reference

`#include <trademgen/basic/BasConst_DemandGeneration.hpp>`

### Static Public Member Functions

- static POSProbabilityMassFunction_T createPOSProbMass ()
- static FRAT5Pattern_T createFRAT5Pattern ()

### 22.10.1 Detailed Description

Default PoS probability mass.

Definition at line 24 of file BasConst_DemandGeneration.hpp.

### 22.10.2 Member Function Documentation

#### 22.10.2.1 POSProbabilityMassFunction_T TRADEMGEN::DefaultMap::createPOSProbMass ( ) [static]

Default PoS probability mass.

Definition at line 20 of file BasConst.cpp.

#### 22.10.2.2 FRAT5Pattern_T TRADEMGEN::DefaultMap::createFRAT5Pattern ( ) [static]

Default FRAT5 pattern.

Definition at line 41 of file BasConst.cpp.

The documentation for this struct was generated from the following files:

- trademgen/basic/BasConst_DemandGeneration.hpp
- trademgen/basic/BasConst.cpp

## 22.11 TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT > Struct Template Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

### Public Member Functions

- definition (DemandParser const &self)
- boost::spirit::classic::rule < ScannerT > const & start () const

### Public Attributes

- boost::spirit::classic::rule < ScannerT > demand_list
- boost::spirit::classic::rule < ScannerT > not_to_be_parsed
- boost::spirit::classic::rule < ScannerT > demand
- boost::spirit::classic::rule < ScannerT > demand_end
- boost::spirit::classic::rule < ScannerT > pref_dep_date_range
- boost::spirit::classic::rule < ScannerT > date
- boost::spirit::classic::rule < ScannerT > dow
- boost::spirit::classic::rule < ScannerT > origin
- boost::spirit::classic::rule < ScannerT > destination
- boost::spirit::classic::rule < ScannerT > pref_cabin
- boost::spirit::classic::rule < ScannerT > demand_params
- boost::spirit::classic::rule < ScannerT > pos_dist
- boost::spirit::classic::rule < ScannerT > pos_pair
- boost::spirit::classic::rule < ScannerT > pos_code
- boost::spirit::classic::rule < ScannerT > pos_share
- boost::spirit::classic::rule < ScannerT > channel_dist
- boost::spirit::classic::rule < ScannerT > channel_pair
- boost::spirit::classic::rule < ScannerT > channel_code
- boost::spirit::classic::rule < ScannerT > channel_share

- boost::spirit::classic::rule < ScannerT > trip_dist
- boost::spirit::classic::rule < ScannerT > trip_pair
- boost::spirit::classic::rule < ScannerT > trip_code
- boost::spirit::classic::rule < ScannerT > trip_share
- boost::spirit::classic::rule < ScannerT > stay_dist
- boost::spirit::classic::rule < ScannerT > stay_pair
- boost::spirit::classic::rule < ScannerT > stay_share
- boost::spirit::classic::rule < ScannerT > ff_dist
- boost::spirit::classic::rule < ScannerT > ff_pair
- boost::spirit::classic::rule < ScannerT > ff_code
- boost::spirit::classic::rule < ScannerT > ff_share
- boost::spirit::classic::rule < ScannerT > pref_dep_time_dist
- boost::spirit::classic::rule < ScannerT > pref_dep_time_pair
- boost::spirit::classic::rule < ScannerT > pref_dep_time_share
- boost::spirit::classic::rule < ScannerT > time
- boost::spirit::classic::rule < ScannerT > wtp
- boost::spirit::classic::rule < ScannerT > time_value_dist
- boost::spirit::classic::rule < ScannerT > time_value_pair
- boost::spirit::classic::rule < ScannerT > time_value_share
- boost::spirit::classic::rule < ScannerT > dtd_dist
- boost::spirit::classic::rule < ScannerT > dtd_pair
- boost::spirit::classic::rule < ScannerT > dtd_share

### 22.11.1 Detailed Description

template<typename ScannerT>struct TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >

Definition at line 352 of file DemandParserHelper.hpp.

### 22.11.2 Constructor & Destructor Documentation

#### 22.11.2.1 template<typename ScannerT > TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::definition ( DemandParser const & *self* )

Definition at line 532 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::airport_p(), TRADEMGEN::DemandParserHelper::cabin_code_p(), TRADEMGEN::DemandParserHelper::day_p(), TRADEMGEN::DemandParserHelper::dow_p(), TRADEMGEN::DemandParserHelper::ff_type_p(), TRADEMGEN::DemandParserHelper::hours_p(), TRADEMGEN::DemandParserHelper::minutes_p(), TRADEMGEN::DemandParserHelper::month_p(), TRADEMGEN::DemandParserHelper::seconds_p(), TRADEMGEN::DemandParserHelper::stay_duration_p(), and TRADEMGEN::DemandParserHelper::year_p().

### 22.11.3 Member Function Documentation

#### 22.11.3.1 template<typename ScannerT > bsc::rule< ScannerT > const & TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::start ( ) const

Entry point of the parser.

Definition at line 776 of file DemandParserHelper.cpp.

### 22.11.4 Member Data Documentation

#### 22.11.4.1 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::demand_list

Definition at line 356 of file DemandParserHelper.hpp.

#### 22.11.4.2 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::not_to_be_parsed

Definition at line 356 of file DemandParserHelper.hpp.

#### 22.11.4.3 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::demand

Definition at line 356 of file DemandParserHelper.hpp.

#### 22.11.4.4 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::demand_end

Definition at line 356 of file DemandParserHelper.hpp.

#### 22.11.4.5 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pref_dep_date_range

Definition at line 356 of file DemandParserHelper.hpp.

#### 22.11.4.6 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::date

Definition at line 356 of file DemandParserHelper.hpp.

#### 22.11.4.7 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::dow

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.8 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::origin

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.9 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::destination

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.10 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pref_cabin

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.11 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::demand_params

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.12 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pos_dist

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.13 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pos_pair

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.14 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pos_code

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.15 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pos_share

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.16 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::channel_dist

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.17 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::channel_pair

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.18 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::channel_code

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.19 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::channel_share

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.20 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::trip_dist

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.21 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::trip_pair

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.22 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::trip_code

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.23 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::trip_share

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.24 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::stay_dist

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.25 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::stay_pair

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.26 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::stay_share

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.27 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::ff_dist

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.28 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::ff_pair

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.29 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::ff_code

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.30 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::ff_share

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.31 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pref_dep_time_dist

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.32 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pref_dep_time_pair

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.33 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::pref_dep_time_share

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.34 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::time

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.35 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::wtp

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.36 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::time_value_dist

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.37 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::time_value_pair

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.38 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::time_value_share

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.39 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::dtd_dist

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.40 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::dtd_pair

Definition at line 356 of file DemandParserHelper.hpp.

22.11.4.41 template<typename ScannerT > boost::spirit::classic::rule<ScannerT> TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >::dtd_share

Definition at line 356 of file DemandParserHelper.hpp.

The documentation for this struct was generated from the following files:

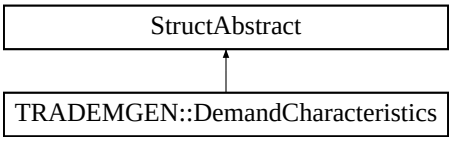
- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.12 TRADEMGEN::DemandCharacteristics Struct Reference

Class modeling the characteristics of a demand type.

`#include <trademgen/basic/DemandCharacteristics.hpp>`

Inheritance diagram for TRADEMGEN::DemandCharacteristics:




#### Public Member Functions

- const stdair::AirportCode_T & getPOSValue (const stdair::Probability_T &iCumulativeProbability) const
- bool checkPOSValue (const stdair::AirportCode_T &iPOS) const
- const std::string describe () const
- DemandCharacteristics (const ArrivalPatternCumulativeDistribution_T &, const POSProbabilityMassFunction_T &, const ChannelProbabilityMassFunction_T &, const TripTypeProbabilityMassFunction_T &, const StayDurationProbabilityMassFunction_T &, const FrequentFlyerProbabilityMassFunction_T &, const PreferredDepartureTimeContinuousDistribution_T &, const stdair::WTP_T &, const ValueOfTimeContinuousDistribution_T &)
- DemandCharacteristics ()
- DemandCharacteristics (const DemandCharacteristics &)
- ~DemandCharacteristics ()

#### Public Attributes

- ContinuousFloatDuration_T _arrivalPattern
- POSProbabilityMass_T _posProbabilityMass
- ChannelProbabilityMass_T _channelProbabilityMass
- TripTypeProbabilityMass_T _tripTypeProbabilityMass
- StayDurationProbabilityMass_T _stayDurationProbabilityMass
- FrequentFlyerProbabilityMass_T _frequentFlyerProbabilityMass
- PreferredDepartureTimeCumulativeDistribution_T _preferredDepartureTimeCumulativeDistribution
- stdair::WTP_T _minWTP
- CumulativeDistribution_T _frat5Pattern
- ValueOfTimeCumulativeDistribution_T _valueOfTimeCumulativeDistribution

### 22.12.1 Detailed Description

Class modeling the characteristics of a demand type.

Definition at line 21 of file DemandCharacteristics.hpp.

### 22.12.2 Constructor & Destructor Documentation

#### 22.12.2.1 TRADEMGEN::DemandCharacteristics::DemandCharacteristics ( const ArrivalPatternCumulativeDistribution_T & *iArrivalPattern,* const POSProbabilityMassFunction_T & *iPOSProbMass,* const ChannelProbabilityMassFunction_T & *iChannelProbMass,* const TripTypeProbabilityMassFunction_T & *iTripTypeProbMass,* const StayDurationProbabilityMassFunction_T & *iStayDurationProbMass,* const FrequentFlyerProbabilityMassFunction_T & *iFrequentFlyerProbMass,* const PreferredDepartureTimeContinuousDistribution_T & *iPreferredDepartureTimeContinuousDistribution,* const stdair::WTP_T & *iMinWTP,* const ValueOfTimeContinuousDistribution_T & *iValueOfTimeContinuousDistribution* )

Constructor.

Definition at line 44 of file DemandCharacteristics.cpp.

#### 22.12.2.2 TRADEMGEN::DemandCharacteristics::DemandCharacteristics ( )

Default constructor.

Definition at line 16 of file DemandCharacteristics.cpp.

#### 22.12.2.3 TRADEMGEN::DemandCharacteristics::DemandCharacteristics ( const DemandCharacteristics & *iDC* )

Copy constructor.

Definition at line 30 of file DemandCharacteristics.cpp.

#### 22.12.2.4 TRADEMGEN::DemandCharacteristics::~DemandCharacteristics ( )

Destructor.

Definition at line 65 of file DemandCharacteristics.cpp.

### 22.12.3 Member Function Documentation

#### 22.12.3.1 const stdair::AirportCode_T & TRADEMGEN::DemandCharacteristics::getPOSValue ( const stdair::Probability_T & *iCumulativeProbability* ) const

Get the POS corresponding to the cumulative probability

Definition at line 70 of file DemandCharacteristics.cpp.

References _posProbabilityMass, and TRADEMGEN::CategoricalAttributeLite< T >::getValue().

Referenced by TRADEMGEN::DemandStream::generatePOS().

#### 22.12.3.2 bool TRADEMGEN::DemandCharacteristics::checkPOSValue ( const stdair::AirportCode_T & *iPOS* ) const

Check that the POS is within the distribution.

Definition at line 76 of file DemandCharacteristics.cpp.

References _posProbabilityMass, and TRADEMGEN::CategoricalAttributeLite< T >::checkValue().

#### 22.12.3.3 const std::string TRADEMGEN::DemandCharacteristics::describe ( ) const

Give a description of the structure (for display purposes).

Definition at line 81 of file DemandCharacteristics.cpp.

References _arrivalPattern, _channelProbabilityMass, _frequentFlyerProbabilityMass, _minWTP, _posProbabilityMass, _preferredDepartureTimeCumulativeDistribution, _stayDurationProbabilityMass, _tripTypeProbabilityMass, _valueOfTimeCumulativeDistribution, TRADEMGEN::ContinuousAttributeLite< T >::displayCumulativeDistribution(), and TRADEMGEN::CategoricalAttributeLite< T >::displayProbabilityMass().

Referenced by TRADEMGEN::DemandStream::display().

### 22.12.4 Member Data Documentation

#### 22.12.4.1 ContinuousFloatDuration_T TRADEMGEN::DemandCharacteristics::_arrivalPattern

Arrival pattern (cumulative distribution of timing of arrival of requests (negative number of days between departure date and request date).

Definition at line 83 of file DemandCharacteristics.hpp.

Referenced by describe(), TRADEMGEN::DemandStream::generateTimeOfRequestPoissonProcess(), and TRADEMGEN::DemandStream::generateTimeOfRequestStatisticsOrder().

#### 22.12.4.2 POSProbabilityMass_T TRADEMGEN::DemandCharacteristics::_posProbabilityMass

POS probability mass.

Definition at line 88 of file DemandCharacteristics.hpp.

Referenced by checkPOSValue(), describe(), and getPOSValue().

#### 22.12.4.3 ChannelProbabilityMass_T TRADEMGEN::DemandCharacteristics::_channelProbabilityMass

Channel probability mass.

Definition at line 93 of file DemandCharacteristics.hpp.

Referenced by describe(), and TRADEMGEN::DemandStream::generateChannel().

#### 22.12.4.4 TripTypeProbabilityMass_T TRADEMGEN::DemandCharacteristics::_tripTypeProbabilityMass

Trip type probability mass.

Definition at line 98 of file DemandCharacteristics.hpp.

Referenced by describe(), and TRADEMGEN::DemandStream::generateTripType().

#### 22.12.4.5 StayDurationProbabilityMass_T TRADEMGEN::DemandCharacteristics::_stayDurationProbabilityMass

Stay duration probability mass.

Definition at line 103 of file DemandCharacteristics.hpp.

Referenced by describe(), and TRADEMGEN::DemandStream::generateStayDuration().

#### 22.12.4.6 FrequentFlyerProbabilityMass_T TRADEMGEN::DemandCharacteristics::_frequentFlyerProbabilityMass

Frequent flyer probability mass.

Definition at line 108 of file DemandCharacteristics.hpp.

Referenced by describe(), and TRADEMGEN::DemandStream::generateFrequentFlyer().

#### 22.12.4.7 PreferredDepartureTimeCumulativeDistribution_T TRADEMGEN::DemandCharacteristics::_preferredDepartureTimeCumulativeDistribution

Preferred departure time cumulative distribution.

Definition at line 113 of file DemandCharacteristics.hpp.

Referenced by describe().

#### 22.12.4.8 stdair::WTP_T TRADEMGEN::DemandCharacteristics::_minWTP

Min Willingness-to-pay, used for the computation of the WTP of each request.

Definition at line 119 of file DemandCharacteristics.hpp.

Referenced by describe(), and TRADEMGEN::DemandStream::generateWTP().

#### 22.12.4.9 CumulativeDistribution_T TRADEMGEN::DemandCharacteristics::_frat5Pattern

FRAT5 pattern, used for the computation of WTP.

Definition at line 124 of file DemandCharacteristics.hpp.

Referenced by TRADEMGEN::DemandStream::generateWTP().

#### 22.12.4.10 ValueOfTimeCumulativeDistribution_T TRADEMGEN::DemandCharacteristics::_valueOfTimeCumulativeDistribution

Value of time cumulative distribution.

Definition at line 129 of file DemandCharacteristics.hpp.

Referenced by describe(), and TRADEMGEN::DemandStream::generateValueOfTime().

The documentation for this struct was generated from the following files:

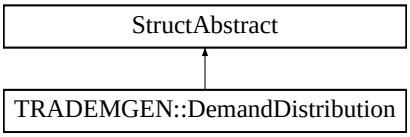
- trademgen/basic/DemandCharacteristics.hpp
- trademgen/basic/DemandCharacteristics.cpp

## 22.13 TRADEMGEN::DemandDistribution Struct Reference

Class modeling the distribution of a demand type.

`#include <trademgen/basic/DemandDistribution.hpp>`

Inheritance diagram for TRADEMGEN::DemandDistribution:




### Public Member Functions

- DemandDistribution (const stdair::NbOfRequests_T &iMean, const stdair::StdDevValue_T &iStdDev)
- DemandDistribution ()
- DemandDistribution (const DemandDistribution &)
- ~DemandDistribution ()
- void fromStream (std::istream &ioIn)
- const std::string describe () const
- std::string display () const

### Public Attributes

- stdair::NbOfRequests_T _meanNumberOfRequests
- stdair::StdDevValue_T _stdDevNumberOfRequests

### 22.13.1 Detailed Description

Class modeling the distribution of a demand type.

Definition at line 20 of file DemandDistribution.hpp.

### 22.13.2 Constructor & Destructor Documentation

#### 22.13.2.1 TRADEMGEN::DemandDistribution::DemandDistribution ( const stdair::NbOfRequests_T & *iMean*, const stdair::StdDevValue_T & *iStdDev* )

Constructor.

Definition at line 15 of file DemandDistribution.cpp.

#### 22.13.2.2 TRADEMGEN::DemandDistribution::DemandDistribution ( )

Default constructor.

Definition at line 22 of file DemandDistribution.cpp.

#### 22.13.2.3 TRADEMGEN::DemandDistribution::DemandDistribution ( const DemandDistribution & *iDemandDistribution* )

Copy constructor.

Definition at line 31 of file DemandDistribution.cpp.

#### 22.13.2.4 TRADEMGEN::DemandDistribution::~DemandDistribution ( )

Destructor.

Definition at line 26 of file DemandDistribution.cpp.

### 22.13.3 Member Function Documentation

#### 22.13.3.1 void TRADEMGEN::DemandDistribution::fromStream ( std::istream & *ioIn* )

Read a Business Object from an input stream.

**Parameters**

| | |
|---|---|
| *istream&* | the input stream. |

Definition at line 37 of file DemandDistribution.cpp.

#### 22.13.3.2 const std::string TRADEMGEN::DemandDistribution::describe ( ) const

Display of the structure.

Definition at line 41 of file DemandDistribution.cpp.

References _meanNumberOfRequests, and _stdDevNumberOfRequests.

Referenced by display(), and TRADEMGEN::DemandStream::display().

#### 22.13.3.3 std::string TRADEMGEN::DemandDistribution::display ( ) const

Display demand distribution.

Definition at line 49 of file DemandDistribution.cpp.

References describe().

### 22.13.4 Member Data Documentation

#### 22.13.4.1 stdair::NbOfRequests_T TRADEMGEN::DemandDistribution::_meanNumberOfRequests

Mean number of requests.

Definition at line 67 of file DemandDistribution.hpp.

Referenced by describe(), TRADEMGEN::DemandStream::generateTimeOfRequestPoissonProcess(), and TRADEMGEN::DemandStream::getMeanNumberOfRequests().

#### 22.13.4.2 stdair::StdDevValue_T TRADEMGEN::DemandDistribution::_stdDevNumberOfRequests

Standard deviation of number of requests.

Definition at line 72 of file DemandDistribution.hpp.

Referenced by describe(), and TRADEMGEN::DemandStream::getStdDevNumberOfRequests().

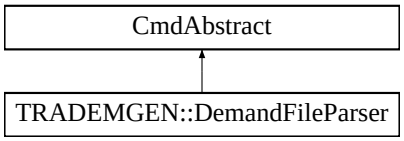
The documentation for this struct was generated from the following files:

- trademgen/basic/DemandDistribution.hpp
- trademgen/basic/DemandDistribution.cpp

## 22.14 TRADEMGEN::DemandFileParser Class Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandFileParser:




### Public Member Functions

- DemandFileParser (stdair::EventQueue &, stdair::RandomGeneration &, const POSProbabilityMass_T &, const stdair::Filename_T &iDemandInputFilename)
- bool generateDemand ()

#### 22.14.1 Detailed Description

Class wrapping the initialisation and entry point of the parser.

The seemingly redundancy is used to force the instantiation of the actual parser, which is a templatised Boost Spirit grammar. Hence, the actual parser is instantiated within that class object code.

Definition at line 393 of file DemandParserHelper.hpp.

#### 22.14.2 Constructor & Destructor Documentation

##### 22.14.2.1 TRADEMGEN::DemandFileParser::DemandFileParser ( stdair::EventQueue & , stdair::RandomGeneration & , const POSProbabilityMass_T & , const stdair::Filename_T & *iDemandInputFilename* )

Constructor.

Definition at line 791 of file DemandParserHelper.cpp.

#### 22.14.3 Member Function Documentation

##### 22.14.3.1 bool TRADEMGEN::DemandFileParser::generateDemand ( )

Parse the demand input file.

Definition at line 833 of file DemandParserHelper.cpp.

Referenced by TRADEMGEN::DemandParser::generateDemand().

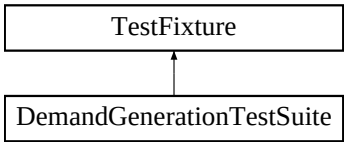
The documentation for this class was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.15 DemandGenerationTestSuite Class Reference

`#include <test/trademgen/DemandGenerationTestSuite.hpp>`

Inheritance diagram for DemandGenerationTestSuite:




#### Public Member Functions

- void simpleEventGeneration ()
- DemandGenerationTestSuite ()

#### Protected Attributes

- std::stringstream _describeKey

### 22.15.1 Detailed Description

Definition at line 6 of file DemandGenerationTestSuite.hpp.

### 22.15.2 Constructor & Destructor Documentation

#### 22.15.2.1 DemandGenerationTestSuite::DemandGenerationTestSuite ( )

Test some error detection functionalities. Constructor.

### 22.15.3 Member Function Documentation

#### 22.15.3.1 void DemandGenerationTestSuite::simpleEventGeneration ( )

Test a simple event generation functionality.

### 22.15.4 Member Data Documentation

#### 22.15.4.1 std::stringstream DemandGenerationTestSuite::_describeKey [protected]

Definition at line 27 of file DemandGenerationTestSuite.hpp.

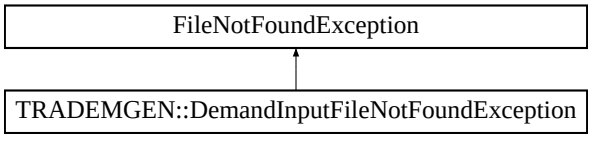
The documentation for this class was generated from the following file:

- test/trademgen/DemandGenerationTestSuite.hpp

## 22.16 TRADEMGEN::DemandInputFileNotFoundException Class Reference

`#include <trademgen/TRADEMGEN_Exceptions.hpp>`

Inheritance diagram for TRADEMGEN::DemandInputFileNotFoundException:



#### Public Member Functions

- DemandInputFileNotFoundException (const std::string &iWhat)

### 22.16.1 Detailed Description

Exception when no demand input file can be found

Definition at line 30 of file TRADEMGEN_Exceptions.hpp.

### 22.16.2 Constructor & Destructor Documentation

#### 22.16.2.1 TRADEMGEN::DemandInputFileNotFoundException::DemandInputFileNotFoundException ( const std::string & *iWhat* ) [inline]

Constructor.

Definition at line 36 of file TRADEMGEN_Exceptions.hpp.

The documentation for this class was generated from the following file:

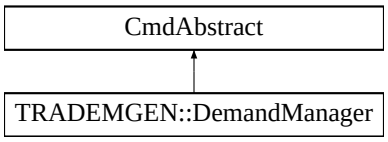
- trademgen/TRADEMGEN_Exceptions.hpp

## 22.17 TRADEMGEN::DemandManager Class Reference

Utility class for Demand and DemandStream objects.

`#include <trademgen/command/DemandManager.hpp>`

Inheritance diagram for TRADEMGEN::DemandManager:




#### Friends

- struct DemandParserHelper::doEndDemand
- class TRADEMGEN_Service

### 22.17.1 Detailed Description

Utility class for Demand and DemandStream objects.

Definition at line 38 of file DemandManager.hpp.

### 22.17.2 Friends And Related Function Documentation

#### 22.17.2.1 friend struct DemandParserHelper::doEndDemand [friend]

Definition at line 39 of file DemandManager.hpp.

#### 22.17.2.2 friend class TRADEMGEN_Service [friend]

Definition at line 40 of file DemandManager.hpp.

The documentation for this class was generated from the following files:

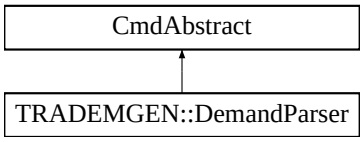
- trademgen/command/DemandManager.hpp
- trademgen/command/DemandManager.cpp

## 22.18 TRADEMGEN::DemandParser Class Reference

Class wrapping the parser entry point.

`#include <trademgen/command/DemandParser.hpp>`

Inheritance diagram for TRADEMGEN::DemandParser:




### Static Public Member Functions

- static void generateDemand (const stdair::Filename_T &, stdair::EventQueue &, stdair::RandomGeneration &, const POSProbabilityMass_T &)

### 22.18.1 Detailed Description

Class wrapping the parser entry point.

Definition at line 26 of file DemandParser.hpp.

### 22.18.2 Member Function Documentation

#### 22.18.2.1 void TRADEMGEN::DemandParser::generateDemand ( const stdair::Filename_T & *iFilename,* stdair::EventQueue & *ioEventQueue,* stdair::RandomGeneration & *ioSharedGenerator,* const POSProbabilityMass_T & *iDefaultPOSProbablityMass* ) [static]

Parse the CSV file describing travel demand, for instance for generating simulated booking request in a simulator.

The state of the random generator, given as parameter, evolves each time a demand request is generated.

**Parameters**

| | |
|---|---|
| *const* | stdair::Filename_T& The file-name of the CSV-formatted demand input file. |
| *stdair::Event-Queue&* | Event queue. |
| *stdair::Random-Generation&* | Random generator. |

Definition at line 18 of file DemandParser.cpp.

References TRADEMGEN::DemandFileParser::generateDemand().

The documentation for this class was generated from the following files:

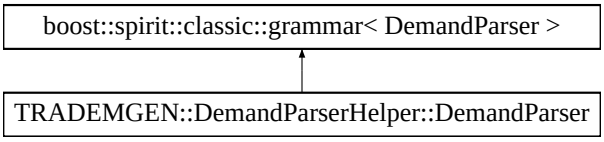
- trademgen/command/DemandParser.hpp

- trademgen/command/DemandParser.cpp

## 22.19 TRADEMGEN::DemandParserHelper::DemandParser Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::DemandParser:




### Classes

- struct definition

### Public Member Functions

- DemandParser (stdair::EventQueue &, stdair::RandomGeneration &, const POSProbabilityMass_T &, DemandStruct &)

### Public Attributes

- stdair::EventQueue & _eventQueue
- stdair::RandomGeneration & _uniformGenerator
- const POSProbabilityMass_T & _posProbabilityMass
- DemandStruct & _demand

#### 22.19.1 Detailed Description

PrefDepDate; Origin; Destination; PassengerType; Mean; StdDev; PosDist; ChannelDist; TripTypeDist; StayDurationDist; FrequentFlyerDist; PrefDepTimeDist; min WTP; (PrefArrivalDate; PrefArrivalTime;) TimeValueDist; ValueOfTimeDist; ArrivalPatternDist; 2010-02-08; SIN; BKK; L; 10.0; 1.0; SIN:0.7, BKK:0.2, row:0.1; DF:0.1, DN:0.3, IF:0.4, IN:0.2; RO:0.6, RI:0.2, OW:0.2; 0:0.1, 1:0.1, 2:0.15, 3:0.15, 4:0.15, 5:0.35; P:0.01, G:0.05, S:0.15, M:0.3, N:0.49; 06:0, 07:0.1, 09:0.3, 17:0.4, 19:0.8, 20:0.95, 22:1; 100:0, 500:0.8, 2000:1; 15:0, 60:1; 330:0, 40:0.2, 20:0.6, 1:1;

Fixed: Prefered departure date (yyyy-mm-dd) Origin (3-char airport code) Destination (3-char airport code) PassengerType (1-char, e.g., 'L' for Leisure, 'B' for Business) Observable: Mean StdDev Distribution with Probability Masses: POS Channel (D=direct, I=indirect, N=oNline, F=oFfline) Trip type(RO=outbound of round-trip,RI=inbound of round-trip,OW=one way) Stay duration (number of days) Frequent flyer (P=Platinum, G=Gold, S=Silver, M=Member, N=None) Continuous cumulative distribution: Preferred departure time (hh:mm:ss) Preferred arrival date (equal to prefered departure date) Preferred arrival time (equal to prefered departure time) Value of time Arrival pattern (DTD as a positive value) The main fields are separated by ';' Probability mass distributions are defined by comma-separated 'value:probability' pairs Continuous cumulative distribution are defined by comma-separated 'value:probability' pairs, sorted in increasing order of values. The meaning of probability is P(random variable <= value) = probability.

Grammar: Demand ::= PrefDepDate ';' Origin ';' Destination ';' PassengerType ';' DemandParams ';' PosDist ';' ChannelDist ';' TripDist ';' StayDist ';' FfDist ';' PrefDepTimeDist ';' minWTP ';' TimeValueDist ';' DtdDist EndOfDemand PrefDepDate ::= date PassengerType ::= 'L' | 'B' | 'F' DemandParams ::= DemandMean ';' DemandStdDev PosDist ::= PosPair (',' PosPair)* PosPair ::= PosCode ':' PosShare PosCode ::= AirportCode | "row" PosShare ::= real ChannelDist ::= ChannelPair (',' ChannelPair)* ChannelPair ::= Channel_Code ':' ChannelShare ChannelCode

::= "DF" | "DN" | "IF" | "IN" ChannelShare ::= real TripDist ::= TripPair (',' TripPair)∗ TripPair ::= TripCode ':' TripShare TripCode ::= "RO" | "RI" | "OW" TripShare ::= real StayDist ::= StayPair (',' StayPair)∗ StayPair ::= [0;3]-digit-integer ':' stay_share StayShare ::= real FFDist ::= FF_Pair (',' FF_Pair)∗ FFPair ::= FFCode ':' FFShare FFCode ::= 'P' | 'G' | 'S' | 'M' | 'N' FFShare ::= real PrefDepTimeDist ::= PrefDepTimePair (',' PrefDepTimePair)∗ PrefDepTimePair ::= time ':' PrefDepTimeShare PrefDepTimeShare ::= real minWTP ::= real TimeValueDist ::= TimeValuePair (',' TimeValuePair)∗ TimeValuePair ::= [0;2]-digit-integer ':' TimeValueShare TimeValueShare ::= real DTDDist ::= DTDPair (',' DTDPair)∗ DTDPair ::= real ':' DTDShare DTDShare ::= real EndOfDemand ::= ';'Grammar for the demand parser.

Definition at line 345 of file DemandParserHelper.hpp.

#### 22.19.2 Constructor & Destructor Documentation

##### 22.19.2.1 TRADEMGEN::DemandParserHelper::DemandParser::DemandParser ( stdair::EventQueue & *ioEventQueue*, stdair::RandomGeneration & *ioSharedGenerator*, const **POSProbabilityMass_T** & *iPOSProbMass*, **DemandStruct** & *ioDemand* )

Definition at line 521 of file DemandParserHelper.cpp.

#### 22.19.3 Member Data Documentation

##### 22.19.3.1 stdair::EventQueue& TRADEMGEN::DemandParserHelper::DemandParser::_eventQueue

Definition at line 374 of file DemandParserHelper.hpp.

##### 22.19.3.2 stdair::RandomGeneration& TRADEMGEN::DemandParserHelper::DemandParser::_uniformGenerator

Definition at line 375 of file DemandParserHelper.hpp.

##### 22.19.3.3 const **POSProbabilityMass_T**& TRADEMGEN::DemandParserHelper::DemandParser::_posProbabilityMass

Definition at line 376 of file DemandParserHelper.hpp.

##### 22.19.3.4 **DemandStruct**& TRADEMGEN::DemandParserHelper::DemandParser::_demand

Definition at line 377 of file DemandParserHelper.hpp.

The documentation for this struct was generated from the following files:

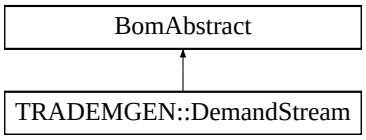
- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.20 TRADEMGEN::DemandStream Class Reference

Class modeling a demand stream.

`#include <trademgen/bom/DemandStream.hpp>`

Inheritance diagram for TRADEMGEN::DemandStream:



### Public Types

- typedef DemandStreamKey Key_T

### Public Member Functions

- const Key_T & getKey () const
- BomAbstract *const getParent () const
- const stdair::AirportCode_T & getOrigin () const
- const stdair::AirportCode_T & getDestination () const
- const stdair::Date_T & getPreferredDepartureDate () const
- const stdair::CabinCode_T & getPreferredCabin () const
- const stdair::HolderMap_T & getHolderMap () const
- const DemandCharacteristics & getDemandCharacteristics () const
- const DemandDistribution & getDemandDistribution () const
- const stdair::NbOfRequests_T & getTotalNumberOfRequestsToBeGenerated () const
- const stdair::NbOfRequests_T & getMeanNumberOfRequests () const
- const stdair::StdDevValue_T & getStdDevNumberOfRequests () const
- const stdair::Count_T & getNumberOfRequestsGeneratedSoFar () const
- const POSProbabilityMass_T & getPOSProbabilityMass () const
- void setNumberOfRequestsGeneratedSoFar (const stdair::Count_T &iCount)
- void setDemandDistribution (const DemandDistribution &iDemandDistribution)
- void setDemandCharacteristics (const ArrivalPatternCumulativeDistribution_T &iArrivalPattern, const POSProbabilityMassFunction_T &iPOSProbMass, const ChannelProbabilityMassFunction_T &iChannelProbMass, const TripTypeProbabilityMassFunction_T &iTripTypeProbMass, const StayDurationProbabilityMassFunction_T &iStayDurationProbMass, const FrequentFlyerProbabilityMassFunction_T &iFrequentFlyerProbMass, const PreferredDepartureTimeContinuousDistribution_T &iPreferredDepartureTimeContinuousDistribution, const stdair::WTP_T &iMinWTP, const ValueOfTimeContinuousDistribution_T &iValueOfTimeContinuousDistribution)
- void setTotalNumberOfRequestsToBeGenerated (const stdair::NbOfRequests_T &iNbOfRequests)
- void setRequestDateTimeRandomGeneratorSeed (const stdair::RandomSeed_T &iSeed)
- void setDemandCharacteristicsRandomGeneratorSeed (const stdair::RandomSeed_T &iSeed)
- void setPOSProbabilityMass (const POSProbabilityMass_T &iProbMass)
- void setAll (const ArrivalPatternCumulativeDistribution_T &, const POSProbabilityMassFunction_T &, const ChannelProbabilityMassFunction_T &, const TripTypeProbabilityMassFunction_T &, const StayDurationProbabilityMassFunction_T &, const FrequentFlyerProbabilityMassFunction_T &, const PreferredDepartureTimeContinuousDistribution_T &, const stdair::WTP_T &, const ValueOfTimeContinuousDistribution_T &, const DemandDistribution &, stdair::BaseGenerator_T &ioSharedGenerator, const stdair::RandomSeed_T &iRequestDateTimeSeed, const stdair::RandomSeed_T &iDemandCharacteristicsSeed, const POSProbabilityMass_T &)
- void setBoolFirstDateTimeRequest (const bool &iFirstDateTimeRequest)
- void incrementGeneratedRequestsCounter ()
- const bool stillHavingRequestsToBeGenerated (const stdair::DemandGenerationMethod &iDemandGenerationMethod) const
- const stdair::DateTime_T generateTimeOfRequestPoissonProcess ()
- const stdair::DateTime_T generateTimeOfRequestStatisticsOrder ()
- const stdair::AirportCode_T generatePOS ()
- const stdair::ChannelLabel_T generateChannel ()
- const stdair::TripType_T generateTripType ()
- const stdair::DayDuration_T generateStayDuration ()
- const stdair::FrequentFlyer_T generateFrequentFlyer ()
- const stdair::Duration_T generatePreferredDepartureTime ()
- const stdair::WTP_T generateWTP (stdair::RandomGeneration &, const stdair::Date_T &, const stdair::DateTime_T &, const stdair::DayDuration_T &)
- const stdair::PriceValue_T generateValueOfTime ()

- stdair::BookingRequestPtr_T generateNextRequest (stdair::RandomGeneration &, const stdair::DemandGenerationMethod &)
- void reset (stdair::BaseGenerator_T &ioSharedGenerator)
- void toStream (std::ostream &ioOut) const
- void fromStream (std::istream &ioIn)
- std::string toString () const
- const std::string describeKey () const
- std::string display () const
- const stdair::Duration_T convertFloatIntoDuration (const stdair::FloatDuration_T)

#### Protected Member Functions

- DemandStream (const Key_T &)
- virtual ~DemandStream ()

#### Protected Attributes

- Key_T _key
- BomAbstract * _parent
- stdair::HolderMap_T _holderMap
- DemandCharacteristics _demandCharacteristics
- DemandDistribution _demandDistribution
- stdair::NbOfRequests_T _totalNumberOfRequestsToBeGenerated
- RandomGenerationContext _randomGenerationContext
- stdair::RandomGeneration _requestDateTimeRandomGenerator
- stdair::RandomGeneration _demandCharacteristicsRandomGenerator
- POSProbabilityMass_T _posProMass

#### Friends

- class stdair::FacBom
- class stdair::FacBomManager

### 22.20.1 Detailed Description

Class modeling a demand stream.

Definition at line 30 of file DemandStream.hpp.

### 22.20.2 Member Typedef Documentation

#### 22.20.2.1 typedef DemandStreamKey TRADEMGEN::DemandStream::Key_T

Definition allowing to retrieve the associated BOM key type.

Definition at line 39 of file DemandStream.hpp.

### 22.20.3 Constructor & Destructor Documentation

#### 22.20.3.1 TRADEMGEN::DemandStream::DemandStream ( const Key_T & *iKey* ) [protected]

Main constructor.

Definition at line 62 of file DemandStream.cpp.

#### 22.20.3.2 TRADEMGEN::DemandStream::~DemandStream ( ) [protected], [virtual]

Destructor.

Definition at line 67 of file DemandStream.cpp.

### 22.20.4 Member Function Documentation

#### 22.20.4.1 const Key_T& TRADEMGEN::DemandStream::getKey ( ) const [inline]

Get the key

Definition at line 45 of file DemandStream.hpp.

References _key.

#### 22.20.4.2 BomAbstract* const TRADEMGEN::DemandStream::getParent ( ) const [inline]

Get the parent object (EventQueue).

Definition at line 50 of file DemandStream.hpp.

References _parent.

#### 22.20.4.3 const stdair::AirportCode_T& TRADEMGEN::DemandStream::getOrigin ( ) const [inline]

Get the origin (part of the primary key).

Definition at line 55 of file DemandStream.hpp.

References _key, and TRADEMGEN::DemandStreamKey::getOrigin().

#### 22.20.4.4 const stdair::AirportCode_T& TRADEMGEN::DemandStream::getDestination ( ) const [inline]

Get the destination (part of the primary key).

Definition at line 60 of file DemandStream.hpp.

References _key, and TRADEMGEN::DemandStreamKey::getDestination().

#### 22.20.4.5 const stdair::Date_T& TRADEMGEN::DemandStream::getPreferredDepartureDate ( ) const [inline]

Get the preferred departure date (part of the primary key).

Definition at line 65 of file DemandStream.hpp.

References _key, and TRADEMGEN::DemandStreamKey::getPreferredDepartureDate().

#### 22.20.4.6 const stdair::CabinCode_T& TRADEMGEN::DemandStream::getPreferredCabin ( ) const [inline]

Get the preferred cabin (part of the primary key).

Definition at line 70 of file DemandStream.hpp.

References _key, and TRADEMGEN::DemandStreamKey::getPreferredCabin().

#### 22.20.4.7 const stdair::HolderMap_T& TRADEMGEN::DemandStream::getHolderMap ( ) const [inline]

Get the map of children holders.

Definition at line 75 of file DemandStream.hpp.

References _holderMap.

#### 22.20.4.8 const DemandCharacteristics& TRADEMGEN::DemandStream::getDemandCharacteristics ( ) const [inline]

Get the demand characteristics.

Definition at line 80 of file DemandStream.hpp.

References _demandCharacteristics.

#### 22.20.4.9 const DemandDistribution& TRADEMGEN::DemandStream::getDemandDistribution ( ) const [inline]

Get the demand distribution.

Definition at line 85 of file DemandStream.hpp.

References _demandDistribution.

#### 22.20.4.10 const stdair::NbOfRequests_T& TRADEMGEN::DemandStream::getTotalNumberOfRequestsToBeGenerated ( ) const [inline]

Get the total number of requests to be generated.

Definition at line 90 of file DemandStream.hpp.

References _totalNumberOfRequestsToBeGenerated.

#### 22.20.4.11 const stdair::NbOfRequests_T& TRADEMGEN::DemandStream::getMeanNumberOfRequests ( ) const [inline]

Get the mean (expected) number of requests.

Definition at line 95 of file DemandStream.hpp.

References _demandDistribution, and TRADEMGEN::DemandDistribution::_meanNumberOfRequests.

#### 22.20.4.12 const stdair::StdDevValue_T& TRADEMGEN::DemandStream::getStdDevNumberOfRequests ( ) const [inline]

Get the standard deviation of number of requests.

Definition at line 100 of file DemandStream.hpp.

References _demandDistribution, and TRADEMGEN::DemandDistribution::_stdDevNumberOfRequests.

#### 22.20.4.13 const stdair::Count_T& TRADEMGEN::DemandStream::getNumberOfRequestsGeneratedSoFar ( ) const [inline]

Get the number of requests generated so far.

Definition at line 105 of file DemandStream.hpp.

References _randomGenerationContext, and TRADEMGEN::RandomGenerationContext::getNumberOfRequests-GeneratedSoFar().

#### 22.20.4.14 const POSProbabilityMass_T& TRADEMGEN::DemandStream::getPOSProbabilityMass ( ) const [inline]

Get the default POS probablity mass, used when "row" (rest of the world) is drawn.

Definition at line 113 of file DemandStream.hpp.

References _posProMass.

#### 22.20.4.15 void TRADEMGEN::DemandStream::setNumberOfRequestsGeneratedSoFar ( const stdair::Count_T & *iCount* ) [inline]

Set the number of requests generated so far.

Definition at line 121 of file DemandStream.hpp.

References _randomGenerationContext, and TRADEMGEN::RandomGenerationContext::setNumberOfRequests-GeneratedSoFar().

22.20.4.16 void TRADEMGEN::DemandStream::setDemandDistribution ( const DemandDistribution & *iDemandDistribution* ) [inline]

Set the demand distribution.

Definition at line 126 of file DemandStream.hpp.

References _demandDistribution.

Referenced by setAll().

22.20.4.17 void TRADEMGEN::DemandStream::setDemandCharacteristics ( const ArrivalPatternCumulativeDistribution_T & *iArrivalPattern,* const POSProbabilityMassFunction_T & *iPOSProbMass,* const ChannelProbabilityMassFunction_T & *iChannelProbMass,* const TripTypeProbabilityMassFunction_T & *iTripTypeProbMass,* const StayDurationProbabilityMassFunction_T & *iStayDurationProbMass,* const FrequentFlyerProbabilityMassFunction_T & *iFrequentFlyerProbMass,* const PreferredDepartureTimeContinuousDistribution_T & *iPreferredDepartureTimeContinuousDistribution,* const stdair::WTP_T & *iMinWTP,* const ValueOfTimeContinuousDistribution_T & *iValueOfTimeContinuousDistribution* ) [inline]

Set the demand characteristics.

Definition at line 132 of file DemandStream.hpp.

References _demandCharacteristics.

Referenced by setAll().

22.20.4.18 void TRADEMGEN::DemandStream::setTotalNumberOfRequestsToBeGenerated ( const stdair::NbOfRequests_T & *iNbOfRequests* ) [inline]

Set the total number of requests to be generated.

Definition at line 150 of file DemandStream.hpp.

References _totalNumberOfRequestsToBeGenerated.

Referenced by setAll().

22.20.4.19 void TRADEMGEN::DemandStream::setRequestDateTimeRandomGeneratorSeed ( const stdair::RandomSeed_T & *iSeed* ) [inline]

Set the seed of the random generator for the request datetime.

Definition at line 155 of file DemandStream.hpp.

References _requestDateTimeRandomGenerator.

Referenced by setAll().

22.20.4.20 void TRADEMGEN::DemandStream::setDemandCharacteristicsRandomGeneratorSeed ( const stdair::RandomSeed_T & *iSeed* ) [inline]

Set the seed of the random generator for the demand characteristics.

Definition at line 160 of file DemandStream.hpp.

References _demandCharacteristicsRandomGenerator.

Referenced by setAll().

22.20.4.21 void TRADEMGEN::DemandStream::setPOSProbabilityMass ( const POSProbabilityMass_T & *iProbMass* ) [inline]

Set the default POS probablity mass, used when "row" (rest of the world) is drawn.

Definition at line 168 of file DemandStream.hpp.

References _posProMass.

Referenced by setAll().

22.20.4.22 void TRADEMGEN::DemandStream::setAll ( const ArrivalPatternCumulativeDistribution_T & *iArrivalPattern,* const POSProbabilityMassFunction_T & *iPOSProbMass,* const ChannelProbabilityMassFunction_T & *iChannelProbMass,* const TripTypeProbabilityMassFunction_T & *iTripTypeProbMass,* const StayDurationProbabilityMassFunction_T & *iStayDurationProbMass,* const FrequentFlyerProbabilityMassFunction_T & *iFrequentFlyerProbMass,* const PreferredDeparture-TimeContinuousDistribution_T & *iPreferredDepartureTimeContinuousDistribution,* const stdair::WTP_T & *iMinWTP,* const ValueOfTimeContinuousDistribution_T & *iValueOfTimeContinuousDistribution,* const DemandDistribution & *iDemandDistribution,* stdair::BaseGenerator_T & *ioSharedGenerator,* const stdair::RandomSeed_T & *iRequestDateTimeSeed,* const stdair::RandomSeed_T & *iDemandCharacteristicsSeed,* const POSProbabilityMass_T & *iDefaultPOSProbablityMass* )

Initialisation.

Definition at line 79 of file DemandStream.cpp.

References setDemandCharacteristics(), setDemandCharacteristicsRandomGeneratorSeed(), setDemand-Distribution(), setPOSProbabilityMass(), setRequestDateTimeRandomGeneratorSeed(), and setTotalNumber-OfRequestsToBeGenerated().

22.20.4.23 void TRADEMGEN::DemandStream::setBoolFirstDateTimeRequest ( const bool & *iFirstDateTimeRequest* ) [inline]

Set the boolean describing if it is the first time we generate a request for a demand stream.

Definition at line 194 of file DemandStream.hpp.

22.20.4.24 void TRADEMGEN::DemandStream::incrementGeneratedRequestsCounter ( ) [inline]

Increment counter of requests generated so far

Definition at line 202 of file DemandStream.hpp.

References _randomGenerationContext, and TRADEMGEN::RandomGenerationContext::incrementGenerated-RequestsCounter().

Referenced by generateTimeOfRequestPoissonProcess(), and generateTimeOfRequestStatisticsOrder().

22.20.4.25 const bool TRADEMGEN::DemandStream::stillHavingRequestsToBeGenerated ( const stdair::DemandGenerationMethod & *iDemandGenerationMethod* ) const

Check whether enough requests have already been generated.

Definition at line 164 of file DemandStream.cpp.

References _randomGenerationContext, _totalNumberOfRequestsToBeGenerated, and TRADEMGEN::Random-GenerationContext::getNumberOfRequestsGeneratedSoFar().

22.20.4.26 const stdair::DateTime_T TRADEMGEN::DemandStream::generateTimeOfRequestPoissonProcess ( )

Generate the time of the next request with poisson process.

Definition at line 189 of file DemandStream.cpp.

References TRADEMGEN::DemandCharacteristics::_arrivalPattern, _demandCharacteristics, _demandDistribution, _key, TRADEMGEN::DemandDistribution::_meanNumberOfRequests, _requestDateTimeRandomGenerator, convertFloatIntoDuration(), TRADEMGEN::DEFAULT_LAST_LOWER_BOUND_ARRIVAL_PATTERN, TRADE-MGEN::ContinuousAttributeLite< T >::getDerivativeValue(), TRADEMGEN::DemandStreamKey::getPreferred-DepartureDate(), TRADEMGEN::ContinuousAttributeLite< T >::getUpperBound(), TRADEMGEN::Continuous-AttributeLite< T >::getValue(), and incrementGeneratedRequestsCounter().

Referenced by generateNextRequest().

#### 22.20.4.27 const stdair::DateTime_T TRADEMGEN::DemandStream::generateTimeOfRequestStatisticsOrder ( )

Generate the time of the next request with statistics order

Definition at line 291 of file DemandStream.cpp.

References TRADEMGEN::DemandCharacteristics::_arrivalPattern, _demandCharacteristics, _key, _randomGenerationContext, _requestDateTimeRandomGenerator, _totalNumberOfRequestsToBeGenerated, convertFloatIntoDuration(), TRADEMGEN::RandomGenerationContext::getCumulativeProbabilitySoFar(), TRADEMGEN::RandomGenerationContext::getNumberOfRequestsGeneratedSoFar(), TRADEMGEN::DemandStreamKey::getPreferredDepartureDate(), TRADEMGEN::ContinuousAttributeLite< T >::getValue(), incrementGeneratedRequestsCounter(), and TRADEMGEN::RandomGenerationContext::setCumulativeProbabilitySoFar().

Referenced by generateNextRequest().

#### 22.20.4.28 const stdair::AirportCode_T TRADEMGEN::DemandStream::generatePOS ( )

Generate the POS.

Definition at line 422 of file DemandStream.cpp.

References _demandCharacteristics, _demandCharacteristicsRandomGenerator, and TRADEMGEN::DemandCharacteristics::getPOSValue().

Referenced by generateNextRequest().

#### 22.20.4.29 const stdair::ChannelLabel_T TRADEMGEN::DemandStream::generateChannel ( )

Generate the reservation channel.

Definition at line 432 of file DemandStream.cpp.

References TRADEMGEN::DemandCharacteristics::_channelProbabilityMass, _demandCharacteristics, _demandCharacteristicsRandomGenerator, and TRADEMGEN::CategoricalAttributeLite< T >::getValue().

Referenced by generateNextRequest().

#### 22.20.4.30 const stdair::TripType_T TRADEMGEN::DemandStream::generateTripType ( )

Generate the trip type.

Definition at line 441 of file DemandStream.cpp.

References _demandCharacteristics, _demandCharacteristicsRandomGenerator, TRADEMGEN::DemandCharacteristics::_tripTypeProbabilityMass, and TRADEMGEN::CategoricalAttributeLite< T >::getValue().

Referenced by generateNextRequest().

#### 22.20.4.31 const stdair::DayDuration_T TRADEMGEN::DemandStream::generateStayDuration ( )

Generate the stay duration.

Definition at line 450 of file DemandStream.cpp.

References _demandCharacteristics, _demandCharacteristicsRandomGenerator, TRADEMGEN::DemandCharacteristics::_stayDurationProbabilityMass, and TRADEMGEN::CategoricalAttributeLite< T >::getValue().

Referenced by generateNextRequest().

#### 22.20.4.32 const stdair::FrequentFlyer_T TRADEMGEN::DemandStream::generateFrequentFlyer ( )

Generate the frequent flyer type.

Definition at line 459 of file DemandStream.cpp.

References _demandCharacteristics, _demandCharacteristicsRandomGenerator, TRADEMGEN::DemandCharacteristics::_frequentFlyerProbabilityMass, and TRADEMGEN::CategoricalAttributeLite< T >::getValue().

Referenced by generateNextRequest().

#### 22.20.4.33 const stdair::Duration_T TRADEMGEN::DemandStream::generatePreferredDepartureTime ( )

Generate the preferred departure time.

Definition at line 468 of file DemandStream.cpp.

References _demandCharacteristics, and _demandCharacteristicsRandomGenerator.

Referenced by generateNextRequest().

#### 22.20.4.34 const stdair::WTP_T TRADEMGEN::DemandStream::generateWTP ( stdair::RandomGeneration & *ioGenerator,* const stdair::Date_T & *iDepartureDate,* const stdair::DateTime_T & *iDateTimeThisRequest,* const stdair::DayDuration_T & *iDurationOfStay* )

Generate the WTP.

Definition at line 482 of file DemandStream.cpp.

References _demandCharacteristics, TRADEMGEN::DemandCharacteristics::_frat5Pattern, TRADEMGEN::DemandCharacteristics::_minWTP, and TRADEMGEN::ContinuousAttributeLite< T >::getValue().

Referenced by generateNextRequest().

#### 22.20.4.35 const stdair::PriceValue_T TRADEMGEN::DemandStream::generateValueOfTime ( )

Generate the value of time.

Definition at line 503 of file DemandStream.cpp.

References _demandCharacteristics, _demandCharacteristicsRandomGenerator, TRADEMGEN::DemandCharacteristics::_valueOfTimeCumulativeDistribution, and TRADEMGEN::ContinuousAttributeLite< T >::getValue().

Referenced by generateNextRequest().

#### 22.20.4.36 stdair::BookingRequestPtr_T TRADEMGEN::DemandStream::generateNextRequest ( stdair::RandomGeneration & *ioGenerator,* const stdair::DemandGenerationMethod & *iDemandGenerationMethod* )

Generate the next request.

**Parameters**

| | |
|---|---|
| *stdair::RandomGeneration* | Random generator. |
| *const* | stdair::DemandGenerationMethod::EN_DemandGenerationMethod Method used to generate the date time of the next booking request: statistic order or poisson process. |

**Returns**

stdair::BookingRequestPtr_T Next request to be simulate.

Definition at line 513 of file DemandStream.cpp.

References _key, describeKey(), generateChannel(), generateFrequentFlyer(), generatePOS(), generatePreferredDepartureTime(), generateStayDuration(), generateTimeOfRequestPoissonProcess(), generateTimeOfRequestStatisticsOrder(), generateTripType(), generateValueOfTime(), generateWTP(), TRADEMGEN::DemandStreamKey::getDestination(), TRADEMGEN::DemandStreamKey::getOrigin(), TRADEMGEN::DemandStreamKey::getPreferredCabin(), and TRADEMGEN::DemandStreamKey::getPreferredDepartureDate().

#### 22.20.4.37 void TRADEMGEN::DemandStream::reset ( stdair::BaseGenerator_T & *ioSharedGenerator* )

Reset all the contexts of the demand stream.

Definition at line 589 of file DemandStream.cpp.

References _randomGenerationContext, and TRADEMGEN::RandomGenerationContext::reset().

#### 22.20.4.38 void TRADEMGEN::DemandStream::toStream ( std::ostream & *ioOut* ) const [inline]

Dump a Business Object into an output stream.

**Parameters**

| | |
|---|---|
| *ostream&* | the output stream. |

Definition at line 266 of file DemandStream.hpp.

References toString().

#### 22.20.4.39 void TRADEMGEN::DemandStream::fromStream ( std::istream & *ioIn* ) [inline]

Read a Business Object from an input stream.

**Parameters**

| | |
|---|---|
| *istream&* | the input stream. |

Definition at line 274 of file DemandStream.hpp.

#### 22.20.4.40 std::string TRADEMGEN::DemandStream::toString ( ) const

Get the serialised version of the Business Object.

Definition at line 71 of file DemandStream.cpp.

References _key, and TRADEMGEN::DemandStreamKey::toString().

Referenced by toStream().

#### 22.20.4.41 const std::string TRADEMGEN::DemandStream::describeKey ( ) const [inline]

Get a string describing the key.

Definition at line 285 of file DemandStream.hpp.

References _key, and TRADEMGEN::DemandStreamKey::toString().

Referenced by generateNextRequest().

#### 22.20.4.42 std::string TRADEMGEN::DemandStream::display ( ) const

Dump recursively the content of the DemandStream object.

Definition at line 111 of file DemandStream.cpp.

References _demandCharacteristics, _demandCharacteristicsRandomGenerator, _demandDistribution, _key, _posProMass, _randomGenerationContext, _requestDateTimeRandomGenerator, _totalNumberOfRequestsToBeGenerated, TRADEMGEN::DemandCharacteristics::describe(), TRADEMGEN::DemandDistribution::describe(), TRADEMGEN::CategoricalAttributeLite< T >::displayProbabilityMass(), and TRADEMGEN::DemandStreamKey::toString().

Referenced by TRADEMGEN::BomDisplay::csvDisplay().

#### 22.20.4.43 const stdair::Duration_T TRADEMGEN::DemandStream::convertFloatIntoDuration ( const stdair::FloatDuration_T *iNumberOfDays* )

Definition at line 393 of file DemandStream.cpp.

Referenced by generateTimeOfRequestPoissonProcess(), and generateTimeOfRequestStatisticsOrder().

### 22.20.5 Friends And Related Function Documentation

#### 22.20.5.1 friend class stdair::FacBom [friend]

Definition at line 31 of file DemandStream.hpp.

#### 22.20.5.2 friend class stdair::FacBomManager [friend]

Definition at line 32 of file DemandStream.hpp.

### 22.20.6 Member Data Documentation

#### 22.20.6.1 Key_T TRADEMGEN::DemandStream::_key [protected]

Primary key (string gathering the origin, destination, POS and date).

Definition at line 321 of file DemandStream.hpp.

Referenced by describeKey(), display(), generateNextRequest(), generateTimeOfRequestPoissonProcess(), generateTimeOfRequestStatisticsOrder(), getDestination(), getKey(), getOrigin(), getPreferredCabin(), getPreferredDepartureDate(), and toString().

#### 22.20.6.2 BomAbstract* TRADEMGEN::DemandStream::_parent [protected]

Pointer on the parent class (EventQueue).

Definition at line 326 of file DemandStream.hpp.

Referenced by getParent().

#### 22.20.6.3 stdair::HolderMap_T TRADEMGEN::DemandStream::_holderMap [protected]

Map holding the children (not used for now).

Definition at line 331 of file DemandStream.hpp.

Referenced by getHolderMap().

#### 22.20.6.4 DemandCharacteristics TRADEMGEN::DemandStream::_demandCharacteristics [protected]

Demand characteristics.

Definition at line 336 of file DemandStream.hpp.

Referenced by display(), generateChannel(), generateFrequentFlyer(), generatePOS(), generatePreferredDepartureTime(), generateStayDuration(), generateTimeOfRequestPoissonProcess(), generateTimeOfRequestStatisticsOrder(), generateTripType(), generateValueOfTime(), generateWTP(), getDemandCharacteristics(), and setDemandCharacteristics().

#### 22.20.6.5 DemandDistribution TRADEMGEN::DemandStream::_demandDistribution [protected]

Demand distribution.

Definition at line 341 of file DemandStream.hpp.

Referenced by display(), generateTimeOfRequestPoissonProcess(), getDemandDistribution(), getMeanNumberOfRequests(), getStdDevNumberOfRequests(), and setDemandDistribution().

#### 22.20.6.6 stdair::NbOfRequests_T TRADEMGEN::DemandStream::_totalNumberOfRequestsToBeGenerated [protected]

Total number of requests to be generated.

Definition at line 346 of file DemandStream.hpp.

Referenced by display(), generateTimeOfRequestStatisticsOrder(), getTotalNumberOfRequestsToBeGenerated(), setTotalNumberOfRequestsToBeGenerated(), and stillHavingRequestsToBeGenerated().

#### 22.20.6.7 RandomGenerationContext TRADEMGEN::DemandStream::_randomGenerationContext [protected]

Random generation context.

Definition at line 351 of file DemandStream.hpp.

Referenced by display(), generateTimeOfRequestStatisticsOrder(), getNumberOfRequestsGeneratedSoFar(), incrementGeneratedRequestsCounter(), reset(), setNumberOfRequestsGeneratedSoFar(), and stillHaving-RequestsToBeGenerated().

#### 22.20.6.8 stdair::RandomGeneration TRADEMGEN::DemandStream::_requestDateTimeRandomGenerator [protected]

Random generator for request date-time.

Definition at line 356 of file DemandStream.hpp.

Referenced by display(), generateTimeOfRequestPoissonProcess(), generateTimeOfRequestStatisticsOrder(), and setRequestDateTimeRandomGeneratorSeed().

#### 22.20.6.9 stdair::RandomGeneration TRADEMGEN::DemandStream::_demandCharacteristicsRandomGenerator [protected]

Random generator for demand characteristics.

Definition at line 361 of file DemandStream.hpp.

Referenced by display(), generateChannel(), generateFrequentFlyer(), generatePOS(), generatePreferred-DepartureTime(), generateStayDuration(), generateTripType(), generateValueOfTime(), and setDemand-CharacteristicsRandomGeneratorSeed().

#### 22.20.6.10 POSProbabilityMass_T TRADEMGEN::DemandStream::_posProMass [protected]

Defaut POS probablity mass, used when "row" (rest of the world) is drawn.

Definition at line 367 of file DemandStream.hpp.

Referenced by display(), getPOSProbabilityMass(), and setPOSProbabilityMass().

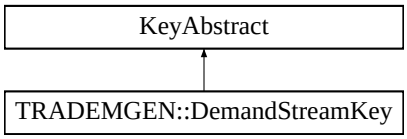
The documentation for this class was generated from the following files:

- trademgen/bom/DemandStream.hpp
- trademgen/bom/DemandStream.cpp

## 22.21 TRADEMGEN::DemandStreamKey Struct Reference

`#include <trademgen/bom/DemandStreamKey.hpp>`

Inheritance diagram for TRADEMGEN::DemandStreamKey:




### Public Member Functions

- DemandStreamKey (const stdair::AirportCode_T &iOrigin, const stdair::AirportCode_T &iDestination, const stdair::Date_T &iPreferredDepartureDate, const stdair::CabinCode_T &iPreferredCabin)
- DemandStreamKey (const DemandStreamKey &)
- ~DemandStreamKey ()
- const stdair::AirportCode_T & getOrigin () const

- const stdair::AirportCode_T & getDestination () const
- const stdair::Date_T & getPreferredDepartureDate () const
- const stdair::CabinCode_T & getPreferredCabin () const
- void toStream (std::ostream &ioOut) const
- void fromStream (std::istream &ioIn)
- const std::string toString () const

#### 22.21.1 Detailed Description

Key of a given demand-stream, made of a pair of required airports/cities (origin and destination), a preferred departure date and a preferred cabin. Those attributes correspond to a the travel requirements of a simulated traveller.

Definition at line 20 of file DemandStreamKey.hpp.

#### 22.21.2 Constructor & Destructor Documentation

##### 22.21.2.1 TRADEMGEN::DemandStreamKey::DemandStreamKey ( const stdair::AirportCode_T & *iOrigin,* const stdair::AirportCode_T & *iDestination,* const stdair::Date_T & *iPreferredDepartureDate,* const stdair::CabinCode_T & *iPreferredCabin* )

Constructor.

Definition at line 25 of file DemandStreamKey.cpp.

##### 22.21.2.2 TRADEMGEN::DemandStreamKey::DemandStreamKey ( const DemandStreamKey & *iKey* )

Default copy constructor.

Definition at line 35 of file DemandStreamKey.cpp.

##### 22.21.2.3 TRADEMGEN::DemandStreamKey::~DemandStreamKey ( )

Destructor.

Definition at line 42 of file DemandStreamKey.cpp.

#### 22.21.3 Member Function Documentation

##### 22.21.3.1 const stdair::AirportCode_T& TRADEMGEN::DemandStreamKey::getOrigin ( ) const [inline]

Get the origin.

Definition at line 43 of file DemandStreamKey.hpp.

Referenced by TRADEMGEN::DemandStream::generateNextRequest(), and TRADEMGEN::DemandStream::getOrigin().

##### 22.21.3.2 const stdair::AirportCode_T& TRADEMGEN::DemandStreamKey::getDestination ( ) const [inline]

Get the destination.

Definition at line 48 of file DemandStreamKey.hpp.

Referenced by TRADEMGEN::DemandStream::generateNextRequest(), and TRADEMGEN::DemandStream::getDestination().

##### 22.21.3.3 const stdair::Date_T& TRADEMGEN::DemandStreamKey::getPreferredDepartureDate ( ) const [inline]

Get the preferred departure date.

Definition at line 53 of file DemandStreamKey.hpp.

Referenced by TRADEMGEN::DemandStream::generateNextRequest(), TRADEMGEN::DemandStream::generateTimeOfRequestPoissonProcess(), TRADEMGEN::DemandStream::generateTimeOfRequestStatisticsOrder(), and TRADEMGEN::DemandStream::getPreferredDepartureDate().

#### 22.21.3.4 const stdair::CabinCode_T& TRADEMGEN::DemandStreamKey::getPreferredCabin ( ) const [inline]

Get the preferred cabin.

Definition at line 58 of file DemandStreamKey.hpp.

Referenced by TRADEMGEN::DemandStream::generateNextRequest(), and TRADEMGEN::DemandStream::getPreferredCabin().

#### 22.21.3.5 void TRADEMGEN::DemandStreamKey::toStream ( std::ostream & *ioOut* ) const

Dump a Business Object Key into an output stream.

**Parameters**

| | |
|---|---|
| *ostream&* | the output stream. |

Definition at line 46 of file DemandStreamKey.cpp.

References toString().

#### 22.21.3.6 void TRADEMGEN::DemandStreamKey::fromStream ( std::istream & *ioIn* )

Read a Business Object Key from an input stream.

**Parameters**

| | |
|---|---|
| *istream&* | the input stream. |

Definition at line 51 of file DemandStreamKey.cpp.

#### 22.21.3.7 const std::string TRADEMGEN::DemandStreamKey::toString ( ) const

Get the serialised version of the Business Object Key.

That string is unique, at the level of a given Business Object, when among children of a given parent Business Object.

For instance, "H" and "K" allow to differentiate among two marketing classes for the same segment-stream.

Definition at line 55 of file DemandStreamKey.cpp.

Referenced by TRADEMGEN::DemandStream::describeKey(), TRADEMGEN::DemandStream::display(), toStream(), and TRADEMGEN::DemandStream::toString().

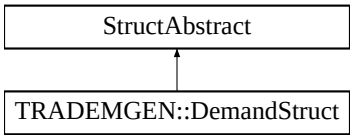
The documentation for this struct was generated from the following files:

- trademgen/bom/DemandStreamKey.hpp
- trademgen/bom/DemandStreamKey.cpp

## 22.22 TRADEMGEN::DemandStruct Struct Reference

`#include <trademgen/bom/DemandStruct.hpp>`

Inheritance diagram for TRADEMGEN::DemandStruct:




#### Public Member Functions

- stdair::Date_T getDate () const
- stdair::Duration_T getTime () const
- const std::string describe () const
- DemandStruct ()
- ~DemandStruct ()

#### Public Attributes

- stdair::DatePeriod_T _dateRange
- stdair::DoWStruct _dow
- stdair::AirportCode_T _origin
- stdair::AirportCode_T _destination
- stdair::CabinCode_T _prefCabin
- stdair::MeanValue_T _demandMean
- stdair::StdDevValue_T _demandStdDev
- POSProbabilityMassFunction_T _posProbDist
- ChannelProbabilityMassFunction_T _channelProbDist
- TripTypeProbabilityMassFunction_T _tripProbDist
- StayDurationProbabilityMassFunction_T _stayProbDist
- FrequentFlyerProbabilityMassFunction_T _ffProbDist
- PreferredDepartureTimeContinuousDistribution_T _prefDepTimeProbDist
- stdair::WTP_T _minWTP
- ValueOfTimeContinuousDistribution_T _timeValueProbDist
- ArrivalPatternCumulativeDistribution_T _dtdProbDist
- stdair::Date_T _prefDepDateStart
- stdair::Date_T _prefDepDateEnd
- unsigned int _itYear
- unsigned int _itMonth
- unsigned int _itDay
- long _itHours
- long _itMinutes
- long _itSeconds
- stdair::AirportCode_T _itPosCode
- stdair::ChannelLabel_T _itChannelCode
- stdair::TripType_T _itTripCode
- stdair::DayDuration_T _itStayDuration
- stdair::FrequentFlyer_T _itFFCode
- stdair::Duration_T _itPrefDepTime
- stdair::PriceValue_T _itTimeValue
- stdair::DayDuration_T _itDTD

### 22.22.1 Detailed Description

Utility Structure for the parsing of Demand structures.

Definition at line 21 of file DemandStruct.hpp.

### 22.22.2 Constructor & Destructor Documentation

#### 22.22.2.1 TRADEMGEN::DemandStruct::DemandStruct ( )

Default constructor.

Definition at line 18 of file DemandStruct.cpp.

#### 22.22.2.2 TRADEMGEN::DemandStruct::~DemandStruct ( )

Destructor

Definition at line 26 of file DemandStruct.cpp.

### 22.22.3 Member Function Documentation

#### 22.22.3.1 stdair::Date_T TRADEMGEN::DemandStruct::getDate ( ) const

Get the date from the staging details.

Definition at line 30 of file DemandStruct.cpp.

References _itDay, _itMonth, and _itYear.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), and TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()().

#### 22.22.3.2 stdair::Duration_T TRADEMGEN::DemandStruct::getTime ( ) const

Get the time from the staging details.

Definition at line 35 of file DemandStruct.cpp.

References _itHours, _itMinutes, and _itSeconds.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()().

#### 22.22.3.3 const std::string TRADEMGEN::DemandStruct::describe ( ) const

Give a description of the structure (for display purposes).

Definition at line 42 of file DemandStruct.cpp.

References _channelProbDist, _dateRange, _demandMean, _demandStdDev, _destination, _dow, _dtdProbDist, _ffProbDist, _minWTP, _origin, _posProbDist, _prefCabin, _prefDepTimeProbDist, _stayProbDist, _timeValueProbDist, and _tripProbDist.

### 22.22.4 Member Data Documentation

#### 22.22.4.1 stdair::DatePeriod_T TRADEMGEN::DemandStruct::_dateRange

Definition at line 51 of file DemandStruct.hpp.

Referenced by describe(), and TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()().

#### 22.22.4.2 stdair::DoWStruct TRADEMGEN::DemandStruct::_dow

Definition at line 52 of file DemandStruct.hpp.

Referenced by describe(), and TRADEMGEN::DemandParserHelper::storeDow::operator()().

#### 22.22.4.3 stdair::AirportCode_T TRADEMGEN::DemandStruct::_origin

Definition at line 53 of file DemandStruct.hpp.

Referenced by describe(), and TRADEMGEN::DemandParserHelper::storeOrigin::operator()().

#### 22.22.4.4 stdair::AirportCode_T TRADEMGEN::DemandStruct::_destination

Definition at line 54 of file DemandStruct.hpp.

Referenced by describe(), and TRADEMGEN::DemandParserHelper::storeDestination::operator()().

#### 22.22.4.5 stdair::CabinCode_T TRADEMGEN::DemandStruct::_prefCabin

Definition at line 55 of file DemandStruct.hpp.

Referenced by describe(), and TRADEMGEN::DemandParserHelper::storePrefCabin::operator()().

#### 22.22.4.6 stdair::MeanValue_T TRADEMGEN::DemandStruct::_demandMean

Definition at line 56 of file DemandStruct.hpp.

Referenced by describe(), and TRADEMGEN::DemandParserHelper::storeDemandMean::operator()().

#### 22.22.4.7 stdair::StdDevValue_T TRADEMGEN::DemandStruct::_demandStdDev

Definition at line 57 of file DemandStruct.hpp.

Referenced by describe(), and TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()().

#### 22.22.4.8 POSProbabilityMassFunction_T TRADEMGEN::DemandStruct::_posProbDist

Definition at line 58 of file DemandStruct.hpp.

Referenced by describe(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

#### 22.22.4.9 ChannelProbabilityMassFunction_T TRADEMGEN::DemandStruct::_channelProbDist

Definition at line 59 of file DemandStruct.hpp.

Referenced by describe(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

#### 22.22.4.10 TripTypeProbabilityMassFunction_T TRADEMGEN::DemandStruct::_tripProbDist

Definition at line 60 of file DemandStruct.hpp.

Referenced by describe(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

#### 22.22.4.11 StayDurationProbabilityMassFunction_T TRADEMGEN::DemandStruct::_stayProbDist

Definition at line 61 of file DemandStruct.hpp.

Referenced by describe(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

#### 22.22.4.12 FrequentFlyerProbabilityMassFunction_T TRADEMGEN::DemandStruct::_ffProbDist

Definition at line 62 of file DemandStruct.hpp.

Referenced by describe(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

#### 22.22.4.13 PreferredDepartureTimeContinuousDistribution_T TRADEMGEN::DemandStruct::_prefDepTimeProbDist

Definition at line 63 of file DemandStruct.hpp.

Referenced by describe(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), and T-

RADEMGEN::DemandParserHelper::doEndDemand::operator()().

#### 22.22.4.14 stdair::WTP_T TRADEMGEN::DemandStruct::_minWTP

Definition at line 64 of file DemandStruct.hpp.

Referenced by describe(), and TRADEMGEN::DemandParserHelper::storeWTP::operator()().

#### 22.22.4.15 ValueOfTimeContinuousDistribution_T TRADEMGEN::DemandStruct::_timeValueProbDist

Definition at line 65 of file DemandStruct.hpp.

Referenced by describe(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

#### 22.22.4.16 ArrivalPatternCumulativeDistribution_T TRADEMGEN::DemandStruct::_dtdProbDist

Definition at line 66 of file DemandStruct.hpp.

Referenced by describe(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

#### 22.22.4.17 stdair::Date_T TRADEMGEN::DemandStruct::_prefDepDateStart

Staging Date.

Definition at line 71 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), and TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()().

#### 22.22.4.18 stdair::Date_T TRADEMGEN::DemandStruct::_prefDepDateEnd

Definition at line 72 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()().

#### 22.22.4.19 unsigned int TRADEMGEN::DemandStruct::_itYear

Definition at line 73 of file DemandStruct.hpp.

Referenced by getDate().

#### 22.22.4.20 unsigned int TRADEMGEN::DemandStruct::_itMonth

Definition at line 74 of file DemandStruct.hpp.

Referenced by getDate().

#### 22.22.4.21 unsigned int TRADEMGEN::DemandStruct::_itDay

Definition at line 75 of file DemandStruct.hpp.

Referenced by getDate().

#### 22.22.4.22 long TRADEMGEN::DemandStruct::_itHours

Staging Time.

Definition at line 78 of file DemandStruct.hpp.

Referenced by getTime().

#### 22.22.4.23 long TRADEMGEN::DemandStruct::_itMinutes

Definition at line 79 of file DemandStruct.hpp.

Referenced by getTime(), and TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()().

#### 22.22.4.24 long TRADEMGEN::DemandStruct::_itSeconds

Definition at line 80 of file DemandStruct.hpp.

Referenced by getTime(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), and TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()().

#### 22.22.4.25 stdair::AirportCode_T TRADEMGEN::DemandStruct::_itPosCode

Staging Point-Of-Sale (POS) code.

Definition at line 83 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePosCode::operator()(), and TRADEMGEN::DemandParserHelper::storePosProbMass::operator()().

#### 22.22.4.26 stdair::ChannelLabel_T TRADEMGEN::DemandStruct::_itChannelCode

Staging channel type code.

Definition at line 86 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), and TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()().

#### 22.22.4.27 stdair::TripType_T TRADEMGEN::DemandStruct::_itTripCode

Staging trip type code.

Definition at line 89 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), and TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()().

#### 22.22.4.28 stdair::DayDuration_T TRADEMGEN::DemandStruct::_itStayDuration

Staging stay duration.

Definition at line 92 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), and TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()().

#### 22.22.4.29 stdair::FrequentFlyer_T TRADEMGEN::DemandStruct::_itFFCode

Staging Frequent Flyer code.

Definition at line 95 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), and TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()().

#### 22.22.4.30 stdair::Duration_T TRADEMGEN::DemandStruct::_itPrefDepTime

Staging preferred departure time.

Definition at line 98 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), and TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()().

#### 22.22.4.31 stdair::PriceValue_T TRADEMGEN::DemandStruct::_itTimeValue

Staging time value.

Definition at line 101 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), and TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()().

#### 22.22.4.32 stdair::DayDuration_T TRADEMGEN::DemandStruct::_itDTD

Staging DTD (Days-To-Departure).

Definition at line 104 of file DemandStruct.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storeDTD::operator()(), and TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()().

The documentation for this struct was generated from the following files:

- trademgen/bom/DemandStruct.hpp
- trademgen/bom/DemandStruct.cpp

## 22.23 TRADEMGEN::DictionaryManager Class Reference

Class wrapper of dictionary business methods.

`#include <trademgen/basic/DictionaryManager.hpp>`

### Static Public Member Functions

- static const stdair::Probability_T keyToValue (const DictionaryKey_T)
- static const DictionaryKey_T valueToKey (const stdair::Probability_T)

### 22.23.1 Detailed Description

Class wrapper of dictionary business methods.

Definition at line 21 of file DictionaryManager.hpp.

### 22.23.2 Member Function Documentation

#### 22.23.2.1 const stdair::Probability_T TRADEMGEN::DictionaryManager::keyToValue ( const DictionaryKey_T *iKey* ) [static]

Convert from key to value.

Definition at line 10 of file DictionaryManager.cpp.

Referenced by TRADEMGEN::ContinuousAttribute< T >::displayCumulativeDistribution(), TRADEMGEN::ContinuousAttributeLite< stdair::FloatDuration_T >::displayCumulativeDistribution(), TRADEMGEN::ContinuousAttribute< T >::displayInverseCumulativeDistribution(), TRADEMGEN::CategoricalAttributeLite< stdair::TripType_T >::displayProbabilityMass(), TRADEMGEN::ContinuousAttributeLite< stdair::FloatDuration_T >::getDerivativeValue(), TRADEMGEN::ContinuousAttributeLite< stdair::FloatDuration_T >::getValue(), and TRADEMGEN::ContinuousAttribute< T >::getValue().

#### 22.23.2.2 const DictionaryKey_T TRADEMGEN::DictionaryManager::valueToKey ( const stdair::Probability_T *iValue* ) [static]

Convert from value to key.

Definition at line 17 of file DictionaryManager.cpp.

Referenced by TRADEMGEN::ContinuousAttributeLite< stdair::FloatDuration_T >::getValue(), TRADEMGEN::CategoricalAttributeLite< stdair::TripType_T >::getValue(), and TRADEMGEN::ContinuousAttribute< T >::getValue().

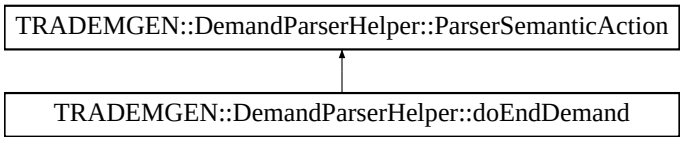
The documentation for this class was generated from the following files:

- trademgen/basic/DictionaryManager.hpp
- trademgen/basic/DictionaryManager.cpp

## 22.24 TRADEMGEN::DemandParserHelper::doEndDemand Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::doEndDemand:




### Public Member Functions

- doEndDemand (stdair::EventQueue &, stdair::RandomGeneration &, const POSProbabilityMass_T &, DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

### Public Attributes

- stdair::EventQueue & _eventQueue
- stdair::RandomGeneration & _uniformGenerator
- const POSProbabilityMass_T & _posProbabilityMass
- DemandStruct & _demand

### 22.24.1 Detailed Description

Mark the end of the demand parsing.

Definition at line 242 of file DemandParserHelper.hpp.

### 22.24.2 Constructor & Destructor Documentation

#### 22.24.2.1 TRADEMGEN::DemandParserHelper::doEndDemand::doEndDemand ( stdair::EventQueue & *ioEventQueue,* stdair::RandomGeneration & *ioSharedGenerator,* const POSProbabilityMass_T & *iPOSProbMass,* DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 412 of file DemandParserHelper.cpp.

### 22.24.3 Member Function Documentation

#### 22.24.3.1 void TRADEMGEN::DemandParserHelper::doEndDemand::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 423 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandStruct::_channelProbDist, TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_dtdProbDist, _eventQueue, TRADEMGEN::DemandStruct::_ffProbDist, _posProbabilityMass, TRADEMGEN::DemandStruct::_posProbDist, TRADEMGEN::DemandStruct::_prefDepTimeProbDist, TRADEMGEN::DemandStruct::_stayProbDist, TRADEMGEN::DemandStruct::_timeValueProbDist, TRADEMGEN::DemandStruct::_tripProbDist, and _uniformGenerator.

#### 22.24.4 Member Data Documentation

##### 22.24.4.1 stdair::EventQueue& TRADEMGEN::DemandParserHelper::doEndDemand::_eventQueue

Actor Specific Context.

Definition at line 249 of file DemandParserHelper.hpp.

Referenced by operator()().

##### 22.24.4.2 stdair::RandomGeneration& TRADEMGEN::DemandParserHelper::doEndDemand::_uniformGenerator

Definition at line 250 of file DemandParserHelper.hpp.

Referenced by operator()().

##### 22.24.4.3 const POSProbabilityMass_T& TRADEMGEN::DemandParserHelper::doEndDemand::_posProbabilityMass

Definition at line 251 of file DemandParserHelper.hpp.

Referenced by operator()().

##### 22.24.4.4 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

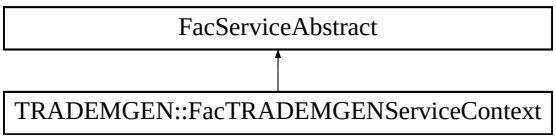
Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and operator()().

The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.25 FacServiceAbstract Class Reference

Inheritance diagram for FacServiceAbstract:




The documentation for this class was generated from the following file:

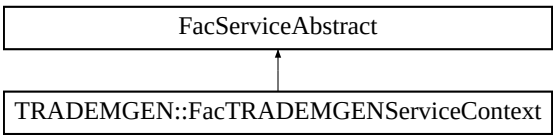
- trademgen/factory/FacTRADEMGENServiceContext.hpp

## 22.26 TRADEMGEN::FacTRADEMGENServiceContext Class Reference

Factory for creating the TraDemGen service context instance.

`#include <trademgen/factory/FacTRADEMGENServiceContext.hpp>`

Inheritance diagram for TRADEMGEN::FacTRADEMGENServiceContext:




### Public Member Functions

- ~FacTRADEMGENServiceContext ()
- TRADEMGEN_ServiceContext & create (const stdair::RandomSeed_T &)

### Static Public Member Functions

- static FacTRADEMGENServiceContext & instance ()

### Protected Member Functions

- FacTRADEMGENServiceContext ()

#### 22.26.1 Detailed Description

Factory for creating the TraDemGen service context instance.

Definition at line 21 of file FacTRADEMGENServiceContext.hpp.

#### 22.26.2 Constructor & Destructor Documentation

##### 22.26.2.1 TRADEMGEN::FacTRADEMGENServiceContext::~FacTRADEMGENServiceContext ( )

Destructor.

The Destruction put the _instance to NULL in order to be clean for the next FacTRADEMGENServiceContext-::instance().

Definition at line 17 of file FacTRADEMGENServiceContext.cpp.

#### 22.26.2.2 TRADEMGEN::FacTRADEMGENServiceContext::FacTRADEMGENServiceContext ( ) [inline], [protected]

Default Constructor.

This constructor is protected in order to ensure the singleton pattern.

Definition at line 57 of file FacTRADEMGENServiceContext.hpp.

Referenced by instance().

### 22.26.3 Member Function Documentation

#### 22.26.3.1 FacTRADEMGENServiceContext & TRADEMGEN::FacTRADEMGENServiceContext::instance ( ) [static]

Provide the unique instance.

The singleton is instantiated when first used.

**Returns**

FacTRADEMGENServiceContext&

Definition at line 22 of file FacTRADEMGENServiceContext.cpp.

References FacTRADEMGENServiceContext().

#### 22.26.3.2 TRADEMGEN_ServiceContext & TRADEMGEN::FacTRADEMGENServiceContext::create ( const stdair::RandomSeed_T & *iRandomSeed* )

Create a new TRADEMGEN_ServiceContext object.

This new object is added to the list of instantiated objects.

**Parameters**

| | |
|---|---|
| *const* | stdair::RandomSeed_T& Seed for the random generation. |

**Returns**

TRADEMGEN_ServiceContext& The newly created object.

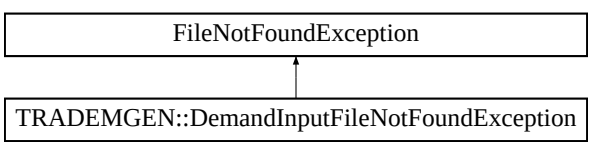
Definition at line 35 of file FacTRADEMGENServiceContext.cpp.

The documentation for this class was generated from the following files:

- trademgen/factory/FacTRADEMGENServiceContext.hpp
- trademgen/factory/FacTRADEMGENServiceContext.cpp

## 22.27 FileNotFoundException Class Reference

Inheritance diagram for FileNotFoundException:




The documentation for this class was generated from the following file:

- trademgen/TRADEMGEN_Exceptions.hpp

## 22.28 TRADEMGEN::FlagSaver Struct Reference

### Public Member Functions

- FlagSaver (std::ostream &oStream)
- ~FlagSaver ()

### 22.28.1 Detailed Description

Helper singleton structure to store the current formatting flags of any given output stream. The flags are re-set at the structure destruction.

Definition at line 22 of file BomDisplay.cpp.

### 22.28.2 Constructor & Destructor Documentation

#### 22.28.2.1 TRADEMGEN::FlagSaver::FlagSaver ( std::ostream & *oStream* ) [inline]

Constructor.

Definition at line 25 of file BomDisplay.cpp.

#### 22.28.2.2 TRADEMGEN::FlagSaver::~FlagSaver ( ) [inline]

Destructor.

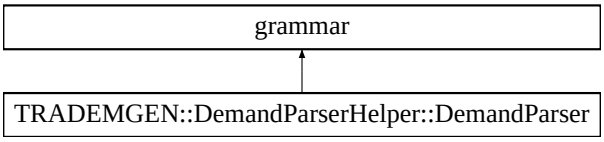
Definition at line 30 of file BomDisplay.cpp.

The documentation for this struct was generated from the following file:

- trademgen/bom/BomDisplay.cpp

## 22.29 grammar Class Reference

Inheritance diagram for grammar:



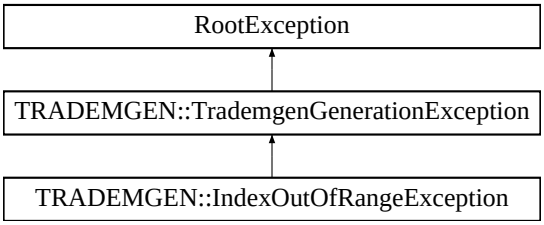

The documentation for this class was generated from the following file:

- trademgen/command/DemandParserHelper.hpp

## 22.30 TRADEMGEN::IndexOutOfRangeException Class Reference

`#include <trademgen/TRADEMGEN_Exceptions.hpp>`

Inheritance diagram for TRADEMGEN::IndexOutOfRangeException:




#### Public Member Functions

- IndexOutOfRangeException (const std::string &iWhat)

#### 22.30.1 Detailed Description

Exception when index out of range

Definition at line 43 of file TRADEMGEN_Exceptions.hpp.

#### 22.30.2 Constructor & Destructor Documentation

##### 22.30.2.1 TRADEMGEN::IndexOutOfRangeException::IndexOutOfRangeException ( const std::string & *iWhat* ) [inline]

Constructor.

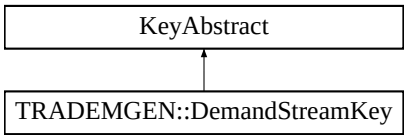
Definition at line 48 of file TRADEMGEN_Exceptions.hpp.

The documentation for this class was generated from the following file:

- trademgen/TRADEMGEN_Exceptions.hpp

## 22.31 KeyAbstract Class Reference

Inheritance diagram for KeyAbstract:



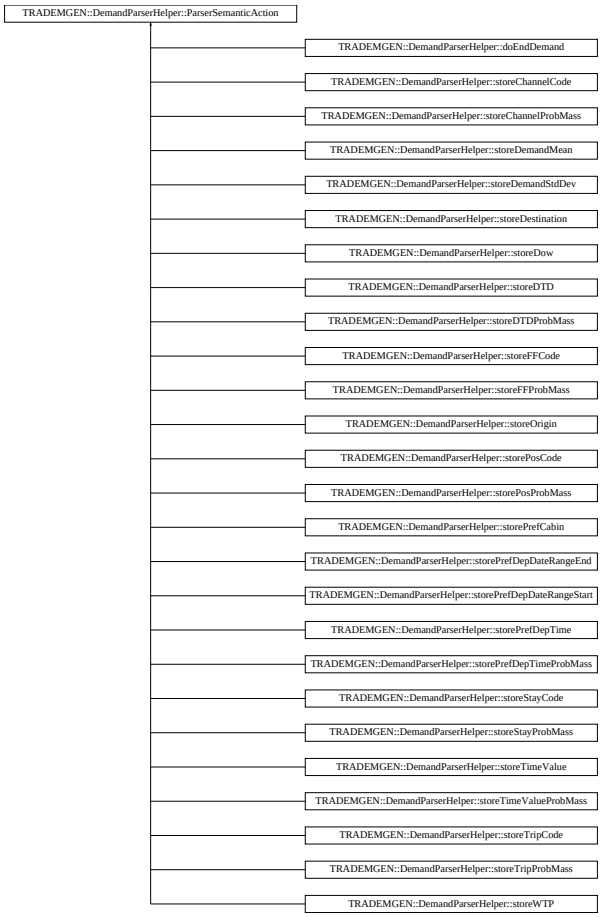

The documentation for this class was generated from the following file:

- trademgen/bom/DemandStreamKey.hpp

## 22.32 TRADEMGEN::DemandParserHelper::ParserSemanticAction Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::ParserSemanticAction:




### Public Member Functions

- ParserSemanticAction (DemandStruct &)

### Public Attributes

- DemandStruct & _demand

#### 22.32.1 Detailed Description

Generic Semantic Action (Actor / Functor) for the Demand Parser.

Definition at line 30 of file DemandParserHelper.hpp.

#### 22.32.2 Constructor & Destructor Documentation

##### 22.32.2.1 TRADEMGEN::DemandParserHelper::ParserSemanticAction::ParserSemanticAction ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 27 of file DemandParserHelper.cpp.

#### 22.32.3 Member Data Documentation

#### 22.32.3.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

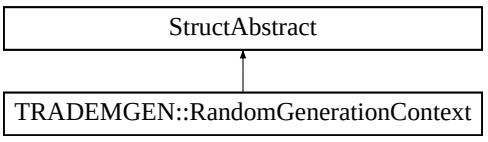
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.33 TRADEMGEN::RandomGenerationContext Struct Reference

`#include <trademgen/basic/RandomGenerationContext.hpp>`

Inheritance diagram for TRADEMGEN::RandomGenerationContext:




### Public Member Functions

- const stdair::Count_T & getNumberOfRequestsGeneratedSoFar () const
- const stdair::Probability_T & getCumulativeProbabilitySoFar () const
- void setNumberOfRequestsGeneratedSoFar (const stdair::Count_T &iCount)
- void setCumulativeProbabilitySoFar (const stdair::Probability_T &iProb)
- RandomGenerationContext ()
- RandomGenerationContext (const RandomGenerationContext &)
- ~RandomGenerationContext ()
- void incrementGeneratedRequestsCounter ()
- void reset ()
- const std::string describe () const

#### 22.33.1 Detailed Description

Structure holding the context necessary for demand random generation.

Definition at line 20 of file RandomGenerationContext.hpp.

#### 22.33.2 Constructor & Destructor Documentation

##### 22.33.2.1 TRADEMGEN::RandomGenerationContext::RandomGenerationContext ( )

Default constructor.

Definition at line 13 of file RandomGenerationContext.cpp.

##### 22.33.2.2 TRADEMGEN::RandomGenerationContext::RandomGenerationContext ( const RandomGenerationContext & *iRGC* )

Default constructors.

Definition at line 20 of file RandomGenerationContext.cpp.

##### 22.33.2.3 TRADEMGEN::RandomGenerationContext::~RandomGenerationContext ( )

Destructor.

Definition at line 26 of file RandomGenerationContext.cpp.

#### 22.33.3 Member Function Documentation

##### 22.33.3.1 const stdair::Count_T& TRADEMGEN::RandomGenerationContext::getNumberOfRequestsGeneratedSoFar ( ) const [inline]

Get the number of requests generated so far.

Definition at line 26 of file RandomGenerationContext.hpp.

Referenced by TRADEMGEN::DemandStream::generateTimeOfRequestStatisticsOrder(), TRADEMGEN::DemandStream::getNumberOfRequestsGeneratedSoFar(), and TRADEMGEN::DemandStream::stillHavingRequestsToBeGenerated().

##### 22.33.3.2 const stdair::Probability_T& TRADEMGEN::RandomGenerationContext::getCumulativeProbabilitySoFar ( ) const [inline]

Get the cumulative probability in arrival pattern for last request generated so far (needed for sequential generation).

Definition at line 34 of file RandomGenerationContext.hpp.

Referenced by TRADEMGEN::DemandStream::generateTimeOfRequestStatisticsOrder().

##### 22.33.3.3 void TRADEMGEN::RandomGenerationContext::setNumberOfRequestsGeneratedSoFar ( const stdair::Count_T & *iCount* ) [inline]

Set the number of requests generated so far.

Definition at line 43 of file RandomGenerationContext.hpp.

Referenced by TRADEMGEN::DemandStream::setNumberOfRequestsGeneratedSoFar().

##### 22.33.3.4 void TRADEMGEN::RandomGenerationContext::setCumulativeProbabilitySoFar ( const stdair::Probability_T & *iProb* ) [inline]

Set the cumulative probability in arrival pattern for last request generated so far (needed for sequential generation).

Definition at line 51 of file RandomGenerationContext.hpp.

Referenced by TRADEMGEN::DemandStream::generateTimeOfRequestStatisticsOrder().

#### 22.33.3.5 void TRADEMGEN::RandomGenerationContext::incrementGeneratedRequestsCounter ( )

Increment counter of requests generated so far.

Definition at line 38 of file RandomGenerationContext.cpp.

Referenced by TRADEMGEN::DemandStream::incrementGeneratedRequestsCounter().

#### 22.33.3.6 void TRADEMGEN::RandomGenerationContext::reset ( )

Reset the counters.

Definition at line 43 of file RandomGenerationContext.cpp.

Referenced by TRADEMGEN::DemandStream::reset().

#### 22.33.3.7 const std::string TRADEMGEN::RandomGenerationContext::describe ( ) const

Give a description of the structure (for display purposes).

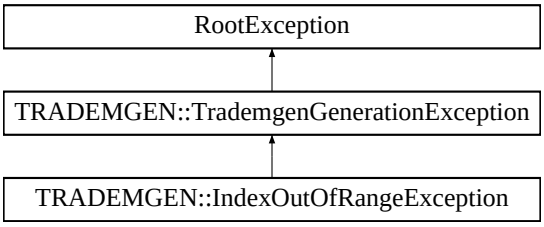
Definition at line 30 of file RandomGenerationContext.cpp.

The documentation for this struct was generated from the following files:

- trademgen/basic/RandomGenerationContext.hpp
- trademgen/basic/RandomGenerationContext.cpp

## 22.34 RootException Class Reference

Inheritance diagram for RootException:

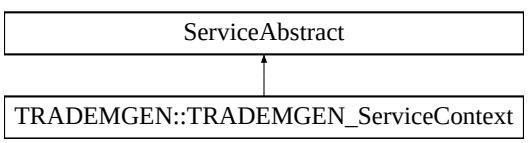



The documentation for this class was generated from the following file:

- trademgen/TRADEMGEN_Exceptions.hpp

## 22.35 ServiceAbstract Class Reference

Inheritance diagram for ServiceAbstract:



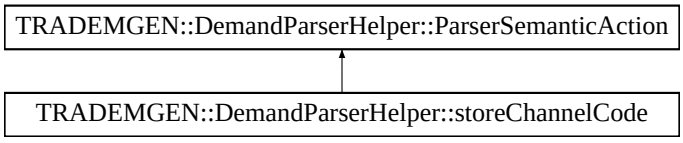

The documentation for this class was generated from the following file:

- trademgen/service/TRADEMGEN_ServiceContext.hpp

## 22.36 TRADEMGEN::DemandParserHelper::storeChannelCode Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeChannelCode:




### Public Member Functions

- storeChannelCode (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

### Public Attributes

- DemandStruct & _demand

#### 22.36.1 Detailed Description

Store the channel type code.

Definition at line 118 of file DemandParserHelper.hpp.

#### 22.36.2 Constructor & Destructor Documentation

##### 22.36.2.1 TRADEMGEN::DemandParserHelper::storeChannelCode::storeChannelCode ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 174 of file DemandParserHelper.cpp.

#### 22.36.3 Member Function Documentation

##### 22.36.3.1 void TRADEMGEN::DemandParserHelper::storeChannelCode::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 179 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_itChannelCode.

#### 22.36.4 Member Data Documentation

##### 22.36.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

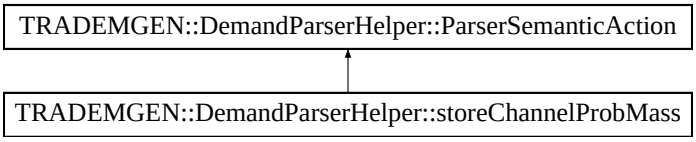
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.37 TRADEMGEN::DemandParserHelper::storeChannelProbMass Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeChannelProbMass:




### Public Member Functions

- storeChannelProbMass (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

### 22.37.1 Detailed Description

Store the channel type probability mass.

Definition at line 126 of file DemandParserHelper.hpp.

### 22.37.2 Constructor & Destructor Documentation

#### 22.37.2.1 TRADEMGEN::DemandParserHelper::storeChannelProbMass::storeChannelProbMass ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 186 of file DemandParserHelper.cpp.

#### 22.37.3 Member Function Documentation

##### 22.37.3.1 void TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 191 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandStruct::_channelProbDist, TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_itChannelCode.

#### 22.37.4 Member Data Documentation

##### 22.37.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

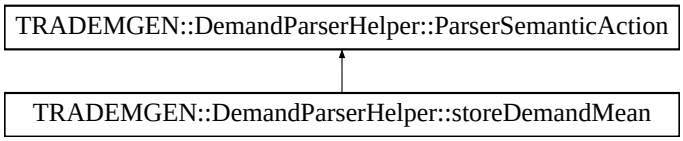
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.38 TRADEMGEN::DemandParserHelper::storeDemandMean Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeDemandMean:



#### Public Member Functions

- storeDemandMean (DemandStruct &)
- void operator() (double iReal) const

#### Public Attributes

- DemandStruct & _demand

### 22.38.1 Detailed Description

Store the demand mean value.

Definition at line 86 of file DemandParserHelper.hpp.

### 22.38.2 Constructor & Destructor Documentation

#### 22.38.2.1 TRADEMGEN::DemandParserHelper::storeDemandMean::storeDemandMean ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 118 of file DemandParserHelper.cpp.

### 22.38.3 Member Function Documentation

#### 22.38.3.1 void TRADEMGEN::DemandParserHelper::storeDemandMean::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 123 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_demandMean.

### 22.38.4 Member Data Documentation

#### 22.38.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

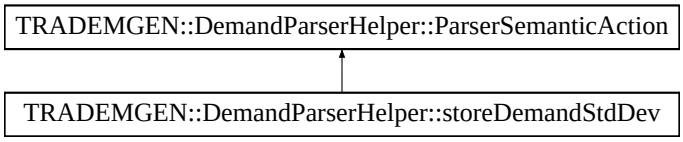
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.39 TRADEMGEN::DemandParserHelper::storeDemandStdDev Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeDemandStdDev:




### Public Member Functions

- storeDemandStdDev (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

### 22.39.1 Detailed Description

Store the demand stdandard deviation value.

Definition at line 94 of file DemandParserHelper.hpp.

### 22.39.2 Constructor & Destructor Documentation

#### 22.39.2.1 TRADEMGEN::DemandParserHelper::storeDemandStdDev::storeDemandStdDev ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 129 of file DemandParserHelper.cpp.

### 22.39.3 Member Function Documentation

#### 22.39.3.1 void TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 134 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_demandStdDev.

### 22.39.4 Member Data Documentation

#### 22.39.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

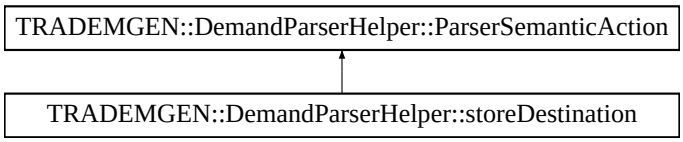
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.40 TRADEMGEN::DemandParserHelper::storeDestination Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeDestination:




### Public Member Functions

- storeDestination (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

### Public Attributes

- DemandStruct & _demand

### 22.40.1 Detailed Description

Store the destination.

Definition at line 70 of file DemandParserHelper.hpp.

#### 22.40.2 Constructor & Destructor Documentation

##### 22.40.2.1 TRADEMGEN::DemandParserHelper::storeDestination::storeDestination ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 93 of file DemandParserHelper.cpp.

#### 22.40.3 Member Function Documentation

##### 22.40.3.1 void TRADEMGEN::DemandParserHelper::storeDestination::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 98 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_destination.

#### 22.40.4 Member Data Documentation

##### 22.40.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

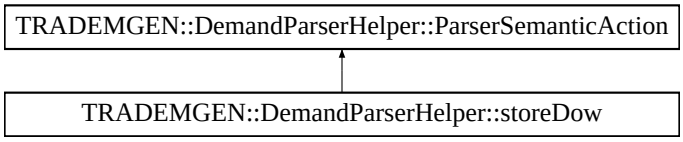
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

### 22.41 TRADEMGEN::DemandParserHelper::storeDow Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeDow:




#### Public Member Functions

- storeDow (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

#### Public Attributes

- DemandStruct & _demand

### 22.41.1 Detailed Description

Store the DOW (day of the Week).

Definition at line 54 of file DemandParserHelper.hpp.

### 22.41.2 Constructor & Destructor Documentation

#### 22.41.2.1 TRADEMGEN::DemandParserHelper::storeDow::storeDow ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 71 of file DemandParserHelper.cpp.

### 22.41.3 Member Function Documentation

#### 22.41.3.1 void TRADEMGEN::DemandParserHelper::storeDow::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 76 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_dow.

### 22.41.4 Member Data Documentation

#### 22.41.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::-

DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

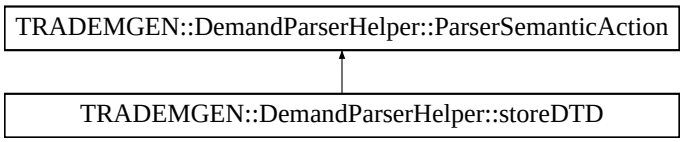
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.42 TRADEMGEN::DemandParserHelper::storeDTD Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeDTD:




### Public Member Functions

- storeDTD (DemandStruct &)
- void operator() (unsigned int iInteger) const

### Public Attributes

- DemandStruct & _demand

### 22.42.1 Detailed Description

Store the parameters for the arrival pattern (as expressed in DTD) continuous probability distribution.

Definition at line 225 of file DemandParserHelper.hpp.

### 22.42.2 Constructor & Destructor Documentation

#### 22.42.2.1 TRADEMGEN::DemandParserHelper::storeDTD::storeDTD ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 383 of file DemandParserHelper.cpp.

### 22.42.3 Member Function Documentation

#### 22.42.3.1 void TRADEMGEN::DemandParserHelper::storeDTD::operator() ( unsigned int *iInteger* ) const

Actor Function (functor).

Definition at line 388 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_itDTD.

#### 22.42.4 Member Data Documentation

##### 22.42.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

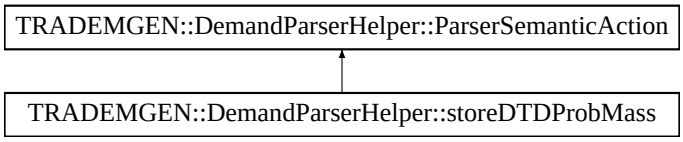
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.43 TRADEMGEN::DemandParserHelper::storeDTDProbMass Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeDTDProbMass:




### Public Member Functions

- storeDTDProbMass (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

#### 22.43.1 Detailed Description

Store the parameters for the arrival pattern (as expressed in DTD) continuous probability distribution.

Definition at line 234 of file DemandParserHelper.hpp.

#### 22.43.2 Constructor & Destructor Documentation

##### 22.43.2.1 TRADEMGEN::DemandParserHelper::storeDTDProbMass::storeDTDProbMass ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 395 of file DemandParserHelper.cpp.

#### 22.43.3 Member Function Documentation

##### 22.43.3.1 void TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 400 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_dtdProbDist, and TRADEMGEN::DemandStruct::_itDTD.

#### 22.43.4 Member Data Documentation

##### 22.43.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

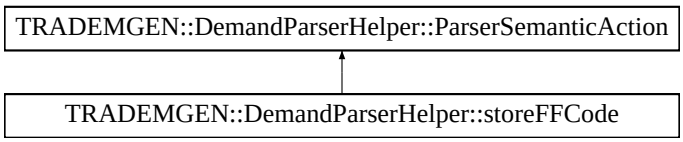
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.44 TRADEMGEN::DemandParserHelper::storeFFCode Struct Reference

```
#include <trademgen/command/DemandParserHelper.hpp>
```

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeFFCode:




#### Public Member Functions

- storeFFCode (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

#### Public Attributes

- DemandStruct & _demand

### 22.44.1 Detailed Description

Store the frequent flyer code.

Definition at line 166 of file DemandParserHelper.hpp.

### 22.44.2 Constructor & Destructor Documentation

#### 22.44.2.1 TRADEMGEN::DemandParserHelper::storeFFCode::storeFFCode ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 278 of file DemandParserHelper.cpp.

### 22.44.3 Member Function Documentation

#### 22.44.3.1 void TRADEMGEN::DemandParserHelper::storeFFCode::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 283 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_itFFCode.

### 22.44.4 Member Data Documentation

#### 22.44.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(),

TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

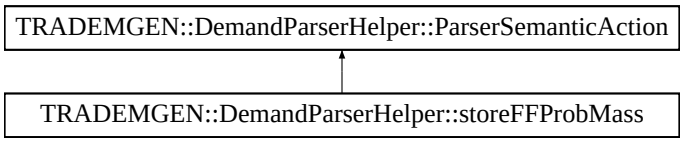
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.45 TRADEMGEN::DemandParserHelper::storeFFProbMass Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeFFProbMass:




### Public Member Functions

- storeFFProbMass (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

### 22.45.1 Detailed Description

Store the frequent flyer probability mass.

Definition at line 174 of file DemandParserHelper.hpp.

### 22.45.2 Constructor & Destructor Documentation

#### 22.45.2.1 TRADEMGEN::DemandParserHelper::storeFFProbMass::storeFFProbMass ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 289 of file DemandParserHelper.cpp.

#### 22.45.3 Member Function Documentation

##### 22.45.3.1 void TRADEMGEN::DemandParserHelper::storeFFProbMass::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 294 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_ffProbDist, and TRADEMGEN::DemandStruct::_itFFCode.

#### 22.45.4 Member Data Documentation

##### 22.45.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

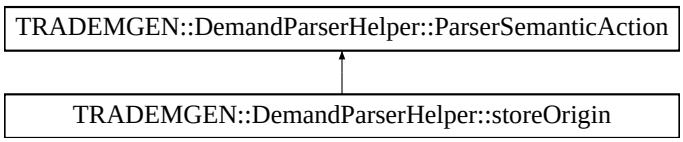
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.46 TRADEMGEN::DemandParserHelper::storeOrigin Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeOrigin:




### Public Member Functions

- storeOrigin (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

#### Public Attributes

- DemandStruct & _demand

### 22.46.1 Detailed Description

Store the origin.

Definition at line 62 of file DemandParserHelper.hpp.

### 22.46.2 Constructor & Destructor Documentation

#### 22.46.2.1 TRADEMGEN::DemandParserHelper::storeOrigin::storeOrigin ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 82 of file DemandParserHelper.cpp.

### 22.46.3 Member Function Documentation

#### 22.46.3.1 void TRADEMGEN::DemandParserHelper::storeOrigin::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 87 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_origin.

### 22.46.4 Member Data Documentation

#### 22.46.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

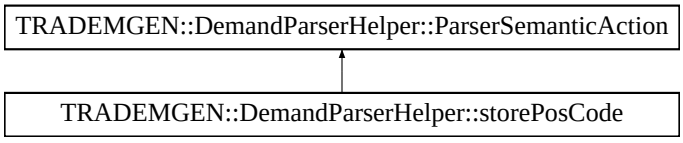
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.47 TRADEMGEN::DemandParserHelper::storePosCode Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storePosCode:




### Public Member Functions

- storePosCode (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

### Public Attributes

- DemandStruct & _demand

#### 22.47.1 Detailed Description

Store the pos type code.

Definition at line 102 of file DemandParserHelper.hpp.

#### 22.47.2 Constructor & Destructor Documentation

##### 22.47.2.1 TRADEMGEN::DemandParserHelper::storePosCode::storePosCode ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 140 of file DemandParserHelper.cpp.

#### 22.47.3 Member Function Documentation

##### 22.47.3.1 void TRADEMGEN::DemandParserHelper::storePosCode::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 145 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_itPosCode.

#### 22.47.4 Member Data Documentation

##### 22.47.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParser-

Helper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

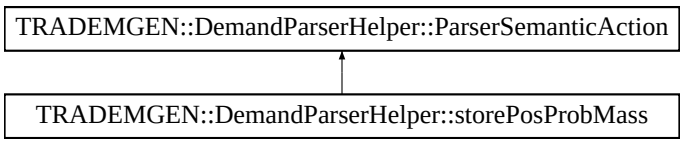
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.48 TRADEMGEN::DemandParserHelper::storePosProbMass Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storePosProbMass:




### Public Member Functions

- storePosProbMass (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

### 22.48.1 Detailed Description

Store the pos type probability mass.

Definition at line 110 of file DemandParserHelper.hpp.

### 22.48.2 Constructor & Destructor Documentation

#### 22.48.2.1 TRADEMGEN::DemandParserHelper::storePosProbMass::storePosProbMass ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 152 of file DemandParserHelper.cpp.

#### 22.48.3 Member Function Documentation

##### 22.48.3.1 void TRADEMGEN::DemandParserHelper::storePosProbMass::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 157 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_itPosCode, and TRADEMGEN::DemandStruct::_posProbDist.

#### 22.48.4 Member Data Documentation

##### 22.48.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

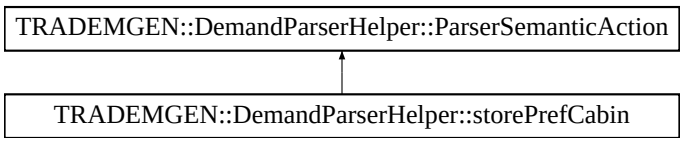
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

### 22.49 TRADEMGEN::DemandParserHelper::storePrefCabin Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storePrefCabin:




#### Public Member Functions

- storePrefCabin (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

**Public Attributes**

- DemandStruct & _demand

### 22.49.1 Detailed Description

Store the preferred cabin.

Definition at line 78 of file DemandParserHelper.hpp.

### 22.49.2 Constructor & Destructor Documentation

#### 22.49.2.1 TRADEMGEN::DemandParserHelper::storePrefCabin::storePrefCabin ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 105 of file DemandParserHelper.cpp.

### 22.49.3 Member Function Documentation

#### 22.49.3.1 void TRADEMGEN::DemandParserHelper::storePrefCabin::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 110 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_prefCabin.

### 22.49.4 Member Data Documentation

#### 22.49.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

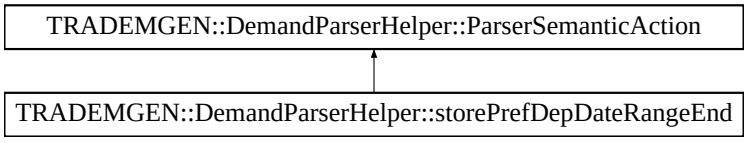
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.50 TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd:




### Public Member Functions

- storePrefDepDateRangeEnd (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

### Public Attributes

- DemandStruct & _demand

### 22.50.1 Detailed Description

Store the end of the date range.

Definition at line 46 of file DemandParserHelper.hpp.

### 22.50.2 Constructor & Destructor Documentation

#### 22.50.2.1 TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::storePrefDepDateRangeEnd ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 48 of file DemandParserHelper.cpp.

### 22.50.3 Member Function Documentation

#### 22.50.3.1 void TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 53 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandStruct::_dateRange, TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_itSeconds, TRADEMGEN::DemandStruct::_prefDepDateEnd, TRADEMGEN::DemandStruct::_prefDepDateStart, and TRADEMGEN::DemandStruct::getDate().

### 22.50.4 Member Data Documentation

#### 22.50.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

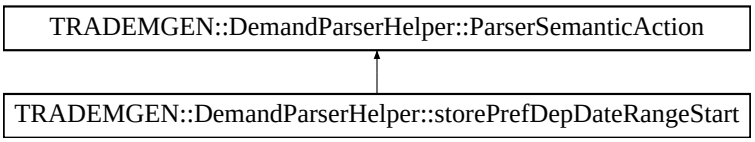
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.51 TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart:




### Public Member Functions

- storePrefDepDateRangeStart (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

### Public Attributes

- DemandStruct & _demand

### 22.51.1 Detailed Description

Store the start of the date range.

Definition at line 38 of file DemandParserHelper.hpp.

### 22.51.2 Constructor & Destructor Documentation

#### 22.51.2.1 TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::storePrefDepDateRangeStart ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 33 of file DemandParserHelper.cpp.

#### 22.51.3 Member Function Documentation

##### 22.51.3.1 void TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 38 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_itSeconds, TRADEMGEN::DemandStruct::_prefDepDateStart, and TRADEMGEN::DemandStruct::getDate().

#### 22.51.4 Member Data Documentation

##### 22.51.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

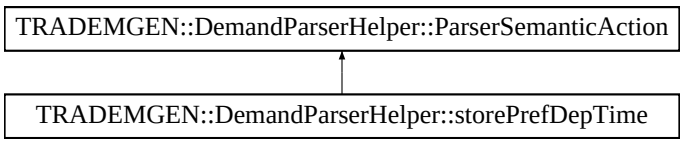
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.52 TRADEMGEN::DemandParserHelper::storePrefDepTime Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storePrefDepTime:




### Public Member Functions

- storePrefDepTime (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

**Public Attributes**

- DemandStruct & _demand

### 22.52.1 Detailed Description

Store the parameters for the preferred departure time continuous probability distribution.

Definition at line 183 of file DemandParserHelper.hpp.

### 22.52.2 Constructor & Destructor Documentation

#### 22.52.2.1 TRADEMGEN::DemandParserHelper::storePrefDepTime::storePrefDepTime ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 312 of file DemandParserHelper.cpp.

### 22.52.3 Member Function Documentation

#### 22.52.3.1 void TRADEMGEN::DemandParserHelper::storePrefDepTime::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 317 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_itMinutes, TRADEMGEN::DemandStruct::_itPrefDepTime, TRADEMGEN::DemandStruct::_itSeconds, and TRADEMGEN::DemandStruct::getTime().

### 22.52.4 Member Data Documentation

#### 22.52.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

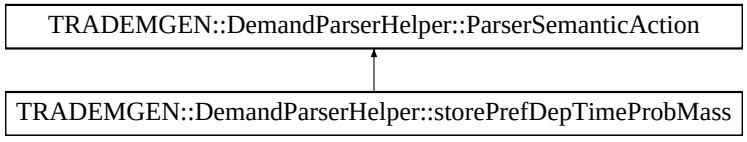
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.53 TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass:




### Public Member Functions

- storePrefDepTimeProbMass (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

#### 22.53.1 Detailed Description

Store the parameters for the preferred departure time continuous probability distribution.

Definition at line 192 of file DemandParserHelper.hpp.

#### 22.53.2 Constructor & Destructor Documentation

##### 22.53.2.1 TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::storePrefDepTimeProbMass ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 332 of file DemandParserHelper.cpp.

#### 22.53.3 Member Function Documentation

##### 22.53.3.1 void TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 337 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_itPrefDepTime, and TRADEMGEN::DemandStruct::_prefDepTimeProbDist.

#### 22.53.4 Member Data Documentation

##### 22.53.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

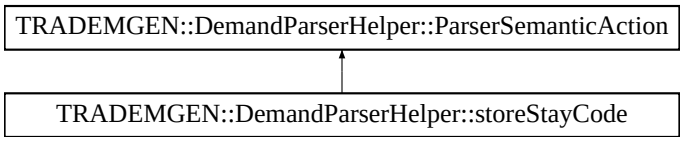
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.54 TRADEMGEN::DemandParserHelper::storeStayCode Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeStayCode:




### Public Member Functions

- storeStayCode (DemandStruct &)
- void operator() (unsigned int iInteger) const

### Public Attributes

- DemandStruct & _demand

### 22.54.1 Detailed Description

Store the stay type code.

Definition at line 150 of file DemandParserHelper.hpp.

### 22.54.2 Constructor & Destructor Documentation

#### 22.54.2.1 TRADEMGEN::DemandParserHelper::storeStayCode::storeStayCode ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 244 of file DemandParserHelper.cpp.

#### 22.54.3 Member Function Documentation

##### 22.54.3.1 void TRADEMGEN::DemandParserHelper::storeStayCode::operator() ( unsigned int *iInteger* ) const

Actor Function (functor).

Definition at line 249 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_itStayDuration.

#### 22.54.4 Member Data Documentation

##### 22.54.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

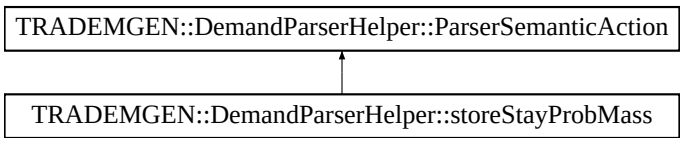
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.55 TRADEMGEN::DemandParserHelper::storeStayProbMass Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeStayProbMass:




### Public Member Functions

- storeStayProbMass (DemandStruct &)
- void operator() (double iReal) const

**Public Attributes**

- DemandStruct & _demand

### 22.55.1 Detailed Description

Store the stay type probability mass.

Definition at line 158 of file DemandParserHelper.hpp.

### 22.55.2 Constructor & Destructor Documentation

#### 22.55.2.1 TRADEMGEN::DemandParserHelper::storeStayProbMass::storeStayProbMass ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 256 of file DemandParserHelper.cpp.

### 22.55.3 Member Function Documentation

#### 22.55.3.1 void TRADEMGEN::DemandParserHelper::storeStayProbMass::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 261 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_itStayDuration, and TRADEMGEN::DemandStruct::_stayProbDist.

### 22.55.4 Member Data Documentation

#### 22.55.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

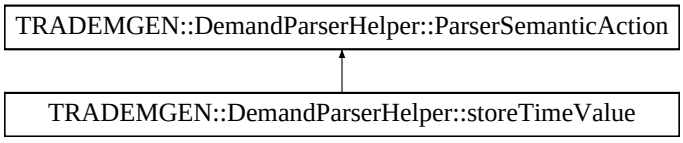
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.56 TRADEMGEN::DemandParserHelper::storeTimeValue Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeTimeValue:




### Public Member Functions

- storeTimeValue (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

#### 22.56.1 Detailed Description

Store the time value.

Definition at line 208 of file DemandParserHelper.hpp.

#### 22.56.2 Constructor & Destructor Documentation

##### 22.56.2.1 TRADEMGEN::DemandParserHelper::storeTimeValue::storeTimeValue ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 359 of file DemandParserHelper.cpp.

#### 22.56.3 Member Function Documentation

##### 22.56.3.1 void TRADEMGEN::DemandParserHelper::storeTimeValue::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 364 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_itTimeValue.

#### 22.56.4 Member Data Documentation

##### 22.56.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParser-

Helper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

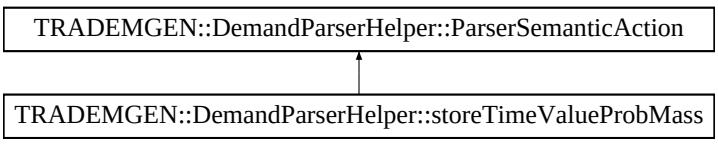
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.57 TRADEMGEN::DemandParserHelper::storeTimeValueProbMass Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeTimeValueProbMass:




### Public Member Functions

- storeTimeValueProbMass (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

### 22.57.1 Detailed Description

Store the time value probability mass.

Definition at line 216 of file DemandParserHelper.hpp.

### 22.57.2 Constructor & Destructor Documentation

#### 22.57.2.1 TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::storeTimeValueProbMass ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 370 of file DemandParserHelper.cpp.

#### 22.57.3 Member Function Documentation

##### 22.57.3.1 void TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 375 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_itTimeValue, and TRADEMGEN::DemandStruct::_timeValueProbDist.

#### 22.57.4 Member Data Documentation

##### 22.57.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

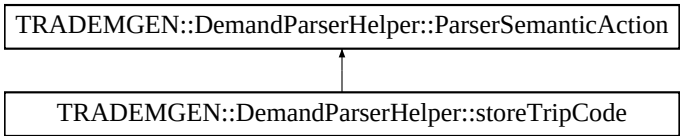
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.58 TRADEMGEN::DemandParserHelper::storeTripCode Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeTripCode:




#### Public Member Functions

- storeTripCode (DemandStruct &)
- void operator() (iterator_t iStr, iterator_t iStrEnd) const

#### Public Attributes

- DemandStruct & _demand

### 22.58.1 Detailed Description

Store the trip type code.

Definition at line 134 of file DemandParserHelper.hpp.

### 22.58.2 Constructor & Destructor Documentation

#### 22.58.2.1 TRADEMGEN::DemandParserHelper::storeTripCode::storeTripCode ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 209 of file DemandParserHelper.cpp.

### 22.58.3 Member Function Documentation

#### 22.58.3.1 void TRADEMGEN::DemandParserHelper::storeTripCode::operator() ( iterator_t *iStr,* iterator_t *iStrEnd* ) const

Actor Function (functor).

Definition at line 214 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_itTripCode.

### 22.58.4 Member Data Documentation

#### 22.58.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

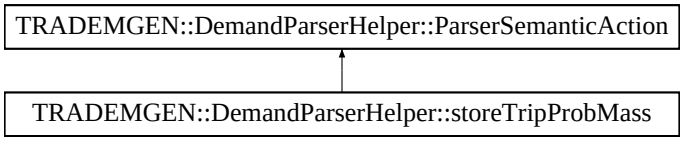
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.59 TRADEMGEN::DemandParserHelper::storeTripProbMass Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeTripProbMass:




### Public Member Functions

- storeTripProbMass (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

### 22.59.1 Detailed Description

Store the trip type probability mass.

Definition at line 142 of file DemandParserHelper.hpp.

### 22.59.2 Constructor & Destructor Documentation

#### 22.59.2.1 TRADEMGEN::DemandParserHelper::storeTripProbMass::storeTripProbMass ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 221 of file DemandParserHelper.cpp.

### 22.59.3 Member Function Documentation

#### 22.59.3.1 void TRADEMGEN::DemandParserHelper::storeTripProbMass::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 226 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, TRADEMGEN::DemandStruct::_itTripCode, and TRADEMGEN::DemandStruct::_tripProbDist.

### 22.59.4 Member Data Documentation

#### 22.59.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(),

TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeWTP::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

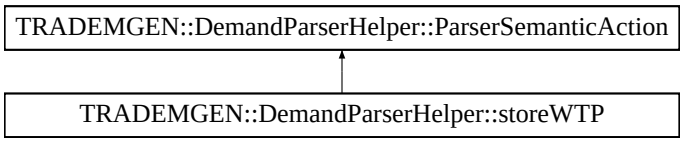
The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

## 22.60 TRADEMGEN::DemandParserHelper::storeWTP Struct Reference

`#include <trademgen/command/DemandParserHelper.hpp>`

Inheritance diagram for TRADEMGEN::DemandParserHelper::storeWTP:




### Public Member Functions

- storeWTP (DemandStruct &)
- void operator() (double iReal) const

### Public Attributes

- DemandStruct & _demand

#### 22.60.1 Detailed Description

Store the parameters for the min Willingness-To-Pay (WTP).

Definition at line 200 of file DemandParserHelper.hpp.

#### 22.60.2 Constructor & Destructor Documentation

##### 22.60.2.1 TRADEMGEN::DemandParserHelper::storeWTP::storeWTP ( DemandStruct & *ioDemand* )

Actor Constructor.

Definition at line 348 of file DemandParserHelper.cpp.

#### 22.60.3 Member Function Documentation

##### 22.60.3.1 void TRADEMGEN::DemandParserHelper::storeWTP::operator() ( double *iReal* ) const

Actor Function (functor).

Definition at line 353 of file DemandParserHelper.cpp.

References TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand, and TRADEMGEN::DemandStruct::_minWTP.

#### 22.60.4 Member Data Documentation

##### 22.60.4.1 DemandStruct& TRADEMGEN::DemandParserHelper::ParserSemanticAction::_demand [inherited]

Actor Context.

Definition at line 34 of file DemandParserHelper.hpp.

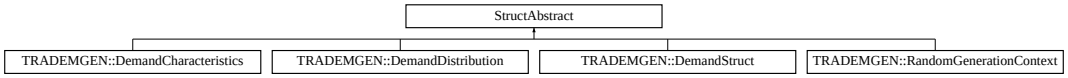
Referenced by TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd::operator()(), TRADEMGEN::DemandParserHelper::storeDow::operator()(), TRADEMGEN::DemandParserHelper::storeOrigin::operator()(), TRADEMGEN::DemandParserHelper::storeDestination::operator()(), TRADEMGEN::DemandParserHelper::storePrefCabin::operator()(), TRADEMGEN::DemandParserHelper::storeDemandMean::operator()(), TRADEMGEN::DemandParserHelper::storeDemandStdDev::operator()(), TRADEMGEN::DemandParserHelper::storePosCode::operator()(), TRADEMGEN::DemandParserHelper::storePosProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeChannelCode::operator()(), TRADEMGEN::DemandParserHelper::storeChannelProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeTripCode::operator()(), TRADEMGEN::DemandParserHelper::storeTripProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeStayCode::operator()(), TRADEMGEN::DemandParserHelper::storeStayProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeFFCode::operator()(), TRADEMGEN::DemandParserHelper::storeFFProbMass::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTime::operator()(), TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass::operator()(), operator()(), TRADEMGEN::DemandParserHelper::storeTimeValue::operator()(), TRADEMGEN::DemandParserHelper::storeTimeValueProbMass::operator()(), TRADEMGEN::DemandParserHelper::storeDTD::operator()(), TRADEMGEN::DemandParserHelper::storeDTDProbMass::operator()(), and TRADEMGEN::DemandParserHelper::doEndDemand::operator()().

The documentation for this struct was generated from the following files:

- trademgen/command/DemandParserHelper.hpp
- trademgen/command/DemandParserHelper.cpp

### 22.61 StructAbstract Class Reference

Inheritance diagram for StructAbstract:

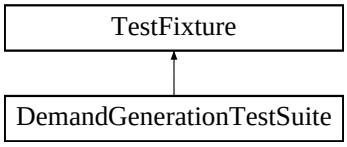



The documentation for this class was generated from the following file:

- trademgen/basic/RandomGenerationContext.hpp

### 22.62 TestFixture Class Reference

Inheritance diagram for TestFixture:



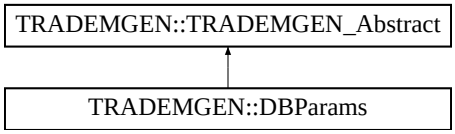

The documentation for this class was generated from the following file:

- test/trademgen/DemandGenerationTestSuite.hpp

## 22.63 TRADEMGEN::TRADEMGEN_Abstract Struct Reference

`#include <trademgen/TRADEMGEN_Abstract.hpp>`

Inheritance diagram for TRADEMGEN::TRADEMGEN_Abstract:




### Public Member Functions

- virtual void toStream (std::ostream &ioOut) const =0
- virtual void fromStream (std::istream &ioIn)=0
- virtual std::string toString () const =0

### Protected Member Functions

- TRADEMGEN_Abstract ()
- TRADEMGEN_Abstract (const TRADEMGEN_Abstract &)
- virtual ~TRADEMGEN_Abstract ()

### 22.63.1 Detailed Description

Base class for the TRADEMGEN interface structures.

Definition at line 16 of file TRADEMGEN_Abstract.hpp.

### 22.63.2 Constructor & Destructor Documentation

#### 22.63.2.1 TRADEMGEN::TRADEMGEN_Abstract::TRADEMGEN_Abstract ( ) [inline], [protected]

Protected Default Constructor to ensure this class is abtract.

Definition at line 33 of file TRADEMGEN_Abstract.hpp.

#### 22.63.2.2 TRADEMGEN::TRADEMGEN_Abstract::TRADEMGEN_Abstract ( const TRADEMGEN_Abstract & ) [inline], [protected]

Definition at line 34 of file TRADEMGEN_Abstract.hpp.

#### 22.63.2.3 virtual TRADEMGEN::TRADEMGEN_Abstract::~TRADEMGEN_Abstract ( ) [inline], [protected], [virtual]

Destructor.

Definition at line 37 of file TRADEMGEN_Abstract.hpp.

### 22.63.3 Member Function Documentation

#### 22.63.3.1 virtual void TRADEMGEN::TRADEMGEN_Abstract::toStream ( std::ostream & *ioOut* ) const [pure virtual]

Dump a structure into an output stream.

**Parameters**

| | |
|---|---|
| *ostream&* | the output stream. |

Implemented in TRADEMGEN::DBParams.

#### 22.63.3.2 virtual void TRADEMGEN::TRADEMGEN_Abstract::fromStream ( std::istream & *ioIn* ) [pure virtual]

Read a structure from an input stream.

**Parameters**

| | |
|---|---|
| *istream&* | the input stream. |

Implemented in TRADEMGEN::DBParams.

Referenced by operator>>().

#### 22.63.3.3 virtual std::string TRADEMGEN::TRADEMGEN_Abstract::toString ( ) const [pure virtual]

Get the serialised version of the structure.

Implemented in TRADEMGEN::DBParams.

The documentation for this struct was generated from the following file:

- trademgen/TRADEMGEN_Abstract.hpp

## 22.64 TRADEMGEN::TRADEMGEN_Service Class Reference

class holding the services related to Travel Demand Generation.

`#include <trademgen/TRADEMGEN_Service.hpp>`

### Public Member Functions

- TRADEMGEN_Service (const stdair::BasLogParams &, const stdair::BasDBParams &, const stdair::RandomSeed_T &)
  *Constructor.*
- TRADEMGEN_Service (const stdair::BasLogParams &, const stdair::RandomSeed_T &)
- TRADEMGEN_Service (stdair::STDAIR_ServicePtr_T, const stdair::RandomSeed_T &)
- void parseAndLoad (const stdair::Filename_T &iDemandInputFilename)
- ~TRADEMGEN_Service ()
- void buildSampleBom ()
- stdair::BookingRequestStruct buildSampleBookingRequest (const bool isForCRS=false)
- void displayAirlineListFromDB () const

- const stdair::Count_T & getExpectedTotalNumberOfRequestsToBeGenerated () const
- const stdair::Count_T & getActualTotalNumberOfRequestsToBeGenerated () const
- const bool stillHavingRequestsToBeGenerated (const stdair::DemandStreamKeyStr_T &, stdair::Progress-StatusSet &, const stdair::DemandGenerationMethod &) const
- stdair::Count_T generateFirstRequests (const stdair::DemandGenerationMethod &) const
- stdair::BookingRequestPtr_T generateNextRequest (const stdair::DemandStreamKeyStr_T &, const stdair::-DemandGenerationMethod &) const
- stdair::ProgressStatusSet popEvent (stdair::EventStruct &) const
- bool isQueueDone () const
- bool generateCancellation (const stdair::TravelSolutionStruct &, const stdair::PartySize_T &, const stdair::-DateTime_T &, const stdair::Date_T &) const
- void reset () const
- std::string csvDisplay () const

### 22.64.1 Detailed Description

class holding the services related to Travel Demand Generation.

Definition at line 38 of file TRADEMGEN_Service.hpp.

### 22.64.2 Constructor & Destructor Documentation

#### 22.64.2.1 TRADEMGEN::TRADEMGEN_Service::TRADEMGEN_Service ( const stdair::BasLogParams & *iLogParams,* const stdair::BasDBParams & *iDBParams,* const stdair::RandomSeed_T & *iRandomSeed* )

Constructor.

The initTrademgenService() method is called; see the corresponding documentation for more details.

A reference on an output stream is given, so that log outputs can be directed onto that stream.

Moreover, database connection parameters are given, so that a session can be created on the corresponding database.

**Parameters**

| | |
|---|---|
| *const* | stdair::BasLogParams& Parameters for the output log stream. |
| *const* | stdair::BasDBParams& Parameters for the database access. |
| *const* | stdair::RandomSeed_T& Seed for the random generation. |

Definition at line 71 of file TRADEMGEN_Service.cpp.

#### 22.64.2.2 TRADEMGEN::TRADEMGEN_Service::TRADEMGEN_Service ( const stdair::BasLogParams & *iLogParams,* const stdair::RandomSeed_T & *iRandomSeed* )

Constructor.

The initTrademgenService() method is called; see the corresponding documentation for more details.

A reference on an output stream is given, so that log outputs can be directed onto that stream.

**Parameters**

| | |
|---|---|
| *const* | stdair::BasLogParams& Parameters for the output log stream. |
| *const* | stdair::RandomSeed_T& Seed for the random generation. |

Definition at line 50 of file TRADEMGEN_Service.cpp.

#### 22.64.2.3 TRADEMGEN::TRADEMGEN_Service::TRADEMGEN_Service ( stdair::STDAIR_ServicePtr_T *ioSTDAIR_Service_ptr*, const stdair::RandomSeed_T & *iRandomSeed* )

Constructor.

The initTrademgenService() method is called; see the corresponding documentation for more details.

Moreover, as no reference on any output stream is given, neither any database access parameter is given, it is assumed that the StdAir log service has already been initialised with the proper log output stream by some other methods in the calling chain (for instance, when the TRADEMGEN_Service is itself being initialised by another library service such as DSIM_Service).

**Parameters**

| | |
|---|---|
| *stdair::STDAIR_ServicePtr_T* | Handler on the STDAIR_Service. |
| *const* | stdair::RandomSeed_T& Seed for the random generation. |

Definition at line 94 of file TRADEMGEN_Service.cpp.

#### 22.64.2.4 TRADEMGEN::TRADEMGEN_Service::~TRADEMGEN_Service ( )

Destructor.

Definition at line 111 of file TRADEMGEN_Service.cpp.

### 22.64.3 Member Function Documentation

#### 22.64.3.1 void TRADEMGEN::TRADEMGEN_Service::parseAndLoad ( const stdair::Filename_T & *iDemandInputFilename* )

Parse the demand input file.

The CSV file, describing the parameters of the demand to be generated for the simulator, is parsed and instantiated in memory accordingly.

**Parameters**

| | |
|---|---|
| *const* | stdair::Filename_T& Filename of the input demand file. |

Definition at line 187 of file TRADEMGEN_Service.cpp.

References generateDemand().

Referenced by TRADEMGEN::Trademgener::init(), and main().

#### 22.64.3.2 void TRADEMGEN::TRADEMGEN_Service::buildSampleBom ( )

Build a sample BOM tree, made of a single DemandStream object.

As of now (March 2011), it corresponds to:

- Origin: SIN
- Destination: BKK
- Preferred departure date: 2011-02-14
- Preferred cabin: Y (Economy)
- POS distribution:
  - BKK: 30%
  - SIN: 70%

- Channel distribution:
  - Direct Offline: 10%
  - Direct Online: 30%
  - Indirect Offline: 40%
  - Indirect Online: 20%
- Trip type distribution:
  - Outbound: 60%
  - Inbound: 20%
  - One-way: 20%
- Arrival pattern distribution:
  - 330 DTD: 0%
  - 40 DTD: 20%
  - 20 DTD: 60%
  - 1 DTD: 100%

  15:0, 60:1
- Stay duration distribution:
  - 0 day: 10%
  - 1 day: 10%
  - 2 days: 15%
  - 3 days: 15%
  - 4 days: 15%
  - 5 days: 35%
- Frequent flyer distribution:
  - Platinum: 1%
  - Gold: 5%
  - Silver: 15%
  - Member: 30%
  - No card: 49%
- Preferred departure time (cumulative distribution):
  - 6am: 0%
  - 7am: 10%
  - 9am: 30%
  - 5pm: 40%
  - 7pm: 80%
  - 8pm: 95%
  - 10pm: 100%
- Value of time distribution:
  - 15 min: 0%
  - 60 min: 100%
- WTP: 200
- Number of requests: Normal (mu = 10.0, std_dev = 1.0)
- Change fee: 20; Non refundable; Saturday night stay

Definition at line 220 of file TRADEMGEN_Service.cpp.

Referenced by main().

#### 22.64.3.3 stdair::BookingRequestStruct TRADEMGEN::TRADEMGEN_Service::buildSampleBookingRequest ( const bool *isForCRS* = `false` )

Build a sample booking request structure.

As of now (March 2011), the sample booking request is made of the following parameters:

- Return trip (inbound): LHR-SYD (POS: LHR, Channel: DN),
- Departing 10-JUN-2011 around 8:00, staying 7 days
- Requested on 15-MAY-2011 at 10:00
- Economy cabin, 3 persons, FF member
- WTP: 1000.0 EUR
- Dis-utility: 100.0 EUR/hour

As of now (March 2011), the CRS-related booking request is made of the following parameters:

- Return trip (inbound): SIN-BKK (POS: SIN, Channel: IN),
- Departing 30-JAN-2010 around 10:00, staying 7 days
- Requested on 22-JAN-2010 at 10:00
- Economy cabin, 3 persons, FF member
- WTP: 1000.0 EUR
- Dis-utility: 100.0 EUR/hour

**See Also**

stdair::CmdBomManager for more details.

**Parameters**

| | |
|---|---|
| *const* | bool isForCRS Whether the sample booking request is for CRS. |

**Returns**

BookingRequestStruct& Sample booking request structure.

Definition at line 279 of file TRADEMGEN_Service.cpp.

#### 22.64.3.4 void TRADEMGEN::TRADEMGEN_Service::displayAirlineListFromDB ( ) const

Display the list of airlines, as held within the sample database.

Definition at line 324 of file TRADEMGEN_Service.cpp.

Referenced by main(), and TRADEMGEN::Trademgener::trademgen().

#### 22.64.3.5 const stdair::Count_T & TRADEMGEN::TRADEMGEN_Service::getExpectedTotalNumberOfRequestsToBeGenerated ( ) const

Get the expected number of events/requests to be generated for all the demand streams.

The getExpectedTotalNbOfEvents() method is called on the underlying EventQueue object, which keeps track of that number.

**Note**

That number usually corresponds to an expectation (i.e., the mean value of a random distribution). The actual number will be drawn when calling the generateFirstRequests() method.

**Returns**

const stdair::Count_T& Expected number of events to be generated.

Definition at line 385 of file TRADEMGEN_Service.cpp.

Referenced by generateDemand().

#### 22.64.3.6 const stdair::Count_T & TRADEMGEN::TRADEMGEN_Service::getActualTotalNumberOfRequestsToBeGenerated ( ) const

Get the actual number of events/requests to be generated for all the demand streams.

The getActualTotalNbOfEvents() method is called on the underlying EventQueue object, which keeps track of that number.

**Note**

That number has been drawn when calling the generateFirstRequests() method.

**Returns**

const stdair::Count_T& Expected number of events to be generated.

Definition at line 409 of file TRADEMGEN_Service.cpp.

#### 22.64.3.7 const bool TRADEMGEN::TRADEMGEN_Service::stillHavingRequestsToBeGenerated ( const stdair::DemandStreamKeyStr_T & *iKey,* stdair::ProgressStatusSet & *ioPSS,* const stdair::DemandGenerationMethod & *iDemandGenerationMethod* ) const

Check whether enough requests have already been generated for the demand stream which corresponds to the given key.

**Parameters**

| | |
|---|---|
| *const* | DemandStreamKey& A string identifying uniquely the demand stream (e.g., "SIN-HND 2010--Feb-08 Y"). |
| *const* | stdair::DemandGenerationMethod& States whether the demand generation must be performed following the method based on statistic orders. The alternative method, while more "intuitive", is also a sequential algorithm. |

**Returns**

bool Whether or not there are still events to be generated for that demand stream.

Definition at line 433 of file TRADEMGEN_Service.cpp.

#### 22.64.3.8 stdair::Count_T TRADEMGEN::TRADEMGEN_Service::generateFirstRequests ( const stdair::DemandGenerationMethod & *iDemandGenerationMethod* ) const

Browse the list of demand streams and generate the first request of each stream.

**Parameters**

| | |
|---|---|
| *const* | stdair::DemandGenerationMethod& States whether the demand generation must be performed following the method based on statistic orders. The alternative method, while more "intuitive", is also a sequential algorithm. |

**Returns**

stdair::Count_T The expected total number of events to be generated

Definition at line 460 of file TRADEMGEN_Service.cpp.

Referenced by generateDemand().

#### 22.64.3.9 stdair::BookingRequestPtr_T TRADEMGEN::TRADEMGEN_Service::generateNextRequest ( const stdair::DemandStreamKeyStr_T & *iKey,* const stdair::DemandGenerationMethod & *iDemandGenerationMethod* ) const

Generate a request with the demand stream which corresponds to the given key.

**Parameters**

| | |
|---|---|
| *const* | DemandStreamKey& A string identifying uniquely the demand stream (e.g., "SIN-HND 2010--Feb-08 Y"). |
| *const* | stdair::DemandGenerationMethod& States whether the demand generation must be performed following the method based on statistic orders. The alternative method, while more "intuitive", is also a sequential algorithm. |

**Returns**

stdair::BookingRequestPtr_T (Boost) shared pointer on the booking request structure, which has just been created.

Definition at line 489 of file TRADEMGEN_Service.cpp.

Referenced by generateDemand().

#### 22.64.3.10 stdair::ProgressStatusSet TRADEMGEN::TRADEMGEN_Service::popEvent ( stdair::EventStruct & *ioEventStruct* ) const

Pop the next coming (in time) event, and remove it from the event queue.

- The next coming (in time) event corresponds to the event having the earliest date-time stamp. In other words, it is the first/front element of the event queue.
- That (first) event/element is then removed from the event queue
- The progress status is updated for the corresponding demand stream.

**Returns**

stdair::EventStruct A copy of the event structure, which comes first in time from within the event queue.

Definition at line 515 of file TRADEMGEN_Service.cpp.

Referenced by generateDemand().

#### 22.64.3.11 bool TRADEMGEN::TRADEMGEN_Service::isQueueDone ( ) const

States whether the event queue has reached the end.

For now, that method states whether the event queue is empty.

Definition at line 534 of file TRADEMGEN_Service.cpp.

Referenced by generateDemand().

#### 22.64.3.12 bool TRADEMGEN::TRADEMGEN_Service::generateCancellation ( const stdair::TravelSolutionStruct & *iTravelSolution,* const stdair::PartySize_T & *iPartySize,* const stdair::DateTime_T & *iRequestTime,* const stdair::Date_T & *iDepartureDate* ) const

Generate the potential cancellation event.

Definition at line 557 of file TRADEMGEN_Service.cpp.

#### 22.64.3.13 void TRADEMGEN::TRADEMGEN_Service::reset ( ) const

Reset the context of the demand streams for another demand generation without having to reparse the demand input file.

Definition at line 584 of file TRADEMGEN_Service.cpp.

Referenced by generateDemand().

#### 22.64.3.14 std::string TRADEMGEN::TRADEMGEN_Service::csvDisplay ( ) const

Recursively display (dump in the returned string) the objects of the BOM tree.

**Returns**

std::string Output string in which the BOM tree is logged/dumped.

Definition at line 300 of file TRADEMGEN_Service.cpp.

Referenced by generateDemand().

The documentation for this class was generated from the following files:

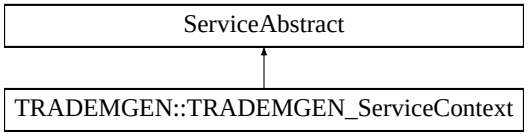
- trademgen/TRADEMGEN_Service.hpp
- trademgen/service/TRADEMGEN_Service.cpp

## 22.65 TRADEMGEN::TRADEMGEN_ServiceContext Class Reference

Class holding the context of the Trademgen services.

`#include <trademgen/service/TRADEMGEN_ServiceContext.hpp>`

Inheritance diagram for TRADEMGEN::TRADEMGEN_ServiceContext:




**Friends**

- class TRADEMGEN_Service
- class FacTRADEMGENServiceContext

### 22.65.1 Detailed Description

Class holding the context of the Trademgen services.

Definition at line 30 of file TRADEMGEN_ServiceContext.hpp.

### 22.65.2 Friends And Related Function Documentation

#### 22.65.2.1 friend class TRADEMGEN_Service [friend]

The TRADEMGEN_Service class should be the sole class to get access to ServiceContext content: general users do not want to bother with a context interface.

Definition at line 36 of file TRADEMGEN_ServiceContext.hpp.

#### 22.65.2.2 friend class FacTRADEMGENServiceContext [friend]

Definition at line 37 of file TRADEMGEN_ServiceContext.hpp.

The documentation for this class was generated from the following files:

- trademgen/service/TRADEMGEN_ServiceContext.hpp
- trademgen/service/TRADEMGEN_ServiceContext.cpp

## 22.66 TRADEMGEN::Trademgener Struct Reference

### Public Member Functions

- std::string trademgen (const std::string &iQuery)
- Trademgener ()
- Trademgener (const Trademgener &iTrademgener)
- ~Trademgener ()
- bool init (const std::string &iLogFilepath, const stdair::RandomSeed_T &iRandomSeed, const stdair::-Filename_T &iDemandInputFilename, const std::string &iDBUser, const std::string &iDBPasswd, const std-::string &iDBHost, const std::string &iDBPort, const std::string &iDBDBName)

### 22.66.1 Detailed Description

Definition at line 22 of file pytrademgen.cpp.

### 22.66.2 Constructor & Destructor Documentation

#### 22.66.2.1 TRADEMGEN::Trademgener::Trademgener ( ) [inline]

Default constructor.

Definition at line 79 of file pytrademgen.cpp.

#### 22.66.2.2 TRADEMGEN::Trademgener::Trademgener ( const Trademgener & *iTrademgener* ) [inline]

Default copy constructor.

Definition at line 83 of file pytrademgen.cpp.

#### 22.66.2.3 TRADEMGEN::Trademgener::~Trademgener ( ) [inline]

Default constructor.

Definition at line 89 of file pytrademgen.cpp.

### 22.66.3 Member Function Documentation

#### 22.66.3.1 std::string TRADEMGEN::Trademgener::trademgen ( const std::string & *iQuery* ) [inline]

Wrapper around the travel demand generation use case.

Definition at line 25 of file pytrademgen.cpp.

References TRADEMGEN::TRADEMGEN_Service::displayAirlineListFromDB().

Referenced by BOOST_PYTHON_MODULE().

#### 22.66.3.2 bool TRADEMGEN::Trademgener::init ( const std::string & *iLogFilepath,* const stdair::RandomSeed_T & *iRandomSeed,* const stdair::Filename_T & *iDemandInputFilename,* const std::string & *iDBUser,* const std::string & *iDBPasswd,* const std::string & *iDBHost,* const std::string & *iDBPort,* const std::string & *iDBDBName* ) [inline]

Wrapper around the search use case.

Definition at line 95 of file pytrademgen.cpp.

References TRADEMGEN::TRADEMGEN_Service::parseAndLoad().

Referenced by BOOST_PYTHON_MODULE().

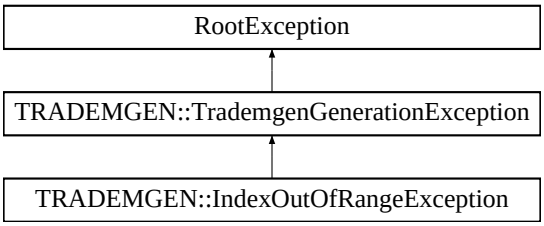
The documentation for this struct was generated from the following file:

- trademgen/python/pytrademgen.cpp

## 22.67 TRADEMGEN::TrademgenGenerationException Class Reference

`#include <trademgen/TRADEMGEN_Exceptions.hpp>`

Inheritance diagram for TRADEMGEN::TrademgenGenerationException:




### Public Member Functions

- TrademgenGenerationException (const std::string &iWhat)

### 22.67.1 Detailed Description

Root exception for the TraDemGen component

Definition at line 18 of file TRADEMGEN_Exceptions.hpp.

### 22.67.2 Constructor & Destructor Documentation

#### 22.67.2.1 TRADEMGEN::TrademgenGenerationException::TrademgenGenerationException ( const std::string & *iWhat* ) [inline]

Constructor.

Definition at line 23 of file TRADEMGEN_Exceptions.hpp.

The documentation for this class was generated from the following file:

- trademgen/TRADEMGEN_Exceptions.hpp

# 23 File Documentation

```
00001
00005 // ////////////////////////////////////////////////////////////////////
00006 // Import section
00007 // ////////////////////////////////////////////////////////////////////
00008 // STL
00009 #include <sstream>
00010 #include <fstream>
00011 #include <map>
00012 #include <cmath>
00013 // Boost Unit Test Framework (UTF)
00014 #define BOOST_TEST_DYN_LINK
00015 #define BOOST_TEST_MAIN
00016 #define BOOST_TEST_MODULE DemandGenerationTest
00017 #include <boost/test/unit_test.hpp>
00018 // StdAir
00019 #include <stdair/stdair_basic_types.hpp>
00020 #include <stdair/basic/BasConst_General.hpp>
00021 #include <stdair/basic/BasLogParams.hpp>
00022 #include <stdair/basic/BasDBParams.hpp>
00023 #include <stdair/basic/BasFileMgr.hpp>
00024 #include <stdair/basic/ProgressStatusSet.hpp>
00025 #include <stdair/bom/EventStruct.hpp>
00026 #include <stdair/bom/EventQueue.hpp>
00027 #include <stdair/bom/BookingRequestStruct.hpp>
00028 #include <stdair/service/Logger.hpp>
00029 // TraDemGen
00030 #include <trademgen/TRADEMGEN_Service.hpp>
00031 #include <trademgen/bom/DemandStreamKey.hpp>
00032 #include <trademgen/config/trademgen-paths.hpp
     >
00033
00034 namespace boost_utf = boost::unit_test;
00035
00036 // (Boost) Unit Test XML Report
```

```
00037 std::ofstream utfReportStream ("DemandGenerationTestSuite_utfresults.xml");
00038
00042 struct UnitTestConfig {
00044   UnitTestConfig() {
00045     boost_utf::unit_test_log.set_stream (utfReportStream);
00046     boost_utf::unit_test_log.set_format (boost_utf::XML);
00047     boost_utf::unit_test_log.set_threshold_level (boost_utf::log_test_units);
00048     //boost_utf::unit_test_log.set_threshold_level
      (boost_utf::log_successful_tests);
00049   }
00050
00052   ~UnitTestConfig() {
00053   }
00054 };
00055
00056 // Specific type definitions
00057 typedef std::pair<stdair::Count_T, stdair::Count_T> NbOfEventsPair_T;
00058 typedef std::map<const stdair::DemandStreamKeyStr_T,
00059                  NbOfEventsPair_T> NbOfEventsByDemandStreamMap_T;
00060
00061
00062 // ///////////////// Main: Unit Test Suite //////////////
00063
00064 // Set the UTF configuration (re-direct the output to a specific file)
00065 BOOST_GLOBAL_FIXTURE (UnitTestConfig);
00066
00067 // Start the test suite
00068 BOOST_AUTO_TEST_SUITE (master_test_suite)
00069
00070
00073 BOOST_AUTO_TEST_CASE (trademgen_simple_simulation_test) {
00074
00075   // Seed for the random generation
00076   const stdair::RandomSeed_T lRandomSeed = stdair::DEFAULT_RANDOM_SEED;
00077
00078 // Input file name
00079   const stdair::Filename_T lInputFilename (STDAIR_SAMPLE_DIR "
      /demand01.csv");
00080
00081   // Check that the file path given as input corresponds to an actual file
00082   const bool doesExistAndIsReadable =
00083     stdair::BasFileMgr::doesExistAndIsReadable (lInputFilename);
00084   BOOST_CHECK_MESSAGE (doesExistAndIsReadable == true,
00085                        "The '" << lInputFilename
00086                        << "' input file can not be open and read");
00087
00088   // Output log File
00089   const stdair::Filename_T lLogFilename ("DemandGenerationTestSuite.log");
00090
00091   // Set the log parameters
00092   std::ofstream logOutputFile;
00093   // open and clean the log outputfile
00094   logOutputFile.open (lLogFilename.c_str());
00095   logOutputFile.clear();
00096
00097   // Initialise the TraDemGen service object
00098   const stdair::BasLogParams lLogParams (stdair::LOG::DEBUG, logOutputFile);
00099   TRADEMGEN::TRADEMGEN_Service trademgenService (
      lLogParams, lRandomSeed);
00100
00101   // Create the DemandStream objects, and insert them within the BOM tree
00102   BOOST_CHECK_NO_THROW (trademgenService.parseAndLoad (lInputFilename));
00103
00113   NbOfEventsByDemandStreamMap_T lNbOfEventsMap;
00114   lNbOfEventsMap.insert (NbOfEventsByDemandStreamMap_T::
00115                          value_type ("SIN-HND 2010-Feb-08 Y",
00116                                      NbOfEventsPair_T (1, 10)));
00117   lNbOfEventsMap.insert (NbOfEventsByDemandStreamMap_T::
00118                          value_type ("SIN-HND 2010-Feb-09 Y",
00119                                      NbOfEventsPair_T (1, 10)));
00120   lNbOfEventsMap.insert (NbOfEventsByDemandStreamMap_T::
00121                          value_type ("SIN-BKK 2010-Feb-08 Y",
00122                                      NbOfEventsPair_T (1, 10)));
00123   lNbOfEventsMap.insert (NbOfEventsByDemandStreamMap_T::
00124                          value_type ("SIN-BKK 2010-Feb-09 Y",
00125                                      NbOfEventsPair_T (1, 10)));
00126   // Total number of events, for all the demand streams: 3
00127   stdair::Count_T lRefExpectedNbOfEvents (40);
00128
00129   // Retrieve the expected (mean value of the) number of events to be
00130   // generated
00131   const stdair::Count_T& lExpectedNbOfEventsToBeGenerated =
00132     trademgenService.getExpectedTotalNumberOfRequestsToBeGenerated();
00133
00134   BOOST_CHECK_EQUAL (lRefExpectedNbOfEvents,
00135                      std::floor (lExpectedNbOfEventsToBeGenerated));
00136
```

```
00137   BOOST_CHECK_MESSAGE (lRefExpectedNbOfEvents ==
00138                        std::floor (lExpectedNbOfEventsToBeGenerated),
00139                        "Expected total number of requests to be generated: "
00140                        << lExpectedNbOfEventsToBeGenerated
00141                        << " (=> "
00142                        << std::floor (lExpectedNbOfEventsToBeGenerated)
00143                        << "). Reference value: " << lRefExpectedNbOfEvents);
00144
00145   // Generate the date time of the requests with the statistic order method.
00146   stdair::DemandGenerationMethod lDemandGenerationMethod (
      stdair::DemandGenerationMethod::STA_ORD);
00147
00157   const stdair::Count_T& lActualNbOfEventsToBeGenerated =
00158     trademgenService.generateFirstRequests(lDemandGenerationMethod);
00159
00160   // DEBUG
00161   STDAIR_LOG_DEBUG ("Expected number of events: "
00162                     << lExpectedNbOfEventsToBeGenerated << ", actual: "
00163                     << lActualNbOfEventsToBeGenerated);
00164
00165   // Total number of events, for all the demand streams: 40
00166   const stdair::Count_T lRefActualNbOfEvents (40);
00167   BOOST_CHECK_EQUAL (lRefActualNbOfEvents, lActualNbOfEventsToBeGenerated);
00168
00169   BOOST_CHECK_MESSAGE (lRefActualNbOfEvents == lActualNbOfEventsToBeGenerated,
00170                        "Actual total number of requests to be generated: "
00171                        << lExpectedNbOfEventsToBeGenerated
00172                        << " (=> "
00173                        << std::floor (lExpectedNbOfEventsToBeGenerated)
00174                        << "). Reference value: " << lRefActualNbOfEvents);
00175
00177   const bool isQueueDone = trademgenService.isQueueDone();
00178   BOOST_REQUIRE_MESSAGE (isQueueDone == false,
00179                          "The event queue should not be empty. You may check "
00180                          << "the input file: '" << lInputFilename << "'");
00181
00189   stdair::Count_T idx = 1;
00190   while (trademgenService.isQueueDone() == false) {
00191
00192     // Get the next event from the event queue
00193     stdair::EventStruct lEventStruct;
00194     stdair::ProgressStatusSet lPPS = trademgenService.popEvent (lEventStruct);
00195
00196     // DEBUG
00197     STDAIR_LOG_DEBUG ("Poped event: '" << lEventStruct.describe() << "'.");
00198
00199     // Extract the corresponding demand/booking request
00200     const stdair::BookingRequestStruct& lPoppedRequest =
00201       lEventStruct.getBookingRequest();
00202
00203     // DEBUG
00204     STDAIR_LOG_DEBUG ("Poped booking request: '"
00205                       << lPoppedRequest.describe() << "'.");
00206
00207     // Retrieve the corresponding demand stream
00208     const stdair::DemandGeneratorKey_T& lDemandStreamKey =
00209       lPoppedRequest.getDemandGeneratorKey();
00210
00211     // Check that the number of booking requests to be generated are correct
00212     const NbOfEventsByDemandStreamMap_T::iterator itNbOfEventsMap =
00213       lNbOfEventsMap.find (lDemandStreamKey);
00214     BOOST_REQUIRE_MESSAGE (itNbOfEventsMap != lNbOfEventsMap.end(),
00215                            "The demand stream key '" << lDemandStreamKey
00216                            << "' is not expected in that test");
00217
00227     const NbOfEventsPair_T& lNbOfEventsPair = itNbOfEventsMap->second;
00228     stdair::Count_T lCurrentNbOfEvents = lNbOfEventsPair.first;
00229     const stdair::Count_T& lExpectedTotalNbOfEvents = lNbOfEventsPair.second;
00230
00231     // Assess whether more events should be generated for that demand stream
00232     const bool stillHavingRequestsToBeGenerated = trademgenService.
00233       stillHavingRequestsToBeGenerated (lDemandStreamKey, lPPS,
00234                                         lDemandGenerationMethod);
00235
00242     if (lCurrentNbOfEvents == 1) {
00248       const stdair::ProgressStatus& lDemandStreamProgressStatus =
00249         lPPS.getSpecificGeneratorStatus();
00250       const stdair::Count_T& lNbOfRequests =
00251         lDemandStreamProgressStatus.getExpectedNb();
00252
00253       BOOST_CHECK_EQUAL (lNbOfRequests, lExpectedTotalNbOfEvents);
00254       BOOST_CHECK_MESSAGE (lNbOfRequests == lExpectedTotalNbOfEvents,
00255                            "[" << lDemandStreamKey
00256                            << "] Total number of requests to be generated: "
00257                            << lNbOfRequests << "). Expected value: "
00258                            << lExpectedTotalNbOfEvents);
00259     }
```

```
00260
00261     // DEBUG
00262     STDAIR_LOG_DEBUG ("=> [" << lDemandStreamKey << "][" << lCurrentNbOfEvents
00263                       << "/" << lExpectedTotalNbOfEvents
00264                       << "] is now processed. "
00265                       << "Still generate events for that demand stream? "
00266                       << stillHavingRequestsToBeGenerated);
00267
00268     // If there are still events to be generated for that demand stream,
00269     // generate and add them to the event queue
00270     if (stillHavingRequestsToBeGenerated == true) {
00271       const stdair::BookingRequestPtr_T lNextRequest_ptr =
00272         trademgenService.generateNextRequest (lDemandStreamKey,
00273                                               lDemandGenerationMethod);
00274       assert (lNextRequest_ptr != NULL);
00275
00281       const stdair::Duration_T lDuration =
00282         lNextRequest_ptr->getRequestDateTime()
00283         - lPoppedRequest.getRequestDateTime();
00284       BOOST_REQUIRE_GT (lDuration.total_milliseconds(), 0);
00285       BOOST_REQUIRE_MESSAGE (lDuration.total_milliseconds() > 0,
00286                              "[" << lDemandStreamKey
00287                              << "] The date-time of the generated event ("
00288                              << lNextRequest_ptr->getRequestDateTime()
00289                              << ") is lower than the date-time "
00290                              << "of the current event ("
00291                              << lPoppedRequest.getRequestDateTime() << ")");
00292
00293       // DEBUG
00294       STDAIR_LOG_DEBUG ("[" << lDemandStreamKey << "][" << lCurrentNbOfEvents
00295                         << "/" << lExpectedTotalNbOfEvents
00296                         << "] Added request: '" << lNextRequest_ptr->describe()
00297                         << "'. Is queue done? "
00298                         << trademgenService.isQueueDone());
00299
00300       // Keep, within the dedicated map, the current counters of events
      updated.
00301       ++lCurrentNbOfEvents;
00302       itNbOfEventsMap->second = NbOfEventsPair_T (lCurrentNbOfEvents,
00303                                                   lExpectedTotalNbOfEvents);
00304     }
00305
00306     // Iterate
00307     ++idx;
00308   }
00309   // Compensate for the last iteration
00310   --idx;
00311   //
00312   BOOST_CHECK_EQUAL (idx, lRefActualNbOfEvents);
00313   BOOST_CHECK_MESSAGE (idx == lRefActualNbOfEvents,
00314                        "The total actual number of events is "
00315                        << lRefActualNbOfEvents << ", but " << idx
00316                        << " events have been generated");
00317
00320   trademgenService.reset();
00321
00322   // DEBUG
00323   STDAIR_LOG_DEBUG ("End of the simulation");
00324
00325   // Close the log file
00326   logOutputFile.close();
00327 }
00328
00329 // End the test suite
00330 BOOST_AUTO_TEST_SUITE_END()
00331
00332
```

## 23.17 test/trademgen/DemandGenerationTestSuite.hpp File Reference

```
#include <iosfwd>
#include <cppunit/extensions/HelperMacros.h>
```

### Classes

- class DemandGenerationTestSuite

### Functions

- CPPUNIT_TEST_SUITE_REGISTRATION (DemandGenerationTestSuite)

#### 23.17.1 Function Documentation

##### 23.17.1.1 CPPUNIT_TEST_SUITE_REGISTRATION ( DemandGenerationTestSuite )

## 23.18 DemandGenerationTestSuite.hpp

```
00001 // STL
00002 #include <iosfwd>
00003 // CPPUNIT
00004 #include <cppunit/extensions/HelperMacros.h>
00005
00006 class DemandGenerationTestSuite : public
      CppUnit::TestFixture {
00007   CPPUNIT_TEST_SUITE (DemandGenerationTestSuite);
00008   CPPUNIT_TEST (simpleEventGeneration);
00009   //  CPPUNIT_TEST (errorCase);
00010   CPPUNIT_TEST_SUITE_END ();
00011 public:
00012
00014   void simpleEventGeneration();
00015
00017   //  void errorCase ();
00018
00020   DemandGenerationTestSuite ();
00021
00022 private:
00024   void simpleEventGenerationHelper();
00025
00026 protected:
00027   std::stringstream _describeKey;
00028 };
00029
00030 CPPUNIT_TEST_SUITE_REGISTRATION (
      DemandGenerationTestSuite);
```

## 23.19 test/trademgen/generateEvents.cpp File Reference

```
#include <cassert>
#include <string>
#include <map>
#include <iostream>
#include <sstream>
#include <test/trademgen/EventStream.hpp>
#include <test/trademgen/CategoricalAttribute.hpp>
```

### Functions

- int main (int argc, char ∗const argv[])

#### 23.19.1 Function Documentation

##### 23.19.1.1 int main ( int *argc*, char ∗const *argv[]* )

Definition at line 12 of file generateEvents.cpp.

## 23.20 generateEvents.cpp

```
00001 // STL
00002 #include <cassert>
00003 #include <string>
```

```
00004 #include <map>
00005 #include <iostream>
00006 #include <sstream>
00007 // TraDemGen
00008 #include <test/trademgen/EventStream.hpp>
00009 #include <test/trademgen/CategoricalAttribute.hpp>
00010
00011 // ////////////// M A I N ////////////////////
00012 int main (int argc, char* const argv[]) {
00013   // input: seed, rate
00014   unsigned long int seed = 2;
00015
00016   if (argc >= 2) {
00017     std::istringstream iStream (argv[1]);
00018     iStream >> seed;
00019   }
00020
00021   // create event stream
00022   TRADEMGEN::EventStream e (seed);
00023   e.setKey("hello");
00024   e.setRate(2.0);
00025
00026   // get rate
00027   // const double r = e.getRate();
00028   std::cout << "Seed: " << seed << std::endl << std::endl;
00029
00030   // create instances
00031   for (int i=0; i<10; i++) {
00032     e.generateNext();
00033   }
00034
00035   // display events
00036   e.displayAllEvents(std::cout);
00037
00038
00039   // ////////////////////////////////////////////////
00040   // attributes
00041   std::map<int, float> M;
00042   M[1] = 0.1;
00043   M[17] = 0.7;
00044   M[77] = 0.2;
00045   TRADEMGEN::CategoricalAttribute C (M);
00046
00047   return 0;
00048 }
```

## 23.21 trademgen/basic/BasConst.cpp File Reference

```
#include <stdair/basic/BasConst_General.hpp>
#include <trademgen/basic/BasConst_TRADEMGEN_Service.hpp>
#include <trademgen/basic/BasConst_DemandGeneration.hpp>
```

### Namespaces

- namespace TRADEMGEN

### Functions

- stdair::BaseGenerator_T TRADEMGEN::DEFAULT_BASE_GENERATOR (stdair::DEFAULT_RANDOM_SEED)
- stdair::UniformGenerator_T TRADEMGEN::DEFAULT_UNIFORM_GENERATOR (DEFAULT_BASE_GENERATOR, DEFAULT_UNIFORM_REAL_DISTRIBUTION)

### Variables

- const POSProbabilityMassFunction_T TRADEMGEN::DEFAULT_POS_PROBALILITY_MASS
- const stdair::FloatDuration_T TRADEMGEN::DEFAULT_LAST_LOWER_BOUND_ARRIVAL_PATTERN = -1
- const FRAT5Pattern_T TRADEMGEN::DEFAULT_FRAT5_PATTERN = DefaultMap::createFRAT5Pattern()

- const double TRADEMGEN::DEFAULT_MAX_ADVANCE_PURCHASE = 330.0
- const stdair::UniformDistribution_T TRADEMGEN::DEFAULT_UNIFORM_REAL_DISTRIBUTION

## 23.22 BasConst.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // StdAir
00005 #include <stdair/basic/BasConst_General.hpp>
00006 // TraDemGen
00007 #include <trademgen/basic/BasConst_TRADEMGEN_Service.hpp
      >
00008 #include <trademgen/basic/BasConst_DemandGeneration.hpp
      >
00009
00010 namespace TRADEMGEN {
00011
00013   // const std::string DEFAULT_TRADEMGEN_SERVICE_NAME = "trademgen";
00014
00016   const POSProbabilityMassFunction_T
      DEFAULT_POS_PROBALILITY_MASS =
00017     DefaultMap::createPOSProbMass();
00018
00020   POSProbabilityMassFunction_T
      DefaultMap::createPOSProbMass() {
00021     POSProbabilityMassFunction_T oMap;
00022     // oMap["SIN"] = 0.44; oMap["HKG"] = 0.04; oMap["CGK"] = 0.04;
00023     // oMap["SYD"] = 0.04; oMap["BKK"] = 0.04; oMap["LHR"] = 0.03;
00024     // oMap["MEL"] = 0.03; oMap["KUL"] = 0.03; oMap["MNL"] = 0.03;
00025     // oMap["PVG"] = 0.03; oMap["PER"] = 0.02; oMap["BNE"] = 0.02;
00026     // oMap["NRT"] = 0.02; oMap["DPS"] = 0.02; oMap["SGN"] = 0.02;
00027     // oMap["PEN"] = 0.02; oMap["FRA"] = 0.02; oMap["PEK"] = 0.02;
00028     // oMap["HKT"] = 0.02; oMap["AKT"] = 0.02; oMap["SFO"] = 0.01;
00029     // oMap["ICN"] = 0.01; oMap["TPE"] = 0.01; oMap["row"] = 0.02;
00030     oMap["row"] = 1.0;
00031     return oMap;
00032   }
00033
00035   const stdair::FloatDuration_T DEFAULT_LAST_LOWER_BOUND_ARRIVAL_PATTERN
       = -1;
00036
00038   const FRAT5Pattern_T DEFAULT_FRAT5_PATTERN
       = DefaultMap::createFRAT5Pattern();
00039
00041   FRAT5Pattern_T DefaultMap::createFRAT5Pattern
      () {
00042     FRAT5Pattern_T oMap;
00043     // oMap[1.10] = 0.0;      oMap[1.40] = 0.80909; oMap[1.45] = 0.8303;
00044     // oMap[1.50] = 0.85152; oMap[1.55] = 0.87273; oMap[1.60] = 0.89394;
00045     // oMap[1.70] = 0.90606; oMap[1.80] = 0.91818; oMap[2.00] = 0.9303;
00046     // oMap[2.30] = 0.94242; oMap[2.60] = 0.95152; oMap[3.00] = 0.96061;
00047     // oMap[3.30] = 0.96970; oMap[3.40] = 0.97879; oMap[3.44] = 0.98485;
00048     // oMap[3.47] = 0.99091; oMap[3.50] = 0.99697; oMap[3.500000001] = 1.0;
00049     // oMap[1.10] = -365;oMap[1.40] = -63; oMap[1.45] = -56;
00050     // oMap[1.50] = -49; oMap[1.55] = -42; oMap[1.60] = -35;
00051     // oMap[1.70] = -31; oMap[1.80] = -27; oMap[2.00] = -23;
00052     // oMap[2.30] = -19; oMap[2.60] = -16; oMap[3.00] = -13;
00053     // oMap[3.30] = -10; oMap[3.40] = -7;  oMap[3.44] = -5;
00054     // oMap[3.47] = -3;  oMap[3.50] = -1;  oMap[3.500000001] = 0;
00055     // oMap[1.0] = -365; oMap[1.10] = -63; oMap[1.13] = -56;
00056     // oMap[1.17] = -49; oMap[1.22] = -42; oMap[1.28] = -35;
00057     // oMap[1.32] = -31; oMap[1.37] = -27; oMap[1.43] = -23;
00058     // oMap[1.51] = -19; oMap[1.60] = -16; oMap[1.70] = -13;
00059     // oMap[1.80] = -10; oMap[1.90] = -7;  oMap[1.93] = -5;
00060     // oMap[1.96] = -3;  oMap[2.00] = -1;  oMap[2.00000001] = 0;
00061     // oMap[1.0] = -365; oMap[1.05] = -63; oMap[1.07] = -56;
00062     // oMap[1.09] = -49; oMap[1.11] = -42; oMap[1.14] = -35;
00063     // oMap[1.16] = -31; oMap[1.18] = -27; oMap[1.21] = -23;
00064     // oMap[1.24] = -19; oMap[1.27] = -16; oMap[1.30] = -13;
00065     // oMap[1.33] = -10; oMap[1.37] = -7;  oMap[1.40] = -5;
00066     // oMap[1.45] = -3;  oMap[1.50] = -1;  oMap[1.500000001] = 0;
00067     oMap[1.10] = -365;oMap[1.40] = -63;
00068     oMap[1.50] = -49; oMap[1.60] = -35; oMap[2.00] = -23;
00069     oMap[2.60] = -16; oMap[3.30] = -10; oMap[3.44] = -5;
00070     oMap[3.50] = -1;  oMap[3.500000001] = 0;
00071     return oMap;
00072   }
00073
00075   const double DEFAULT_MAX_ADVANCE_PURCHASE = 330.0
      ;
00076
00078   stdair::BaseGenerator_T DEFAULT_BASE_GENERATOR (
      stdair::DEFAULT_RANDOM_SEED);
```

```
00079
00081   const stdair::UniformDistribution_T DEFAULT_UNIFORM_REAL_DISTRIBUTION
      ;
00082
00084   stdair::UniformGenerator_T
00085   DEFAULT_UNIFORM_GENERATOR (DEFAULT_BASE_GENERATOR
      ,
00086                              DEFAULT_UNIFORM_REAL_DISTRIBUTION
      );
00087
00088 }
```

## 23.23 trademgen/basic/BasConst_DemandGeneration.hpp File Reference

```
#include <string>
#include <stdair/stdair_maths_types.hpp>
#include <stdair/stdair_date_time_types.hpp>
#include <trademgen/basic/DemandCharacteristicsTypes.hpp>
```

### Classes

- struct TRADEMGEN::DefaultMap

### Namespaces

- namespace TRADEMGEN

### Variables

- stdair::BaseGenerator_T TRADEMGEN::DEFAULT_BASE_GENERATOR
- stdair::UniformGenerator_T TRADEMGEN::DEFAULT_UNIFORM_GENERATOR

## 23.24 BasConst_DemandGeneration.hpp

```
00001 #ifndef __TRADEMGEN_BAS_BASCONST_DEMANDGENERATION_HPP
00002 #define __TRADEMGEN_BAS_BASCONST_DEMANDGENERATION_HPP
00003
00004 // ////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // ////////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
00009 // StdAir
00010 #include <stdair/stdair_maths_types.hpp>
00011 #include <stdair/stdair_date_time_types.hpp>
00012 // TraDemGen
00013 #include <trademgen/basic/DemandCharacteristicsTypes.hpp
      >
00014
00015 namespace TRADEMGEN {
00016
00018   extern const POSProbabilityMassFunction_T
      DEFAULT_POS_PROBALILITY_MASS;
00019
00021   extern const FRAT5Pattern_T DEFAULT_FRAT5_PATTERN
      ;
00022
00024   struct DefaultMap {
00025     static POSProbabilityMassFunction_T
      createPOSProbMass();
00026     static FRAT5Pattern_T createFRAT5Pattern();
00027   };
00028
00030   extern const stdair::FloatDuration_T DEFAULT_LAST_LOWER_BOUND_ARRIVAL_PATTERN
      ;
00031
00033   extern const double DEFAULT_MAX_ADVANCE_PURCHASE;
00034
```

```
00039   extern stdair::BaseGenerator_T DEFAULT_BASE_GENERATOR;
00040
00045   extern stdair::UniformGenerator_T DEFAULT_UNIFORM_GENERATOR
      ;
00046
00048   extern const stdair::UniformDistribution_T DEFAULT_UNIFORM_REAL_DISTRIBUTION
      ;
00049
00050 }
00051 #endif // __TRADEMGEN_BAS_BASCONST_DEMANDGENERATION_HPP
```

## 23.25 trademgen/basic/BasConst_TRADEMGEN_Service.hpp File Reference

```
#include <string>
```

### Namespaces

- namespace TRADEMGEN

## 23.26 BasConst_TRADEMGEN_Service.hpp

```
00001 #ifndef __TRADEMGEN_BAS_BASCONST_TRADEMGEN_SERVICE_HPP
00002 #define __TRADEMGEN_BAS_BASCONST_TRADEMGEN_SERVICE_HPP
00003
00004 // ////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // ////////////////////////////////////////////////////////////////////
00007 #include <string>
00008
00009 namespace TRADEMGEN {
00010
00012   // extern const std::string DEFAULT_TRADEMGEN_SERVICE_NAME;
00013
00014 }
00015 #endif // __TRADEMGEN_BAS_BASCONST_TRADEMGEN_SERVICE_HPP
```

## 23.27 trademgen/basic/BasParserTypes.hpp File Reference

```
#include <string>
#include <boost/spirit/home/classic/core.hpp>
#include <boost/spirit/home/classic/utility/loops.hpp>
#include <boost/spirit/home/classic/utility/chset.hpp>
#include <boost/spirit/home/classic/utility/confix.hpp>
#include <boost/spirit/home/classic/iterator/file_iterator.hpp>
```

### Namespaces

- namespace TRADEMGEN

### Typedefs

- typedef char TRADEMGEN::char_t
- typedef boost::spirit::classic::file_iterator < char_t > TRADEMGEN::iterator_t
- typedef boost::spirit::classic::scanner < iterator_t > TRADEMGEN::scanner_t

- typedef
  boost::spirit::classic::rule
  < scanner_t > TRADEMGEN::rule_t
- typedef
  boost::spirit::classic::int_parser
  < unsigned int, 10, 1, 1 > TRADEMGEN::int1_p_t
- typedef
  boost::spirit::classic::uint_parser
  < unsigned int, 10, 2, 2 > TRADEMGEN::uint2_p_t
- typedef
  boost::spirit::classic::uint_parser
  < unsigned int, 10, 1, 2 > TRADEMGEN::uint1_2_p_t
- typedef
  boost::spirit::classic::uint_parser
  < unsigned int, 10, 1, 3 > TRADEMGEN::uint1_3_p_t
- typedef
  boost::spirit::classic::uint_parser
  < unsigned int, 10, 4, 4 > TRADEMGEN::uint4_p_t
- typedef
  boost::spirit::classic::uint_parser
  < unsigned int, 10, 1, 4 > TRADEMGEN::uint1_4_p_t
- typedef
  boost::spirit::classic::chset
  < char_t > TRADEMGEN::chset_t
- typedef
  boost::spirit::classic::impl::loop_traits
  < chset_t, unsigned int,
  unsigned int >::type TRADEMGEN::repeat_p_t
- typedef
  boost::spirit::classic::bounded
  < uint2_p_t, unsigned int > TRADEMGEN::bounded2_p_t
- typedef
  boost::spirit::classic::bounded
  < uint1_2_p_t, unsigned int > TRADEMGEN::bounded1_2_p_t
- typedef
  boost::spirit::classic::bounded
  < uint1_3_p_t, unsigned int > TRADEMGEN::bounded1_3_p_t
- typedef
  boost::spirit::classic::bounded
  < uint4_p_t, unsigned int > TRADEMGEN::bounded4_p_t
- typedef
  boost::spirit::classic::bounded
  < uint1_4_p_t, unsigned int > TRADEMGEN::bounded1_4_p_t

## 23.28 BasParserTypes.hpp

```
00001 #ifndef __TRADEMGEN_BAS_BASCOMPARSERTYPES_HPP
00002 #define __TRADEMGEN_BAS_BASCOMPARSERTYPES_HPP
00003
00004 // //////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
00009 // Boost
00010 //#define BOOST_SPIRIT_DEBUG
00011 #include <boost/spirit/home/classic/core.hpp>
00012 //#include <boost/spirit/home/classic/attribute.hpp>
00013 //#include <boost/spirit/home/classic/utility/functor_parser.hpp>
00014 #include <boost/spirit/home/classic/utility/loops.hpp>
00015 #include <boost/spirit/home/classic/utility/chset.hpp>
00016 #include <boost/spirit/home/classic/utility/confix.hpp>
```

```
00017 #include <boost/spirit/home/classic/iterator/file_iterator.hpp>
00018 //#include <boost/spirit/home/classic/actor/push_back_actor.hpp>
00019 //#include <boost/spirit/home/classic/actor/assign_actor.hpp>
00020
00021 namespace TRADEMGEN {
00022
00023   // ////////////////////////////////////////////////////////////////////
00024   //
00025   //  Definition of Basic Types
00026   //
00027   // ////////////////////////////////////////////////////////////////////
00028   // For a file, the parsing unit is the character (char). For a string,
00029   // it is a "char const *".
00030   // typedef char const* iterator_t;
00031   typedef char char_t;
00032
00033   // The types of iterator, scanner and rule are then derived from
00034   // the parsing unit.
00035   typedef boost::spirit::classic::file_iterator<char_t> iterator_t;
00036   typedef boost::spirit::classic::scanner<iterator_t> scanner_t;
00037   typedef boost::spirit::classic::rule<scanner_t> rule_t;
00038
00039   // ////////////////////////////////////////////////////////////////////
00040   //
00041   //  Parser related types
00042   //
00043   // ////////////////////////////////////////////////////////////////////
00045   typedef boost::spirit::classic::int_parser<unsigned int, 10, 1, 1> int1_p_t
      ;
00046
00048   typedef boost::spirit::classic::uint_parser<unsigned int, 10, 2, 2> uint2_p_t
      ;
00049
00051   typedef boost::spirit::classic::uint_parser<unsigned int, 10, 1, 2>
      uint1_2_p_t;
00052
00054   typedef boost::spirit::classic::uint_parser<unsigned int, 10, 1, 3>
      uint1_3_p_t;
00055
00057   typedef boost::spirit::classic::uint_parser<unsigned int, 10, 4, 4> uint4_p_t
      ;
00058
00060   typedef boost::spirit::classic::uint_parser<unsigned int, 10, 1, 4>
      uint1_4_p_t;
00061
00063   typedef boost::spirit::classic::chset<char_t> chset_t;
00064
00067   typedef boost::spirit::classic::impl::loop_traits<chset_t,
00068                                                     unsigned int,
00069                                                     unsigned int>::type repeat_p_t
      ;
00070
00072   typedef boost::spirit::classic::bounded<uint2_p_t, unsigned int> bounded2_p_t
      ;
00073   typedef boost::spirit::classic::bounded<uint1_2_p_t, unsigned int>
      bounded1_2_p_t;
00074   typedef boost::spirit::classic::bounded<uint1_3_p_t, unsigned int>
      bounded1_3_p_t;
00075   typedef boost::spirit::classic::bounded<uint4_p_t, unsigned int> bounded4_p_t
      ;
00076   typedef boost::spirit::classic::bounded<uint1_4_p_t, unsigned int>
      bounded1_4_p_t;
00077 }
00078 #endif // __TRADEMGEN_BAS_BASCOMPARSERTYPES_HPP
```

## 23.29 trademgen/basic/CategoricalAttribute.hpp File Reference

```
#include <map>
#include <iosfwd>
#include <stdair/STDAIR_Types.hpp>
#include <stdair/basic/DictionaryManager.hpp>
```

### Classes

- struct stdair::CategoricalAttribute< T >

  *Class modeling the distribution of values that can be taken by a categorical attribute.*

### Namespaces

- namespace stdair

  *Forward declarations.*

## 23.30 CategoricalAttribute.hpp

```
00001 #ifndef __STDAIR_BAS_CATEGORICALATTRIBUTE_HPP
00002 #define __STDAIR_BAS_CATEGORICALATTRIBUTE_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <map>
00009 #include <iosfwd>
00010 // STDAIR
00011 #include <stdair/STDAIR_Types.hpp>
00012 #include <stdair/basic/DictionaryManager.hpp>
00013
00014 namespace stdair {
00015
00020   template <typename T>
00021   struct CategoricalAttribute {
00022
00023   public:
00024     // ////////////////////// Type definitions /////////////////////
00028     typedef std::map<T, DictionaryKey_T> ProbabilityMassFunction_T
      ;
00029
00033     typedef std::map<DictionaryKey_T, T> InverseCumulativeDistribution_T
      ;
00034
00035
00036   private:
00037     // ////////////// Getters ////////////
00041     const ProbabilityMassFunction_T&
      getProbabilityMassFunction() const {
00042       return _probabilityMassFunction;
00043     }
00044
00048     const InverseCumulativeDistribution_T&
      getInverseCumulativeDistribution() const {
00049       return _inverseCumulativeDistribution;
00050     }
00051
00052     // ////////////// Setters ////////////
00056     void setProbabilityMassFunction (const ProbabilityMassFunction_T
      & iProbabilityMassFunction) {
00057       _probabilityMassFunction = iProbabilityMassFunction;
00058       determineInverseCumulativeDistributionFromProbabilityMassFunction
      ();
00059     }
00060
00061
00062   public:
00063     // ///////////////// Business Methods /////////
00067     const T& getValue (const Probability_T& iCumulativeProbability)
       const {
00068
00069       const DictionaryKey_T& lKey =
00070         DictionaryManager::valueToKey (iCumulativeProbability);
00071
00072       InverseCumulativeDistribution_T::const_iterator itT =
00073         _inverseCumulativeDistribution.find (lKey);
00074
00075       if (itT == _inverseCumulativeDistribution.end()) {
00076         std::ostringstream oStr;
00077         oStr << "The following cumulative probability is out of range: "
00078              << iCumulativeProbability << displayInverseCumulativeDistribution
      ();
00079         throw IndexOutOfRangeException (oStr.str());
00080       }
00081
00082       return itT->second;
00083     }
00084
00085
00086   public:
00087     // /////////////// Display Support Methods /////////
00091     const std::string displayProbabilityMassFunction
      () const {
00092       std::ostringstream oStr;
```

```
00093       unsigned int idx = 0;
00094
00095       for (typename ProbabilityMassFunction_T::const_iterator it =
00096              _probabilityMassFunction.begin();
00097            it != _probabilityMassFunction.end(); ++it, ++idx) {
00098         if (idx != 0) {
00099           oStr << ", ";
00100         }
00101         oStr << it->first << ":"
00102              << DictionaryManager::keyToValue (it->second);
00103       }
00104
00105       return oStr.str();
00106     }
00107
00111     const std::string displayInverseCumulativeDistribution
      () const {
00112       std::ostringstream oStr;
00113
00114       for (typename InverseCumulativeDistribution_T::const_iterator it =
00115              _inverseCumulativeDistribution.begin();
00116            it != _inverseCumulativeDistribution.end(); ++it) {
00117         oStr << "cumulative prob: " << DictionaryManager::keyToValue (it->first
      )
00118                   << "  value: " << it->second << std::endl;
00119       }
00120
00121       return oStr.str();
00122     }
00123
00124   public:
00125     // ********** Constructors and destructors *********
00129     CategoricalAttribute (const ProbabilityMassFunction_T
      & iProbabilityMassFunction)
00130       : _probabilityMassFunction (iProbabilityMassFunction) {
00131       determineInverseCumulativeDistributionFromProbabilityMassFunction
      ();
00132     }
00133
00137     CategoricalAttribute() { }
00138
00142     CategoricalAttribute (const CategoricalAttribute
      & iCategoricalAttribute)
00143       : _probabilityMassFunction (iCategoricalAttribute.
      _probabilityMassFunction) {
00144       determineInverseCumulativeDistributionFromProbabilityMassFunction
      ();
00145     }
00146
00150     virtual ~CategoricalAttribute() { }
00151
00152
00157     void determineInverseCumulativeDistributionFromProbabilityMassFunction
      () {
00158
00159       Probability_T cumulative_probability_so_far = 0.0;
00160       for (typename ProbabilityMassFunction_T::const_iterator
00161              itProbabilityMassFunction = _probabilityMassFunction.begin();
00162            itProbabilityMassFunction != _probabilityMassFunction.end();
00163            ++itProbabilityMassFunction) {
00164
00165         Probability_T attribute_probability_mass =
00166           DictionaryManager::keyToValue (itProbabilityMassFunction->second);
00167
00168         if (attribute_probability_mass > 0) {
00169           T attribute_value = itProbabilityMassFunction->first;
00170           cumulative_probability_so_far += attribute_probability_mass;
00171
00172           const DictionaryKey_T& lKey =
00173             DictionaryManager::valueToKey (cumulative_probability_so_far);
00174
00175           //_inverseCumulativeDistribution[lKey] = attribute_value;
00176           _inverseCumulativeDistribution.
00177             insert (typename InverseCumulativeDistribution_T
      ::
00178                     value_type (lKey, attribute_value));
00179         }
00180       }
00181     }
00182
00183   private:
00184     // ********** Attributes **********
00188     ProbabilityMassFunction_T _probabilityMassFunction
      ;
00189
00193     InverseCumulativeDistribution_T
      _inverseCumulativeDistribution;
```

```
00194   };
00195 }
00196 #endif // __STDAIR_BAS_CATEGORICALATTRIBUTE_HPP
```

## 23.31 trademgen/basic/CategoricalAttributeLite.hpp File Reference

```
#include <cassert>
#include <sstream>
#include <string>
#include <vector>
#include <map>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/service/Logger.hpp>
#include <trademgen/TRADEMGEN_Exceptions.hpp>
#include <trademgen/basic/DictionaryManager.hpp>
```

### Classes

- struct TRADEMGEN::CategoricalAttributeLite< T >

  *Class modeling the distribution of values that can be taken by a categorical attribute.*

### Namespaces

- namespace TRADEMGEN

## 23.32 CategoricalAttributeLite.hpp

```
00001 #ifndef __TRADEMGEN_BAS_CATEGORICALATTRIBUTELITE_HPP
00002 #define __TRADEMGEN_BAS_CATEGORICALATTRIBUTELITE_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <cassert>
00009 #include <sstream>
00010 #include <string>
00011 #include <vector>
00012 #include <map>
00013 // StdAir
00014 #include <stdair/stdair_basic_types.hpp>
00015 #include <stdair/service/Logger.hpp>
00016 // TraDemGen
00017 #include <trademgen/TRADEMGEN_Exceptions.hpp>
00018 #include <trademgen/basic/DictionaryManager.hpp
      >
00019
00020 namespace TRADEMGEN {
00021
00026   template <typename T>
00027   struct CategoricalAttributeLite {
00028     public:
00029     // ////////////// Type definitions ///////////////
00033     typedef std::map<T, stdair::Probability_T> ProbabilityMassFunction_T
      ;
00034
00035
00036   public:
00037     // ///////////////// Business Methods ///////////
00041     const T& getValue (const stdair::Probability_T&
      iCumulativeProbability) const {
00042       const DictionaryKey_T& lKey =
00043         DictionaryManager::valueToKey (
      iCumulativeProbability);
00044
00045       for (unsigned int idx = 0; idx < _size; ++idx) {
00046         if (_cumulativeDistribution.at(idx) >= lKey) {
00047           const T& oValue = _valueArray.at(idx);
```

```
00048           return oValue;
00049         }
00050       }
00051
00052       std::ostringstream oStr;
00053       oStr << "The following cumulative probability is out of range: "
00054            << iCumulativeProbability << displayProbabilityMass
      ();
00055       throw IndexOutOfRangeException (oStr.str());
00056     }
00057
00061     bool checkValue (const T& iValue) const {
00062       for (unsigned int idx = 0; idx < _size; ++idx) {
00063         if (_valueArray.at(idx) == iValue) {
00064           return true;
00065         }
00066       }
00067       return false;
00068     }
00069
00070
00071   public:
00072     // ////////////// Display Support Methods /////////
00076     const std::string displayProbabilityMass() const {
00077       std::ostringstream oStr;
00078
00079       for (unsigned int idx = 0; idx < _size; ++idx) {
00080         if (idx != 0) {
00081           oStr << ", ";
00082         }
00083         oStr << _valueArray.at(idx) << ":"
00084              << DictionaryManager::keyToValue (
      _cumulativeDistribution[idx]);
00085       }
00086       return oStr.str();
00087     }
00088
00089
00090   public:
00091     // ////////// Constructors and destructors ////////
00095     CategoricalAttributeLite (const
      ProbabilityMassFunction_T& iValueMap)
00096       : _size (iValueMap.size()) {
00097       init (iValueMap);
00098     }
00099
00103     CategoricalAttributeLite() : _size(1) {
00104     }
00105
00109     CategoricalAttributeLite (const
      CategoricalAttributeLite& iCAL)
00110       : _size (iCAL._size),
00111         _cumulativeDistribution (iCAL._cumulativeDistribution),
00112         _valueArray (iCAL._valueArray) {
00113     }
00114
00118     CategoricalAttributeLite& operator= (
      const CategoricalAttributeLite& iCAL) {
00119       _size = iCAL._size;
00120       _cumulativeDistribution = iCAL._cumulativeDistribution;
00121       _valueArray = iCAL._valueArray;
00122       return *this;
00123     }
00124
00128     virtual ~CategoricalAttributeLite() {
00129     }
00130
00131
00132   private:
00136     void init (const ProbabilityMassFunction_T&
      iValueMap) {
00137
00138       const unsigned int lSize = iValueMap.size();
00139       _cumulativeDistribution.reserve (lSize);
00140       _valueArray.reserve (lSize);
00141
00142       stdair::Probability_T cumulative_probability_so_far = 0.0;
00143
00144       // Browse the map to retrieve the values and to build the
00145       // cumulative probabilities.
00146       for (typename ProbabilityMassFunction_T::const_iterator
00147              itProbabilityMassFunction = iValueMap.begin();
00148            itProbabilityMassFunction != iValueMap.end();
00149            ++itProbabilityMassFunction) {
00150
00151         stdair::Probability_T attribute_probability_mass =
00152           itProbabilityMassFunction->second;
```

```
00153
00154         if (attribute_probability_mass > 0) {
00155           const T& attribute_value = itProbabilityMassFunction->first;
00156           cumulative_probability_so_far += attribute_probability_mass;
00157
00158           const DictionaryKey_T& lKey =
00159             DictionaryManager::valueToKey (
      cumulative_probability_so_far);
00160
00161           // Build the two arrays.
00162           _cumulativeDistribution.push_back (lKey);
00163           _valueArray.push_back (attribute_value);
00164         }
00165       }
00166     }
00167
00168   private:
00169     // ////////// Attributes //////////
00173     unsigned int _size;
00174
00178     std::vector<DictionaryKey_T> _cumulativeDistribution;
00179
00183     std::vector<T> _valueArray;
00184   };
00185 }
00186 #endif // __TRADEMGEN_BAS_CATEGORICALATTRIBUTELITE_HPP
```

## 23.33 trademgen/basic/ContinuousAttribute.hpp File Reference

```
#include <string>
#include <map>
#include <stdair/stdair_date_time_types.hpp>
#include <stdair/service/Logger.hpp>
#include <trademgen/basic/DictionaryManager.hpp>
```

### Classes

- struct TRADEMGEN::ContinuousAttribute< T >

### Namespaces

- namespace TRADEMGEN

## 23.34 ContinuousAttribute.hpp

```
00001 #ifndef __TRADEMGEN_BAS_CONTINUOUSATTRIBUTE_HPP
00002 #define __TRADEMGEN_BAS_CONTINUOUSATTRIBUTE_HPP
00003
00004 // ////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // ////////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
00009 #include <map>
00010 // StdAir
00011 #include <stdair/stdair_date_time_types.hpp>
00012 #include <stdair/service/Logger.hpp>
00013 // TraDemGen
00014 #include <trademgen/basic/DictionaryManager.hpp
      >
00015
00016 namespace TRADEMGEN {
00017
00020   template <class T>
00021   struct ContinuousAttribute {
00022   public:
00023
00024     // ////////////// Type definitions //////////////
00026     typedef std::multimap<T, DictionaryKey_T> ContinuousDistribution_T
      ;
00027     typedef std::multimap<DictionaryKey_T, T> ContinuousInverseDistribution_T
```

```
    ;
00028
00029   private:
00030     // ////////////// Getters ///////////
00032     const ContinuousDistribution_T&
    getCumulativeDistribution() const {
00033       return _cumulativeDistribution;
00034     }
00035
00037     const ContinuousInverseDistribution_T&
    getInverseCumulativeDistribution () const {
00038       return _inverseCumulativeDistribution;
00039     }
00040
00041   private:
00042     // ////////////// Setters ///////////
00044     void setCumulativeDistribution (const ContinuousDistribution_T
    & iCumulativeDistribution) {
00045       _cumulativeDistribution = iCumulativeDistribution;
00046       determineInverseCumulativeDistributionFromCumulativeDistribution
    ();
00047     }
00048
00049   public:
00050     // ///////////////// Business Methods //////////
00052     const T getValue (const stdair::Probability_T&
    iCumulativeProbability) const{
00053       const DictionaryKey_T lKey =
00054         DictionaryManager::valueToKey (
    iCumulativeProbability);
00055       typename ContinuousInverseDistribution_T::const_iterator it =
00056         _inverseCumulativeDistribution.lower_bound (lKey);
00057
00058       stdair::Probability_T cumulativeProbabilityNextPoint =
00059         DictionaryManager::keyToValue (it->first);
00060       T valueNextPoint = it->second;
00061
00062       if (it == _inverseCumulativeDistribution.begin()) {
00063         STDAIR_LOG_DEBUG ("Last element");
00064         return valueNextPoint;
00065       }
00066       --it;
00067
00068       stdair::Probability_T cumulativeProbabilityPreviousPoint =
00069         DictionaryManager::keyToValue (it->first);
00070       T valuePreviousPoint = it->second;
00071       if (cumulativeProbabilityNextPoint == cumulativeProbabilityPreviousPoint)
     {
00072         return valuePreviousPoint;
00073       }
00074
00075       return valuePreviousPoint + (valueNextPoint - valuePreviousPoint)
00076         * (iCumulativeProbability - cumulativeProbabilityPreviousPoint)
00077         / (cumulativeProbabilityNextPoint - cumulativeProbabilityPreviousPoint)
    ;
00078     }
00079
00080   public:
00081     // ///////////////// Display Support Methods //////////
00083     const std::string displayCumulativeDistribution
    () const {
00084       std::ostringstream oStr;
00085       unsigned int idx = 0;
00086       for (typename ContinuousDistribution_T::const_iterator it =
00087              _cumulativeDistribution.begin();
00088            it != _cumulativeDistribution.end(); ++it, ++idx) {
00089         if (idx != 0) {
00090           oStr << ", ";
00091         }
00092         oStr << it->first << ":"
00093              << DictionaryManager::keyToValue (it
    ->second);
00094       }
00095       return oStr.str();
00096     }
00097
00099     const std::string displayInverseCumulativeDistribution
    () const {
00100       std::ostringstream oStr;
00101       for (typename ContinuousInverseDistribution_T::const_iterator it =
00102              _inverseCumulativeDistribution.begin();
00103            it != _inverseCumulativeDistribution.end(); ++it) {
00104         oStr << "cumulative prob: " << DictionaryManager::keyToValue
     (it->first)
00105              << "  value: " << it->second << std::endl;
00106       }
00107       return oStr.str();
```

```
00108     }
00109
00110   public:
00111     // ////////// Constructors and destructors /////////
00113     ContinuousAttribute () { }
00114
00116     ContinuousAttribute (const ContinuousDistribution_T
      & iCumulativeDistribution)
00117       : _cumulativeDistribution (iCumulativeDistribution) {
00118       determineInverseCumulativeDistributionFromCumulativeDistribution
      ();
00119     }
00120
00122     ContinuousAttribute (const ContinuousAttribute
      & iContinuousAttribute)
00123       : _cumulativeDistribution (iContinuousAttribute._cumulativeDistribution),
00124         _inverseCumulativeDistribution (iContinuousAttribute.
      _inverseCumulativeDistribution) {
00125     }
00126
00128     virtual ~ContinuousAttribute () { }
00129
00132     void determineInverseCumulativeDistributionFromCumulativeDistribution
       () {
00133       for (typename ContinuousDistribution_T::iterator itCumulativeDistribution
       =
00134              _cumulativeDistribution.begin();
00135            itCumulativeDistribution != _cumulativeDistribution.end();
00136            ++itCumulativeDistribution) {
00137         _inverseCumulativeDistribution.
00138           insert (typename ContinuousInverseDistribution_T
      ::
00139                   value_type (itCumulativeDistribution->second,
00140                               itCumulativeDistribution->first));
00141       }
00142     }
00143
00144   private:
00145     // ////////// Attributes /////////
00146
00148     ContinuousDistribution_T _cumulativeDistribution;
00149
00151     ContinuousInverseDistribution_T
      _inverseCumulativeDistribution;
00152   };
00153
00154 }
00155 #endif // __STDAIR_BAS_CONTINUOUSATTRIBUTE_HPP
```

## 23.35 trademgen/basic/ContinuousAttributeLite.hpp File Reference

```
#include <cassert>
#include <iosfwd>
#include <string>
#include <vector>
#include <map>
#include <stdair/stdair_basic_types.hpp>
#include <trademgen/TRADEMGEN_Exceptions.hpp>
#include <trademgen/basic/DictionaryManager.hpp>
```

### Classes

- struct TRADEMGEN::ContinuousAttributeLite< T >

  *Class modeling the distribution of values that can be taken by a continuous attribute.*

### Namespaces

- namespace TRADEMGEN

## 23.36 ContinuousAttributeLite.hpp

```
00001 #ifndef __TRADEMGEN_BAS_CONTINUOUSATTRIBUTELITE_HPP
00002 #define __TRADEMGEN_BAS_CONTINUOUSATTRIBUTELITE_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <cassert>
00009 #include <iosfwd>
00010 #include <string>
00011 #include <vector>
00012 #include <map>
00013 // StdAir
00014 #include <stdair/stdair_basic_types.hpp>
00015 // TraDemGen
00016 #include <trademgen/TRADEMGEN_Exceptions.hpp>
00017 #include <trademgen/basic/DictionaryManager.hpp
      >
00018
00019 namespace TRADEMGEN {
00020
00025   template <typename T>
00026   struct ContinuousAttributeLite {
00027   public:
00028     // ////////////////////// Type definitions ///////////////////////
00032     typedef std::map<T, stdair::Probability_T> ContinuousDistribution_T
      ;
00033
00034   public:
00035     // ////////////////////// Business Methods ////////////////////
00039     const T getValue(const stdair::Probability_T&
      iCumulativeProbability) const{
00040       const DictionaryKey_T& lKey =
00041         DictionaryManager::valueToKey (
      iCumulativeProbability);
00042
00043       // Find the first cumulative probablity value greater or equal to lKey.
00044       unsigned int idx = 0;
00045       for (; idx < _size; ++idx) {
00046         if (_cumulativeDistribution.at(idx) > lKey) {
00047           break;
00048         }
00049       }
00050
00051       if (idx == 0) {
00052         return _valueArray.at(idx);
00053       }
00054       if (idx == _size) {
00055         return _valueArray.at(idx-1);
00056       }
00057
00058       //
00059       const stdair::Probability_T& lCumulativeCurrentPoint =
00060         DictionaryManager::keyToValue (
      _cumulativeDistribution.at(idx));
00061       const T& lValueCurrentPoint = _valueArray.at(idx);
00062
00063       //
00064       const stdair::Probability_T& lCumulativePreviousPoint =
00065         DictionaryManager::keyToValue (
      _cumulativeDistribution.at(idx-1));
00066       const T& lValuePreviousPoint = _valueArray.at(idx-1);
00067
00068       if (lCumulativePreviousPoint == lCumulativeCurrentPoint) {
00069         return lValuePreviousPoint;
00070       }
00071
00072       T oValue= lValuePreviousPoint + (lValueCurrentPoint - lValuePreviousPoint
      )
00073         * (iCumulativeProbability - lCumulativePreviousPoint)
00074         / (lCumulativeCurrentPoint - lCumulativePreviousPoint);
00075
00076       return oValue;
00077     }
00078
00082     const double getDerivativeValue(const T iKey) const{
00083
00084       // Find the first key value greater or equal to iKey.
00085       unsigned int idx = 0;
00086       for (; idx < _size; ++idx) {
00087         if (_valueArray.at(idx) > iKey) {
00088           break;
00089         }
00090       }
00091
```

```
00092       assert (idx != 0);
00093       assert (idx != _size);
00094
00095       //
00096       const stdair::Probability_T& lCumulativeCurrentPoint =
00097         DictionaryManager::keyToValue (
    _cumulativeDistribution.at(idx));
00098       const T& lValueCurrentPoint = _valueArray.at(idx);
00099
00100       //
00101       const stdair::Probability_T& lCumulativePreviousPoint =
00102         DictionaryManager::keyToValue (
    _cumulativeDistribution.at(idx-1));
00103       const T& lValuePreviousPoint = _valueArray.at(idx-1);
00104
00105       assert (lValueCurrentPoint != lValuePreviousPoint);
00106
00107       const double oValue= (lCumulativeCurrentPoint - lCumulativePreviousPoint)
00108         / (lValueCurrentPoint - lValuePreviousPoint);
00109
00110       return oValue;
00111     }
00112
00116     const T getUpperBound (const T iKey) const {
00117       // Find the first key value greater or equal to iKey.
00118       unsigned int idx = 0;
00119       for (; idx < _size; ++idx) {
00120         if (_valueArray.at(idx) > iKey) {
00121           break;
00122         }
00123       }
00124       assert (idx != 0);
00125       assert (idx != _size);
00126
00127       return _valueArray.at (idx);
00128     }
00129
00130   public:
00131     // ////////////// Display Support Methods ////////////////
00135     const std::string displayCumulativeDistribution
    () const {
00136       std::ostringstream oStr;
00137
00138       for (unsigned int idx = 0; idx < _size; ++idx) {
00139         if (idx != 0) {
00140           oStr << ", ";
00141         }
00142
00143         const stdair::Probability_T& lProbability =
00144           DictionaryManager::keyToValue (
    _cumulativeDistribution.at(idx));
00145
00146         oStr << _valueArray.at(idx) << ":" << lProbability;
00147       }
00148       return oStr.str();
00149     }
00150
00151
00152   public:
00153     // ////////// Constructors and destructors //////////////
00157     ContinuousAttributeLite (const
    ContinuousDistribution_T& iValueMap)
00158       : _size (iValueMap.size()) {
00159       init (iValueMap);
00160     }
00161
00165     ContinuousAttributeLite (const
    ContinuousAttributeLite& iCAL)
00166       : _size (iCAL._size),
00167         _cumulativeDistribution (iCAL._cumulativeDistribution),
00168         _valueArray (iCAL._valueArray) {
00169     }
00170
00174     ContinuousAttributeLite& operator= (const
    ContinuousAttributeLite& iCAL) {
00175       _size = iCAL._size;
00176       _cumulativeDistribution = iCAL._cumulativeDistribution;
00177       _valueArray = iCAL._valueArray;
00178       return *this;
00179     }
00180
00184     virtual ~ContinuousAttributeLite() {
00185     }
00186
00187   private:
00191     ContinuousAttributeLite() : _size(1) {
00192     }
```

```
00193
00198     void init (const ContinuousDistribution_T&
      iValueMap) {
00199       //
00200       const unsigned int lSize = iValueMap.size();
00201       _cumulativeDistribution.reserve (lSize);
00202       _valueArray.reserve (lSize);
00203
00204       // Browse the map to retrieve the values and cumulative probabilities.
00205       for (typename ContinuousDistribution_T::const_iterator it =
00206              iValueMap.begin(); it != iValueMap.end(); ++it) {
00207
00208         const T& attributeValue = it->first;
00209         const DictionaryKey_T& lKey =
      DictionaryManager::valueToKey (it->second);
00210
00211         // Build the two arrays.
00212         _cumulativeDistribution.push_back (lKey);
00213         _valueArray.push_back (attributeValue);
00214       }
00215     }
00216
00217
00218   private:
00219     // ////////// Attributes //////////
00223     unsigned int _size;
00224
00228     std::vector<DictionaryKey_T> _cumulativeDistribution;
00229
00233     std::vector<T> _valueArray;
00234   };
00235
00236 }
00237 #endif // __TRADEMGEN_BAS_CONTINUOUSATTRIBUTELITE_HPP
```

## 23.37 trademgen/basic/DemandCharacteristics.cpp File Reference

```
#include <cassert>
#include <sstream>
#include <stdair/stdair_basic_types.hpp>
#include <trademgen/basic/BasConst_DemandGeneration.hpp>
#include <trademgen/basic/DemandCharacteristics.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.38 DemandCharacteristics.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 // StdAir
00008 #include <stdair/stdair_basic_types.hpp>
00009 // TraDemGen
00010 #include <trademgen/basic/BasConst_DemandGeneration.hpp
      >
00011 #include <trademgen/basic/DemandCharacteristics.hpp
      >
00012
00013 namespace TRADEMGEN {
00014
00015   // ////////////////////////////////////////////////////
00016   DemandCharacteristics::DemandCharacteristics
      ()
00017     : _arrivalPattern (ArrivalPatternCumulativeDistribution_T
      ()),
00018       _posProbabilityMass (POSProbabilityMassFunction_T
      ()),
00019       _channelProbabilityMass (ChannelProbabilityMassFunction_T
      ()),
```

```
00020       _tripTypeProbabilityMass (TripTypeProbabilityMassFunction_T
      ()),
00021       _stayDurationProbabilityMass (StayDurationProbabilityMassFunction_T
      ()),
00022       _frequentFlyerProbabilityMass (FrequentFlyerProbabilityMassFunction_T
      ()),
00023       _preferredDepartureTimeCumulativeDistribution (
      PreferredDepartureTimeContinuousDistribution_T
      ()),
00024       _minWTP (stdair::WTP_T()), _frat5Pattern (DEFAULT_FRAT5_PATTERN
      ),
00025       _valueOfTimeCumulativeDistribution (ValueOfTimeContinuousDistribution_T
      ()) {
00026   }
00027
00028   // ////////////////////////////////////////////////////
00029   DemandCharacteristics::
00030   DemandCharacteristics (const DemandCharacteristics
      & iDC)
00031     : _arrivalPattern (iDC._arrivalPattern),
00032       _posProbabilityMass (iDC._posProbabilityMass),
00033       _channelProbabilityMass (iDC._channelProbabilityMass),
00034       _tripTypeProbabilityMass (iDC._tripTypeProbabilityMass),
00035       _stayDurationProbabilityMass (iDC._stayDurationProbabilityMass),
00036       _frequentFlyerProbabilityMass (iDC._frequentFlyerProbabilityMass),
00037       _preferredDepartureTimeCumulativeDistribution (iDC.
      _preferredDepartureTimeCumulativeDistribution),
00038       _minWTP (iDC._minWTP), _frat5Pattern (iDC._frat5Pattern),
00039       _valueOfTimeCumulativeDistribution (iDC.
      _valueOfTimeCumulativeDistribution) {
00040   }
00041
00042   // ////////////////////////////////////////////////////
00043   DemandCharacteristics::
00044   DemandCharacteristics (const
      ArrivalPatternCumulativeDistribution_T&
      iArrivalPattern,
00045                          const POSProbabilityMassFunction_T
      & iPOSProbMass,
00046                          const ChannelProbabilityMassFunction_T
      & iChannelProbMass,
00047                          const TripTypeProbabilityMassFunction_T
      & iTripTypeProbMass,
00048                          const StayDurationProbabilityMassFunction_T
      & iStayDurationProbMass,
00049                          const FrequentFlyerProbabilityMassFunction_T
      & iFrequentFlyerProbMass,
00050                          const PreferredDepartureTimeContinuousDistribution_T
      & iPreferredDepartureTimeContinuousDistribution,
00051                          const stdair::WTP_T& iMinWTP,
00052                          const ValueOfTimeContinuousDistribution_T
      & iValueOfTimeContinuousDistribution)
00053     : _arrivalPattern (iArrivalPattern),
00054       _posProbabilityMass (iPOSProbMass),
00055       _channelProbabilityMass (iChannelProbMass),
00056       _tripTypeProbabilityMass (iTripTypeProbMass),
00057       _stayDurationProbabilityMass (iStayDurationProbMass),
00058       _frequentFlyerProbabilityMass (iFrequentFlyerProbMass),
00059       _preferredDepartureTimeCumulativeDistribution (
      iPreferredDepartureTimeContinuousDistribution),
00060       _minWTP (iMinWTP), _frat5Pattern (DEFAULT_FRAT5_PATTERN
      ),
00061       _valueOfTimeCumulativeDistribution (iValueOfTimeContinuousDistribution) {
00062   }
00063
00064   // ////////////////////////////////////////////////////
00065   DemandCharacteristics::~DemandCharacteristics
      () {
00066   }
00067
00068   // ////////////////////////////////////////////////////
00069   const stdair::AirportCode_T& DemandCharacteristics::
00070   getPOSValue (const stdair::Probability_T& iCumulativeProbability
      ) const {
00071     return _posProbabilityMass.getValue (
      iCumulativeProbability);
00072   }
00073
00074   // ////////////////////////////////////////////////////
00075   bool DemandCharacteristics::
00076   checkPOSValue (const stdair::AirportCode_T& iPOS) const {
00077     return _posProbabilityMass.checkValue (iPOS);
00078   }
00079
00080   // ////////////////////////////////////////////////////
00081   const std::string DemandCharacteristics::describe
      () const {
```

```
00082     std::ostringstream oStr;
00083
00084     //
00085     oStr << "****************** Demand characteristics ******************"
00086          << std::endl;
00087     oStr << "Arrival pattern (days from departure, proportion): ";
00088     oStr << _arrivalPattern.displayCumulativeDistribution
      () << std::endl;
00089     oStr << "POS probability mass (POS, propotion): ";
00090     oStr << _posProbabilityMass.displayProbabilityMass
      ()
00091          << std::endl;
00092     oStr << "Channel probability mass (channel, propotion): ";
00093     oStr << _channelProbabilityMass.
      displayProbabilityMass()
00094          << std::endl;
00095     oStr << "Trip type probability mass (trip type, propotion): ";
00096     oStr << _tripTypeProbabilityMass.
      displayProbabilityMass()
00097          << std::endl;
00098     oStr << "Stay duration probability mass (number of days, propotion): ";
00099     oStr << _stayDurationProbabilityMass.
      displayProbabilityMass()
00100          << std::endl;
00101     oStr << "Frequent flyer probability mass (frequent flyer, propotion): ";
00102     oStr << _frequentFlyerProbabilityMass.
      displayProbabilityMass()
00103          << std::endl;
00104     oStr << "Preferred departure time cumulative distribution (time,
       proportion: ";
00105     oStr << _preferredDepartureTimeCumulativeDistribution
      .displayCumulativeDistribution() << std::endl;
00106     oStr << "min WTP: " << _minWTP << std::endl;
00107     oStr << "Value of time cumulative distribution (value of time, proportion:
      ";
00108     oStr << _valueOfTimeCumulativeDistribution
      .displayCumulativeDistribution()
00109          << std::endl;
00110
00111
00112     return oStr.str();
00113   }
00114
00115 }
00116
```

## 23.39 trademgen/basic/DemandCharacteristics.hpp File Reference

```
#include <string>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_date_time_types.hpp>
#include <stdair/basic/StructAbstract.hpp>
#include <trademgen/basic/DemandCharacteristicsTypes.hpp>
```

### Classes

- struct TRADEMGEN::DemandCharacteristics

  *Class modeling the characteristics of a demand type.*

### Namespaces

- namespace TRADEMGEN

## 23.40 DemandCharacteristics.hpp

```
00001 #ifndef __TRADEMGEN_BAS_DEMAND_CHARACTERISTICS_HPP
00002 #define __TRADEMGEN_BAS_DEMAND_CHARACTERISTICS_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
```

```
00006 // ////////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
00009 // StdAir
00010 #include <stdair/stdair_basic_types.hpp>
00011 #include <stdair/stdair_date_time_types.hpp>
00012 #include <stdair/basic/StructAbstract.hpp>
00013 // TraDemGen
00014 #include <trademgen/basic/DemandCharacteristicsTypes.hpp
      >
00015
00016 namespace TRADEMGEN {
00017
00021   struct DemandCharacteristics : public
      stdair::StructAbstract {
00022
00023   public:
00024     // ////////////// Business support methods /////////
00028     const stdair::AirportCode_T&
00029     getPOSValue (const stdair::Probability_T& iCumulativeProbability
      ) const;
00030
00034     bool checkPOSValue (const stdair::AirportCode_T& iPOS) const;
00035
00036
00037   public:
00038     // ////////////// Display support methods /////////
00042     const std::string describe() const;
00043
00044
00045   public:
00046     // ////////// Constructors and destructors ////////
00050     DemandCharacteristics (const
      ArrivalPatternCumulativeDistribution_T&,
00051                            const POSProbabilityMassFunction_T
      &,
00052                            const ChannelProbabilityMassFunction_T
      &,
00053                            const TripTypeProbabilityMassFunction_T
      &,
00054                            const StayDurationProbabilityMassFunction_T
      &,
00055                            const FrequentFlyerProbabilityMassFunction_T
      &,
00056                            const PreferredDepartureTimeContinuousDistribution_T
      &,
00057                            const stdair::WTP_T&,
00058                            const ValueOfTimeContinuousDistribution_T
      &);
00059
00063     DemandCharacteristics();
00064
00068     DemandCharacteristics (const DemandCharacteristics
      &);
00069
00073     ~DemandCharacteristics();
00074
00075
00076   public:
00077     // ////////////////////// Attributes ///////////////////
00083     ContinuousFloatDuration_T _arrivalPattern
      ;
00084
00088     POSProbabilityMass_T _posProbabilityMass
      ;
00089
00093     ChannelProbabilityMass_T _channelProbabilityMass
      ;
00094
00098     TripTypeProbabilityMass_T _tripTypeProbabilityMass
      ;
00099
00103     StayDurationProbabilityMass_T
      _stayDurationProbabilityMass;
00104
00108     FrequentFlyerProbabilityMass_T
      _frequentFlyerProbabilityMass;
00109
00113     PreferredDepartureTimeCumulativeDistribution_T
       _preferredDepartureTimeCumulativeDistribution
      ;
00114
00119     stdair::WTP_T _minWTP;
00120
00124     CumulativeDistribution_T _frat5Pattern
      ;
00125
```

```
00129     ValueOfTimeCumulativeDistribution_T
      _valueOfTimeCumulativeDistribution;
00130   };
00131
00132 }
00133 #endif // __TRADEMGEN_BAS_DEMAND_CHARACTERISTICS_HPP
```

## 23.41 trademgen/basic/DemandCharacteristicsTypes.hpp File Reference

```
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_date_time_types.hpp>
#include <stdair/stdair_demand_types.hpp>
#include <trademgen/basic/ContinuousAttributeLite.hpp>
#include <trademgen/basic/CategoricalAttributeLite.hpp>
```

### Namespaces

- namespace TRADEMGEN

### Typedefs

- typedef ContinuousAttributeLite < stdair::FloatDuration_T > TRADEMGEN::ContinuousFloatDuration_T
- typedef ContinuousFloatDuration_T::ContinuousDistribution_T TRADEMGEN::ArrivalPatternCumulativeDistribution_T
- typedef CategoricalAttributeLite < stdair::AirportCode_T > TRADEMGEN::POSProbabilityMass_T
- typedef POSProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::POSProbabilityMassFunction_T
- typedef CategoricalAttributeLite < stdair::ChannelLabel_T > TRADEMGEN::ChannelProbabilityMass_T
- typedef ChannelProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::ChannelProbabilityMassFunction_T
- typedef CategoricalAttributeLite < stdair::TripType_T > TRADEMGEN::TripTypeProbabilityMass_T
- typedef TripTypeProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::TripTypeProbabilityMassFunction_T
- typedef CategoricalAttributeLite < stdair::DayDuration_T > TRADEMGEN::StayDurationProbabilityMass_T
- typedef StayDurationProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::StayDurationProbabilityMassFunction_T
- typedef CategoricalAttributeLite < stdair::FrequentFlyer_T > TRADEMGEN::FrequentFlyerProbabilityMass_T
- typedef FrequentFlyerProbabilityMass_T::ProbabilityMassFunction_T TRADEMGEN::FrequentFlyerProbabilityMassFunction_T

- typedef ContinuousAttributeLite < stdair::IntDuration_T > TRADEMGEN::PreferredDepartureTimeCumulativeDistribution_T
- typedef PreferredDepartureTimeCumulativeDistribution_T::ContinuousDistribution_T TRADEMGEN::PreferredDepartureTimeContinuousDistribution_T
- typedef ContinuousAttributeLite < stdair::PriceValue_T > TRADEMGEN::ValueOfTimeCumulativeDistribution_T
- typedef ValueOfTimeCumulativeDistribution_T::ContinuousDistribution_T TRADEMGEN::ValueOfTimeContinuousDistribution_T
- typedef ContinuousAttributeLite < stdair::RealNumber_T > TRADEMGEN::CumulativeDistribution_T
- typedef CumulativeDistribution_T::ContinuousDistribution_T TRADEMGEN::FRAT5Pattern_T

## 23.42 DemandCharacteristicsTypes.hpp

```
00001 #ifndef __TRADEMGEN_BAS_DEMANDCHARACTERISTICSTYPES_HPP
00002 #define __TRADEMGEN_BAS_DEMANDCHARACTERISTICSTYPES_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // StdAir
00008 #include <stdair/stdair_basic_types.hpp>
00009 #include <stdair/stdair_date_time_types.hpp>
00010 #include <stdair/stdair_demand_types.hpp>
00011 // TraDemGen
00012 #include <trademgen/basic/ContinuousAttributeLite.hpp
      >
00013 #include <trademgen/basic/CategoricalAttributeLite.hpp
      >
00014
00015 namespace TRADEMGEN {
00016
00019   typedef ContinuousAttributeLite<stdair::FloatDuration_T>
      ContinuousFloatDuration_T;
00020
00022   typedef ContinuousFloatDuration_T::ContinuousDistribution_T
      ArrivalPatternCumulativeDistribution_T;
00023
00025   typedef CategoricalAttributeLite<stdair::AirportCode_T>
      POSProbabilityMass_T;
00026
00028   typedef POSProbabilityMass_T::ProbabilityMassFunction_T
      POSProbabilityMassFunction_T;
00029
00031   typedef CategoricalAttributeLite<stdair::ChannelLabel_T>
      ChannelProbabilityMass_T;
00032
00034   typedef ChannelProbabilityMass_T::ProbabilityMassFunction_T
      ChannelProbabilityMassFunction_T;
00035
00037   typedef CategoricalAttributeLite<stdair::TripType_T>
      TripTypeProbabilityMass_T;
00038
00040   typedef TripTypeProbabilityMass_T::ProbabilityMassFunction_T
      TripTypeProbabilityMassFunction_T;
00041
00043   typedef CategoricalAttributeLite<stdair::DayDuration_T>
      StayDurationProbabilityMass_T;
00044
00046   typedef StayDurationProbabilityMass_T::ProbabilityMassFunction_T
      StayDurationProbabilityMassFunction_T;
00047
00049   typedef CategoricalAttributeLite<stdair::FrequentFlyer_T>
      FrequentFlyerProbabilityMass_T;
00050
00052   typedef FrequentFlyerProbabilityMass_T::ProbabilityMassFunction_T
      FrequentFlyerProbabilityMassFunction_T;
00053
00055   typedef ContinuousAttributeLite<stdair::IntDuration_T>
      PreferredDepartureTimeCumulativeDistribution_T
```

```
    ;
00056
00058   typedef
      PreferredDepartureTimeCumulativeDistribution_T::ContinuousDistribution_T
       PreferredDepartureTimeContinuousDistribution_T
    ;
00059
00061   typedef ContinuousAttributeLite<stdair::PriceValue_T>
       ValueOfTimeCumulativeDistribution_T;
00062
00064   typedef ValueOfTimeCumulativeDistribution_T::ContinuousDistribution_T
       ValueOfTimeContinuousDistribution_T;
00065
00067   typedef ContinuousAttributeLite<stdair::RealNumber_T>
       CumulativeDistribution_T;
00068   typedef CumulativeDistribution_T::ContinuousDistribution_T
       FRAT5Pattern_T;
00069 }
00070 #endif // __TRADEMGEN_BAS_DEMANDCHARACTERISTICSTYPES_HPP
```

## 23.43 trademgen/basic/DemandDistribution.cpp File Reference

```
#include <cassert>
#include <sstream>
#include <stdair/stdair_date_time_types.hpp>
#include <trademgen/basic/DemandDistribution.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.44 DemandDistribution.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 // StdAir
00008 #include <stdair/stdair_date_time_types.hpp>
00009 // TraDemGen
00010 #include <trademgen/basic/DemandDistribution.hpp
      >
00011
00012 namespace TRADEMGEN {
00013
00014   // ////////////////////////////////////////////////////
00015   DemandDistribution::DemandDistribution
      (const stdair::NbOfRequests_T& iMean,
00016                                         const stdair::StdDevValue_T& iStdDev)
00017     : _meanNumberOfRequests (iMean),
00018       _stdDevNumberOfRequests (iStdDev) {
00019   }
00020
00021   // ////////////////////////////////////////////////////
00022   DemandDistribution::DemandDistribution(
      ) {
00023   }
00024
00025   // ////////////////////////////////////////////////////
00026   DemandDistribution::~DemandDistribution
      () {
00027   }
00028
00029   // ////////////////////////////////////////////////////
00030   DemandDistribution::
00031   DemandDistribution (const DemandDistribution
      & iDemandDistribution)
00032     : _meanNumberOfRequests (iDemandDistribution._meanNumberOfRequests),
00033       _stdDevNumberOfRequests (iDemandDistribution._stdDevNumberOfRequests) {
00034   }
00035
00036   // ////////////////////////////////////////////////////
00037   void DemandDistribution::fromStream (
```

```
      std::istream& ioIn) {
00038   }
00039
00040   // ////////////////////////////////////////////////////
00041   const std::string DemandDistribution::describe()
       const {
00042     std::ostringstream oStr;
00043     oStr << "N (" << _meanNumberOfRequests << ", "
00044          << _stdDevNumberOfRequests << ")";
00045     return oStr.str();
00046   }
00047
00048   // ////////////////////////////////////////////////////
00049   std::string DemandDistribution::display() const {
00050     std::ostringstream oStr;
00051     oStr << describe() << std::endl;
00052     return oStr.str();
00053   }
00054
00055 }
00056
```

## 23.45 trademgen/basic/DemandDistribution.hpp File Reference

```
#include <string>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/basic/StructAbstract.hpp>
#include <trademgen/basic/ContinuousAttribute.hpp>
```

### Classes

- struct TRADEMGEN::DemandDistribution

  *Class modeling the distribution of a demand type.*

### Namespaces

- namespace TRADEMGEN

## 23.46 DemandDistribution.hpp

```
00001 #ifndef __TRADEMGEN_BAS_DEMAND_DISTRIBUTION_HPP
00002 #define __TRADEMGEN_BAS_DEMAND_DISTRIBUTION_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
00009 // StdAir
00010 #include <stdair/stdair_basic_types.hpp>
00011 #include <stdair/basic/StructAbstract.hpp>
00012 // TraDemGen
00013 #include <trademgen/basic/ContinuousAttribute.hpp
      >
00014
00015 namespace TRADEMGEN {
00016
00020   struct DemandDistribution : public stdair::StructAbstract {
00021   public:
00022     // ////////// Constructors and destructors /////////
00026     DemandDistribution (const stdair::NbOfRequests_T& iMean,
00027                         const stdair::StdDevValue_T& iStdDev);
00031     DemandDistribution();
00035     DemandDistribution (const DemandDistribution
      &);
00039      ~DemandDistribution();
00040
00041
00042   public:
00043     // ////////////// Display Support Methods /////////
00049     void fromStream (std::istream& ioIn);
```

```
00050
00054     const std::string describe() const;
00055
00059     std::string display() const;
00060
00061
00062   public:
00063     // ////////// Attributes //////////
00067     stdair::NbOfRequests_T _meanNumberOfRequests;
00068
00072     stdair::StdDevValue_T _stdDevNumberOfRequests;
00073   };
00074
00075 }
00076 #endif // __TRADEMGEN_BAS_DEMAND_DISTRIBUTION_HPP
```

## 23.47 trademgen/basic/DictionaryManager.cpp File Reference

```
#include <trademgen/basic/DictionaryManager.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.48 DictionaryManager.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // TRADEMGEN
00005 #include <trademgen/basic/DictionaryManager.hpp
      >
00006
00007 namespace TRADEMGEN {
00008   // ////////////////////////////////////////////////////////////////////
00009   const stdair::Probability_T DictionaryManager::
00010   keyToValue (const DictionaryKey_T iKey) {
00011     //    return static_cast<stdair::Probability_T>(iKey) / 1000;
00012     return iKey;
00013   }
00014
00015   // ////////////////////////////////////////////////////////////////////
00016   const DictionaryKey_T DictionaryManager::
00017   valueToKey (const stdair::Probability_T iValue) {
00018     //    return iValue * 1000;
00019     return iValue;
00020   }
00021 }
```

## 23.49 trademgen/basic/DictionaryManager.hpp File Reference

```
#include <stdair/stdair_maths_types.hpp>
```

### Classes

- class TRADEMGEN::DictionaryManager

  *Class wrapper of dictionary business methods.*

### Namespaces

- namespace TRADEMGEN

#### Typedefs

- typedef stdair::Probability_T TRADEMGEN::DictionaryKey_T

## 23.50 DictionaryManager.hpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 #ifndef __TRADEMGEN_BASIC_DICTIONARYMANAGER_HPP
00003 #define __TRADEMGEN_BASIC_DICTIONARYMANAGER_HPP
00004
00005 // ////////////////////////////////////////////////////////////////////
00006 // Import section
00007 // ////////////////////////////////////////////////////////////////////
00008 // StdAir
00009 #include <stdair/stdair_maths_types.hpp>
00010
00011 namespace TRADEMGEN {
00012
00013   // ////////////// Type definitions /////////////////
00015   //typedef unsigned short DictionaryKey_T;
00016   typedef stdair::Probability_T DictionaryKey_T;
00017
00021   class DictionaryManager {
00022   public:
00023     // ////////////// Business methods /////////////////
00027     static const stdair::Probability_T keyToValue (const
      DictionaryKey_T);
00028
00032     static const DictionaryKey_T valueToKey (const
      stdair::Probability_T);
00033   };
00034 }
00035 #endif // __TRADEMGEN_BASIC_DICTIONARYMANAGER_HPP
```

## 23.51 trademgen/basic/RandomGenerationContext.cpp File Reference

```
#include <cassert>
#include <sstream>
#include <trademgen/basic/RandomGenerationContext.hpp>
```

#### Namespaces

- namespace TRADEMGEN

## 23.52 RandomGenerationContext.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 // TraDemGen
00008 #include <trademgen/basic/RandomGenerationContext.hpp
      >
00009
00010 namespace TRADEMGEN {
00011
00012   // ////////////////////////////////////////////////////////////////////
00013   RandomGenerationContext::RandomGenerationContext
       ()
00014     : _numberOfRequestsGeneratedSoFar (0),
00015       _cumulativeProbabilitySoFar (0.0) {
00016   }
00017
00018   // ////////////////////////////////////////////////////////////////////
00019   RandomGenerationContext::
00020   RandomGenerationContext (const
      RandomGenerationContext& iRGC)
00021     : _numberOfRequestsGeneratedSoFar (iRGC._numberOfRequestsGeneratedSoFar),
00022       _cumulativeProbabilitySoFar (iRGC._cumulativeProbabilitySoFar) {
```

```
00023   }
00024
00025   // ////////////////////////////////////////////////////////////////////
00026   RandomGenerationContext::~RandomGenerationContext
      () {
00027   }
00028
00029   // ////////////////////////////////////////////////////////////////////
00030   const std::string RandomGenerationContext::describe
      () const {
00031     std::ostringstream oStr;
00032     oStr << _numberOfRequestsGeneratedSoFar
00033          << " => " << _cumulativeProbabilitySoFar;
00034     return oStr.str();
00035   }
00036
00037   // ////////////////////////////////////////////////////////////////////
00038   void RandomGenerationContext::incrementGeneratedRequestsCounter
      () {
00039     ++_numberOfRequestsGeneratedSoFar;
00040   }
00041
00042   // ////////////////////////////////////////////////////////////////////
00043   void RandomGenerationContext::reset() {
00044     _cumulativeProbabilitySoFar = 0.0;
00045     _numberOfRequestsGeneratedSoFar = 0;
00046   }
00047
00048 }
```

## 23.53 trademgen/basic/RandomGenerationContext.hpp File Reference

```
#include <iosfwd>
#include <string>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_maths_types.hpp>
#include <stdair/basic/StructAbstract.hpp>
```

### Classes

- struct TRADEMGEN::RandomGenerationContext

### Namespaces

- namespace TRADEMGEN

## 23.54 RandomGenerationContext.hpp

```
00001 #ifndef __TRADEMGEN_BAS_RANDOM_GENERATION_CONTEXT_HPP
00002 #define __TRADEMGEN_BAS_RANDOM_GENERATION_CONTEXT_HPP
00003
00004 // ////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // ////////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <iosfwd>
00009 #include <string>
00010 // StdAir
00011 #include <stdair/stdair_basic_types.hpp>
00012 #include <stdair/stdair_maths_types.hpp>
00013 #include <stdair/basic/StructAbstract.hpp>
00014
00015 namespace TRADEMGEN {
00016
00020   struct RandomGenerationContext : public
      stdair::StructAbstract {
00021   public:
00022     // ////////// Getters /////////
00026     const stdair::Count_T& getNumberOfRequestsGeneratedSoFar
      () const {
00027       return _numberOfRequestsGeneratedSoFar;
```

```
00028     }
00029
00034     const stdair::Probability_T& getCumulativeProbabilitySoFar
      () const {
00035       return _cumulativeProbabilitySoFar;
00036     }
00037
00038   public:
00039     // ////////// Setters /////////
00043     void setNumberOfRequestsGeneratedSoFar (
      const stdair::Count_T& iCount) {
00044       _numberOfRequestsGeneratedSoFar = iCount;
00045     }
00046
00051     void setCumulativeProbabilitySoFar (const
      stdair::Probability_T& iProb) {
00052       _cumulativeProbabilitySoFar = iProb;
00053     }
00054
00055
00056   public:
00057     // ////////// Constructors and destructors ////////
00061     RandomGenerationContext();
00062
00066     RandomGenerationContext (const
      RandomGenerationContext&);
00067
00071     ~RandomGenerationContext();
00072
00073
00074   public:
00075     // /////////////// Business Methods //////////
00079     void incrementGeneratedRequestsCounter();
00080
00084     void reset();
00085
00086
00087   public:
00088     // ////////////// Display Support Methods //////////
00092     const std::string describe() const;
00093
00094
00095   private:
00096     // ////////// Attributes //////////
00100     stdair::Count_T _numberOfRequestsGeneratedSoFar;
00101
00106     stdair::Probability_T _cumulativeProbabilitySoFar;
00107   };
00108
00109 }
00110 #endif // __STDAIR_BAS_RANDOM_GENERATION_CONTEXT_HPP
```

## 23.55 trademgen/batches/trademgen.cpp File Reference

```
#include <cassert>
#include <sstream>
#include <fstream>
#include <vector>
#include <list>
#include <string>
#include <boost/tokenizer.hpp>
#include <boost/program_options.hpp>
#include <boost/accumulators/accumulators.hpp>
#include <boost/accumulators/statistics.hpp>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/basic/BasConst_General.hpp>
#include <stdair/basic/ProgressStatusSet.hpp>
#include <stdair/basic/DemandGenerationMethod.hpp>
#include <stdair/bom/EventStruct.hpp>
#include <stdair/bom/EventQueue.hpp>
#include <stdair/bom/BookingRequestStruct.hpp>
#include <stdair/bom/BomDisplay.hpp>
#include <stdair/service/Logger.hpp>
#include <trademgen/TRADEMGEN_Service.hpp>
#include <trademgen/config/trademgen-paths.hpp>
```

### Typedefs

- typedef unsigned int NbOfRuns_T
- typedef ba::accumulator_set
  < double, ba::stats
  < ba::tag::min, ba::tag::max,
  ba::tag::mean(ba::immediate),
  ba::tag::sum,
  ba::tag::variance > > stat_acc_type

### Functions

- const stdair::Filename_T K_TRADEMGEN_DEFAULT_LOG_FILENAME ("trademgen.log")
- const stdair::Filename_T K_TRADEMGEN_DEFAULT_INPUT_FILENAME (STDAIR_SAMPLE_DIR"/demand01.csv")
- const stdair::Filename_T K_TRADEMGEN_DEFAULT_OUTPUT_FILENAME ("request.csv")
- void stat_display (std::ostream &oStream, const stat_acc_type &iStatAcc)
- template<class T >
  std::ostream & operator<< (std::ostream &os, const std::vector< T > &v)
- int readConfiguration (int argc, char *argv[], bool &ioIsBuiltin, stdair::RandomSeed_T &ioRandomSeed, NbOfRuns_T &ioRandomRuns, stdair::Filename_T &ioInputFilename, stdair::Filename_T &ioOutputFilename, stdair::Filename_T &ioLogFilename, stdair::DemandGenerationMethod &ioDemandGenerationMethod)
- void generateDemand (TRADEMGEN::TRADEMGEN_Service &ioTrademgenService, const stdair::Filename_T &iOutputFilename, const NbOfRuns_T &iNbOfRuns, const stdair::DemandGenerationMethod &iDemandGenerationMethod)
- int main (int argc, char *argv[])

### Variables

- const
  stdair::DemandGenerationMethod K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD

- const char K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD_CHAR
- const stdair::RandomSeed_T K_TRADEMGEN_DEFAULT_RANDOM_SEED
- const NbOfRuns_T K_TRADEMGEN_DEFAULT_RANDOM_DRAWS = 1
- const bool K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT = false
- const int K_TRADEMGEN_EARLY_RETURN_STATUS = 99

### 23.55.1 Typedef Documentation

#### 23.55.1.1 typedef unsigned int NbOfRuns_T

Definition at line 40 of file trademgen.cpp.

#### 23.55.1.2 typedef ba::accumulator_set<double, ba::stats<ba::tag::min, ba::tag::max, ba::tag::mean (ba::immediate), ba::tag::sum, ba::tag::variance> > stat_acc_type

Type definition to gather statistics.

Definition at line 49 of file trademgen.cpp.

### 23.55.2 Function Documentation

#### 23.55.2.1 const stdair::Filename_T K_TRADEMGEN_DEFAULT_LOG_FILENAME ( "trademgen.log" )

Default name and location for the log file.

Referenced by readConfiguration().

#### 23.55.2.2 const stdair::Filename_T K_TRADEMGEN_DEFAULT_INPUT_FILENAME ( STDAIR_SAMPLE_DIR"/demand01.csv" )

Default name and location for the (CSV) input file.

Referenced by readConfiguration().

#### 23.55.2.3 const stdair::Filename_T K_TRADEMGEN_DEFAULT_OUTPUT_FILENAME ( "request.csv" )

Default name and location for the (CSV) output file.

Referenced by readConfiguration().

#### 23.55.2.4 void stat_display ( std::ostream & *oStream,* const stat_acc_type & *iStatAcc* )

Display the statistics held by the dedicated accumulator.

Definition at line 107 of file trademgen.cpp.

Referenced by generateDemand().

#### 23.55.2.5 template<class T > std::ostream& operator<< ( std::ostream & *os,* const std::vector< T > & *v* )

Definition at line 129 of file trademgen.cpp.

#### 23.55.2.6 int readConfiguration ( int *argc,* char * *argv[],* bool & *ioIsBuiltin,* stdair::RandomSeed_T & *ioRandomSeed,* NbOfRuns_T & *ioRandomRuns,* stdair::Filename_T & *ioInputFilename,* stdair::Filename_T & *ioOutputFilename,* stdair::Filename_T & *ioLogFilename,* stdair::DemandGenerationMethod & *ioDemandGenerationMethod* )

Read and parse the command line options.

Definition at line 138 of file trademgen.cpp.

References K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT, K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD_CHAR, K_TRADEMGEN_DEFAULT_INPUT_FILENAME(), K_TRADEMGEN_DEFAULT_LOG_F-

ILENAME(), K_TRADEMGEN_DEFAULT_OUTPUT_FILENAME(), K_TRADEMGEN_EARLY_RETURN_STATUS, PACKAGE_NAME, PACKAGE_VERSION, and PREFIXDIR.

Referenced by main().

#### 23.55.2.7 void generateDemand ( TRADEMGEN::TRADEMGEN_Service & *ioTrademgenService,* const stdair::Filename_T & *iOutputFilename,* const NbOfRuns_T & *iNbOfRuns,* const stdair::DemandGenerationMethod & *iDemandGenerationMethod* )

Definition at line 278 of file trademgen.cpp.

References TRADEMGEN::TRADEMGEN_Service::csvDisplay(), TRADEMGEN::TRADEMGEN_Service::generateFirstRequests(), TRADEMGEN::TRADEMGEN_Service::generateNextRequest(), TRADEMGEN::TRADEMGEN_Service::getExpectedTotalNumberOfRequestsToBeGenerated(), TRADEMGEN::TRADEMGEN_Service::isQueueDone(), TRADEMGEN::TRADEMGEN_Service::popEvent(), TRADEMGEN::TRADEMGEN_Service::reset(), and stat_display().

Referenced by main(), and TRADEMGEN::TRADEMGEN_Service::parseAndLoad().

#### 23.55.2.8 int main ( int *argc,* char * *argv[]* )

Definition at line 422 of file trademgen.cpp.

References TRADEMGEN::TRADEMGEN_Service::buildSampleBom(), generateDemand(), K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD, TRADEMGEN::TRADEMGEN_Service::parseAndLoad(), and readConfiguration().

### 23.55.3 Variable Documentation

#### 23.55.3.1 const stdair::DemandGenerationMethod K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD

**Initial value:**

```
stdair::DemandGenerationMethod::POI_PRO
```

Default demand generation method: Poisson Process.

Definition at line 72 of file trademgen.cpp.

Referenced by main().

#### 23.55.3.2 const char K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD_CHAR

**Initial value:**

```
K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD
    .getMethodAsChar()
```

Default demand generation method name: 'P' for Poisson Process.

Definition at line 78 of file trademgen.cpp.

Referenced by readConfiguration().

#### 23.55.3.3 const stdair::RandomSeed_T K_TRADEMGEN_DEFAULT_RANDOM_SEED

**Initial value:**

```
stdair::DEFAULT_RANDOM_SEED
```

Default random generation seed (e.g., 120765987).

Definition at line 84 of file trademgen.cpp.

Referenced by readConfiguration().

#### 23.55.3.4 const NbOfRuns_T K_TRADEMGEN_DEFAULT_RANDOM_DRAWS = 1

Default number of random draws to be generated (best if over 100).

Definition at line 90 of file trademgen.cpp.

#### 23.55.3.5 const bool K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT = false

Default for the input type. It can be either built-in or provided by an input file. That latter must then be given with the -i option.

Definition at line 96 of file trademgen.cpp.

Referenced by readConfiguration().

#### 23.55.3.6 const int K_TRADEMGEN_EARLY_RETURN_STATUS = 99

Early return status (so that it can be differentiated from an error).

Definition at line 101 of file trademgen.cpp.

Referenced by main(), and readConfiguration().

## 23.56 trademgen.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 #include <fstream>
00008 #include <vector>
00009 #include <list>
00010 #include <string>
00011 //  //// Boost (Extended STL) ////
00012 // Boost Tokeniser
00013 #include <boost/tokenizer.hpp>
00014 // Boost Program Options
00015 #include <boost/program_options.hpp>
00016 // Boost Accumulators
00017 #include <boost/accumulators/accumulators.hpp>
00018 #include <boost/accumulators/statistics.hpp>
00019 // Boost Progress
00020 //#include <boost/progress.hpp>
00021 // StdAir
00022 #include <stdair/stdair_basic_types.hpp>
00023 #include <stdair/basic/BasConst_General.hpp>
00024 #include <stdair/basic/ProgressStatusSet.hpp>
00025 #include <stdair/basic/DemandGenerationMethod.hpp>
00026 #include <stdair/bom/EventStruct.hpp>
00027 #include <stdair/bom/EventQueue.hpp>
00028 #include <stdair/bom/BookingRequestStruct.hpp>
00029 #include <stdair/bom/BomDisplay.hpp>
00030 #include <stdair/service/Logger.hpp>
00031 // TraDemGen
00032 #include <trademgen/TRADEMGEN_Service.hpp>
00033 #include <trademgen/config/trademgen-paths.hpp
      >
00034 #include <trademgen/config/trademgen-paths.hpp
      >
00035
00036 // Aliases for namespaces
00037 namespace ba = boost::accumulators;
00038
00039 // //////// Specific type definitions ///////
00040 typedef unsigned int NbOfRuns_T;
00041
00045 typedef ba::accumulator_set<double,
00046                             ba::stats<ba::tag::min, ba::tag::max,
00047                                       ba::tag::mean (ba::immediate),
00048                                       ba::tag::sum,
00049                                       ba::tag::variance> > stat_acc_type
      ;
```

```
00050
00051 // //////// Constants //////
00055 const stdair::Filename_T K_TRADEMGEN_DEFAULT_LOG_FILENAME
       ("trademgen.log");
00056
00060 const stdair::Filename_T K_TRADEMGEN_DEFAULT_INPUT_FILENAME
       (STDAIR_SAMPLE_DIR
00061                                                              "/demand01.csv");
00062
00066 const stdair::Filename_T K_TRADEMGEN_DEFAULT_OUTPUT_FILENAME
       ("request.csv");
00067
00071 const stdair::DemandGenerationMethod
00072 K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD
       =
00073   stdair::DemandGenerationMethod::POI_PRO;
00074
00078 const char K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD_CHAR
       =
00079   K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD
      .getMethodAsChar();
00080
00084 const stdair::RandomSeed_T K_TRADEMGEN_DEFAULT_RANDOM_SEED
       =
00085   stdair::DEFAULT_RANDOM_SEED;
00086
00090 const NbOfRuns_T K_TRADEMGEN_DEFAULT_RANDOM_DRAWS
       = 1;
00091
00096 const bool K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT
       = false;
00097
00101 const int K_TRADEMGEN_EARLY_RETURN_STATUS = 99;
00102
00103
00107 void stat_display (std::ostream& oStream, const stat_acc_type
      & iStatAcc) {
00108
00109   // Store current formatting flags of the output stream
00110   std::ios::fmtflags oldFlags = oStream.flags();
00111
00112   //
00113   oStream.setf (std::ios::fixed);
00114
00115   //
00116   oStream << "Statistics for the demand generation runs: " << std::endl;
00117   oStream << "  minimum   = " << ba::min (iStatAcc) << std::endl;
00118   oStream << "  mean      = " << ba::mean (iStatAcc) << std::endl;
00119   oStream << "  maximum   = " << ba::max (iStatAcc) << std::endl;
00120   oStream << "  count     = " << ba::count (iStatAcc) << std::endl;
00121   oStream << "  variance  = " << ba::variance (iStatAcc) << std::endl;
00122
00123   // Reset formatting flags of output stream
00124   oStream.flags (oldFlags);
00125 }
00126
00127 // ///////// Parsing of Options & Configuration /////////
00128 // A helper function to simplify the main part.
00129 template<class T> std::ostream& operator<< (std::ostream& os,
00130                                             const std::vector<T>& v) {
00131   std::copy (v.begin(), v.end(), std::ostream_iterator<T> (std::cout, " "));
00132   return os;
00133 }
00134
00138 int readConfiguration (int argc, char* argv[], bool&
      ioIsBuiltin,
00139                        stdair::RandomSeed_T& ioRandomSeed,
00140                        NbOfRuns_T& ioRandomRuns,
00141                        stdair::Filename_T& ioInputFilename,
00142                        stdair::Filename_T& ioOutputFilename,
00143                        stdair::Filename_T& ioLogFilename,
00144                        stdair::DemandGenerationMethod& ioDemandGenerationMethod
      ) {
00145
00146   // Demand generation method as a single char (e.g., 'P' or 'S').
00147   char lDemandGenerationMethodChar;
00148
00149   // Default for the built-in input
00150   ioIsBuiltin = K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT
      ;
00151
00152   // Declare a group of options that will be allowed only on command line
00153   boost::program_options::options_description generic ("Generic options");
00154   generic.add_options()
00155     ("prefix", "print installation prefix")
00156     ("version,v", "print version string")
00157     ("help,h", "produce help message");
```

```
00158
00159   // Declare a group of options that will be allowed both on command
00160   // line and in config file
00161   boost::program_options::options_description config ("Configuration");
00162   config.add_options()
00163     ("builtin,b",
00164      "The sample BOM tree can be either built-in or parsed from an input file.
       That latter must then be given with the -i/--input option")
00165     ("seed,s",
00166      boost::program_options::value<stdair::RandomSeed_T>(&ioRandomSeed)->
      default_value(K_TRADEMGEN_DEFAULT_RANDOM_SEED),
00167      "Seed for the random generation")
00168     ("draws,d",
00169      boost::program_options::value<NbOfRuns_T>(&ioRandomRuns)->default_value(
      K_TRADEMGEN_DEFAULT_RANDOM_DRAWS),
00170      "Number of runs for the demand generations")
00171     ("demandgeneration,G",
00172      boost::program_options::value< char >(&lDemandGenerationMethodChar)->
      default_value(K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD_CHAR
      ),
00173      "Method used to generate the demand (i.e., the booking requests): Poisson
       Process (P) or Order Statistics (S)")
00174     ("input,i",
00175      boost::program_options::value< std::string >(&ioInputFilename)->
      default_value(K_TRADEMGEN_DEFAULT_INPUT_FILENAME),
00176      "(CSV) input file for the demand distributions")
00177     ("output,o",
00178      boost::program_options::value< std::string >(&ioOutputFilename)->
      default_value(K_TRADEMGEN_DEFAULT_OUTPUT_FILENAME),
00179      "(CSV) output file for the generated requests")
00180     ("log,l",
00181      boost::program_options::value< std::string >(&ioLogFilename)->
      default_value(K_TRADEMGEN_DEFAULT_LOG_FILENAME),
00182      "Filepath for the logs")
00183     ;
00184
00185   // Hidden options, will be allowed both on command line and
00186   // in config file, but will not be shown to the user.
00187   boost::program_options::options_description hidden ("Hidden options");
00188   hidden.add_options()
00189     ("copyright",
00190      boost::program_options::value< std::vector<std::string> >(),
00191      "Show the copyright (license)");
00192
00193   boost::program_options::options_description cmdline_options;
00194   cmdline_options.add(generic).add(config).add(hidden);
00195
00196   boost::program_options::options_description config_file_options;
00197   config_file_options.add(config).add(hidden);
00198
00199   boost::program_options::options_description visible ("Allowed options");
00200   visible.add(generic).add(config);
00201
00202   boost::program_options::positional_options_description p;
00203   p.add ("copyright", -1);
00204
00205   boost::program_options::variables_map vm;
00206   boost::program_options::
00207     store (boost::program_options::command_line_parser (argc, argv).
00208            options (cmdline_options).positional(p).run(), vm);
00209
00210   std::ifstream ifs ("trademgen.cfg");
00211   boost::program_options::store (parse_config_file (ifs, config_file_options),
00212                                  vm);
00213   boost::program_options::notify (vm);
00214
00215   if (vm.count ("help")) {
00216     std::cout << visible << std::endl;
00217     return K_TRADEMGEN_EARLY_RETURN_STATUS;
00218   }
00219
00220   if (vm.count ("version")) {
00221     std::cout << PACKAGE_NAME << ", version " << PACKAGE_VERSION
       << std::endl;
00222     return K_TRADEMGEN_EARLY_RETURN_STATUS;
00223   }
00224
00225   if (vm.count ("prefix")) {
00226     std::cout << "Installation prefix: " << PREFIXDIR << std::endl;
00227     return K_TRADEMGEN_EARLY_RETURN_STATUS;
00228   }
00229
00230   if (vm.count ("builtin")) {
00231     ioIsBuiltin = true;
00232   }
00233   const std::string isBuiltinStr = (ioIsBuiltin == true)?"yes":"no";
00234   std::cout << "The BOM should be built-in? " << isBuiltinStr << std::endl;
```

```
00235
00236   if (ioIsBuiltin == false) {
00237
00238     // The BOM tree should be built from parsing a demand input file
00239     if (vm.count ("input")) {
00240       ioInputFilename = vm["input"].as< std::string >();
00241       std::cout << "Input filename is: " << ioInputFilename << std::endl;
00242
00243     } else {
00244       // The built-in option is not selected. However, no demand input file
00245       // is specified
00246       std::cerr << "Either one among the -b/--builtin and -i/--input "
00247                 << "options must be specified" << std::endl;
00248     }
00249   }
00250
00251   if (vm.count ("output")) {
00252     ioOutputFilename = vm["output"].as< std::string >();
00253     std::cout << "Output filename is: " << ioOutputFilename << std::endl;
00254   }
00255
00256   if (vm.count ("log")) {
00257     ioLogFilename = vm["log"].as< std::string >();
00258     std::cout << "Log filename is: " << ioLogFilename << std::endl;
00259   }
00260
00261   if (vm.count ("demandgeneration")) {
00262     ioDemandGenerationMethod =
00263       stdair::DemandGenerationMethod (lDemandGenerationMethodChar);
00264     std::cout << "Date-time request generation method is: "
00265               << ioDemandGenerationMethod.describe() << std::endl;
00266   }
00267
00268   //
00269   std::cout << "The random generation seed is: " << ioRandomSeed << std::endl;
00270
00271   //
00272   std::cout << "The number of runs is: " << ioRandomRuns << std::endl;
00273
00274   return 0;
00275 }
00276
00277 // ////////////////////////////////////////////////////////////////////
00278 void generateDemand (TRADEMGEN::TRADEMGEN_Service
      & ioTrademgenService,
00279                      const stdair::Filename_T& iOutputFilename,
00280                      const NbOfRuns_T& iNbOfRuns,
00281                      const stdair::DemandGenerationMethod&
      iDemandGenerationMethod) {
00282
00283   // Open and clean the .csv output file
00284   std::ofstream output;
00285   output.open (iOutputFilename.c_str());
00286   output.clear();
00287
00288   // Initialise the statistics collector/accumulator
00289   stat_acc_type lStatAccumulator;
00290
00291   // Retrieve the expected (mean value of the) number of events to be
00292   // generated
00293   const stdair::Count_T& lExpectedNbOfEventsToBeGenerated =
00294     ioTrademgenService.getExpectedTotalNumberOfRequestsToBeGenerated
      ();
00295
00296   // Initialise the (Boost) progress display object
00297   boost::progress_display lProgressDisplay (lExpectedNbOfEventsToBeGenerated
00298                                             * iNbOfRuns);
00299
00300   for (NbOfRuns_T runIdx = 1; runIdx <= iNbOfRuns; ++runIdx) {
00301     // ////////////////////////////////////////////////////
00302     output << "Run number: " << runIdx << std::endl;
00303
00308     const stdair::Count_T& lActualNbOfEventsToBeGenerated =
00309       ioTrademgenService.generateFirstRequests (
      iDemandGenerationMethod);
00310
00311     // DEBUG
00312     STDAIR_LOG_DEBUG ("[" << runIdx << "] Expected: "
00313                       << lExpectedNbOfEventsToBeGenerated << ", actual: "
00314                       << lActualNbOfEventsToBeGenerated);
00315
00323     while (ioTrademgenService.isQueueDone() == false) {
00324
00325       // Extract the next event from the event queue
00326       stdair::EventStruct lEventStruct;
00327       stdair::ProgressStatusSet lProgressStatusSet =
00328         ioTrademgenService.popEvent (lEventStruct);
```

```
00329
00330       // DEBUG
00331       // STDAIR_LOG_DEBUG ("[" << runIdx << "] Poped event: '"
00332       //                   << lEventStruct.describe() << "'.");
00333
00334       // Extract the corresponding demand/booking request
00335       const stdair::BookingRequestStruct& lPoppedRequest =
00336         lEventStruct.getBookingRequest();
00337
00338       // DEBUG
00339       STDAIR_LOG_DEBUG ("[" << runIdx << "] Poped booking request: '"
00340                         << lPoppedRequest.describe() << "'.");
00341
00342       // Dump the request into the dedicated CSV file
00343       // stdair::BomDisplay::csvDisplay (output, lPoppedRequest);
00344
00345       // Retrieve the corresponding demand stream key
00346       const stdair::DemandGeneratorKey_T& lDemandStreamKey =
00347         lPoppedRequest.getDemandGeneratorKey();
00348
00349       // Assess whether more events should be generated for that demand stream
00350       const bool stillHavingRequestsToBeGenerated = ioTrademgenService.
00351         stillHavingRequestsToBeGenerated (lDemandStreamKey,
00352                                           lProgressStatusSet,
00353                                           iDemandGenerationMethod);
00354
00355       // DEBUG
00356       STDAIR_LOG_DEBUG (lProgressStatusSet.describe());
00357       STDAIR_LOG_DEBUG ("=> [" << lDemandStreamKey << "] is now processed. "
00358                         << "Still generate events for that demand stream? "
00359                         << stillHavingRequestsToBeGenerated);
00360
00361       // If there are still events to be generated for that demand stream,
00362       // generate and add them to the event queue
00363       if (stillHavingRequestsToBeGenerated == true) {
00364
00365         stdair::BookingRequestPtr_T lNextRequest_ptr =
00366           ioTrademgenService.generateNextRequest (
    lDemandStreamKey,
00367                                                   iDemandGenerationMethod);
00368
00369         assert (lNextRequest_ptr != NULL);
00370
00371         // Sanity check
00372         const stdair::Duration_T lDuration =
00373           lNextRequest_ptr->getRequestDateTime()
00374           - lPoppedRequest.getRequestDateTime();
00375         if (lDuration.total_milliseconds() < 0) {
00376           STDAIR_LOG_ERROR ("[" << lDemandStreamKey
00377                             << "] The date-time of the generated event ("
00378                             << lNextRequest_ptr->getRequestDateTime()
00379                             << ") is lower than the date-time "
00380                             << "of the current event ("
00381                             << lPoppedRequest.getRequestDateTime() << ")");
00382           assert (false);
00383         }
00384
00385         // DEBUG
00386         STDAIR_LOG_DEBUG ("[" << lDemandStreamKey << "] Added request: '"
00387                           << lNextRequest_ptr->describe()
00388                           << "'. Is queue done? "
00389                           << ioTrademgenService.isQueueDone());
00390       }
00391       // DEBUG
00392       STDAIR_LOG_DEBUG ("");
00393
00394       // Update the progress display
00395       ++lProgressDisplay;
00396     }
00397
00398     // Add the number of events to the statistics accumulator
00399     lStatAccumulator (lActualNbOfEventsToBeGenerated);
00400
00401     // Reset the service (including the event queue) for the next run
00402     ioTrademgenService.reset();
00403   }
00404
00405   // DEBUG
00406   STDAIR_LOG_DEBUG ("End of the demand generation. Following are some "
00407                     "statistics for the " << iNbOfRuns << " runs.");
00408   std::ostringstream oStatStr;
00409   stat_display (oStatStr, lStatAccumulator);
00410   STDAIR_LOG_DEBUG (oStatStr.str());
00411
00412   // DEBUG
00413   const std::string& lBOMStr = ioTrademgenService.csvDisplay();
00414   STDAIR_LOG_DEBUG (lBOMStr);
```

```
00415
00416   // Close the output file
00417   output.close();
00418 }
00419
00420
00421 // ///////////////// M A I N //////////////////
00422 int main (int argc, char* argv[]) {
00423
00424   // State whether the BOM tree should be built-in or parsed from an input file
00425   bool isBuiltin;
00426
00427   // Random generation seed
00428   stdair::RandomSeed_T lRandomSeed;
00429
00430   // Number of random draws to be generated (best if greater than 100)
00431   NbOfRuns_T lNbOfRuns;
00432
00433   // Input file name
00434   stdair::Filename_T lInputFilename;
00435
00436   // Output file name
00437   stdair::Filename_T lOutputFilename;
00438
00439   // Output log File
00440   stdair::Filename_T lLogFilename;
00441
00442   // Demand generation method.
00443   stdair::DemandGenerationMethod
00444     lDemandGenerationMethod (K_TRADEMGEN_DEFAULT_DEMAND_GENERATION_METHOD
      );
00445
00446   // Call the command-line option parser
00447   const int lOptionParserStatus =
00448     readConfiguration (argc, argv, isBuiltin, lRandomSeed,
      lNbOfRuns,
00449                        lInputFilename, lOutputFilename, lLogFilename,
00450                        lDemandGenerationMethod);
00451
00452   if (lOptionParserStatus == K_TRADEMGEN_EARLY_RETURN_STATUS) {
00453     return 0;
00454   }
00455
00456   // Set the log parameters
00457   std::ofstream logOutputFile;
00458   // Open and clean the log outputfile
00459   logOutputFile.open (lLogFilename.c_str());
00460   logOutputFile.clear();
00461
00462   // Set up the log parameters
00463   const stdair::BasLogParams lLogParams (stdair::LOG::DEBUG, logOutputFile);
00464
00465   // Initialise the TraDemGen service object
00466   TRADEMGEN::TRADEMGEN_Service trademgenService (
      lLogParams, lRandomSeed);
00467
00468   // Check wether or not a (CSV) input file should be read
00469   if (isBuiltin == true) {
00470     // Create a sample DemandStream object, and insert it within the BOM tree
00471     trademgenService.buildSampleBom();
00472
00473   } else {
00474     // Create the DemandStream objects, and insert them within the BOM tree
00475     trademgenService.parseAndLoad (lInputFilename);
00476   }
00477
00478   // Calculate the expected number of events to be generated.
00479   generateDemand (trademgenService, lOutputFilename, lNbOfRuns,
00480                   lDemandGenerationMethod);
00481
00482   // Close the Log outputFile
00483   logOutputFile.close();
00484
00485   /*
00486     \note: as that program is not intended to be run on a server in
00487     production, it is better not to catch the exceptions. When it
00488     happens (that an exception is throwned), that way we get the
00489     call stack.
00490   */
00491
00492   return 0;
00493 }
```

## 23.57 trademgen/ui/qt/trademgen/trademgen.cpp File Reference

```
#include "trademgen.h"
#include <QtGui/QLabel>
#include <QtGui/QMenu>
#include <QtGui/QMenuBar>
#include <QtGui/QAction>
#include "trademgen.moc"
```

## 23.58 trademgen.cpp

```
00001 #include "trademgen.h"
00002
00003 #include <QtGui/QLabel>
00004 #include <QtGui/QMenu>
00005 #include <QtGui/QMenuBar>
00006 #include <QtGui/QAction>
00007
00008 trademgen::trademgen()
00009 {
00010     QLabel* l = new QLabel( this );
00011     l->setText( "Hello World!" );
00012     setCentralWidget( l );
00013     QAction* a = new QAction(this);
00014     a->setText( "Quit" );
00015     connect(a, SIGNAL(triggered()), SLOT(close()) );
00016     menuBar()->addMenu( "File" )->addAction( a );
00017 }
00018
00019 trademgen::~trademgen()
00020 {}
00021
00022 #include "trademgen.moc"
```

## 23.59 trademgen/batches/trademgen_with_db.cpp File Reference

```
#include <cassert>
#include <iostream>
#include <sstream>
#include <fstream>
#include <vector>
#include <string>
#include <boost/date_time/posix_time/posix_time.hpp>
#include <boost/date_time/gregorian/gregorian.hpp>
#include <boost/tokenizer.hpp>
#include <boost/program_options.hpp>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/basic/BasConst_General.hpp>
#include <stdair/basic/BasDBParams.hpp>
#include <stdair/basic/BasLogParams.hpp>
#include <trademgen/TRADEMGEN_Service.hpp>
#include <trademgen/config/trademgen-paths.hpp>
```

### Typedefs

- typedef std::vector< std::string > WordList_T

### Functions

- const std::string K_TRADEMGEN_DEFAULT_LOG_FILENAME ("trademgen_with_db.log")

- const std::string K_TRADEMGEN_DEFAULT_INPUT_FILENAME (STDAIR_SAMPLE_DIR"/demand01.csv")
- const std::string K_TRADEMGEN_DEFAULT_QUERY_STRING ("my good old query")
- const std::string K_TRADEMGEN_DEFAULT_DB_USER ("dsim")
- const std::string K_TRADEMGEN_DEFAULT_DB_PASSWD ("dsim")
- const std::string K_TRADEMGEN_DEFAULT_DB_DBNAME ("sim_dsim")
- const std::string K_TRADEMGEN_DEFAULT_DB_HOST ("localhost")
- const std::string K_TRADEMGEN_DEFAULT_DB_PORT ("3306")
- void tokeniseStringIntoWordList (const std::string &iPhrase, WordList_T &ioWordList)
- std::string createStringFromWordList (const WordList_T &iWordList)
- template<class T >
  std::ostream & operator<< (std::ostream &os, const std::vector< T > &v)
- int readConfiguration (int argc, char *argv[], bool &ioIsBuiltin, stdair::RandomSeed_T &ioRandomSeed, std::string &ioQueryString, stdair::Filename_T &ioInputFilename, std::string &ioLogFilename, std::string &ioDBUser, std::string &ioDBPasswd, std::string &ioDBHost, std::string &ioDBPort, std::string &ioDBDBName)
- int main (int argc, char *argv[])

**Variables**

- const bool K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT = false
- const stdair::RandomSeed_T K_TRADEMGEN_DEFAULT_RANDOM_SEED
- const int K_TRADEMGEN_EARLY_RETURN_STATUS = 99

### 23.59.1 Typedef Documentation

#### 23.59.1.1 typedef std::vector<std::string> WordList_T

Definition at line 24 of file trademgen_with_db.cpp.

### 23.59.2 Function Documentation

#### 23.59.2.1 const std::string K_TRADEMGEN_DEFAULT_LOG_FILENAME ( "trademgen_with_db.log" )

Default name and location for the log file.

#### 23.59.2.2 const std::string K_TRADEMGEN_DEFAULT_INPUT_FILENAME ( STDAIR_SAMPLE_DIR"/demand01.csv" )

Default name and location for the (CSV) input file.

#### 23.59.2.3 const std::string K_TRADEMGEN_DEFAULT_QUERY_STRING ( "my good old query" )

Default query string.

Referenced by readConfiguration().

#### 23.59.2.4 const std::string K_TRADEMGEN_DEFAULT_DB_USER ( "dsim" )

Default parameters for the database connection.

Referenced by readConfiguration().

#### 23.59.2.5 const std::string K_TRADEMGEN_DEFAULT_DB_PASSWD ( "dsim" )

Referenced by readConfiguration().

#### 23.59.2.6 const std::string K_TRADEMGEN_DEFAULT_DB_DBNAME ( "sim_dsim" )

Referenced by readConfiguration().

#### 23.59.2.7 const std::string K_TRADEMGEN_DEFAULT_DB_HOST ( "localhost" )

Referenced by readConfiguration().

#### 23.59.2.8 const std::string K_TRADEMGEN_DEFAULT_DB_PORT ( "3306" )

Referenced by readConfiguration().

#### 23.59.2.9 void tokeniseStringIntoWordList ( const std::string & *iPhrase,* WordList_T & *ioWordList* )

Definition at line 67 of file trademgen_with_db.cpp.

Referenced by readConfiguration().

#### 23.59.2.10 std::string createStringFromWordList ( const WordList_T & *iWordList* )

Definition at line 89 of file trademgen_with_db.cpp.

Referenced by readConfiguration().

#### 23.59.2.11 template<class T > std::ostream& operator<< ( std::ostream & *os,* const std::vector< T > & *v* )

Definition at line 108 of file trademgen_with_db.cpp.

#### 23.59.2.12 int readConfiguration ( int *argc,* char * *argv[],* bool & *ioIsBuiltin,* stdair::RandomSeed_T & *ioRandomSeed,* std::string & *ioQueryString,* stdair::Filename_T & *ioInputFilename,* std::string & *ioLogFilename,* std::string & *ioDBUser,* std::string & *ioDBPasswd,* std::string & *ioDBHost,* std::string & *ioDBPort,* std::string & *ioDBDBName* )

Read and parse the command line options.

Definition at line 118 of file trademgen_with_db.cpp.

References createStringFromWordList(), K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT, K_TRADEMGEN_DEFAULT_DB_DBNAME(), K_TRADEMGEN_DEFAULT_DB_HOST(), K_TRADEMGEN_DEFAULT_DB_PASSWD(), K_TRADEMGEN_DEFAULT_DB_PORT(), K_TRADEMGEN_DEFAULT_DB_USER(), K_TRADEMGEN_DEFAULT_INPUT_FILENAME(), K_TRADEMGEN_DEFAULT_LOG_FILENAME(), K_TRADEMGEN_DEFAULT_QUERY_STRING(), K_TRADEMGEN_DEFAULT_RANDOM_SEED, K_TRADEMGEN_EARLY_RETURN_STATUS, PACKAGE_NAME, PACKAGE_VERSION, PREFIXDIR, and tokeniseStringIntoWordList().

#### 23.59.2.13 int main ( int *argc,* char * *argv[]* )

Definition at line 288 of file trademgen_with_db.cpp.

References TRADEMGEN::TRADEMGEN_Service::buildSampleBom(), TRADEMGEN::TRADEMGEN_Service::displayAirlineListFromDB(), K_TRADEMGEN_EARLY_RETURN_STATUS, TRADEMGEN::TRADEMGEN_Service::parseAndLoad(), and readConfiguration().

### 23.59.3 Variable Documentation

#### 23.59.3.1 const bool K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT = false

Default for the input type. It can be either built-in or provided by an input file. That latter must then be given with the -i option.

Definition at line 43 of file trademgen_with_db.cpp.

#### 23.59.3.2 const stdair::RandomSeed_T K_TRADEMGEN_DEFAULT_RANDOM_SEED

**Initial value:**

```
stdair::DEFAULT_RANDOM_SEED
```

Default random generation seed (e.g., 120765987).

Definition at line 48 of file trademgen_with_db.cpp.

#### 23.59.3.3 const int K_TRADEMGEN_EARLY_RETURN_STATUS = 99

Early return status (so that it can be differentiated from an error).

Definition at line 115 of file trademgen_with_db.cpp.

## 23.60 trademgen_with_db.cpp

```
00001 // STL
00002 #include <cassert>
00003 #include <iostream>
00004 #include <sstream>
00005 #include <fstream>
00006 #include <vector>
00007 #include <string>
00008 // Boost (Extended STL)
00009 #include <boost/date_time/posix_time/posix_time.hpp>
00010 #include <boost/date_time/gregorian/gregorian.hpp>
00011 #include <boost/tokenizer.hpp>
00012 #include <boost/program_options.hpp>
00013 // StdAir
00014 #include <stdair/stdair_basic_types.hpp>
00015 #include <stdair/basic/BasConst_General.hpp>
00016 #include <stdair/basic/BasDBParams.hpp>
00017 #include <stdair/basic/BasLogParams.hpp>
00018 // TraDemGen
00019 #include <trademgen/TRADEMGEN_Service.hpp>
00020 #include <trademgen/config/trademgen-paths.hpp
      >
00021
00022
00023 // //////// Type definitions ///////
00024 typedef std::vector<std::string> WordList_T;
00025
00026
00027 // //////// Constants //////
00031 const std::string K_TRADEMGEN_DEFAULT_LOG_FILENAME
       ("trademgen_with_db.log");
00032
00036 const std::string K_TRADEMGEN_DEFAULT_INPUT_FILENAME
       (STDAIR_SAMPLE_DIR
00037                                                    "/demand01.csv");
00038
00043 const bool K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT
       = false;
00044
00048 const stdair::RandomSeed_T K_TRADEMGEN_DEFAULT_RANDOM_SEED
       =
00049   stdair::DEFAULT_RANDOM_SEED;
00050
00054 const std::string K_TRADEMGEN_DEFAULT_QUERY_STRING
       ("my good old query");
00055
00059 const std::string K_TRADEMGEN_DEFAULT_DB_USER ("dsim
      ");
00060 const std::string K_TRADEMGEN_DEFAULT_DB_PASSWD ("
      dsim");
00061 const std::string K_TRADEMGEN_DEFAULT_DB_DBNAME ("
      sim_dsim");
00062 const std::string K_TRADEMGEN_DEFAULT_DB_HOST ("
      localhost");
00063 const std::string K_TRADEMGEN_DEFAULT_DB_PORT ("3306
      ");
00064
00065
00066 // ////////////////////////////////////////////////////////////////////
00067 void tokeniseStringIntoWordList (const std::string&
      iPhrase,
00068                                  WordList_T& ioWordList) {
00069   // Empty the word list
00070   ioWordList.clear();
00071
00072   // Boost Tokeniser
00073   typedef boost::tokenizer<boost::char_separator<char> > Tokeniser_T;
00074
00075   // Define the separators
00076   const boost::char_separator<char> lSepatorList("
       .,;:|+-*/_=!@#$%^~^&(){}[]?'<>\"");
00077
00078   // Initialise the phrase to be tokenised
```

```
00079   Tokeniser_T lTokens (iPhrase, lSepatorList);
00080   for (Tokeniser_T::const_iterator tok_iter = lTokens.begin();
00081        tok_iter != lTokens.end(); ++tok_iter) {
00082     const std::string& lTerm = *tok_iter;
00083     ioWordList.push_back (lTerm);
00084   }
00085
00086 }
00087
00088 // ////////////////////////////////////////////////////////////////////
00089 std::string createStringFromWordList (const WordList_T
      & iWordList) {
00090   std::ostringstream oStr;
00091
00092   unsigned short idx = iWordList.size();
00093   for (WordList_T::const_iterator itWord = iWordList.begin();
00094        itWord != iWordList.end(); ++itWord, --idx) {
00095     const std::string& lWord = *itWord;
00096     oStr << lWord;
00097     if (idx > 1) {
00098       oStr << " ";
00099     }
00100   }
00101
00102   return oStr.str();
00103 }
00104
00105
00106 // ///////// Parsing of Options & Configuration /////////
00107 // A helper function to simplify the main part.
00108 template<class T> std::ostream& operator<< (std::ostream& os,
00109                                             const std::vector<T>& v) {
00110   std::copy (v.begin(), v.end(), std::ostream_iterator<T> (std::cout, " "));
00111   return os;
00112 }
00113
00115 const int K_TRADEMGEN_EARLY_RETURN_STATUS = 99;
00116
00118 int readConfiguration (int argc, char* argv[], bool&
      ioIsBuiltin,
00119                        stdair::RandomSeed_T& ioRandomSeed,
00120                        std::string& ioQueryString,
00121                        stdair::Filename_T& ioInputFilename,
00122                        std::string& ioLogFilename,
00123                        std::string& ioDBUser, std::string& ioDBPasswd,
00124                        std::string& ioDBHost, std::string& ioDBPort,
00125                        std::string& ioDBDBName) {
00126
00127   // Default for the built-in input
00128   ioIsBuiltin = K_TRADEMGEN_DEFAULT_BUILT_IN_INPUT
      ;
00129
00130   // Initialise the travel query string, if that one is empty
00131   if (ioQueryString.empty() == true) {
00132     ioQueryString = K_TRADEMGEN_DEFAULT_QUERY_STRING
      ;
00133   }
00134
00135   // Transform the query string into a list of words (STL strings)
00136   WordList_T lWordList;
00137   tokeniseStringIntoWordList (ioQueryString,
      lWordList);
00138
00139   // Declare a group of options that will be allowed only on command line
00140   boost::program_options::options_description generic ("Generic options");
00141   generic.add_options()
00142     ("prefix", "print installation prefix")
00143     ("version,v", "print version string")
00144     ("help,h", "produce help message");
00145
00146   // Declare a group of options that will be allowed both on command
00147   // line and in config file
00148   boost::program_options::options_description config ("Configuration");
00149   config.add_options()
00150     ("builtin,b",
00151      "The sample BOM tree can be either built-in or parsed from an input file.
       That latter must then be given with the -i/--input option")
00152     ("seed,s",
00153      boost::program_options::value<stdair::RandomSeed_T>(&ioRandomSeed)->
      default_value(K_TRADEMGEN_DEFAULT_RANDOM_SEED),
00154      "Seed for the random generation")
00155     ("input,i",
00156      boost::program_options::value< std::string >(&ioInputFilename)->
      default_value(K_TRADEMGEN_DEFAULT_INPUT_FILENAME),
00157      "(CVS) input file for the demand distributions")
00158     ("log,l",
00159      boost::program_options::value< std::string >(&ioLogFilename)->
```

```
      default_value(K_TRADEMGEN_DEFAULT_LOG_FILENAME),
00160      "Filepath for the logs")
00161     ("user,u",
00162      boost::program_options::value< std::string >(&ioDBUser)->default_value(
      K_TRADEMGEN_DEFAULT_DB_USER),
00163      "SQL database user (e.g., dsim)")
00164     ("passwd,p",
00165      boost::program_options::value< std::string >(&ioDBPasswd)->default_value(
      K_TRADEMGEN_DEFAULT_DB_PASSWD),
00166      "SQL database password (e.g., dsim)")
00167     ("host,H",
00168      boost::program_options::value< std::string >(&ioDBHost)->default_value(
      K_TRADEMGEN_DEFAULT_DB_HOST),
00169      "SQL database hostname (e.g., localhost)")
00170     ("port,P",
00171      boost::program_options::value< std::string >(&ioDBPort)->default_value(
      K_TRADEMGEN_DEFAULT_DB_PORT),
00172      "SQL database port (e.g., 3306)")
00173     ("dbname,m",
00174      boost::program_options::value< std::string >(&ioDBDBName)->default_value(
      K_TRADEMGEN_DEFAULT_DB_DBNAME),
00175      "SQL database name (e.g., sim_dsim)")
00176     ("query,q",
00177      boost::program_options::value< WordList_T >(&lWordList)->multitoken(),
00178      "Query word list")
00179     ;
00180
00181   // Hidden options, will be allowed both on command line and
00182   // in config file, but will not be shown to the user.
00183   boost::program_options::options_description hidden ("Hidden options");
00184   hidden.add_options()
00185     ("copyright",
00186      boost::program_options::value< std::vector<std::string> >(),
00187      "Show the copyright (license)");
00188
00189   boost::program_options::options_description cmdline_options;
00190   cmdline_options.add(generic).add(config).add(hidden);
00191
00192   boost::program_options::options_description config_file_options;
00193   config_file_options.add(config).add(hidden);
00194
00195   boost::program_options::options_description visible ("Allowed options");
00196   visible.add(generic).add(config);
00197
00198   boost::program_options::positional_options_description p;
00199   p.add ("copyright", -1);
00200
00201   boost::program_options::variables_map vm;
00202   boost::program_options::
00203     store (boost::program_options::command_line_parser (argc, argv).
00204            options (cmdline_options).positional(p).run(), vm);
00205
00206   std::ifstream ifs ("trademgen_with_db.cfg");
00207   boost::program_options::store (parse_config_file (ifs, config_file_options),
00208                                  vm);
00209   boost::program_options::notify (vm);
00210
00211   if (vm.count ("help")) {
00212     std::cout << visible << std::endl;
00213     return K_TRADEMGEN_EARLY_RETURN_STATUS;
00214   }
00215
00216   if (vm.count ("version")) {
00217     std::cout << PACKAGE_NAME << ", version " << PACKAGE_VERSION
      << std::endl;
00218     return K_TRADEMGEN_EARLY_RETURN_STATUS;
00219   }
00220
00221   if (vm.count ("prefix")) {
00222     std::cout << "Installation prefix: " << PREFIXDIR << std::endl;
00223     return K_TRADEMGEN_EARLY_RETURN_STATUS;
00224   }
00225
00226   if (vm.count ("builtin")) {
00227     ioIsBuiltin = true;
00228   }
00229   const std::string isBuiltinStr = (ioIsBuiltin == true)?"yes":"no";
00230   std::cout << "The BOM should be built-in? " << isBuiltinStr << std::endl;
00231
00232   if (ioIsBuiltin == false) {
00233
00234     // The BOM tree should be built from parsing a demand input file
00235     if (vm.count ("input")) {
00236       ioInputFilename = vm["input"].as< std::string >();
00237       std::cout << "Input filename is: " << ioInputFilename << std::endl;
00238
00239     } else {
```

```
00240       // The built-in option is not selected. However, no demand input file
00241       // is specified
00242       std::cerr << "Either one among the -b/--builtin and -i/--input "
00243                 << "options must be specified" << std::endl;
00244     }
00245   }
00246
00247   if (vm.count ("log")) {
00248     ioLogFilename = vm["log"].as< std::string >();
00249     std::cout << "Log filename is: " << ioLogFilename << std::endl;
00250   }
00251
00252   if (vm.count ("user")) {
00253     ioDBUser = vm["user"].as< std::string >();
00254     std::cout << "SQL database user name is: " << ioDBUser << std::endl;
00255   }
00256
00257   if (vm.count ("passwd")) {
00258     ioDBPasswd = vm["passwd"].as< std::string >();
00259     // std::cout << "SQL database user password is: " << ioDBPasswd <<
      std::endl;
00260   }
00261
00262   if (vm.count ("host")) {
00263     ioDBHost = vm["host"].as< std::string >();
00264     std::cout << "SQL database host name is: " << ioDBHost << std::endl;
00265   }
00266
00267   if (vm.count ("port")) {
00268     ioDBPort = vm["port"].as< std::string >();
00269     std::cout << "SQL database port number is: " << ioDBPort << std::endl;
00270   }
00271
00272   if (vm.count ("dbname")) {
00273     ioDBDBName = vm["dbname"].as< std::string >();
00274     std::cout << "SQL database name is: " << ioDBDBName << std::endl;
00275   }
00276
00277   //
00278   std::cout << "The random generation seed is: " << ioRandomSeed << std::endl;
00279
00280   ioQueryString = createStringFromWordList (lWordList);
00281   std::cout << "The query string is: " << ioQueryString << std::endl;
00282
00283   return 0;
00284 }
00285
00286
00287 // ///////////////// M A I N //////////////////
00288 int main (int argc, char* argv[]) {
00289
00290   // State whether the BOM tree should be built-in or parsed from an input file
00291   bool isBuiltin;
00292
00293   // Random generation seed
00294   stdair::RandomSeed_T lRandomSeed;
00295
00296   // Query
00297   std::string lQuery;
00298
00299   // Input file name
00300   stdair::Filename_T lInputFilename;
00301
00302   // Output log File
00303   std::string lLogFilename;
00304
00305   // SQL database parameters
00306   std::string lDBUser;
00307   std::string lDBPasswd;
00308   std::string lDBHost;
00309   std::string lDBPort;
00310   std::string lDBDBName;
00311
00312   // Airline code
00313   const stdair::AirlineCode_T lAirlineCode ("BA");
00314
00315   // Call the command-line option parser
00316   const int lOptionParserStatus =
00317     readConfiguration (argc, argv, isBuiltin, lRandomSeed,
      lQuery,
00318                        lInputFilename, lLogFilename,
00319                        lDBUser, lDBPasswd, lDBHost, lDBPort, lDBDBName);
00320
00321   if (lOptionParserStatus == K_TRADEMGEN_EARLY_RETURN_STATUS
      ) {
00322     return 0;
00323   }
```

```
00324
00325   // Set the database parameters
00326   stdair::BasDBParams lDBParams (lDBUser, lDBPasswd, lDBHost, lDBPort,
00327                                  lDBDBName);
00328
00329   // Set the log parameters
00330   std::ofstream logOutputFile;
00331   // open and clean the log outputfile
00332   logOutputFile.open (lLogFilename.c_str());
00333   logOutputFile.clear();
00334
00335   // Set up the log parameters
00336   const stdair::BasLogParams lLogParams (stdair::LOG::DEBUG, logOutputFile);
00337
00338   // Initialise the TraDemGen service object
00339   TRADEMGEN::TRADEMGEN_Service trademgenService (
      lLogParams, lDBParams,
00340                                                  lRandomSeed);
00341
00342   // Check wether or not a (CSV) input file should be read
00343   if (isBuiltin == true) {
00344     // Create a sample DemandStream object, and insert it within the BOM tree
00345     trademgenService.buildSampleBom();
00346
00347   } else {
00348     // Create the DemandStream objects, and insert them within the BOM tree
00349     trademgenService.parseAndLoad (lInputFilename);
00350   }
00351
00352   // Query the database
00353   trademgenService.displayAirlineListFromDB();
00354
00355   // Close the Log outputFile
00356   logOutputFile.close();
00357
00358   return 0;
00359 }
```

## 23.61 trademgen/bom/BomDisplay.cpp File Reference

```
#include <cassert>
#include <ostream>
#include <stdair/basic/BasConst_BomDisplay.hpp>
#include <stdair/bom/BomManager.hpp>
#include <stdair/bom/EventQueue.hpp>
#include <trademgen/bom/DemandStream.hpp>
#include <trademgen/bom/BomDisplay.hpp>
```

### Classes

- struct TRADEMGEN::FlagSaver

### Namespaces

- namespace TRADEMGEN

## 23.62 BomDisplay.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <ostream>
00007 // StdAir
00008 #include <stdair/basic/BasConst_BomDisplay.hpp>
00009 #include <stdair/bom/BomManager.hpp>
00010 #include <stdair/bom/EventQueue.hpp>
00011 // TraDemGen
00012 #include <trademgen/bom/DemandStream.hpp>
```

```
00013 #include <trademgen/bom/BomDisplay.hpp>
00014
00015 namespace TRADEMGEN {
00016
00022   struct FlagSaver {
00023   public:
00025     FlagSaver (std::ostream& oStream)
00026       : _oStream (oStream), _streamFlags (oStream.flags()) {
00027     }
00028
00030     ~FlagSaver() {
00031       // Reset formatting flags of the given output stream
00032       _oStream.flags (_streamFlags);
00033     }
00034
00035   private:
00037     std::ostream& _oStream;
00039     std::ios::fmtflags _streamFlags;
00040   };
00041
00042   // ////////////////////////////////////////////////////////////////////
00043   std::string BomDisplay::csvDisplay (const
      stdair::EventQueue& iEventQueue) {
00044     std::ostringstream oStream;
00045
00049     oStream << std::endl;
00050     oStream << "================================================================
      "
00051             << std::endl;
00052     oStream << "EventQueue: " << iEventQueue.describeKey() << std::endl;
00053     oStream << "================================================================
      "
00054             << std::endl;
00055
00056     // Check whether there are DemandStream objects
00057     if (stdair::BomManager::hasList<DemandStream> (iEventQueue) == false) {
00058       return oStream.str();
00059     }
00060
00061     // Retrieve the DemandStream list
00062     const DemandStreamList_T& lDemandStreamList =
00063       stdair::BomManager::getList<DemandStream> (iEventQueue);
00064
00065     // Browse the inventories
00066     for (DemandStreamList_T::const_iterator itDemandStream =
00067            lDemandStreamList.begin();
00068          itDemandStream != lDemandStreamList.end(); ++itDemandStream) {
00069       DemandStream* lDemandStream_ptr = *itDemandStream;
00070       assert (lDemandStream_ptr != NULL);
00071
00072       // Display the demand stream
00073       csvDisplay (oStream, *lDemandStream_ptr);
00074     }
00075
00076     return oStream.str();
00077   }
00078
00079   // ////////////////////////////////////////////////////////////////////
00080   void BomDisplay::csvDisplay (std::ostream& oStream,
00081                                const DemandStream& iDemandStream) {
00082     // Save the formatting flags for the given STL output stream
00083     FlagSaver flagSaver (oStream);
00084
00088     oStream << "++++++++++++++++++++++++++++++++++++++++++++++++++" << std::endl
      ;
00089     oStream << iDemandStream.display();
00090     oStream << "++++++++++++++++++++++++++++++++++++++++++++++++++" << std::endl
      ;
00091   }
00092
00093 }
```

## 23.63 trademgen/bom/BomDisplay.hpp File Reference

```
#include <iosfwd>
#include <string>
```

#### Classes

- class TRADEMGEN::BomDisplay

  *Utility class to display TraDemGen objects with a pretty format.*

#### Namespaces

- namespace stdair

  *Forward declarations.*
- namespace TRADEMGEN

## 23.64 BomDisplay.hpp

```
00001 #ifndef __TRADEMGEN_BOM_BOMDISPLAY_HPP
00002 #define __TRADEMGEN_BOM_BOMDISPLAY_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <iosfwd>
00009 #include <string>
00010 // TraDemGen
00011
00013 namespace stdair {
00014   class EventQueue;
00015 }
00016
00017 namespace TRADEMGEN {
00018
00020   class DemandStream;
00021
00026   class BomDisplay {
00027   public:
00028     // ///////////////// Display support methods /////////////////
00037     static std::string csvDisplay (const stdair::EventQueue&);
00038
00047     static void csvDisplay (std::ostream&, const DemandStream
      &);
00048   };
00049
00050 }
00051 #endif // __TRADEMGEN_BOM_BOMDISPLAY_HPP
```

## 23.65 trademgen/bom/DemandStream.cpp File Reference

```
#include <cassert>
#include <sstream>
#include <cmath>
#include <iomanip>
#include <boost/make_shared.hpp>
#include <stdair/basic/BasConst_General.hpp>
#include <stdair/basic/BasConst_Inventory.hpp>
#include <stdair/basic/BasConst_Request.hpp>
#include <stdair/bom/BookingRequestStruct.hpp>
#include <stdair/service/Logger.hpp>
#include <trademgen/basic/BasConst_DemandGeneration.hpp>
#include <trademgen/bom/DemandStream.hpp>
```

#### Namespaces

- namespace TRADEMGEN

## 23.66 DemandStream.cpp

```
00001 // //////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // //////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 #include <cmath>
00008 #include <iomanip>
00009 // Boost
00010 #include <boost/make_shared.hpp>
00011 // StdAir
00012 #include <stdair/basic/BasConst_General.hpp>
00013 #include <stdair/basic/BasConst_Inventory.hpp>
00014 #include <stdair/basic/BasConst_Request.hpp>
00015 #include <stdair/bom/BookingRequestStruct.hpp>
00016 #include <stdair/service/Logger.hpp>
00017 // TraDemGen
00018 #include <trademgen/basic/BasConst_DemandGeneration.hpp
     >
00019 #include <trademgen/bom/DemandStream.hpp>
00020
00021 namespace TRADEMGEN {
00022
00023   // //////////////////////////////////////////////////////////////////////
00024   DemandStream::DemandStream()
00025     : _key (stdair::DEFAULT_ORIGIN, stdair::DEFAULT_DESTINATION,
00026             stdair::DEFAULT_DEPARTURE_DATE, stdair::DEFAULT_CABIN_CODE),
00027       _parent (NULL),
00028       _demandCharacteristics (ArrivalPatternCumulativeDistribution_T
     (),
00029                               POSProbabilityMassFunction_T
     (),
00030                               ChannelProbabilityMassFunction_T
     (),
00031                               TripTypeProbabilityMassFunction_T
     (),
00032                               StayDurationProbabilityMassFunction_T
     (),
00033                               FrequentFlyerProbabilityMassFunction_T
     (),
00034                               PreferredDepartureTimeContinuousDistribution_T
     (),
00035                               0.0,
00036                               ValueOfTimeContinuousDistribution_T
     ()),
00037       _posProMass (DEFAULT_POS_PROBALILITY_MASS),
00038       _firstDateTimeRequest (true) {
00039     assert (false);
00040   }
00041
00042   // //////////////////////////////////////////////////////////////////////
00043   DemandStream::DemandStream (const DemandStream&)
00044     : _key (stdair::DEFAULT_ORIGIN, stdair::DEFAULT_DESTINATION,
00045             stdair::DEFAULT_DEPARTURE_DATE, stdair::DEFAULT_CABIN_CODE),
00046       _parent (NULL),
00047       _demandCharacteristics (ArrivalPatternCumulativeDistribution_T
     (),
00048                               POSProbabilityMassFunction_T
     (),
00049                               ChannelProbabilityMassFunction_T
     (),
00050                               TripTypeProbabilityMassFunction_T
     (),
00051                               StayDurationProbabilityMassFunction_T
     (),
00052                               FrequentFlyerProbabilityMassFunction_T
     (),
00053                               PreferredDepartureTimeContinuousDistribution_T
     (),
00054                               0.0,
00055                               ValueOfTimeContinuousDistribution_T
     ()),
00056       _posProMass (DEFAULT_POS_PROBALILITY_MASS),
00057       _firstDateTimeRequest (true) {
00058     assert (false);
00059   }
00060
00061   // //////////////////////////////////////////////////////////////////////
00062   DemandStream::DemandStream (const Key_T& iKey) :
00063     _key (iKey) {
00064   }
00065
00066   // //////////////////////////////////////////////////////////////////////
00067   DemandStream::~DemandStream() {
00068   }
```

```
00069
00070   // ////////////////////////////////////////////////////////////////////
00071   std::string DemandStream::toString() const {
00072     std::ostringstream oStr;
00073     oStr << _key.toString();
00074     return oStr.str();
00075   }
00076
00077   // ////////////////////////////////////////////////////////////////////
00078   void DemandStream::
00079   setAll (const ArrivalPatternCumulativeDistribution_T
      & iArrivalPattern,
00080           const POSProbabilityMassFunction_T&
      iPOSProbMass,
00081           const ChannelProbabilityMassFunction_T
      & iChannelProbMass,
00082           const TripTypeProbabilityMassFunction_T
      & iTripTypeProbMass,
00083           const StayDurationProbabilityMassFunction_T
      & iStayDurationProbMass,
00084           const FrequentFlyerProbabilityMassFunction_T
      & iFrequentFlyerProbMass,
00085           const PreferredDepartureTimeContinuousDistribution_T
      & iPreferredDepartureTimeContinuousDistribution,
00086           const stdair::WTP_T& iMinWTP,
00087           const ValueOfTimeContinuousDistribution_T
      & iValueOfTimeContinuousDistribution,
00088           const DemandDistribution& iDemandDistribution,
00089           stdair::BaseGenerator_T& ioSharedGenerator,
00090           const stdair::RandomSeed_T& iRequestDateTimeSeed,
00091           const stdair::RandomSeed_T& iDemandCharacteristicsSeed,
00092           const POSProbabilityMass_T&
      iDefaultPOSProbablityMass) {
00093
00094     setDemandCharacteristics (iArrivalPattern,
      iPOSProbMass,
00095                               iChannelProbMass, iTripTypeProbMass,
00096                               iStayDurationProbMass, iFrequentFlyerProbMass,
00097                               iPreferredDepartureTimeContinuousDistribution,
00098                               iMinWTP, iValueOfTimeContinuousDistribution);
00099
00100     setDemandDistribution (iDemandDistribution);
00101     setTotalNumberOfRequestsToBeGenerated
      (0);
00102     setRequestDateTimeRandomGeneratorSeed
      (iRequestDateTimeSeed);
00103     setDemandCharacteristicsRandomGeneratorSeed
       (iDemandCharacteristicsSeed);
00104     setPOSProbabilityMass (iDefaultPOSProbablityMass);
00105
00106     //
00107     init (ioSharedGenerator);
00108   }
00109
00110   // ////////////////////////////////////////////////////////////////////
00111   std::string DemandStream::display() const {
00112     std::ostringstream oStr;
00113
00114     oStr << "Demand stream key: " << _key.toString() << std::endl;
00115
00116     //
00117     oStr << _demandCharacteristics.describe();
00118
00119     //
00120     oStr << _demandDistribution.describe() << " => "
00121          << _totalNumberOfRequestsToBeGenerated
       << " to be generated"
00122          << std::endl;
00123
00124     //
00125     oStr << "Random generation context: " << _randomGenerationContext
00126          << std::endl;
00127
00128     //
00129     oStr << "Random generator for date-time: "
00130          << _requestDateTimeRandomGenerator <<
      std::endl;
00131     oStr << "Random generator for demand characteristics: "
00132          << _demandCharacteristicsRandomGenerator
       << std::endl;
00133
00134     //
00135     oStr << _posProMass.displayProbabilityMass
      () << std::endl;
00136
00137     return oStr.str();
00138   }
```

```
00139
00140   // ////////////////////////////////////////////////////////////////////
00141   void DemandStream::init (stdair::BaseGenerator_T& ioSharedGenerator) {
00142
00143     // Generate the number of requests
00144     const stdair::RealNumber_T lMu = _demandDistribution.
      _meanNumberOfRequests;
00145     const stdair::RealNumber_T lSigma =
00146       _demandDistribution._stdDevNumberOfRequests
      ;
00147
00148     stdair::NormalDistribution_T lDistrib (lMu, lSigma);
00149     stdair::NormalGenerator_T lNormalGen (ioSharedGenerator, lDistrib);
00150
00151     const stdair::RealNumber_T lRealNumberOfRequestsToBeGenerated =lNormalGen()
      ;
00152
00153     const stdair::NbOfRequests_T lIntegerNumberOfRequestsToBeGenerated =
00154       std::floor (lRealNumberOfRequestsToBeGenerated + 0.5);
00155
00156     _totalNumberOfRequestsToBeGenerated =
      lIntegerNumberOfRequestsToBeGenerated;
00157
00158     _stillHavingRequestsToBeGenerated = true;
00159     _firstDateTimeRequest = true;
00160   }
00161
00162   // ////////////////////////////////////////////////////////////////////
00163   const bool DemandStream::
00164   stillHavingRequestsToBeGenerated (const
      stdair::DemandGenerationMethod& iDemandGenerationMethod) const {
00165
00166     const stdair::DemandGenerationMethod::EN_DemandGenerationMethod&
      lENDemandGenerationMethod =
00167       iDemandGenerationMethod.getMethod();
00168     if (lENDemandGenerationMethod == stdair::DemandGenerationMethod::STA_ORD) {
00169       bool hasStillHavingRequestsToBeGenerated = true;
00170
00171       // Check whether enough requests have already been generated
00172       const stdair::Count_T lNbOfRequestsGeneratedSoFar =
00173         _randomGenerationContext.
      getNumberOfRequestsGeneratedSoFar();
00174
00175       const stdair::Count_T lRemainingNumberOfRequestsToBeGenerated =
00176         _totalNumberOfRequestsToBeGenerated
      - lNbOfRequestsGeneratedSoFar;
00177
00178       if (lRemainingNumberOfRequestsToBeGenerated <= 0) {
00179         hasStillHavingRequestsToBeGenerated = false;
00180       }
00181
00182       return hasStillHavingRequestsToBeGenerated;
00183     } else {
00184       return _stillHavingRequestsToBeGenerated;
00185     }
00186   }
00187
00188   // ////////////////////////////////////////////////////////////////////
00189   const stdair::DateTime_T DemandStream::generateTimeOfRequestPoissonProcess
      () {
00190
00191     // Prepare arrival pattern.
00192     const ContinuousFloatDuration_T& lArrivalPattern =
00193       _demandCharacteristics._arrivalPattern
      ;
00194
00195     const stdair::Time_T lHardcodedReferenceDepartureTime =
00196       boost::posix_time::hours (8);
00197
00198     // Prepare departure date time.
00199     const stdair::DateTime_T lDepartureDateTime =
00200       boost::posix_time::ptime (_key.getPreferredDepartureDate
      (),
00201                                 lHardcodedReferenceDepartureTime);
00202
00203     // If no request has been generated so far...
00204     if (_firstDateTimeRequest) {
00205       const stdair::Probability_T lProbabilityFirstRequest = 0;
00206
00207       // Get the lower bound of the arrival pattern (correponding
00208       // to a cumulative probability of 0).
00209       _dateTimeLastRequest =
00210         lArrivalPattern.getValue (lProbabilityFirstRequest);
00211
00212       _firstDateTimeRequest = false;
00213     }
00214
```

```
00215     // Sanity check.
00216     assert (_firstDateTimeRequest == false);
00217
00218     // If the date time of the last request is equal to the lower bound of
00219     // the last daily rate interval (default value is -1, meaning one day
00220     // before departure), we stopped generating request by returning a
00221     // request date time after departure date time.
00222     if (_dateTimeLastRequest == DEFAULT_LAST_LOWER_BOUND_ARRIVAL_PATTERN
    ) {
00223       _stillHavingRequestsToBeGenerated = false;
00224
00225       // Get a positive number of days.
00226       const stdair::Duration_T lDifferenceBetweenDepartureAndThisLowerBound =
00227         convertFloatIntoDuration (-
    DEFAULT_LAST_LOWER_BOUND_ARRIVAL_PATTERN
    );
00228
00229       // Calculate a request date-time after the departure date time to end
00230       // the demand generation algorithm.
00231       const stdair::DateTime_T oDateTimeThisRequest =
00232         lDepartureDateTime + lDifferenceBetweenDepartureAndThisLowerBound;
00233
00234       return oDateTimeThisRequest;
00235     }
00236
00237     // Get the upper bound of the current daily rate interval.
00238     stdair::FloatDuration_T lUpperBound =
00239       lArrivalPattern.getUpperBound (_dateTimeLastRequest);
00240
00241     // Compute the daily rate demand.
00242     double lDailyRate =lArrivalPattern.getDerivativeValue(
    _dateTimeLastRequest);
00243     // Get the expected average number of requests.
00244     const double lDemandMean = _demandDistribution.
    _meanNumberOfRequests;
00245     // Multiply the daily rate by the expected average number of requests.
00246     lDailyRate *= lDemandMean;
00247
00248     // Generate an exponential variable.
00249     const stdair::FloatDuration_T lExponentialVariable =
00250       _requestDateTimeRandomGenerator.
    generateExponential (lDailyRate);
00251
00252     // Compute the new date time request.
00253     const stdair::FloatDuration_T lDateTimeThisRequest =
00254       _dateTimeLastRequest + lExponentialVariable;
00255
00256     stdair::DateTime_T oDateTimeThisRequest;
00257
00258     // Verify if this request is in the given daily rate interval.
00259     if (lDateTimeThisRequest < lUpperBound) {
00260
00261       // Conversion.
00262       const stdair::Duration_T lDifferenceBetweenDepartureAndThisRequest =
00263         convertFloatIntoDuration (lDateTimeThisRequest)
    ;
00264
00265       // The request date-time is derived from departure date and arrival
     pattern.
00266       oDateTimeThisRequest = lDepartureDateTime
00267         + lDifferenceBetweenDepartureAndThisRequest;
00268
00269       // Remember this date time request.
00270       _dateTimeLastRequest = lDateTimeThisRequest;
00271
00272       // Update the counter of requests generated so far.
00273       incrementGeneratedRequestsCounter();
00274
00275       const double lRefDateTimeThisRequest = lDateTimeThisRequest + double(2880
    0.001/86400.0);
00276       STDAIR_LOG_NOTIFICATION (boost::gregorian::to_iso_string(_key.
    getPreferredDepartureDate()) << ";" <<
    std::setprecision(10) << lRefDateTimeThisRequest);
00277     } else {
00278
00279       // The current request is not in the given daily rate interval.
00280       // Change the daily rate.
00281       _dateTimeLastRequest = lUpperBound;
00282
00283       // Generate a date time request in the new daily rate interval.
00284       oDateTimeThisRequest = generateTimeOfRequestPoissonProcess
     ();
00285     }
00286
00287     return oDateTimeThisRequest;
00288   }
00289
```

```
00290   // ////////////////////////////////////////////////////////////////////
00291   const stdair::DateTime_T DemandStream::generateTimeOfRequestStatisticsOrder
      () {
00292
00309     //
00310     // Calculate the result of the formula above step by step.
00311     //
00312
00313     // 1) Get the number of requests generated so far.
00314     //    (equal to k - 1)
00315     const stdair::Count_T& lNbOfRequestsGeneratedSoFar =
00316       _randomGenerationContext.
      getNumberOfRequestsGeneratedSoFar();
00317
00318     // 2) Deduce the number of requests not generated yet.
00319     //    (equal to n - k + 1)
00320     const stdair::Count_T lRemainingNumberOfRequestsToBeGenerated =
00321       _totalNumberOfRequestsToBeGenerated -
      lNbOfRequestsGeneratedSoFar;
00322
00323     // Assert that there are still requests to be generated.
00324     assert (lRemainingNumberOfRequestsToBeGenerated > 0);
00325
00326     // 3) Inverse the number of requests not generated yet.
00327     //    1/(n - k + 1)
00328     const double lRemainingRate =
00329       1.0 / static_cast<double> (lRemainingNumberOfRequestsToBeGenerated);
00330
00331     // 4) Get the cumulative probality so far and take its complement.
00332     //    (equal to 1 - x(k-1))
00333     const stdair::Probability_T& lCumulativeProbabilitySoFar =
00334       _randomGenerationContext.
      getCumulativeProbabilitySoFar();
00335     const stdair::Probability_T lComplementOfCumulativeProbabilitySoFar =
00336       1.0 - lCumulativeProbabilitySoFar;
00337
00338     // 5) Draw a random variable y and calculate the factor equal to
00339     //    (1 - y)^(1/(n - k + 1)).
00340     const stdair::Probability_T& lVariate = _requestDateTimeRandomGenerator
      ();
00341     double lFactor = std::pow (1.0 - lVariate, lRemainingRate);
00342     if (lFactor >= 1.0 - 1e-6){
00343       lFactor = 1.0 - 1e-6;
00344     }
00345
00346     // 6) Apply the whole formula above to calculate the cumulative probability
00347     //    of the new request.
00348     //    (equal to 1 - (1 - x(k-1))(1 - y)^(1/(n - k + 1)))
00349     const stdair::Probability_T lCumulativeProbabilityThisRequest =
00350       1.0 - lComplementOfCumulativeProbabilitySoFar * lFactor;
00351
00352     // Now that the cumulative proportion of events generated has been
00353     // calculated, we deduce from the arrival pattern the arrival time of the
00354     // k-th event.
00355     const stdair::FloatDuration_T lNumberOfDaysBetweenDepartureAndThisRequest =
00356       _demandCharacteristics._arrivalPattern
      .getValue (lCumulativeProbabilityThisRequest);
00357
00358     const stdair::Duration_T lDifferenceBetweenDepartureAndThisRequest =
00359       convertFloatIntoDuration (
      lNumberOfDaysBetweenDepartureAndThisRequest);
00360
00361     const stdair::Time_T lHardcodedReferenceDepartureTime =
00362       boost::posix_time::hours (8);
00363
00364     const stdair::DateTime_T lDepartureDateTime =
00365       boost::posix_time::ptime (_key.getPreferredDepartureDate
      (),
00366                                 lHardcodedReferenceDepartureTime);
00367
00368     // The request date-time is derived from departure date and arrival
       pattern.
00369     const stdair::DateTime_T oDateTimeThisRequest =
00370       lDepartureDateTime + lDifferenceBetweenDepartureAndThisRequest;
00371
00372     // Update random generation context
00373     _randomGenerationContext.
      setCumulativeProbabilitySoFar (
      lCumulativeProbabilityThisRequest);
00374
00375     // Update the counter of requests generated so far.
00376     incrementGeneratedRequestsCounter();
00377
00378     // DEBUG
00379     // STDAIR_LOG_DEBUG (lCumulativeProbabilityThisRequest << "; "
00380     //                   << lNumberOfDaysBetweenDepartureAndThisRequest);
00381
```

```
00382     // NOTIFICATION
00383     double lRefNumberOfDaysBetweenDepartureAndThisRequest =
00384       lNumberOfDaysBetweenDepartureAndThisRequest + double(1.0/3.0);
00385     STDAIR_LOG_NOTIFICATION (boost::gregorian::to_iso_string(_key.
      getPreferredDepartureDate()) << ";" <<
      std::setprecision(10) << lRefNumberOfDaysBetweenDepartureAndThisRequest);
00386
00387     return oDateTimeThisRequest;
00388   }
00389
00390   // ////////////////////////////////////////////////////////////////////
00391
00392   const stdair::Duration_T DemandStream::
00393   convertFloatIntoDuration (const
      stdair::FloatDuration_T iNumberOfDays) {
00394
00395     // Convert the number of days in number of seconds + number of milliseconds
00396     const stdair::FloatDuration_T lNumberOfSeconds =
00397       iNumberOfDays * stdair::SECONDS_IN_ONE_DAY;
00398
00399     // Get the number of seconds.
00400     const stdair::IntDuration_T lIntNumberOfSeconds =
00401       std::floor (lNumberOfSeconds);
00402
00403     // Get the number of milliseconds.
00404     const stdair::FloatDuration_T lNumberOfMilliseconds =
00405       (lNumberOfSeconds - lIntNumberOfSeconds)
00406       * stdair::MILLISECONDS_IN_ONE_SECOND;
00407
00408     // +1 is a trick to ensure that the next Event is strictly later
00409     // than the current one
00410     const stdair::IntDuration_T lIntNumberOfMilliseconds =
00411       std::floor (lNumberOfMilliseconds) + 1;
00412
00413     // Convert the number of seconds and milliseconds into a duration.
00414     const stdair::Duration_T lDifferenceBetweenDepartureAndThisRequest =
00415       boost::posix_time::seconds (lIntNumberOfSeconds)
00416       + boost::posix_time::millisec (lIntNumberOfMilliseconds);
00417
00418     return lDifferenceBetweenDepartureAndThisRequest;
00419   }
00420
00421   // ////////////////////////////////////////////////////////////////////
00422   const stdair::AirportCode_T DemandStream::generatePOS
      () {
00423
00424     // Generate a random number between 0 and 1.
00425     const stdair::Probability_T& lVariate =
      _demandCharacteristicsRandomGenerator();
00426     const stdair::AirportCode_T& oPOS = _demandCharacteristics
      .getPOSValue (lVariate);
00427
00428     return oPOS;
00429   }
00430
00431   // ////////////////////////////////////////////////////////////////////
00432   const stdair::ChannelLabel_T DemandStream::generateChannel
      () {
00433     // Generate a random number between 0 and 1.
00434     const stdair::Probability_T lVariate =
00435       _demandCharacteristicsRandomGenerator
      ();
00436
00437     return _demandCharacteristics._channelProbabilityMass
      .getValue (lVariate);
00438   }
00439
00440   // ////////////////////////////////////////////////////////////////////
00441   const stdair::TripType_T DemandStream::generateTripType
      () {
00442     // Generate a random number between 0 and 1.
00443     const stdair::Probability_T lVariate =
00444       _demandCharacteristicsRandomGenerator
      ();
00445
00446     return _demandCharacteristics.
      _tripTypeProbabilityMass.getValue (lVariate);
00447   }
00448
00449   // ////////////////////////////////////////////////////////////////////
00450   const stdair::DayDuration_T DemandStream::generateStayDuration
      () {
00451     // Generate a random number between 0 and 1.
00452     const stdair::Probability_T lVariate =
00453       _demandCharacteristicsRandomGenerator
      ();
00454
```

```
00455     return _demandCharacteristics.
      _stayDurationProbabilityMass.getValue (
      lVariate);
00456   }
00457
00458   // ////////////////////////////////////////////////////////////////////
00459   const stdair::FrequentFlyer_T DemandStream::generateFrequentFlyer
      () {
00460     // Generate a random number between 0 and 1.
00461     const stdair::Probability_T lVariate =
00462       _demandCharacteristicsRandomGenerator
      ();
00463
00464     return _demandCharacteristics.
      _frequentFlyerProbabilityMass.getValue (
      lVariate);
00465   }
00466
00467   // ////////////////////////////////////////////////////////////////////
00468   const stdair::Duration_T DemandStream::generatePreferredDepartureTime
      () {
00469     // Generate a random number between 0 and 1.
00470     const stdair::Probability_T lVariate =
00471       _demandCharacteristicsRandomGenerator
      ();
00472     const stdair::IntDuration_T lNbOfSeconds = _demandCharacteristics
      .
00473       _preferredDepartureTimeCumulativeDistribution.getValue (lVariate);
00474
00475     const stdair::Duration_T oTime = boost::posix_time::seconds (lNbOfSeconds);
00476
00477     return oTime;
00478   }
00479
00480   // ////////////////////////////////////////////////////////////////////
00481   const stdair::WTP_T DemandStream::
00482   generateWTP (stdair::RandomGeneration& ioGenerator,
00483                const stdair::Date_T& iDepartureDate,
00484                const stdair::DateTime_T& iDateTimeThisRequest,
00485                const stdair::DayDuration_T& iDurationOfStay) {
00486     const stdair::Date_T lDateThisRequest = iDateTimeThisRequest.date();
00487     const stdair::DateOffset_T lAP = iDepartureDate - lDateThisRequest;
00488     const stdair::DayDuration_T lAPInDays = lAP.days();
00489
00490     stdair::RealNumber_T lProb = -lAPInDays;
00491       //1 - lAPInDays / DEFAULT_MAX_ADVANCE_PURCHASE;
00492     if (lProb < 0.0) { lProb = 0.0; }
00493     stdair::RealNumber_T lFrat5Coef =
00494       _demandCharacteristics._frat5Pattern.
      getValue (lProb);
00495
00496     const stdair::WTP_T lWTP =  _demandCharacteristics.
      _minWTP
00497       * (1.0 + (lFrat5Coef - 1.0) * log(ioGenerator()) / log(0.5));
00498
00499     return lWTP;
00500   }
00501
00502   // ////////////////////////////////////////////////////////////////////
00503   const stdair::PriceValue_T DemandStream::generateValueOfTime
      () {
00504     // Generate a random number between 0 and 1.
00505     const stdair::Probability_T lVariate =
00506       _demandCharacteristicsRandomGenerator
      ();
00507
00508     return _demandCharacteristics.
      _valueOfTimeCumulativeDistribution.getValue
       (lVariate);
00509   }
00510
00511   // ////////////////////////////////////////////////////////////////////
00512   stdair::BookingRequestPtr_T DemandStream::
00513   generateNextRequest (stdair::RandomGeneration&
      ioGenerator,
00514                        const stdair::DemandGenerationMethod&
      iDemandGenerationMethod) {
00515
00516     // Origin
00517     const stdair::AirportCode_T& lOrigin = _key.getOrigin();
00518     // Destination
00519     const stdair::AirportCode_T& lDestination = _key.getDestination
      ();
00520     // Preferred departure date
00521     const stdair::Date_T& lPreferredDepartureDate =
00522       _key.getPreferredDepartureDate();
00523     // Preferred cabin
```

```
00524     const stdair::CabinCode_T& lPreferredCabin = _key.getPreferredCabin
      ();
00525     // Party size
00526     const stdair::NbOfSeats_T lPartySize = stdair::DEFAULT_PARTY_SIZE;
00527     // POS
00528     const stdair::AirportCode_T lPOS = generatePOS();
00529
00530     // Compute the request date time with the correct algorithm.
00531     stdair::DateTime_T lDateTimeThisRequest;
00532     const stdair::DemandGenerationMethod::EN_DemandGenerationMethod&
      lENDemandGenerationMethod =
00533       iDemandGenerationMethod.getMethod();
00534     switch(lENDemandGenerationMethod) {
00535     case stdair::DemandGenerationMethod::POI_PRO:
00536       lDateTimeThisRequest = generateTimeOfRequestPoissonProcess
      (); break;
00537     case stdair::DemandGenerationMethod::STA_ORD:
00538       lDateTimeThisRequest = generateTimeOfRequestStatisticsOrder
      (); break;
00539     default: assert (false); break;
00540     }
00541
00542     // Booking channel.
00543     const stdair::ChannelLabel_T lChannelLabel = generateChannel
      ();
00544     // Trip type.
00545     const stdair::TripType_T lTripType = generateTripType();
00546     // Stay duration.
00547     const stdair::DayDuration_T lStayDuration = generateStayDuration
      ();
00548     // Frequet flyer type.
00549     const stdair::FrequentFlyer_T lFrequentFlyer = generateFrequentFlyer
      ();
00550     // Preferred departure time.
00551     const stdair::Duration_T lPreferredDepartureTime =
00552       generatePreferredDepartureTime();
00553     // Value of time
00554     const stdair::PriceValue_T lValueOfTime = generateValueOfTime
      ();
00555     // WTP
00556     const stdair::WTP_T lWTP = generateWTP (ioGenerator,
      lPreferredDepartureDate,
00557                                             lDateTimeThisRequest,lStayDuration)
      ;
00558
00559     // TODO 1: understand why the following form does not work, knowing
00560     // that:
00561     // typedef boost::shared_ptr<stdair::BookingRequestStruct>
       stdair::BookingRequestPtr_T
00562     // stdair::BookingRequestPtr_T oBookingRequest_ptr =
00563     //   boost::make_shared<stdair::BookingRequestStruct> ();
00564
00565
00566     // TODO 2: move the creation of the structure out of the BOM layer
00567     //  (into the command layer, e.g., within the DemandManager command).
00568
00569     // Create the booking request
00570     stdair::BookingRequestPtr_T oBookingRequest_ptr =
00571       stdair::BookingRequestPtr_T
00572       (new stdair::BookingRequestStruct (describeKey(), lOrigin,
00573                                          lDestination, lPOS,
00574                                          lPreferredDepartureDate,
00575                                          lDateTimeThisRequest,
00576                                          lPreferredCabin, lPartySize,
00577                                          lChannelLabel, lTripType,
00578                                          lStayDuration, lFrequentFlyer,
00579                                          lPreferredDepartureTime,
00580                                          lWTP, lValueOfTime));
00581
00582     // DEBUG
00583     // STDAIR_LOG_DEBUG ("\n[BKG] " << oBookingRequest_ptr->describe());
00584
00585     return oBookingRequest_ptr;
00586   }
00587
00588   // ////////////////////////////////////////////////////////////////////
00589   void DemandStream::reset (stdair::BaseGenerator_T&
      ioSharedGenerator) {
00590     _randomGenerationContext.reset();
00591     init (ioSharedGenerator);
00592   }
00593
00594 }
```

## 23.67 trademgen/bom/DemandStream.hpp File Reference

```
#include <stdair/bom/BomAbstract.hpp>
#include <stdair/bom/BookingRequestTypes.hpp>
#include <stdair/basic/RandomGeneration.hpp>
#include <stdair/basic/DemandGenerationMethod.hpp>
#include <trademgen/basic/DemandCharacteristics.hpp>
#include <trademgen/basic/DemandDistribution.hpp>
#include <trademgen/basic/RandomGenerationContext.hpp>
#include <trademgen/bom/DemandStreamKey.hpp>
#include <trademgen/bom/DemandStreamTypes.hpp>
```

### Classes

- class TRADEMGEN::DemandStream

  *Class modeling a demand stream.*

### Namespaces

- namespace stdair

  *Forward declarations.*
- namespace TRADEMGEN

## 23.68 DemandStream.hpp

```
00001 #ifndef __TRADEMGEN_BOM_DEMANDSTREAM_HPP
00002 #define __TRADEMGEN_BOM_DEMANDSTREAM_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // StdAir
00008 #include <stdair/bom/BomAbstract.hpp>
00009 #include <stdair/bom/BookingRequestTypes.hpp>
00010 #include <stdair/basic/RandomGeneration.hpp>
00011 #include <stdair/basic/DemandGenerationMethod.hpp>
00012 // TraDemGen
00013 #include <trademgen/basic/DemandCharacteristics.hpp
      >
00014 #include <trademgen/basic/DemandDistribution.hpp
      >
00015 #include <trademgen/basic/RandomGenerationContext.hpp
      >
00016 #include <trademgen/bom/DemandStreamKey.hpp>
00017 #include <trademgen/bom/DemandStreamTypes.hpp
      >
00018
00020 namespace stdair {
00021   class FacBomManager;
00022   template <typename BOM> class FacBom;
00023 }
00024
00025 namespace TRADEMGEN {
00026
00030   class DemandStream : public stdair::BomAbstract {
00031     template <typename BOM> friend class stdair::FacBom;
00032     friend class stdair::FacBomManager;
00033
00034   public:
00035     // ////////// Type definitions ////////////
00039     typedef DemandStreamKey Key_T;
00040
00041
00042   public:
00043     // ////////////// Getters ///////////
00045     const Key_T& getKey() const {
00046       return _key;
00047     }
00048
```

```
00050     BomAbstract* const getParent() const {
00051       return _parent;
00052     }
00053
00055     const stdair::AirportCode_T& getOrigin() const {
00056       return _key.getOrigin();
00057     }
00058
00060     const stdair::AirportCode_T& getDestination() const {
00061       return _key.getDestination();
00062     }
00063
00065     const stdair::Date_T& getPreferredDepartureDate()
      const {
00066       return _key.getPreferredDepartureDate();
00067     }
00068
00070     const stdair::CabinCode_T& getPreferredCabin() const {
00071       return _key.getPreferredCabin();
00072     }
00073
00075     const stdair::HolderMap_T& getHolderMap() const {
00076       return _holderMap;
00077     }
00078
00080     const DemandCharacteristics& getDemandCharacteristics
      () const {
00081       return _demandCharacteristics;
00082     }
00083
00085     const DemandDistribution& getDemandDistribution
      () const {
00086       return _demandDistribution;
00087     }
00088
00090     const stdair::NbOfRequests_T& getTotalNumberOfRequestsToBeGenerated
      () const{
00091       return _totalNumberOfRequestsToBeGenerated
      ;
00092     }
00093
00095     const stdair::NbOfRequests_T& getMeanNumberOfRequests
      () const {
00096       return _demandDistribution._meanNumberOfRequests
      ;
00097     }
00098
00100     const stdair::StdDevValue_T& getStdDevNumberOfRequests
      () const {
00101       return _demandDistribution._stdDevNumberOfRequests
      ;
00102     }
00103
00105     const stdair::Count_T& getNumberOfRequestsGeneratedSoFar
      () const {
00106       return _randomGenerationContext.
      getNumberOfRequestsGeneratedSoFar();
00107     }
00108
00113     const POSProbabilityMass_T& getPOSProbabilityMass
      () const {
00114       return _posProMass;
00115     }
00116
00117
00118   public:
00119     // ////////////////// Setters ////////////////////
00121     void setNumberOfRequestsGeneratedSoFar (
      const stdair:: Count_T& iCount) {
00122       _randomGenerationContext.
      setNumberOfRequestsGeneratedSoFar (iCount);
00123     }
00124
00126     void setDemandDistribution (const DemandDistribution
      & iDemandDistribution) {
00127       _demandDistribution = iDemandDistribution;
00128     }
00129
00131     void
00132     setDemandCharacteristics (const
      ArrivalPatternCumulativeDistribution_T&
      iArrivalPattern,
00133                               const POSProbabilityMassFunction_T
      & iPOSProbMass,
00134                               const ChannelProbabilityMassFunction_T
      & iChannelProbMass,
00135                               const TripTypeProbabilityMassFunction_T
```

```
      & iTripTypeProbMass,
00136                                 const StayDurationProbabilityMassFunction_T
      & iStayDurationProbMass,
00137                                 const FrequentFlyerProbabilityMassFunction_T
      & iFrequentFlyerProbMass,
00138                                 const
      PreferredDepartureTimeContinuousDistribution_T
      & iPreferredDepartureTimeContinuousDistribution,
00139                                 const stdair::WTP_T& iMinWTP,
00140                                 const ValueOfTimeContinuousDistribution_T
      & iValueOfTimeContinuousDistribution) {
00141       _demandCharacteristics =
00142         DemandCharacteristics (iArrivalPattern,
      iPOSProbMass,
00143                                iChannelProbMass, iTripTypeProbMass,
00144                                iStayDurationProbMass, iFrequentFlyerProbMass,
00145                                iPreferredDepartureTimeContinuousDistribution,
00146                                iMinWTP, iValueOfTimeContinuousDistribution);
00147     }
00148
00150     void setTotalNumberOfRequestsToBeGenerated
       (const stdair::NbOfRequests_T& iNbOfRequests) {
00151       _totalNumberOfRequestsToBeGenerated =
      iNbOfRequests;
00152     }
00153
00155     void setRequestDateTimeRandomGeneratorSeed
       (const stdair::RandomSeed_T& iSeed) {
00156       _requestDateTimeRandomGenerator.init (
      iSeed);
00157     }
00158
00160     void setDemandCharacteristicsRandomGeneratorSeed
       (const stdair::RandomSeed_T& iSeed) {
00161       _demandCharacteristicsRandomGenerator
      .init (iSeed);
00162     }
00163
00168     void setPOSProbabilityMass (const POSProbabilityMass_T
      & iProbMass) {
00169       _posProMass = iProbMass;
00170     }
00171
00175     void setAll (const ArrivalPatternCumulativeDistribution_T
      &,
00176                  const POSProbabilityMassFunction_T
      &,
00177                  const ChannelProbabilityMassFunction_T
      &,
00178                  const TripTypeProbabilityMassFunction_T
      &,
00179                  const StayDurationProbabilityMassFunction_T
      &,
00180                  const FrequentFlyerProbabilityMassFunction_T
      &,
00181                  const PreferredDepartureTimeContinuousDistribution_T
      &,
00182                  const stdair::WTP_T&,
00183                  const ValueOfTimeContinuousDistribution_T
      &,
00184                  const DemandDistribution&,
00185                  stdair::BaseGenerator_T& ioSharedGenerator,
00186                  const stdair::RandomSeed_T& iRequestDateTimeSeed,
00187                  const stdair::RandomSeed_T& iDemandCharacteristicsSeed,
00188                  const POSProbabilityMass_T&);
00189
00194     void setBoolFirstDateTimeRequest (const bool&
      iFirstDateTimeRequest) {
00195       _firstDateTimeRequest = iFirstDateTimeRequest;
00196     }
00197
00198
00199   public:
00200     // ////////////////// Business Methods /////////////////
00202     void incrementGeneratedRequestsCounter() {
00203       _randomGenerationContext.
      incrementGeneratedRequestsCounter();
00204     }
00205
00207     const bool stillHavingRequestsToBeGenerated
       (const stdair::DemandGenerationMethod& iDemandGenerationMethod) const;
00208
00210     const stdair::DateTime_T generateTimeOfRequestPoissonProcess
      ();
00211
00213     const stdair::DateTime_T generateTimeOfRequestStatisticsOrder
      ();
```

```
00214
00216     const stdair::AirportCode_T generatePOS();
00217
00219     const stdair::ChannelLabel_T generateChannel();
00220
00222     const stdair::TripType_T generateTripType();
00223
00225     const stdair::DayDuration_T generateStayDuration();
00226
00228     const stdair::FrequentFlyer_T generateFrequentFlyer();
00229
00231     const stdair::Duration_T generatePreferredDepartureTime
      ();
00232
00234     const stdair::WTP_T generateWTP (stdair::RandomGeneration&,
00235                                      const stdair::Date_T&,
00236                                      const stdair::DateTime_T&,
00237                                      const stdair::DayDuration_T&);
00238
00240     const stdair::PriceValue_T generateValueOfTime();
00241
00252     stdair::BookingRequestPtr_T
00253     generateNextRequest (stdair::RandomGeneration&,
00254                          const stdair::DemandGenerationMethod&);
00255
00257     void reset (stdair::BaseGenerator_T& ioSharedGenerator);
00258
00259
00260   public:
00261     // ////////////////// Display support methods //////////////
00266     void toStream (std::ostream& ioOut) const {
00267       ioOut << toString();
00268     }
00269
00274     void fromStream (std::istream& ioIn) {
00275     }
00276
00280     std::string toString() const;
00281
00285     const std::string describeKey() const {
00286       return _key.toString();
00287     }
00288
00292     std::string display() const;
00293
00294     const stdair::Duration_T convertFloatIntoDuration (
      const stdair::FloatDuration_T);
00295
00296   protected:
00297     // ////////// Constructors and destructors /////////
00301     DemandStream (const Key_T&);
00305     virtual ~DemandStream();
00306
00307   private:
00309     DemandStream();
00311     DemandStream (const DemandStream&);
00313     void init (stdair::BaseGenerator_T& ioSharedGenerator);
00314
00315
00316   protected:
00317     // ////////// Attributes //////////
00321     Key_T _key;
00322
00326     BomAbstract* _parent;
00327
00331     stdair::HolderMap_T _holderMap;
00332
00336     DemandCharacteristics _demandCharacteristics
      ;
00337
00341     DemandDistribution _demandDistribution
      ;
00342
00346     stdair::NbOfRequests_T _totalNumberOfRequestsToBeGenerated
      ;
00347
00351     RandomGenerationContext _randomGenerationContext
      ;
00352
00356     stdair::RandomGeneration _requestDateTimeRandomGenerator
      ;
00357
00361     stdair::RandomGeneration _demandCharacteristicsRandomGenerator
      ;
00362
00367     POSProbabilityMass_T _posProMass;
00368
```

```
00369   private:
00370     bool _stillHavingRequestsToBeGenerated;
00371
00372     bool _firstDateTimeRequest;
00373
00374     stdair::FloatDuration_T _dateTimeLastRequest;
00375   };
00376
00377 }
00378 #endif // __TRADEMGEN_BOM_DEMANDSTREAM_HPP
```

## 23.69 trademgen/bom/DemandStreamKey.cpp File Reference

```
#include <cassert>
#include <sstream>
#include <stdair/basic/BasConst_Inventory.hpp>
#include <trademgen/bom/DemandStreamKey.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.70 DemandStreamKey.cpp

```
00001 // //////////////////////////////////////////////////////////////////
00002 // Import section
00003 // //////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 // StdAir
00008 #include <stdair/basic/BasConst_Inventory.hpp>
00009 // TraDemGen
00010 #include <trademgen/bom/DemandStreamKey.hpp>
00011
00012 namespace TRADEMGEN {
00013
00014   // //////////////////////////////////////////////////////////////////
00015   DemandStreamKey::DemandStreamKey()
00016     : _origin (stdair::DEFAULT_ORIGIN),
00017       _destination (stdair::DEFAULT_DESTINATION),
00018       _preferredDepartureDate (stdair::DEFAULT_DEPARTURE_DATE),
00019       _preferredCabin (stdair::DEFAULT_CABIN_CODE) {
00020     assert (false);
00021   }
00022
00023   // //////////////////////////////////////////////////////////////////
00024   DemandStreamKey::
00025   DemandStreamKey (const stdair::AirportCode_T& iOrigin,
00026                    const stdair::AirportCode_T& iDestination,
00027                    const stdair::Date_T& iPreferredDepartureDate,
00028                    const stdair::CabinCode_T& iPreferredCabin)
00029     : _origin (iOrigin), _destination (iDestination),
00030       _preferredDepartureDate (iPreferredDepartureDate),
00031       _preferredCabin (iPreferredCabin) {
00032   }
00033
00034   // //////////////////////////////////////////////////////////////////
00035   DemandStreamKey::DemandStreamKey (const DemandStreamKey& iKey)
00036     : _origin (iKey._origin), _destination (iKey._destination),
00037       _preferredDepartureDate (iKey._preferredDepartureDate),
00038       _preferredCabin (iKey._preferredCabin) {
00039   }
00040
00041   // //////////////////////////////////////////////////////////////////
00042   DemandStreamKey::~DemandStreamKey () {
00043   }
00044
00045   // //////////////////////////////////////////////////////////////////
00046   void DemandStreamKey::toStream (std::ostream& ioOut)
       const {
00047     ioOut << "DemandStreamKey: " << toString();
00048   }
00049
00050   // //////////////////////////////////////////////////////////////////
```

```
00051   void DemandStreamKey::fromStream (std::istream&
      ioIn) {
00052   }
00053
00054   // ////////////////////////////////////////////////////////////////////
00055   const std::string DemandStreamKey::toString() const
      {
00056     std::ostringstream oStr;
00057     oStr << _origin << "-" << _destination << " " << _preferredDepartureDate
00058          << " " << _preferredCabin;
00059     return oStr.str();
00060   }
00061
00062 }
```

## 23.71 trademgen/bom/DemandStreamKey.hpp File Reference

```
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_date_time_types.hpp>
#include <stdair/bom/KeyAbstract.hpp>
```

### Classes

- struct TRADEMGEN::DemandStreamKey

### Namespaces

- namespace TRADEMGEN

## 23.72 DemandStreamKey.hpp

```
00001 #ifndef __TRADEMGEN_BOM_DEMANDSTREAMKEY_HPP
00002 #define __TRADEMGEN_BOM_DEMANDSTREAMKEY_HPP
00003
00004 // ////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // ////////////////////////////////////////////////////////////////////
00007 // StdAir
00008 #include <stdair/stdair_basic_types.hpp>
00009 #include <stdair/stdair_date_time_types.hpp>
00010 #include <stdair/bom/KeyAbstract.hpp>
00011
00012 namespace TRADEMGEN {
00013
00020   struct DemandStreamKey : public stdair::KeyAbstract {
00021
00022     // ////////// Constructors and destructors //////////
00023   private:
00025     DemandStreamKey();
00026
00027   public:
00029     DemandStreamKey (const stdair::AirportCode_T& iOrigin,
00030                      const stdair::AirportCode_T& iDestination,
00031                      const stdair::Date_T& iPreferredDepartureDate,
00032                      const stdair::CabinCode_T& iPreferredCabin);
00034     DemandStreamKey (const DemandStreamKey&);
00035
00037     ~DemandStreamKey();
00038
00039
00040   public:
00041     // ////////// Getters //////////
00043     const stdair::AirportCode_T& getOrigin() const {
00044       return _origin;
00045     }
00046
00048     const stdair::AirportCode_T& getDestination() const {
00049       return _destination;
00050     }
00051
00053     const stdair::Date_T& getPreferredDepartureDate ()
      const {
```

```
00054       return _preferredDepartureDate;
00055     }
00056
00058     const stdair::CabinCode_T& getPreferredCabin() const {
00059       return _preferredCabin;
00060     }
00061
00062
00063     // ////////// Display support methods /////////
00066     void toStream (std::ostream& ioOut) const;
00067
00070     void fromStream (std::istream& ioIn);
00071
00077     const std::string toString() const;
00078
00079
00080   private:
00081     // ////////////////// Attributes ///////////////
00083     stdair::AirportCode_T _origin;
00084
00086     stdair::AirportCode_T _destination;
00087
00089     stdair::Date_T _preferredDepartureDate;
00090
00092     stdair::CabinCode_T _preferredCabin;
00093   };
00094
00095 }
00096 #endif // __TRADEMGEN_BOM_DEMANDSTREAMKEY_HPP
```

## 23.73 trademgen/bom/DemandStreamTypes.hpp File Reference

```
#include <map>
#include <list>
#include <stdair/bom/key_types.hpp>
```

### Namespaces

- namespace TRADEMGEN

### Typedefs

- typedef std::list< DemandStream * > TRADEMGEN::DemandStreamList_T
- typedef std::map< const stdair::MapKey_T, DemandStream * > TRADEMGEN::DemandStreamMap_T

## 23.74 DemandStreamTypes.hpp

```
00001 #ifndef __TRADEMGEN_BOM_DEMANDSTREAMTYPES_HPP
00002 #define __TRADEMGEN_BOM_DEMANDSTREAMTYPES_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <map>
00009 #include <list>
00010 // StdAir
00011 #include <stdair/bom/key_types.hpp>
00012
00013 namespace TRADEMGEN {
00014
00015   // Forward declarations.
00016   class DemandStream;
00017
00019   typedef std::list<DemandStream*> DemandStreamList_T;
00020
00022   typedef std::map<const stdair::MapKey_T, DemandStream*> DemandStreamMap_T
      ;
00023
00024 }
00025 #endif // __TRADEMGEN_BOM_DEMANDSTREAMTYPES_HPP
```

## 23.75 trademgen/bom/DemandStruct.cpp File Reference

```
#include <cassert>
#include <sstream>
#include <stdair/basic/BasConst_Inventory.hpp>
#include <stdair/basic/BasConst_Period_BOM.hpp>
#include <stdair/service/Logger.hpp>
#include <trademgen/TRADEMGEN_Types.hpp>
#include <trademgen/bom/DemandStruct.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.76 DemandStruct.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 // StdAir
00008 #include <stdair/basic/BasConst_Inventory.hpp>
00009 #include <stdair/basic/BasConst_Period_BOM.hpp>
00010 #include <stdair/service/Logger.hpp>
00011 // TRADEMGEN
00012 #include <trademgen/TRADEMGEN_Types.hpp>
00013 #include <trademgen/bom/DemandStruct.hpp>
00014
00015 namespace TRADEMGEN {
00016
00017   // ////////////////////////////////////////////////////////////////////
00018   DemandStruct::DemandStruct()
00019     : _dateRange (stdair::BOOST_DEFAULT_DATE_PERIOD),
00020       _dow (stdair::DEFAULT_DOW_STRING),
00021       _prefCabin (stdair::DEFAULT_CABIN_CODE),
00022       _itHours (0), _itMinutes (0), _itSeconds (0), _itFFCode ("") {
00023   }
00024
00025   // ////////////////////////////////////////////////////////////////////
00026   DemandStruct::~DemandStruct() {
00027   }
00028
00029   // ////////////////////////////////////////////////////////////////////
00030   stdair::Date_T DemandStruct::getDate() const {
00031     return stdair::Date_T (_itYear, _itMonth, _itDay);
00032   }
00033
00034   // ////////////////////////////////////////////////////////////////////
00035   stdair::Duration_T DemandStruct::getTime() const {
00036     return boost::posix_time::hours (_itHours)
00037       + boost::posix_time::minutes (_itMinutes)
00038       + boost::posix_time::seconds (_itSeconds);
00039   }
00040
00041   // ////////////////////////////////////////////////////////////////////
00042   const std::string DemandStruct::describe() const {
00043     std::ostringstream ostr;
00044     ostr << _dateRange << " - " << _dow
00045          << " " << _origin << "-" << _destination
00046          << " " << _prefCabin
00047          << ", N(" << _demandMean << ", " << _demandStdDev
       << "); ";
00048
00049     unsigned short idx = 0;
00050     for (POSProbabilityMassFunction_T::const_iterator it = _posProbDist
      .begin();
00051          it != _posProbDist.end(); ++it, ++idx) {
00052       const stdair::AirportCode_T& lPosCode = it->first;
00053       const stdair::Probability_T& lPosProbMass = it->second;
00054       if (idx != 0) {
00055         ostr << ", ";
00056       }
00057       ostr << lPosCode << ":" << lPosProbMass;
00058     }
```

```
00059     ostr << "; ";
00060
00061     idx = 0;
00062     for (ChannelProbabilityMassFunction_T::const_iterator it =
00063            _channelProbDist.begin();
00064          it != _channelProbDist.end(); ++it, ++idx) {
00065       const stdair::ChannelLabel_T lChannelCode = it->first;
00066       const stdair::Probability_T& lChannelProbMass = it->second;
00067       if (idx != 0) {
00068         ostr << ", ";
00069       }
00070       ostr << lChannelCode << ":" << lChannelProbMass;
00071     }
00072     ostr << "; ";
00073
00074     idx = 0;
00075     for (TripTypeProbabilityMassFunction_T::const_iterator it =
00076            _tripProbDist.begin();
00077          it != _tripProbDist.end(); ++it, ++idx) {
00078       const stdair::TripType_T lTripCode = it->first;
00079       const stdair::Probability_T& lTripProbMass = it->second;
00080       if (idx != 0) {
00081         ostr << ", ";
00082       }
00083       ostr << lTripCode << ":" << lTripProbMass;
00084     }
00085     ostr << "; ";
00086
00087     idx = 0;
00088     for (StayDurationProbabilityMassFunction_T::const_iterator it =
00089            _stayProbDist.begin();
00090          it != _stayProbDist.end(); ++it, ++idx) {
00091       const stdair::DayDuration_T& lStayDuration = it->first;
00092       const stdair::Probability_T& lStayProbMass = it->second;
00093       if (idx != 0) {
00094         ostr << ", ";
00095       }
00096       ostr << lStayDuration << ":" << lStayProbMass;
00097     }
00098     ostr << "; ";
00099
00100     idx = 0;
00101     for (FrequentFlyerProbabilityMassFunction_T::const_iterator it =
00102            _ffProbDist.begin();
00103          it != _ffProbDist.end(); ++it, ++idx) {
00104       const stdair::FrequentFlyer_T lFFCode = it->first;
00105       const stdair::Probability_T& lFFProbMass = it->second;
00106       if (idx != 0) {
00107         ostr << ", ";
00108       }
00109       ostr << lFFCode << ":" << lFFProbMass;
00110     }
00111     ostr << "; ";
00112
00113     idx = 0;
00114     for (PreferredDepartureTimeContinuousDistribution_T::const_iterator it =
00115            _prefDepTimeProbDist.begin();
00116          it != _prefDepTimeProbDist.end(); ++it, ++idx) {
00117       const stdair::IntDuration_T& lPrefDepTime = it->first;
00118       const stdair::Probability_T& lPrefDepTimeProbMass = it->second;
00119       if (idx != 0) {
00120         ostr << ", ";
00121       }
00122       ostr << lPrefDepTime << ":" << lPrefDepTimeProbMass;
00123     }
00124     ostr << "; ";
00125
00126     ostr << _minWTP << "; ";
00127
00128     idx = 0;
00129     for (ValueOfTimeContinuousDistribution_T::const_iterator it =
00130            _timeValueProbDist.begin();
00131          it != _timeValueProbDist.end(); ++it, ++idx) {
00132       const stdair::PriceValue_T& lTimeValue = it->first;
00133       const stdair::Probability_T& lTimeValueProbMass = it->second;
00134       if (idx != 0) {
00135         ostr << ", ";
00136       }
00137       ostr << lTimeValue << ":" << lTimeValueProbMass;
00138     }
00139     ostr << "; ";
00140
00141     idx = 0;
00142     for (ArrivalPatternCumulativeDistribution_T::const_iterator it =
00143            _dtdProbDist.begin(); it != _dtdProbDist.end
      (); ++it, ++idx) {
00144       const stdair::FloatDuration_T& lDTD = it->first;
```

```
00145       const stdair::Probability_T& lDTDProbMass = it->second;
00146       if (idx != 0) {
00147         ostr << ", ";
00148       }
00149       ostr << lDTD << ":" << lDTDProbMass;
00150     }
00151     ostr << "; ";
00152
00153     return ostr.str();
00154   }
00155
00156 }
```

## 23.77 trademgen/bom/DemandStruct.hpp File Reference

```
#include <string>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_maths_types.hpp>
#include <stdair/stdair_date_time_types.hpp>
#include <stdair/basic/StructAbstract.hpp>
#include <stdair/bom/DoWStruct.hpp>
#include <trademgen/basic/DemandCharacteristicsTypes.hpp>
```

### Classes

- struct TRADEMGEN::DemandStruct

### Namespaces

- namespace TRADEMGEN

## 23.78 DemandStruct.hpp

```
00001 #ifndef __TRADEMGEN_BOM_DEMANDSTRUCT_HPP
00002 #define __TRADEMGEN_BOM_DEMANDSTRUCT_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
00009 // StdAir
00010 #include <stdair/stdair_basic_types.hpp>
00011 #include <stdair/stdair_maths_types.hpp>
00012 #include <stdair/stdair_date_time_types.hpp>
00013 #include <stdair/basic/StructAbstract.hpp>
00014 #include <stdair/bom/DoWStruct.hpp>
00015 // TraDemGen
00016 #include <trademgen/basic/DemandCharacteristicsTypes.hpp
     >
00017
00018 namespace TRADEMGEN {
00019
00021   struct DemandStruct : public stdair::StructAbstract {
00022
00023   public:
00024     // ////////////////////// Getters ////////////////////
00026     stdair::Date_T getDate() const;
00027
00029     stdair::Duration_T getTime() const;
00030
00031
00032   public:
00033     // ////////////////// Display Support Methods /////////////////
00035     const std::string describe() const;
00036
00037
00038   public:
00039     // ///////////////// Constructors and destructors ////////////////
00041     DemandStruct();
```

```
00043     ~DemandStruct();
00044   private:
00046     DemandStruct (const DemandStruct&);
00047
00048
00049   public:
00050     // ////////////// Attributes ////////////////////
00051     stdair::DatePeriod_T _dateRange;
00052     stdair::DoWStruct _dow;
00053     stdair::AirportCode_T _origin;
00054     stdair::AirportCode_T _destination;
00055     stdair::CabinCode_T _prefCabin;
00056     stdair::MeanValue_T _demandMean;
00057     stdair::StdDevValue_T _demandStdDev;
00058     POSProbabilityMassFunction_T _posProbDist
    ;
00059     ChannelProbabilityMassFunction_T
    _channelProbDist;
00060     TripTypeProbabilityMassFunction_T
    _tripProbDist;
00061     StayDurationProbabilityMassFunction_T
    _stayProbDist;
00062     FrequentFlyerProbabilityMassFunction_T
     _ffProbDist;
00063     PreferredDepartureTimeContinuousDistribution_T
     _prefDepTimeProbDist;
00064     stdair::WTP_T _minWTP;
00065     ValueOfTimeContinuousDistribution_T
    _timeValueProbDist;
00066     ArrivalPatternCumulativeDistribution_T
     _dtdProbDist;
00067
00068   public:
00069     // ////////////// Staging ////////////////////
00071     stdair::Date_T _prefDepDateStart;
00072     stdair::Date_T _prefDepDateEnd;
00073     unsigned int _itYear;
00074     unsigned int _itMonth;
00075     unsigned int _itDay;
00076
00078     long _itHours;
00079     long _itMinutes;
00080     long _itSeconds;
00081
00083     stdair::AirportCode_T _itPosCode;
00084
00086     stdair::ChannelLabel_T _itChannelCode;
00087
00089     stdair::TripType_T _itTripCode;
00090
00092     stdair::DayDuration_T _itStayDuration;
00093
00095     stdair::FrequentFlyer_T _itFFCode;
00096
00098     stdair::Duration_T _itPrefDepTime;
00099
00101     stdair::PriceValue_T _itTimeValue;
00102
00104     stdair::DayDuration_T _itDTD;
00105   };
00106
00107 }
00108 #endif // __TRADEMGEN_BOM_DEMANDSTRUCT_HPP
```

## 23.79 trademgen/command/DBManager.cpp File Reference

```
#include <cassert>
#include <soci/soci.h>
#include <soci/mysql/soci-mysql.h>
#include <stdair/bom/AirlineStruct.hpp>
#include <stdair/service/Logger.hpp>
#include <trademgen/command/DBManager.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.80 DBManager.cpp

```
00001 // //////////////////////////////////////////////////////////////////
00002 // Import section
00003 // //////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 // SOCI
00007 #if defined(SOCI_HEADERS_BURIED)
00008 #include <soci/core/soci.h>
00009 #include <soci/backends/mysql/soci-mysql.h>
00010 #else // SOCI_HEADERS_BURIED
00011 #include <soci/soci.h>
00012 #include <soci/mysql/soci-mysql.h>
00013 #endif // SOCI_HEADERS_BURIED
00014 // StdAir
00015 #include <stdair/bom/AirlineStruct.hpp>
00016 #include <stdair/service/Logger.hpp>
00017 // TraDemGen
00018 #include <trademgen/command/DBManager.hpp>
00019
00020 namespace TRADEMGEN {
00021
00022   // //////////////////////////////////////////////////////////////////
00023   void DBManager::
00024   prepareSelectStatement (stdair::DBSession_T&
      ioSociSession,
00025                           stdair::DBRequestStatement_T& ioSelectStatement,
00026                           stdair::AirlineStruct& ioAirline) {
00027
00028     try {
00029
00030       // Instanciate a SQL statement (no request is performed at that stage)
00044     } catch (std::exception const& lException) {
00045       STDAIR_LOG_ERROR ("Error: " << lException.what());
00046       throw stdair::SQLDatabaseException (lException.what());
00047     }
00048   }
00049
00050   // //////////////////////////////////////////////////////////////////
00051   void DBManager::
00052   prepareSelectOnAirlineCodeStatement (stdair::DBSession_T& ioSociSession,
00053                                        stdair::DBRequestStatement_T&
      ioSelectStatement,
00054                                        const stdair::AirlineCode_T&
      iAirlineCode,
00055                                        stdair::AirlineStruct& ioAirline) {
00056
00057     try {
00058
00059       // Instanciate a SQL statement (no request is performed at that stage)
00090     } catch (std::exception const& lException) {
00091       STDAIR_LOG_ERROR ("Error: " << lException.what());
00092       throw stdair::SQLDatabaseException (lException.what());
00093     }
00094   }
00095
00096   // //////////////////////////////////////////////////////////////////
00097   bool DBManager::iterateOnStatement (
      stdair::DBRequestStatement_T& ioStatement,
00098                                       stdair::AirlineStruct& ioAirline,
00099                                       const bool iShouldDoReset) {
00100     bool hasStillData = false;
00101
00102     try {
00103
00104       // Reset the list of names of the given Airline object
00105       if (iShouldDoReset == true) {
00106         // ioAirline.resetMatrix();
00107       }
00108
00109       // Retrieve the next row of Airline object
00110       hasStillData = ioStatement.fetch();
00111
00112     } catch (std::exception const& lException) {
00113       STDAIR_LOG_ERROR ("Error: " << lException.what());
00114       throw stdair::SQLDatabaseException (lException.what());
00115     }
00116
00117     return hasStillData;
00118   }
00119
00120   // //////////////////////////////////////////////////////////////////
00121   void DBManager::updateAirlineInDB (
      stdair::DBSession_T& ioSociSession,
00122                                      const stdair::AirlineStruct& iAirline) {
00123
```

```
00124     try {
00125
00126       // Begin a transaction on the database
00127       ioSociSession.begin();
00128
00129       // Instanciate a SQL statement (no request is performed at that stage)
00130       std::string lAirlineCode;
00131       /*
00132       stdair::DBRequestStatement_T lUpdateStatement =
00133         (ioSociSession.prepare
00134          << "update ref_airline_details "
00135          << "set xapian_docid = :xapian_docid "
00136          << "where code = :code", soci::use (lDocID), soci::use
      (lAirlineCode));
00137
00138       // Execute the SQL query
00139       lDocID = iAirline.getDocID();
00140       lAirlineCode = iAirline.getAirlineCode();
00141       lUpdateStatement.execute (true);
00142       */
00143
00144       // Commit the transaction on the database
00145       ioSociSession.commit();
00146
00147       // Debug
00148       // TRADEMGEN_LOG_DEBUG ("[" << lDocID << "] " << iAirline);
00149
00150     } catch (std::exception const& lException) {
00151       STDAIR_LOG_ERROR ("Error: " << lException.what());
00152       throw stdair::SQLDatabaseException (lException.what());
00153     }
00154   }
00155
00156   // ////////////////////////////////////////////////////////////////////
00157   bool DBManager::retrieveAirline (
      stdair::DBSession_T& ioSociSession,
00158                                    const stdair::AirlineCode_T& iAirlineCode,
00159                                    stdair::AirlineStruct& ioAirline) {
00160     bool oHasRetrievedAirline = false;
00161
00162     try {
00163
00164       // Prepare the SQL request corresponding to the select statement
00165       stdair::DBRequestStatement_T lSelectStatement (ioSociSession);
00166       DBManager::prepareSelectOnAirlineCodeStatement (ioSociSession,
00167                                                       lSelectStatement,
00168                                                       iAirlineCode, ioAirline);
00169       const bool shouldDoReset = true;
00170       bool hasStillData = iterateOnStatement (
      lSelectStatement, ioAirline,
00171                                               shouldDoReset);
00172       if (hasStillData == true) {
00173         oHasRetrievedAirline = true;
00174       }
00175
00176       // Sanity check
00177       const bool shouldNotDoReset = false;
00178       hasStillData = iterateOnStatement (lSelectStatement,
      ioAirline,
00179                                          shouldNotDoReset);
00180       // Debug
00181       // STDAIR_LOG_DEBUG ("[" << iDocID << "] " << ioAirline);
00182
00183     } catch (std::exception const& lException) {
00184       STDAIR_LOG_ERROR ("Error: " << lException.what());
00185       throw stdair::SQLDatabaseException (lException.what());
00186     }
00187
00188     return oHasRetrievedAirline;
00189   }
00190
00191 }
```

## 23.81 trademgen/command/DBManager.hpp File Reference

```
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_db.hpp>
#include <trademgen/TRADEMGEN_Types.hpp>
```

### Classes

- class TRADEMGEN::DBManager

### Namespaces

- namespace TRADEMGEN

## 23.82 DBManager.hpp

```
00001 #ifndef __TRADEMGEN_CMD_DBMANAGER_HPP
00002 #define __TRADEMGEN_CMD_DBMANAGER_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // StdAir
00008 #include <stdair/stdair_basic_types.hpp>
00009 #include <stdair/stdair_db.hpp>
00010 // Trademgen
00011 #include <trademgen/TRADEMGEN_Types.hpp>
00012
00013 namespace TRADEMGEN {
00014
00015   // Forward declarations
00016   struct AirlineStruct;
00017
00020   class DBManager {
00021   public:
00024     static void updateAirlineInDB (stdair::DBSession_T&,
00025                                    const stdair::AirlineStruct&);
00026
00030     static bool retrieveAirline (stdair::DBSession_T&,
00031                                  const stdair::AirlineCode_T&,
00032                                  stdair::AirlineStruct&);
00033
00034
00035   public:
00037     static void prepareSelectStatement (
      stdair::DBSession_T&,
00038                                         stdair::DBRequestStatement_T&,
00039                                         stdair::AirlineStruct&);
00040
00045     static bool iterateOnStatement (
      stdair::DBRequestStatement_T&,
00046                                     stdair::AirlineStruct&,
00047                                     const bool iShouldDoReset);
00048
00049
00050   private:
00052     static void prepareSelectOnAirlineCodeStatement (stdair::DBSession_T&,
00053
      stdair::DBRequestStatement_T&,
00054                                                      const
      stdair::AirlineCode_T&,
00055                                                      stdair::AirlineStruct&);
00056
00057
00058   private:
00060     DBManager() {}
00061     DBManager(const DBManager&) {}
00063     ~DBManager() {}
00064   };
00065
00066 }
00067 #endif // __TRADEMGEN_CMD_DBMANAGER_HPP
```

## 23.83 trademgen/command/DemandManager.cpp File Reference

```
#include <cassert>
```

```
#include <stdair/basic/ProgressStatusSet.hpp>
#include <stdair/bom/BomManager.hpp>
#include <stdair/bom/EventStruct.hpp>
#include <stdair/bom/BookingRequestStruct.hpp>
#include <stdair/bom/EventQueue.hpp>
#include <stdair/bom/TravelSolutionStruct.hpp>
#include <stdair/bom/CancellationStruct.hpp>
#include <stdair/factory/FacBom.hpp>
#include <stdair/factory/FacBomManager.hpp>
#include <stdair/service/Logger.hpp>
#include <trademgen/basic/DemandCharacteristics.hpp>
#include <trademgen/basic/DemandDistribution.hpp>
#include <trademgen/bom/DemandStruct.hpp>
#include <trademgen/bom/DemandStream.hpp>
#include <trademgen/command/DemandManager.hpp>
```

#### Namespaces

- namespace TRADEMGEN

## 23.84 DemandManager.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 // StdAir
00007 #include <stdair/basic/ProgressStatusSet.hpp>
00008 #include <stdair/bom/BomManager.hpp>
00009 #include <stdair/bom/EventStruct.hpp>
00010 #include <stdair/bom/BookingRequestStruct.hpp>
00011 #include <stdair/bom/EventQueue.hpp>
00012 #include <stdair/bom/TravelSolutionStruct.hpp>
00013 #include <stdair/bom/CancellationStruct.hpp>
00014 #include <stdair/factory/FacBom.hpp>
00015 #include <stdair/factory/FacBomManager.hpp>
00016 #include <stdair/service/Logger.hpp>
00017 // TraDemGen
00018 #include <trademgen/basic/DemandCharacteristics.hpp
      >
00019 #include <trademgen/basic/DemandDistribution.hpp
      >
00020 #include <trademgen/bom/DemandStruct.hpp>
00021 #include <trademgen/bom/DemandStream.hpp>
00022 #include <trademgen/command/DemandManager.hpp
      >
00023
00024 namespace TRADEMGEN {
00025
00026   // ////////////////////////////////////////////////////////////////////
00027   void DemandManager::
00028   buildSampleBomStd (stdair::EventQueue& ioEventQueue,
00029                      stdair::RandomGeneration& ioSharedGenerator,
00030                      const POSProbabilityMass_T& iPOSProbMass)
       {
00031
00032     // Key of the demand stream
00033     const stdair::AirportCode_T lOrigin ("SIN");
00034     const stdair::AirportCode_T lDestination ("BKK");
00035     const stdair::Date_T lDepDate (2011, 2, 14);
00036     const stdair::CabinCode_T lCabin ("Y");
00037
00038     //
00039     const DemandStreamKey lDemandStreamKey (lOrigin, lDestination, lDepDate,
00040                                             lCabin);
00041
00042     // DEBUG
00043     // STDAIR_LOG_DEBUG ("Demand stream key: " << lDemandStreamKey.describe());
00044
00045     // Distribution for the number of requests
00046     const stdair::MeanValue_T lDemandMean (10.0);
00047     const stdair::StdDevValue_T lDemandStdDev (1.0);
```

```
00048     const DemandDistribution lDemandDistribution (lDemandMean, lDemandStdDev);
00049
00050     // Seed
00051     const stdair::RandomSeed_T& lRequestDateTimeSeed =
00052       generateSeed (ioSharedGenerator);
00053     const stdair::RandomSeed_T& lDemandCharacteristicsSeed =
00054       generateSeed (ioSharedGenerator);
00055
00056     //
00057     ArrivalPatternCumulativeDistribution_T
       lDTDProbDist;
00058     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-330
       ,
00059                                                                             0));
00060     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-40,
00061                                                                             0.2)
       );
00062     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-20,
00063                                                                             0.6)
       );
00064     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-1,
00065                                                                             1.0)
       );
00066     //
00067     POSProbabilityMassFunction_T lPOSProbDist;
00068     lPOSProbDist.insert (POSProbabilityMassFunction_T::value_type ("BKK", 0.3))
       ;
00069     lPOSProbDist.insert (POSProbabilityMassFunction_T::value_type ("SIN", 0.7))
       ;
00070     //
00071     ChannelProbabilityMassFunction_T
       lChannelProbDist;
00072     lChannelProbDist.insert (ChannelProbabilityMassFunction_T::value_type ("DF"
       ,
00073                                                                             0.1)
       );
00074     lChannelProbDist.insert (ChannelProbabilityMassFunction_T::value_type ("DN"
       ,
00075                                                                             0.3)
       );
00076     lChannelProbDist.insert (ChannelProbabilityMassFunction_T::value_type ("IF"
       ,
00077                                                                             0.4)
       );
00078     lChannelProbDist.insert (ChannelProbabilityMassFunction_T::value_type ("IN"
       ,
00079                                                                             0.2)
       );
00080     //
00081     TripTypeProbabilityMassFunction_T
       lTripProbDist;
00082     lTripProbDist.insert (TripTypeProbabilityMassFunction_T::value_type ("RO",
00083                                                                           0.6));
00084     lTripProbDist.insert (TripTypeProbabilityMassFunction_T::value_type ("RI",
00085                                                                           0.2));
00086     lTripProbDist.insert (TripTypeProbabilityMassFunction_T::value_type ("OW",
00087                                                                           0.2));
00088     //
00089     StayDurationProbabilityMassFunction_T
       lStayProbDist;
00090     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(0,
00091                                                                             0.1)
       );
00092     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(1,
00093                                                                             0.1)
       );
00094     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(2,
00095                                                                             .15)
       );
00096     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(3,
00097                                                                             .15)
       );
00098     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(4,
00099                                                                             .15)
       );
00100     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(5,
00101                                                                             .35)
       );
00102     //
00103     FrequentFlyerProbabilityMassFunction_T
       lFFProbDist;
00104     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("P",
00105                                                                           0.01)
       );
00106     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("G",
00107                                                                           0.05)
       );
```

```
00108     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("S",
00109                                                                            0.15)
      );
00110     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("M",
00111                                                                            0.3))
      ;
00112     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("N",
00113                                                                            0.49)
      );
00114     //
00115     PreferredDepartureTimeContinuousDistribution_T
       lPrefDepTimeProbDist;
00116     lPrefDepTimeProbDist.
00117       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (6, 0)
      );
00118     lPrefDepTimeProbDist.
00119       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (7,
00120                                                                            0.1))
      ;
00121     lPrefDepTimeProbDist.
00122       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (9,
00123                                                                            0.3))
      ;
00124     lPrefDepTimeProbDist.
00125       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (17,
00126                                                                            0.4))
      ;
00127     lPrefDepTimeProbDist.
00128       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (19,
00129                                                                            0.80)
      );
00130     lPrefDepTimeProbDist.
00131       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (20,
00132                                                                            0.95)
      );
00133     lPrefDepTimeProbDist.
00134       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (22,
00135                                                                            1));
00136     //
00137     ValueOfTimeContinuousDistribution_T
      lTimeValueProbDist;
00138     lTimeValueProbDist.insert(ValueOfTimeContinuousDistribution_T::value_type(1
      5,
00139                                                                              0
      ));
00140     lTimeValueProbDist.insert(ValueOfTimeContinuousDistribution_T::value_type(6
      0,
00141                                                                              1
      ));
00142
00143     //
00144     const stdair::WTP_T lWTP (1000.0);
00145
00146
00147     // Delegate the call to the dedicated command
00148     DemandStream& lDemandStream =
00149       createDemandStream (ioEventQueue, lDemandStreamKey, lDTDProbDist,
00150                           lPOSProbDist, lChannelProbDist, lTripProbDist,
00151                           lStayProbDist, lFFProbDist, lPrefDepTimeProbDist,
00152                           lWTP, lTimeValueProbDist, lDemandDistribution,
00153                           ioSharedGenerator.getBaseGenerator(),
00154                           lRequestDateTimeSeed,
00155                           lDemandCharacteristicsSeed, iPOSProbMass);
00156
00157     // Calculate the expected total number of events for the current
00158     // demand stream
00159     const stdair::NbOfRequests_T& lExpectedTotalNbOfEvents =
00160       lDemandStream.getMeanNumberOfRequests();
00161
00165     ioEventQueue.addStatus (stdair::EventType::BKG_REQ,
00166                             lExpectedTotalNbOfEvents);
00167   }
00168
00169   // ////////////////////////////////////////////////////////////////////
00170   DemandStream& DemandManager::createDemandStream
00171    (stdair::EventQueue& ioEventQueue,
00172     const DemandStreamKey& iKey,
00173     const ArrivalPatternCumulativeDistribution_T
      & iArrivalPattern,
00174     const POSProbabilityMassFunction_T& iPOSProbMass
      ,
00175     const ChannelProbabilityMassFunction_T&
      iChannelProbMass,
00176     const TripTypeProbabilityMassFunction_T&
      iTripTypeProbMass,
00177     const StayDurationProbabilityMassFunction_T
      & iStayDurationProbMass,
```

```
00178    const FrequentFlyerProbabilityMassFunction_T
      & iFrequentFlyerProbMass,
00179    const PreferredDepartureTimeContinuousDistribution_T
      & iPreferredDepartureTimeContinuousDistribution,
00180    const stdair::WTP_T& iMinWTP,
00181    const ValueOfTimeContinuousDistribution_T
      & iValueOfTimeContinuousDistribution,
00182    const DemandDistribution& iDemandDistribution,
00183    stdair::BaseGenerator_T&  ioSharedGenerator,
00184    const stdair::RandomSeed_T& iRequestDateTimeSeed,
00185    const stdair::RandomSeed_T& iDemandCharacteristicsSeed,
00186    const POSProbabilityMass_T& iDefaultPOSProbablityMass) {
00187
00188     DemandStream& oDemandStream =
00189       stdair::FacBom<DemandStream>::instance().create (iKey);
00190
00191     oDemandStream.setAll (iArrivalPattern, iPOSProbMass,
00192                           iChannelProbMass, iTripTypeProbMass,
00193                           iStayDurationProbMass, iFrequentFlyerProbMass,
00194                           iPreferredDepartureTimeContinuousDistribution,
00195                           iMinWTP, iValueOfTimeContinuousDistribution,
00196                           iDemandDistribution, ioSharedGenerator,
00197                           iRequestDateTimeSeed, iDemandCharacteristicsSeed,
00198                           iDefaultPOSProbablityMass);
00199
00200     // Link the DemandStream to its parent (EventQueue)
00201     stdair::FacBomManager::linkWithParent (ioEventQueue, oDemandStream);
00202
00203     // Add the DemandStream to the dedicated list and map
00204     stdair::FacBomManager::addToListAndMap (ioEventQueue, oDemandStream);
00205
00206     return oDemandStream;
00207   }
00208
00209   // ////////////////////////////////////////////////////////////////////
00210   void DemandManager::
00211   createDemandCharacteristics (stdair::EventQueue& ioEventQueue,
00212                                stdair::RandomGeneration& ioSharedGenerator,
00213                                const POSProbabilityMass_T&
      iPOSProbMass,
00214                                const DemandStruct& iDemand) {
00215     stdair::BaseGenerator_T& lSharedGenerator =
00216       ioSharedGenerator.getBaseGenerator();
00217
00218     // Parse the date period and DoW and generate demand characteristics.
00219     const stdair::DatePeriod_T lDateRange = iDemand._dateRange;
00220     for (boost::gregorian::day_iterator itDate = lDateRange.begin();
00221          itDate != lDateRange.end(); ++itDate) {
00222       const stdair::Date_T& currentDate = *itDate;
00223
00224       // Retrieve, for the current day, the Day-Of-the-Week (thanks to Boost)
00225       const unsigned short currentDoW = currentDate.day_of_week().as_number();
00226
00227       // The demand structure stores which Days (-Of-the-Week) are
00228       // active within the week. For each day (Mon., Tue., etc.), a boolean
00229       // states whether the Flight is active for that day.
00230       const stdair::DoWStruct& lDoWList = iDemand._dow;
00231       const bool isDoWActive = lDoWList.getStandardDayOfWeek (currentDoW);
00232
00233       if (isDoWActive == true) {
00234         const DemandStreamKey lDemandStreamKey (iDemand._origin,
00235                                                 iDemand._destination,
00236                                                 currentDate,
00237                                                 iDemand._prefCabin);
00238         // DEBUG
00239         // STDAIR_LOG_DEBUG ("Demand stream key: " <<
      lDemandStreamKey.describe());
00240
00241         //
00242         const DemandDistribution lDemandDistribution (iDemand._demandMean,
00243                                                       iDemand._demandStdDev);
00244
00245         // Seed
00246         const stdair::RandomSeed_T& lRequestDateTimeSeed =
00247           generateSeed (ioSharedGenerator);
00248         const stdair::RandomSeed_T& lDemandCharacteristicsSeed =
00249           generateSeed (ioSharedGenerator);
00250
00251         // Delegate the call to the dedicated command
00252         DemandStream& lDemandStream =
00253           createDemandStream (ioEventQueue, lDemandStreamKey,
00254                               iDemand._dtdProbDist, iDemand._posProbDist,
00255                               iDemand._channelProbDist,
00256                               iDemand._tripProbDist,
00257                               iDemand._stayProbDist, iDemand._ffProbDist,
00258                               iDemand._prefDepTimeProbDist,
00259                               iDemand._minWTP,
```

```
00260                               iDemand._timeValueProbDist,
00261                               lDemandDistribution, lSharedGenerator,
00262                               lRequestDateTimeSeed,
00263                               lDemandCharacteristicsSeed,
00264                               iPOSProbMass);
00265
00266         // Calculate the expected total number of events for the current
00267         // demand stream
00268         const stdair::NbOfRequests_T& lExpectedTotalNbOfEvents =
00269           lDemandStream.getMeanNumberOfRequests();
00270
00275         ioEventQueue.addStatus (stdair::EventType::BKG_REQ,
00276                                 lExpectedTotalNbOfEvents);
00277       }
00278     }
00279   }
00280
00281   // ////////////////////////////////////////////////////////////////////
00282   stdair::RandomSeed_T DemandManager::
00283   generateSeed (stdair::RandomGeneration& ioSharedGenerator) {
00284     stdair::RealNumber_T lVariateUnif = ioSharedGenerator() * 1e9;
00285     stdair::RandomSeed_T oSeed = static_cast<stdair::RandomSeed_T>(lVariateUnif
     );
00286     return oSeed;
00287   }
00288
00289   // ////////////////////////////////////////////////////////////////////
00290   const bool DemandManager::
00291   stillHavingRequestsToBeGenerated (const stdair::EventQueue& iEventQueue,
00292                                     const stdair::DemandStreamKeyStr_T& iKey,
00293                                     stdair::ProgressStatusSet& ioPSS,
00294                                     const stdair::DemandGenerationMethod&
     iDemandGenerationMethod) {
00295     // Retrieve the DemandStream which corresponds to the given key.
00296     const DemandStream& lDemandStream =
00297       stdair::BomManager::getObject<DemandStream> (iEventQueue, iKey);
00298
00299     // Retrieve the progress status of the demand stream.
00300     stdair::ProgressStatus
00301       lProgressStatus (lDemandStream.getNumberOfRequestsGeneratedSoFar(),
00302                        lDemandStream.getMeanNumberOfRequests(),
00303                        lDemandStream.getTotalNumberOfRequestsToBeGenerated());
00304     ioPSS.setSpecificGeneratorStatus (lProgressStatus, iKey);
00305
00306     return lDemandStream.stillHavingRequestsToBeGenerated (
     iDemandGenerationMethod);
00307   }
00308
00309   // ////////////////////////////////////////////////////////////////////
00310   stdair::BookingRequestPtr_T DemandManager::
00311   generateNextRequest (stdair::EventQueue& ioEventQueue,
00312                        stdair::RandomGeneration& ioGenerator,
00313                        const stdair::DemandStreamKeyStr_T& iKey,
00314                        const stdair::DemandGenerationMethod&
     iDemandGenerationMethod) {
00315
00316     // Retrieve the DemandStream which corresponds to the given key.
00317     DemandStream& lDemandStream =
00318       stdair::BomManager::getObject<DemandStream> (ioEventQueue, iKey);
00319
00320     // Generate the next booking request
00321     stdair::BookingRequestPtr_T lBookingRequest =
00322       lDemandStream.generateNextRequest (ioGenerator,
00323                                          iDemandGenerationMethod);
00324
00325     // Create an event structure
00326     stdair::EventStruct lEventStruct (stdair::EventType::BKG_REQ,
00327                                       lBookingRequest);
00328
00336     ioEventQueue.addEvent (lEventStruct);
00337
00338     return lBookingRequest;
00339   }
00340
00341   // ////////////////////////////////////////////////////////////////////
00342   stdair::Count_T DemandManager::
00343   generateFirstRequests (stdair::EventQueue& ioEventQueue,
00344                          stdair::RandomGeneration& ioGenerator,
00345                          const stdair::DemandGenerationMethod&
     iDemandGenerationMethod) {
00346
00347     // Actual total number of events to be generated
00348     stdair::NbOfRequests_T lActualTotalNbOfEvents = 0.0;
00349
00350     // Retrieve the DemandStream list
00351     const DemandStreamList_T& lDemandStreamList =
00352       stdair::BomManager::getList<DemandStream> (ioEventQueue);
```

```
00353
00354     for (DemandStreamList_T::const_iterator itDemandStream =
00355            lDemandStreamList.begin();
00356          itDemandStream != lDemandStreamList.end(); ++itDemandStream) {
00357       DemandStream* lDemandStream_ptr = *itDemandStream;
00358       assert (lDemandStream_ptr != NULL);
00359
00360       lDemandStream_ptr->setBoolFirstDateTimeRequest(true);
00361
00362       // Calculate the expected total number of events for the current
00363       // demand stream
00364       const stdair::NbOfRequests_T& lActualNbOfEvents =
00365         lDemandStream_ptr->getTotalNumberOfRequestsToBeGenerated();
00366       lActualTotalNbOfEvents += lActualNbOfEvents;
00367
00368       // Retrieve the key of the demand stream
00369       const DemandStreamKey& lKey = lDemandStream_ptr->getKey();
00370
00371       // Update the progress status for the given event type (i.e.,
00372       // booking request)
00373       ioEventQueue.updateStatus (stdair::EventType::BKG_REQ, lActualNbOfEvents)
    ;
00374
00375       // Check whether there are still booking requests to be generated
00376       const bool stillHavingRequestsToBeGenerated =
00377         lDemandStream_ptr->stillHavingRequestsToBeGenerated (
    iDemandGenerationMethod);
00378
00379       if (stillHavingRequestsToBeGenerated) {
00380         // Generate the next event (booking request), and insert it
00381         // into the event queue
00382         generateNextRequest (ioEventQueue, ioGenerator, lKey.toString(),
00383                              iDemandGenerationMethod);
00384       }
00385     }
00386
00387     // Update the actual total number of events to be generated
00388     ioEventQueue.setActualTotalNbOfEvents (lActualTotalNbOfEvents);
00389
00390     // Retrieve the actual total number of events to be generated
00391     const stdair::Count_T oTotalNbOfEvents = std::floor (lActualTotalNbOfEvents
    );
00392
00393     //
00394     return oTotalNbOfEvents;
00395   }
00396
00397   // ////////////////////////////////////////////////////////////////////
00398   void DemandManager::reset (stdair::EventQueue& ioEventQueue,
00399                              stdair::BaseGenerator_T& ioShareGenerator) {
00400
00401     // TODO: check whether it is really necessary to destroy the
00402     // objects manually. Indeed, FacSupervisor::cleanAll() should
00403     // destroy any BOM object.
00404
00405     // Reset all the DemandStream objects
00406     const DemandStreamList_T& lDemandStreamList =
00407       stdair::BomManager::getList<DemandStream> (ioEventQueue);
00408     for (DemandStreamList_T::const_iterator itDS = lDemandStreamList.begin();
00409          itDS != lDemandStreamList.end(); ++itDS) {
00410       DemandStream* lCurrentDS_ptr = *itDS;
00411       assert (lCurrentDS_ptr != NULL);
00412
00413       lCurrentDS_ptr->reset (ioShareGenerator);
00414     }
00415
00423     ioEventQueue.reset();
00424   }
00425
00426
00427   // ////////////////////////////////////////////////////////////////////
00428   bool DemandManager::
00429   generateCancellation (stdair::EventQueue& ioEventQueue,
00430                         stdair::RandomGeneration& ioGenerator,
00431                         const stdair::TravelSolutionStruct& iTravelSolution,
00432                         const stdair::PartySize_T& iPartySize,
00433                         const stdair::DateTime_T& iRequestTime,
00434                         const stdair::Date_T& iDepartureDate) {
00435
00436     // Draw a random number to decide if we generate a
00437     // cancellation. For instance, the probability will be hardcoded.
00438     // The cancellation time will be generated uniformly.
00439     double lRandomNumber = ioGenerator();
00440
00441     if (lRandomNumber >= 0.5) {
00442       return false;
00443     }
```

```
00444     lRandomNumber /= 0.5;
00445
00446     // Hardcode the latest cancellation time.
00447     const stdair::Time_T lMidNight =
00448       boost::posix_time::hours (0);
00449     const stdair::DateTime_T lDepartureDateTime =
00450       boost::posix_time::ptime (iDepartureDate, lMidNight);
00451
00452     // Time to departure.
00453     const stdair::Duration_T lTimeToDeparture = lDepartureDateTime-iRequestTime
    ;
00454
00455     // Cancellation time to departure
00456     const long lTimeToDepartureInSeconds = lTimeToDeparture.total_seconds();
00457     const long lCancellationTimeToDepartureInSeconds =
00458       static_cast<long> (lTimeToDepartureInSeconds * lRandomNumber);
00459     const stdair::Duration_T lCancellationTimeToDeparture (0, 0,
    lCancellationTimeToDepartureInSeconds);
00460
00461     // Cancellation time
00462     const stdair::DateTime_T lCancellationTime =
00463       lDepartureDateTime - lCancellationTimeToDeparture;
00464
00465     // Retrieve the segment path
00466     const stdair::SegmentPath_T lSegmentPath = iTravelSolution.getSegmentPath()
    ;
00467
00468     // Hardcoded class path
00469     const stdair::FareOptionStruct& lChosenFareOption =
00470       iTravelSolution.getChosenFareOption ();
00471     const stdair::ClassList_StringList_T& lClassPath =
00472       lChosenFareOption.getClassPath();
00473     std::ostringstream oStr;
00474     for (stdair::ClassList_StringList_T::const_iterator itClassList =
00475           lClassPath.begin(); itClassList != lClassPath.end(); ++itClassList)
    {
00476       const stdair::ClassList_String_T& lClassList = *itClassList;
00477       assert (lClassList.size() > 0);
00478       oStr << lClassList.at(0);
00479     }
00480     const stdair::ClassList_String_T lClassList_String = oStr.str();
00481
00482     // Create the cancellation.
00483     stdair::CancellationPtr_T lCancellation_ptr =
00484       stdair::CancellationPtr_T
00485       (new stdair::CancellationStruct (lSegmentPath, lClassList_String,
00486                                        iPartySize, lCancellationTime));
00487
00488     // Create an event structure
00489     stdair::EventStruct lEventStruct (stdair::EventType::CX, lCancellation_ptr)
    ;
00490
00498     ioEventQueue.addEvent (lEventStruct);
00499
00500     return true;
00501   }
00502
00503   // ////////////////////////////////////////////////////////////////////
00504   void DemandManager::
00505   buildSampleBom (stdair::EventQueue& ioEventQueue,
00506                   stdair::RandomGeneration& ioSharedGenerator,
00507                   const POSProbabilityMass_T& iPOSProbMass)
    {
00508
00509     //
00510     ArrivalPatternCumulativeDistribution_T
     lDTDProbDist;
00511     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-330
    ,
00512                                                                             0));
00513     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-150
    ,
00514                                                                             0.1)
    );
00515     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-92,
00516                                                                             0.2)
    );
00517     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-55,
00518                                                                             0.3)
    );
00519     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-34,
00520                                                                             0.4)
    );
00521     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-21,
00522                                                                             0.5)
    );
00523     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-12,
```

```
00524                                                                   0.6)
      );
00525     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-6,
00526                                                                   0.7)
      );
00527     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-3,
00528                                                                   0.8)
      );
00529     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(-1,
00530                                                                   0.9)
      );
00531     lDTDProbDist.insert(ArrivalPatternCumulativeDistribution_T::value_type(0,
00532                                                                   1.0)
      );
00533
00534     //
00535     ChannelProbabilityMassFunction_T
      lChannelProbDist;
00536     lChannelProbDist.insert (ChannelProbabilityMassFunction_T::value_type ("DF"
      ,
00537                                                                   0.0)
      );
00538     lChannelProbDist.insert (ChannelProbabilityMassFunction_T::value_type ("DN"
      ,
00539                                                                   0.0)
      );
00540     lChannelProbDist.insert (ChannelProbabilityMassFunction_T::value_type ("IF"
      ,
00541                                                                   0.0)
      );
00542     lChannelProbDist.insert (ChannelProbabilityMassFunction_T::value_type ("IN"
      ,
00543                                                                   1.0)
      );
00544
00545     //
00546     TripTypeProbabilityMassFunction_T
      lTripProbDist;
00547     lTripProbDist.insert (TripTypeProbabilityMassFunction_T::value_type ("RO",
00548                                                                    0.0));
00549     lTripProbDist.insert (TripTypeProbabilityMassFunction_T::value_type ("RI",
00550                                                                    0.0));
00551     lTripProbDist.insert (TripTypeProbabilityMassFunction_T::value_type ("OW",
00552                                                                    1.0));
00553
00554     //
00555     StayDurationProbabilityMassFunction_T
      lStayProbDist;
00556     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(0,
00557                                                                   0.1)
      );
00558     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(1,
00559                                                                   0.1)
      );
00560     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(2,
00561                                                                   .15)
      );
00562     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(3,
00563                                                                   .15)
      );
00564     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(4,
00565                                                                   .15)
      );
00566     lStayProbDist.insert(StayDurationProbabilityMassFunction_T::value_type(5,
00567                                                                   .35)
      );
00568
00569     //
00570     FrequentFlyerProbabilityMassFunction_T
       lFFProbDist;
00571     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("P",
00572                                                                   0.1))
      ;
00573     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("G",
00574                                                                   0.01)
      );
00575     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("S",
00576                                                                   0.09)
      );
00577     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("M",
00578                                                                   0.4))
      ;
00579     lFFProbDist.insert(FrequentFlyerProbabilityMassFunction_T::value_type("N",
00580                                                                   0.4))
      ;
00581
00582     //
```

```
00583     ValueOfTimeContinuousDistribution_T
      lTimeValueProbDist;
00584     lTimeValueProbDist.insert(ValueOfTimeContinuousDistribution_T::value_type(1
      5,
00585                                                                                0
      ));
00586     lTimeValueProbDist.insert(ValueOfTimeContinuousDistribution_T::value_type(6
      0,
00587                                                                                1
      ));
00588
00589     /*
      ============================================================================*/
00590
00591     // Key of the demand stream
00592     const stdair::AirportCode_T lSINOrigin ("SIN");
00593     const stdair::AirportCode_T lBKKDestination ("BKK");
00594     const stdair::Date_T lDepDate (2010, 2, 8);
00595     const stdair::CabinCode_T lCabin ("Y");
00596
00597     //
00598     const DemandStreamKey lSINBKKDemandStreamKey (lSINOrigin, lBKKDestination,
      lDepDate,
00599                                                   lCabin);
00600
00601     // DEBUG
00602     // STDAIR_LOG_DEBUG ("Demand stream key: " << lDemandStreamKey.describe());
00603
00604     // Distribution for the number of requests
00605     const stdair::MeanValue_T lSINBKKDemandMean (60.0);
00606     const stdair::StdDevValue_T lSINBKKDemandStdDev (4.0);
00607     const DemandDistribution lSINBKKDemandDistribution (lSINBKKDemandMean,
      lSINBKKDemandStdDev);
00608
00609     // Seed
00610     const stdair::RandomSeed_T& lSINBKKRequestDateTimeSeed =
00611       generateSeed (ioSharedGenerator);
00612     const stdair::RandomSeed_T& lSINBKKDemandCharacteristicsSeed =
00613       generateSeed (ioSharedGenerator);
00614
00615
00616     //
00617     POSProbabilityMassFunction_T lSINBKKPOSProbDist
      ;
00618     lSINBKKPOSProbDist.insert (POSProbabilityMassFunction_T::value_type ("SIN",
       1.0));
00619     lSINBKKPOSProbDist.insert (POSProbabilityMassFunction_T::value_type ("BKK",
       0.0));
00620
00621     //
00622     PreferredDepartureTimeContinuousDistribution_T
       lSINPrefDepTimeProbDist;
00623     lSINPrefDepTimeProbDist.
00624       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (6, 0)
      );
00625     lSINPrefDepTimeProbDist.
00626       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (8,
00627                                                                           0.7))
      ;
00628     lSINPrefDepTimeProbDist.
00629       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (10,
00630                                                                           0.8))
      ;
00631     lSINPrefDepTimeProbDist.
00632       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (12,
00633                                                                           0.9))
      ;
00634     lSINPrefDepTimeProbDist.
00635       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (14,
00636                                                                           1.0))
      ;
00637
00638     //
00639     const stdair::WTP_T lSINBKKWTP (400.0);
00640
00641
00642     // Delegate the call to the dedicated command
00643     DemandStream& lSINBKKDemandStream =
00644       createDemandStream (ioEventQueue, lSINBKKDemandStreamKey, lDTDProbDist,
00645                           lSINBKKPOSProbDist, lChannelProbDist, lTripProbDist,
00646                           lStayProbDist, lFFProbDist, lSINPrefDepTimeProbDist,
00647                           lSINBKKWTP, lTimeValueProbDist,
      lSINBKKDemandDistribution,
00648                           ioSharedGenerator.getBaseGenerator(),
00649                           lSINBKKRequestDateTimeSeed,
00650                           lSINBKKDemandCharacteristicsSeed, iPOSProbMass);
00651
```

```
00652     // Calculate the expected total number of events for the current
00653     // demand stream
00654     const stdair::NbOfRequests_T& lSINBKKExpectedNbOfEvents =
00655       lSINBKKDemandStream.getMeanNumberOfRequests();
00656
00657     /*
    ============================================================================*/
00658
00659     // Key of the demand stream
00660     const stdair::AirportCode_T lBKKOrigin ("BKK");
00661     const stdair::AirportCode_T lHKGDestination ("HKG");
00662
00663     //
00664     const DemandStreamKey lBKKHKGDemandStreamKey (lBKKOrigin, lHKGDestination,
    lDepDate,
00665                                                   lCabin);
00666
00667     // DEBUG
00668     // STDAIR_LOG_DEBUG ("Demand stream key: " << lDemandStreamKey.describe());
00669
00670     // Distribution for the number of requests
00671     const stdair::MeanValue_T lBKKHKGDemandMean (60.0);
00672     const stdair::StdDevValue_T lBKKHKGDemandStdDev (4.0);
00673     const DemandDistribution lBKKHKGDemandDistribution (lBKKHKGDemandMean,
    lBKKHKGDemandStdDev);
00674
00675     // Seed
00676     const stdair::RandomSeed_T& lBKKHKGRequestDateTimeSeed =
00677       generateSeed (ioSharedGenerator);
00678     const stdair::RandomSeed_T& lBKKHKGDemandCharacteristicsSeed =
00679       generateSeed (ioSharedGenerator);
00680
00681
00682     //
00683     POSProbabilityMassFunction_T lBKKHKGPOSProbDist
    ;
00684     lBKKHKGPOSProbDist.insert (POSProbabilityMassFunction_T::value_type ("BKK",
     1.0));
00685     lBKKHKGPOSProbDist.insert (POSProbabilityMassFunction_T::value_type ("HKG",
     0.0));
00686
00687     //
00688     PreferredDepartureTimeContinuousDistribution_T
     lBKKPrefDepTimeProbDist;
00689     lBKKPrefDepTimeProbDist.
00690       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (8, 0)
    );
00691     lBKKPrefDepTimeProbDist.
00692       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (10,
00693                                                                           0.2))
    ;
00694     lBKKPrefDepTimeProbDist.
00695       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (1,
00696                                                                           0.6))
    ;
00697     lBKKPrefDepTimeProbDist.
00698       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (14,
00699                                                                           0.8))
    ;
00700     lBKKPrefDepTimeProbDist.
00701       insert (PreferredDepartureTimeContinuousDistribution_T::value_type (16,
00702                                                                           1.0))
    ;
00703
00704     //
00705     const stdair::WTP_T lBKKHKGWTP (400.0);
00706
00707
00708     // Delegate the call to the dedicated command
00709     DemandStream& lBKKHKGDemandStream =
00710       createDemandStream (ioEventQueue, lBKKHKGDemandStreamKey, lDTDProbDist,
00711                           lBKKHKGPOSProbDist, lChannelProbDist, lTripProbDist,
00712                           lStayProbDist, lFFProbDist, lBKKPrefDepTimeProbDist,
00713                           lBKKHKGWTP, lTimeValueProbDist,
    lBKKHKGDemandDistribution,
00714                           ioSharedGenerator.getBaseGenerator(),
00715                           lBKKHKGRequestDateTimeSeed,
00716                           lBKKHKGDemandCharacteristicsSeed, iPOSProbMass);
00717
00718     // Calculate the expected total number of events for the current
00719     // demand stream
00720     const stdair::NbOfRequests_T& lBKKHKGExpectedNbOfEvents =
00721       lBKKHKGDemandStream.getMeanNumberOfRequests();
00722
00723     /*
    ============================================================================*/
00724
```

```
00725     // Key of the demand stream
00726
00727     //
00728     const DemandStreamKey lSINHKGDemandStreamKey (lSINOrigin, lHKGDestination,
      lDepDate,
00729                                                   lCabin);
00730
00731     // DEBUG
00732     // STDAIR_LOG_DEBUG ("Demand stream key: " << lDemandStreamKey.describe());
00733
00734     // Distribution for the number of requests
00735     const stdair::MeanValue_T lSINHKGDemandMean (60.0);
00736     const stdair::StdDevValue_T lSINHKGDemandStdDev (4.0);
00737     const DemandDistribution lSINHKGDemandDistribution (lSINHKGDemandMean,
      lSINHKGDemandStdDev);
00738
00739     // Seed
00740     const stdair::RandomSeed_T& lSINHKGRequestDateTimeSeed =
00741       generateSeed (ioSharedGenerator);
00742     const stdair::RandomSeed_T& lSINHKGDemandCharacteristicsSeed =
00743       generateSeed (ioSharedGenerator);
00744
00745
00746     //
00747     POSProbabilityMassFunction_T lSINHKGPOSProbDist
      ;
00748     lSINHKGPOSProbDist.insert (POSProbabilityMassFunction_T::value_type ("SIN",
       1.0));
00749     lSINHKGPOSProbDist.insert (POSProbabilityMassFunction_T::value_type ("HKG",
       0.0));
00750
00751     //
00752     const stdair::WTP_T lSINHKGWTP (750.0);
00753
00754
00755     // Delegate the call to the dedicated command
00756     DemandStream& lSINHKGDemandStream =
00757       createDemandStream (ioEventQueue, lSINHKGDemandStreamKey, lDTDProbDist,
00758                           lSINHKGPOSProbDist, lChannelProbDist, lTripProbDist,
00759                           lStayProbDist, lFFProbDist, lSINPrefDepTimeProbDist,
00760                           lSINHKGWTP, lTimeValueProbDist,
      lSINHKGDemandDistribution,
00761                           ioSharedGenerator.getBaseGenerator(),
00762                           lSINHKGRequestDateTimeSeed,
00763                           lSINHKGDemandCharacteristicsSeed, iPOSProbMass);
00764
00765     // Calculate the expected total number of events for the current
00766     // demand stream
00767     const stdair::NbOfRequests_T& lSINHKGExpectedNbOfEvents =
00768       lSINHKGDemandStream.getMeanNumberOfRequests();
00769
00770     /*
      ============================================================================*/
00771
00775     const stdair::NbOfRequests_T lExpectedTotalNbOfEvents =
00776       lSINBKKExpectedNbOfEvents + lBKKHKGExpectedNbOfEvents +
      lSINHKGExpectedNbOfEvents;
00777     ioEventQueue.addStatus (stdair::EventType::BKG_REQ,
00778                             lExpectedTotalNbOfEvents);
00779   }
00780
00781 }
```

## 23.85 trademgen/command/DemandManager.hpp File Reference

```
#include <stdair/stdair_basic_types.hpp>
#include <stdair/basic/RandomGeneration.hpp>
#include <stdair/basic/DemandGenerationMethod.hpp>
#include <stdair/bom/BookingRequestTypes.hpp>
#include <stdair/command/CmdAbstract.hpp>
#include <trademgen/TRADEMGEN_Types.hpp>
#include <trademgen/basic/DemandCharacteristicsTypes.hpp>
#include <trademgen/bom/DemandStreamKey.hpp>
```

### Classes

- class TRADEMGEN::DemandManager

  *Utility class for Demand and DemandStream objects.*

### Namespaces

- namespace stdair

  *Forward declarations.*
- namespace TRADEMGEN
- namespace TRADEMGEN::DemandParserHelper

## 23.86 DemandManager.hpp

```
00001 #ifndef __TRADEMGEN_CMD_DEMANDMANAGER_HPP
00002 #define __TRADEMGEN_CMD_DEMANDMANAGER_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // StdAir
00008 #include <stdair/stdair_basic_types.hpp>
00009 #include <stdair/basic/RandomGeneration.hpp>
00010 #include <stdair/basic/DemandGenerationMethod.hpp>
00011 #include <stdair/bom/BookingRequestTypes.hpp>
00012 #include <stdair/command/CmdAbstract.hpp>
00013 // TraDemGen
00014 #include <trademgen/TRADEMGEN_Types.hpp>
00015 #include <trademgen/basic/DemandCharacteristicsTypes.hpp
     >
00016 #include <trademgen/bom/DemandStreamKey.hpp>
00017
00018 // Forward declarations
00019 namespace stdair {
00020   class EventQueue;
00021   struct ProgressStatusSet;
00022   struct TravelSolutionStruct;
00023 }
00024
00025 namespace TRADEMGEN {
00026
00027   // Forward declarations
00028   struct DemandDistribution;
00029   struct DemandStruct;
00030   class DemandStream;
00031   namespace DemandParserHelper {
00032     struct doEndDemand;
00033   }
00034
00038   class DemandManager : public stdair::CmdAbstract {
00039     friend struct DemandParserHelper::doEndDemand
     ;
00040     friend class TRADEMGEN_Service;
00041
00042   private:
00043     // //////// Business methodes //////////
00123     static void buildSampleBomStd (stdair::EventQueue&,
      stdair::RandomGeneration&,
00124                                    const POSProbabilityMass_T&
     );
00125
00126     // Demand sample bom for partnerships study.
00127     static void buildSampleBom (stdair::EventQueue&, stdair::RandomGeneration&,
00128                                 const POSProbabilityMass_T&
     );
00129
00137     static void createDemandCharacteristics (stdair::EventQueue&,
00138                                              stdair::RandomGeneration&,
00139                                              const POSProbabilityMass_T
     &,
00140                                              const DemandStruct&);
00141
00149     static stdair::RandomSeed_T generateSeed (stdair::RandomGeneration&);
00150
00172     static DemandStream&
00173     createDemandStream (stdair::EventQueue&,
00174                         const DemandStreamKey&,
```

```
00175                         const ArrivalPatternCumulativeDistribution_T
      &,
00176                         const POSProbabilityMassFunction_T
      &,
00177                         const ChannelProbabilityMassFunction_T
      &,
00178                         const TripTypeProbabilityMassFunction_T
      &,
00179                         const StayDurationProbabilityMassFunction_T
      &,
00180                         const FrequentFlyerProbabilityMassFunction_T
      &,
00181                         const PreferredDepartureTimeContinuousDistribution_T
      &,
00182                         const stdair::WTP_T&,
00183                         const ValueOfTimeContinuousDistribution_T
      &,
00184                         const DemandDistribution&,
      stdair::BaseGenerator_T&,
00185                         const stdair::RandomSeed_T&,
00186                         const stdair::RandomSeed_T&,
00187                         const POSProbabilityMass_T&);
00188
00205     static const bool
00206     stillHavingRequestsToBeGenerated (const stdair::EventQueue&,
00207                                       const stdair::DemandStreamKeyStr_T&,
00208                                       stdair::ProgressStatusSet&,
00209                                       const stdair::DemandGenerationMethod&);
00210
00225     static stdair::Count_T generateFirstRequests (stdair::EventQueue&,
00226                                                   stdair::RandomGeneration&,
00227                                                   const
      stdair::DemandGenerationMethod&);
00228
00249     static stdair::BookingRequestPtr_T
00250     generateNextRequest (stdair::EventQueue&, stdair::RandomGeneration&,
00251                          const stdair::DemandStreamKeyStr_T&,
00252                          const stdair::DemandGenerationMethod&);
00253
00262     static void reset (stdair::EventQueue&, stdair::BaseGenerator_T&);
00263
00267     static bool generateCancellation (stdair::EventQueue&,
00268                                       stdair::RandomGeneration&,
00269                                       const stdair::TravelSolutionStruct&,
00270                                       const stdair::PartySize_T&,
00271                                       const stdair::DateTime_T&,
00272                                       const stdair::Date_T&);
00273   };
00274
00275 }
00276 #endif // __TRADEMGEN_CMD_DEMANDMANAGER_HPP
```

## 23.87 trademgen/command/DemandParser.cpp File Reference

```
#include <cassert>
#include <stdair/basic/BasFileMgr.hpp>
#include <stdair/basic/RandomGeneration.hpp>
#include <stdair/bom/Inventory.hpp>
#include <trademgen/command/DemandParserHelper.hpp>
#include <trademgen/command/DemandParser.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.88 DemandParser.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 // StdAir
00007 #include <stdair/basic/BasFileMgr.hpp>
```

```
00008 #include <stdair/basic/RandomGeneration.hpp>
00009 #include <stdair/bom/Inventory.hpp>
00010 // TraDemGen
00011 #include <trademgen/command/DemandParserHelper.hpp
      >
00012 #include <trademgen/command/DemandParser.hpp>
00013
00014 namespace TRADEMGEN {
00015
00016   // ////////////////////////////////////////////////////////////////////
00017   void DemandParser::
00018   generateDemand (const stdair::Filename_T& iFilename,
00019                   stdair::EventQueue& ioEventQueue,
00020                   stdair::RandomGeneration& ioSharedGenerator,
00021                   const POSProbabilityMass_T&
      iDefaultPOSProbablityMass) {
00022
00023     // Check that the file path given as input corresponds to an actual file
00024     const bool doesExistAndIsReadable =
00025       stdair::BasFileMgr::doesExistAndIsReadable (iFilename);
00026     if (doesExistAndIsReadable == false) {
00027       STDAIR_LOG_ERROR ("The demand input file '" << iFilename
00028                         << "' does not exist or can not be read");
00029
00030       throw DemandInputFileNotFoundException ("
      The demand file '" + iFilename
00031                                               + "' does not exist or can not "
00032                                               "be read");
00033     }
00034
00035     // Initialise the demand file parser.
00036     DemandFileParser lDemandParser (ioEventQueue,
      ioSharedGenerator,
00037                                     iDefaultPOSProbablityMass, iFilename);
00038
00039     // Parse the CSV-formatted demand input file, and generate the
00040     // corresponding DemandCharacteristic objects.
00041     lDemandParser.generateDemand();
00042   }
00043
00044 }
```

## 23.89 trademgen/command/DemandParser.hpp File Reference

```
#include <string>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/command/CmdAbstract.hpp>
#include <trademgen/basic/DemandCharacteristicsTypes.hpp>
```

### Classes

- class TRADEMGEN::DemandParser

  *Class wrapping the parser entry point.*

### Namespaces

- namespace stdair

  *Forward declarations.*
- namespace TRADEMGEN

## 23.90 DemandParser.hpp

```
00001 #ifndef __TRADEMGEN_CMD_DEMANDPARSER_HPP
00002 #define __TRADEMGEN_CMD_DEMANDPARSER_HPP
00003
00004 // ////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // ////////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
```

```
00009 // StdAir
00010 #include <stdair/stdair_basic_types.hpp>
00011 #include <stdair/command/CmdAbstract.hpp>
00012 // TraDemGen
00013 #include <trademgen/basic/DemandCharacteristicsTypes.hpp
      >
00014
00016 namespace stdair {
00017   class EventQueue;
00018   struct RandomGeneration;
00019 }
00020
00021 namespace TRADEMGEN {
00022
00026   class DemandParser : public stdair::CmdAbstract {
00027   public:
00040     static void generateDemand (const stdair::Filename_T&,
      stdair::EventQueue&,
00041                                 stdair::RandomGeneration&,
00042                                 const POSProbabilityMass_T&
      );
00043   };
00044 }
00045 #endif // __TRADEMGEN_CMD_DEMANDPARSER_HPP
```

## 23.91 trademgen/command/DemandParserHelper.cpp File Reference

```
#include <cassert>
#include <stdair/basic/RandomGeneration.hpp>
#include <stdair/basic/BasFileMgr.hpp>
#include <stdair/bom/EventQueue.hpp>
#include <stdair/service/Logger.hpp>
#include <trademgen/basic/DemandCharacteristicsTypes.hpp>
#include <trademgen/command/DemandParserHelper.hpp>
#include <trademgen/command/DemandManager.hpp>
```

### Namespaces

- namespace TRADEMGEN
- namespace TRADEMGEN::DemandParserHelper

### Functions

- repeat_p_t TRADEMGEN::DemandParserHelper::airline_code_p (chset_t("0-9A-Z").derived(), 2, 3)
- bounded1_4_p_t TRADEMGEN::DemandParserHelper::flight_number_p (uint1_4_p.derived(), 0u, 9999u)
- bounded4_p_t TRADEMGEN::DemandParserHelper::year_p (uint4_p.derived(), 2000u, 2099u)
- bounded2_p_t TRADEMGEN::DemandParserHelper::month_p (uint2_p.derived(), 1u, 12u)
- bounded2_p_t TRADEMGEN::DemandParserHelper::day_p (uint2_p.derived(), 1u, 31u)
- repeat_p_t TRADEMGEN::DemandParserHelper::dow_p (chset_t("0-1").derived().derived(), 7, 7)
- repeat_p_t TRADEMGEN::DemandParserHelper::airport_p (chset_t("0-9A-Z").derived(), 3, 3)
- bounded1_2_p_t TRADEMGEN::DemandParserHelper::hours_p (uint1_2_p.derived(), 0u, 23u)
- bounded2_p_t TRADEMGEN::DemandParserHelper::minutes_p (uint2_p.derived(), 0u, 59u)
- bounded2_p_t TRADEMGEN::DemandParserHelper::seconds_p (uint2_p.derived(), 0u, 59u)
- chset_t TRADEMGEN::DemandParserHelper::cabin_code_p ("A-Z")
- chset_t TRADEMGEN::DemandParserHelper::passenger_type_p ("A-Z")
- chset_t TRADEMGEN::DemandParserHelper::ff_type_p ("A-Z")
- repeat_p_t TRADEMGEN::DemandParserHelper::class_code_list_p (chset_t("A-Z").derived(), 1, 26)
- bounded1_3_p_t TRADEMGEN::DemandParserHelper::stay_duration_p (uint1_3_p.derived(), 0u, 999u)

### Variables

- int1_p_t TRADEMGEN::DemandParserHelper::int1_p
- uint2_p_t TRADEMGEN::DemandParserHelper::uint2_p
- uint1_2_p_t TRADEMGEN::DemandParserHelper::uint1_2_p
- uint1_3_p_t TRADEMGEN::DemandParserHelper::uint1_3_p
- uint4_p_t TRADEMGEN::DemandParserHelper::uint4_p
- uint1_4_p_t TRADEMGEN::DemandParserHelper::uint1_4_p
- int1_p_t TRADEMGEN::DemandParserHelper::family_code_p

## 23.92 DemandParserHelper.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 // StdAir
00007 #include <stdair/basic/RandomGeneration.hpp>
00008 #include <stdair/basic/BasFileMgr.hpp>
00009 #include <stdair/bom/EventQueue.hpp>
00010 #include <stdair/service/Logger.hpp>
00011 // TraDemGen
00012 #include <trademgen/basic/DemandCharacteristicsTypes.hpp
      >
00013 //#define BOOST_SPIRIT_DEBUG
00014 #include <trademgen/command/DemandParserHelper.hpp
      >
00015 #include <trademgen/command/DemandManager.hpp
      >
00016
00017 namespace bsc = boost::spirit::classic;
00018
00019 namespace TRADEMGEN {
00020
00021   namespace DemandParserHelper {
00022
00023     // ////////////////////////////////////////////////////////////////
00024     //  Semantic actions
00025     // ////////////////////////////////////////////////////////////////
00026
00027     ParserSemanticAction::ParserSemanticAction
       (DemandStruct& ioDemand)
00028       : _demand (ioDemand) {
00029     }
00030
00031     // ////////////////////////////////////////////////////////////////
00032     storePrefDepDateRangeStart::
00033     storePrefDepDateRangeStart (DemandStruct
      & ioDemand)
00034       : ParserSemanticAction (ioDemand) {
00035     }
00036
00037     // ////////////////////////////////////////////////////////////////
00038     void storePrefDepDateRangeStart::operator()
      (iterator_t iStr,
00039                                         iterator_t iStrEnd) const {
00040       _demand._prefDepDateStart = _demand.
      getDate();
00041
00042       // Reset the number of seconds
00043       _demand._itSeconds = 0;
00044     }
00045
00046     // ////////////////////////////////////////////////////////////////
00047     storePrefDepDateRangeEnd::
00048     storePrefDepDateRangeEnd (DemandStruct
      & ioDemand)
00049       : ParserSemanticAction (ioDemand) {
00050     }
00051
00052     // ////////////////////////////////////////////////////////////////
00053     void storePrefDepDateRangeEnd::operator()
      (iterator_t iStr,
00054                                       iterator_t iStrEnd) const {
00055       // As a Boost date period (DatePeriod_T) defines the last day of
00056       // the period to be end-date - one day, we have to add one day to that
00057       // end date before.
00058       const stdair::DateOffset_T oneDay (1);
00059       _demand._prefDepDateEnd = _demand.getDate
```

```
() + oneDay;
00060
00061       // Transform the date pair (i.e., the date range) into a date period
00062       _demand._dateRange =
00063         stdair::DatePeriod_T (_demand._prefDepDateStart
,
00064                               _demand._prefDepDateEnd);
00065
00066       // Reset the number of seconds
00067       _demand._itSeconds = 0;
00068     }
00069
00070     // ////////////////////////////////////////////////////////////////////
00071     storeDow::storeDow (DemandStruct& ioDemand)
00072       : ParserSemanticAction (ioDemand) {
00073     }
00074
00075     // ////////////////////////////////////////////////////////////////////
00076     void storeDow::operator() (iterator_t iStr,
iterator_t iStrEnd) const {
00077       stdair::DOW_String_T lDow (iStr, iStrEnd);
00078       _demand._dow = lDow;
00079     }
00080
00081     // ////////////////////////////////////////////////////////////////////
00082     storeOrigin::storeOrigin (DemandStruct&
 ioDemand)
00083       : ParserSemanticAction (ioDemand) {
00084     }
00085
00086     // ////////////////////////////////////////////////////////////////////
00087     void storeOrigin::operator() (iterator_t
iStr, iterator_t iStrEnd) const {
00088       stdair::AirportCode_T lOrigin (iStr, iStrEnd);
00089       _demand._origin = lOrigin;
00090     }
00091
00092     // ////////////////////////////////////////////////////////////////////
00093     storeDestination::storeDestination (
DemandStruct& ioDemand)
00094       : ParserSemanticAction (ioDemand) {
00095     }
00096
00097     // ////////////////////////////////////////////////////////////////////
00098     void storeDestination::operator() (iterator_t
 iStr,
00099                                        iterator_t iStrEnd) const {
00100       stdair::AirportCode_T lDestination (iStr, iStrEnd);
00101       _demand._destination = lDestination;
00102     }
00103
00104     // ////////////////////////////////////////////////////////////////////
00105     storePrefCabin::storePrefCabin (DemandStruct
& ioDemand)
00106       : ParserSemanticAction (ioDemand) {
00107     }
00108
00109     // ////////////////////////////////////////////////////////////////////
00110     void storePrefCabin::operator() (iterator_t
 iStr,
00111                                      iterator_t iStrEnd) const {
00112       stdair::CabinCode_T lPrefCabin  (iStr, iStrEnd);
00113       _demand._prefCabin = lPrefCabin;
00114       //STDAIR_LOG_DEBUG ("Preferred cabin: " << lPrefCabin);
00115     }
00116
00117     // ////////////////////////////////////////////////////////////////////
00118     storeDemandMean::storeDemandMean (
DemandStruct& ioDemand)
00119       : ParserSemanticAction (ioDemand) {
00120     }
00121
00122     // ////////////////////////////////////////////////////////////////////
00123     void storeDemandMean::operator() (double iReal)
 const {
00124       _demand._demandMean = iReal;
00125       //STDAIR_LOG_DEBUG ("Demand mean: " << iReal);
00126     }
00127
00128     // ////////////////////////////////////////////////////////////////////
00129     storeDemandStdDev::storeDemandStdDev (
DemandStruct& ioDemand)
00130       : ParserSemanticAction (ioDemand) {
00131     }
00132
00133     // ////////////////////////////////////////////////////////////////////
00134     void storeDemandStdDev::operator() (double
```

```
      iReal) const {
00135       _demand._demandStdDev = iReal;
00136       //STDAIR_LOG_DEBUG ("Demand stddev: " << iReal);
00137     }
00138
00139     // ////////////////////////////////////////////////////////////////////
00140     storePosCode::storePosCode (DemandStruct
      & ioDemand)
00141       : ParserSemanticAction (ioDemand) {
00142     }
00143
00144     // ////////////////////////////////////////////////////////////////////
00145     void storePosCode::operator() (iterator_t
       iStr, iterator_t iStrEnd) const {
00146       const stdair::AirportCode_T lPosCode (iStr, iStrEnd);
00147       _demand._itPosCode = lPosCode;
00148       //STDAIR_LOG_DEBUG ("Pos code: " << lPosCode);
00149     }
00150
00151     // ////////////////////////////////////////////////////////////////////
00152     storePosProbMass::storePosProbMass (
      DemandStruct& ioDemand)
00153       : ParserSemanticAction (ioDemand) {
00154     }
00155
00156     // ////////////////////////////////////////////////////////////////////
00157     void storePosProbMass::operator() (double
      iReal) const {
00158       const bool hasInsertBeenSuccessfull =
00159         _demand._posProbDist.
00160         insert (POSProbabilityMassFunction_T::
00161                 value_type (_demand._itPosCode, iReal)).second
      ;
00162       if (hasInsertBeenSuccessfull == false) {
00163         STDAIR_LOG_ERROR ("The same POS code ('" << _demand._itPosCode
00164                           << "') has probably been given twice");
00165         throw stdair::CodeDuplicationException ("The same POS code ('"
00166                                                 + _demand._itPosCode
00167                                                 + "') has probably been given
       twice");
00168       }
00169
00170       //STDAIR_LOG_DEBUG ("PosProbMass: " << iReal);
00171     }
00172
00173     // ////////////////////////////////////////////////////////////////////
00174     storeChannelCode::storeChannelCode (
      DemandStruct& ioDemand)
00175       : ParserSemanticAction (ioDemand) {
00176     }
00177
00178     // ////////////////////////////////////////////////////////////////////
00179     void storeChannelCode::operator() (iterator_t
       iStr,
00180                                        iterator_t iStrEnd) const {
00181       _demand._itChannelCode = std::string (iStr, iStrEnd)
      ;
00182       //STDAIR_LOG_DEBUG ("Channel code: " << _demand._itChannelCode);
00183     }
00184
00185     // ////////////////////////////////////////////////////////////////////
00186     storeChannelProbMass::storeChannelProbMass
       (DemandStruct& ioDemand)
00187       : ParserSemanticAction (ioDemand) {
00188     }
00189
00190     // ////////////////////////////////////////////////////////////////////
00191     void storeChannelProbMass::operator() (
      double iReal) const {
00192       const bool hasInsertBeenSuccessfull =
00193         _demand._channelProbDist.
00194         insert (ChannelProbabilityMassFunction_T
      ::
00195                 value_type (_demand._itChannelCode, iReal)
      ).second;
00196       if (hasInsertBeenSuccessfull == false) {
00197         STDAIR_LOG_ERROR ("The same channel type code ('"
00198                           << _demand._itChannelCode
00199                           << "') has probably been given twice");
00200         throw stdair::CodeDuplicationException ("The same channel type code ('"
00201                                                 + _demand._itChannelCode
00202                                                 + "') has probably been given
       twice");
00203       }
00204
00205       //STDAIR_LOG_DEBUG ("ChannelProbMass: " << iReal);
00206     }
```

```
00207
00208     // ////////////////////////////////////////////////////////////////////
00209     storeTripCode::storeTripCode (DemandStruct
      & ioDemand)
00210       : ParserSemanticAction (ioDemand) {
00211     }
00212
00213     // ////////////////////////////////////////////////////////////////////
00214     void storeTripCode::operator() (iterator_t
       iStr,
00215                                     iterator_t iStrEnd) const {
00216       _demand._itTripCode = std::string (iStr, iStrEnd);
00217       //STDAIR_LOG_DEBUG ("Trip code: " << _demand._itTripCode);
00218     }
00219
00220     // ////////////////////////////////////////////////////////////////////
00221     storeTripProbMass::storeTripProbMass (
      DemandStruct& ioDemand)
00222       : ParserSemanticAction (ioDemand) {
00223     }
00224
00225     // ////////////////////////////////////////////////////////////////////
00226     void storeTripProbMass::operator() (double
      iReal) const {
00227       const bool hasInsertBeenSuccessfull =
00228         _demand._tripProbDist.
00229         insert (TripTypeProbabilityMassFunction_T
      ::
00230                 value_type (_demand._itTripCode, iReal)).
      second;
00231       if (hasInsertBeenSuccessfull == false) {
00232         STDAIR_LOG_ERROR ("The same trip type code ('"
00233                           << _demand._itTripCode
00234                           << "') has probably been given twice");
00235         throw stdair::CodeDuplicationException ("The same trip type code ('"
00236                                                 + _demand._itTripCode
00237                                                 + "') has probably been given
       twice");
00238       }
00239
00240       //STDAIR_LOG_DEBUG ("TripProbMass: " << iReal);
00241     }
00242
00243     // ////////////////////////////////////////////////////////////////////
00244     storeStayCode::storeStayCode (DemandStruct
      & ioDemand)
00245       : ParserSemanticAction (ioDemand) {
00246     }
00247
00248     // ////////////////////////////////////////////////////////////////////
00249     void storeStayCode::operator() (unsigned int
      iInteger) const {
00250       const stdair::DayDuration_T lStayDuration (iInteger);
00251       _demand._itStayDuration = lStayDuration;
00252       // STDAIR_LOG_DEBUG ("Stay duration: " << lStayDuration);
00253     }
00254
00255     // ////////////////////////////////////////////////////////////////////
00256     storeStayProbMass::storeStayProbMass (
      DemandStruct& ioDemand)
00257       : ParserSemanticAction (ioDemand) {
00258     }
00259
00260     // ////////////////////////////////////////////////////////////////////
00261     void storeStayProbMass::operator() (double
      iReal) const {
00262       const bool hasInsertBeenSuccessfull =
00263         _demand._stayProbDist.
00264         insert (StayDurationProbabilityMassFunction_T
      ::
00265                 value_type (_demand._itStayDuration,
      iReal)).second;
00266       if (hasInsertBeenSuccessfull == false) {
00267         std::ostringstream oStr;
00268         oStr << "The same stay duration ('" << _demand._itStayDuration
00269              << "') has probably been given twice";
00270         STDAIR_LOG_ERROR (oStr.str());
00271         throw stdair::CodeDuplicationException (oStr.str());
00272       }
00273
00274       // STDAIR_LOG_DEBUG ("StayProbMass: " << iReal);
00275     }
00276
00277     // ////////////////////////////////////////////////////////////////////
00278     storeFFCode::storeFFCode (DemandStruct&
       ioDemand)
00279       : ParserSemanticAction (ioDemand) {
```

```
00280     }
00281
00282     // ////////////////////////////////////////////////////////////////////
00283     void storeFFCode::operator() (iterator_t
      iStr, iterator_t iStrEnd) const {
00284       _demand._itFFCode = std::string (iStr, iStrEnd);
00285       //STDAIR_LOG_DEBUG ("FF code: " << _demand._itFFCode);
00286     }
00287
00288     // ////////////////////////////////////////////////////////////////////
00289     storeFFProbMass::storeFFProbMass (
      DemandStruct& ioDemand)
00290       : ParserSemanticAction (ioDemand) {
00291     }
00292
00293     // ////////////////////////////////////////////////////////////////////
00294     void storeFFProbMass::operator() (double iReal)
       const {
00295       const bool hasInsertBeenSuccessfull =
00296         _demand._ffProbDist.
00297         insert (FrequentFlyerProbabilityMassFunction_T
      ::
00298                 value_type (_demand._itFFCode, iReal)).second;
00299       if (hasInsertBeenSuccessfull == false) {
00300         STDAIR_LOG_ERROR ("The same Frequent Flyer code ('"
00301                           << _demand._itFFCode
00302                           << "') has probably been given twice");
00303         throw stdair::CodeDuplicationException("The same Frequent Flyer code ('
      "
00304                                                + _demand._itFFCode
00305                                                + "') has probably been given
       twice");
00306       }
00307
00308       //STDAIR_LOG_DEBUG ("FfProbMass: " << iReal);
00309     }
00310
00311     // ////////////////////////////////////////////////////////////////////
00312     storePrefDepTime::storePrefDepTime (
      DemandStruct& ioDemand)
00313       : ParserSemanticAction (ioDemand) {
00314     }
00315
00316     // ////////////////////////////////////////////////////////////////////
00317     void storePrefDepTime::operator() (iterator_t
       iStr,
00318                                        iterator_t iStrEnd) const {
00319       _demand._itPrefDepTime = _demand.getTime
      ();
00320
00321       // DEBUG
00322       // STDAIR_LOG_DEBUG ("Pref dep time: " << _demand._itHours << ":"
00323       //                   << _demand._itMinutes << ":" << _demand._itSeconds
00324       //                   << " ==> " << _demand._itPrefDepTime);
00325
00326       // Reset the number of minutes and seconds
00327       _demand._itMinutes = 0;
00328       _demand._itSeconds = 0;
00329     }
00330
00331     // ////////////////////////////////////////////////////////////////////
00332     storePrefDepTimeProbMass::storePrefDepTimeProbMass
       (DemandStruct& ioDemand)
00333       : ParserSemanticAction (ioDemand) {
00334     }
00335
00336     // ////////////////////////////////////////////////////////////////////
00337     void storePrefDepTimeProbMass::operator()
      (double iReal) const {
00338       const stdair::IntDuration_T lIntDuration =
00339         _demand._itPrefDepTime.total_seconds();
00340
00341       _demand._prefDepTimeProbDist.
00342         insert (PreferredDepartureTimeContinuousDistribution_T
      ::
00343                 value_type (lIntDuration, iReal));
00344       //STDAIR_LOG_DEBUG ("PrefDepTimeProbMass: " << iReal);
00345     }
00346
00347     // ////////////////////////////////////////////////////////////////////
00348     storeWTP::storeWTP (DemandStruct& ioDemand)
00349       : ParserSemanticAction (ioDemand) {
00350     }
00351
00352     // ////////////////////////////////////////////////////////////////////
00353     void storeWTP::operator() (double iReal) const {
00354       _demand._minWTP = iReal;
```

```
00355       //STDAIR_LOG_DEBUG ("WTP: " << iReal);
00356     }
00357
00358     // ////////////////////////////////////////////////////////////////////
00359     storeTimeValue::storeTimeValue (DemandStruct
      & ioDemand)
00360       : ParserSemanticAction (ioDemand) {
00361     }
00362
00363     // ////////////////////////////////////////////////////////////////////
00364     void storeTimeValue::operator() (double iReal)
       const {
00365       _demand._itTimeValue = iReal;
00366       //STDAIR_LOG_DEBUG ("Time value: " << iReal);
00367     }
00368
00369     // ////////////////////////////////////////////////////////////////////
00370     storeTimeValueProbMass::storeTimeValueProbMass
       (DemandStruct& ioDemand)
00371       : ParserSemanticAction (ioDemand) {
00372     }
00373
00374     // ////////////////////////////////////////////////////////////////////
00375     void storeTimeValueProbMass::operator()
      (double iReal) const {
00376       _demand._timeValueProbDist.
00377         insert (ValueOfTimeContinuousDistribution_T
      ::
00378                 value_type (_demand._itTimeValue, iReal));
00379       //STDAIR_LOG_DEBUG ("TimeValueProbMass: " << iReal);
00380     }
00381
00382     // ////////////////////////////////////////////////////////////////////
00383     storeDTD::storeDTD (DemandStruct& ioDemand)
00384       : ParserSemanticAction (ioDemand) {
00385     }
00386
00387     // ////////////////////////////////////////////////////////////////////
00388     void storeDTD::operator() (unsigned int iInteger)
       const {
00389       const stdair::DayDuration_T lDTD (iInteger);
00390       _demand._itDTD = lDTD;
00391       //STDAIR_LOG_DEBUG ("DTD: " << lDTD);
00392     }
00393
00394     // ////////////////////////////////////////////////////////////////////
00395     storeDTDProbMass::storeDTDProbMass (
      DemandStruct& ioDemand)
00396       : ParserSemanticAction (ioDemand) {
00397     }
00398
00399     // ////////////////////////////////////////////////////////////////////
00400     void storeDTDProbMass::operator() (double
      iReal) const {
00401       const stdair::FloatDuration_T lZeroDTDFloat = 0.0;
00402       stdair::FloatDuration_T lDTDFloat =
00403         static_cast<stdair::FloatDuration_T> (_demand._itDTD);
00404       lDTDFloat = lZeroDTDFloat - lDTDFloat;
00405
00406       _demand._dtdProbDist.insert (
      ArrivalPatternCumulativeDistribution_T::
00407                                    value_type (lDTDFloat, iReal));
00408       //STDAIR_LOG_DEBUG ("DTDProbMass: " << iReal);
00409     }
00410
00411     // ////////////////////////////////////////////////////////////////////
00412     doEndDemand::doEndDemand (stdair::EventQueue&
      ioEventQueue,
00413                               stdair::RandomGeneration& ioSharedGenerator,
00414                               const POSProbabilityMass_T&
      iPOSProbMass,
00415                               DemandStruct& ioDemand)
00416       : ParserSemanticAction (ioDemand), _eventQueue (
      ioEventQueue),
00417         _uniformGenerator (ioSharedGenerator),
00418         _posProbabilityMass (iPOSProbMass) {
00419     }
00420
00421     // ////////////////////////////////////////////////////////////////////
00422     // void doEndDemand::operator() (char iChar) const {
00423     void doEndDemand::operator() (iterator_t
      iStr, iterator_t iStrEnd) const {
00424
00425       // DEBUG: Display the result
00426       // STDAIR_LOG_DEBUG ("Demand: " << _demand.describe());
00427
00428       // Create the Demand BOM objects
```

```
00429       DemandManager::createDemandCharacteristics (_eventQueue,
    _uniformGenerator,
00430                                                   _posProbabilityMass
    , _demand);
00431
00432       // Clean the lists
00433       _demand._posProbDist.clear();
00434       _demand._channelProbDist.clear();
00435       _demand._tripProbDist.clear();
00436       _demand._stayProbDist.clear();
00437       _demand._ffProbDist.clear();
00438       _demand._prefDepTimeProbDist.clear();
00439       _demand._timeValueProbDist.clear();
00440       _demand._dtdProbDist.clear();
00441     }
00442
00443
00444     // ////////////////////////////////////////////////////////////////////
00445     //
00446     //  Utility Parsers
00447     //
00448     // ////////////////////////////////////////////////////////////////////
00450     int1_p_t int1_p;
00451
00453     uint2_p_t uint2_p;
00454
00456     uint1_2_p_t uint1_2_p;
00457
00459     uint1_3_p_t uint1_3_p;
00460
00462     uint4_p_t uint4_p;
00463
00465     uint1_4_p_t uint1_4_p;
00466
00468     repeat_p_t airline_code_p (chset_t("0-9A-Z")
    .derived(), 2, 3);
00469
00471     bounded1_4_p_t flight_number_p (uint1_4_p
    .derived(), 0u, 9999u);
00472
00474     bounded4_p_t year_p (uint4_p.derived(), 2000u,
    2099u);
00475
00477     bounded2_p_t month_p (uint2_p.derived(), 1u, 12u)
    ;
00478
00480     bounded2_p_t day_p (uint2_p.derived(), 1u, 31u);
00481
00483     repeat_p_t dow_p (chset_t("0-1").derived().derived(),
     7, 7);
00484
00486     repeat_p_t airport_p (chset_t("0-9A-Z").derived()
    , 3, 3);
00487
00489     bounded1_2_p_t hours_p (uint1_2_p.derived(),
    0u, 23u);
00490
00492     bounded2_p_t minutes_p (uint2_p.derived(), 0u,
    59u);
00493
00495     bounded2_p_t seconds_p (uint2_p.derived(), 0u,
    59u);
00496
00498     chset_t cabin_code_p ("A-Z");
00499
00501     chset_t passenger_type_p ("A-Z");
00502
00504     chset_t ff_type_p ("A-Z");
00505
00507     int1_p_t family_code_p;
00508
00510     repeat_p_t class_code_list_p (chset_t("
    A-Z").derived(), 1, 26);
00511
00513     bounded1_3_p_t stay_duration_p (uint1_3_p
    .derived(), 0u, 999u);
00514
00515
00516     // ////////////////////////////////////////////////////////////////////
00517     //  (Boost Spirit) Grammar Definition
00518     // ////////////////////////////////////////////////////////////////////
00519
00520     // ////////////////////////////////////////////////////////////////////
00521     DemandParser::DemandParser (stdair::EventQueue&
    ioEventQueue,
00522                                 stdair::RandomGeneration& ioSharedGenerator,
00523                                 const POSProbabilityMass_T&
```

```
      iPOSProbMass,
00524                                 DemandStruct& ioDemand)
00525       : _eventQueue (ioEventQueue), _uniformGenerator (ioSharedGenerator),
00526         _posProbabilityMass (iPOSProbMass), _demand (ioDemand) {
00527     }
00528
00529     // ////////////////////////////////////////////////////////////////////
00530     template<typename ScannerT>
00531     DemandParser::definition<ScannerT>::
00532     definition (DemandParser const& self) {
00533
00534       demand_list = *( not_to_be_parsed |
00535                        demand)
00536         ;
00537
00538      not_to_be_parsed = bsc::
00539        lexeme_d[bsc::comment_p("//")
00540                 | bsc::comment_p("/*", "*/")
00541                 | bsc::eol_p]
00542         ;
00543
00544       demand =
00545         pref_dep_date_range
00546         >> ';' >> origin >> ';' >> destination
00547         >> ';' >> pref_cabin[storePrefCabin(self._demand)]
00548         >> ';' >> pos_dist
00549         >> ';' >> channel_dist
00550         >> ';' >> trip_dist
00551         >> ';' >> stay_dist
00552         >> ';' >> ff_dist
00553         >> ';' >> pref_dep_time_dist
00554         >> ';' >> wtp
00555         >> ';' >> time_value_dist
00556         >> ';' >> dtd_dist
00557         >> ';' >> demand_params
00558         >> demand_end[doEndDemand (self._eventQueue, self.
      _uniformGenerator,
00559                                    self._posProbabilityMass, self._demand)]
00560         ;
00561
00562       demand_end = bsc::ch_p(';')
00563         ;
00564
00565       pref_dep_date_range = date[storePrefDepDateRangeStart
      (self._demand)]
00566         >> ';' >> date[storePrefDepDateRangeEnd(self.
      _demand)]
00567         >> ';' >> dow[storeDow(self._demand)]
00568         ;
00569
00570       date =
00571         bsc::lexeme_d[(year_p)[bsc::assign_a(self._demand._itYear)]
00572          >> '-' >> (month_p)[bsc::assign_a(self._demand._itMonth)]
00573          >> '-' >> (day_p)[bsc::assign_a(self._demand._itDay)]
00574          ]
00575         ;
00576
00577       dow = bsc::lexeme_d[ dow_p ]
00578         ;
00579
00580       origin =
00581         (airport_p)[storeOrigin(self._demand)]
00582         ;
00583
00584       destination =
00585         (airport_p)[storeDestination(self._demand)]
00586         ;
00587
00588       pref_cabin = cabin_code_p;
00589
00590       pos_dist =
00591         pos_pair >> *( ',' >> pos_pair )
00592         ;
00593
00594       pos_pair =
00595         pos_code[storePosCode(self._demand)]
00596         >> ':' >> pos_share
00597         ;
00598
00599       pos_code =
00600         airport_p
00601         | bsc::chseq_p("row")
00602         ;
00603
00604       pos_share =
00605         (bsc::ureal_p)[storePosProbMass(self._demand)]
00606         ;
```

```
00607
00608       channel_dist =
00609         channel_pair >> *( ',' >> channel_pair )
00610         ;
00611
00612       channel_pair =
00613         channel_code[storeChannelCode(self._demand)]
00614         >> ':' >> channel_share
00615         ;
00616
00617       channel_code =
00618         bsc::chseq_p("DF") | bsc::chseq_p("DN")
00619         | bsc::chseq_p("IF") | bsc::chseq_p("IN")
00620         ;
00621
00622       channel_share =
00623         (bsc::ureal_p)[storeChannelProbMass(self._demand)]
00624         ;
00625
00626       trip_dist =
00627         trip_pair >> *( ',' >> trip_pair )
00628         ;
00629
00630       trip_pair =
00631         trip_code[storeTripCode(self._demand)]
00632         >> ':' >> trip_share
00633         ;
00634
00635       trip_code =
00636         bsc::chseq_p("RO") | bsc::chseq_p("RI") | bsc::chseq_p("OW")
00637         ;
00638
00639       trip_share =
00640         (bsc::ureal_p)[storeTripProbMass(self._demand)]
00641         ;
00642
00643       stay_dist =
00644         stay_pair >> *( ',' >> stay_pair )
00645         ;
00646
00647       stay_pair =
00648         (stay_duration_p)[storeStayCode(self.
      _demand)]
00649         >> ':' >> stay_share
00650         ;
00651
00652       stay_share =
00653         (bsc::ureal_p)[storeStayProbMass(self._demand)]
00654         ;
00655
00656       ff_dist =
00657         ff_pair >> *( ',' >> ff_pair )
00658         ;
00659
00660       ff_pair =
00661         ff_code[storeFFCode(self._demand)]
00662         >> ':' >> ff_share
00663         ;
00664
00665       ff_code = ff_type_p;
00666
00667       ff_share =
00668         (bsc::ureal_p)[storeFFProbMass(self._demand)]
00669         ;
00670
00671       pref_dep_time_dist =
00672         pref_dep_time_pair >> *( ',' >> pref_dep_time_pair )
00673         ;
00674
00675       pref_dep_time_pair =
00676         (time)[storePrefDepTime(self._demand)]
00677         >> ':' >> pref_dep_time_share
00678         ;
00679
00680       pref_dep_time_share =
00681         (bsc::ureal_p)[storePrefDepTimeProbMass(self.
      _demand)]
00682         ;
00683
00684       time =
00685         bsc::lexeme_d[
00686        (hours_p)[bsc::assign_a(self._demand._itHours)]
00687        >> !('.' >> (minutes_p)[bsc::assign_a(self._demand._itMinutes)]
      )
00688        >> !('.' >> (seconds_p)[bsc::assign_a(self._demand._itSeconds)]
      )
00689        ]
```

```
00690         ;
00691
00692       wtp =
00693         (bsc::ureal_p)[storeWTP(self._demand)]
00694         ;
00695
00696       time_value_dist =
00697         time_value_pair >> *( ',' >> time_value_pair )
00698         ;
00699
00700       time_value_pair =
00701         (bsc::ureal_p)[storeTimeValue(self._demand)]
00702         >> ':' >> time_value_share
00703         ;
00704
00705       time_value_share =
00706         (bsc::ureal_p)[storeTimeValueProbMass(self.
      _demand)]
00707         ;
00708
00709       dtd_dist =
00710         dtd_pair >> *( ',' >> dtd_pair )
00711         ;
00712
00713       dtd_pair =
00714         (bsc::ureal_p)[storeDTD(self._demand)]
00715         >> ':' >> dtd_share
00716         ;
00717
00718       dtd_share =
00719         (bsc::ureal_p)[storeDTDProbMass(self._demand)]
00720         ;
00721
00722       demand_params =
00723         bsc::ch_p('N')
00724         >> ','
00725         >> (bsc::ureal_p)[storeDemandMean(self._demand)]
00726         >> ','
00727         >> (bsc::ureal_p)[storeDemandStdDev(self._demand)]
00728         ;
00729
00730       // BOOST_SPIRIT_DEBUG_NODE (DemandParser);
00731       BOOST_SPIRIT_DEBUG_NODE (demand_list);
00732       BOOST_SPIRIT_DEBUG_NODE (not_to_be_parsed);
00733       BOOST_SPIRIT_DEBUG_NODE (demand);
00734       BOOST_SPIRIT_DEBUG_NODE (demand_end);
00735       BOOST_SPIRIT_DEBUG_NODE (pref_dep_date);
00736       BOOST_SPIRIT_DEBUG_NODE (date);
00737       BOOST_SPIRIT_DEBUG_NODE (origin);
00738       BOOST_SPIRIT_DEBUG_NODE (destination);
00739       BOOST_SPIRIT_DEBUG_NODE (pref_cabin);
00740       BOOST_SPIRIT_DEBUG_NODE (pos_dist);
00741       BOOST_SPIRIT_DEBUG_NODE (pos_pair);
00742       BOOST_SPIRIT_DEBUG_NODE (pos_code);
00743       BOOST_SPIRIT_DEBUG_NODE (pos_share);
00744       BOOST_SPIRIT_DEBUG_NODE (channel_dist);
00745       BOOST_SPIRIT_DEBUG_NODE (channel_pair);
00746       BOOST_SPIRIT_DEBUG_NODE (channel_code);
00747       BOOST_SPIRIT_DEBUG_NODE (channel_share);
00748       BOOST_SPIRIT_DEBUG_NODE (trip_dist);
00749       BOOST_SPIRIT_DEBUG_NODE (trip_pair);
00750       BOOST_SPIRIT_DEBUG_NODE (trip_code);
00751       BOOST_SPIRIT_DEBUG_NODE (trip_share);
00752       BOOST_SPIRIT_DEBUG_NODE (stay_dist);
00753       BOOST_SPIRIT_DEBUG_NODE (stay_pair);
00754       BOOST_SPIRIT_DEBUG_NODE (stay_share);
00755       BOOST_SPIRIT_DEBUG_NODE (ff_dist);
00756       BOOST_SPIRIT_DEBUG_NODE (ff_pair);
00757       BOOST_SPIRIT_DEBUG_NODE (ff_code);
00758       BOOST_SPIRIT_DEBUG_NODE (ff_share);
00759       BOOST_SPIRIT_DEBUG_NODE (pref_dep_time_dist);
00760       BOOST_SPIRIT_DEBUG_NODE (pref_dep_time_pair);
00761       BOOST_SPIRIT_DEBUG_NODE (pref_dep_time_share);
00762       BOOST_SPIRIT_DEBUG_NODE (time);
00763       BOOST_SPIRIT_DEBUG_NODE (wtp);
00764       BOOST_SPIRIT_DEBUG_NODE (time_value_dist);
00765       BOOST_SPIRIT_DEBUG_NODE (time_value_pair);
00766       BOOST_SPIRIT_DEBUG_NODE (time_value_share);
00767       BOOST_SPIRIT_DEBUG_NODE (dtd_dist);
00768       BOOST_SPIRIT_DEBUG_NODE (dtd_pair);
00769       BOOST_SPIRIT_DEBUG_NODE (dtd_share);
00770       BOOST_SPIRIT_DEBUG_NODE (demand_params);
00771     }
00772
00773     // ////////////////////////////////////////////////////////////////
00774     template<typename ScannerT>
00775     bsc::rule<ScannerT> const&
```

```
00776     DemandParser::definition<ScannerT>::start
      () const {
00777       return demand_list;
00778     }
00779
00780   }
00781
00782
00784   //
00785   //  Entry class for the file parser
00786   //
00788
00789   // ////////////////////////////////////////////////////////////////////
00790   DemandFileParser::
00791   DemandFileParser (stdair::EventQueue& ioEventQueue,
00792                     stdair::RandomGeneration& ioSharedGenerator,
00793                     const POSProbabilityMass_T&
      iPOSProbMass,
00794                     const std::string& iFilename)
00795     : _filename (iFilename), _eventQueue (ioEventQueue),
00796       _uniformGenerator (ioSharedGenerator),
00797       _posProbabilityMass (iPOSProbMass) {
00798     init();
00799   }
00800
00801   // ////////////////////////////////////////////////////////////////////
00802   void DemandFileParser::init() {
00803     // Check that the file exists and is readable
00804     const bool doesExistAndIsReadable =
00805       stdair::BasFileMgr::doesExistAndIsReadable (_filename);
00806
00807     if (doesExistAndIsReadable == false) {
00808       STDAIR_LOG_ERROR ("The demand file " << _filename
00809                         << " does not exist or can not be read.");
00810
00811       throw DemandInputFileNotFoundException ("
      The demand file " + _filename
00812                                               + " does not exist or can not "
00813                                               + "be read");
00814     }
00815
00816     // Open the file
00817     _startIterator = iterator_t (_filename);
00818
00819     // Check the filename exists and can be open
00820     if (!_startIterator) {
00821       STDAIR_LOG_ERROR ("The demand file " << _filename << " can not be open.")
      ;
00822
00823       throw DemandInputFileNotFoundException ("The demand file " + _filename
00824                                               + " does not exist or can not "
00825                                               + "be read");
00826     }
00827
00828     // Create an EOF iterator
00829     _endIterator = _startIterator.make_end();
00830   }
00831
00832   // ////////////////////////////////////////////////////////////////////
00833   bool DemandFileParser::generateDemand () {
00834     bool oResult = false;
00835
00836     STDAIR_LOG_DEBUG ("Parsing demand input file: " << _filename);
00837
00838     // Initialise the parser (grammar) with the helper/staging structure.
00839     DemandParserHelper::DemandParser
      lDemandParser (_eventQueue,
00840                                                    _uniformGenerator,
00841                                                    _posProbabilityMass,
00842                                                    _demand);
00843
00844     // Launch the parsing of the file and, thanks to the doEndDemand
00845     // call-back structure, the building of the whole EventQueue BOM
00846     // (i.e., including Inventory, FlightDate, LegDate, SegmentDate, etc.)
00847     bsc::parse_info<iterator_t> info =
00848       bsc::parse (_startIterator, _endIterator, lDemandParser,
00849                   bsc::space_p - bsc::eol_p);
00850
00851     // Retrieves whether or not the parsing was successful
00852     oResult = info.hit;
00853
00854     const std::string hasBeenFullyReadStr = (info.full == true)?"":"not ";
00855     if (oResult == true) {
00856       STDAIR_LOG_DEBUG ("Parsing of demand input file: " << _filename
00857                         << " succeeded: read " << info.length
00858                         << " characters. The input file has "
00859                         << hasBeenFullyReadStr
```

```
00860                       << "been fully read. Stop point: " << info.stop);
00861
00862     } else {
00863       std::ostringstream oStr;
00864       oStr << "Parsing of demand input file: " << _filename << " failed: read "
00865            << info.length << " characters. The input file has "
00866            << hasBeenFullyReadStr << "been fully read. Stop point: "
00867            << info.stop;
00868       STDAIR_LOG_ERROR (oStr.str());
00869       throw stdair::ParserException (oStr.str());
00870     }
00871
00872     return oResult;
00873   }
00874
00875 }
```

## 23.93 trademgen/command/DemandParserHelper.hpp File Reference

```
#include <string>
#include <stdair/command/CmdAbstract.hpp>
#include <trademgen/TRADEMGEN_Types.hpp>
#include <trademgen/basic/BasParserTypes.hpp>
#include <trademgen/bom/DemandStruct.hpp>
```

### Classes

- struct TRADEMGEN::DemandParserHelper::ParserSemanticAction
- struct TRADEMGEN::DemandParserHelper::storePrefDepDateRangeStart
- struct TRADEMGEN::DemandParserHelper::storePrefDepDateRangeEnd
- struct TRADEMGEN::DemandParserHelper::storeDow
- struct TRADEMGEN::DemandParserHelper::storeOrigin
- struct TRADEMGEN::DemandParserHelper::storeDestination
- struct TRADEMGEN::DemandParserHelper::storePrefCabin
- struct TRADEMGEN::DemandParserHelper::storeDemandMean
- struct TRADEMGEN::DemandParserHelper::storeDemandStdDev
- struct TRADEMGEN::DemandParserHelper::storePosCode
- struct TRADEMGEN::DemandParserHelper::storePosProbMass
- struct TRADEMGEN::DemandParserHelper::storeChannelCode
- struct TRADEMGEN::DemandParserHelper::storeChannelProbMass
- struct TRADEMGEN::DemandParserHelper::storeTripCode
- struct TRADEMGEN::DemandParserHelper::storeTripProbMass
- struct TRADEMGEN::DemandParserHelper::storeStayCode
- struct TRADEMGEN::DemandParserHelper::storeStayProbMass
- struct TRADEMGEN::DemandParserHelper::storeFFCode
- struct TRADEMGEN::DemandParserHelper::storeFFProbMass
- struct TRADEMGEN::DemandParserHelper::storePrefDepTime
- struct TRADEMGEN::DemandParserHelper::storePrefDepTimeProbMass
- struct TRADEMGEN::DemandParserHelper::storeWTP
- struct TRADEMGEN::DemandParserHelper::storeTimeValue
- struct TRADEMGEN::DemandParserHelper::storeTimeValueProbMass
- struct TRADEMGEN::DemandParserHelper::storeDTD
- struct TRADEMGEN::DemandParserHelper::storeDTDProbMass
- struct TRADEMGEN::DemandParserHelper::doEndDemand
- struct TRADEMGEN::DemandParserHelper::DemandParser
- struct TRADEMGEN::DemandParserHelper::DemandParser::definition< ScannerT >
- class TRADEMGEN::DemandFileParser

### Namespaces

- namespace stdair

  *Forward declarations.*
- namespace TRADEMGEN
- namespace TRADEMGEN::DemandParserHelper

## 23.94 DemandParserHelper.hpp

```
00001 #ifndef __TRADEMGEN_CMD_DEMANDPARSERHELPER_HPP
00002 #define __TRADEMGEN_CMD_DEMANDPARSERHELPER_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
00009 // STDAIR
00010 #include <stdair/command/CmdAbstract.hpp>
00011 // TRADEMGEN
00012 #include <trademgen/TRADEMGEN_Types.hpp>
00013 #include <trademgen/basic/BasParserTypes.hpp>
00014 #include <trademgen/bom/DemandStruct.hpp>
00015
00016 // Forward declarations
00017 namespace stdair {
00018   class EventQueue;
00019   struct RandomGeneration;
00020 }
00021
00022 namespace TRADEMGEN {
00023
00024   namespace DemandParserHelper {
00025
00026     // //////////////////////////////////////////////////////////////////
00027     //  Semantic actions
00028     // //////////////////////////////////////////////////////////////////
00030     struct ParserSemanticAction {
00032       ParserSemanticAction (DemandStruct&);
00034       DemandStruct& _demand;
00035     };
00036
00038     struct storePrefDepDateRangeStart : public
      ParserSemanticAction {
00040       storePrefDepDateRangeStart (DemandStruct
      &);
00042       void operator() (iterator_t iStr, iterator_t
       iStrEnd) const;
00043     };
00044
00046     struct storePrefDepDateRangeEnd : public
      ParserSemanticAction {
00048       storePrefDepDateRangeEnd (DemandStruct
      &);
00050       void operator() (iterator_t iStr, iterator_t
       iStrEnd) const;
00051     };
00052
00054     struct storeDow : public ParserSemanticAction {
00056       storeDow (DemandStruct&);
00058       void operator() (iterator_t iStr, iterator_t
       iStrEnd) const;
00059     };
00060
00062     struct storeOrigin : public ParserSemanticAction
      {
00064       storeOrigin (DemandStruct&);
00066       void operator() (iterator_t iStr, iterator_t
       iStrEnd) const;
00067     };
00068
00070     struct storeDestination : public ParserSemanticAction
      {
00072       storeDestination (DemandStruct&);
00074       void operator() (iterator_t iStr, iterator_t
       iStrEnd) const;
00075     };
00076
00078     struct storePrefCabin : public ParserSemanticAction
      {
00080       storePrefCabin (DemandStruct&);
```

```
00082       void operator() (iterator_t iStr, iterator_t
      iStrEnd) const;
00083     };
00084
00086     struct storeDemandMean : public ParserSemanticAction
      {
00088       storeDemandMean (DemandStruct&);
00090       void operator() (double iReal) const;
00091     };
00092
00094     struct storeDemandStdDev : public ParserSemanticAction
      {
00096       storeDemandStdDev (DemandStruct&);
00098       void operator() (double iReal) const;
00099     };
00100
00102     struct storePosCode : public ParserSemanticAction
      {
00104       storePosCode (DemandStruct&);
00106       void operator() (iterator_t iStr, iterator_t
      iStrEnd) const;
00107     };
00108
00110     struct storePosProbMass : public ParserSemanticAction
      {
00112       storePosProbMass (DemandStruct&);
00114       void operator() (double iReal) const;
00115     };
00116
00118     struct storeChannelCode : public ParserSemanticAction
      {
00120       storeChannelCode (DemandStruct&);
00122       void operator() (iterator_t iStr, iterator_t
      iStrEnd) const;
00123     };
00124
00126     struct storeChannelProbMass : public
      ParserSemanticAction {
00128       storeChannelProbMass (DemandStruct&);
00130       void operator() (double iReal) const;
00131     };
00132
00134     struct storeTripCode : public ParserSemanticAction
      {
00136       storeTripCode (DemandStruct&);
00138       void operator() (iterator_t iStr, iterator_t
      iStrEnd) const;
00139     };
00140
00142     struct storeTripProbMass : public ParserSemanticAction
      {
00144       storeTripProbMass (DemandStruct&);
00146       void operator() (double iReal) const;
00147     };
00148
00150     struct storeStayCode : public ParserSemanticAction
      {
00152       storeStayCode (DemandStruct&);
00154       void operator() (unsigned int iInteger) const;
00155     };
00156
00158     struct storeStayProbMass : public ParserSemanticAction
      {
00160       storeStayProbMass (DemandStruct&);
00162       void operator() (double iReal) const;
00163     };
00164
00166     struct storeFFCode : public ParserSemanticAction
      {
00168       storeFFCode (DemandStruct&);
00170       void operator() (iterator_t iStr, iterator_t
      iStrEnd) const;
00171     };
00172
00174     struct storeFFProbMass : public ParserSemanticAction
      {
00176       storeFFProbMass (DemandStruct&);
00178       void operator() (double iReal) const;
00179     };
00180
00183     struct storePrefDepTime : public ParserSemanticAction
      {
00185       storePrefDepTime (DemandStruct&);
00187       void operator() (iterator_t iStr, iterator_t
      iStrEnd) const;
00188     };
00189
```

```
00192     struct storePrefDepTimeProbMass : public
      ParserSemanticAction {
00194       storePrefDepTimeProbMass (DemandStruct
      &);
00196       void operator() (double iReal) const;
00197     };
00198
00200     struct storeWTP : public ParserSemanticAction {
00202       storeWTP (DemandStruct&);
00204       void operator() (double iReal) const;
00205     };
00206
00208     struct storeTimeValue : public ParserSemanticAction
      {
00210       storeTimeValue (DemandStruct&);
00212       void operator() (double iReal) const;
00213     };
00214
00216     struct storeTimeValueProbMass : public
      ParserSemanticAction {
00218       storeTimeValueProbMass (DemandStruct&);
00220       void operator() (double iReal) const;
00221     };
00222
00225     struct storeDTD : public ParserSemanticAction {
00227       storeDTD (DemandStruct&);
00229       void operator() (unsigned int iInteger) const;
00230     };
00231
00234     struct storeDTDProbMass : public ParserSemanticAction
      {
00236       storeDTDProbMass (DemandStruct&);
00238       void operator() (double iReal) const;
00239     };
00240
00242     struct doEndDemand : public ParserSemanticAction
      {
00244       doEndDemand (stdair::EventQueue&, stdair::RandomGeneration&,
00245                    const POSProbabilityMass_T&,
      DemandStruct&);
00247       void operator() (iterator_t iStr, iterator_t
      iStrEnd) const;
00249       stdair::EventQueue& _eventQueue;
00250       stdair::RandomGeneration& _uniformGenerator;
00251       const POSProbabilityMass_T& _posProbabilityMass
      ;
00252     };
00253
00254
00256     //
00257     //  (Boost Spirit) Grammar Definition
00258     //
00260
00345     struct DemandParser :
00346       public boost::spirit::classic::grammar<DemandParser> {
00347
00348       DemandParser (stdair::EventQueue&, stdair::RandomGeneration&,
00349                     const POSProbabilityMass_T&,
      DemandStruct&);
00350
00351       template <typename ScannerT>
00352       struct definition {
00353         definition (DemandParser const& self);
00354
00355         // Instantiation of rules
00356         boost::spirit::classic::rule<ScannerT> demand_list,
00357           not_to_be_parsed, demand, demand_end,
      pref_dep_date_range,
00358           date, dow, origin, destination, pref_cabin
      , demand_params,
00359           pos_dist, pos_pair, pos_code, pos_share
      ,
00360           channel_dist, channel_pair, channel_code
      , channel_share,
00361           trip_dist, trip_pair, trip_code,
      trip_share,
00362           stay_dist, stay_pair, stay_share,
00363           ff_dist, ff_pair, ff_code, ff_share,
00364           pref_dep_time_dist, pref_dep_time_pair
      , pref_dep_time_share, time,
00365           wtp,
00366           time_value_dist, time_value_pair,
      time_value_share,
00367           dtd_dist, dtd_pair, dtd_share;
00368
00370         boost::spirit::classic::rule<ScannerT> const& start() const;
00371       };
```

```
00372
00373       // Parser Context
00374       stdair::EventQueue& _eventQueue;
00375       stdair::RandomGeneration& _uniformGenerator;
00376       const POSProbabilityMass_T& _posProbabilityMass
    ;
00377       DemandStruct& _demand;
00378     };
00379
00380   }
00381
00382
00384   //
00385   //  Entry class for the file parser
00386   //
00388
00393   class DemandFileParser : public stdair::CmdAbstract {
00394   public:
00396     DemandFileParser (stdair::EventQueue&,
    stdair::RandomGeneration&,
00397                       const POSProbabilityMass_T&,
00398                       const stdair::Filename_T& iDemandInputFilename);
00399
00401     bool generateDemand ();
00402
00403   private:
00405     void init();
00406
00407   private:
00408     // Attributes
00410     stdair::Filename_T _filename;
00411
00413     iterator_t _startIterator;
00414
00416     iterator_t _endIterator;
00417
00419     stdair::EventQueue& _eventQueue;
00420
00422     stdair::RandomGeneration& _uniformGenerator;
00423
00425     const POSProbabilityMass_T& _posProbabilityMass;
00426
00428     DemandStruct _demand;
00429   };
00430
00431 }
00432 #endif // __TRADEMGEN_CMD_DEMANDPARSERHELPER_HPP
```

## 23.95 trademgen/config/trademgen-paths.hpp File Reference

### Macros

- #define PACKAGE "trademgen"
- #define PACKAGE_NAME "TRADEMGEN"
- #define PACKAGE_VERSION "0.2.2"
- #define PREFIXDIR "/usr"
- #define EXEC_PREFIX "/usr"
- #define BINDIR "/usr/bin"
- #define LIBDIR "/usr/lib"
- #define LIBEXECDIR "/usr/libexec"
- #define SBINDIR "/usr/sbin"
- #define SYSCONFDIR "/usr/etc"
- #define INCLUDEDIR "/usr/include"
- #define DATAROOTDIR "/usr/share"
- #define DATADIR "/usr/share"
- #define DOCDIR "/usr/share/doc/trademgen-0.2.2"
- #define MANDIR "/usr/share/man"
- #define INFODIR "/usr/share/info"
- #define HTMLDIR "/usr/share/doc/trademgen-0.2.2/html"
- #define PDFDIR "/usr/share/doc/trademgen-0.2.2/html"
- #define STDAIR_SAMPLE_DIR "/usr/share/stdair/samples"

### 23.95.1 Macro Definition Documentation

#### 23.95.1.1 #define PACKAGE "trademgen"

Definition at line 4 of file trademgen-paths.hpp.

#### 23.95.1.2 #define PACKAGE_NAME "TRADEMGEN"

Definition at line 5 of file trademgen-paths.hpp.

Referenced by readConfiguration().

#### 23.95.1.3 #define PACKAGE_VERSION "0.2.2"

Definition at line 6 of file trademgen-paths.hpp.

Referenced by readConfiguration().

#### 23.95.1.4 #define PREFIXDIR "/usr"

Definition at line 7 of file trademgen-paths.hpp.

Referenced by readConfiguration().

#### 23.95.1.5 #define EXEC_PREFIX "/usr"

Definition at line 8 of file trademgen-paths.hpp.

#### 23.95.1.6 #define BINDIR "/usr/bin"

Definition at line 9 of file trademgen-paths.hpp.

#### 23.95.1.7 #define LIBDIR "/usr/lib"

Definition at line 10 of file trademgen-paths.hpp.

#### 23.95.1.8 #define LIBEXECDIR "/usr/libexec"

Definition at line 11 of file trademgen-paths.hpp.

#### 23.95.1.9 #define SBINDIR "/usr/sbin"

Definition at line 12 of file trademgen-paths.hpp.

#### 23.95.1.10 #define SYSCONFDIR "/usr/etc"

Definition at line 13 of file trademgen-paths.hpp.

#### 23.95.1.11 #define INCLUDEDIR "/usr/include"

Definition at line 14 of file trademgen-paths.hpp.

#### 23.95.1.12 #define DATAROOTDIR "/usr/share"

Definition at line 15 of file trademgen-paths.hpp.

#### 23.95.1.13 #define DATADIR "/usr/share"

Definition at line 16 of file trademgen-paths.hpp.

#### 23.95.1.14 #define DOCDIR "/usr/share/doc/trademgen-0.2.2"

Definition at line 17 of file trademgen-paths.hpp.

#### 23.95.1.15 #define MANDIR "/usr/share/man"

Definition at line 18 of file trademgen-paths.hpp.

#### 23.95.1.16 #define INFODIR "/usr/share/info"

Definition at line 19 of file trademgen-paths.hpp.

#### 23.95.1.17 #define HTMLDIR "/usr/share/doc/trademgen-0.2.2/html"

Definition at line 20 of file trademgen-paths.hpp.

#### 23.95.1.18 #define PDFDIR "/usr/share/doc/trademgen-0.2.2/html"

Definition at line 21 of file trademgen-paths.hpp.

#### 23.95.1.19 #define STDAIR_SAMPLE_DIR "/usr/share/stdair/samples"

Definition at line 22 of file trademgen-paths.hpp.

## 23.96 trademgen-paths.hpp

```
00001 #ifndef __TRADEMGEN_PATHS_HPP__
00002 #define __TRADEMGEN_PATHS_HPP__
00003
00004 #define PACKAGE "trademgen"
00005 #define PACKAGE_NAME "TRADEMGEN"
00006 #define PACKAGE_VERSION "0.2.2"
00007 #define PREFIXDIR "/usr"
00008 #define EXEC_PREFIX "/usr"
00009 #define BINDIR "/usr/bin"
00010 #define LIBDIR "/usr/lib"
00011 #define LIBEXECDIR "/usr/libexec"
00012 #define SBINDIR "/usr/sbin"
00013 #define SYSCONFDIR "/usr/etc"
00014 #define INCLUDEDIR "/usr/include"
00015 #define DATAROOTDIR "/usr/share"
00016 #define DATADIR "/usr/share"
00017 #define DOCDIR "/usr/share/doc/trademgen-0.2.2"
00018 #define MANDIR "/usr/share/man"
00019 #define INFODIR "/usr/share/info"
00020 #define HTMLDIR "/usr/share/doc/trademgen-0.2.2/html"
00021 #define PDFDIR "/usr/share/doc/trademgen-0.2.2/html"
00022 #define STDAIR_SAMPLE_DIR "/usr/share/stdair/samples"
00023
00024 #endif // __TRADEMGEN_PATHS_HPP__
```

## 23.97 trademgen/DBParams.hpp File Reference

```
#include <iosfwd>
#include <string>
#include <trademgen/TRADEMGEN_Types.hpp>
#include <trademgen/TRADEMGEN_Abstract.hpp>
```

### Classes

- struct TRADEMGEN::DBParams

### Namespaces

- namespace TRADEMGEN

### Typedefs

- typedef std::list< std::string > TRADEMGEN::DBParamsNameList_T

## 23.98 DBParams.hpp

```
00001 #ifndef __TRADEMGEN_DBPARAMS_HPP
00002 #define __TRADEMGEN_DBPARAMS_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <iosfwd>
00009 #include <string>
00010 // Trademgen
00011 #include <trademgen/TRADEMGEN_Types.hpp>
00012 #include <trademgen/TRADEMGEN_Abstract.hpp>
00013
00014 namespace TRADEMGEN {
00015
00017   typedef std::list<std::string> DBParamsNameList_T;
00018
00019
00021   struct DBParams : public TRADEMGEN_Abstract {
00022   public:
00023     // ///////// Getters ////////
00025     std::string getUser() const {
00026       return _user;
00027     }
00028
00030     std::string getPassword() const {
00031       return _passwd;
00032     }
00033
00035     std::string getHost() const {
00036       return _host;
00037     }
00038
00040     std::string getPort() const {
00041       return _port;
00042     }
00043
00045     std::string getDBName() const {
00046       return _dbname;
00047     }
00048
00049
00050     // ///////// Setters //////////
00052     void setUser (const std::string& iUser) {
00053       _user = iUser;
00054     }
00055
00057     void setPassword (const std::string& iPasswd) {
00058       _passwd = iPasswd;
00059     }
00060
00062     void setHost (const std::string& iHost) {
00063       _host = iHost;
00064     }
00065
00067     void setPort (const std::string& iPort) {
00068       _port = iPort;
00069     }
00070
00072     void setDBName (const std::string& iDBName) {
00073       _dbname = iDBName;
00074     }
00075
00076
00077   public:
00078     // ///////// Busines methods ////////
00080     bool check () const {
00081       if (_user.empty() == true || _passwd.empty() == true
00082           || _host.empty() == true || _port.empty()
00083           || _dbname.empty() == true) {
00084         return false;
00085       }
00086       return true;
00087     }
00088
00089   public:
00090     // ///////// Display methods ////////
```

```
00093     void toStream (std::ostream& ioOut) const {
00094       ioOut << toString();
00095     }
00096
00099     void fromStream (std::istream&) {
00100     }
00101
00103     std::string toShortString() const {
00104       std::ostringstream oStr;
00105       oStr << _dbname << "." << _user << "@" << _host << ":" << _port;
00106       return oStr.str();
00107     }
00108
00110     std::string toString() const {
00111       std::ostringstream oStr;
00112       oStr << _dbname << "." << _user << "@" << _host << ":" << _port;
00113       return oStr.str();
00114     }
00115
00116
00117   public:
00119     DBParams (const std::string& iDBUser, const std::string& iDBPasswd,
00120               const std::string& iDBHost, const std::string& iDBPort,
00121               const std::string& iDBName)
00122       : _user (iDBUser), _passwd (iDBPasswd), _host (iDBHost), _port (iDBPort),
00123         _dbname (iDBName) {
00124     }
00125
00127     // DBParams ();
00129     // DBParams (const DBParams&);
00130
00132     virtual ~DBParams() {}
00133
00134
00135   private:
00136     // /////// Attributes /////////
00138     std::string _user;
00140     std::string _passwd;
00142     std::string _host;
00144     std::string _port;
00146     std::string _dbname;
00147   };
00148
00149 }
00150 #endif // __TRADEMGEN_DBPARAMS_HPP
```

## 23.99 trademgen/factory/FacTRADEMGENServiceContext.cpp File Reference

```
#include <cassert>
#include <stdair/service/FacSupervisor.hpp>
#include <trademgen/factory/FacTRADEMGENServiceContext.hpp>
#include <trademgen/service/TRADEMGEN_ServiceContext.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.100 FacTRADEMGENServiceContext.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 // StdAir
00007 #include <stdair/service/FacSupervisor.hpp>
00008 // TraDemGen
00009 #include <trademgen/factory/FacTRADEMGENServiceContext.hpp
      >
00010 #include <trademgen/service/TRADEMGEN_ServiceContext.hpp
      >
00011
00012 namespace TRADEMGEN {
00013
00014   FacTRADEMGENServiceContext* FacTRADEMGENServiceContext::_instance = NULL;
```

```
00015
00016   // ////////////////////////////////////////////////////////////////////
00017   FacTRADEMGENServiceContext::~FacTRADEMGENServiceContext
      () {
00018     _instance = NULL;
00019   }
00020
00021   // ////////////////////////////////////////////////////////////////////
00022   FacTRADEMGENServiceContext&
      FacTRADEMGENServiceContext::instance() {
00023
00024     if (_instance == NULL) {
00025       _instance = new FacTRADEMGENServiceContext();
00026       assert (_instance != NULL);
00027
00028       stdair::FacSupervisor::instance().
      registerServiceFactory (_instance);
00029     }
00030     return *_instance;
00031   }
00032
00033   // ////////////////////////////////////////////////////////////////////
00034   TRADEMGEN_ServiceContext&
      FacTRADEMGENServiceContext::
00035   create (const stdair::RandomSeed_T& iRandomSeed) {
00036     TRADEMGEN_ServiceContext* aServiceContext_ptr =
      NULL;
00037
00038     aServiceContext_ptr = new TRADEMGEN_ServiceContext
      (iRandomSeed);
00039     assert (aServiceContext_ptr != NULL);
00040
00041     // The new object is added to the Bom pool
00042     _pool.push_back (aServiceContext_ptr);
00043
00044     return *aServiceContext_ptr;
00045   }
00046
00047 }
```

## 23.101 trademgen/factory/FacTRADEMGENServiceContext.hpp File Reference

```
#include <stdair/stdair_maths_types.hpp>
#include <stdair/service/FacServiceAbstract.hpp>
#include <trademgen/TRADEMGEN_Types.hpp>
```

### Classes

- class TRADEMGEN::FacTRADEMGENServiceContext

  *Factory for creating the TraDemGen service context instance.*

### Namespaces

- namespace TRADEMGEN

## 23.102 FacTRADEMGENServiceContext.hpp

```
00001 #ifndef __TRADEMGEN_FAC_FACTRADEMGENSERVICECONTEXT_HPP
00002 #define __TRADEMGEN_FAC_FACTRADEMGENSERVICECONTEXT_HPP
00003
00004 // ////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // ////////////////////////////////////////////////////////////////////
00007 // StdAir
00008 #include <stdair/stdair_maths_types.hpp>
00009 #include <stdair/service/FacServiceAbstract.hpp>
00010 // TraDemGen
00011 #include <trademgen/TRADEMGEN_Types.hpp>
00012
00013 namespace TRADEMGEN {
00014
```

```
00016   class TRADEMGEN_ServiceContext;
00017
00021   class FacTRADEMGENServiceContext : public
      stdair::FacServiceAbstract {
00022   public:
00030     static FacTRADEMGENServiceContext& instance
      ();
00031
00038     ~FacTRADEMGENServiceContext();
00039
00048     TRADEMGEN_ServiceContext& create (const
      stdair::RandomSeed_T&);
00049
00050
00051   protected:
00057     FacTRADEMGENServiceContext () {}
00058
00059   private:
00063     static FacTRADEMGENServiceContext* _instance;
00064   };
00065
00066 }
00067 #endif // __TRADEMGEN_FAC_FACTRADEMGENSERVICECONTEXT_HPP
```

## 23.103 trademgen/python/pytrademgen.cpp File Reference

```
#include <cassert>
#include <stdexcept>
#include <fstream>
#include <sstream>
#include <string>
#include <list>
#include <vector>
#include <boost/python.hpp>
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_exceptions.hpp>
#include <stdair/basic/BasFileMgr.hpp>
#include <stdair/basic/BasLogParams.hpp>
#include <stdair/basic/BasDBParams.hpp>
#include <trademgen/TRADEMGEN_Service.hpp>
```

### Classes

- struct TRADEMGEN::Trademgener

### Namespaces

- namespace TRADEMGEN

### Functions

- BOOST_PYTHON_MODULE (libpytrademgen)

#### 23.103.1 Function Documentation

##### 23.103.1.1 BOOST_PYTHON_MODULE ( libpytrademgen )

Definition at line 162 of file pytrademgen.cpp.

References TRADEMGEN::Trademgener::init(), and TRADEMGEN::Trademgener::trademgen().

## 23.104 pytrademgen.cpp

```
00001 // STL
00002 #include <cassert>
00003 #include <stdexcept>
00004 #include <fstream>
00005 #include <sstream>
00006 #include <string>
00007 #include <list>
00008 #include <vector>
00009 // Boost String
00010 #include <boost/python.hpp>
00011 // StdAir
00012 #include <stdair/stdair_basic_types.hpp>
00013 #include <stdair/stdair_exceptions.hpp>
00014 #include <stdair/basic/BasFileMgr.hpp>
00015 #include <stdair/basic/BasLogParams.hpp>
00016 #include <stdair/basic/BasDBParams.hpp>
00017 // TraDemGen
00018 #include <trademgen/TRADEMGEN_Service.hpp>
00019
00020 namespace TRADEMGEN {
00021
00022   struct Trademgener {
00023   public:
00025     std::string trademgen (const std::string& iQuery) {
00026       std::ostringstream oStream;
00027
00028       // Sanity check
00029       if (_logOutputStream == NULL) {
00030         oStream << "The log filepath is not valid." << std::endl;
00031         return oStream.str();
00032       }
00033       assert (_logOutputStream != NULL);
00034
00035       try {
00036
00037         // DEBUG
00038         *_logOutputStream << "Python search for '" << iQuery << "'"
00039                           << std::endl;
00040
00041         if (_trademgenService == NULL) {
00042           oStream << "The Trademgen service has not been initialised, "
00043                   << "i.e., the init() method has not been called "
00044                   << "correctly on the Trademgener object. Please "
00045                   << "check that all the parameters are not empty and "
00046                   << "point to actual files.";
00047           *_logOutputStream << oStream.str();
00048           return oStream.str();
00049         }
00050         assert (_trademgenService != NULL);
00051
00052         // Do the trademgen
00053         _trademgenService->displayAirlineListFromDB();
00054
00055         // DEBUG
00056         *_logOutputStream << "Python search for '" << iQuery
00057                           << "' returned '" << std::endl;
00058
00059         // DEBUG
00060         *_logOutputStream << "TraDemGen output: "
00061                           << oStream.str() << std::endl;
00062
00063       } catch (const stdair::RootException& eTrademgenError) {
00064         *_logOutputStream << "TraDemGen error: "  << eTrademgenError.what()
00065                           << std::endl;
00066
00067       } catch (const std::exception& eStdError) {
00068         *_logOutputStream << "Error: "  << eStdError.what() << std::endl;
00069
00070       } catch (...) {
00071         *_logOutputStream << "Unknown error" << std::endl;
00072       }
00073
00074       return oStream.str();
00075     }
00076
00077   public:
00079     Trademgener() : _trademgenService (NULL), _logOutputStream (NULL
     ) {
00080     }
00081
00083     Trademgener (const Trademgener& iTrademgener)
00084       : _trademgenService (iTrademgener._trademgenService),
00085         _logOutputStream (iTrademgener._logOutputStream) {
00086     }
00087
```

```
00089     ~Trademgener() {
00090       _trademgenService = NULL;
00091       _logOutputStream = NULL;
00092     }
00093
00095     bool init (const std::string& iLogFilepath,
00096                const stdair::RandomSeed_T& iRandomSeed,
00097                const stdair::Filename_T& iDemandInputFilename,
00098                const std::string& iDBUser, const std::string& iDBPasswd,
00099                const std::string& iDBHost, const std::string& iDBPort,
00100                const std::string& iDBDBName) {
00101       bool isEverythingOK = true;
00102
00103       try {
00104
00105         // Check that the file path given as input corresponds to an actual
      file
00106         const bool isWriteable = (iLogFilepath.empty() == false);
00107         // stdair::BasFileMgr::isWriteable (iLogFilepath);
00108         if (isWriteable == false) {
00109           isEverythingOK = false;
00110           return isEverythingOK;
00111         }
00112
00113         // Set the log parameters
00114         _logOutputStream = new std::ofstream;
00115         assert (_logOutputStream != NULL);
00116
00117         // Open and clean the log outputfile
00118         _logOutputStream->open (iLogFilepath.c_str());
00119         _logOutputStream->clear();
00120
00121         // DEBUG
00122         *_logOutputStream << "Python wrapper initialisation" << std::endl;
00123         const stdair::BasLogParams lLogParams (stdair::LOG::DEBUG,
00124                                                *_logOutputStream);
00125
00126         // Initialise the context
00127         stdair::BasDBParams lDBParams (iDBUser, iDBPasswd, iDBHost, iDBPort,
00128                                        iDBDBName);
00129         _trademgenService = new TRADEMGEN_Service (lLogParams,
      lDBParams,
00130                                                    iRandomSeed);
00131         assert (_trademgenService != NULL);
00132
00133         // Create the DemandStream objects, and insert them within the BOM tree
00134         _trademgenService->parseAndLoad (iDemandInputFilename);
00135
00136         // DEBUG
00137         *_logOutputStream << "Python wrapper initialised" << std::endl;
00138
00139       } catch (const stdair::RootException& eTrademgenError) {
00140         *_logOutputStream << "Trademgen error: "  << eTrademgenError.what()
00141                           << std::endl;
00142
00143       } catch (const std::exception& eStdError) {
00144         *_logOutputStream << "Error: "  << eStdError.what() << std::endl;
00145
00146       } catch (...) {
00147         *_logOutputStream << "Unknown error" << std::endl;
00148       }
00149
00150       return isEverythingOK;
00151     }
00152
00153   private:
00155     TRADEMGEN_Service* _trademgenService;
00156     std::ofstream* _logOutputStream;
00157   };
00158
00159 }
00160
00161 // ////////////////////////////////////////////////////////////////
00162 BOOST_PYTHON_MODULE(libpytrademgen) {
00163   boost::python::class_<TRADEMGEN::Trademgener> ("Trademgener")
00164     .def ("trademgen", &TRADEMGEN::Trademgener::trademgen
      )
00165     .def ("init", &TRADEMGEN::Trademgener::init);
00166 }
```

## 23.105 trademgen/service/TRADEMGEN_Service.cpp File Reference

```
#include <cassert>
```

```
#include <sstream>
#include <boost/make_shared.hpp>
#include <soci/soci.h>
#include <stdair/basic/BasChronometer.hpp>
#include <stdair/basic/BasConst_General.hpp>
#include <stdair/bom/BomRoot.hpp>
#include <stdair/bom/BookingRequestStruct.hpp>
#include <stdair/bom/AirlineStruct.hpp>
#include <stdair/bom/EventStruct.hpp>
#include <stdair/bom/EventQueue.hpp>
#include <stdair/command/DBManagerForAirlines.hpp>
#include <stdair/service/Logger.hpp>
#include <stdair/service/DBSessionManager.hpp>
#include <stdair/STDAIR_Service.hpp>
#include <trademgen/basic/BasConst_TRADEMGEN_Service.hpp>
#include <trademgen/bom/BomDisplay.hpp>
#include <trademgen/bom/DemandStreamKey.hpp>
#include <trademgen/factory/FacTRADEMGENServiceContext.hpp>
#include <trademgen/command/DemandParser.hpp>
#include <trademgen/command/DemandManager.hpp>
#include <trademgen/service/TRADEMGEN_ServiceContext.hpp>
#include <trademgen/TRADEMGEN_Service.hpp>
```

#### Namespaces

- namespace TRADEMGEN

## 23.106 TRADEMGEN_Service.cpp

```
00001 // ////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // ////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 // Boost
00008 #include <boost/make_shared.hpp>
00009 #if defined(SOCI_HEADERS_BURIED)
00010 #include <soci/core/soci.h>
00011 #else // SOCI_HEADERS_BURIED
00012 #include <soci/soci.h>
00013 #endif // SOCI_HEADERS_BURIED
00014 // StdAir
00015 #include <stdair/basic/BasChronometer.hpp>
00016 #include <stdair/basic/BasConst_General.hpp>
00017 #include <stdair/bom/BomRoot.hpp>
00018 #include <stdair/bom/BookingRequestStruct.hpp>
00019 #include <stdair/bom/AirlineStruct.hpp>
00020 #include <stdair/bom/EventStruct.hpp>
00021 #include <stdair/bom/EventQueue.hpp>
00022 #include <stdair/command/DBManagerForAirlines.hpp>
00023 #include <stdair/service/Logger.hpp>
00024 #include <stdair/service/DBSessionManager.hpp>
00025 #include <stdair/STDAIR_Service.hpp>
00026 // TraDemGen
00027 #include <trademgen/basic/BasConst_TRADEMGEN_Service.hpp
      >
00028 #include <trademgen/bom/BomDisplay.hpp>
00029 #include <trademgen/bom/DemandStreamKey.hpp>
00030 #include <trademgen/factory/FacTRADEMGENServiceContext.hpp
      >
00031 #include <trademgen/command/DemandParser.hpp>
00032 #include <trademgen/command/DemandManager.hpp
      >
00033 #include <trademgen/service/TRADEMGEN_ServiceContext.hpp
      >
00034 #include <trademgen/TRADEMGEN_Service.hpp>
00035
00036 namespace TRADEMGEN {
```

```
00037
00038   // //////////////////////////////////////////////////////////////////
00039   TRADEMGEN_Service::TRADEMGEN_Service() : _trademgenServiceContext (NULL) {
00040     assert (false);
00041   }
00042
00043   // //////////////////////////////////////////////////////////////////
00044   TRADEMGEN_Service::TRADEMGEN_Service (const TRADEMGEN_Service& iService)
00045     : _trademgenServiceContext (NULL) {
00046     assert (false);
00047   }
00048
00049   // //////////////////////////////////////////////////////////////////
00050   TRADEMGEN_Service::TRADEMGEN_Service (const stdair::BasLogParams& iLogParams,
00051                                         const stdair::RandomSeed_T& iRandomSeed
      )
00052     : _trademgenServiceContext (NULL) {
00053
00054     // Initialise the STDAIR service handler
00055     stdair::STDAIR_ServicePtr_T lSTDAIR_Service_ptr =
00056       initStdAirService (iLogParams);
00057
00058     // Initialise the service context
00059     initServiceContext (iRandomSeed);
00060
00061     // Add the StdAir service context to the TRADEMGEN service context
00062     // \note TRADEMGEN owns the STDAIR service resources here.
00063     const bool ownStdairService = true;
00064     addStdAirService (lSTDAIR_Service_ptr, ownStdairService);
00065
00066     // Initialise the (remaining of the) context
00067     initTrademgenService();
00068   }
00069
00070   // //////////////////////////////////////////////////////////////////
00071   TRADEMGEN_Service::TRADEMGEN_Service (const stdair::BasLogParams& iLogParams,
00072                                         const stdair::BasDBParams& iDBParams,
00073                                         const stdair::RandomSeed_T& iRandomSeed
      )
00074     : _trademgenServiceContext (NULL) {
00075
00076     // Initialise the STDAIR service handler
00077     stdair::STDAIR_ServicePtr_T lSTDAIR_Service_ptr =
00078       initStdAirService (iLogParams, iDBParams);
00079
00080     // Initialise the service context
00081     initServiceContext (iRandomSeed);
00082
00083     // Add the StdAir service context to the TRADEMGEN service context
00084     // \note TRADEMGEN owns the STDAIR service resources here.
00085     const bool ownStdairService = true;
00086     addStdAirService (lSTDAIR_Service_ptr, ownStdairService);
00087
00088     // Initialise the (remaining of the) context
00089     initTrademgenService();
00090   }
00091
00092   // //////////////////////////////////////////////////////////////////
00093   TRADEMGEN_Service::
00094   TRADEMGEN_Service (stdair::STDAIR_ServicePtr_T ioSTDAIR_Service_ptr,
00095                      const stdair::RandomSeed_T& iRandomSeed)
00096     : _trademgenServiceContext (NULL) {
00097
00098     // Initialise the service context
00099     initServiceContext (iRandomSeed);
00100
00101     // Add the StdAir service context to the TRADEMGEN service context
00102     // \note TraDemGen does not own the STDAIR service resources here.
00103     const bool doesNotOwnStdairService = false;
00104     addStdAirService (ioSTDAIR_Service_ptr, doesNotOwnStdairService);
00105
00106     // Initialise the context
00107     initTrademgenService();
00108   }
00109
00110   // //////////////////////////////////////////////////////////////////
00111   TRADEMGEN_Service::~TRADEMGEN_Service()
      {
00112     // Delete/Clean all the objects from memory
00113     finalise();
00114   }
00115
00116   // //////////////////////////////////////////////////////////////////
00117   void TRADEMGEN_Service::finalise() {
00118     assert (_trademgenServiceContext != NULL);
00119     // Reset the (Boost.)Smart pointer pointing on the STDAIR_Service object.
00120     _trademgenServiceContext->reset();
```

```
00121   }
00122
00123   // ////////////////////////////////////////////////////////////////////
00124   void TRADEMGEN_Service::
00125   initServiceContext (const stdair::RandomSeed_T& iRandomSeed) {
00126     // Initialise the service context
00127     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext =
00128       FacTRADEMGENServiceContext::instance(
      ).create (iRandomSeed);
00129     _trademgenServiceContext = &lTRADEMGEN_ServiceContext;
00130   }
00131
00132   // ////////////////////////////////////////////////////////////////////
00133   void TRADEMGEN_Service::
00134   addStdAirService (stdair::STDAIR_ServicePtr_T ioSTDAIR_Service_ptr,
00135                     const bool iOwnStdairService) {
00136     // Retrieve the TraDemGen service context
00137     assert (_trademgenServiceContext != NULL);
00138     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext =
00139       *_trademgenServiceContext;
00140
00141     // Store the STDAIR service object within the (TRADEMGEN) service context
00142     lTRADEMGEN_ServiceContext.setSTDAIR_Service (ioSTDAIR_Service_ptr,
00143                                                  iOwnStdairService);
00144   }
00145
00146   // ////////////////////////////////////////////////////////////////////
00147   stdair::STDAIR_ServicePtr_T TRADEMGEN_Service::
00148   initStdAirService (const stdair::BasLogParams& iLogParams,
00149                      const stdair::BasDBParams& iDBParams) {
00150
00156     stdair::STDAIR_ServicePtr_T lSTDAIR_Service_ptr =
00157       boost::make_shared<stdair::STDAIR_Service> (iLogParams, iDBParams);
00158     assert (lSTDAIR_Service_ptr != NULL);
00159
00160     return lSTDAIR_Service_ptr;
00161   }
00162
00163   // ////////////////////////////////////////////////////////////////////
00164   stdair::STDAIR_ServicePtr_T TRADEMGEN_Service::
00165   initStdAirService (const stdair::BasLogParams& iLogParams) {
00166
00172     stdair::STDAIR_ServicePtr_T lSTDAIR_Service_ptr =
00173       boost::make_shared<stdair::STDAIR_Service> (iLogParams);
00174     assert (lSTDAIR_Service_ptr != NULL);
00175
00176     return lSTDAIR_Service_ptr;
00177   }
00178
00179   // ////////////////////////////////////////////////////////////////////
00180   void TRADEMGEN_Service::initTrademgenService() {
00181     // Do nothing at this stage. A sample BOM tree may be built by
00182     // calling the buildSampleBom() method
00183   }
00184
00185   // ////////////////////////////////////////////////////////////////////
00186   void TRADEMGEN_Service::
00187   parseAndLoad (const stdair::Filename_T& iDemandInputFilename) {
00188
00189     // Retrieve the TraDemGen service context
00190     assert (_trademgenServiceContext != NULL);
00191     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
      =
00192       *_trademgenServiceContext;
00193
00194     // Retrieve the shared generator
00195     stdair::RandomGeneration& lSharedGenerator =
00196       lTRADEMGEN_ServiceContext.getUniformGenerator();
00197
00198     // Retrieve the default POS distribution
00199     const POSProbabilityMass_T& lDefaultPOSProbabilityMass
      =
00200       lTRADEMGEN_ServiceContext.getPOSProbabilityMass();
00201
00202     // Retrieve the StdAir service context
00203     stdair::STDAIR_Service& lSTDAIR_Service =
00204       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00205
00206     // Retrieve the event queue
00207     stdair::EventQueue& lEventQueue = lSTDAIR_Service.getEventQueue();
00208
00209     // Parse the input file and initialise the demand generators
00210     stdair::BasChronometer lDemandGeneration; lDemandGeneration.start();
00211     DemandParser::generateDemand (
      iDemandInputFilename, lEventQueue,
00212                                   lSharedGenerator, lDefaultPOSProbabilityMass)
      ;
```

```
00213     const double lGenerationMeasure = lDemandGeneration.elapsed();
00214
00215     // DEBUG
00216     STDAIR_LOG_DEBUG ("Demand generation time: " << lGenerationMeasure);
00217   }
00218
00219   // ////////////////////////////////////////////////////////////////////
00220   void TRADEMGEN_Service::buildSampleBom() {
00221
00222     // Retrieve the TraDemGen service context
00223     if (_trademgenServiceContext == NULL) {
00224       throw stdair::NonInitialisedServiceException ("The TraDemGen service has
      "
00225                                                     "not been initialised");
00226     }
00227     assert (_trademgenServiceContext != NULL);
00228
00229     // Retrieve the TraDemGen service context and whether it owns the Stdair
00230     // service
00231     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
       =
00232       *_trademgenServiceContext;
00233     const bool doesOwnStdairService =
00234       lTRADEMGEN_ServiceContext.getOwnStdairServiceFlag();
00235
00236     // Retrieve the StdAir service object from the (TraDemGen) service context
00237     stdair::STDAIR_Service& lSTDAIR_Service =
00238       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00239
00244     if (doesOwnStdairService == true) {
00245       //
00246       lSTDAIR_Service.buildSampleBom();
00247     }
00248
00261     // Retrieve the shared generator
00262     stdair::RandomGeneration& lSharedGenerator =
00263       lTRADEMGEN_ServiceContext.getUniformGenerator();
00264
00265     // Retrieve the default POS distribution
00266     const POSProbabilityMass_T& lDefaultPOSProbabilityMass
       =
00267       lTRADEMGEN_ServiceContext.getPOSProbabilityMass();
00268
00269     // Retrieve the event queue
00270     stdair::EventQueue& lEventQueue = lSTDAIR_Service.getEventQueue();
00271
00272     // Delegate the BOM building to the dedicated service
00273     DemandManager::buildSampleBom (lEventQueue,
      lSharedGenerator,
00274                                    lDefaultPOSProbabilityMass);
00275   }
00276
00277   // ////////////////////////////////////////////////////////////////////
00278   stdair::BookingRequestStruct TRADEMGEN_Service::
00279   buildSampleBookingRequest (const bool isForCRS) {
00280
00281     // Retrieve the TraDemGen service context
00282     if (_trademgenServiceContext == NULL) {
00283       throw stdair::NonInitialisedServiceException ("The TraDemGen service has
      "
00284                                                     "not been initialised");
00285     }
00286     assert (_trademgenServiceContext != NULL);
00287
00288     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
       =
00289       *_trademgenServiceContext;
00290
00291     // Retrieve the STDAIR service object from the (TraDemGen) service context
00292     stdair::STDAIR_Service& lSTDAIR_Service =
00293       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00294
00295     // Delegate the BOM building to the dedicated service
00296     return lSTDAIR_Service.buildSampleBookingRequest (isForCRS);
00297   }
00298
00299   // ////////////////////////////////////////////////////////////////////
00300   std::string TRADEMGEN_Service::csvDisplay()
       const {
00301
00302     // Retrieve the TraDemGen service context
00303     if (_trademgenServiceContext == NULL) {
00304       throw stdair::NonInitialisedServiceException ("The TraDemGen service has
      "
00305                                                     "not been initialised");
00306     }
00307     assert (_trademgenServiceContext != NULL);
```

```
00308
00309     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
      =
00310       *_trademgenServiceContext;
00311
00312     // Retrieve the STDAIR service object from the (TraDemGen) service context
00313     stdair::STDAIR_Service& lSTDAIR_Service =
00314       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00315
00316     // Retrieve the event queue
00317     stdair::EventQueue& lEventQueue = lSTDAIR_Service.getEventQueue();
00318
00319     // Delegate the BOM building to the dedicated service
00320     return BomDisplay::csvDisplay (lEventQueue);
00321   }
00322
00323   // ////////////////////////////////////////////////////////////////////
00324   void TRADEMGEN_Service::displayAirlineListFromDB
      () const {
00325
00326     // Retrieve the TraDemGen service context
00327     if (_trademgenServiceContext == NULL) {
00328       throw stdair::NonInitialisedServiceException ("The TraDemGen service has
      "
00329                                                     "not been initialised");
00330     }
00331     assert (_trademgenServiceContext != NULL);
00332     // TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext =
00333     //   *_trademgenServiceContext;
00334
00335     // Get the date-time for the present time
00336     boost::posix_time::ptime lNowDateTime =
00337       boost::posix_time::second_clock::local_time();
00338     //boost::gregorian::date lNowDate = lNowDateTime.date();
00339
00340     // DEBUG
00341     STDAIR_LOG_DEBUG (std::endl
00342                       << "================================================="
00343                       << std::endl
00344                       << lNowDateTime);
00345
00346     // Delegate the query execution to the dedicated command
00347     stdair::BasChronometer lAirListChronometer;
00348     lAirListChronometer.start();
00349
00350     // Retrieve the database session handler
00351     stdair::DBSession_T& lDBSession =
00352       stdair::DBSessionManager::instance().getDBSession();
00353
00354     // Prepare and execute the select statement
00355     stdair::AirlineStruct lAirline;
00356     stdair::DBRequestStatement_T lSelectStatement (lDBSession);
00357     stdair::DBManagerForAirlines::prepareSelectStatement (lDBSession,
00358                                                           lSelectStatement,
00359                                                           lAirline);
00360
00361     // Prepare the SQL request corresponding to the select statement
00362     bool hasStillData = true;
00363     unsigned int idx = 0;
00364     while (hasStillData == true) {
00365       hasStillData =
00366         stdair::DBManagerForAirlines::iterateOnStatement (lSelectStatement,
00367                                                           lAirline);
00368
00369       // DEBUG
00370       STDAIR_LOG_DEBUG ("[" << idx << "]: " << lAirline);
00371
00372       // Iteration
00373       ++idx;
00374     }
00375
00376     const double lAirListMeasure = lAirListChronometer.elapsed();
00377
00378     // DEBUG
00379     STDAIR_LOG_DEBUG ("Sample service for airline list retrieval: "
00380                       << lAirListMeasure);
00381   }
00382
00383   // ////////////////////////////////////////////////////////////////////
00384   const stdair::Count_T& TRADEMGEN_Service::
00385   getExpectedTotalNumberOfRequestsToBeGenerated
      () const {
00386
00387     // Retrieve the TraDemGen service context
00388     assert (_trademgenServiceContext != NULL);
00389     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
      =
```

```
00390       *_trademgenServiceContext;
00391
00392     // Retrieve the StdAir service context
00393     stdair::STDAIR_Service& lSTDAIR_Service =
00394       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00395
00396     // Retrieve the event queue object instance
00397     const stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00398
00399     // Delegate the call to the dedicated command
00400     const stdair::Count_T& oExpectedTotalNumberOfRequestsToBeGenerated =
00401       lQueue.getExpectedTotalNbOfEvents (stdair::EventType::BKG_REQ);
00402
00403     //
00404     return oExpectedTotalNumberOfRequestsToBeGenerated;
00405   }
00406
00407   // ////////////////////////////////////////////////////////////////////
00408   const stdair::Count_T& TRADEMGEN_Service::
00409   getActualTotalNumberOfRequestsToBeGenerated
      () const {
00410
00411     // Retrieve the TraDemGen service context
00412     assert (_trademgenServiceContext != NULL);
00413     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
       =
00414       *_trademgenServiceContext;
00415
00416     // Retrieve the StdAir service context
00417     stdair::STDAIR_Service& lSTDAIR_Service =
00418       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00419
00420     // Retrieve the event queue object instance
00421     const stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00422
00423     // Delegate the call to the dedicated command
00424     const stdair::Count_T& oActualTotalNumberOfRequestsToBeGenerated =
00425       lQueue.getActualTotalNbOfEvents (stdair::EventType::BKG_REQ);
00426
00427     //
00428     return oActualTotalNumberOfRequestsToBeGenerated;
00429   }
00430
00431   // ////////////////////////////////////////////////////////////////////
00432   const bool TRADEMGEN_Service::
00433   stillHavingRequestsToBeGenerated (const
      stdair::DemandStreamKeyStr_T& iKey,
00434                                     stdair::ProgressStatusSet& ioPSS,
00435                                     const stdair::DemandGenerationMethod&
      iDemandGenerationMethod) const {
00436
00437     // Retrieve the TraDemGen service context
00438     assert (_trademgenServiceContext != NULL);
00439     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
       =
00440       *_trademgenServiceContext;
00441
00442     // Retrieve the StdAir service context
00443     stdair::STDAIR_Service& lSTDAIR_Service =
00444       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00445
00446     // Retrieve the event queue object instance
00447     const stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00448
00449     // Delegate the call to the dedicated command
00450     const bool oStillHavingRequestsToBeGenerated =
00451       DemandManager::stillHavingRequestsToBeGenerated
       (lQueue, iKey, ioPSS,
00452                                                       iDemandGenerationMethod)
      ;
00453
00454     //
00455     return oStillHavingRequestsToBeGenerated;
00456   }
00457
00458   // ////////////////////////////////////////////////////////////////////
00459   stdair::Count_T TRADEMGEN_Service::
00460   generateFirstRequests (const
      stdair::DemandGenerationMethod& iDemandGenerationMethod) const {
00461
00462     // Retrieve the TraDemGen service context
00463     assert (_trademgenServiceContext != NULL);
00464     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
       =
00465       *_trademgenServiceContext;
00466
00467     // Retrieve the StdAir service context
```

```
00468     stdair::STDAIR_Service& lSTDAIR_Service =
00469       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00470
00471     // Retrieve the event queue object instance
00472     stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00473
00474     // Retrieve the random generator
00475     stdair::RandomGeneration& lGenerator =
00476       lTRADEMGEN_ServiceContext.getUniformGenerator();
00477
00478     // Delegate the call to the dedicated command
00479     const stdair::Count_T& oActualTotalNbOfEvents =
00480       DemandManager::generateFirstRequests
      (lQueue, lGenerator,
00481                                           iDemandGenerationMethod);
00482
00483     //
00484     return oActualTotalNbOfEvents;
00485   }
00486
00487   // ////////////////////////////////////////////////////////////////////
00488   stdair::BookingRequestPtr_T TRADEMGEN_Service::
00489   generateNextRequest (const stdair::DemandStreamKeyStr_T&
      iKey,
00490                        const stdair::DemandGenerationMethod&
      iDemandGenerationMethod) const {
00491
00492     // Retrieve the TraDemGen service context
00493     assert (_trademgenServiceContext != NULL);
00494     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
      =
00495       *_trademgenServiceContext;
00496
00497     // Retrieve the StdAir service context
00498     stdair::STDAIR_Service& lSTDAIR_Service =
00499       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00500
00501     // Retrieve the event queue object instance
00502     stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00503
00504     // Retrieve the random generator
00505     stdair::RandomGeneration& lGenerator =
00506       lTRADEMGEN_ServiceContext.getUniformGenerator();
00507
00508     // Delegate the call to the dedicated command
00509     return DemandManager::generateNextRequest
      (lQueue, lGenerator, iKey,
00510                                             iDemandGenerationMethod);
00511   }
00512
00513   // ////////////////////////////////////////////////////////////////////
00514   stdair::ProgressStatusSet TRADEMGEN_Service::
00515   popEvent (stdair::EventStruct& ioEventStruct) const {
00516
00517     // Retrieve the TraDemGen service context
00518     assert (_trademgenServiceContext != NULL);
00519     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
      =
00520       *_trademgenServiceContext;
00521
00522     // Retrieve the StdAir service context
00523     stdair::STDAIR_Service& lSTDAIR_Service =
00524       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00525
00526     // Retrieve the event queue object instance
00527     stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00528
00529     // Extract the next event from the queue
00530     return lQueue.popEvent (ioEventStruct);
00531   }
00532
00533   // ////////////////////////////////////////////////////////////////////
00534   bool TRADEMGEN_Service::isQueueDone() const {
00535
00536     // Retrieve the TraDemGen service context
00537     assert (_trademgenServiceContext != NULL);
00538     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
      =
00539       *_trademgenServiceContext;
00540
00541     // Retrieve the StdAir service context
00542     stdair::STDAIR_Service& lSTDAIR_Service =
00543       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00544
00545     // Retrieve the event queue object instance
00546     const stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00547
```

```
00548     // Calculates whether the event queue has been fully emptied
00549     const bool isQueueDone = lQueue.isQueueDone();
00550
00551     //
00552     return isQueueDone;
00553   }
00554
00555   // ////////////////////////////////////////////////////////////////////
00556   bool TRADEMGEN_Service::
00557   generateCancellation (const
      stdair::TravelSolutionStruct& iTravelSolution,
00558                         const stdair::PartySize_T& iPartySize,
00559                         const stdair::DateTime_T& iRequestTime,
00560                         const stdair::Date_T& iDepartureDate) const {
00561
00562     // Retrieve the TraDemGen service context
00563     assert (_trademgenServiceContext != NULL);
00564     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
      =
00565       *_trademgenServiceContext;
00566
00567     // Retrieve the random generator
00568     stdair::RandomGeneration& lGenerator =
00569       lTRADEMGEN_ServiceContext.getUniformGenerator();
00570
00571     // Retrieve the StdAir service context
00572     stdair::STDAIR_Service& lSTDAIR_Service =
00573       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00574
00575     // Retrieve the event queue object instance
00576     stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00577
00578     return DemandManager::generateCancellation
      (lQueue, lGenerator,
00579                                                 iTravelSolution, iPartySize,
00580                                                 iRequestTime, iDepartureDate);
00581   }
00582
00583   // ////////////////////////////////////////////////////////////////////
00584   void TRADEMGEN_Service::reset() const {
00585
00586     // Retrieve the TraDemGen service context
00587     assert (_trademgenServiceContext != NULL);
00588     TRADEMGEN_ServiceContext& lTRADEMGEN_ServiceContext
      =
00589       *_trademgenServiceContext;
00590
00591     // Retrieve the StdAir service context
00592     stdair::STDAIR_Service& lSTDAIR_Service =
00593       lTRADEMGEN_ServiceContext.getSTDAIR_Service();
00594     // Retrieve the event queue object instance
00595     stdair::EventQueue& lQueue = lSTDAIR_Service.getEventQueue();
00596
00597     // Retrieve the shared generator
00598     stdair::RandomGeneration& lSharedGenerator =
00599       lTRADEMGEN_ServiceContext.getUniformGenerator();
00600
00601     // Delegate the call to the dedicated command
00602     DemandManager::reset (lQueue, lSharedGenerator.
      getBaseGenerator());
00603   }
00604 }
```

## 23.107 trademgen/service/TRADEMGEN_ServiceContext.cpp File Reference

```
#include <cassert>
#include <sstream>
#include <stdair/STDAIR_Service.hpp>
#include <stdair/basic/BasConst_General.hpp>
#include <trademgen/basic/BasConst_DemandGeneration.hpp>
#include <trademgen/service/TRADEMGEN_ServiceContext.hpp>
```

### Namespaces

- namespace TRADEMGEN

## 23.108 TRADEMGEN_ServiceContext.cpp

```
00001 // //////////////////////////////////////////////////////////////////////
00002 // Import section
00003 // //////////////////////////////////////////////////////////////////////
00004 // STL
00005 #include <cassert>
00006 #include <sstream>
00007 // StdAir
00008 #include <stdair/STDAIR_Service.hpp>
00009 #include <stdair/basic/BasConst_General.hpp>
00010 // TraDemGen
00011 #include <trademgen/basic/BasConst_DemandGeneration.hpp
      >
00012 #include <trademgen/service/TRADEMGEN_ServiceContext.hpp
      >
00013
00014 namespace TRADEMGEN {
00015
00016   // //////////////////////////////////////////////////////////////////////
00017   TRADEMGEN_ServiceContext::TRADEMGEN_ServiceContext ()
00018     : _ownStdairService (false), _uniformGenerator (stdair::DEFAULT_RANDOM_SEED
      ),
00019       _posProbabilityMass (DEFAULT_POS_PROBALILITY_MASS
      ) {
00020   }
00021
00022   // //////////////////////////////////////////////////////////////////////
00023   TRADEMGEN_ServiceContext::
00024   TRADEMGEN_ServiceContext (const TRADEMGEN_ServiceContext& iServiceContext)
00025     : _ownStdairService (false), _uniformGenerator (stdair::DEFAULT_RANDOM_SEED
      ),
00026       _posProbabilityMass (DEFAULT_POS_PROBALILITY_MASS
      ) {
00027   }
00028
00029   // //////////////////////////////////////////////////////////////////////
00030   TRADEMGEN_ServiceContext::
00031   TRADEMGEN_ServiceContext (const stdair::RandomSeed_T& iRandomSeed)
00032     : _ownStdairService (false), _uniformGenerator (iRandomSeed),
00033       _posProbabilityMass (DEFAULT_POS_PROBALILITY_MASS
      ) {
00034   }
00035
00036   // //////////////////////////////////////////////////////////////////////
00037   TRADEMGEN_ServiceContext::~TRADEMGEN_ServiceContext() {
00038   }
00039
00040   // //////////////////////////////////////////////////////////////////////
00041   const std::string TRADEMGEN_ServiceContext::shortDisplay() const {
00042     std::ostringstream oStr;
00043     oStr << "TRADEMGEN_ServiceContext -- Owns StdAir service: "
00044          << _ownStdairService << " -- Generator: " << _uniformGenerator;
00045     return oStr.str();
00046   }
00047
00048   // //////////////////////////////////////////////////////////////////////
00049   const std::string TRADEMGEN_ServiceContext::display() const {
00050     std::ostringstream oStr;
00051     oStr << shortDisplay();
00052     return oStr.str();
00053   }
00054
00055   // //////////////////////////////////////////////////////////////////////
00056   const std::string TRADEMGEN_ServiceContext::describe() const {
00057     return shortDisplay();
00058   }
00059
00060   // //////////////////////////////////////////////////////////////////////
00061   void TRADEMGEN_ServiceContext::reset() {
00062     if (_ownStdairService == true) {
00063       _stdairService.reset();
00064     }
00065   }
00066
00067 }
```

## 23.109 trademgen/service/TRADEMGEN_ServiceContext.hpp File Reference

```
#include <string>
```

```
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_service_types.hpp>
#include <stdair/basic/RandomGeneration.hpp>
#include <stdair/bom/BookingRequestTypes.hpp>
#include <stdair/service/ServiceAbstract.hpp>
#include <trademgen/TRADEMGEN_Types.hpp>
#include <trademgen/basic/DemandCharacteristicsTypes.hpp>
```

### Classes

- class TRADEMGEN::TRADEMGEN_ServiceContext

  *Class holding the context of the Trademgen services.*

### Namespaces

- namespace stdair

  *Forward declarations.*
- namespace TRADEMGEN

## 23.110 TRADEMGEN_ServiceContext.hpp

```
00001 #ifndef __TRADEMGEN_SVC_TRADEMGENSERVICECONTEXT_HPP
00002 #define __TRADEMGEN_SVC_TRADEMGENSERVICECONTEXT_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <string>
00009 // StdAir
00010 #include <stdair/stdair_basic_types.hpp>
00011 #include <stdair/stdair_service_types.hpp>
00012 #include <stdair/basic/RandomGeneration.hpp>
00013 #include <stdair/bom/BookingRequestTypes.hpp>
00014 #include <stdair/service/ServiceAbstract.hpp>
00015 // TraDemGen
00016 #include <trademgen/TRADEMGEN_Types.hpp>
00017 #include <trademgen/basic/DemandCharacteristicsTypes.hpp
      >
00018
00019 // Forward declarations
00020 namespace stdair {
00021   struct DemandCharacteristics;
00022   struct DemandDistribution;
00023 }
00024
00025 namespace TRADEMGEN {
00026
00030   class TRADEMGEN_ServiceContext : public
      stdair::ServiceAbstract {
00036     friend class TRADEMGEN_Service;
00037     friend class FacTRADEMGENServiceContext;
00038
00039   private:
00040     // ///////// Getters //////////
00044     stdair::STDAIR_ServicePtr_T getSTDAIR_ServicePtr() const {
00045       return _stdairService;
00046     }
00047
00051     stdair::STDAIR_Service& getSTDAIR_Service() const {
00052       assert (_stdairService != NULL);
00053       return *_stdairService;
00054     }
00055
00059     const bool getOwnStdairServiceFlag() const {
00060       return _ownStdairService;
00061     }
00062
00066     stdair::RandomGeneration& getUniformGenerator() {
00067       return _uniformGenerator;
00068     }
```

```
00069
00073     const POSProbabilityMass_T& getPOSProbabilityMass()
      const {
00074       return _posProbabilityMass;
00075     }
00076
00077
00078   private:
00079     // ********* Setters **********
00083     void setSTDAIR_Service (stdair::STDAIR_ServicePtr_T ioSTDAIR_ServicePtr,
00084                             const bool iOwnStdairService) {
00085       _stdairService = ioSTDAIR_ServicePtr;
00086       _ownStdairService = iOwnStdairService;
00087     }
00088
00089
00090   private:
00091     // ********* Display Methods **********
00095     const std::string shortDisplay() const;
00096
00100     const std::string display() const;
00101
00105     const std::string describe() const;
00106
00107
00108   private:
00110
00113     TRADEMGEN_ServiceContext (const stdair::RandomSeed_T&);
00117     TRADEMGEN_ServiceContext();
00121     TRADEMGEN_ServiceContext (const TRADEMGEN_ServiceContext&);
00122
00126     ~TRADEMGEN_ServiceContext();
00127
00131     void reset();
00132
00133
00134   private:
00135     // *************** Children ***************
00139     stdair::STDAIR_ServicePtr_T _stdairService;
00140
00144     bool _ownStdairService;
00145
00146
00147   private:
00148     // ************** Attributes ****************
00155     stdair::RandomGeneration _uniformGenerator;
00156
00160     const POSProbabilityMass_T _posProbabilityMass;
00161   };
00162
00163 }
00164 #endif // __TRADEMGEN_SVC_TRADEMGENSERVICECONTEXT_HPP
```

## 23.111 trademgen/TRADEMGEN_Abstract.hpp File Reference

```
#include <istream>
#include <ostream>
#include <sstream>
#include <string>
```

### Classes

- struct TRADEMGEN::TRADEMGEN_Abstract

### Namespaces

- namespace TRADEMGEN

### Functions

- template<class charT , class traits >

std::basic_ostream< charT,
traits > & operator<< (std::basic_ostream< charT, traits > &ioOut, const TRADEMGEN::TRADEMGEN_-Abstract &iStructure)

- template<class charT , class traits >
std::basic_istream< charT,
traits > & operator>> (std::basic_istream< charT, traits > &ioIn, TRADEMGEN::TRADEMGEN_Abstract &ioStucture)

### 23.111.1 Function Documentation

#### 23.111.1.1 template<class charT , class traits > std::basic_ostream<charT, traits>& operator<< ( std::basic_ostream< charT, traits > & *ioOut,* const TRADEMGEN::TRADEMGEN_Abstract & *iStructure* ) [inline]

Piece of code given by Nicolai M. Josuttis, Section 13.12.1 "Implementing Output Operators" (p653) of his book "The C++ Standard Library: A Tutorial and Reference", published by Addison-Wesley.

Definition at line 49 of file TRADEMGEN_Abstract.hpp.

#### 23.111.1.2 template<class charT , class traits > std::basic_istream<charT, traits>& operator>> ( std::basic_istream< charT, traits > & *ioIn,* TRADEMGEN::TRADEMGEN_Abstract & *ioStucture* ) [inline]

Piece of code given by Nicolai M. Josuttis, Section 13.12.1 "Implementing Output Operators" (pp655-657) of his book "The C++ Standard Library: A Tutorial and Reference", published by Addison-Wesley.

Definition at line 77 of file TRADEMGEN_Abstract.hpp.

References TRADEMGEN::TRADEMGEN_Abstract::fromStream().

## 23.112 TRADEMGEN_Abstract.hpp

```
00001 #ifndef __TRADEMGEN_TRADEMGEN_ABSTRACT_HPP
00002 #define __TRADEMGEN_TRADEMGEN_ABSTRACT_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <istream>
00009 #include <ostream>
00010 #include <sstream>
00011 #include <string>
00012
00013 namespace TRADEMGEN {
00014
00016   struct TRADEMGEN_Abstract {
00017   public:
00018     // /////////// Display support methods /////////
00021     virtual void toStream (std::ostream& ioOut) const = 0;
00022
00025     virtual void fromStream (std::istream& ioIn) = 0;
00026
00028     virtual std::string toString() const = 0;
00029
00030
00031   protected:
00033     TRADEMGEN_Abstract () {}
00034     TRADEMGEN_Abstract (const TRADEMGEN_Abstract
      &) {}
00035
00037     virtual ~TRADEMGEN_Abstract() {}
00038   };
00039 }
00040
00046 template <class charT, class traits>
00047 inline
00048 std::basic_ostream<charT, traits>&
00049 operator<< (std::basic_ostream<charT, traits>& ioOut,
00050             const TRADEMGEN::TRADEMGEN_Abstract&
     iStructure) {
00056   std::basic_ostringstream<charT,traits> ostr;
00057   ostr.copyfmt (ioOut);
00058   ostr.width (0);
00059
```

```
00060   // Fill string stream
00061   iStructure.toStream (ostr);
00062
00063   // Print string stream
00064   ioOut << ostr.str();
00065
00066   return ioOut;
00067 }
00068
00074 template <class charT, class traits>
00075 inline
00076 std::basic_istream<charT, traits>&
00077 operator>> (std::basic_istream<charT, traits>& ioIn,
00078             TRADEMGEN::TRADEMGEN_Abstract&
      ioStucture) {
00079   // Fill Bom object with input stream
00080   ioStucture.fromStream (ioIn);
00081   return ioIn;
00082 }
00083
00084 #endif // __TRADEMGEN_TRADEMGEN_ABSTRACT_HPP
```

## 23.113 trademgen/TRADEMGEN_Exceptions.hpp File Reference

```
#include <exception>
#include <stdair/stdair_exceptions.hpp>
```

### Classes

- class TRADEMGEN::TrademgenGenerationException
- class TRADEMGEN::DemandInputFileNotFoundException
- class TRADEMGEN::IndexOutOfRangeException

### Namespaces

- namespace TRADEMGEN

## 23.114 TRADEMGEN_Exceptions.hpp

```
00001 #ifndef __TRADEMGEN_TRADEMGEN_EXCEPTIONS_HPP
00002 #define __TRADEMGEN_TRADEMGEN_EXCEPTIONS_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // STL
00008 #include <exception>
00009 // StdAir
00010 #include <stdair/stdair_exceptions.hpp>
00011
00012 namespace TRADEMGEN {
00013
00014   // ///////// Exceptions //////////
00018   class TrademgenGenerationException : public
      stdair::RootException {
00019   public:
00023     TrademgenGenerationException (const std::string
      & iWhat)
00024       : stdair::RootException (iWhat) {}
00025   };
00026
00030   class DemandInputFileNotFoundException
00031     : public stdair::FileNotFoundException {
00032   public:
00036     DemandInputFileNotFoundException (const
      std::string& iWhat)
00037       : stdair::FileNotFoundException (iWhat) {}
00038   };
00039
00043   class IndexOutOfRangeException : public
      TrademgenGenerationException {
00044   public:
```

```
00048     IndexOutOfRangeException (const std::string& iWhat)
00049       : TrademgenGenerationException (iWhat) {}
00050   };
00051
00052 }
00053 #endif // __TRADEMGEN_TRADEMGEN_EXCEPTIONS_HPP
00054
```

## 23.115 trademgen/TRADEMGEN_Service.hpp File Reference

```
#include <stdair/stdair_basic_types.hpp>
#include <stdair/stdair_demand_types.hpp>
#include <stdair/stdair_maths_types.hpp>
#include <stdair/stdair_service_types.hpp>
#include <stdair/basic/DemandGenerationMethod.hpp>
#include <stdair/bom/BookingRequestTypes.hpp>
#include <stdair/bom/EventTypes.hpp>
```

### Classes

- class TRADEMGEN::TRADEMGEN_Service

  *class holding the services related to Travel Demand Generation.*

### Namespaces

- namespace stdair

  *Forward declarations.*
- namespace TRADEMGEN

## 23.116 TRADEMGEN_Service.hpp

```
00001 #ifndef __TRADEMGEN_TRADEMGEN_SERVICE_HPP
00002 #define __TRADEMGEN_TRADEMGEN_SERVICE_HPP
00003
00004 // //////////////////////////////////////////////////////////////////
00005 // Import section
00006 // //////////////////////////////////////////////////////////////////
00007 // StdAir
00008 #include <stdair/stdair_basic_types.hpp>
00009 #include <stdair/stdair_demand_types.hpp>
00010 #include <stdair/stdair_maths_types.hpp>
00011 #include <stdair/stdair_service_types.hpp>
00012 #include <stdair/basic/DemandGenerationMethod.hpp>
00013 #include <stdair/bom/BookingRequestTypes.hpp>
00014 #include <stdair/bom/EventTypes.hpp>
00015
00016 // Forward declarations
00017 namespace stdair {
00018   class EventQueue;
00019   struct ProgressStatusSet;
00020   struct BasLogParams;
00021   struct BasDBParams;
00022   struct BookingRequestStruct;
00023   struct DemandCharacteristics;
00024   struct DemandDistribution;
00025   struct EventStruct;
00026   struct TravelSolutionStruct;
00027 }
00028
00029 namespace TRADEMGEN {
00030
00032   class TRADEMGEN_ServiceContext;
00033   struct DemandStreamKey;
00034
00038   class TRADEMGEN_Service {
00039   public:
00040     // ////////////////// Constructors and Destructors /////////////////
00057     TRADEMGEN_Service (const stdair::BasLogParams&, const
```

```
      stdair::BasDBParams&,
00058                         const stdair::RandomSeed_T&);
00059
00072     TRADEMGEN_Service (const stdair::BasLogParams&, const
      stdair::RandomSeed_T&);
00073
00090     TRADEMGEN_Service (stdair::STDAIR_ServicePtr_T, const
      stdair::RandomSeed_T&);
00091
00100     void parseAndLoad (const stdair::Filename_T&
      iDemandInputFilename);
00101
00105     ~TRADEMGEN_Service();
00106
00107
00108   public:
00109     // ////////////////// Business support methods /////////////////
00189     void buildSampleBom();
00190
00221     stdair::BookingRequestStruct
00222     buildSampleBookingRequest (const bool isForCRS =
      false);
00223
00227     void displayAirlineListFromDB() const;
00228
00243     const stdair::Count_T& getExpectedTotalNumberOfRequestsToBeGenerated
      () const;
00244
00258     const stdair::Count_T& getActualTotalNumberOfRequestsToBeGenerated
      () const;
00259
00274     const bool
00275     stillHavingRequestsToBeGenerated (const
      stdair::DemandStreamKeyStr_T&,
00276                                       stdair::ProgressStatusSet&,
00277                                       const stdair::DemandGenerationMethod&)
      const;
00278
00291     stdair::Count_T
00292     generateFirstRequests (const
      stdair::DemandGenerationMethod&) const;
00293
00308     stdair::BookingRequestPtr_T
00309     generateNextRequest (const stdair::DemandStreamKeyStr_T&
      ,
00310                          const stdair::DemandGenerationMethod&) const;
00311
00328     stdair::ProgressStatusSet popEvent (stdair::EventStruct&) const;
00329
00335     bool isQueueDone() const;
00336
00340     bool generateCancellation (const
      stdair::TravelSolutionStruct&,
00341                                const stdair::PartySize_T&,
00342                                const stdair::DateTime_T&,
00343                                const stdair::Date_T&) const;
00344
00349     void reset() const;
00350
00351
00352   public:
00353     // ///////////////// Display support methods /////////////////
00361     std::string csvDisplay() const;
00362
00363
00364   private:
00365     // ////////////////// Constructors and Destructors /////////////////
00369     TRADEMGEN_Service();
00370
00374     TRADEMGEN_Service (const TRADEMGEN_Service
      &);
00375
00387     stdair::STDAIR_ServicePtr_T initStdAirService (const stdair::BasLogParams&,
00388                                                    const stdair::BasDBParams&);
00389
00399     stdair::STDAIR_ServicePtr_T initStdAirService (const stdair::BasLogParams&)
      ;
00400
00409     void addStdAirService (stdair::STDAIR_ServicePtr_T ioSTDAIR_ServicePtr,
00410                            const bool iOwnStdairService);
00411
00418     void initServiceContext (const stdair::RandomSeed_T&);
00419
00426     void initTrademgenService();
00427
00431     void finalise();
00432
```

```
00433
00434   private:
00435     // ********* Service Context *********
00439     TRADEMGEN_ServiceContext* _trademgenServiceContext;
00440   };
00441
00442 }
00443 #endif // __TRADEMGEN_TRADEMGEN_SERVICE_HPP
```

## 23.117 trademgen/TRADEMGEN_Types.hpp File Reference

```
#include <boost/shared_ptr.hpp>
#include <trademgen/TRADEMGEN_Exceptions.hpp>
```

### Namespaces

- namespace TRADEMGEN

### Typedefs

- typedef boost::shared_ptr
  < TRADEMGEN_Service > TRADEMGEN::TRADEMGEN_ServicePtr_T

## 23.118 TRADEMGEN_Types.hpp

```
00001 #ifndef __TRADEMGEN_TRADEMGEN_TYPES_HPP
00002 #define __TRADEMGEN_TRADEMGEN_TYPES_HPP
00003
00004 // ////////////////////////////////////////////////////////////////////
00005 // Import section
00006 // ////////////////////////////////////////////////////////////////////
00007 // Boost
00008 #include <boost/shared_ptr.hpp>
00009 // TraDemGen
00010 #include <trademgen/TRADEMGEN_Exceptions.hpp>
00011
00012 namespace TRADEMGEN {
00013
00014   // Forward declarations
00015   class TRADEMGEN_Service;
00016
00017
00018   // ******** Type definitions specific to DSim *********
00022   typedef boost::shared_ptr<TRADEMGEN_Service> TRADEMGEN_ServicePtr_T
      ;
00023
00024 }
00025 #endif // __TRADEMGEN_TRADEMGEN_TYPES_HPP
00026
```

## 23.119 trademgen/ui/qt/trademgen/main.cpp File Reference

```
#include <QtGui/QApplication>
#include "trademgen.h"
```

### Functions

- int main (int argc, char **argv)

#### 23.119.1 Function Documentation

##### 23.119.1.1 int main ( int *argc*, char ** *argv* )

Definition at line 5 of file main.cpp.

## 23.120 main.cpp

```
00001 #include <QtGui/QApplication>
00002 #include "trademgen.h"
00003
00004
00005 int main(int argc, char** argv)
00006 {
00007     QApplication app(argc, argv);
00008     trademgen foo;
00009     foo.show();
00010     return app.exec();
00011 }
```

# Index