Type of Operation

Derived Asset Solution

May 2, 2013

Contents

1.0 Introduction

The purpose of this document is to provide the Kentucky Transportation Cabinet (KYTC) with supporting documentation to accompany a script that has been developed to meet an outstanding data need. This document should be read in its entirety prior to running the script that it supports, *install_derived_asset_type_op.sql*. It provides brief instructions on how to install the derived and make updates to meet any administration requirements, such as defining roles to control user access to the new asset.

The script creates a Derived Asset for the direction of travel information that is currently maintained as an attribute on the base datum network element. KYTC originally maintained direction of travel information as an asset attribute, but in order to support other systems, such as SuperLoad, changed business practices to maintain the information as an attribute on the base datum element. Other systems, such as TED and HPMS, still require the information to be available as a route based asset view for reporting and also for querying using Exor forms. KYTC does not want to conduct maintenance on the information in two separate areas. The information also needs to be displayable as a GIS layer. Bentley Systems, Inc. has developed a script that will meet this need and this document will instruct KYTC on how to install the function.

2.0 Description of Derived Asset Solution

Bentley Systems has developed a script that utilizes existing functions in the Exor Software and provides a solution to meet the requirements discussed above. KYTC has already created a foreign table asset of the base datum, 'BD' and a merge query has been created. A derived asset is then created using this merge query that provides the direction of travel information along routes in an asset. A DBMS job will perform a scheduled refresh and rebuild of the derived asset that will keep it sufficiently up to date.

3.0 Derived Asset Details and Administration Security

Bentley has created an installation process to implement standard features of the Exor software. The details of these are:

- A foreign table asset is required so merge query can query data from the base datum. KYTC has already created a foreign table asset of the base datum called 'BD'.
- A merge query 'TYPEOP' is created with a role HIG_ADMIN in Normal mode. The merge query returns a record each time the direction of travel on a route changes. The merge query will only return values as they change, instead of returning a value for each base datum.
- A derived asset 'OPBD' is created with one attribute 'TYPE_OP' that will hold the derived information. Metadata is created for the asset and its attribute, and this metadata can be reviewed in the forms application using the Asset Metamodel Form. Roles are assigned to the asset to control who is able to view and update the asset. By default, the roles assigned with this process are INV_ALL in Normal mode and INV_READONLY in Read only mode. The KYTC administrator should alter the roles associated to this asset using forms in the normal way.

4.0 Installing the Derived Asset

A script has been provided to install the derived asset and all of its dependencies to the database. It creates the derived asset, associated roles, and the merge query. This script will remove any existing asset with the name 'OP'.

The script can be located in ..\install\ *opbd_kytc_derived_asset.sql*

After installation please review the log file that is created during the installer process of errors.

5.0 Creating the DBMS Job

A DBMS job needs to be created and run to rebuild the derived asset periodically. The KYTC administrator can designate a date and interval that will run the job, automating the process of rebuilding the asset with up to date data. A process to start the job will look like this:

```
Set serveroutput on

DECLARE
  X NUMBER;
BEGIN
  SYS.DBMS_JOB.SUBMIT
  ( job       => X
   ,what      => '-- Derived Assets ad hoc: OP
nm3inv_composite2.call_rebuild(
   p_dbms_job_no => job
  ,p_inv_type => ''OP''
  ,p_effective_date => TO_DATE(sysdate)
  ,p_send_mail => TRUE

);'
   ,next_date => TO_DATE(sysdate)
   ,interval  => 'to_date(sysdate +1)'
   ,no_parse  => FALSE
  );
  SYS.DBMS_OUTPUT.PUT_LINE('Job Number is: ' || to_char(x));
COMMIT;
END;
```

6.0 Uninstalling the Derived Asset

An additional script has been provided that can be run if KYTC ever needs to remove the derived asset and all of its dependencies from the database. It deletes the derived asset, associated roles, the merge query, and all associated inventory items and members. This must be done if the derived asset type ever needs to be recreated.

The script is titled: *uninstall_derived_asset_type_op.sql*

The DBMS job should be manually removed.

7.0 Summary and Conclusion

The derived asset created by running the script accompanying this document will meet the data needs for querying and reporting information pertaining to direction of travel on its state's highways.

KYTC will continue to be able to maintain direction of travel as a base datum attribute but will also be able to access this information as an asset through Exor forms or other reporting and querying mechanisms. Like any asset, a GIS layer can be created so that this information can also be viewed as an asset layer in Spatial Manager or Locator. The attributes of the derived asset could be extended to include the route location of the resulting sections if this was desired.

Although the derived asset is refreshed periodically, the job created with this script can be run automatically at a set interval, so that the asset is rebuilt with new data as often as KYTC deems necessary.