TempusV2

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Contents

Chapter 1

TempusV2 API

TempusV2 is a framework which offers generic graph manipulation abilities in order to develop multimodal path planning requests.

It is designed around a core, whose documentation is detailed here. Main classes processed by TempusV2 are:

- Tempus::Road::Graph representing the road graph
- Tempus::PublicTransport::Graph representing a public transport graph
- Tempus::POI representing points of interest on the road graph
- Tempus::Multimodal::Graph which is a wrapper around a road graph, public transport graphs and POIs

These graphs are filled up with data coming from a database. Please refer to the -Db namespace to see available functions. Especially have a look at the Tempus::PQImporter class.

Path planning algorithms are designed to be written as user plugins. The Plugin base class gives access to some callbacks. Please have a look at the three different sample plugins shipped with TempusV2: Tempus::RoadPlugin, Tempus::PtPlugin and Tempus::MultiPlugin.

The internal API is exposed to other programs and languages through a WPS server. Have a look at the WPS::Service class and at its derived classes.

Chapter 2

Namespace Index

2.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

Chapter 3

Class Index

3.1 Class Hierarchy

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

Chapter 4

Class Index

4.1 Class List

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

Chapter 5

Namespace Documentation

5.1 Db Namespace Reference

Classes

- class Value
- class RowValue
- class Result
- class Connection

Functions

- template<>
  std::string **Value::as**< **std::string** > ()
- template<>
  Tempus::Time **Value::as**< **Tempus::Time** > ()

5.1.1 Detailed Description

Database access is modeled by means of the following classes, inspired by pqxx: A Db::Connection objet represents a connection to a database. It is a lightweighted objet that is reference-counted and thus can be copied safely. A Db::Result objet represents result of a query. It is a lightweighted objet that is reference-counted and thus can be copied safely. A Db::RowValue object represents a row of a result and is obtained by Db::Result::operator[] A Db::Value object represent a basic value. It is obtained by Db::RowValue::operator[]. It has templated conversion operators for common data types.

These classes throw std::runtime_error on problem.

5.2 Tempus Namespace Reference

Namespaces

- namespace Multimodal
- namespace PublicTransport
- namespace Road

Classes

- class Application
- struct ConsistentClass
- struct Base
- struct Time
- struct RoadType
- struct Point2D
- struct TransportType
- class ProgressionCallback
- struct TextProgression
- struct vertex_or_edge
- struct vertex_or_edge< G, boost::vertex_property_tag >
- struct vertex_or_edge< G, boost::edge_property_tag >
- struct FieldPropertyAccessor
- struct FunctionPropertyAccessor
- class PQImporter
- class Plugin
- class PluginGraphVisitorHelper
- class Request
- struct POI
- class Roadmap
- class MultiPlugin
- class LengthCalculator
- class PtPlugin
- class RoadPlugin
- class TestPlugin

Typedefs

- typedef unsigned long long int db_id_t
- typedef boost::gregorian::date Date
- typedef boost::posix_time::ptime DateTime
- typedef std::map< db_id_t, RoadType > RoadTypes
- typedef std::map< db_id_t, TransportType > TransportTypes
- typedef std::map< int, double > Costs
- typedef PluginGraphVisitorHelper < Road::Graph,&Plugin::road_vertex_accessor,&Plugin::road_edge_accessor > **PluginRoadGraphVisitor**
- typedef PluginGraphVisitorHelper < PublicTransport::Graph,&Plugin::pt_vertex_accessor,&Plugin::pt_edge_accessor > **PluginPtGraphVisitor**

- typedef PluginGraphVisitorHelper < Multimodal::Graph,&Plugin::vertex_accessor,&Plugin::edge_accessor > **PluginGraphVisitor**
- typedef std::list< Roadmap > Result

Enumerations

- enum CostId { **CostDistance** = 1, **CostDuration**, **CostPrice**, **CostCarbon**, × **CostCalories**, **CostNumberOfChanges**, **CostVariability** }

Functions

- std::string **cost_name** (int cost)
- std::string **cost_unit** (int cost)
- Point2D coordinates (const Road::Vertex &v, Db::Connection &db, const Road::Graph &graph)
- Point2D coordinates (const PublicTransport::Vertex &v, Db::Connection &db, const PublicTransport::Graph &graph)
- Point2D coordinates (const POI *poi, Db::Connection &db)
- Point2D coordinates (const Multimodal::Vertex &v, Db::Connection &db, const Multimodal::Graph &graph)
- ostream & **operator**<< (ostream &out, const Multimodal::Vertex &v)
- ostream & **operator**<< (ostream &out, const Multimodal::Edge &e)
- std::ostream & **operator**<< (std::ostream &ostr, const Multimodal::VertexIterator &it)
- std::ostream & **operator**<< (std::ostream &ostr, const Multimodal::OutEdgeIterator &it)
- std::ostream & **operator**<< (std::ostream &ostr, const Multimodal::EdgeIterator &it)
- std::ostream & **operator**<< (std::ostream &out, const Multimodal::Vertex &v)
- std::ostream & **operator**<< (std::ostream &out, const Multimodal::Edge &v)
- template<class G >
  boost::graph_traits< G > ::vertex_descriptor vertex_from_id (Tempus::db_id_t db_id, G &graph)
- template<class G >
  boost::graph_traits< G > ::edge_descriptor edge_from_id (Tempus::db_id_t db_id, G &graph)
- template<class G >
  bool vertex_exists (typename boost::graph_traits< G >::vertex_descriptor v, G &graph)
- template<class G >
  bool edge_exists (typename boost::graph_traits< G >::edge_descriptor v, G &graph)
- **DECLARE_TEMPUS_PLUGIN** (MultiPlugin)
- **DECLARE_TEMPUS_PLUGIN** (PtPlugin)
- **DECLARE_TEMPUS_PLUGIN** (RoadPlugin)

Variables

- ProgressionCallback null_progression_callback

5.2.1 Detailed Description

Tempus PostgreSQL importer.

TestPlugin used for unit tests

5.2.2 Typedef Documentation

5.2.2.1 typedef std::map<int, double> Tempus::Costs

Type used to model costs. Either in a Step or as an optimizing criterion. This is a map to a double value and thus is user extensible.

5.2.2.2 typedef boost::gregorian::date Tempus::Date

Date type : dd/mm/yyyy

5.2.2.3 typedef boost::posix_time::ptime Tempus::DateTime

DateTime stores a date and a time

5.2.2.4 typedef unsigned long long int Tempus::db_id_t

Type used inside the DB to store IDs. O means NULL.

5.2.2.5 typedef std::list<Roadmap> Tempus::Result

A Result is a list of Roadmap, ordered by relevance towards optimizing criteria

5.2.2.6 typedef std::map<db_id_t, RoadType> Tempus::RoadTypes

Road types constants.

5.2.2.7 typedef std::map<db_id_t, TransportType> Tempus::TransportTypes

Transport types constants.

5.2.3 Enumeration Type Documentation

5.2.3.1 enum Tempus::CostId

Default common cost identifiers

5.2.4 Function Documentation

5.2.4.1 Point2D Tempus::coordinates (const Road::Vertex & *v,* Db::Connection & *db,* const Road::Graph & *graph*)

Get 2D coordinates of a road vertex, from the database

5.2.4.2 Point2D Tempus::coordinates (const PublicTransport::Vertex & *v,* Db::Connection & *db,* const PublicTransport::Graph & *graph*)

Get 2D coordinates of a public transport vertex, from the database

5.2.4.3 Point2D Tempus::coordinates (const POI * *poi,* Db::Connection & *db*)

Get 2D coordinates of a POI, from the database

5.2.4.4 Point2D Tempus::coordinates (const Multimodal::Vertex & *v,* Db::Connection & *db,* const Multimodal::Graph & *graph*)

Get 2D coordinates of a multimodal vertex, from the database

5.2.4.5 template<class G > bool Tempus::edge_exists (typename boost::graph_traits< G >::edge_descriptor *v,* G & *graph*)

Tests if an edge exists. Works for Road::Edge, PublicTransport::Edge and Multimodal::Edge

5.2.4.6 template<class G > boost::graph_traits<G>::edge_descriptor Tempus::edge_from_id (Tempus::db_id_t *db_id,* G & *graph*)

Get an edge descriptor from its database's id. This is templated in a way that it is compliant with Road::Edge A PublicTransport::Edge has no unique id associated.

5.2.4.7 template<class G > bool Tempus::vertex_exists (typename boost::graph_traits< G >::vertex_descriptor *v,* G & *graph*)

Tests if a vertex exists. Works for Road::Vertex, PublicTransport::Vertex and Multimodal::Vertex

5.2.4.8 template<class G > boost::graph_traits<G>::vertex_descriptor Tempus::vertex_from_id (Tempus::db_id_t *db_id*, G & *graph*)

Get a vertex descriptor from its database's id. This is templated in a way that it is compliant with Road::Vertex, PublicTransport::Vertex

5.2.5 Variable Documentation

5.2.5.1 ProgressionCallback Tempus::null_progression_callback

The default (null) progression callback that does nothing

5.3 Tempus::Multimodal Namespace Reference

Classes

- struct Vertex
- struct Edge
- struct Graph
- class VertexIterator
- class OutEdgeIterator
- class EdgeIterator
- class VertexIndexProperty

Functions

- VertexIndexProperty get (boost::vertex_index_t, const Multimodal::Graph &graph)
- size_t **get** (const VertexIndexProperty &p, const Multimodal::Vertex &v)
- size_t num_vertices (const Graph &graph)
- size_t num_edges (const Graph &graph)
- Vertex & source (Edge &e, const Graph &graph)
- Vertex & target (Edge &e, const Graph &graph)
- pair< VertexIterator, VertexIterator > vertices (const Graph &graph)
- pair< EdgeIterator, EdgeIterator > edges (const Graph &graph)
- pair< OutEdgeIterator, OutEdgeIterator > out_edges (const Vertex &v, const Graph &graph)
- size_t **out_degree** (Vertex &v, const Graph &graph)
- std::pair< Edge, bool > edge (const Vertex &u, const Vertex &v, const Graph &graph)
- std::pair< Road::Edge, bool > road_edge (const Multimodal::Edge &e)
- std::pair < PublicTransport::Edge, bool > public_transport_edge (const Multimodal::Edge &e)

5.3.1 Detailed Description

Multimodal namespace

A Multimodal::Graph is a Road::Graph, a list of PublicTransport::Graph and a list of POIs

5.3.2 Function Documentation

5.3.2.1 std::pair< Edge, bool > Tempus::Multimodal::edge (const Vertex & *u*, const Vertex & *v*, const Graph & *graph*)

Find an edge, based on a source and target vertex. It does not implements Adjacency-Matrix, since it does not returns in constant time (linear in the number of edges)

5.3.2.2 std::pair< EdgeIterator, EdgeIterator > Tempus::Multimodal::edges (const Graph & *graph*)

Returns a range of EdgeIterator. Constant time

5.3.2.3 VertexIndexProperty Tempus::Multimodal::get (boost::vertex_index_t , const Multimodal::Graph & *graph*)

Overloading of get()

5.3.2.4 size_t Tempus::Multimodal::num_edges (const Graph & *graph*)

Number of edges. Constant time

5.3.2.5 size_t Tempus::Multimodal::num_vertices (const Graph & *graph*)

Number of vertices. Constant time

5.3.2.6 std::pair< OutEdgeIterator, OutEdgeIterator > Tempus::-Multimodal::out_edges (const Vertex & *v*, const Graph & *graph*)

Returns a range of EdgeIterator that allows to iterate on out edges of a vertex. Constant time

5.3.2.7 std::pair< PublicTransport::Edge, bool > Tempus::-Multimodal::public_transport_edge (const Multimodal::Edge & *e*)

Get the public transport edge if the given edge is a Transport2Transport else, return false

5.3.2.8 std::pair< Road::Edge, bool > Tempus::Multimodal::road_edge (const Multimodal::Edge & *e*)

Get the road edge if the given edge is a Road2Road else, return false

5.3.2.9 Vertex & Tempus::Multimodal::source (Edge & *e*, const Graph & *graph*)

Returns source vertex from an edge. Constant time (linear in number of PT networks)

5.3.2.10 Vertex & Tempus::Multimodal::target (Edge & *e*, const Graph & *graph*)

Returns source vertex from an edge. Constant time (linear in number of PT networks)

5.3.2.11 std::pair< VertexIterator, VertexIterator > Tempus::Multimodal::vertices (const Graph & *graph*)

Returns a range of VertexIterator. Constant time

5.4 Tempus::PublicTransport Namespace Reference

Classes

- struct Network
- struct Stop
- struct Section
- struct Calendar
- struct Trip
- struct Route
- struct FareRule
- struct FareAttribute
- struct Transfer

Typedefs

- typedef boost::vecS VertexListType
- typedef boost::vecS **EdgeListType**
- typedef boost::mpl::if_ < boost::detail::is_random_access < VertexListType >-::type, size_t, void * >::type Vertex
- typedef boost::detail::edge_desc_impl < boost::directed_tag, Vertex > Edge
  see adjacency_list.hpp
- typedef boost::adjacency_list < VertexListType, EdgeListType, boost::directedS, Stop, Section > Graph
- typedef boost::graph_traits < Graph >::vertex_iterator **VertexIterator**
- typedef boost::graph_traits < Graph >::edge_iterator **EdgeIterator**
- typedef boost::graph_traits < Graph >::out_edge_iterator **OutEdgeIterator**

5.4.1 Detailed Description

A PublicTransport::Graph is a made of PublicTransport::Stop and PublicTransport::-Section

It generally maps to the database's schema: one class exists for each table. Tables with 1<->N arity are represented by STL containers (vectors or lists) External keys are represented by pointers to other classes or by vertex/edge descriptors.

PublicTransport::Stop and PublicTransport::Section classes are used to build a BGL public transport graph.

5.4.2 Typedef Documentation

5.4.2.1 typedef boost::adjacency_list<VertexListType, EdgeListType, boost::directedS, Stop, Section> Tempus::PublicTransport::Graph

Definition of a public transport graph

5.4.2.2 typedef boost::mpl::if_<boost::detail::is_random_access<VertexListType>::type, size_t, void*>::type Tempus::PublicTransport::Vertex

To make a long line short: VertexDescriptor is either typedef'd to size_t or to a pointer, depending on VertexListType and EdgeListType used to represent lists of vertices (vec-S, listS, etc.)

5.4.2.3 typedef boost::vecS Tempus::PublicTransport::VertexListType

storage types used to make a road graph

5.5 Tempus::Road Namespace Reference

Classes

- struct Node
- struct Section
- struct Road

Typedefs

- typedef boost::vecS VertexListType
- typedef boost::vecS **EdgeListType**
- typedef boost::mpl::if_ < boost::detail::is_random_access < VertexListType >-::type, size_t, void * >::type Vertex
- typedef boost::detail::edge_desc_impl < boost::undirected_tag, Vertex > Edge

see adjacency_list.hpp

- typedef boost::adjacency_list < VertexListType, EdgeListType, boost::undirectedS, Node, Section > Graph
- typedef boost::graph_traits < Graph >::vertex_iterator **VertexIterator**
- typedef boost::graph_traits < Graph >::edge_iterator **EdgeIterator**
- typedef boost::graph_traits < Graph >::out_edge_iterator **OutEdgeIterator**

5.5.1 Detailed Description

A Road::Graph is made of Road::Node and Road::Section

It generally maps to the database's schema: one class exists for each table. Tables with 1<->N arity are represented by STL containers (vectors or lists) External keys are represented by reference to other classes or by vertex/edge descriptors

Road::Node and Road::Section classes are used to build a BGL road graph as "bundled" edge and vertex properties

5.5.2 Typedef Documentation

5.5.2.1 typedef boost::adjacency_list<VertexListType, EdgeListType, boost::undirectedS, Node, Section > Tempus::Road::Graph

The final road graph type

5.5.2.2 typedef boost::mpl::if_<boost::detail::is_random_access<VertexListType>::type, size_t, void*>::type Tempus::Road::Vertex

To make a long line short: VertexDescriptor is either typedef'd to size_t or to a pointer, depending on VertexListType and EdgeListType used to represent lists of vertices (vecS, listS, etc.)

5.5.2.3 typedef boost::vecS Tempus::Road::VertexListType

Storage types used to make a road graph

5.6 WPS Namespace Reference

Classes

- class StateService
- class ConnectService
- class PreBuildService
- class BuildService
- class PluginListService

- class ConstantListService
- class PluginService
- class GetOptionsDescService
- class GetMetricsService
- class GetOptionsService
- class SetOptionsService
- class PreProcessService
- class ProcessService
- class ResultService
- class CleanupService
- class Request
- class Service

Functions

- void **ensure_minimum_state** (int state)
- void **get_xml_point** (xmlNode *node, double &x, double &y)
- Tempus::db_id_t **road_vertex_id_from_coordinates** (Db::Connection &db, double x, double y)

Variables

- static StateService **state_service_**
- static GetMetricsService **get_metrics_service**
- static GetOptionsService **get_options_service**
- static GetOptionsDescService **get_option_desc_service**
- static SetOptionsService **set_option_service**
- static ConnectService **connect_service_**
- static PluginListService **plugin_list_service**
- static PreBuildService **pre_build_service_**
- static BuildService **build_service_**
- static PreProcessService **pre_process_service_**
- static ProcessService **process_service_**
- static ResultService **result_service_**
- static CleanupService **cleanup_service_**
- static ConstantListService **constant_list_service**

5.6.1 Detailed Description

A WPS Service is a generic process callable through the 'Execute' WPS operation.

5.7 wps_client Namespace Reference

Classes

- class HttpCgiConnection
- class WPSClient

Functions

- def **to_xml_indent**
- def **to_xml**
- def **get_wps_exception**

5.7.1 Detailed Description

```
WPS client classes.
Shared by the command line tests and by the QGis plugin
```

Chapter 6

Class Documentation

6.1 Tempus::Application Class Reference

`#include <application.hh>`

Public Types

- enum State { Started = 0, Connected, GraphPreBuilt, GraphBuilt }

Public Member Functions

- void state (State state)
- State **state** () const
- void connect (const std::string &db_options)
- const std::string & **db_options** () const
- Plugin * load_plugin (const std::string &name)
- void **unload_plugin** (Plugin *plugin)
- void pre_build_graph ()
- void build_graph ()
- Multimodal::Graph & graph ()

Static Public Member Functions

- static Application * instance ()

Protected Attributes

- Db::Connection **db_**
- std::string **db_options_**
- Multimodal::Graph **graph_**
- State **state_**

Related Functions

(Note that these are not member functions.)

- Db::Connection & db_connection ()

6.1.1 Detailed Description

Class used to represent the global state of the current application

6.1.2 Member Enumeration Documentation

6.1.2.1 enum Tempus::Application::State

Used to represent the application state

Enumerator:

Started The application has just been (re)started

Connected The application is connected to a database

GraphPreBuilt Graph has been pre built

GraphBuilt Graph has been built

6.1.3 Member Function Documentation

6.1.3.1 void Tempus::Application::build_graph ( )

Build the graph in memory (import from the database and wake up plugins)

6.1.3.2 void Tempus::Application::connect (const std::string & *db_options*)

Connect to the database

Parameters

in	*db_options*	string giving options for database connection (e.g. dbname="" user="", etc.)

6.1.3.3 Multimodal::Graph& Tempus::Application::graph ( ) [inline]

Graph accessor (non const)

6.1.3.4 Application * Tempus::Application::instance ( ) [static]

Access to the singleton instance

6.1.3.5 Plugin * Tempus::Application::load_plugin (const std::string & *name*)

Plugin loading

Parameters

in	*name*	Name of the plugin to load

6.1.3.6 void Tempus::Application::pre_build_graph ( )

Method to call to pre build the graph in memory

6.1.3.7 void Tempus::Application::state (State *state*) [inline]

State accessors

6.1.4 Friends And Related Function Documentation

6.1.4.1 Db::Connection& db_connection ( ) [related]

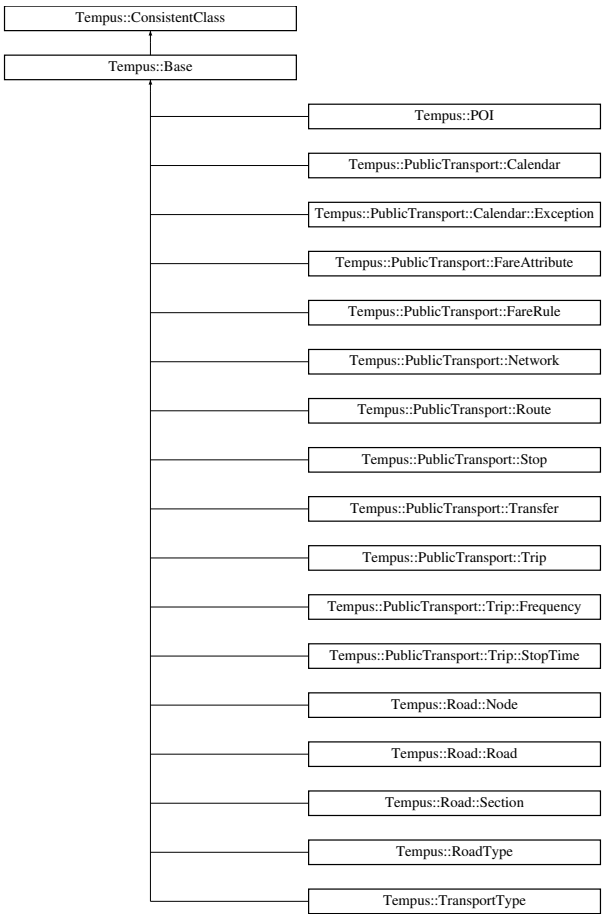
Database connection accessors.

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

- core/application.hh
- core/application.cc

6.2 Tempus::Base Struct Reference

Inheritance diagram for Tempus::Base:



Public Attributes

- db_id_t db_id

6.2.1 Member Data Documentation

6.2.1.1 db_id_t Tempus::Base::db_id

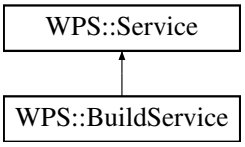
Persistant ID relative to the storage database. Common to many classes.

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

- core/common.hh

6.3 WPS::BuildService Class Reference

Inheritance diagram for WPS::BuildService:



Public Member Functions

- Service::ParameterMap & **execute** (Service::ParameterMap &input_parameter_map)

6.3.1 Detailed Description

"build" service, invokes build_graph()

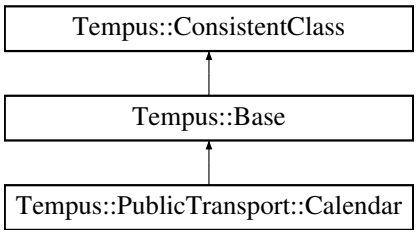
The documentation for this class was generated from the following file:

- wps/tempus_services.cc

6.4 Tempus::PublicTransport::Calendar Struct Reference

`#include <public_transport_graph.hh>`

Inheritance diagram for Tempus::PublicTransport::Calendar:



Classes

- struct Exception

Public Attributes

- bool **monday**

- bool **tuesday**
- bool **wednesday**
- bool **thursday**
- bool **friday**
- bool **saturday**
- bool **sunday**
- Date **start_date**
- Date **end_date**
- std::vector< Exception > **service_exceptions**

6.4.1 Detailed Description

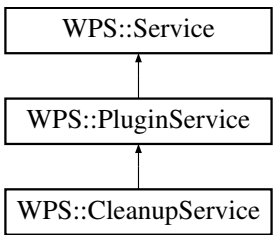
Refers to the 'pt_calendar' table

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

- core/public_transport_graph.hh

6.5 WPS::CleanupService Class Reference

Inheritance diagram for WPS::CleanupService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.5.1 Detailed Description

"cleanup" service, invokes cleanup() on a plugin

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

- wps/tempus_services.cc

6.6 Db::Connection Class Reference

`#include <db.hh>`

Public Member Functions

- **Connection** (const std::string &db_options)
- void **connect** (const std::string &db_options)
- **Connection** (const Connection &r)
- Connection & **operator=** (const Connection &r)
- Result exec (const std::string &query) throw (std::runtime_error)

Protected Member Functions

- void **dec_refs** () const
- void **inc_refs** () const

Protected Attributes

- PGconn * **conn_**
- int **nrefs_**

6.6.1 Detailed Description

Class representing connection to a database.

6.6.2 Member Function Documentation

6.6.2.1 Result Db::Connection::exec (const std::string & *query*) throw (std::runtime_error) [inline]

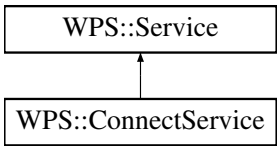
Query execution. Returns a Db::Result. Throws a std::runtime_error on problem

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

- core/db.hh

6.7 WPS::ConnectService Class Reference

Inheritance diagram for WPS::ConnectService:



Public Member Functions

- Service::ParameterMap & **execute** (Service::ParameterMap &input_parameter_map)

6.7.1 Detailed Description

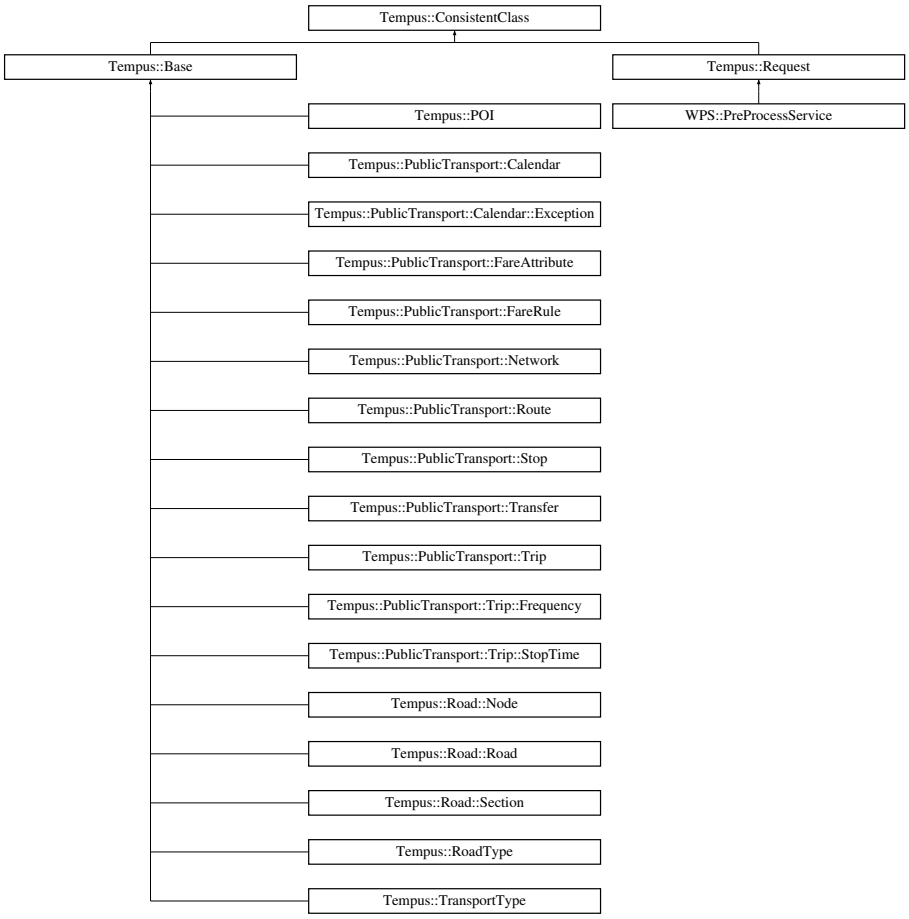
"connect" service. Input var: db_options, the options used to connect to the database to consider

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

- wps/tempus_services.cc

6.8 Tempus::ConsistentClass Struct Reference

Inheritance diagram for Tempus::ConsistentClass:



Public Member Functions

- bool check_consistency ()

Protected Member Functions

- virtual bool check_consistency_ ()

6.8.1 Member Function Documentation

6.8.1.1 bool Tempus::ConsistentClass::check_consistency ( ) [inline]

Consistency checking. When on debug mode, calls the virtual check() method. When the debug mode is disabled, it does nothing.

6.8.1.2 virtual bool Tempus::ConsistentClass::check_consistency_ ( )

```
[inline, protected, virtual]
```

Private method to override in derived classes. Does nothing by default.

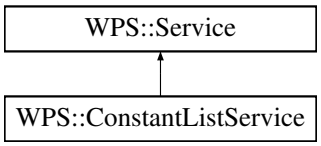
Reimplemented in Tempus::PublicTransport::Transfer, Tempus::PublicTransport::FareAttribute, Tempus::PublicTransport::Route, Tempus::PublicTransport::Trip, Tempus::TransportType, and Tempus::Request.

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

- core/common.hh

6.9 WPS::ConstantListService Class Reference

Inheritance diagram for WPS::ConstantListService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.9.1 Detailed Description

"constant_list" service, outputs list of constants contained in the database (road type, transport type, transport networks).

Output var: road_types. Output var: transport_types. Output var: transport_networks.

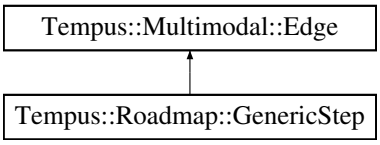
The documentation for this class was generated from the following file:

- wps/tempus_services.cc

6.10 Tempus::Multimodal::Edge Struct Reference

```
#include <multimodal_graph.hh>
```

Inheritance diagram for Tempus::Multimodal::Edge:



Public Types

- enum **ConnectionType** { **UnknownConnection**, **Road2Road**, **Road2Transport**, **Transport2Road**, **Transport2Transport**, **Road2Poi**, **Poi2Road** }

Public Member Functions

- ConnectionType connection_type () const
- **Edge** (Multimodal::Vertex s, Multimodal::Vertex t)
- bool **operator==** (const Multimodal::Edge &e) const
- bool **operator!=** (const Multimodal::Edge &e) const
- bool **operator**< (const Multimodal::Edge &e) const

Public Attributes

- Multimodal::Vertex source
- Multimodal::Vertex target

6.10.1 Detailed Description

A multimodal edge is a pair of multimodal vertices

6.10.2 Member Function Documentation

6.10.2.1 Edge::ConnectionType Tempus::Multimodal::Edge::connection_type ( ) const

Get the connection type of the edge

6.10.3 Member Data Documentation

6.10.3.1 Multimodal::Vertex Tempus::Multimodal::Edge::source

The source vertex

6.10.3.2 Multimodal::Vertex Tempus::Multimodal::Edge::target

The target vertex

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

- core/multimodal_graph.hh
- core/multimodal_graph.cc

6.11 Tempus::Multimodal::EdgeIterator Class Reference

`#include <multimodal_graph.hh>`

Public Member Functions

- **EdgeIterator** (const Multimodal::Graph &graph)
- void **to_end** ()
- Multimodal::Edge & **dereference** () const
- void **increment** ()
- bool **equal** (const EdgeIterator &v) const

Protected Attributes

- const Multimodal::Graph * graph_
- Multimodal::VertexIterator vi_
- Multimodal::VertexIterator **vi_end_**
- Multimodal::OutEdgeIterator ei_
- Multimodal::OutEdgeIterator **ei_end_**

Friends

- std::ostream & **Tempus::operator**<< (std::ostream &ostr, const EdgeIterator &it)

6.11.1 Detailed Description

Class that implements the edge iterator concept of a Multimodal::Graph

It is a wrapper around a VertexIterator and an OutEdgeIterator. Basically, iterating over edges is done by a double for loop that iterates over each out edges of each vertex

6.11.2 Member Data Documentation

6.11.2.1 Multimodal::OutEdgeIterator Tempus::Multimodal::EdgeIterator::ei_ [protected]

A pair of OutEdgeIterator

6.11.2.2 const Multimodal::Graph* Tempus::Multimodal::EdgeIterator::graph_ [protected]

The underlying graph

6.11.2.3 Multimodal::VertexIterator Tempus::Multimodal::EdgeIterator::vi_ [protected]

A pair of VertexIterator

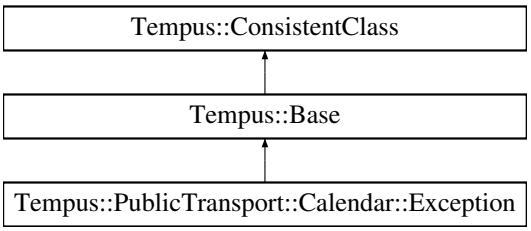
The documentation for this class was generated from the following files:

- core/multimodal_graph.hh
- core/multimodal_graph.cc

6.12 Tempus::PublicTransport::Calendar::Exception Struct Reference

`#include <public_transport_graph.hh>`

Inheritance diagram for Tempus::PublicTransport::Calendar::Exception:



Public Types

- enum **ExceptionType** { **ServiceAdded** = 1, **ServiceRemoved** }

Public Attributes

- Date **calendar_date**

- ExceptionType **exception_type**

6.12.1 Detailed Description

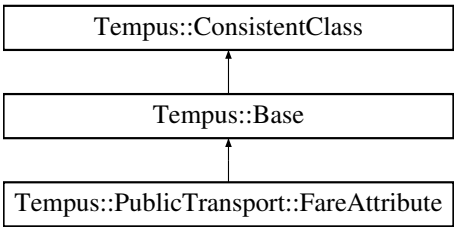
Refers to the 'pt_calendar_date' table. It represents exceptions to the regular service

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

- core/public_transport_graph.hh

6.13 Tempus::PublicTransport::FareAttribute Struct Reference

Inheritance diagram for Tempus::PublicTransport::FareAttribute:



Public Types

- enum **TransferType** { **NoTransferAllowed** = 0, **OneTransferAllowed**, **TwoTransfersAllowed**, **UnlimitedTransfers** = -1 }
- typedef std::vector< FareRule > **FareRulesList**

Public Attributes

- char currency_type [4]

  ISO 4217 codes.
- double **price**
- int **transfers**
- int transfers_duration

  in seconds
- FareRulesList **fare_rules**

Protected Member Functions

- bool check_consistency_ ()
- FareAttribute ()

6.13.1 Constructor & Destructor Documentation

6.13.1.1 Tempus::PublicTransport::FareAttribute::FareAttribute ( ) [inline, protected]

< default value

6.13.2 Member Function Documentation

6.13.2.1 bool Tempus::PublicTransport::FareAttribute::check_consistency_ ( ) [inline, protected, virtual]

Private method to override in derived classes. Does nothing by default.

Reimplemented from Tempus::ConsistentClass.

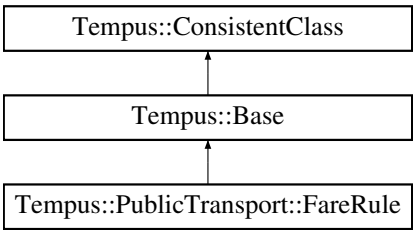
The documentation for this struct was generated from the following file:

- core/public_transport_graph.hh

6.14 Tempus::PublicTransport::FareRule Struct Reference

`#include <public_transport_graph.hh>`

Inheritance diagram for Tempus::PublicTransport::FareRule:



Public Types

- typedef std::vector< int > **ZoneIdList**

Public Attributes

- Route * **route**
- ZoneIdList **origins**
- ZoneIdList **destinations**
- ZoneIdList **contains**

6.14.1 Detailed Description

Refers to the 'pt_fare_rule' table

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

- core/public_transport_graph.hh

6.15 Tempus::FieldPropertyAccessor< Graph, Tag, T, Member > Struct Template Reference

`#include <multimodal_graph.hh>`

Public Member Functions

- **FieldPropertyAccessor** (Graph &graph, Member mem)

Public Attributes

- Graph & **graph_**
- Member **mem_**

6.15.1 Detailed Description

template<class Graph, class Tag, class T, class Member>struct Tempus::FieldPropertyAccessor< Graph, Tag, T, Member >

A FieldPropertyAccessor implements a Readable Property Map concept and gives read access to the member of a vertex or edge

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

- core/multimodal_graph.hh

6.16 sub_map< KT, VT >::FilterPredicate< K, V > Struct Template Reference

Public Member Functions

- **FilterPredicate** (const std::set< K > &selection)
- bool **operator()** (typename std::pair< K, V > p)

Public Attributes

- const std::set< K > * **select_**

template<class KT, class VT>template<class K, class V> struct sub_map< KT, VT >::FilterPredicate< K, V >

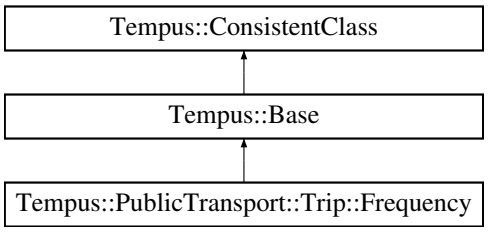
The documentation for this struct was generated from the following file:

- core/sub_map.hh

6.17 Tempus::PublicTransport::Trip::Frequency Struct Reference

`#include <public_transport_graph.hh>`

Inheritance diagram for Tempus::PublicTransport::Trip::Frequency:



Public Attributes

- Time **start_time**
- Time **end_time**
- int **headways_secs**

6.17.1 Detailed Description

Refers to the 'pt_frequency' table

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

- core/public_transport_graph.hh

6.18 Tempus::FunctionPropertyAccessor< Graph, Tag, T, Function > Struct Template Reference

`#include <multimodal_graph.hh>`

Public Member Functions

- **FunctionPropertyAccessor** (Graph &graph, Function fct)

Public Attributes

- Graph & **graph_**
- Function **fct_**

6.18.1 Detailed Description

template<class Graph, class Tag, class T, class Function>struct Tempus::FunctionPropertyAccessor< Graph, Tag, T, Function >

A FunctionPropertyAccessor implements a Readable Property Map concept by means of a function application on a vertex or edge of a graph

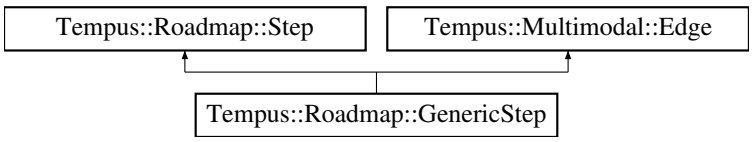
The documentation for this struct was generated from the following file:

- core/multimodal_graph.hh

6.19 Tempus::Roadmap::GenericStep Struct Reference

`#include <roadmap.hh>`

Inheritance diagram for Tempus::Roadmap::GenericStep:



Public Member Functions

- **GenericStep** (const Multimodal::Edge &edge)

6.19.1 Detailed Description

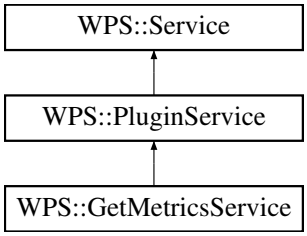
A generic step from a vertex to another Inherits from Step as well as from Multimodal::Edge

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

- core/roadmap.hh

6.20 WPS::GetMetricsService Class Reference

Inheritance diagram for WPS::GetMetricsService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.20.1 Detailed Description

"get_metrics" service, outputs metrics of a plugin.

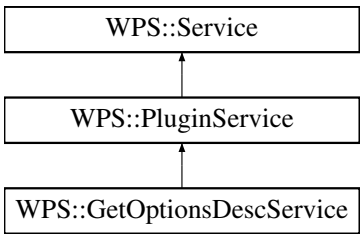
Output var: metrics, list of metrics with their name and value

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

- wps/tempus_services.cc

6.21 WPS::GetOptionsDescService Class Reference

Inheritance diagram for WPS::GetOptionsDescService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.21.1 Detailed Description

"get_option_descriptions" service, get descriptions of a plugin options.

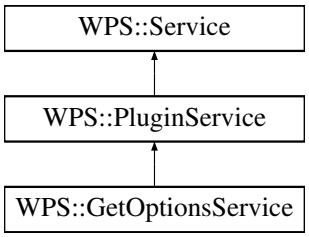
Output var: outputs, lists of option with their name, type and description

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

- wps/tempus_services.cc

6.22 WPS::GetOptionsService Class Reference

Inheritance diagram for WPS::GetOptionsService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.22.1 Detailed Description

"get_options" service, lists values of plugin's options.

Output var: options, list of options with their name and value

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

- wps/tempus_services.cc

6.23 Tempus::Multimodal::Graph Struct Reference

`#include <multimodal_graph.hh>`

Public Types

- typedef std::map< db_id_t, PublicTransport::Network > NetworkMap
- typedef sub_map< db_id_t, PublicTransport::Graph > PublicTransportGraphList

- typedef std::map< db_id_t, POI > PoiList
- typedef std::map< std::string, Tempus::db_id_t > **NameToId**

Public Attributes

- Road::Graph road
- NetworkMap **network_map**
- PublicTransportGraphList **public_transports**
- PoiList **pois**
- RoadTypes road_types
- TransportTypes **transport_types**
- NameToId road_type_from_name
- NameToId transport_type_from_name

6.23.1 Detailed Description

A MultimodalGraph is basically a Road::Graph associated with a list of PublicTransport-::Graph

6.23.2 Member Typedef Documentation

6.23.2.1 typedef std::map<db_id_t, PublicTransport::Network> Tempus::Multimodal::Graph::NetworkMap

Public transport networks

6.23.2.2 typedef std::map<db_id_t, POI> Tempus::Multimodal::Graph::PoiList

Point of interests

6.23.2.3 typedef sub_map<db_id_t, PublicTransport::Graph> Tempus::Multimodal::Graph::PublicTransportGraphList

Public transports graphs network_id -> PublicTransport::Graph This a sub_map that can thus be filtered to select only a subset

6.23.3 Member Data Documentation

6.23.3.1 Road::Graph Tempus::Multimodal::Graph::road

The road graph

6.23.3.2 NameToId Tempus::Multimodal::Graph::road_type_from_name

Associative array that maps a road type name to a road type id

6.23.3.3 RoadTypes Tempus::Multimodal::Graph::road_types

Variables used to store constants.

6.23.3.4 NameToId Tempus::Multimodal::Graph::transport_type_from_name

Associative array that maps a transport type name to a transport type id

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

- core/multimodal_graph.hh

6.24 boost::graph_traits< Tempus::Multimodal::Graph > Struct - Template Reference

`#include <multimodal_graph.hh>`

Public Types

- typedef Tempus::Multimodal::Vertex **vertex_descriptor**
- typedef Tempus::Multimodal::Edge **edge_descriptor**
- typedef Tempus::Multimodal::OutEdgeIterator **out_edge_iterator**
- typedef Tempus::Multimodal::VertexIterator **vertex_iterator**
- typedef Tempus::Multimodal::EdgeIterator **edge_iterator**
- typedef directed_tag **directed_category**
- typedef disallow_parallel_edge_tag **edge_parallel_category**
- typedef incidence_graph_tag **traversal_category**
- typedef size_t **vertices_size_type**
- typedef size_t **edges_size_type**
- typedef size_t **degree_size_type**

Static Public Member Functions

- static vertex_descriptor **null_vertex** ()

6.24.1 Detailed Description

template<>struct boost::graph_traits< Tempus::Multimodal::Graph >

Boost graph traits definition

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

- core/multimodal_graph.hh

6.25 wps_client.HttpCgiConnection Class Reference

Public Member Functions

- def **__init__**
- def **reset**
- def **request**

Public Attributes

- **conn**
- **host**
- **url**

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

- wps/client/wps_client.py

6.26 Tempus::LengthCalculator Class Reference

Public Member Functions

- **LengthCalculator** (Db::Connection &db)
- double **operator()** (PublicTransport::Graph &graph, PublicTransport::Edge &e)

Protected Attributes

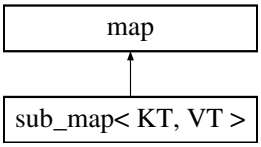
- Db::Connection & **db_**

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

- core/sample_pt_plugin.cc

6.27 map Class Reference

Inheritance diagram for map:

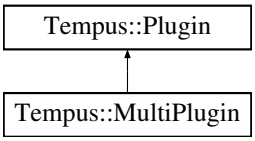


The documentation for this class was generated from the following file:

- core/sub_map.hh

6.28 Tempus::MultiPlugin Class Reference

Inheritance diagram for Tempus::MultiPlugin:



Public Types

- typedef std::list < Multimodal::Vertex > Path

Public Member Functions

- **MultiPlugin** (Db::Connection &db)
- virtual void post_build ()
- virtual void pre_process (Request &request) throw (std::invalid_argument)
- Multimodal::Vertex **vertex_from_road_node_id** (db_id_t id)
- void add_roadmap (const Path &path)
- bool find_path (const Multimodal::Vertex &origin, const Multimodal::Vertex &destination, int optimizing_criterion, Path &path)
- virtual void process ()
- void cleanup ()

6.28.1 Member Typedef Documentation

6.28.1.1 typedef std::list<Multimodal::Vertex> Tempus::MultiPlugin::Path

A path is a list of vertices

6.28.2 Member Function Documentation

6.28.2.1 void Tempus::MultiPlugin::add_roadmap (const Path & *path*) [inline]

Convert a path into a roadmap

6.28.2.2 void Tempus::MultiPlugin::cleanup ( ) [inline, virtual]

Cleanup method.

Reimplemented from Tempus::Plugin.

6.28.2.3 bool Tempus::MultiPlugin::find_path (const Multimodal::Vertex & *origin,* const Multimodal::Vertex & *destination,* int *optimizing_criterion,* Path & *path*) [inline]

Try to find the shortest path between origin and destination, optimizing the passed criterion The given path is not cleared The bool returned is false if no path has been found

6.28.2.4 virtual void Tempus::MultiPlugin::post_build ( ) [inline, virtual]

In the post_build, we pre-compute a table of distances for each edge

Reimplemented from Tempus::Plugin.

6.28.2.5 virtual void Tempus::MultiPlugin::pre_process (Request & *request*) throw (std::invalid_argument) [inline, virtual]

Pre-process the user request.

Parameters

in	*request*	The request to preprocess.

Exceptions

std::invalid_argument	Throws an instance of std::invalid_argument if the request cannot be processed by the current plugin.

Reimplemented from Tempus::Plugin.

6.28.2.6 virtual void Tempus::MultiPlugin::process ( ) [inline, virtual]

The main process

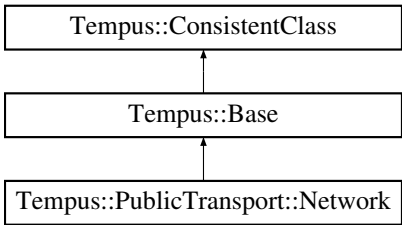
Reimplemented from Tempus::Plugin.

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

- core/sample_multi_plugin.cc

6.29 Tempus::PublicTransport::Network Struct Reference

Inheritance diagram for Tempus::PublicTransport::Network:



Public Attributes

- std::string **name**
- db_id_t provided_transport_types

6.29.1 Member Data Documentation

6.29.1.1 db_id_t Tempus::PublicTransport::Network::provided_transport_types

Transport types provided by this network It is a ORed combination of TransportType IDs (power of two)

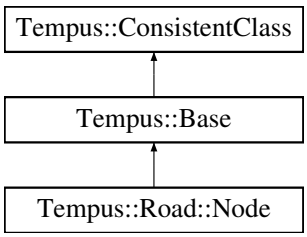
The documentation for this struct was generated from the following file:

- core/public_transport_graph.hh

6.30 Tempus::Road::Node Struct Reference

```
#include <road_graph.hh>
```

Inheritance diagram for Tempus::Road::Node:



Public Attributes

- Vertex vertex
- bool **is_junction**
- bool **is_bifurcation**

6.30.1 Detailed Description

Used as Vertex. Refers to the 'road_node' DB's table

6.30.2 Member Data Documentation

6.30.2.1 Vertex Tempus::Road::Node::vertex

This is a shortcut to the vertex index in the corresponding graph, if any. Needed to speedup access to a graph's vertex from a Node. Can be null

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

- core/road_graph.hh

6.31 Tempus::vertex_or_edge< G, Tag >::null_class Struct Reference

template<class G, class Tag> struct Tempus::vertex_or_edge< G, Tag >::null_class

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

- core/multimodal_graph.hh

6.32 Tempus::Plugin::OptionDescription Struct Reference

```
#include <plugin.hh>
```

Public Attributes

- OptionType **type**
- std::string **description**
- OptionValue **default_value**

6.32.1 Detailed Description

Plugin option description

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

- core/plugin.hh

6.33 Tempus::Plugin::OptionTypeFrom< T > Struct Template - Reference

`#include <plugin.hh>`

Static Public Attributes

- static const OptionType **type**

6.33.1 Detailed Description

template<typename T>struct Tempus::Plugin::OptionTypeFrom< T >

Conversion from a C++ type to an OptionType. (Uses template specialization)

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

- core/plugin.hh

6.34 Tempus::Plugin::OptionTypeFrom< bool > Struct Template Reference

Static Public Attributes

- static const OptionType **type** = Plugin::BoolOption

template<> struct Tempus::Plugin::OptionTypeFrom< bool >

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

- core/plugin.hh

6.35 Tempus::Plugin::OptionTypeFrom< float > Struct Template Reference

Static Public Attributes

- static const OptionType **type** = Plugin::FloatOption

template<> struct Tempus::Plugin::OptionTypeFrom< float >

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

- core/plugin.hh

6.36 Tempus::Plugin::OptionTypeFrom< int > Struct Template - Reference

Static Public Attributes

- static const OptionType **type** = Plugin::IntOption

template<> struct Tempus::Plugin::OptionTypeFrom< int >

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

- core/plugin.hh

6.37 Tempus::Plugin::OptionTypeFrom< std::string > Struct - Template Reference

Static Public Attributes

- static const OptionType **type** = Plugin::StringOption

template<> struct Tempus::Plugin::OptionTypeFrom< std::string >

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

- core/plugin.hh

6.38 Tempus::Multimodal::OutEdgeIterator Class Reference

`#include <multimodal_graph.hh>`

Public Member Functions

- **OutEdgeIterator** (const Multimodal::Graph &graph, Multimodal::Vertex source)
- void **to_end** ()
- Multimodal::Edge & **dereference** () const
- void **increment** ()
- bool **equal** (const OutEdgeIterator &v) const

Protected Attributes

- Multimodal::Vertex source_
- const Multimodal::Graph * graph_
- Multimodal::Edge edge_
- Road::OutEdgeIterator road_it_
- Road::OutEdgeIterator **road_it_end_**
- PublicTransport::OutEdgeIterator pt_it_
- PublicTransport::OutEdgeIterator **pt_it_end_**
- size_t stop2road_connection_
- int poi2road_connection_

Friends

- std::ostream & **Tempus::operator<<** (std::ostream &ostr, const OutEdgeIterator &it)

Related Functions

(Note that these are not member functions.)

- int road2stop_connection_
- int road2poi_connection_

6.38.1 Detailed Description

Class that implements the out edges iterator concept of a Multimodal::Graph

It is a wrapper around:

- a source vertex
- a road edge iterator for road edges
- a public transport edge iterator
- various counters to deal with road <-> transport stops and road <-> poi

Deferencing, incrementation and comparison operators are defined by means of these underlying iterators

6.38.2 Friends And Related Function Documentation

6.38.2.1 int road2poi_connection_ [related]

A counter used to represent position on a Road2Poi connection. A road node can be linked to 0..N POI ()

6.38.2.2 int road2stop_connection_ [related]

A counter used to represent position on a Road2Transport connection. A road node can be linked to 0..N public transport nodes ()

6.38.3 Member Data Documentation

6.38.3.1 Multimodal::Edge Tempus::Multimodal::OutEdgeIterator::edge_ [mutable, protected]

The edge used during the dereferencing operation

6.38.3.2 const Multimodal::Graph* Tempus::Multimodal::OutEdgeIterator::graph_ [protected]

The underlying graph

6.38.3.3 int Tempus::Multimodal::OutEdgeIterator::poi2road_connection_ [protected]

A counter used to represent position on a Poi2Road connection. Indeed, a POI is linked to a road section and thus to 2 road nodes. 0: on the node_from of the associated road section 1: on the node_to 2: out of the connection

6.38.3.4 PublicTransport::OutEdgeIterator Tempus::Multimodal::OutEdgeIterator::pt_it_ [protected]

A pair of out edge iterators for public transport vertices

6.38.3.5 Road::OutEdgeIterator Tempus::Multimodal::OutEdgeIterator::road_it_ [protected]

A pair of out edge iterators for road vertices

6.38.3.6 Multimodal::Vertex Tempus::Multimodal::OutEdgeIterator::source_ [protected]

The source vertex

6.38.3.7 size_t Tempus::Multimodal::OutEdgeIterator::stop2road_connection_ [protected]

A counter used to represent position on a Transport2Road connection. Indeed, a transport stop is linked to a road section and thus to 2 road nodes. 0: on the node_from of the associated road section 1: on the node_to 2: out of the connection

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

- core/multimodal_graph.hh
- core/multimodal_graph.cc

6.39 WPS::Service::ParameterSchema Struct Reference

Public Attributes

- std::string **schema**
- bool **is_complex**

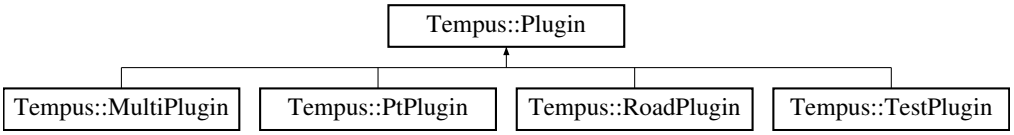
The documentation for this struct was generated from the following file:

- wps/wps_service.hh

6.40 Tempus::Plugin Class Reference

`#include <plugin.hh>`

Inheritance diagram for Tempus::Plugin:



Classes

- struct OptionDescription
- struct OptionTypeFrom
- struct OptionTypeFrom< bool >
- struct OptionTypeFrom< float >
- struct OptionTypeFrom< int >
- struct OptionTypeFrom< std::string >

Public Types

- enum OptionType { **BoolOption**, **IntOption**, **FloatOption**, **StringOption** }
- enum **AccessType** { **InitAccess**, **DiscoverAccess**, **ExamineAccess**, **EdgeRelaxedAccess**, **EdgeNotRelaxedAccess**, **EdgeMinimizedAccess**, **EdgeNotMinimizedAccess**, **TreeEdgeAccess**, **NonTreeEdgeAccess**, **BackEdgeAccess**, **ForwardOrCrossEdgeAccess**, **StartAccess**, **FinishAccess**, **GrayTargetAccess**, **BlackTargetAccess** }
- typedef std::map< std::string, Plugin * > PluginList
- typedef boost::any **OptionValue**
- typedef std::map< std::string, OptionValue > **OptionValueList**
- typedef std::map< std::string, OptionDescription > **OptionDescriptionList**
- typedef boost::any MetricValue
- typedef std::map< std::string, MetricValue > MetricValueList

Public Member Functions

- template<class T >
  void declare_option (const std::string &name, const std::string &description, T default_value)
- OptionDescriptionList & option_descriptions ()
- OptionValueList & **options** ()
- template<class T >
  void set_option (const std::string &name, const T &value)
- void set_option_from_string (const std::string &name, const std::string &value)
- std::string option_to_string (const std::string &name)
- template<class T >
  void get_option (const std::string &name, T &value)
- template<class T >
  T get_option (const std::string &name)

- MetricValueList & metrics ()
- std::string metric_to_string (const std::string &name)
- std::string name () const
- Plugin (const std::string &name, Db::Connection &db)
- virtual ~Plugin ()
- virtual void post_build ()
- virtual void validate ()
- virtual void road_vertex_accessor (Road::Vertex v, int access_type)
- virtual void **road_edge_accessor** (Road::Edge e, int access_type)
- virtual void **pt_vertex_accessor** (PublicTransport::Vertex v, int access_type)
- virtual void **pt_edge_accessor** (PublicTransport::Edge e, int access_type)
- virtual void **vertex_accessor** (Multimodal::Vertex v, int access_type)
- virtual void **edge_accessor** (Multimodal::Edge e, int access_type)
- virtual void cycle ()
- virtual void pre_process (Request &request) throw (std::invalid_argument)
- virtual void process ()
- virtual void post_process ()
- virtual Result & result ()
- virtual void cleanup ()

Static Public Member Functions

- static Plugin * load (const std::string &dll_name)
- static void unload (Plugin *plugin)
- static PluginList & **plugin_list** ()

Protected Attributes

- Multimodal::Graph & graph_
- Request request_
- Result result_
- std::string name_

  Name of this plugin.
- Db::Connection & db_

  Db connection.
- void * module_

  The concrete plugin handler (HMODULE or void)*
- OptionDescriptionList options_descriptions_

  Plugin option management.
- OptionValueList **options_**
- MetricValueList **metrics_**

Static Protected Attributes

- static PluginList **plugin_list_**

6.40.1 Detailed Description

Base class that has to be derived in plugins

A Tempus plugin is made of :

- some user-defined options
- some callback functions called when user requests are processed
- some performance metrics

6.40.2 Member Typedef Documentation

6.40.2.1 typedef boost::any Tempus::Plugin::MetricValue

A metric is also a boost::any

6.40.2.2 typedef std::map<std::string, MetricValue> Tempus::Plugin::MetricValueList

Metric name -> value

6.40.2.3 typedef std::map<std::string, Plugin*> Tempus::Plugin::PluginList

Access to global plugin list

6.40.3 Member Enumeration Documentation

6.40.3.1 enum Tempus::Plugin::OptionType

Plugin option type

6.40.4 Constructor & Destructor Documentation

6.40.4.1 Tempus::Plugin::Plugin (const std::string & *name*, Db::Connection & *db*)

Called when the plugin is loaded into memory (install)

6.40.4.2 virtual Tempus::Plugin::~Plugin ( ) [inline, virtual]

Called when the plugin is unloaded from memory (uninstall)

6.40.5 Member Function Documentation

6.40.5.1 void Tempus::Plugin::cleanup ( ) [virtual]

Cleanup method.

Reimplemented in Tempus::MultiPlugin, Tempus::PtPlugin, and Tempus::RoadPlugin.

6.40.5.2 void Tempus::Plugin::cycle ( ) [virtual]

Cycle

6.40.5.3 template<class T > void Tempus::Plugin::declare_option (const std::string & *name,* const std::string & *description,* T *default_value*) [inline]

Method used by a plugin to declare an option

6.40.5.4 template<class T > void Tempus::Plugin::get_option (const std::string & *name,* T & *value*) [inline]

Method used to get an option value

6.40.5.5 template<class T > T Tempus::Plugin::get_option (const std::string & *name*) [inline]

Method used to get an option value, alternative signature.

6.40.5.6 Plugin * Tempus::Plugin::load (const std::string & *dll_name*) [static]

Static function used to load a plugin from disk

6.40.5.7 std::string Tempus::Plugin::metric_to_string (const std::string & *name*)

Converts a metric value to a string

6.40.5.8 MetricValueList& Tempus::Plugin::metrics ( ) [inline]

Access to metric list

6.40.5.9 std::string Tempus::Plugin::name ( ) const [inline]

Name accessor

6.40.5.10 OptionDescriptionList& Tempus::Plugin::option_descriptions ( ) [inline]

Option descriptions accessor

6.40.5.11 std::string Tempus::Plugin::option_to_string (const std::string & *name*)

Method used to get a string from an option value

6.40.5.12 void Tempus::Plugin::post_build ( ) [virtual]

Called after graphs have been built in memory.

Reimplemented in Tempus::MultiPlugin, and Tempus::RoadPlugin.

6.40.5.13 void Tempus::Plugin::post_process ( ) [virtual]

Post-process the user request.

6.40.5.14 void Tempus::Plugin::pre_process (Request & *request*) throw (std::invalid_argument) [virtual]

Pre-process the user request.

Parameters

in	*request*	The request to preprocess.

Exceptions

std::invalid_argument	Throws an instance of std::invalid_argument if the request cannot be processed by the current plugin.

Reimplemented in Tempus::MultiPlugin, Tempus::RoadPlugin, Tempus::PtPlugin, and Tempus::TestPlugin.

6.40.5.15 void Tempus::Plugin::process ( ) [virtual]

Process the last preprocessed user request. Must populates the 'result_' object.

Process the user request. Must populates the 'result_' object.

Reimplemented in Tempus::MultiPlugin, Tempus::RoadPlugin, and Tempus::PtPlugin.

6.40.5.16 Result & Tempus::Plugin::result ( ) [virtual]

Result formatting

Text formatting and preparation of roadmap

6.40.5.17 virtual void Tempus::Plugin::road_vertex_accessor (Road::Vertex *v*, int *access_type*) [inline, virtual]

Acessors methods. They can be called on graph traversals. A Plugin is made compatible with a boost::visitor by means of a PluginGraphVisitor

Reimplemented in Tempus::RoadPlugin.

6.40.5.18 template<class T > void Tempus::Plugin::set_option (const std::string & *name*, const T & *value*) [inline]

Method used to set an option value

6.40.5.19 void Tempus::Plugin::set_option_from_string (const std::string & *name*, const std::string & *value*)

Method used to set an option value from a string. Conversions are made, based on the option description

6.40.5.20 void Tempus::Plugin::unload (Plugin * *plugin*) [static]

Static funtion used to unload a plugin We cannot call delete directly on the plugin pointer, since it has been allocated from within another DLL.

6.40.5.21 void Tempus::Plugin::validate ( ) [virtual]

Called in order to validate the in-memory structure.

6.40.6 Member Data Documentation

6.40.6.1 Multimodal::Graph& Tempus::Plugin::graph_ [protected]

Graph extracted from the database

6.40.6.2 Request Tempus::Plugin::request_ [protected]

User request

6.40.6.3 Result Tempus::Plugin::result_ [protected]

Result

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

- core/plugin.hh
- core/plugin.cc

6.41 Tempus::PluginGraphVisitorHelper< Graph, VertexAccessorFunction, EdgeAccessorFunction > Class Template Reference

`#include <plugin.hh>`

Public Types

- typedef boost::graph_traits < Graph >::vertex_descriptor **VDescriptor**
- typedef boost::graph_traits < Graph >::edge_descriptor **EDescriptor**

Public Member Functions

- **PluginGraphVisitorHelper** (Plugin *plugin)
- void **initialize_vertex** (VDescriptor v, const Graph &graph)
- void **examine_vertex** (VDescriptor v, const Graph &graph)
- void **discover_vertex** (VDescriptor v, const Graph &graph)
- void **start_vertex** (VDescriptor v, const Graph &graph)
- void **finish_vertex** (VDescriptor v, const Graph &graph)
- void **examine_edge** (EDescriptor e, const Graph &graph)
- void **tree_edge** (EDescriptor e, const Graph &graph)
- void **non_tree_edge** (EDescriptor e, const Graph &graph)
- void **back_edge** (EDescriptor e, const Graph &graph)
- void **gray_target** (EDescriptor e, const Graph &graph)
- void **black_target** (EDescriptor e, const Graph &graph)
- void **forward_or_cross_edge** (EDescriptor e, const Graph &graph)
- void **edge_relaxed** (EDescriptor e, const Graph &graph)
- void **edge_not_relaxed** (EDescriptor e, const Graph &graph)
- void **edge_minimized** (EDescriptor e, const Graph &graph)
- void **edge_not_minimized** (EDescriptor e, const Graph &graph)

Protected Attributes

- Plugin * **plugin_**

6.41.1 Detailed Description

template<class Graph, void(Plugin::*)(typename boost::graph_traits< Graph >::vertex_descriptor, int) VertexAccessorFunction, void(Plugin::*)(typename boost::graph_traits< Graph >::edge_descriptor, int) EdgeAccessorFunction>class Tempus::PluginGraphVisitorHelper< Graph, VertexAccessorFunction, EdgeAccessorFunction >

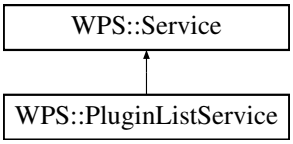
Class used as a boost::visitor. This is a proxy to Plugin::xxx_accessor methods. It may be used as implementation of any kind of boost::graph visitors (BFS, DFS, Dijkstra, A*, Bellman-Ford)

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

- core/plugin.hh

6.42 WPS::PluginListService Class Reference

Inheritance diagram for WPS::PluginListService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.42.1 Detailed Description

"plugin_list" service, lists loaded plugins.

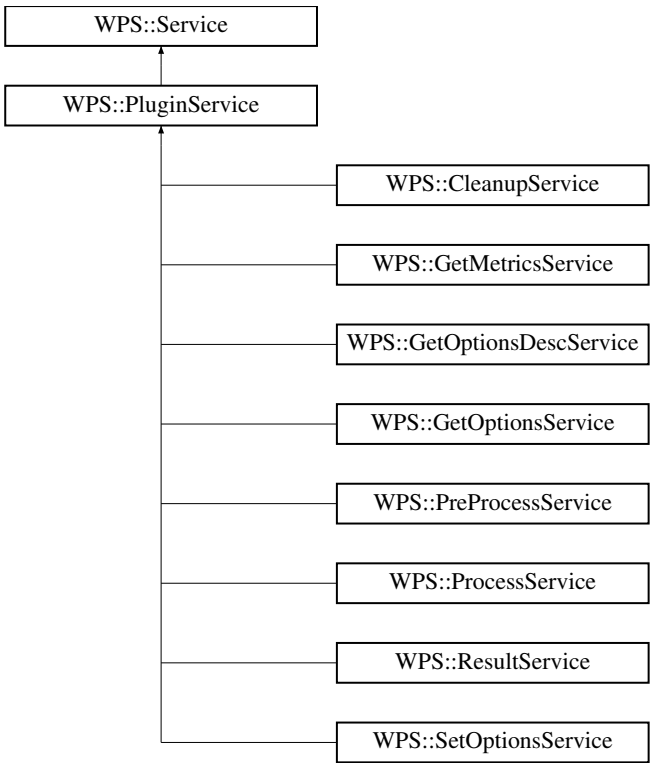
Output var: plugins, list of plugin names

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

- wps/tempus_services.cc

6.43 WPS::PluginService Class Reference

Inheritance diagram for WPS::PluginService:



Public Member Functions

- **PluginService** (const std::string &name)
- Plugin * **get_plugin** (ParameterMap &input_parameters)

6.43.1 Detailed Description

Base class for services that are linked to a particular plugin. Input var: plugin, the plugin name

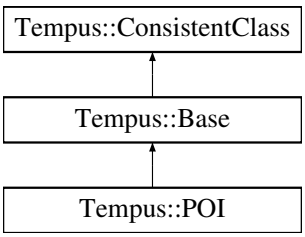
The documentation for this class was generated from the following file:

- wps/tempus_services.cc

6.44 Tempus::POI Struct Reference

`#include <road_graph.hh>`

Inheritance diagram for Tempus::POI:



Public Types

- enum **PoiType** { **TypeCarPark** = 1, **TypeSharedCarPoint**, **TypeCyclePark**, **TypeSharedCyclePoint**, **TypeUserPOI** }

Public Attributes

- int **poi_type**
- std::string **name**
- int parking_transport_type

  bitfield of TransportTypeId
- Road::Edge road_section
- double **abscissa_road_section**

6.44.1 Detailed Description

refers to the 'poi' DB's table

6.44.2 Member Data Documentation

6.44.2.1 Road::Edge Tempus::POI::road_section

Link to a road section. Must not be null.

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

- core/road_graph.hh

6.45 Tempus::Point2D Struct Reference

`#include <common.hh>`

Public Attributes

- double **x**
- double **y**

6.45.1 Detailed Description

2D Points

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

- core/common.hh

6.46 Tempus::PQImporter Class Reference

Public Member Functions

- **PQImporter** (const std::string &pg_options)
- Db::Result query (const std::string &query_str)
- void import_constants (Multimodal::Graph &graph, ProgressionCallback &callback=null_progression_callback)
- void import_graph (Multimodal::Graph &graph, ProgressionCallback &callback=null_progression_callback)
- Db::Connection & get_connection ()

Protected Attributes

- Db::Connection **connection_**

6.46.1 Member Function Documentation

6.46.1.1 Db::Connection& Tempus::PQImporter::get_connection ( ) [inline]

Access to underlying connection object

6.46.1.2 void Tempus::PQImporter::import_constants (Multimodal::Graph & *graph*, ProgressionCallback & *callback* = null_progression_callback)

Import constants (road, transports types) into global variables.

6.46.1.3 void Tempus::PQImporter::import_graph (Multimodal::Graph & *graph,* ProgressionCallback & *progression* = null_progression_callback)

Import the multimodal graph

Function used to import the road and public transport graphs from a PostgreSQL database.

6.46.1.4 Db::Result Tempus::PQImporter::query (const std::string & *query_str*)

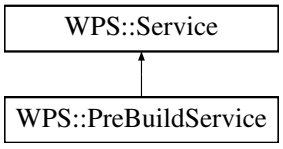
Query the database

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

- core/pgsql_importer.hh
- core/pgsql_importer.cc

6.47 WPS::PreBuildService Class Reference

Inheritance diagram for WPS::PreBuildService:



Public Member Functions

- Service::ParameterMap & **execute** (Service::ParameterMap &input_parameter_map)

6.47.1 Detailed Description

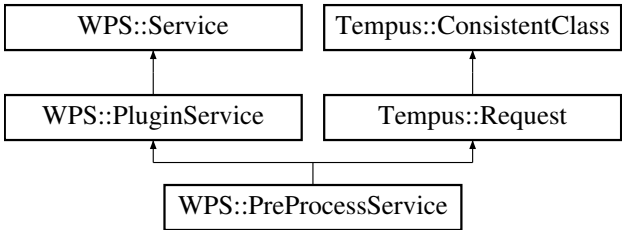
"pre_build" service, invokes pre_build()

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

- wps/tempus_services.cc

6.48 WPS::PreProcessService Class Reference

Inheritance diagram for WPS::PreProcessService:



Public Member Functions

- void **parse_constraint** (xmlNode *node, Request::TimeConstraint &constraint)
- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.48.1 Detailed Description

"pre_process" service.

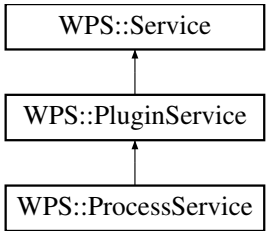
Input var: request, the path request (see request.hh)

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

- wps/tempus_services.cc

6.49 WPS::ProcessService Class Reference

Inheritance diagram for WPS::ProcessService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.49.1 Detailed Description

"process" service, invokes process() on a plugin

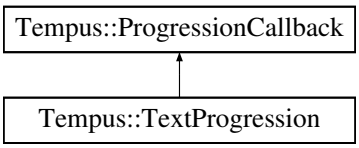
The documentation for this class was generated from the following file:

- wps/tempus_services.cc

6.50 Tempus::ProgressionCallback Class Reference

`#include <common.hh>`

Inheritance diagram for Tempus::ProgressionCallback:



Public Member Functions

- virtual void **operator()** (float, bool=false)

6.50.1 Detailed Description

Base class in charge of progression callback.

This is used for methods that might take time before giving user feedback See pgsql_importer.hh for instance

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

- core/common.hh

6.51 boost::property_traits< Tempus::FieldPropertyAccessor< Graph, Tag, T, Member > > Struct Template Reference

`#include <multimodal_graph.hh>`

Public Types

- typedef T **value_type**
- typedef T & **reference**
- typedef Tempus::vertex_or_edge < Graph, Tag >::descriptor **key_type**
- typedef Tag **category**

6.51.1 Detailed Description

template<class Graph, class Tag, class T, class Member>struct boost::property_traits< Tempus::FieldPropertyAccessor< Graph, Tag, T, Member > >

Specialization of property_traits for FieldPropertyAccessor

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

- core/multimodal_graph.hh

6.52 boost::property_traits< Tempus::FunctionPropertyAccessor< Graph, Tag, T, Function > > Struct Template Reference

`#include <multimodal_graph.hh>`

Public Types

- typedef T **value_type**
- typedef T & **reference**
- typedef Tempus::vertex_or_edge < Graph, Tag >::descriptor **key_type**
- typedef Tag **category**

6.52.1 Detailed Description

template<class Graph, class Tag, class T, class Function>struct boost::property_traits< Tempus::FunctionPropertyAccessor< Graph, Tag, T, Function > >

Specialization of property_traits for FunctionPropertyAccessor

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

- core/multimodal_graph.hh

6.53 boost::property_traits< Tempus::Multimodal::VertexIndexProperty > Struct Template Reference

`#include <multimodal_graph.hh>`

Public Types

- typedef size_t **value_type**
- typedef size_t & **reference**

- typedef Tempus::Multimodal::Vertex **key_type**
- typedef boost::vertex_property_tag **category**

6.53.1 Detailed Description

template<>struct boost::property_traits< Tempus::Multimodal::VertexIndexProperty >

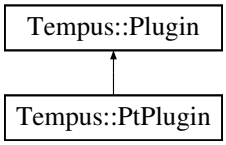
VertexIndexProperty declaration inside boost::property_traits<>

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

- core/multimodal_graph.hh

6.54 Tempus::PtPlugin Class Reference

Inheritance diagram for Tempus::PtPlugin:



Public Member Functions

- **PtPlugin** (Db::Connection &db)
- virtual void pre_process (Request &request) throw (std::invalid_argument)
- virtual void **pt_vertex_accessor** (PublicTransport::Vertex v, int access_type)
- virtual void process ()
- void cleanup ()

6.54.1 Member Function Documentation

6.54.1.1 void Tempus::PtPlugin::cleanup ( ) [inline, virtual]

Cleanup method.

Reimplemented from Tempus::Plugin.

6.54.1.2 virtual void Tempus::PtPlugin::pre_process (Request & *request*) throw (std::invalid_argument) [inline, virtual]

Pre-process the user request.

Parameters

in	*request*	The request to preprocess.

Exceptions

std::invalid_argument	Throws an instance of std::invalid_argument if the request cannot be processed by the current plugin.

Reimplemented from Tempus::Plugin.

6.54.1.3 virtual void Tempus::PtPlugin::process ( ) [inline, virtual]

Process the last preprocessed user request. Must populates the 'result_' object.

Process the user request. Must populates the 'result_' object.

Reimplemented from Tempus::Plugin.

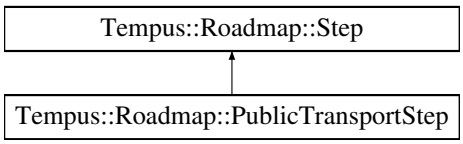
The documentation for this class was generated from the following file:

- core/sample_pt_plugin.cc

6.55 Tempus::Roadmap::PublicTransportStep Struct Reference

`#include <roadmap.hh>`

Inheritance diagram for Tempus::Roadmap::PublicTransportStep:



Public Attributes

- db_id_t **network_id**
- PublicTransport::Edge section
- db_id_t trip_id

  used to indicate the direction

6.55.1 Detailed Description

A Step made with a public transport

For a trip from station A to station C that passes through the station B, 2 steps are stored, each with the same trip_id.

6.55.2 Member Data Documentation

6.55.2.1 PublicTransport::Edge Tempus::Roadmap::PublicTransportStep::section

The public transport section part of the step

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

- core/roadmap.hh

6.56 WPS::Request Class Reference

`#include <wps_request.hh>`

Public Member Functions

- **Request** (std::streambuf *ins, std::streambuf *outs)
- int **process** ()
- int **print_error_status** (int status, const std::string &msg)
- int **print_exception** (const std::string &type, const std::string &msg)

Protected Attributes

- std::istream **ins_**
- std::ostream **outs_**

6.56.1 Detailed Description

WPS::Request. It is in charge of processing a WPS request

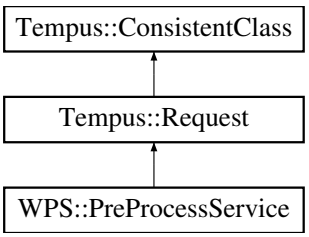
The documentation for this class was generated from the following files:

- wps/wps_request.hh
- wps/wps_request.cc

6.57 Tempus::Request Class Reference

`#include <request.hh>`

Inheritance diagram for Tempus::Request:



Classes

- struct Step
- struct TimeConstraint

Public Types

- typedef std::vector< Step > **StepList**

Public Member Functions

- Road::Vertex destination ()

Public Attributes

- StepList steps
- unsigned allowed_transport_types
- Road::Vertex parking_location
- std::vector< db_id_t > allowed_networks
- TimeConstraint departure_constraint
- Road::Vertex origin
- std::vector< int > optimizing_criteria

Protected Member Functions

- bool check_consistency_ ()

6.57.1 Detailed Description

A Request is used to model user requests to the planning engine.

6.57.2 Member Function Documentation

6.57.2.1 bool Tempus::Request::check_consistency_ ( ) [inline, protected, virtual]

Private method to override in derived classes. Does nothing by default.

Reimplemented from Tempus::ConsistentClass.

6.57.2.2 Road::Vertex Tempus::Request::destination ( ) [inline]

Shortcut to get the final destination (the last step)

6.57.3 Member Data Documentation

6.57.3.1 std::vector<db_id_t> Tempus::Request::allowed_networks

Public transport options: list of allowed networks

6.57.3.2 unsigned Tempus::Request::allowed_transport_types

Allowed transport types. It can be stored in an integer, since transport_type ID are powers of two.

6.57.3.3 TimeConstraint Tempus::Request::departure_constraint

Timeing constraint on the departure

6.57.3.4 std::vector<int> Tempus::Request::optimizing_criteria

Criteria to optimize. The list is ordered by criterion priority. Refers to a CostId (see common.hh)

6.57.3.5 Road::Vertex Tempus::Request::origin

Vertex origin of the request

6.57.3.6 Road::Vertex Tempus::Request::parking_location

Private vehicule option: parking location

6.57.3.7 StepList Tempus::Request::steps

Steps involved in the request. It has to be made at a minimum of an origin and a destination. It may include intermediary points.

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

- core/request.hh

6.58 Db::Result Class Reference

`#include <db.hh>`

Public Member Functions

- **Result** (PGresult *res)
- Result (const Result &r)
- Result & operator= (const Result &r)
- size_t size ()
- size_t columns ()
- RowValue operator[] (size_t idx)

Protected Member Functions

- void **dec_refs** () const
- void **inc_refs** () const

Protected Attributes

- PGresult * **res_**
- int **nrefs_**

6.58.1 Detailed Description

Class representing result of a query

6.58.2 Constructor & Destructor Documentation

6.58.2.1 Db::Result::Result (const Result & *r*) [inline]

Copy constructor

6.58.3 Member Function Documentation

6.58.3.1 size_t Db::Result::columns ( ) [inline]

Number of columns

6.58.3.2 Result& Db::Result::operator= (const Result & *r*) [inline]

Assignment operator. Deals with reference counting

6.58.3.3 RowValue Db::Result::operator[] (size_t *idx*) [inline]

Access to a row of a result, by row number

6.58.3.4 size_t Db::Result::size ( ) [inline]

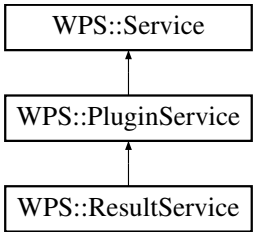
Number of rows

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

- core/db.hh

6.59 WPS::ResultService Class Reference

Inheritance diagram for WPS::ResultService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.59.1 Detailed Description

"result" service, get results from a path query.

Output var: results, see roadmap.hh

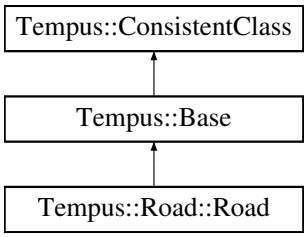
The documentation for this class was generated from the following file:

- wps/tempus_services.cc

6.60 Tempus::Road::Road Struct Reference

`#include <road_graph.hh>`

Inheritance diagram for Tempus::Road::Road:



Public Attributes

- std::vector< Edge > road_section
- double cost

6.60.1 Detailed Description

refers to the 'road_road' DB's table

6.60.2 Member Data Documentation

6.60.2.1 double Tempus::Road::Road::cost

-1 means infinite cost

6.60.2.2 std::vector<Edge> Tempus::Road::Road::road_section

Array of road sections

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

- core/road_graph.hh

6.61 Tempus::Roadmap Class Reference

`#include <roadmap.hh>`

Classes

- struct GenericStep
- struct PublicTransportStep
- struct RoadStep
- struct Step

Public Types

- typedef std::vector< Step * > StepList

Public Attributes

- StepList **steps**
- Costs **total_costs**

6.61.1 Detailed Description

A Roadmap is an object used to model steps involved in a multimodal route. It is a base for result values of a request.

6.61.2 Member Typedef Documentation

6.61.2.1 typedef std::vector<Step*> Tempus::Roadmap::StepList

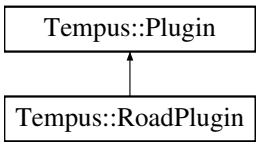
A Roadmap is a list of Step augmented with some total costs. Ownership : pointers are allocated by the caller but freed on Roadmap destruction

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

- core/roadmap.hh

6.62 Tempus::RoadPlugin Class Reference

Inheritance diagram for Tempus::RoadPlugin:



Public Member Functions

- **RoadPlugin** (Db::Connection &db)
- virtual void post_build ()
- virtual void pre_process (Request &request) throw (std::invalid_argument)
- virtual void road_vertex_accessor (Road::Vertex v, int access_type)
- virtual void process ()
- void cleanup ()

Protected Attributes

- bool **trace_vertex_**

6.62.1 Member Function Documentation

6.62.1.1 void Tempus::RoadPlugin::cleanup ( ) [inline, virtual]

Cleanup method.

Reimplemented from Tempus::Plugin.

6.62.1.2 virtual void Tempus::RoadPlugin::post_build ( ) [inline, virtual]

Called after graphs have been built in memory.

Reimplemented from Tempus::Plugin.

6.62.1.3 virtual void Tempus::RoadPlugin::pre_process (Request & *request*) throw (std::invalid_argument) [inline, virtual]

Pre-process the user request.

Parameters

in	*request*	The request to preprocess.

Exceptions

std::invalid_argument	Throws an instance of std::invalid_argument if the request cannot be processed by the current plugin.

Reimplemented from Tempus::Plugin.

6.62.1.4 virtual void Tempus::RoadPlugin::process ( ) [inline, virtual]

Process the last preprocessed user request. Must populates the 'result_' object.

Process the user request. Must populates the 'result_' object. We define a property map that reads the 'length' (of type double) member of a Road::Section, which is the edge property of a Road::Graph

Visitor to be built on 'this'. This way, xxx_accessor methods will be called

Reimplemented from Tempus::Plugin.

6.62.1.5 virtual void Tempus::RoadPlugin::road_vertex_accessor (Road::Vertex *v*, int *access_type*) [inline, virtual]

Acessors methods. They can be called on graph traversals. A Plugin is made compatible with a boost::visitor by means of a PluginGraphVisitor

Reimplemented from Tempus::Plugin.

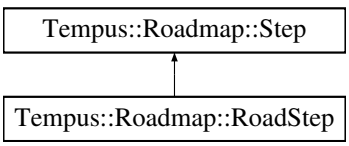
The documentation for this class was generated from the following file:

- core/sample_road_plugin.cc

6.63 Tempus::Roadmap::RoadStep Struct Reference

`#include <roadmap.hh>`

Inheritance diagram for Tempus::Roadmap::RoadStep:



Public Types

- enum EndMovement { **GoAhead**, **TurnLeft**, **TurnRight**, **UTurn**, **RoundAboutEnter**, FirstExit, **SecondExit**, **ThirdExit**, **FourthExit**, **FifthExit**, **SixthExit**, **YouAreArrived** = 999 }

  The movement that is to be done at the end of the section.

Public Attributes

- Road::Edge road_section
- Road::Edge road_direction
- double distance_km
- EndMovement **end_movement**

6.63.1 Detailed Description

A Step that occurs on the road, either by a pedestrian or a private vehicle

6.63.2 Member Enumeration Documentation

6.63.2.1 enum Tempus::Roadmap::RoadStep::EndMovement

The movement that is to be done at the end of the section.

Enumerator:

FirstExit in a roundabout

6.63.3 Member Data Documentation

6.63.3.1 double Tempus::Roadmap::RoadStep::distance_km

Distance to walk/drive (in km). -1 if we have to go until the end of the section

6.63.3.2 Road::Edge Tempus::Roadmap::RoadStep::road_direction

The road section where to go in the direction of

6.63.3.3 Road::Edge Tempus::Roadmap::RoadStep::road_section

The road section where to start from

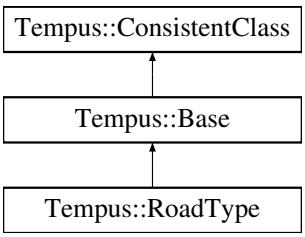
The documentation for this struct was generated from the following file:

- core/roadmap.hh

6.64 Tempus::RoadType Struct Reference

`#include <common.hh>`

Inheritance diagram for Tempus::RoadType:



Public Attributes

- std::string **name**

6.64.1 Detailed Description

Refers to tempus.road_type table

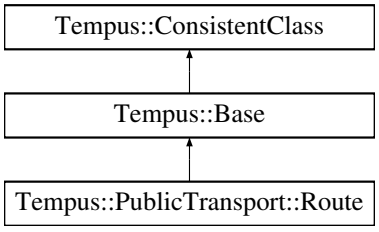
The documentation for this struct was generated from the following file:

- core/common.hh

6.65 Tempus::PublicTransport::Route Struct Reference

`#include <public_transport_graph.hh>`

Inheritance diagram for Tempus::PublicTransport::Route:



Public Types

- enum **RouteType** { **TypeTram** = 0, **TypeSubway**, **TypeRail**, **TypeBus**, **TypeFerry**, **TypeCableCar**, **TypeSuspendedCar**, **TypeFunicular** }

Public Attributes

- db_id_t network_id
- std::string **short_name**

- std::string **long_name**
- int **route_type**
- std::vector< Trip > **trips**

Protected Member Functions

- bool check_consistency_ ()

6.65.1 Detailed Description

refers to the 'pt_route' DB's table

6.65.2 Member Function Documentation

6.65.2.1 bool Tempus::PublicTransport::Route::check_consistency_ ( ) [inline, protected, virtual]

Private method to override in derived classes. Does nothing by default.

Reimplemented from Tempus::ConsistentClass.

6.65.3 Member Data Documentation

6.65.3.1 db_id_t Tempus::PublicTransport::Route::network_id

public transport network

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

- core/public_transport_graph.hh

6.66 Db::RowValue Class Reference

```
#include <db.hh>
```

Public Member Functions

- **RowValue** (PGresult *res, size_t nrow)
- Value operator[] (size_t fn)

Protected Attributes

- PGresult * **res_**
- size_t **nrow_**

6.66.1 Detailed Description

Class used to represent a row in a result.

6.66.2 Member Function Documentation

6.66.2.1 Value Db::RowValue::operator[] (size_t *fn*) [inline]

Access to a value by column number

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

- core/db.hh

6.67 scoped_ptr< T, deletion_fct > Class Template Reference

`#include <xml_helper.hh>`

Public Member Functions

- **scoped_ptr** (T *ptr)
- **scoped_ptr** (const scoped_ptr< T, deletion_fct > &p)
- scoped_ptr< T, deletion_fct > & **operator=** (const scoped_ptr< T, deletion_fct > &p)
- T * **get** ()
- void **set** (T *ptr)

Protected Member Functions

- void **deleteme** ()

Protected Attributes

- T * **ptr_**

6.67.1 Detailed Description

template<class T, void deletion_fct>class scoped_ptr< T, deletion_fct >

Helper functions around libxml Helper class designed to hold already-allocated pointers and call a deletion function when the object is out of scope. This is the way libxml works: it returns allocated pointers that have to be freed by the caller

There is no reference counting. Objets are "moved" from instances (as boost::auto_ptr does) For example a = b transfers ownership from b to a and b is set to null

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

- wps/xml_helper.hh

6.68 Tempus::PublicTransport::Section Struct Reference

`#include <public_transport_graph.hh>`

Public Attributes

- Edge edge
- const Graph * **graph**
- db_id_t **stop_from**
- db_id_t **stop_to**
- db_id_t network_id

  must not be null

6.68.1 Detailed Description

used as an Edge in a PublicTransportGraph

6.68.2 Member Data Documentation

6.68.2.1 Edge Tempus::PublicTransport::Section::edge

This is a shortcut to the edge index in the corresponding graph, if any. Needed to speedup access to a graph's edge from a Section Can be null

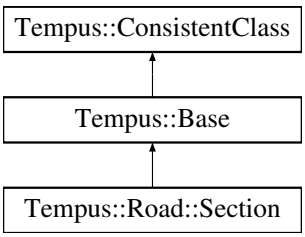
The documentation for this struct was generated from the following file:

- core/public_transport_graph.hh

6.69 Tempus::Road::Section Struct Reference

`#include <road_graph.hh>`

Inheritance diagram for Tempus::Road::Section:



Public Attributes

- Edge edge
- db_id_t **road_type**
- int transport_type_ft

  bitfield of TransportTypeId
- int transport_type_tf

  bitfield of TransportTypeId
- double **length**
- double **car_speed_limit**
- double **car_average_speed**
- double **bus_average_speed**
- std::string **road_name**
- std::string **address_left_side**
- std::string **address_right_side**
- int **lane**
- bool **is_roundabout**
- bool **is_bridge**
- bool **is_tunnel**
- bool **is_ramp**
- bool **is_tollway**
- std::vector < PublicTransport::Stop * > stops
- std::vector< POI * > pois

6.69.1 Detailed Description

Used as Directed Edge. Refers to the 'road_section' DB's table

6.69.2 Member Data Documentation

6.69.2.1 Edge Tempus::Road::Section::edge

This is a shortcut to the edge index in the corresponding graph, if any. Needed to speedup access to a graph's edge from a Section. Can be null

6.69.2.2 std::vector<POI*> Tempus::Road::Section::pois

List of Point Of Interests attached to this road section

6.69.2.3 std::vector< PublicTransport::Stop* > Tempus::Road::Section::stops

List of public transport stops, attached to this road section

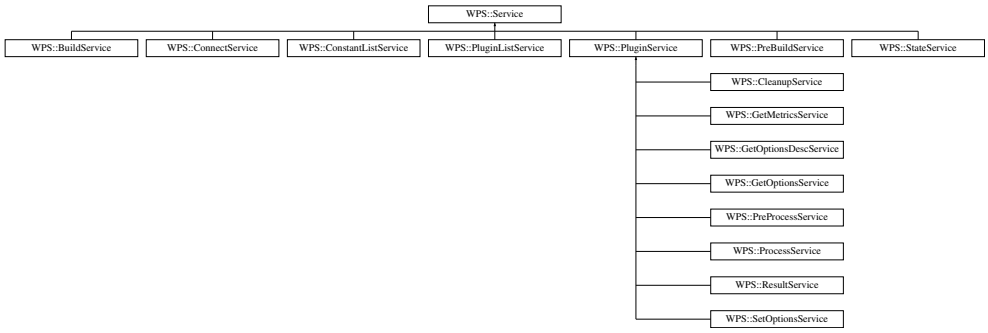
The documentation for this struct was generated from the following file:

- core/road_graph.hh

6.70 WPS::Service Class Reference

`#include <wps_service.hh>`

Inheritance diagram for WPS::Service:



Classes

- struct ParameterSchema

Public Types

- typedef std::map< std::string, xmlNode * > **ParameterMap**

Public Member Functions

- **Service** (const std::string &name)
- void parse_xml_parameters (ParameterMap &input_parameter_map)
- virtual ParameterMap & **execute** (ParameterMap &input_parameter_map)
- std::ostream & get_xml_description (std::ostream &out)
- std::ostream & get_xml_execute_response (std::ostream &out)

Static Public Member Functions

- static Service * get_service (const std::string &name)
- static bool exists (const std::string &name)
- static std::ostream & get_xml_capabilities (std::ostream &out)

Protected Types

- typedef std::map< std::string, ParameterSchema > **SchemaMap**

Protected Member Functions

- virtual void check_parameters (ParameterMap &parameter_map, SchemaMap &schema_map)
- void add_input_parameter (const std::string &name, const std::string &schema, bool is_complex=true)
- void add_output_parameter (const std::string &name, const std::string &schema, bool is_complex=true)

Protected Attributes

- SchemaMap **input_parameter_schema_**
- SchemaMap **output_parameter_schema_**
- std::string **name_**
- ParameterMap output_parameters_

Static Protected Attributes

- static std::map< std::string, Service * > * services_ = 0

6.70.1 Detailed Description

Function callable from a WPS 'Execute' operation

6.70.2 Member Function Documentation

6.70.2.1 void WPS::Service::add_input_parameter (const std::string & *name*, const std::string & *schema*, bool *is_complex* = `true`) [inline, protected]

Adds an input parameter definition. To be called by derived classes in their constructor

6.70.2.2 void WPS::Service::add_output_parameter (const std::string & *name*, const std::string & *schema*, bool *is_complex* = `true`) [inline, protected]

Adds an output parameter definition. To be called by derived classes in their constructor

6.70.2.3 void WPS::Service::check_parameters (ParameterMap & *parameter_map*, SchemaMap & *schema_map*) [protected, virtual]

Check parameters against their XML schemas

6.70.2.4 static bool WPS::Service::exists (const std::string & *name*) [inline, static]

Global service map interface: tests if a service exists

6.70.2.5 Service * WPS::Service::get_service (const std::string & *name*) [static]

Global service map interface: returns a Service* based on a service name

6.70.2.6 std::ostream & WPS::Service::get_xml_capabilities (std::ostream & *out*) [static]

Global service map interface: returns an XML string that conforms to a 'GetCapabilities' operation

6.70.2.7 std::ostream & WPS::Service::get_xml_description (std::ostream & *out*)

Returns an XML string that conforms to a DescribeProcess operation

6.70.2.8 std::ostream & WPS::Service::get_xml_execute_response (std::ostream & *out*)

Returns an XML string that represents results of an Execute operation

6.70.2.9 void WPS::Service::parse_xml_parameters (ParameterMap & *input_parameter_map*)

Extract input parameters

6.70.3 Member Data Documentation

6.70.3.1 ParameterMap WPS::Service::output_parameters_ [protected]

Output parameters

6.70.3.2 std::map< std::string, Service * > * WPS::Service::services_ = 0 [static, protected]

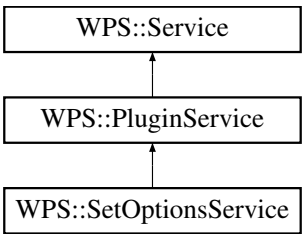
A global map of services

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

- wps/wps_service.hh
- wps/wps_service.cc

6.71 WPS::SetOptionsService Class Reference

Inheritance diagram for WPS::SetOptionsService:



Public Member Functions

- Service::ParameterMap & **execute** (ParameterMap &input_parameter_map)

6.71.1 Detailed Description

"set_options" service, used to set plugin's options.

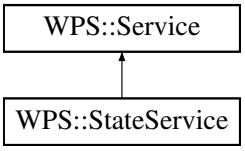
Input var: options, list of options with their name and value

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

- wps/tempus_services.cc

6.72 WPS::StateService Class Reference

Inheritance diagram for WPS::StateService:



Public Member Functions

- Service::ParameterMap & **execute** (Service::ParameterMap &input_parameter_map)

6.72.1 Detailed Description

"state" service. Output var: state, the server state. Output var: db_options, options used to connect to the database.

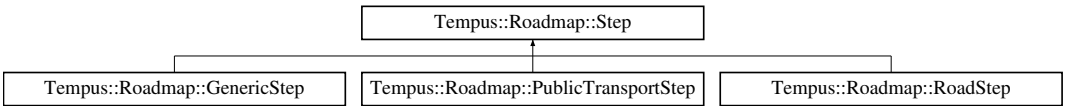
The documentation for this class was generated from the following file:

- wps/tempus_services.cc

6.73 Tempus::Roadmap::Step Struct Reference

`#include <roadmap.hh>`

Inheritance diagram for Tempus::Roadmap::Step:



Public Types

- enum **StepType** { **RoadStep**, **PublicTransportStep**, **GenericStep** }

Public Member Functions

- **Step** (StepType type)

Public Attributes

- StepType **step_type**
- Costs **costs**
- std::string geometry_wkb

6.73.1 Detailed Description

A Step is a part of a route, where the transport type is constant This a generic class

6.73.2 Member Data Documentation

6.73.2.1 std::string Tempus::Roadmap::Step::geometry_wkb

Geometry of the step, described as a WKB, for visualization purpose May be empty.

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

- core/roadmap.hh

6.74 Tempus::Request::Step Struct Reference

`#include <request.hh>`

Public Attributes

- Road::Vertex **destination**
- TimeConstraint **constraint**
- bool private_vehicule_at_destination

6.74.1 Detailed Description

Class used to represent destinations of a request and constraints of the step

6.74.2 Member Data Documentation

6.74.2.1 bool Tempus::Request::Step::private_vehicule_at_destination

Whether the private vehicule must reach the destination

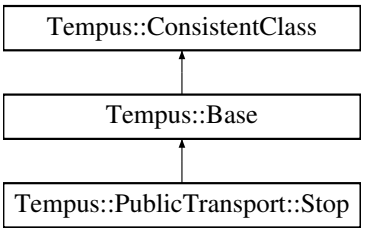
The documentation for this struct was generated from the following file:

- core/request.hh

6.75 Tempus::PublicTransport::Stop Struct Reference

`#include <public_transport_graph.hh>`

Inheritance diagram for Tempus::PublicTransport::Stop:



Public Attributes

- Vertex vertex
- const Graph * **graph**
- std::string **name**
- bool **is_station**
- Vertex parent_station
- bool **has_parent**
- Road::Edge road_section
- double **abscissa_road_section**
- int zone_id

6.75.1 Detailed Description

Used as a vertex in a PublicTransportGraph. Refers to the 'pt_stop' DB's table

6.75.2 Member Data Documentation

6.75.2.1 Vertex Tempus::PublicTransport::Stop::parent_station

link to a possible parent station, or null

6.75.2.2 Road::Edge Tempus::PublicTransport::Stop::road_section

link to a road section must not be null

6.75.2.3 Vertex Tempus::PublicTransport::Stop::vertex

This is a shortcut to the vertex index in the corresponding graph, if any. Needed to speedup access to a graph's vertex from a Node. Can be null

6.75.2.4 int Tempus::PublicTransport::Stop::zone_id

Fare zone ID of this stop

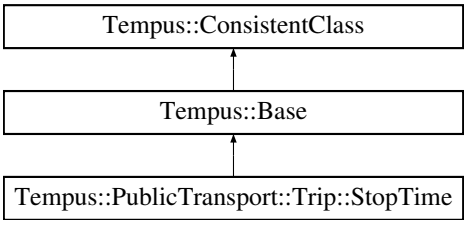
The documentation for this struct was generated from the following file:

- core/public_transport_graph.hh

6.76 Tempus::PublicTransport::Trip::StopTime Struct Reference

`#include <public_transport_graph.hh>`

Inheritance diagram for Tempus::PublicTransport::Trip::StopTime:



Public Attributes

- PublicTransport::Vertex stop
- Time **arrival_time**
- Time **departure_time**
- std::string **stop_headsign**
- int **pickup_type**
- int **drop_off_type**
- double **shape_dist_traveled**

6.76.1 Detailed Description

Refers to the 'pt_stop_time' table

6.76.2 Member Data Documentation

6.76.2.1 PublicTransport::Vertex Tempus::PublicTransport::Trip::StopTime::stop

Link to the Stop. Must not be null. Represents the link part of the "stop_sequence" field

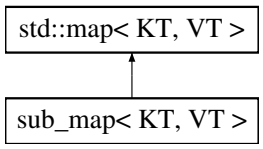
The documentation for this struct was generated from the following file:

- core/public_transport_graph.hh

6.77 sub_map< KT, VT > Class Template Reference

`#include <sub_map.hh>`

Inheritance diagram for sub_map< KT, VT >:



Classes

- struct FilterPredicate

Public Types

- typedef boost::filter_iterator < FilterPredicate< KT, VT > , typename std::map< KT, VT > ::const_iterator > **const_subset_iterator**
- typedef boost::filter_iterator < FilterPredicate< KT, VT > , typename std::map< KT, VT > ::iterator > **subset_iterator**

Public Member Functions

- void select (std::set< KT > &selection)
- void select_all ()
- void select_none ()
- const std::set< KT > & selection () const
- const_subset_iterator **subset_begin** () const
- const_subset_iterator **subset_end** () const
- subset_iterator **subset_begin** ()
- subset_iterator **subset_end** ()

Protected Attributes

- std::set< KT > **selection_**
- FilterPredicate< KT, VT > **predicate_**

6.77.1 Detailed Description

template<class KT, class VT>class sub_map< KT, VT >

A sub_map is a specialization of std::map where a subset of keys is selected for iteration.

It is used the same way a std::map is used. In addition, the selected subset can be set with select(std::set<KT>&) and can be iterated over with a pair of iterators given by subset_begin() and subset_end()

6.77.2 Member Function Documentation

6.77.2.1 template<class KT, class VT> void sub_map< KT, VT >::select (std::set< KT > & *selection*) [inline]

Set the current subset

6.77.2.2 template<class KT, class VT> void sub_map< KT, VT >::select_all ( ) [inline]

Select all the elements of the map as the current subset

6.77.2.3 template<class KT, class VT> void sub_map< KT, VT >::select_none ( ) [inline]

Set the current subset to void

6.77.2.4 template<class KT, class VT> const std::set<KT>& sub_map< KT, VT >::selection ( ) const [inline]

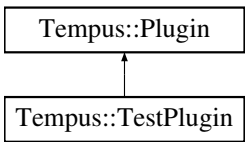
Retrieve current selection

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

- core/sub_map.hh

6.78 Tempus::TestPlugin Class Reference

Inheritance diagram for Tempus::TestPlugin:



Public Member Functions

- **TestPlugin** (Db::Connection &db)
- virtual void pre_process (Request &request) throw (std::invalid_argument)

6.78.1 Member Function Documentation

6.78.1.1 virtual void Tempus::TestPlugin::pre_process (Request & *request*) throw (std::invalid_argument) [inline, virtual]

Pre-process the user request.

Parameters

in	*request*	The request to preprocess.

Exceptions

std::invalid_argument	Throws an instance of std::invalid_argument if the request cannot be processed by the current plugin.

Reimplemented from Tempus::Plugin.

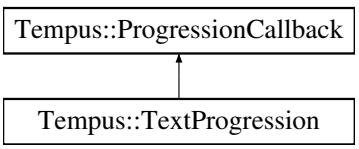
The documentation for this class was generated from the following file:

- core/test_plugin.cc

6.79 Tempus::TextProgression Struct Reference

`#include <common.hh>`

Inheritance diagram for Tempus::TextProgression:



Public Member Functions

- **TextProgression** (int N=50)
- virtual void **operator()** (float percent, bool finished)

Protected Attributes

- int **N_**
- int **old_N_**

6.79.1 Detailed Description

Simple progession processing: text based progression bar.

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

- core/common.hh
- core/common.cc

6.80 Tempus::Time Struct Reference

`#include <common.hh>`

Public Attributes

- long **n_secs**

6.80.1 Detailed Description

Time is the number of seconds since 00:00.

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

- core/common.hh

6.81 Tempus::Request::TimeConstraint Struct Reference

Public Types

- enum **TimeConstraintType** { **NoConstraint** = 0, **ConstraintBefore**, **ConstraintAfter** }

Public Attributes

- int type

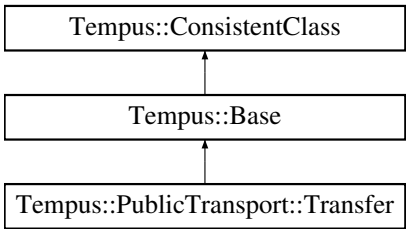
  TimeConstraintType.
- DateTime **date_time**

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

- core/request.hh

6.82 Tempus::PublicTransport::Transfer Struct Reference

Inheritance diagram for Tempus::PublicTransport::Transfer:



Public Types

- enum **TranferType** { **NormalTransfer** = 0, **TimedTransfer**, **MinimalTimed-Transfer**, **ImpossibleTransfer** }

Public Attributes

- Vertex from_stop
- Vertex **to_stop**
- int **transfer_type**
- int min_transfer_time

Protected Member Functions

- bool check_consistency_ ()

6.82.1 Member Function Documentation

6.82.1.1 bool Tempus::PublicTransport::Transfer::check_consistency_ ( ) [inline, protected, virtual]

Private method to override in derived classes. Does nothing by default.

Reimplemented from Tempus::ConsistentClass.

6.82.2 Member Data Documentation

6.82.2.1 Vertex Tempus::PublicTransport::Transfer::from_stop

Link between two stops. Must not be null

6.82.2.2 int Tempus::PublicTransport::Transfer::min_transfer_time

Must be positive not null. Expressed in seconds

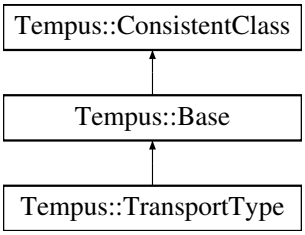
The documentation for this struct was generated from the following file:

- core/public_transport_graph.hh

6.83 Tempus::TransportType Struct Reference

`#include <common.hh>`

Inheritance diagram for Tempus::TransportType:



Public Attributes

- db_id_t **parent_id**
- std::string **name**
- bool **need_parking**
- bool **need_station**
- bool **need_return**
- bool **need_network**

Protected Member Functions

- bool check_consistency_ ()

6.83.1 Detailed Description

Refers to tempus.transport_type table

6.83.2 Member Function Documentation

6.83.2.1 bool Tempus::TransportType::check_consistency_ ( ) [inline, protected, virtual]

Private method to override in derived classes. Does nothing by default. x is a power of two if (x & (x - 1)) is 0

Reimplemented from Tempus::ConsistentClass.

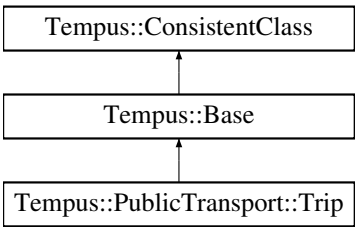
The documentation for this struct was generated from the following file:

- core/common.hh

6.84 Tempus::PublicTransport::Trip Struct Reference

`#include <public_transport_graph.hh>`

Inheritance diagram for Tempus::PublicTransport::Trip:



Classes

- struct Frequency
- struct StopTime

Public Types

- typedef std::list< std::vector < StopTime > > StopTimes
- typedef std::list< Frequency > **Frequencies**

Public Attributes

- std::string **short_name**
- StopTimes stop_times
- Frequencies frequencies
- Calendar * service

Protected Member Functions

- bool check_consistency_ ()

6.84.1 Detailed Description

Trip, Route, StopTime and Frequencies classes

6.84.2 Member Typedef Documentation

6.84.2.1 typedef std::list< std::vector< StopTime > > Tempus::PublicTransport::Trip::StopTimes

This is the definition of a list of stop times for a trip. The list of stop times has to be ordered to represent the sequence of stops (based on the "stop_sequence" field of the corresponding "stop_times" table

6.84.3 Member Function Documentation

6.84.3.1 bool Tempus::PublicTransport::Trip::check_consistency_ ( ) [inline, protected, virtual]

Private method to override in derived classes. Does nothing by default.

Reimplemented from Tempus::ConsistentClass.

6.84.4 Member Data Documentation

6.84.4.1 Frequencies Tempus::PublicTransport::Trip::frequencies

List of frequencies for this trip

6.84.4.2 Calendar* Tempus::PublicTransport::Trip::service

Link to the dates when service is available. Must not be null.

6.84.4.3 StopTimes Tempus::PublicTransport::Trip::stop_times

List of all stop times. Can be a subset of those stored in the database.

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

- core/public_transport_graph.hh

6.85 Db::Value Class Reference

```
#include <db.hh>
```

Public Member Functions

- **Value** (const char *value, size_t len, bool isnull)
- template<class T >
  T as ()
- template<class T >
  void operator>> (T &obj)
- bool is_null ()

Protected Attributes

- const char * **value_**
- size_t **len_**
- bool **isnull_**

6.85.1 Detailed Description

Class representing an atomic value stored in a database.

6.85.2 Member Function Documentation

6.85.2.1 double Db::Value::as< double > ( ) [inline]

This is the generic conversion operator. It calls stringstream conversion operators (slow!). Specialization can be introduced, or via a specialization of the stringstream-::operator>>()

6.85.2.2 bool Db::Value::is_null ( ) [inline]

Tests if the underlying object is null

6.85.2.3 template<class T > void Db::Value::operator>> (T & *obj*) [inline]

Conversion operator. Does nothing if the underlying object is null (which is a special value in a database)

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

- core/db.hh
- core/db.cc

6.86 Tempus::Multimodal::Vertex Struct Reference

`#include <multimodal_graph.hh>`

Public Types

- enum VertexType { **Road**, PublicTransport, Poi }

Public Member Functions

- bool operator== (const Vertex &v) const
- bool **operator!=** (const Vertex &v) const
- bool **operator**< (const Vertex &v) const
- **Vertex** (const Road::Graph *graph, Road::Vertex vertex)
- **Vertex** (const PublicTransport::Graph *graph, PublicTransport::Vertex vertex)
- **Vertex** (const POI *poi)

Public Attributes

- VertexType **type**
- union {
  const Road::Graph * **road_graph**
  const PublicTransport::Graph * **pt_graph**
  const POI * **poi**
  };

- Road::Vertex road_vertex
- PublicTransport::Vertex pt_vertex

6.86.1 Detailed Description

A Multimodal::Vertex is either a Road::Vertex or PublicTransport::Vertex on a particular public transport network

6.86.2 Member Enumeration Documentation

6.86.2.1 enum Tempus::Multimodal::Vertex::VertexType

Enumerator:

PublicTransport This vertex is a road vertex.

Poi This vertex is a public transport stop. This vertex is a POI

6.86.3 Member Function Documentation

6.86.3.1 bool Tempus::Multimodal::Vertex::operator== (const Vertex & *v*) const

Comparison operator

6.86.4 Member Data Documentation

6.86.4.1 PublicTransport::Vertex Tempus::Multimodal::Vertex::pt_vertex

The public transport vertex if this is relevant (cannot be stored in a union since it has non trivial constructors)

6.86.4.2 Road::Vertex Tempus::Multimodal::Vertex::road_vertex

The road vertex if this is relevant (cannot be stored in a union since it has non trivial constructors)

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

- core/multimodal_graph.hh
- core/multimodal_graph.cc

6.87 Tempus::vertex_or_edge< G, Tag > Struct Template Reference

`#include <multimodal_graph.hh>`

Classes

- struct null_class

Public Types

- typedef null_class **property_type**
- typedef null_class **descriptor**

6.87.1 Detailed Description

template<class G, class Tag>struct Tempus::vertex_or_edge< G, Tag >

Template magic used to abstract a graph object (either a vertex or an edge)

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

- core/multimodal_graph.hh

6.88 Tempus::vertex_or_edge< G, boost::edge_property_tag > - Struct Template Reference

Public Types

- typedef boost::edge_bundle_type< G >::type **property_type**
- typedef boost::graph_traits< G >::edge_descriptor **descriptor**

template<class G> struct Tempus::vertex_or_edge< G, boost::edge_property_tag >

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

- core/multimodal_graph.hh

6.89 Tempus::vertex_or_edge< G, boost::vertex_property_tag > - Struct Template Reference

Public Types

- typedef boost::vertex_bundle_type< G >::type **property_type**
- typedef boost::graph_traits< G >::vertex_descriptor **descriptor**

template<class G> struct Tempus::vertex_or_edge< G, boost::vertex_property_tag >

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

- core/multimodal_graph.hh

6.90 Tempus::Multimodal::VertexIndexProperty Class Reference

`#include <multimodal_graph.hh>`

Public Member Functions

- **VertexIndexProperty** (const Graph &graph)
- size_t **get_index** (const Vertex &v) const
- size_t **operator[]** (const Vertex &v) const

Protected Attributes

- const Multimodal::Graph & **graph_**

6.90.1 Detailed Description

Class that implemented the property map vertex_index.

The goal is to map an integer in the range (0, num_vertices-1) to a vertex

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

- core/multimodal_graph.hh
- core/multimodal_graph.cc

6.91 Tempus::Multimodal::VertexIterator Class Reference

`#include <multimodal_graph.hh>`

Public Member Functions

- **VertexIterator** (const Graph &graph)
- void to_end ()
- Vertex & dereference () const
- void increment ()
- bool equal (const VertexIterator &v) const

Protected Attributes

- Road::VertexIterator **road_it_**
- Road::VertexIterator **road_it_end_**
- Multimodal::Graph::PublicTransportGraphList::const_subset_iterator **pt_graph_-it_**
- Multimodal::Graph::PublicTransportGraphList::const_subset_iterator **pt_graph_-it_end_**
- Multimodal::Graph::PoiList::const_iterator **poi_it_**
- Multimodal::Graph::PoiList::const_iterator **poi_it_end_**
- PublicTransport::VertexIterator **pt_it_**
- PublicTransport::VertexIterator **pt_it_end_**
- const Multimodal::Graph * **graph_**
- Multimodal::Vertex vertex_

Friends

- std::ostream & **Tempus::operator<<** (std::ostream &ostr, const Multimodal::-VertexIterator &it)

6.91.1 Detailed Description

Class that implements the Iterator concept for vertices of a Multimodal::Graph

It is a wrapper around:

- a vertex iterator on the current road graph
- an iterator on the public networks
- a vertex iterator on the current public network

Deferencing, incrementation and comparison operators are defined by means of these underlying iterators

6.91.2 Member Function Documentation

6.91.2.1 Vertex & Tempus::Multimodal::VertexIterator::dereference ( ) const

Dereferencing. Needed by boost::iterator_facade

6.91.2.2 bool Tempus::Multimodal::VertexIterator::equal (const VertexIterator & *v*) const

Comparison operator. Needed by boost::iterator_facade

6.91.2.3 void Tempus::Multimodal::VertexIterator::increment ( )

Incrementing. Needed by boost::iterator_facade

6.91.2.4 void Tempus::Multimodal::VertexIterator::to_end ( )

Move the iterator to the end. Used mainly by vertices(const Multimodal::Graph&)

6.91.3 Member Data Documentation

6.91.3.1 Multimodal::Vertex Tempus::Multimodal::VertexIterator::vertex_ [mutable, protected]

Object returned by the deferencing operator

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

- core/multimodal_graph.hh
- core/multimodal_graph.cc

6.92 wps_client.WPSClient Class Reference

Public Member Functions

- def **__init__**
- def **get_capabilities**
- def **describe_process**
- def **execute**

Public Attributes

- **conn**

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

- wps/client/wps_client.py

6.93 XML Class Reference

```
#include <xml_helper.hh>
```

Static Public Member Functions

- static std::string escape_text (const std::string &message)
- static std::string to_string (xmlNode *node, int indent_level=0)
- static void ensure_validity (xmlNode *node, const std::string &schema_str)
- static xmlNode * new_node (const std::string &name)
- static xmlNode * new_text (const std::string &text)
- template<class T >
  static void new_prop (xmlNode *node, const std::string &key, T value)
- static std::string get_prop (xmlNode *node, const std::string &key)
- static void add_child (xmlNode *node, xmlNode *child)
- static xmlNode * get_next_nontext (xmlNode *node)

Static Protected Member Functions

- static void accumulate_error (void *ctx, const char *msg,...)
- static int **init** ()

Static Protected Attributes

- static bool **clear_errors_** = false
- static std::string **xml_error_**
- static int **init_n_** = XML::init()

6.93.1 Detailed Description

XML helper class

6.93.2 Member Function Documentation

6.93.2.1 void XML::accumulate_error (void * *ctx*, const char * *msg*, ...) [static, protected]

Generic libxml error handling. Accumulate errors in a string. This is intended to be used to transform XML parsing errors to std::exceptions

6.93.2.2 static void XML::add_child (xmlNode * *node*, xmlNode * *child*) [inline, static]

Shortcut to xmlAddChild

6.93.2.3 void XML::ensure_validity (xmlNode * *node*, const std::string & *schema_str*) [static]

Throws a std::invalid_argument if the given node is not validated against the schema

6.93.2.4 std::string XML::escape_text (const std::string & *message*) [static]

Returns a string that can be written as an XML text node

6.93.2.5 xmlNode * XML::get_next_nontext (xmlNode * *node*) [static]

Get the next non text node

6.93.2.6 static std::string XML::get_prop (xmlNode * *node*, const std::string & *key*) [inline, static]

Shortcut to xmlGetProp, using C++ std::string

6.93.2.7 static xmlNode* XML::new_node (const std::string & *name*) [inline, static]

Shortcut to xmlNewNode, using C++ std::string

6.93.2.8 template<class T > static void XML::new_prop (xmlNode * *node*, const std::string & *key*, T *value*) [inline, static]

Shortcut to xmlNewProp, using C++ std::string

6.93.2.9 static xmlNode* XML::new_text (const std::string & *text*) [inline, static]

Shortcut to xmlNewText, using C++ std::string

6.93.2.10 std::string XML::to_string (xmlNode * *node*, int *indent_level* = 0) [static]

Outputs a node to a string, recursively

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

- wps/xml_helper.hh
- wps/xml_helper.cc