

# Realworld SyncManager

## Concepts and technical features

### Transparent synchronization between Smallworld GIS and Oracle Spatial

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Realworld SyncManager provides functionality for the synchronization of spatial and non-spatial data managed in the version managed data store of Smallworld GIS and corresponding data in an Oracle.

### SyncManager Features

The main goal of Realworld SyncManager is the synchronization of the Smallworld Version Managed Data Store (VMDS) with an Oracle Spatial Database. Highlights of functionality are:

- User friendly setup of the synchronization process;
- Transparent process execution;
- Graphical user interface to setup the mapping between Smallworld and Oracle;
- Support of synchronization of Smallworld multiple / internal worlds. Metadata about the different worlds is stored within Oracle;
- Synchronization of joins;
- Synchronization of standard Smallworld dimensions;
- And synchronization of enumerators.

The optimal performance of SyncManager results in short synchronization times.

### Realworld SyncManager

Realworld SyncManager addresses the data synchronization between Smallworld and Oracle Spatial on a number of levels:

#### Quality assurance

Synchronization of data between different databases and data models requires special attention.

The Data Quality Checker within Sync Manager enables users to get an overview of the quality of the synchronization process.

The Data Fixer enables users to fix potential errors and execute quality tests.

#### Performance suitable for operations

Realworld SyncManager assures that the synchronization process is performed at optimal speed, bringing the synchronization process within the scope of operational tasks.

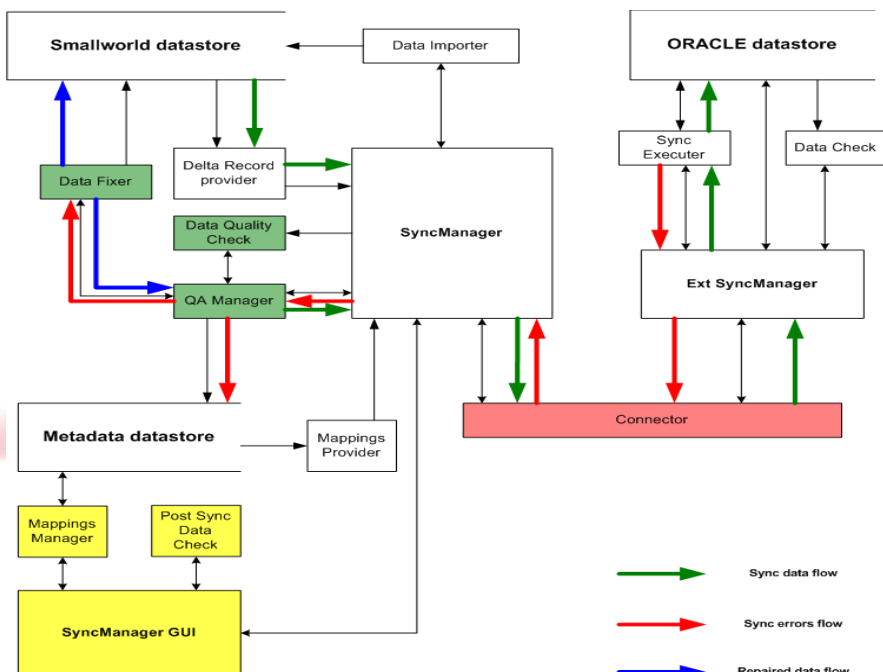
#### Transparent configuration

Realworld SyncManager provides a graphical user interface to setup the mappings of data types between the Smallworld and Oracle data models. This mapping includes functions to change naming convention for ease of use and reference.

#### Transparent process view

The graphical user interface of Realworld SyncManager allows users to:

- Perform data quality checks on the collections marked for synchronization
- Perform post synchronization integrity checks
- Browse and manage potential synchronization errors
- Browse and manage potential post - synchronization inconsistencies.



Synchronization data flow

## Ext SyncManager

A set of components within Realworld SyncManager is responsible for managing the connection between Smallworld and Oracle and transforming the data exchanged between both systems. This collection of tools is called Ext SyncManager.

Ext SyncManager performs the following tasks:

- The Ext SyncManager instructs the Sync Executer to extract the changes for an Oracle table;
- For each changed record, the Sync Executer builds a delta record and sends it to Ext SyncManager;
- The delta records are marshaled to SyncManager;
- The SyncManager forwards the delta records to a Data Importer;
- Data Importer transforms the marshaled data into Smallworld data according to mapping definitions and tries to post it to Smallworld data store;
- The Data Importer catches any errors that might be thrown while posting to data store, wraps them into XML elements and forwards the XML to SyncManager that will forward them to the QA Manager;
- The QA Manager will store the errors to persistent storage (Metadata data store).

## Communication Interface

This connector component is responsible for creating and facilitating the communications between the Sync Manager's two sets of components.

It is designed to act as a channel for data between the two systems.

## The synchronization process

The Smallworld Sync Manager set of components is responsible with managing the mappings between Smallworld and Oracle data models and ensuring the quality of synchronization process and also the quality of the exchanged data.

The process knows the following detailed activities:

- The records required for synchronization are extracted from the Smallworld data store using Delta Record provider.
- The Delta Record provider builds delta records according to the mapping definition.
- The delta records are marshaled to Sync Manager.
- Ext Sync Executer transforms the marshaled data into Oracle data and posts to the Oracle database.
- The Sync Executer catches any errors that might be thrown while posting to Oracle and forwards them to Sync Manager.
- The Ext Sync Manager sends the errors to Sync Manager that forwards them to the QA Manager.
- Depending on the mapping definition, the QA Manager might store the errors to persistent storage (Metadata data store) or forwards them to a Data Fixer.
- The Data Fixer repairs the defect data as far as possible, makes the necessary updates in the database, rebuilds the delta record and sends it to QA Manager.

The QA Manager sends the new delta records to Sync Manager which will marshal it to Ext Sync Manager.

## Availability

Realworld Sync Manager is available for:

- Smallworld Release 3.3 and higher together with
- Oracle Spatial 10.0.2 and higher