

# **How To Test Data Abstraction Best Practices**

## An Open Source Asset for use with TIBCO® Data Virtualization

TIBCO Software empowers executives, developers, and business users with Fast Data solutions that make the right data available in real time for faster answers, better decisions, and smarter action. Over the past 15 years, thousands of businesses across the globe have relied on TIBCO technology to integrate their applications and ecosystems, analyze their data, and create real-time solutions. Learn how TIBCO turns data—big or small—into differentiation at www.tibco.com.

Project Name	AS Assets Data Abstraction Best Practices	
<b>Document Location</b>	This document is only valid on the day it was printed. The source of the document will be found in the ASAssets_DataAbstractionBestPractices folder (https://github.com/TIBCOSoftware)	
Purpose	Self-paced instructional	



www.tibco.com

Global Headquarters 3303 Hillview Avenue Palo Alto, CA 94304 Tel: +1 650-846-1000 +1 800-420-8450

Fax: +1 650-846-1005

## **Revision History**

Version	Date	Author	Comments	
1.0	08/28/2013	Mike Tinius	Initial revision	
8.0	12/05/2013	Mike Tinius	Updated for Best Practices 8.0	
8.1	05/05/2014	Mike Tinius	Updated for Best Practices 8.1 and ASAssets change.	
8.1.3	08/08/2014	Mike Tinius	Updated docs for Best Practices 8.1.3 release.	
8.1.4	08/25/2014	Mike Tinius	Updated for Best Practices 8.1.4 release.	
8.1.5	11/26/2014	Mike Tinius	Updated for Best Practices 8.1.5 release	
8.1.6	05/20/2014	Mike Tinius	Updated for Best Practices 8.1.6 release	
8.1.7	11/26/2014	Mike Tinius	Updated for Best Practices v8.1.7 – added generateViews=2 to allow generating views with a SELECT * projection.	
8.1.8	05/24/2017	Mike Tinius	Updated for Best Practices v8.1.8 – added Privilege scripts.	
8.1.9	12/06/2017	Mike Tinius	Transitioned to Tibco for release 8.1.9	
2018Q1	03/20/2018	Mike Tinius	Release 2018Q1 – no changes.	

## **Related Documents**

Name	Version
How To Use Utilities.pdf	2018Q1
How To Use Data Abstraction Best Practices.pdf	2018Q1
How To Learn Data Abstraction Best Practices.pdf	2018Q1
How To Use Data Abstraction Best Practices Manage Annotations.pdf	2018Q1
How To Use Data Abstraction Best Practices Privilege Scripts.pdf	2018Q1

## **Supported Versions**

Name	Version
TIBCO® Data Virtualization	7.0 or later
AS Assets Utilities open source	2018Q1 or later

## **Table of Contents**

1	Overview 4	
2	Project Maintenance Functional Tests	5
3	Upgrade Project Functional Tests	7
4	Generate Views Functional Test	12
5	Perform Round Trip Test	21
	Test Round Trip for "lab00"	21
	Test Round Trip for "BestPracticesTestSmall"	24

#### 1 Overview

This document provides a test plan for the Data Abstraction Best Practices. The test plan should be followed whenever the Utilities and Best Practice code is changed. In the text below, any reference to "X\_X\_X" should be replaced with the current version of the Best Practices. The test project that will be used for testing will be called "lab00". There are also references to the major and minor version XX. In this case the point release is dropped from the folder name. These releases should be considered minor point release upgrades to the existing Data Abstraction Bes Practices folder. For example:

- /shared/BestPractices\_v81
  - o The same folder is used for 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.5, 8.1.6, and 8.1.7
  - Each point release will overwrite the previous release.
- /shared/BestPractices\_v82 this would represent a minor release change where the functionality was great enough to determine elicit a new folder while preserving the original folder.
  - This could be a result of structural changes to the code base or differences in the underlying Utilities parameters.

## 2 Project Maintenance Functional Tests

The project maintenance methods are found in the folder: /shared/BestPractices\_vXX/\_ProjectMaintenance

#### Assumptions:

- The Data Abstraction Sample was imported during installation.
  - BestPractices\_YYYYQn\_DataAbstractionSample81.car

The following are a list of functional tests that should be performed:

- Get the Best Practices Version
  - getBestPracticesVersion()
  - Result: returns the current version. Example: 2018.1
- 2. Update Impacted Resources
  - updateImpactedBestPractices()
  - Result: returns 1 for success
- 3. Generate Project
  - generateProject( "/shared/lab00", 1, 1)
  - Result: Refresh Studio...generates the project specified on input.
- 4. Create data source metadata
  - Copy the entire folder of Metadata found at: /shared/DataAbstractionSampleXX/Physical/ Metadata to /shared/lab00/Physical
  - Copy the entire folder of Transformations found at: /shared/DataAbstractionSampleXX/Physical/ Formatting/Transformations to /shared/lab00/Physical/Formatting
  - o Rebind the XSLT in Formatting/Transformations to test/Metadata...
- 5. Generate Configure Starting Folders
  - generateConfigureStartingFolders("/shared/lab00")
  - Result: Refresh Studio...generates a new ConfigureStartingFolders at /shared/lab00/ scripts/Configure/ConfigureStartingFolders
- 6. Rename Project
  - o renameProject("/shared/lab00", "lab00 new", 1, 1, 1)
  - Result: Refresh Studio...project has a new name of test\_new

- Verify /Constants/defaultValues basePath should be rebound to new name.
- Verify /Documentation/documentationTrigger\* parameters should be rebound to new name.
- Verify /Generate/generate\* all should be rebound to new name.

## 7. Move Project

- o **moveProject**("/shared/lab00 new", "/shared/labs/test", 1, 1, 1)
- o **Result**: Refresh Studio...project has been moved to a new folder
  - Verify /Constants/defaultValues basePath should be rebound to new name.
  - Verify /Documentation/documentationTrigger\* parameters should be rebound to new name.

Verify /Generate/generate\* - all should be rebound to new name.

## 3 Upgrade Project Functional Tests

The upgrade project maintenance method is found in the folder: /shared/BestPractices\_vXX/\_ProjectMaintenance. Import sample projects are previous versions of the Best Practices from the RegressionTest folder. The following are a list of functional tests that should be performed:

- 1. Upgrade version 1.0
  - a. Import (overwrite) sample project DataAbstractionSample10.car
  - b. Import (overwrite) B.P. 3.0 BestPractices\_generic\_v3-2010-09-30.car
  - c. **upgradeProject**(X.X, "/shared/DataAbstractionSample10", 1)
  - d. Result: creates folder: /shared/DataAbstractionSample10\_vXX
- 2. Upgrade version 4.0
  - a. Import (overwrite) sample project DataAbstractionSample40.car
  - b. Import (overwrite) B.P. 4.0 BestPractices v4-2011-02-08.car
  - c. **upgradeProject**(X.X, "/shared/DataAbstractionSample40", 1)
  - d. **Result**: creates folder: /shared/DataAbstractionSample40\_vXX
  - e. Known Issues:
    - /CRUD/isEmpty/isEmpty\_SupportingDocuments
      - isEmptyString(inVector[1].FileContentBlob, explicit, result);
        - a. change to isEmptyBlob
      - isEmptyString(inVector[1].FileContentClob, explicit, result);
        - a. change to isEmptyClob
    - ii. /CRUD/RetrievePK/retrievePK SupportingDocuments
      - formatString(inVector[i].FileContentBlob, 'FileContentBlob'...
        - a. comment out or remove this line
      - 2. **formatString**(inVector[i].FileContentClob, 'FileContentClob'...
        - a. change to formatClob
- 3. Upgrade version 5.0
  - a. Import (overwrite) sample project DataAbstractionSample50.car

- b. Import (overwrite) B.P. 5.0 BestPractices\_v5\_1-2012\_02\_15.car
- c. **upgradeProject**(X.X, "/shared/DataAbstractionSample50", 1)
- d. Result: creates folder: /shared/DataAbstractionSample50 vXX
- 4. Upgrade version 6.0
  - a. Import (overwrite) sample project DataAbstractionSample40.car
  - b. Import (overwrite) B.P. 6.0 –BestPractices\_v6\_0\_repaired\_ASAssets.car
  - c. **upgradeProject**(X.X, "/shared/DataAbstractionSample60", 1)
  - d. Result: creates folder: /shared/DataAbstractionSample60\_vXX
  - e. Known Issues:
    - i. /CRUD/isEmpty/isEmpty\_SupportingDocuments
      - isEmptyString(inVector[1].FileContentBlob, explicit, result);
        - a. change to isEmptyBlob
      - isEmptyString(inVector[1].FileContentClob, explicit, result);
        - a. change to isEmptyClob
    - ii. /CRUD/RetrievePK/retrievePK\_SupportingDocuments
      - formatString(inVector[i].FileContentBlob, 'FileContentBlob'...
        - a. comment out or remove this line
      - 2. **formatString**(inVector[i].FileContentClob, 'FileContentClob'...
        - a. change to formatClob
- 5. Upgrade version 6.6
  - a. Import (overwrite) sample project DataAbstractionSample66.car
  - b. Import (overwrite) B.P. 6.6 –BestPractices\_v6\_6\_repaired\_ASAssets.car
  - c. upgradeProject(X.X, "/shared/DataAbstractionSample66", 1)
  - d. Result: creates folder: /shared/DataAbstractionSample66\_vXX
  - e. Known Issues:
    - i. /CRUD/isEmpty/isEmpty\_SupportingDocuments
      - isEmptyString(inVector[1].FileContentBlob, explicit, result);

- a. change to isEmptyBlob
- isEmptyString(inVector[1].FileContentClob, explicit, result);
  - a. change to isEmptyClob
- ii. /CRUD/RetrievePK/retrievePK SupportingDocuments
  - formatString(inVector[i].FileContentBlob, 'FileContentBlob'...
    - a. comment out or remove this line
  - 2. **formatString**(inVector[i].FileContentClob, 'FileContentClob'...
    - a. change to formatClob
- 6. Upgrade version 7.0
  - a. Import (overwrite) sample project DataAbstractionSample70.car
  - b. Import (overwrite) B.P. 7.0 –BestPractices\_v7\_0\_repaired\_ASAssets.car
  - c. **upgradeProject**(X.X, "/shared/DataAbstractionSample70", 1)
  - d. Result: upgrades project in place: /shared/DataAbstractionSample70
  - e. Known Issues:
    - i. /CRUD/isEmpty/isEmpty\_SupportingDocuments
      - isEmptyString(inVector[1].FileContentBlob, explicit, result);
        - a. change to isEmptyBlob
      - isEmptyString(inVector[1].FileContentClob, explicit, result);
        - a. change to isEmptyClob
    - ii. /CRUD/RetrievePK/retrievePK SupportingDocuments
      - formatString(inVector[i].FileContentBlob, 'FileContentBlob'...
        - a. comment out or remove this line
      - 2. **formatString**(inVector[i].FileContentClob, 'FileContentClob'...
        - a. change to formatClob
- 7. Upgrade version 7.1
  - a. Import (overwrite) sample project DataAbstractionSample71.car

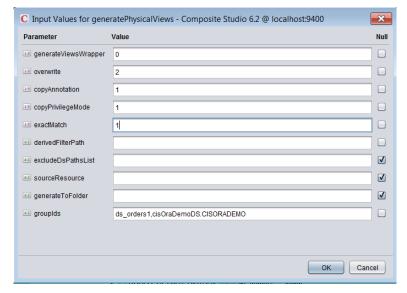
- b. Import (overwrite) B.P. 7.1 –BestPractices\_v7\_1\_repaired\_ASAssets.car
- c. **upgradeProject**(X.X, "/shared/DataAbstractionSample71", 1)
- d. Result: upgrades project in place: /shared/DataAbstractionSample71
- e. Known Issues:
  - i. /CRUD/isEmpty/isEmpty\_SupportingDocuments
    - isEmptyString(inVector[1].FileContentBlob, explicit, result);
      - a. change to isEmptyBlob
    - isEmptyString(inVector[1].FileContentClob, explicit, result);
      - a. change to isEmptyClob
  - ii. /CRUD/RetrievePK/retrievePK SupportingDocuments
    - formatString(inVector[i].FileContentBlob, 'FileContentBlob'...
      - a. comment out or remove this line
    - 2. **formatString**(inVector[i].FileContentClob, 'FileContentClob'...
      - a. change to formatClob
- 8. Upgrade version 7.2
  - a. Import (overwrite) sample project DataAbstractionSample72.car
  - b. Import (overwrite) B.P. 7.2 –BestPractices\_v7\_2\_repaired\_ASAssets.car
  - c. upgradeProject(X.X, "/shared/DataAbstractionSample72", 1)
  - d. Result: upgrades project in place: /shared/DataAbstractionSample72
- 9. Upgrade version 7.3
  - a. Import (overwrite) sample project DataAbstractionSample73.car
  - b. Import (overwrite) B.P. 7.3 –BestPractices v7 3 repaired ASAssets.car
  - c. **upgradeProject**(X.X, "/shared/DataAbstractionSample73", 1)
- d. **Result**: upgrades project in place: /shared/DataAbstractionSample7310. Upgrade version 8.0
  - a. Import (overwrite) sample project DataAbstractionSample80.car

- b. Import (overwrite) B.P. 8.0 BestPractices\_v8\_0\_repaired\_ASAssets.car
- c. **upgradeProject**(X.X, "/shared/DataAbstractionSample80", 1)
  - i. **Result**: upgrades project in place: /shared/DataAbstractionSample80

## 4 Generate Views Functional Test

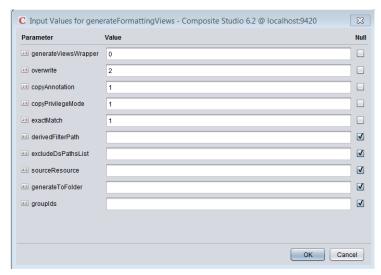
The following are a list of functional tests that should be performed. Refer to the project created in the first section. Open the scripts generate folder: /shared/labs/lab00/\_scripts/Generate.

- Copy Common\_Model\_v3\_file3\_lab.xlxs to C:\CompositeSoftware\BestPractices\BestPractices\_vXX\Common\_Model\_v3\_file 3.xlxs
- 2. Cache common\_model view before starting. Be sure that Common\_Model\_v3\_file3.xlxs contains "lab00" project entries.
- 3. Generate Physical Views
  - generatePhysicalViews(0, 2, 1, 1, 1, null, null, null, null, ds\_orders1,cisOraDemoDS.CISORADEMO)



- Result: rows=152. Folders created:
  - /Physical/Physical/CISORADEMO
  - /Physical/Physical/ds orders1
- 4. Generate Formatting Views
  - generateFormattingViews(0, 2, 1, 1, 1, null, null, null, null, null)

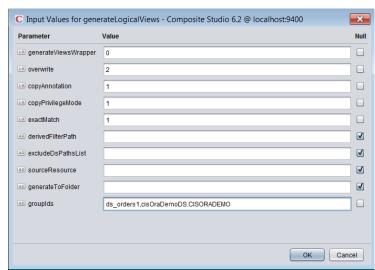
 $\circ$ 



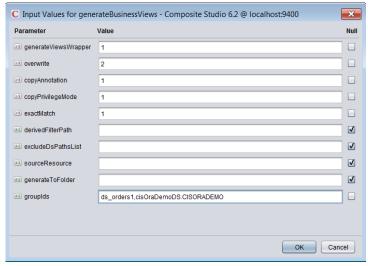
- Result: rows=455. All folders that match the folders in Metadata are created.
- 5. Generate Logical Views

0

generateLogicalViews(0, 2, 1, 1, 1, null, null, null, null, ds\_orders1,cisOraDemoDS.CISORADEMO)



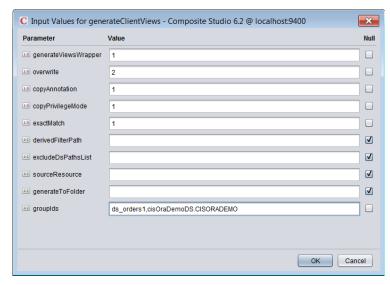
- o Result: rows=153. Folders created:
  - /Business/Business/CISORADEMO
  - /Business/Business/ds\_orders1
- 6. Generate Business Views
  - generateBusinessViews(1, 2, 1, 1, 1, null, null, null, null, ds\_orders1,cisOraDemoDS.CISORADEMO)



- Result: rows=153. Folders created:
  - /Business/Business/CISORADEMO
  - /Business/Business/ds orders1
- 7. Generate Client Views

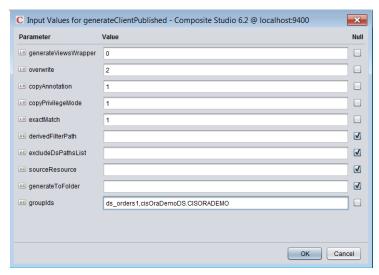
0

generateClientViews(1, 2, 1, 1, 1, null, null,



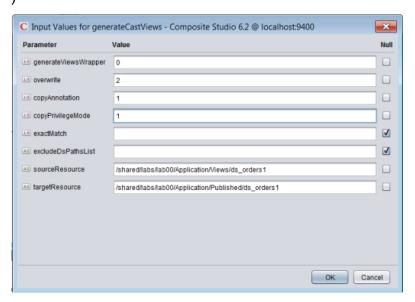
- Result: rows=153. Folders created:
  - /Application/Views/CISORADEMO
  - /Application/Views/ds orders1
- 8. Generate Client Published Views
  - generateClientPublished(0, 2, 1, 1, 1, null, null, null, null, null, null, null, null, orders1,cisOraDemoDS.CISORADEMO)

 $\bigcirc$ 



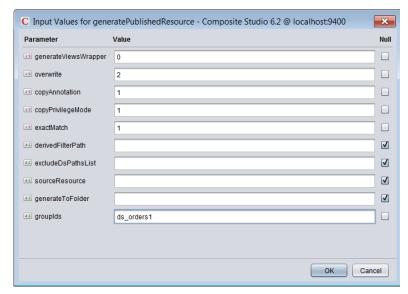
- Result: rows=153. Folders created:
  - /Application/Published/CISORADEMO
  - /Application/Published/ds\_orders1
- 9. Generate Cast Views

- Delete the folder /Application/Published/ds\_orders1
- generateCastViews(0, 2, 1, 1, 1, null, /shared/labs/lab00/Application/Views/ds\_orders1 /shared/labs/lab00/Application/Published/ds\_orders1

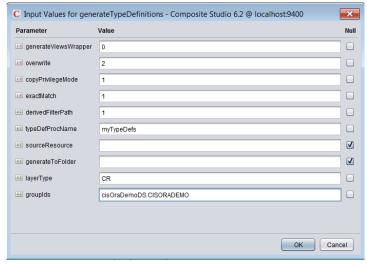


- Result: rows=41. Folders created:
  - /Application/Published/ds\_orders1

- Insure the views were created with cast statements.
- 10. Generate Published Database Resource
  - Create a published database called "ds\_orders1"
  - o **generatePublishedResource**(0, 2, 1, 1, 1, null, null, null, null, ds\_orders1)



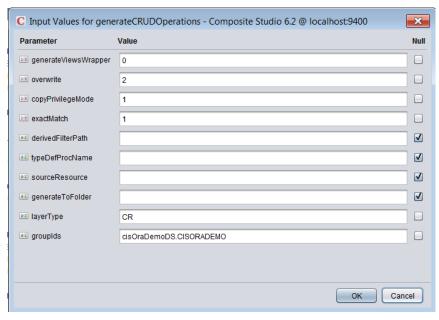
- Result: rows=4. Published resources created:
  - /services/databases/ds\_orders1
    - /customers
    - /orderdetails
    - /orders
    - /shippingmethods
- 11. Generate Type Definitions
  - generateTypeDefinitions(0, 2, 1, 1, null, myTypeDefs, null, null, CR, cisOraDemoDS.CISORADEMO)



- Result: rows=1. Procedure created:
  - /Application/Services/CRUD/Definitions/ myTypeDefs\_cisOraDemoDS.CISORADEMO

#### 12. Generate CRUD Operations

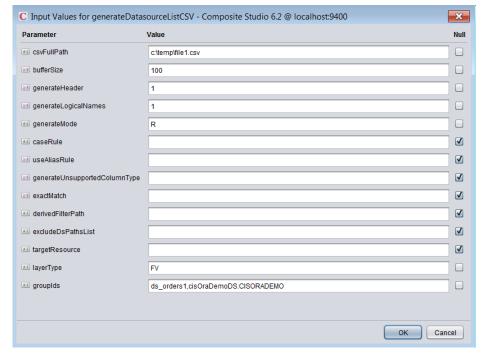
- Pre-requisite: generatePhysicalViews must have been executed with the "generateIndexes=1" variable set.
- generateCRUDOperations(0, 2, 1, 1, null, null,



- Result: rows=103. Folders created:
  - /Application/Services/CRUD/...multiple folders
- 13. Generate Data Source List CSV File

### generateDatasourceListCSV(

c:\temp\file1.csv, 100, 1, 1, R, null, nul

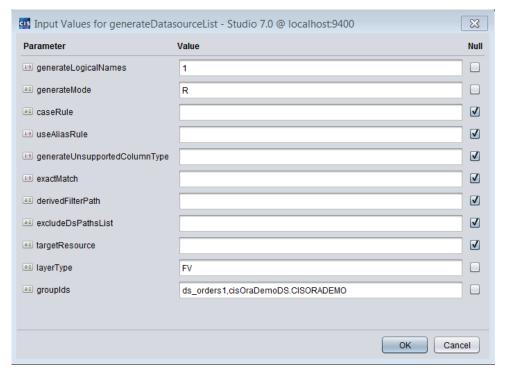


- Result: error=0. File is created:
  - A Common Model Best Practices CSV file gets created in the file system at C:\Temp\file1.csv

#### 14. Generate Data Source List

0

generateDatasourceList(1, R, null, null,



Result: rows=153.

#### 15. Generate "Generic" Views

- Create a custom copy of generateFormattingViews and place in the \_Custom folder
- Modify the following parameter
  - DECLARE generateViews

## SMALLINT DEFAULT 2;

- -- 0=Do not generate (browse only) print out what will happen but don't perform the generation
- -- 1=Do generate [DEFAULT] Perform the VIEW Generation with a column projection.
- -- 2=Do generate Perform the VIEW Generation with a select \* projection.
- generateViews(1, 2, 1, 1, 1, null, null, null, <S>, <T>, null)
  - S /shared/lab00/Physical/Formatting/Transformations/ds XML/productCatalog Transformation
  - T /shared/lab00/Physical/Formatting\_All/Transformations/ds\_XML/productCatalog\_Transformation
  - $S\ / shared/lab00/Physical/Metadata/Excel/Common\_Model\_v3\_file2/Common\_Model\_v3\_file2.xlsx$

/shared/lab00/Physical/Formatting\_All/Excel/Common\_Model\_v3\_file2/Common\_Model\_v3\_file2.xlsx

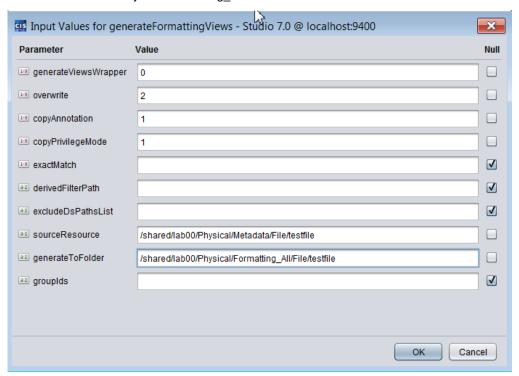
- S /shared/lab00/Physical/Metadata/OracleSource/cisOraDemoDS/CISORADEMO
- T /shared/lab00/Physical/Formatting All/OracleSource/cisOraDemoDS/CISORADEMO
- S /shared/BestPracticesTestSmall/Physical/Metadata/OracleSource/cisOraDemoDS/CISORADEMO

Т

/shared/BestPracticesTestSmall/Physical/Formatting\_All/OracleSource/cisOraDemoDS/CISORADEMO

S /shared/lab00/Physical/Metadata/File/testfile

T /shared/lab00/Physical/Formatting\_All/File/testfile



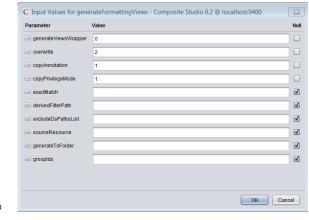
Result: Views generated with SELECT \* projection in the /Formatting\_All folder.

## 5 Perform Round Trip Test

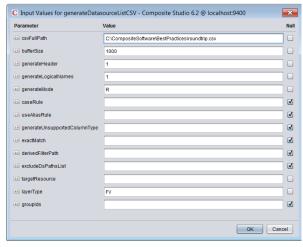
The following is a procedure to follow to execute a round trip test. This test will use the both the "lab00" folder previously created as well as the much larger test base from the "BestPracticesTestSmall" project. The objective of this test is to make sure the code is consistent between generating views and generating the CSV spreadsheet.

#### Test Round Trip for "lab00"

- 1. Assumption: The cache has been refreshed.
- 2. Remove /shared/labs/lab00/Physical/Formatting/<all-subfolders-except-Transformations>
- 3. Generate Formatting Views
  - o **generateFormattingViews**(0, 2, 1, 1, 1, null, null, null, null, null)



- 4. Generate Data Source List CSV File
  - generateDatasourceListCSV(
     C:\CompositeSoftware\BestPractices\roundtrip.csv, 1000, 1, 1, R, null, null, null, null, null, null, null, FV, null)



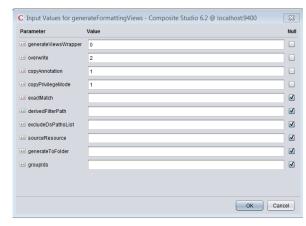
Result: error=0. File is created:

- A Common Model Best Practices CSV file gets created in the file system at C:\CompositeSoftware\BestPractices\roundtrip.csv
- Make a copy of the Formatting layer views Target=/shared/labs/lab00/Physical/Formatting\_Copy\_1
- 6. Copy the contents roundtrip.csv to Common Model v3 file4 sample lab.xlsx
  - Open Common\_Model\_v3\_file4\_sample\_lab.xlsx
  - Open roundtrip.csv in Excel
    - Select cell A2 and use the keystrokes: Ctrl-Shift-End (this will select Columns A-L and all rows except the header row
    - Do a Ctrl-C (copy)
  - Switch to Common\_Model\_v3\_file4\_sample\_lab.xlsx
    - Locate the cells for "lab00"
    - Place your cursor in the first cell for lab00
    - Do a Ctrl-V (Paste)
    - Save the spreadsheet
  - Refresh the cache of the spreadsheets: Common\_Model\_v3\_file[1-4].xlsx
    - Switch to Studio, Manager tab
    - Select "Cached Resources"
    - Select "common model"
    - Click Refresh Cache
- 7. Remove the views in the Formatting layer except the "/Transformations" folder which is considered a source folder for transformation procedures.

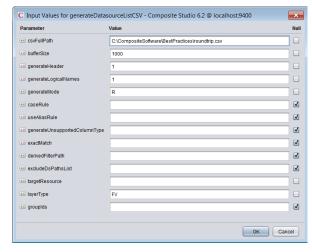
- 8. Generate the Formatting layer views generateFormattingViews(1, 2, 1, 0, null, null, null, null, null, null)
- 9. Validate the view generation process
  - validateGenerateViews(
     /shared/labs/lab00/Physical/Formatting,
     /shared/labs/lab00/Physical/Formatting\_Copy\_1, null, 1, N, C, N)
  - Result: There should be no rows displayed as this indicates that all views are equal and the round-trip was successful.

#### Test Round Trip for "BestPracticesTestSmall"

- Import BestPracticesTestSmall.car.
- 2. Assumption: The cache has been refreshed.
- Remove /shared/BestPracticesTestSmall/Physical/Formatting/<all-subfoldersexcept-Transformations>
- 4. Generate Formatting Views
  - o **generateFormattingViews**(0, 2, 1, 1, 1, null, null, null, null, null)



- 5. Generate Data Source List CSV File
  - generateDatasourceListCSV(
     C:\CompositeSoftware\BestPractices\roundtrip.csv, 1000, 1, 1, R, null, null, null, null, null, null, null, rull)



- Result: error=0. File is created:
  - A Common Model Best Practices CSV file gets created in the file system at C:\CompositeSoftware\BestPractices\roundtrip.csv
- 6. Make a copy of the Formatting layer views

- Target=/shared/ BestPracticesTestSmall/Physical/Formatting\_Copy\_1
- 7. Copy the contents roundtrip.csv to Common\_Model\_v3\_file3.xlsx
  - Open Common Model v3 file3.xlsx
  - Open roundtrip.csv in Excel
    - Select cell A2 and use the keystrokes: Ctrl-Shift-End (this will select Columns A-L and all rows except the header row
    - Do a Ctrl-C (copy)
  - Switch to Common\_Model\_v3\_file3.xlsx
    - Remove all cells with data for columns A-L
    - Place cursor in cell A2
    - Do a Ctrl-V (Paste)
    - Save the spreadsheet
  - Refresh the cache of the spreadsheets: Common\_Model\_v3\_file[1-4].xlsx
    - Switch to Studio, Manager tab
    - Select "Cached Resources"
    - Select "common model"
    - Click Refresh Cache
- 8. Remove the views in the Formatting layer except the "/Transformations" folder which is considered a source folder for transformation procedures.
- 9. Generate the Formatting layer views generateFormattingViews(1, 2, 1, 0, null, null, null, null, null, null, null)
- 10. Validate the view generation process
  - validateGenerateViews(/shared/BestPracticesTestSmall/Physical/Formattin g, /shared/BestPracticesTestSmall /Physical/Formatting\_Copy\_1, null, 1, N, C, N)
    - Result: There should be no rows displayed as this indicates that all views are equal and the round-trip was successful.