



xDI DEV

B Metadata & Mapping



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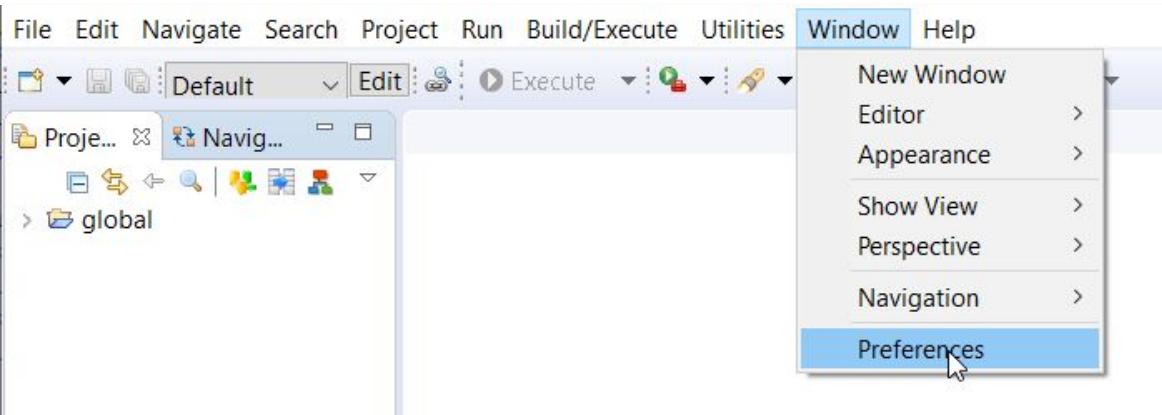
B1 - Introduce Metadata, Mapping & tutorial



Windows preferences

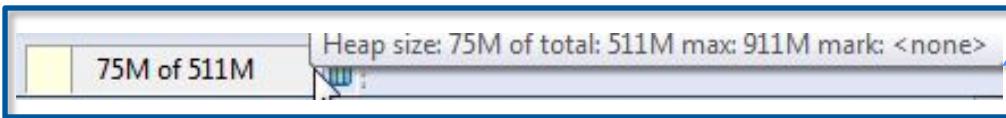


Some Window preferences modified

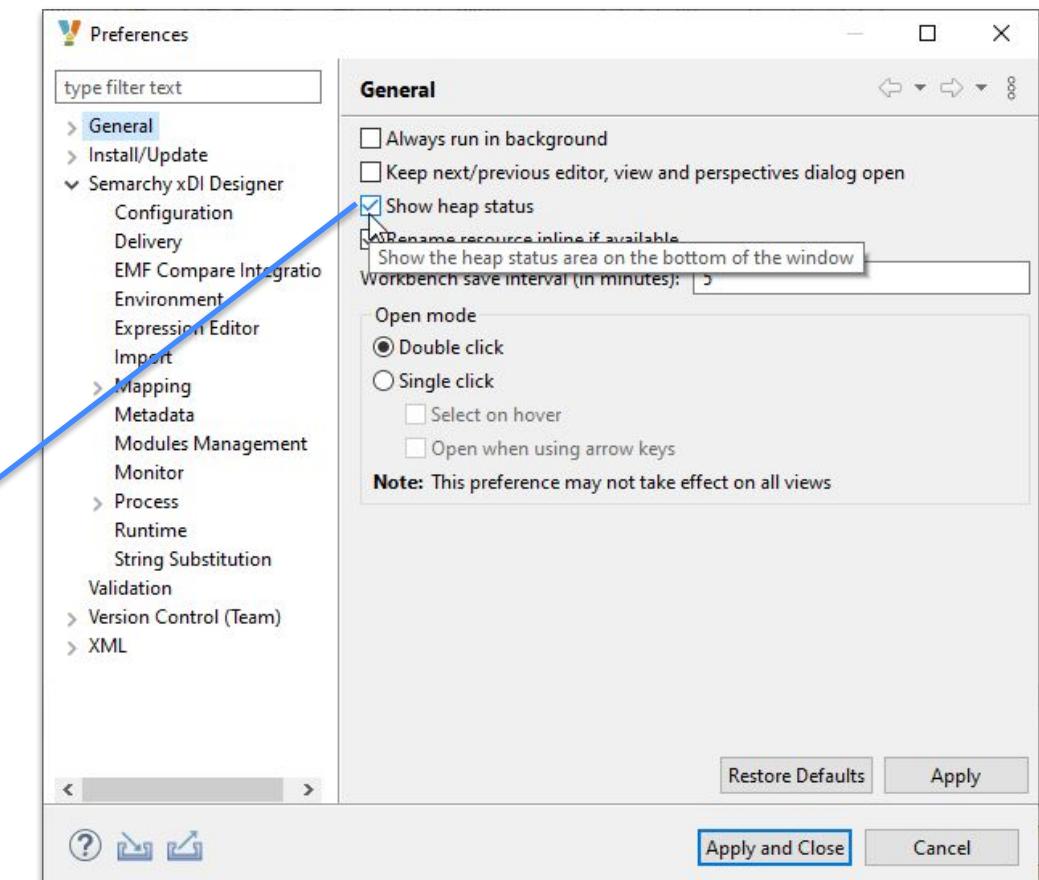


Some options already updated on your workspace

Displayed on the lower band of the Designer Window

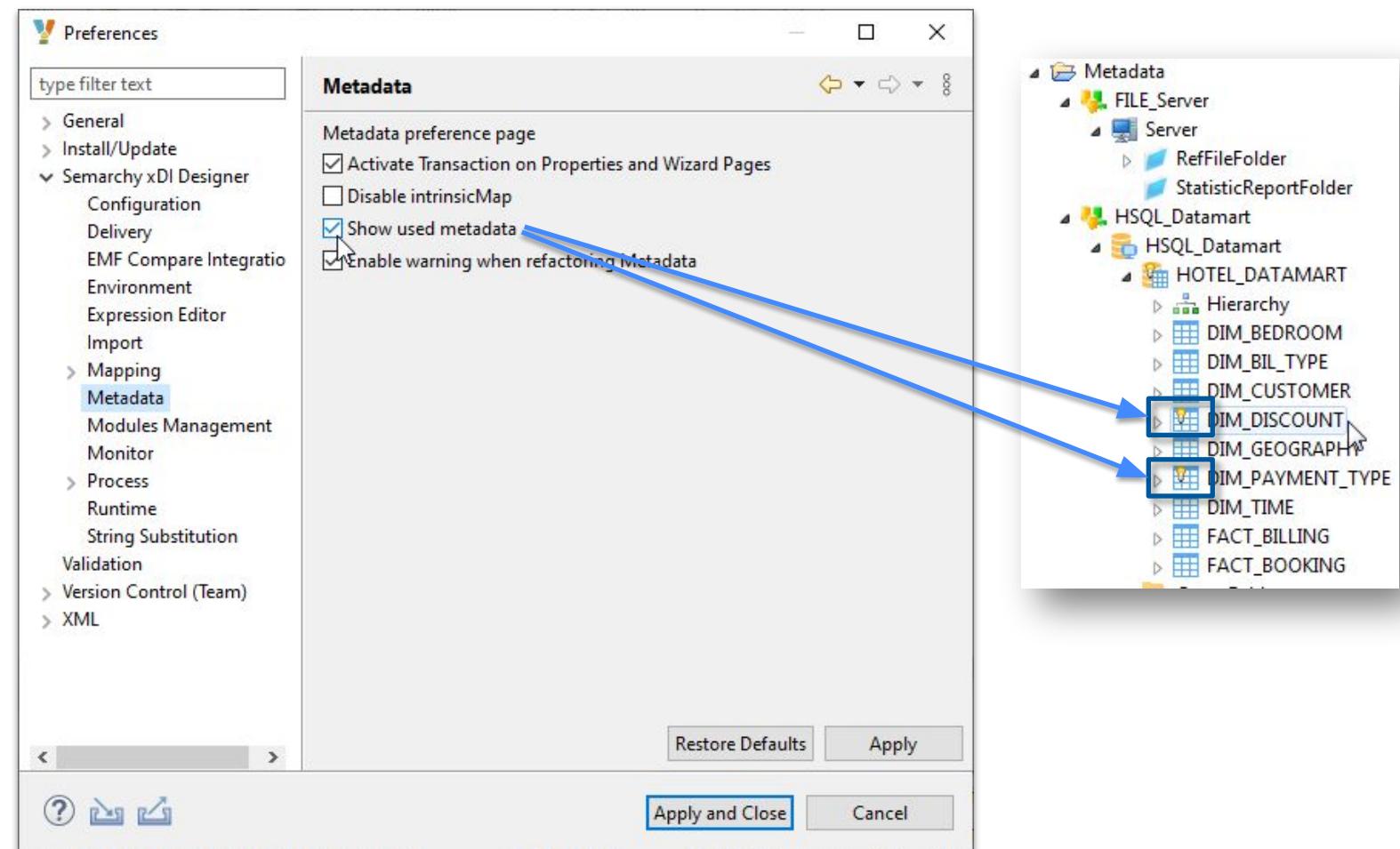


Set “Show heap status” option



Set “Show used metadata”

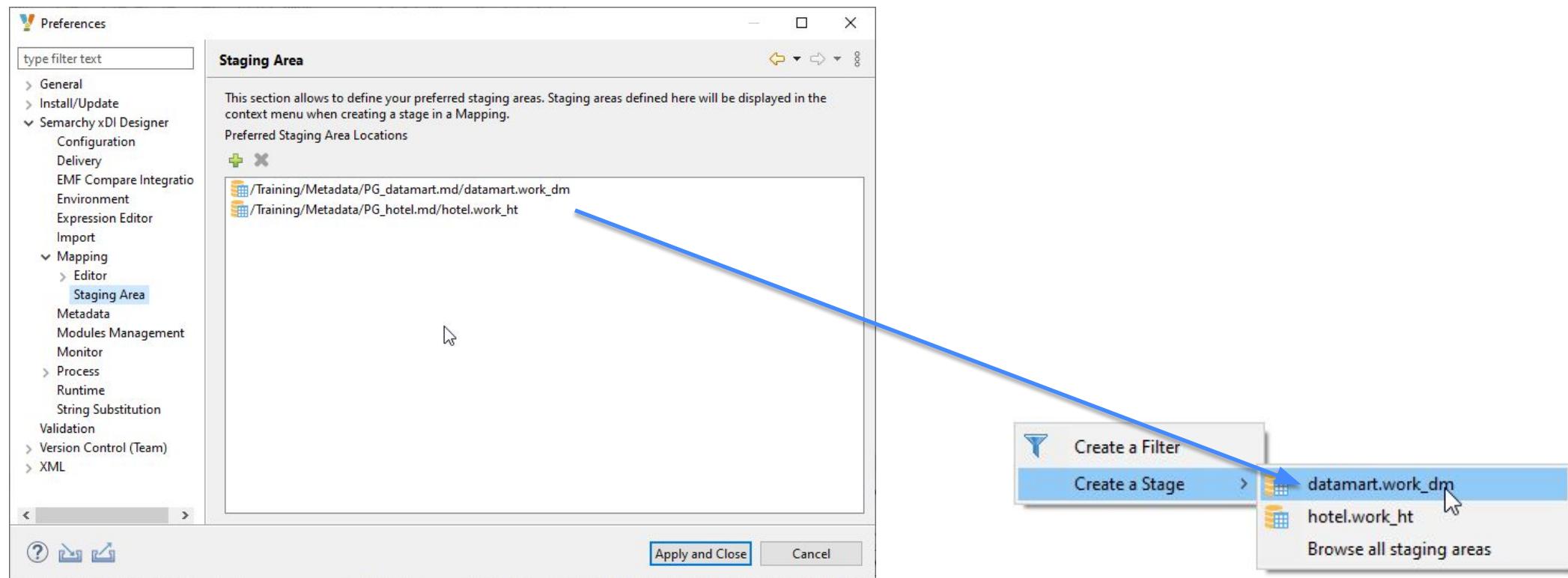
Show used metadata



Define preferred “Staging Area”

Define your preferred staging areas

Allows you to choose directly this schema as a stage in a mapping

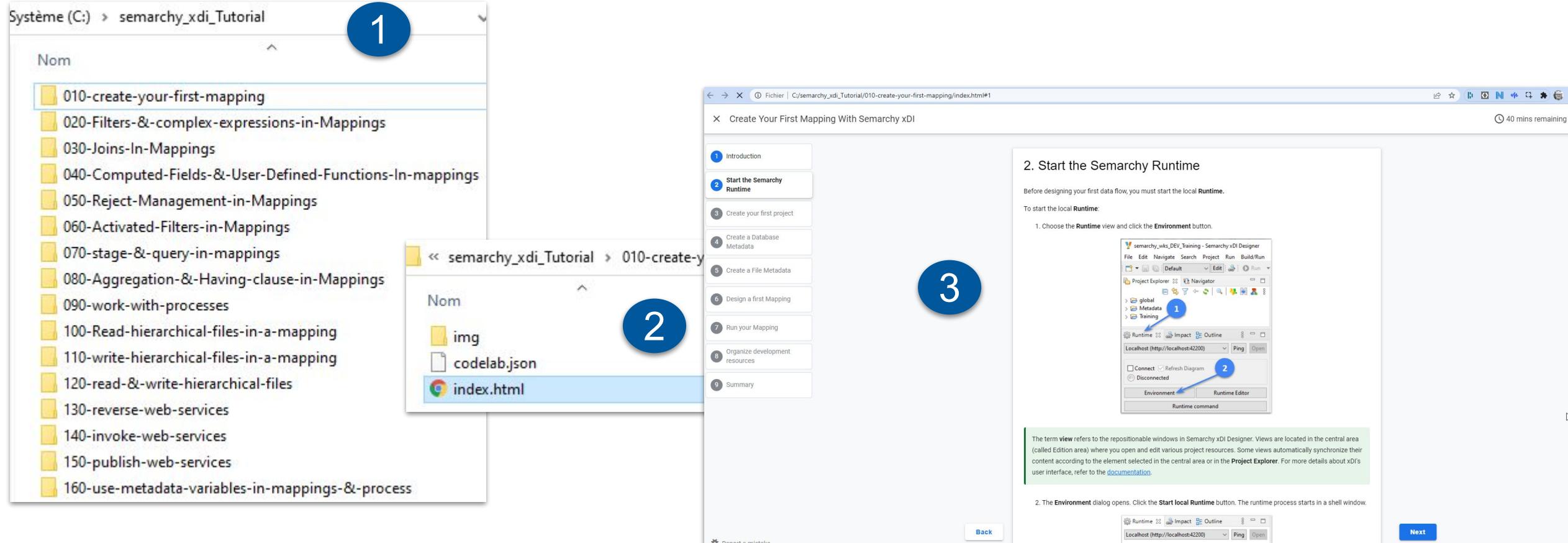




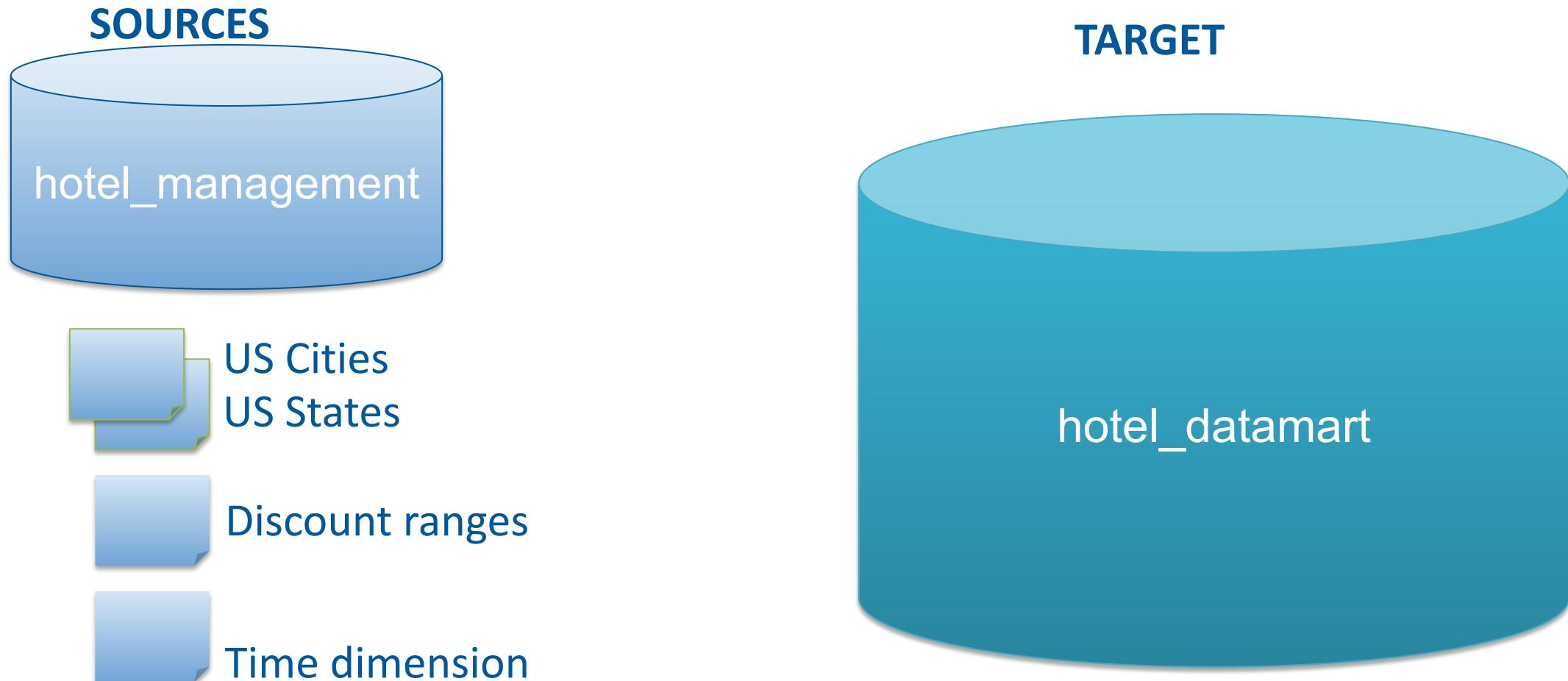
The tutorial



Launch tutorials



The demonstration data sources used in the tutorial





Metadata & the Reverse Engineering



Reverse Engineering of the Metadata

xDI uses standards to represent/capture (reverse engineering) the structure of Company' Information Systems in Metadatas

- To reverse databases, xDI uses [JDBC](#)
 - It is possible to overload the JDBC reverse to retrieve more details
- The reverse of an XML definition is based on an [XML](#) or [XSD](#) file
- The reverse of a JSON structure is based on a [sample json](#) file or a [json schema](#)
- To reverse web services definitions Semarchy xDI uses a [WSDL](#) file or URL
- It's possible to [select a part](#) of hierarchical structure of XML, JSON or Web Services during the reverse

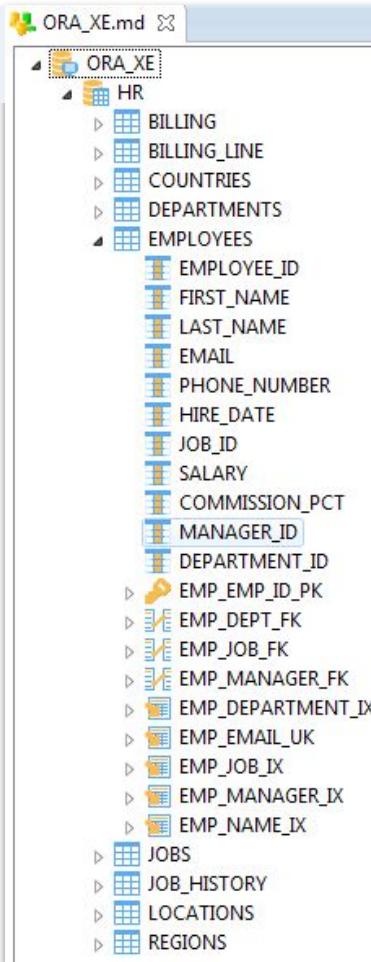
The Metadata files

- The result of a reverse is a metadata file whose extension is « .md »
- Metadata files are XML files
- For each type of technology (rdbms, XML, Web Services) the content of the XML metadata will be different

Result of the Reverse engineering

The result will be different for each technology

Database



Tables

Columns

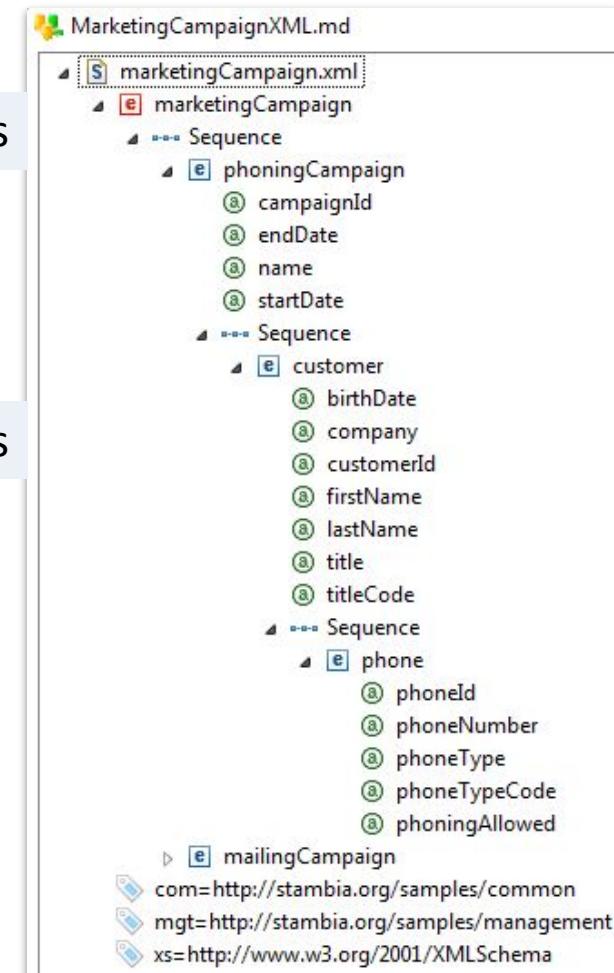
Primary keys

Foreign keys

Indexes

Elements

Attributes



Xml

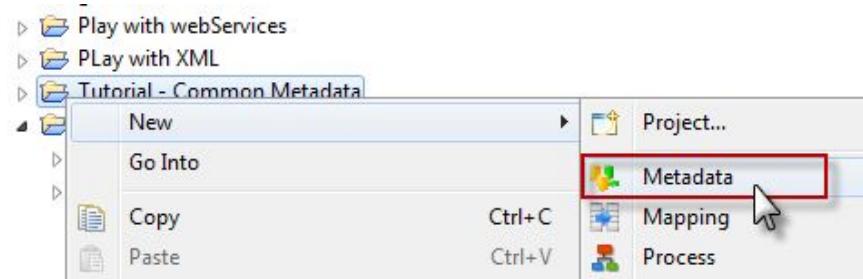
Creating a new Metadata file 1/3

- To create a new metadata file
 - In the project explorer, click on the metadata icon



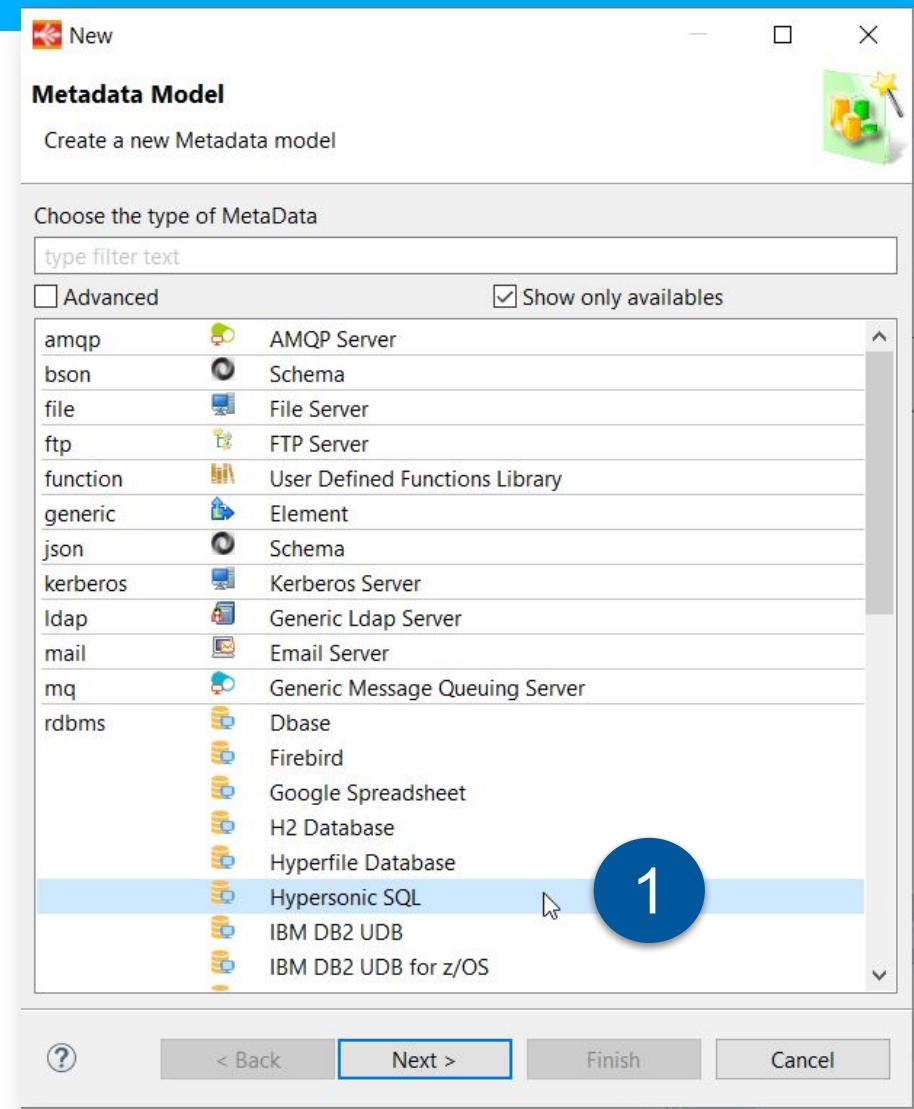
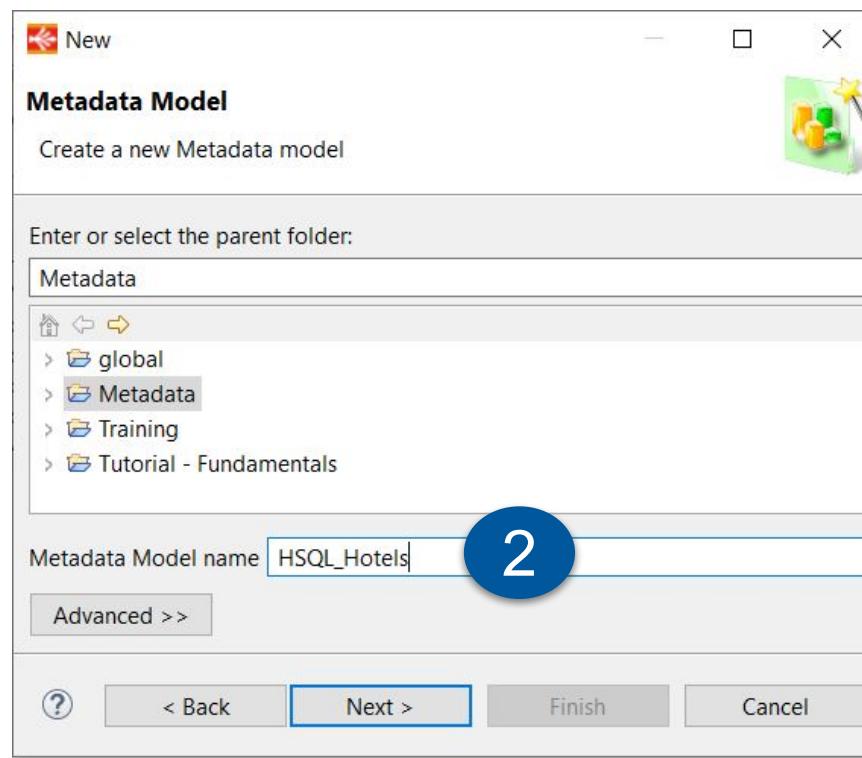
Or

- Right-Click and choose New -> Metadata



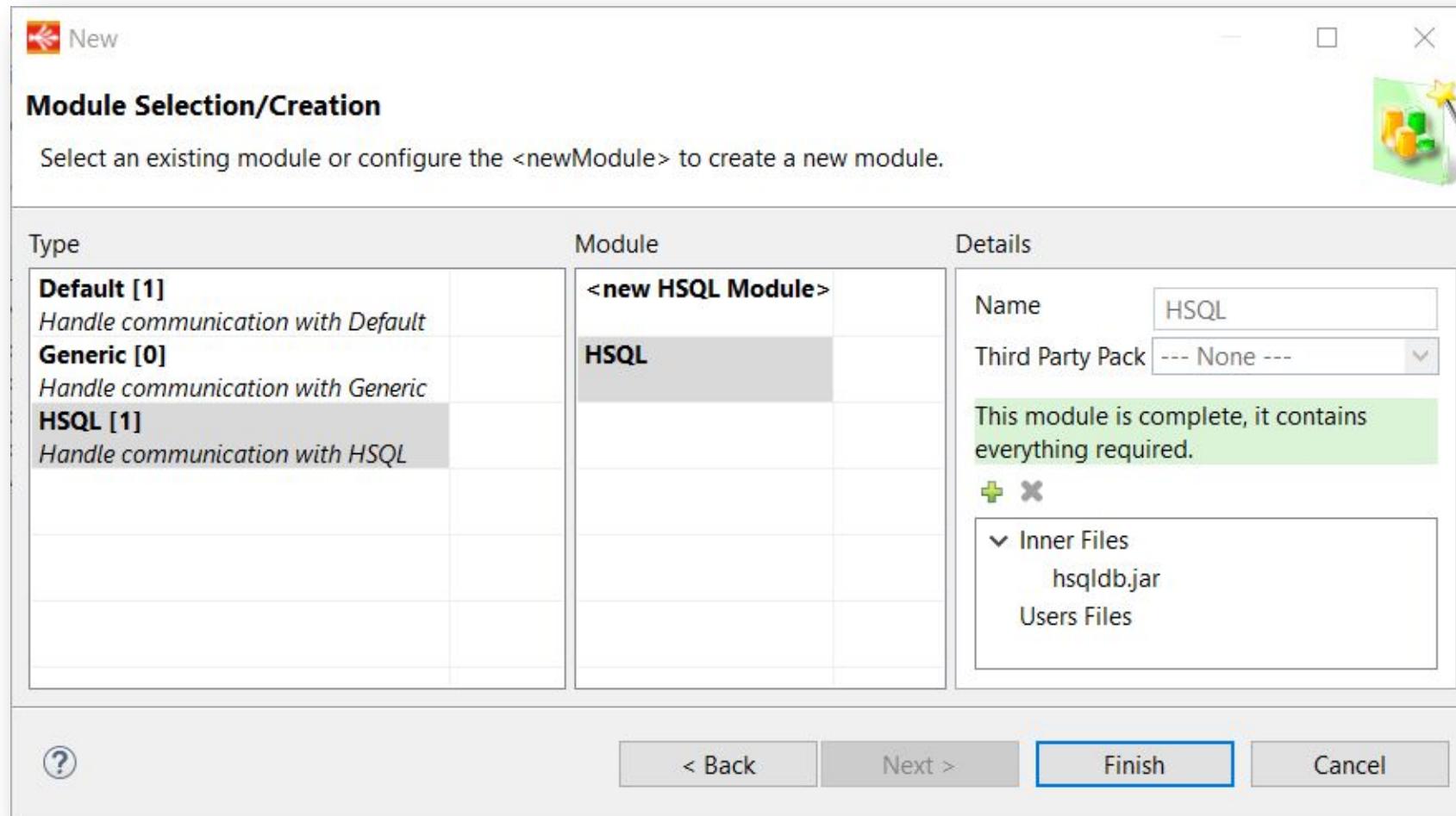
Creating a new Metadata file 2/3

1. Choose the technology
2. Give a name



Create a new Metadata file 3/3

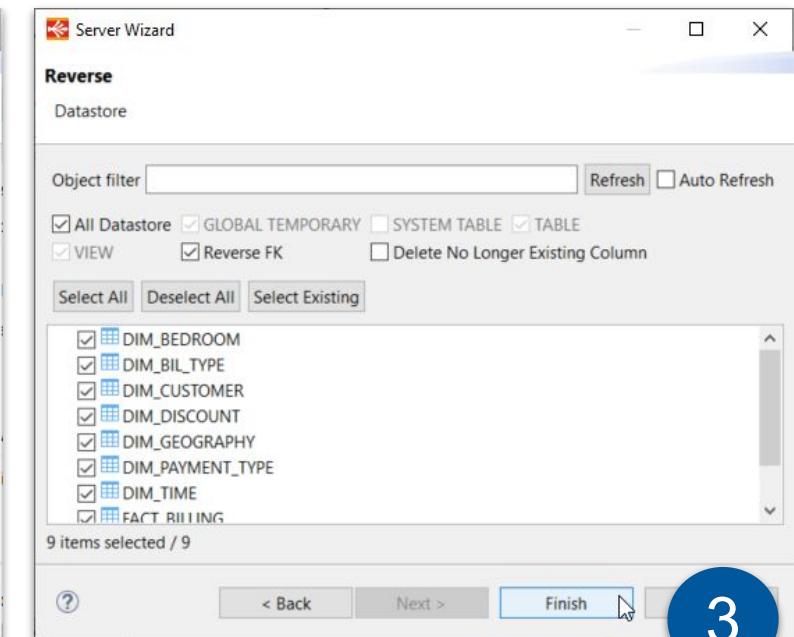
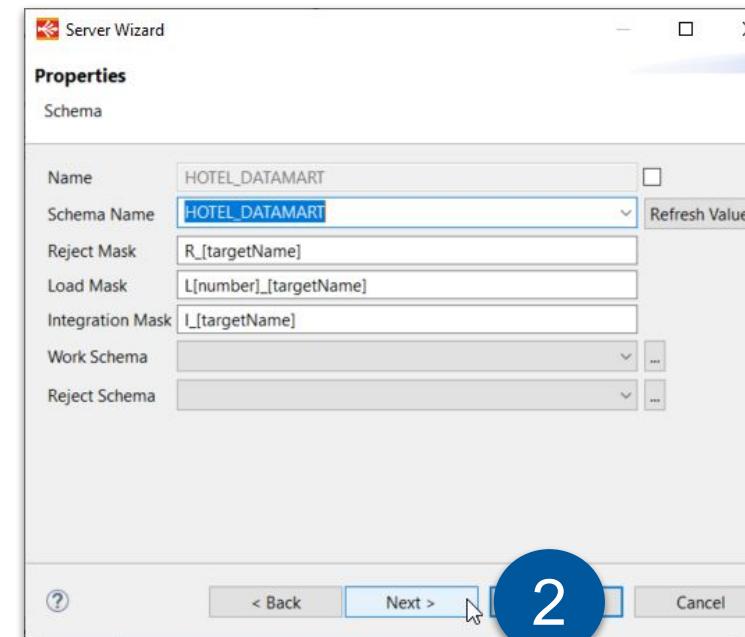
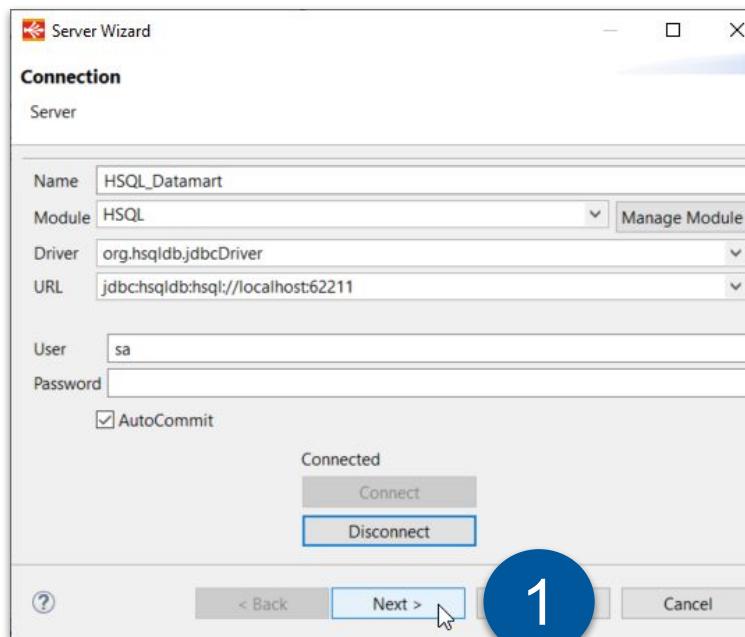
Select the required module & follow the wizard (depending on the technology)



Zoom on RDBMS Metadata

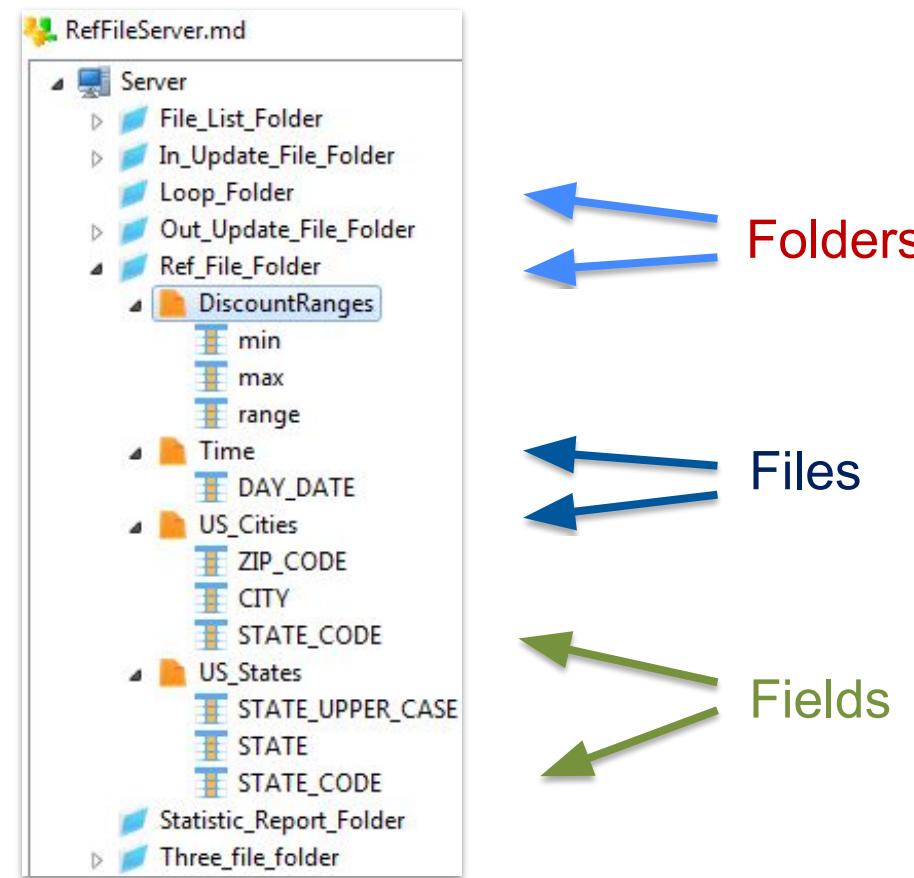
For the Rdbms metadata the wizard will guide you through 3 steps

1. Defining the connection (Url, User, password...)
2. Selecting a schema (container for the tables)
3. Selecting the tables to be reversed



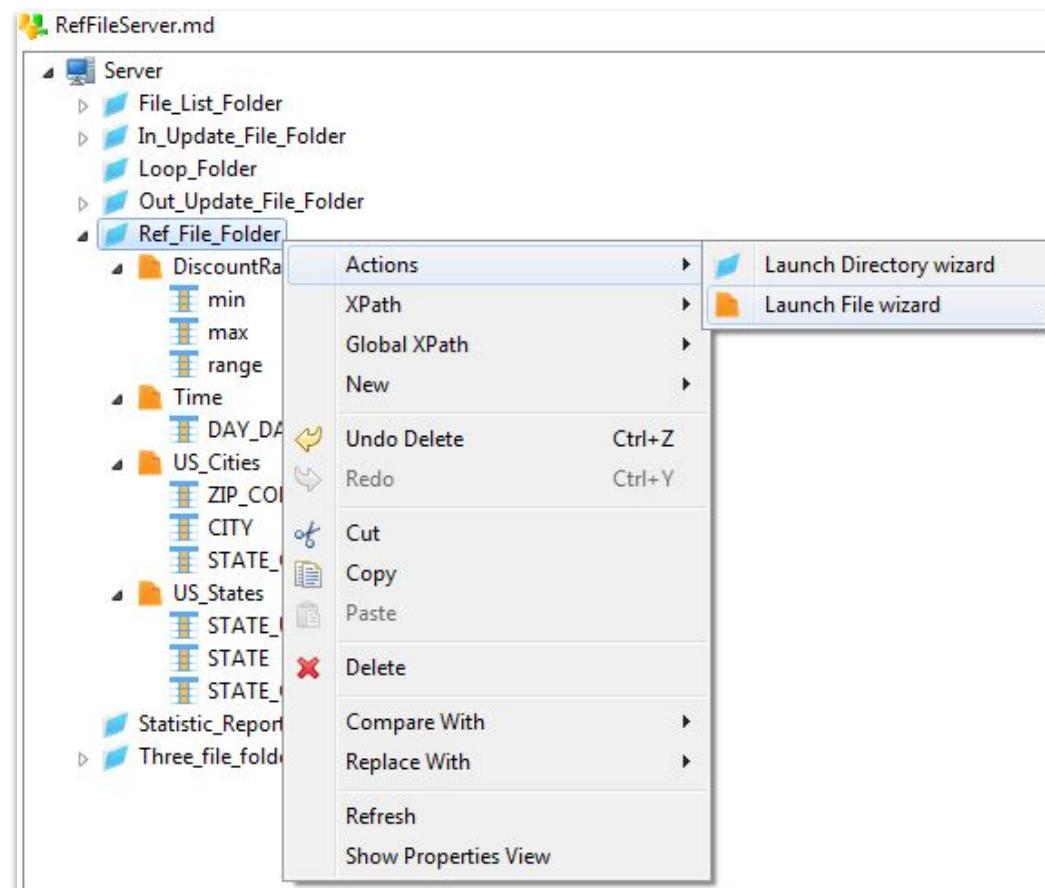
Zoom on file Metadata

The File Server Metadata type allows to group several folders and several files



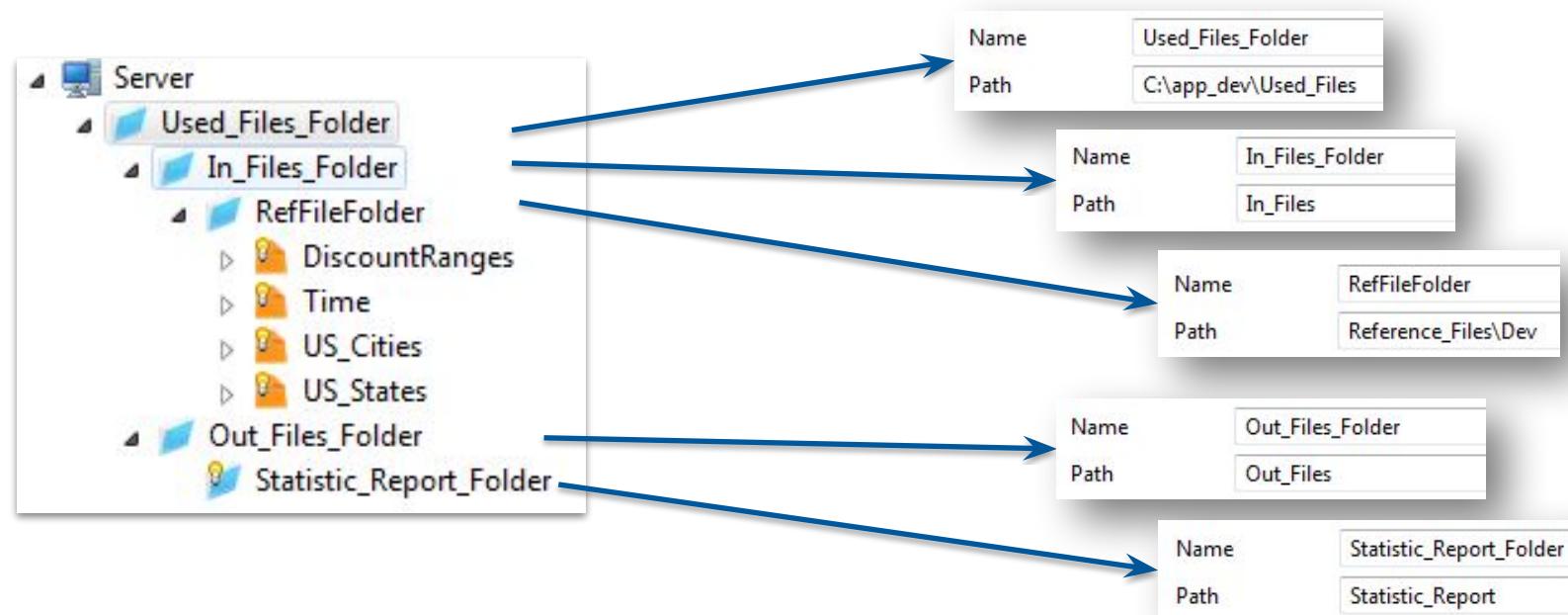
Zoom on file metadata

You can define a new file or a new folder with the help of the wizards



Hierarchical folder structure

You can define a hierarchical folder structure to represent all your folders

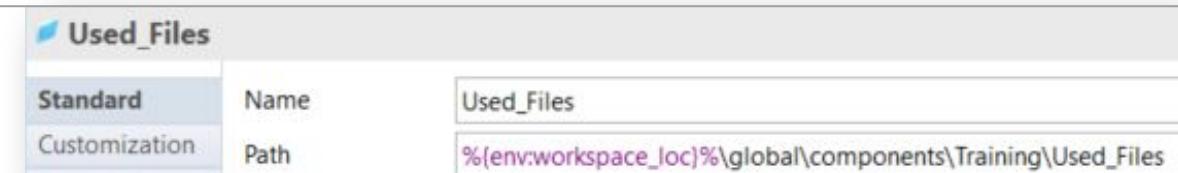
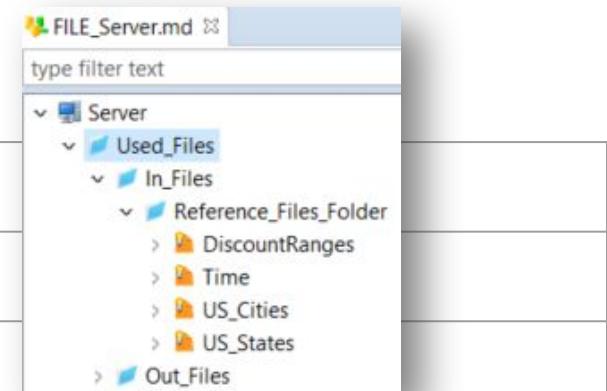


Use substitution variables in file md path

It's possible to use Substitution Variables in path Expressions of the file metadata with the syntax `%{env:<substitution variable>}%`

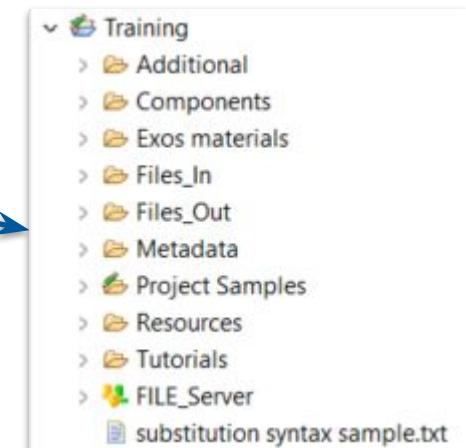
Substitution variables can be :

eclipse_home	<i>Absolute path to current Designer installation folder</i>
workspace_loc	<i>Absolute path to current workspace folder</i>
project_name	<i>Name of the Project from which the value is generated</i>
project_loc	<i>Absolute path of the Project from which the value is generated</i>
resource_name	<i>Name of the resource from which the value is generated, which can be for instance the name of the process in which the value is generated</i>
resource_loc	<i>Absolute path of the resource from which the value is generated, which can be for instance the path of the process in which the value is generated</i>



Available resources in your Workspace

- In the “Training” project, you will find
 - All the required folders, components and files available and ready to use
- In the “Metadata” project,
 - A dedicated File metadata is available and can be used to reverse or generate files



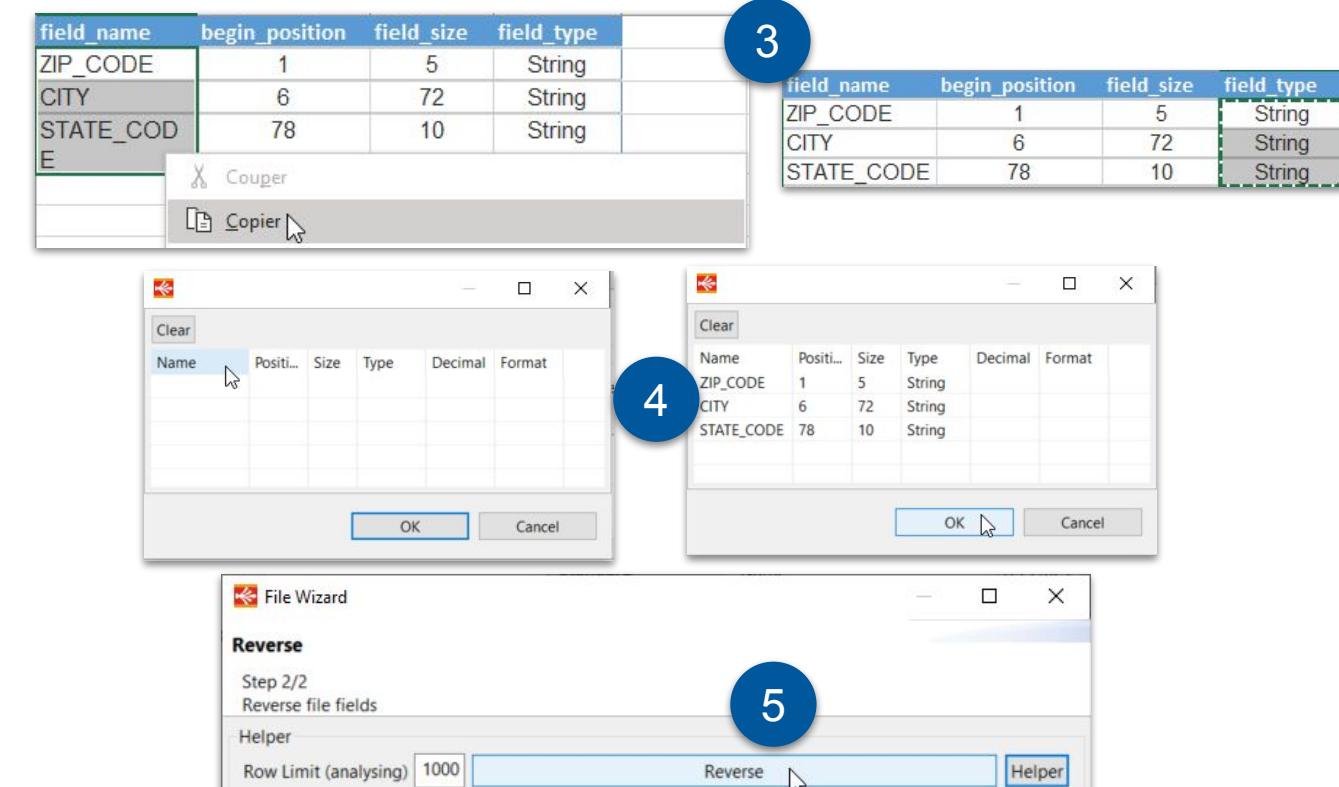
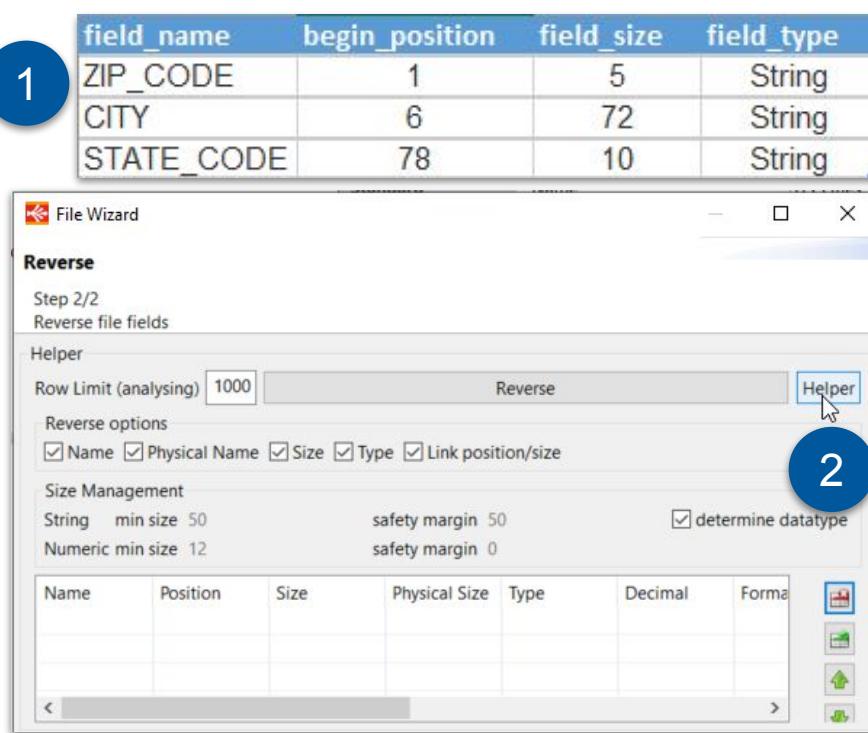
A screenshot of the 'FILE_Server.md' metadata editor. The left pane shows a tree view of components under the 'Server' category, including 'JSON_In_Folder', 'JSON_Out_Folder', 'Reference_Files_Folder' (which is selected), 'Send_Mail_Folder', 'Statistic_Report_Folder', 'XML_In_Folder', and 'XML_Out_Folder'. The right pane displays a table for the 'Reference_Files_Folder' component:

Standard	Name	Path
Customization	Path	Description
Externalize		
Core		

The 'Path' column shows the value: '%{env:workspace_loc%}\Training\In_Files\Reference_Files'.

Use the helper to reverse fields of a file metadata

1. When the description of a file is defined in another description file
2. Use the helper to automatically reverse the description of the fields
3. copy each column content of description file (without column header)
4. Left click on each column of the helper produce a paste





Demo

Files & Rdbms Metadata reverse
engineering





Related tutorial exercises

Creation of the first Metadata



Exploring the results

Take the time to explore the metadata & the Data

The screenshot shows the Hotel.md metadata model. On the left, a tree view lists entities like HOTEL MANAGEMENT, PROD, T_ADDRESS, T_BDR_PLN_CUS, and T_CUSTOMER. The CUS_ID entity is selected in the center panel. Its properties include:

- Name:** CUS_ID
- Physical Name:** CUS_ID
- Type:** INTEGER
- Size:** 32
- Decimal Digits:** 0
- Is Nullable:** Unchecked
- Slowly Changing Dimension Mode:** Unchecked
- Description:** (empty)
- Automatically Generated:** Unchecked
- Auto Increment:** Unchecked
- Enable CDC:** Checked

The screenshot shows the Hotel.md interface. The T_ADDRESS entity is selected. A context menu is open over the entity, with the "Consult data" option highlighted. Below the interface, a SQL query window displays the following results:

```
select * from HOTEL_MANAGEMENT.T_ADDRESS
```

ADR_ID	CUS_ID	ADR_LINE1	ADR_LINE2	ADR_LINE3	ADR_LINE4	ADR_ZIP_CODE	ADR_CITY	ADR_STATE_CODE	ADR_LAT	ADR_LON
1	1	610 Beacon St			02115	BOSTON	MA	42,351498	-71,087196	
2	6	590 lunar street	Staten Island		10304	NEW YORK	NY	<null>	<null>	
3	3	1150 South Lake St			90057	LOS ANGELES	CA	<null>	<null>	
4	4	90210 beverly street			90057	LOS ANGELES	CA	<null>	<null>	
5	5	225 S Duncan St	Staten Island		10304	NEW YORK	NY	40,600956	-74,096970	
6	7	910 E college St			90201	LOS ANGELES	CA	34,061710	-118,233009	
7	2	225 Friend St			02114	BOSTON	MA	42,364445	-71,061172	
8	10	995 Figueroa Terrace	101		90012	LOS ANGELES	CA	34,068233	-118,244682	
9	12	900 W 190th St	Apt 7g		10040	NEW YORK	NY	40,857410	-73,935287	
10	11	105 Prince St	Apt 4		02113	BOSTON	MA	42,366001	-71,056862	
11	13	200 W 143rd St			10030	NEW YORK	NY	40,820374	-73,940086	
12	14	13 Pearson St	Staten Island		10314	NEW YORK	NY	40,590565	-74,188408	
13	15	45 48th Avenue	Queens		11373	NEW YORK	NY	40,741142	-73,875511	
14	16	2370 NW 181 St Terrace	Miami Gardens		33056	MIAMI	FL	<null>	<null>	

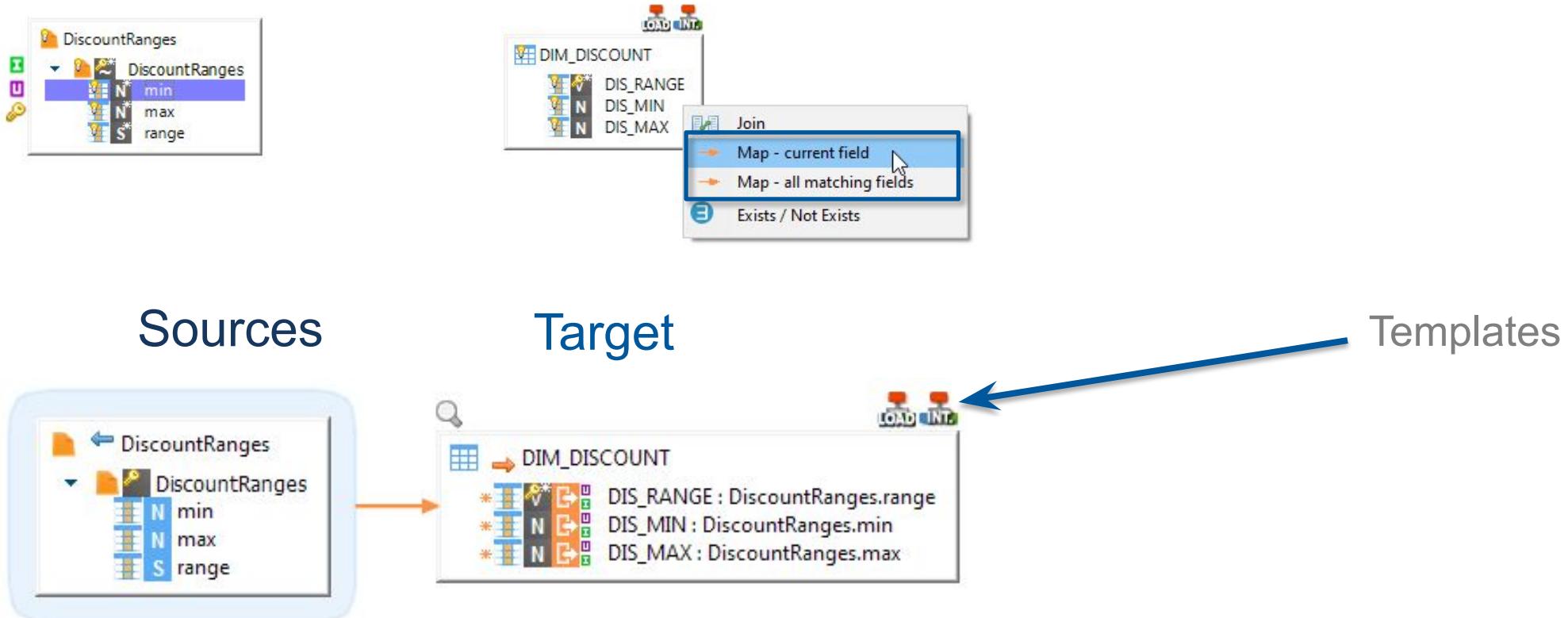


Introduction to Mappings



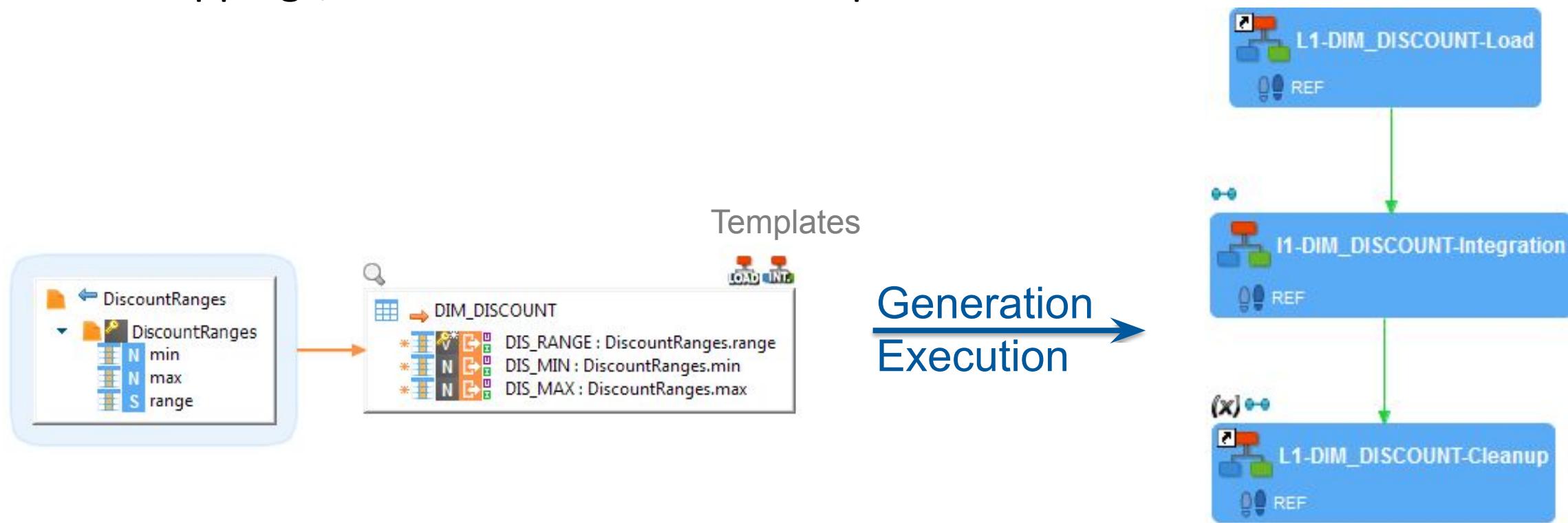
Mapping

The objective of a mapping is to load one or several targets from heterogeneous sources



Mapping

A mapping will generate a process based on the business rules defined in the mappings, the metadata and the templates



Creating a new mapping

1. Select a location in a project
2. Click on “Create new mapping” icon



or

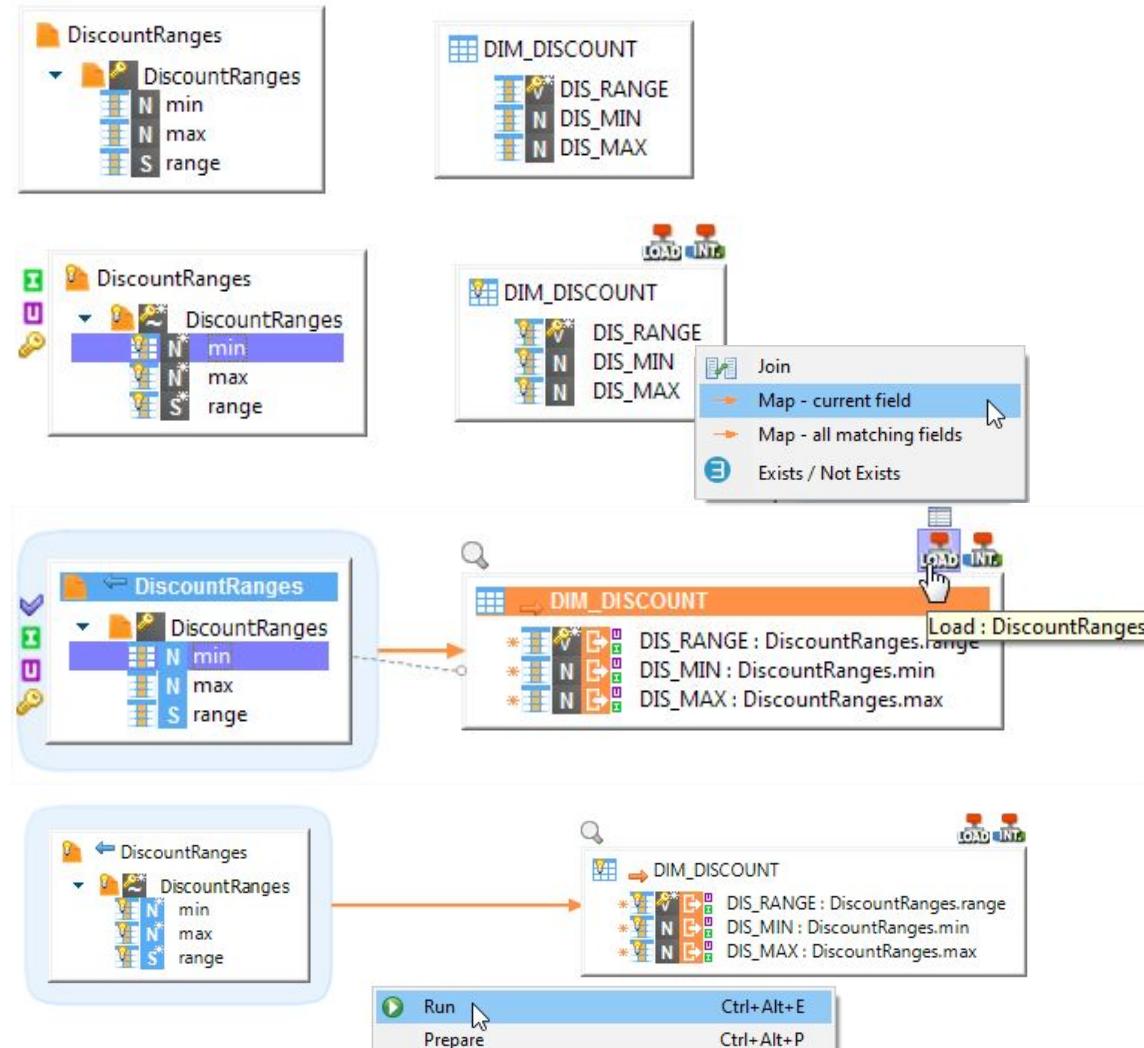
2. Right click and choose “Create new mapping”



Designing a Mapping

Simple steps to design a mapping

- Drag & drop sources and targets
- Define your business rules
 - Filters,
 - Maps & Transformations
 - Joins, not exists...
- Parametrize the templates
- Execute and have a look





Practice exercise

Tutorial fundamentals from the beginning to “Creation of a mapping with complex expressions”



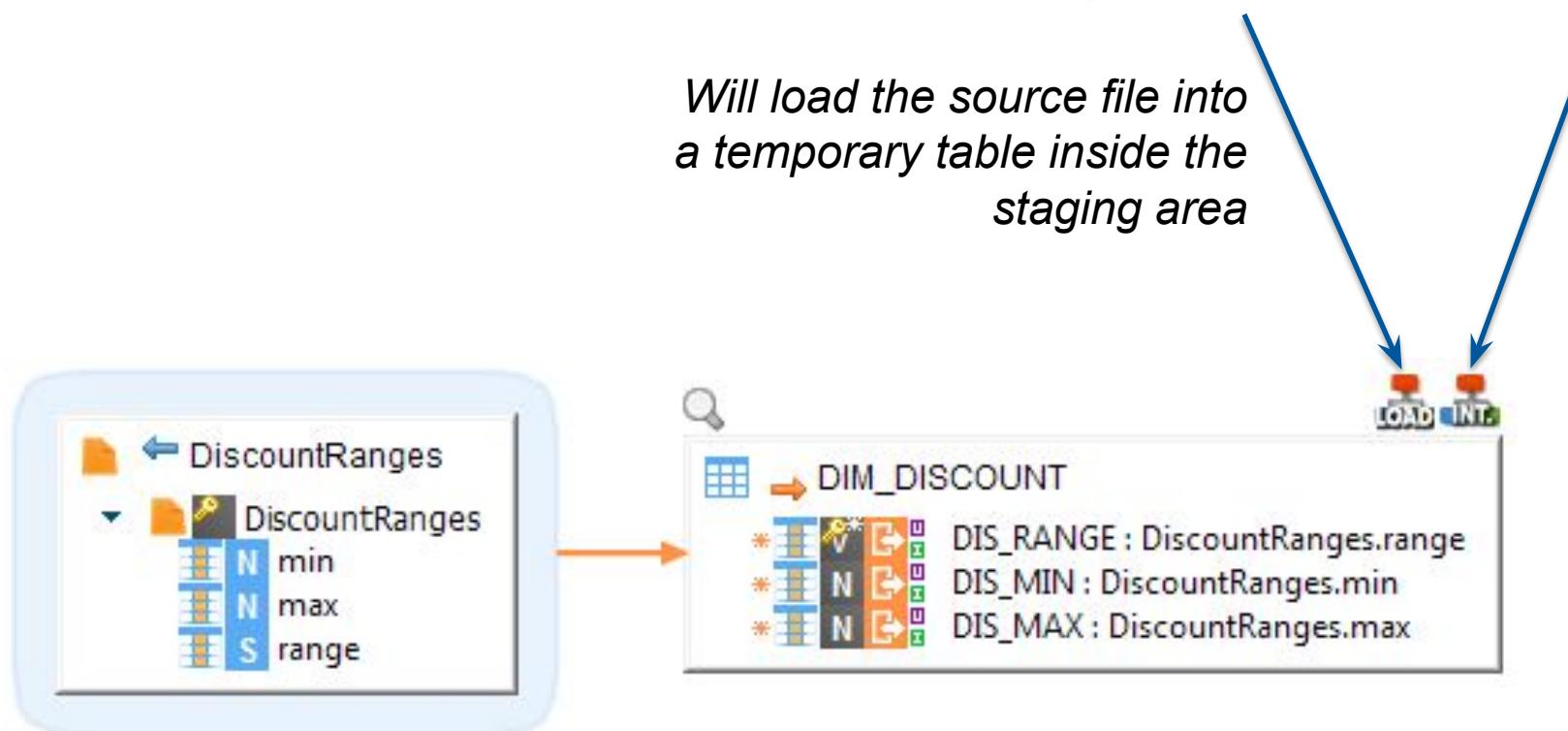


xDI DEV

B Metadata & Mapping

B2 - Feedback on first mappings

Analyzing the result of a mapping



Managing template options

You can modify the behavior of your mapping by using the template options

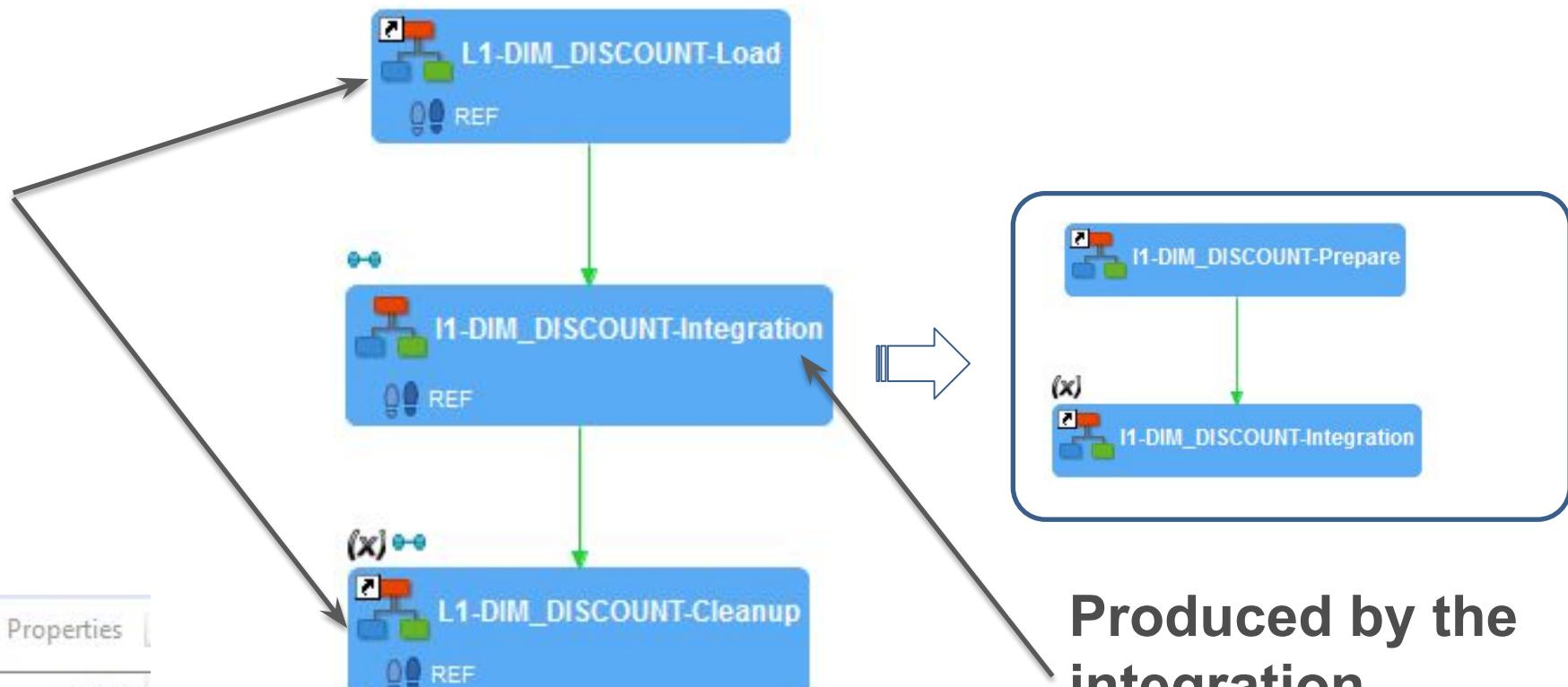
The screenshot illustrates the configuration of a mapping step. On the left, a mapping diagram shows a source table 'DiscountRanges' with three columns: 'min', 'max', and 'range'. An arrow points from this source to a target table 'DIM_DISCOUNT'. The target table has three columns: 'DIS_RANGE', 'DIS_MIN', and 'DIS_MAX', all mapped to the corresponding columns in the source. A 'LOAD INT.' button is visible next to the target table. On the right, a detailed configuration window for 'Template I_DIM_DISCOUNT' is shown. The 'Properties' tab is selected. Under the 'Core' section, several checkboxes are checked: 'Do Insert', 'Commit Transaction', 'Clean Temporary Objects', 'Load', 'Do Update', 'Transactional Mode On Target', 'Use Distinct', 'Create Target Table', 'Recycle Rejects', 'Synchronize Deletions From CDC', and 'Create Index On Pre Integration Table'. The 'Transaction Name' field is set to 'T1'.

Analyzing the resulting process

Produced by the load template

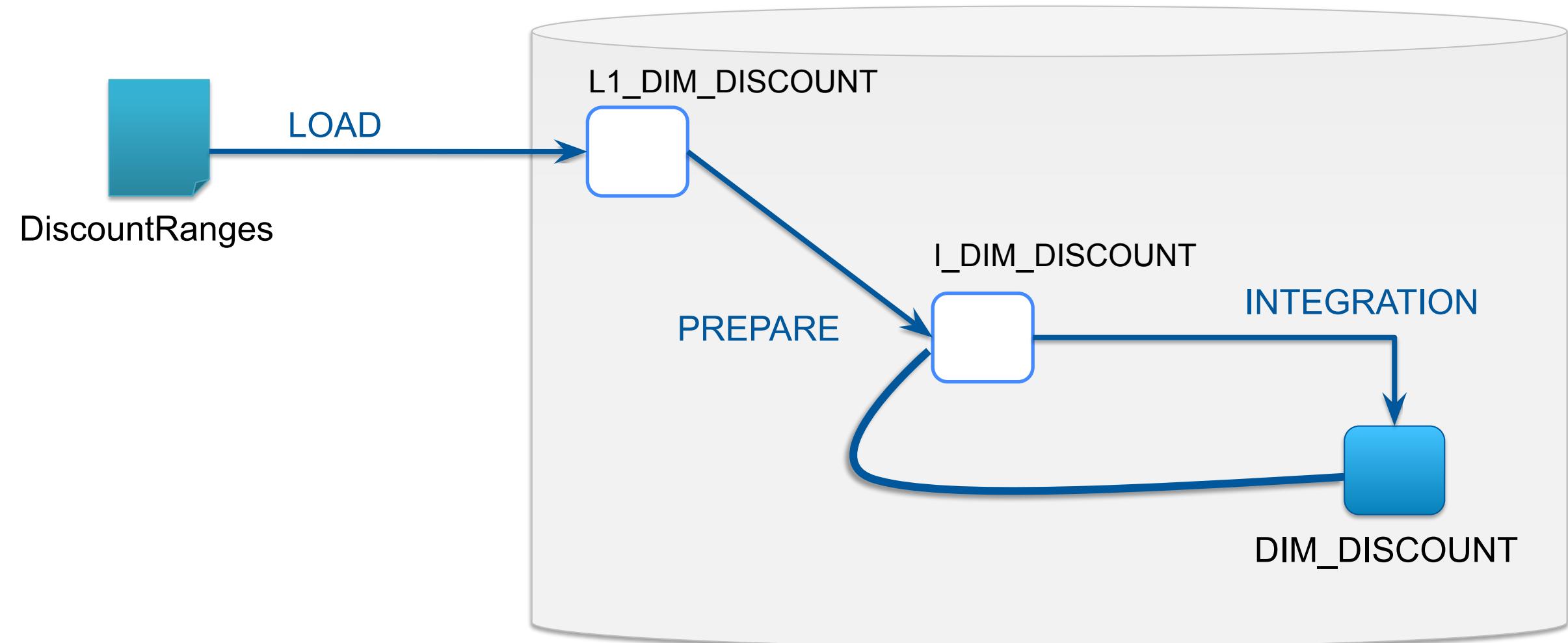
Statistic View

Name	Value
SUM(SQL_NB_ROWS)	18
SUM(SQL_STAT_INSERT)	6
SUM(SQL_STAT_UPDATE)	0



Produced by the integration template

Understanding the result



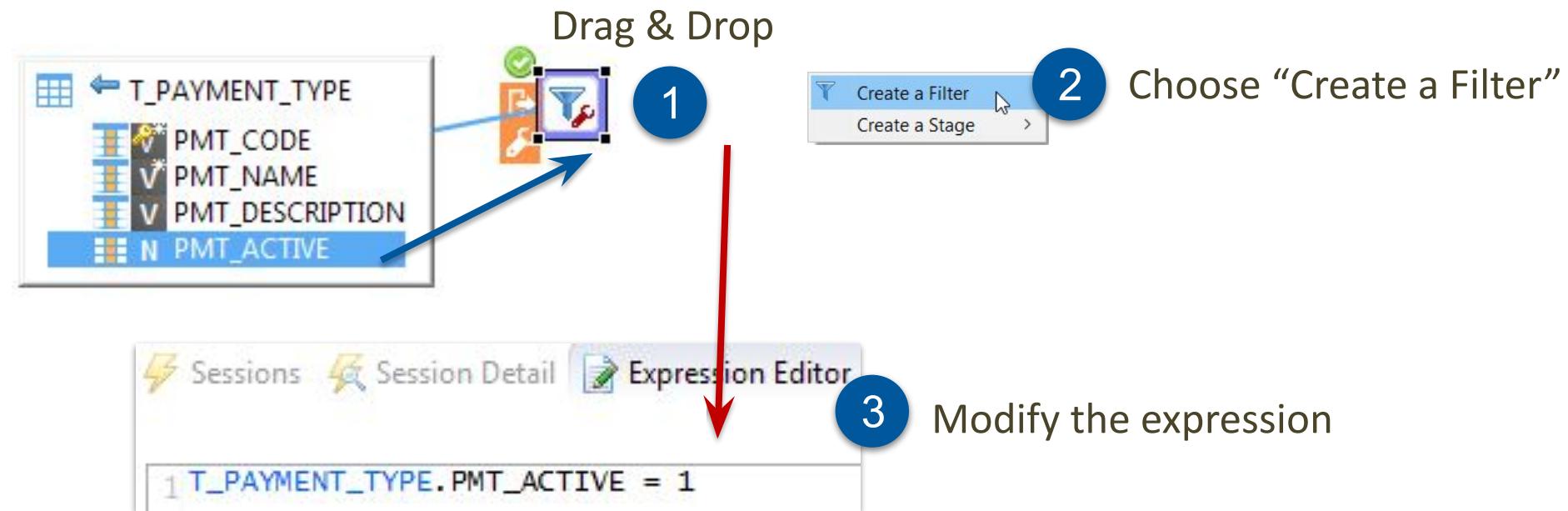


Filters & transformations



Designing a filter

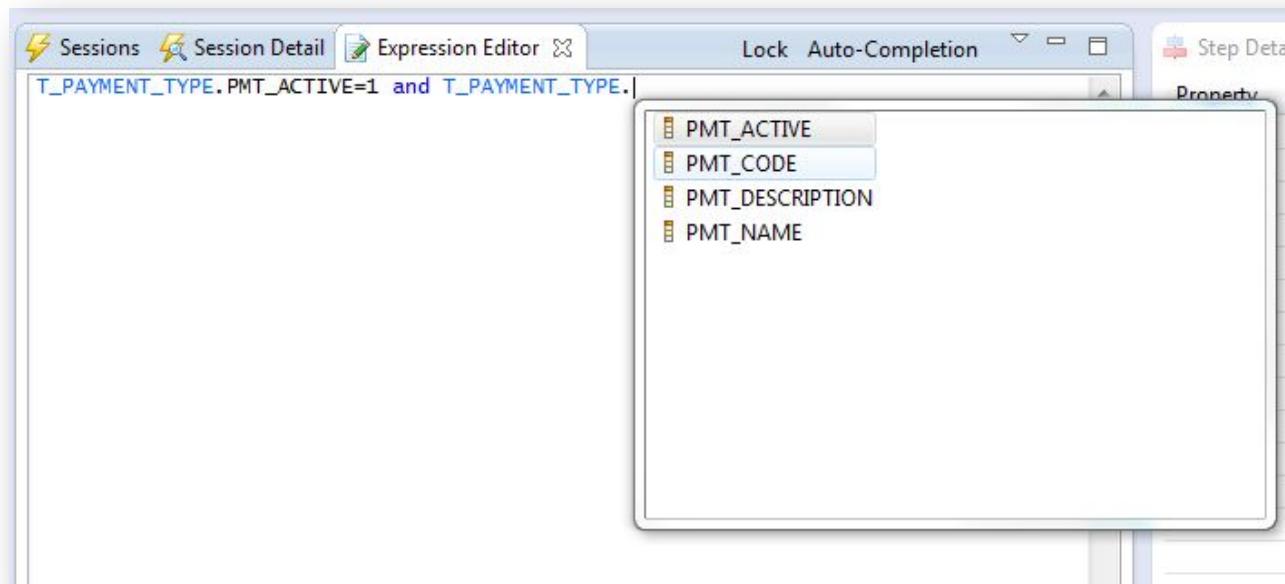
Drag & Drop the source column on which you want to do a filter



Designing a filter

You can add more columns by

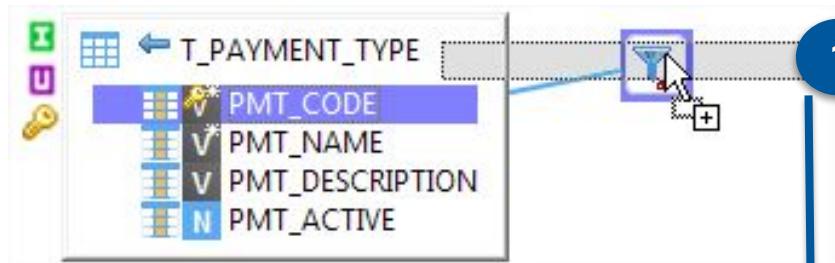
- Writing and using auto-completion
 - CTRL-SPACE keys or “Auto-Completion” button



Designing a filter

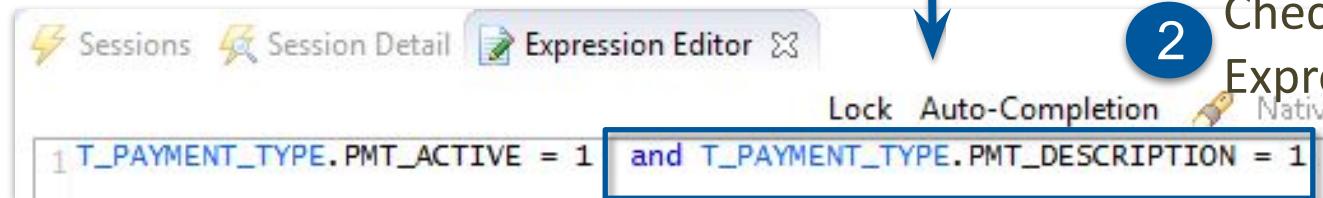
You can add more columns by

- Drag & drop another column in the filter:



1

Drag & Drop

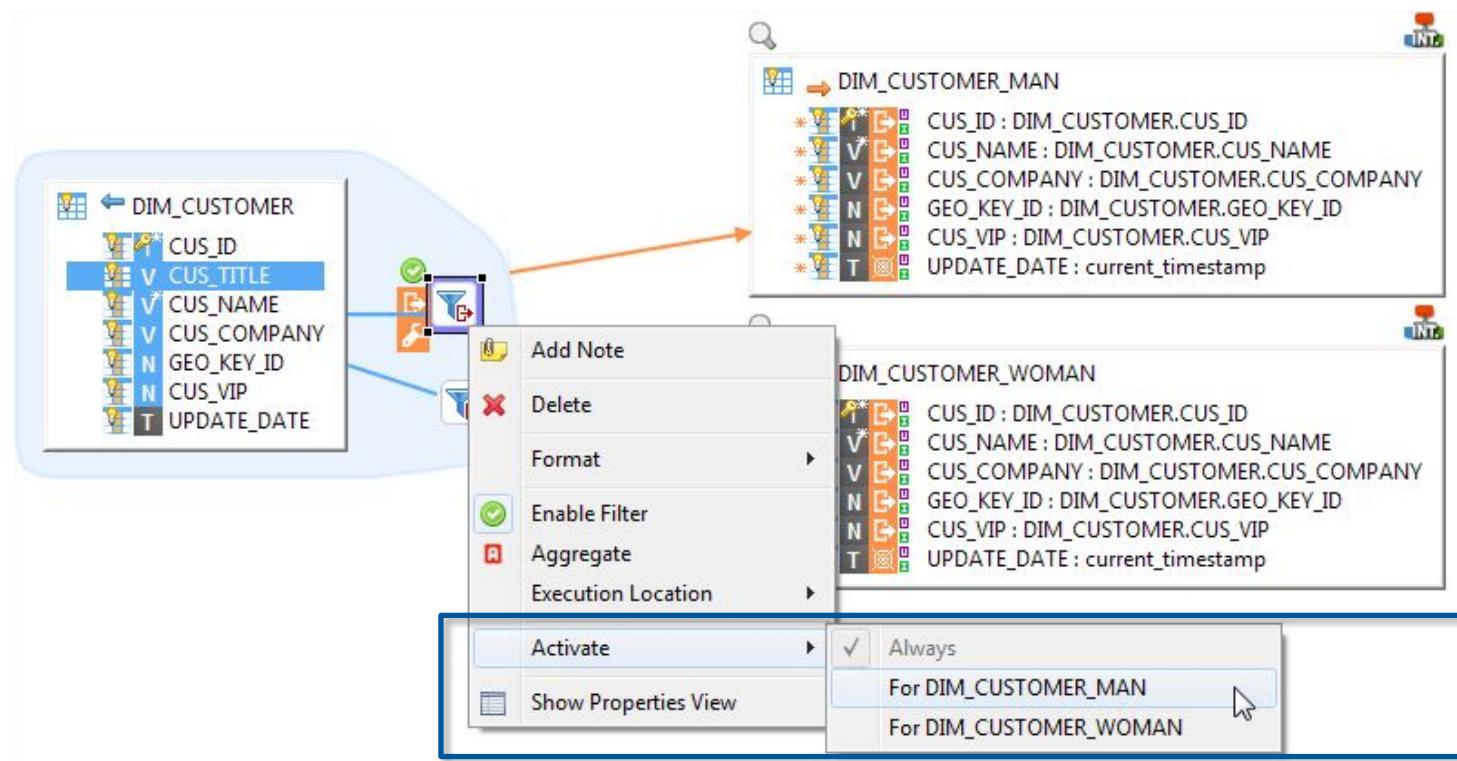


2

Check the result in the
Expression Editor

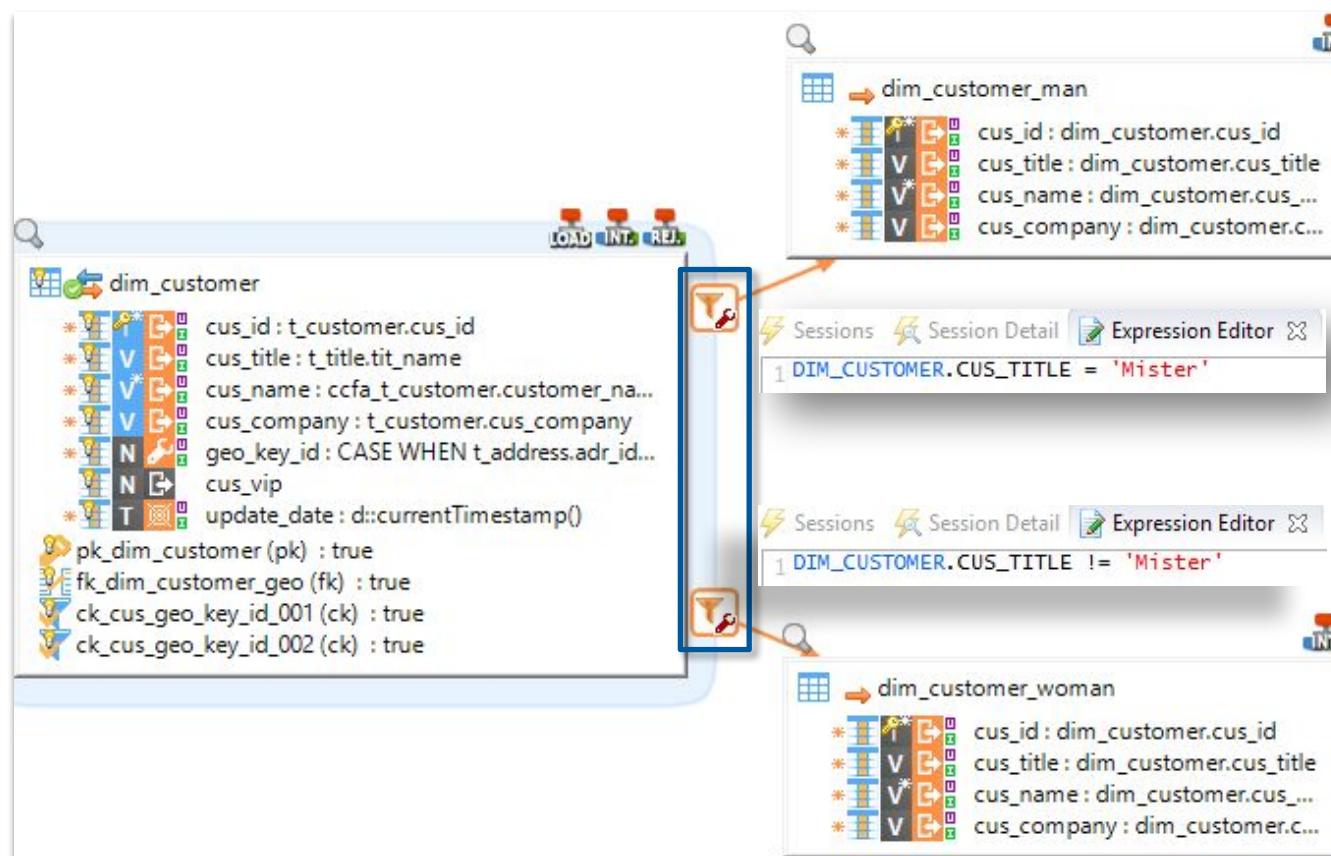
Designing a filter with several targets

If you have several direct targets, you can choose for the filter on which target applying this restriction



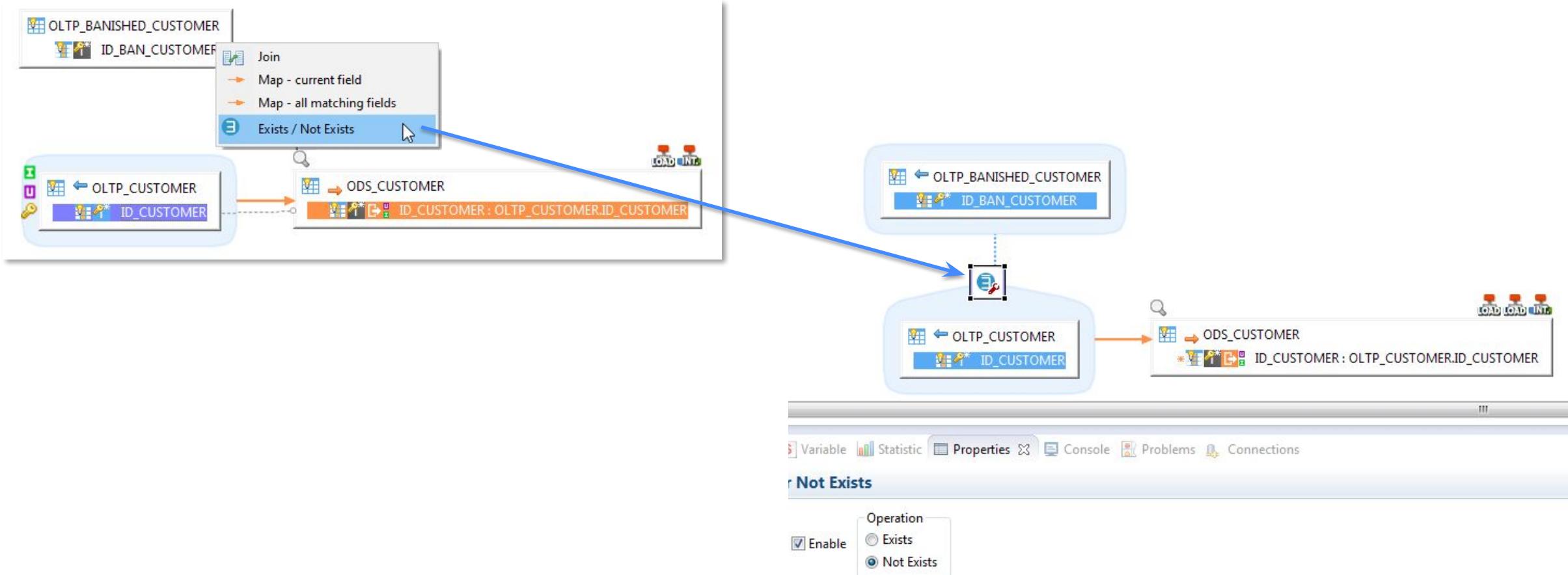
Designing a filter with several targets

An example of the results with two filters, one for each target table

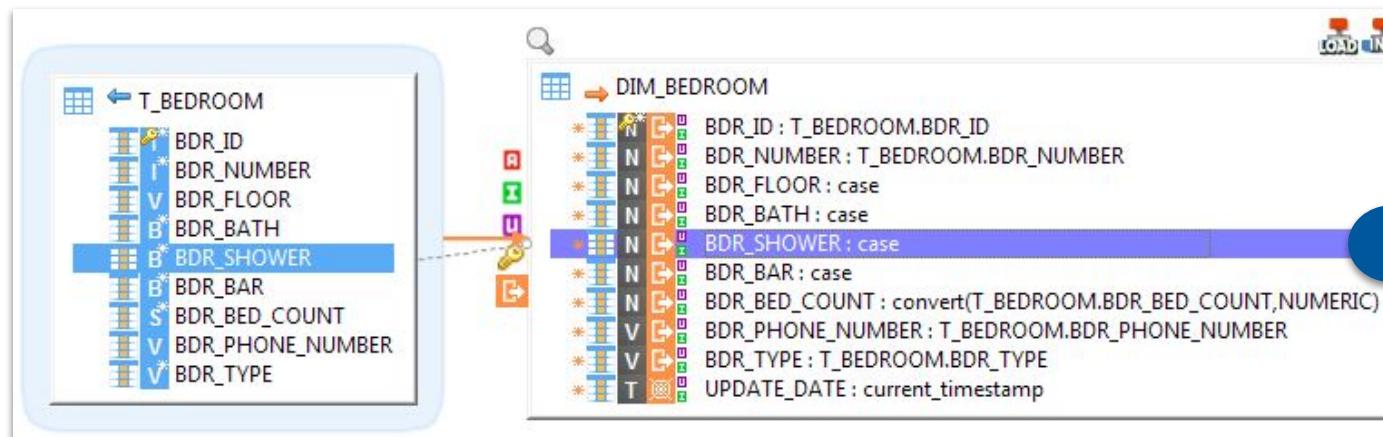


Exists / Not exists

It's possible to add Exists / Not Exists SQL clause natively in a Mapping to filter datasets



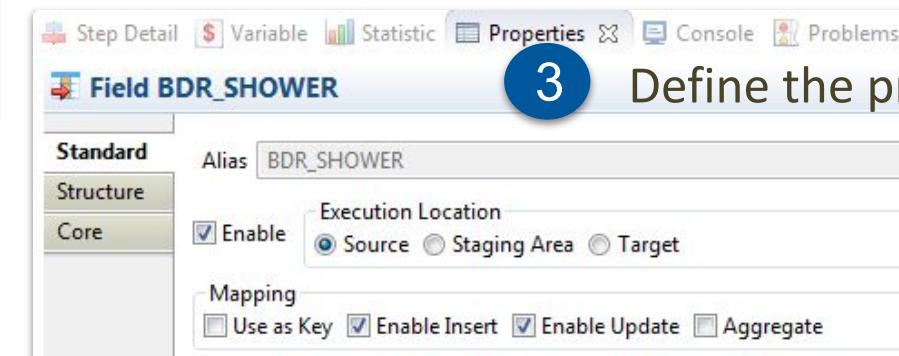
Understanding transformations



Select a column

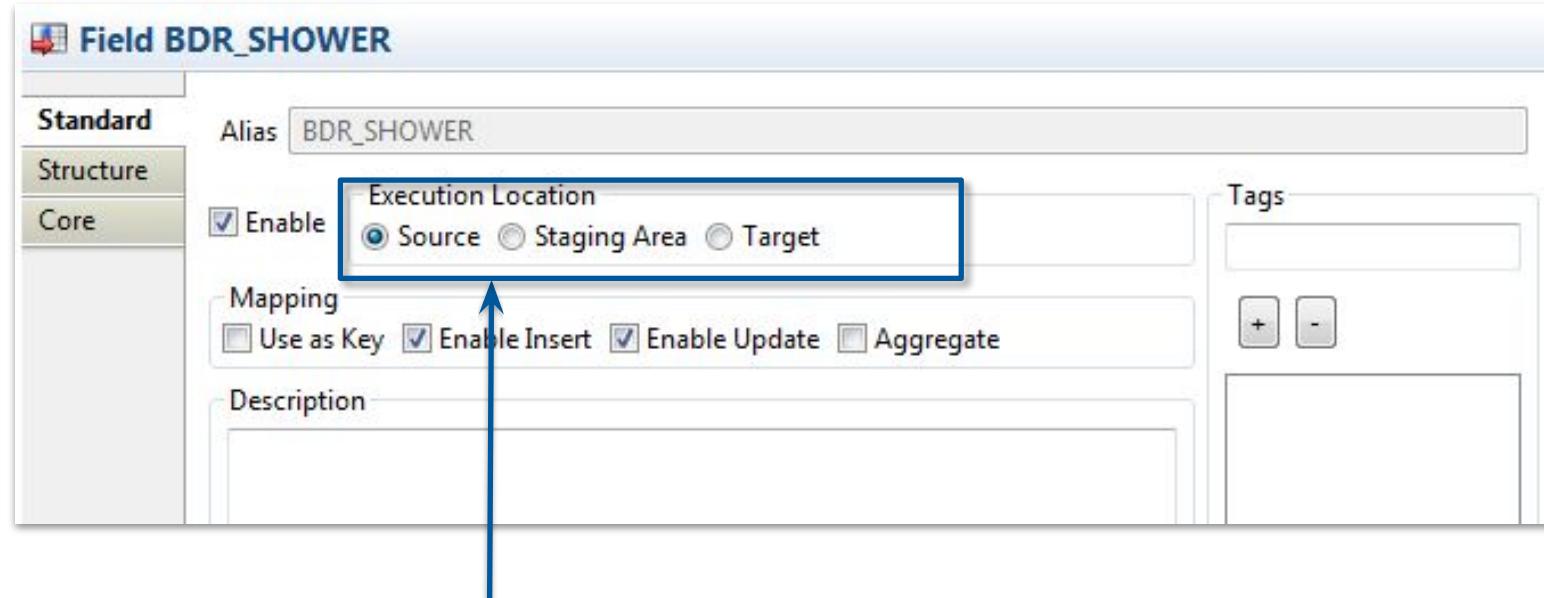
Complete the Expression Editor 2

```
case
when T_BEDROOM.BDR_SHOWER = 'true' then 1
else 0
end
```



Define the properties

The Mapping properties



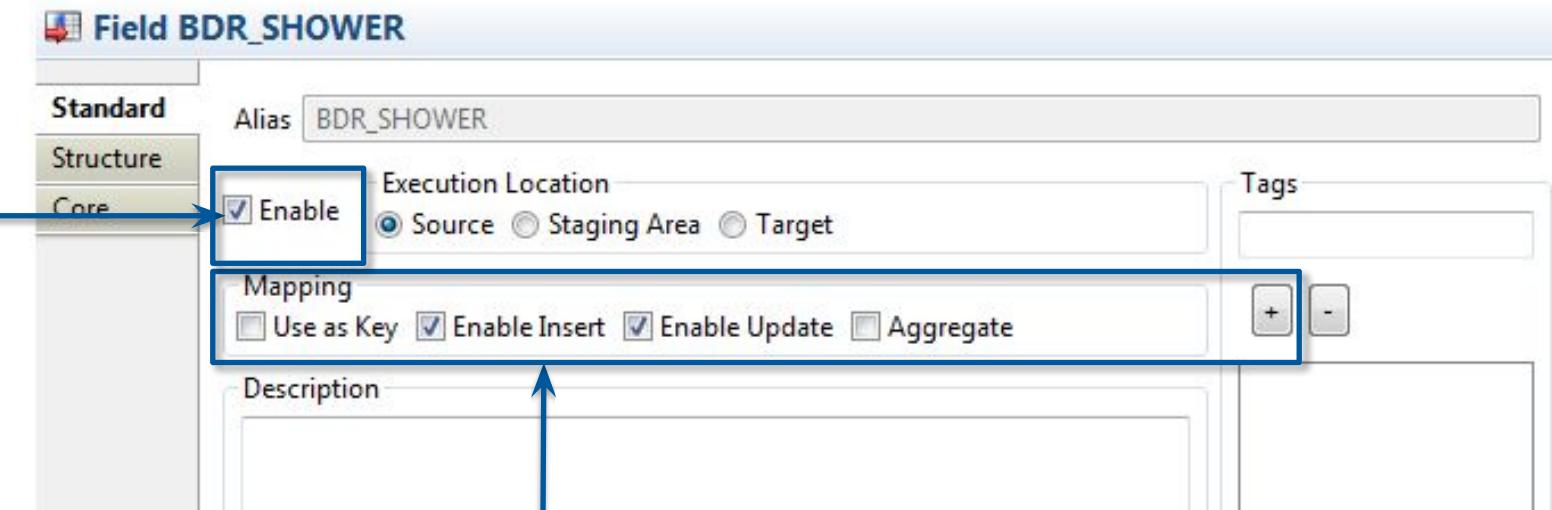
Location of the execution

- **Source** : Expression executed during the select on the source
- **Staging Area** : Expression executed during the select in the staging area tables
- **Target** : expression executed during the final insertion or update of the data in the target

Each type of location will be used and explained during the exercises

The Mapping properties

**Enable / disable
the expression**



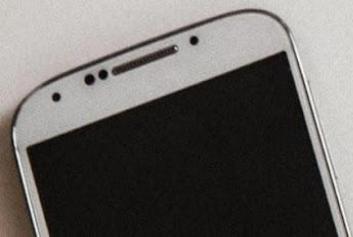
General properties

- | | |
|----------------------|--|
| Use as key | : Use this column as the key for this mapping |
| Enable Insert | : The expression will be used for insert SQL orders |
| Enable Update | : The expression will be used for update SQL orders |
| Aggregate | : Check this box if you use aggregation functions in your expression |



Demo

Filter, Exist and Transformations





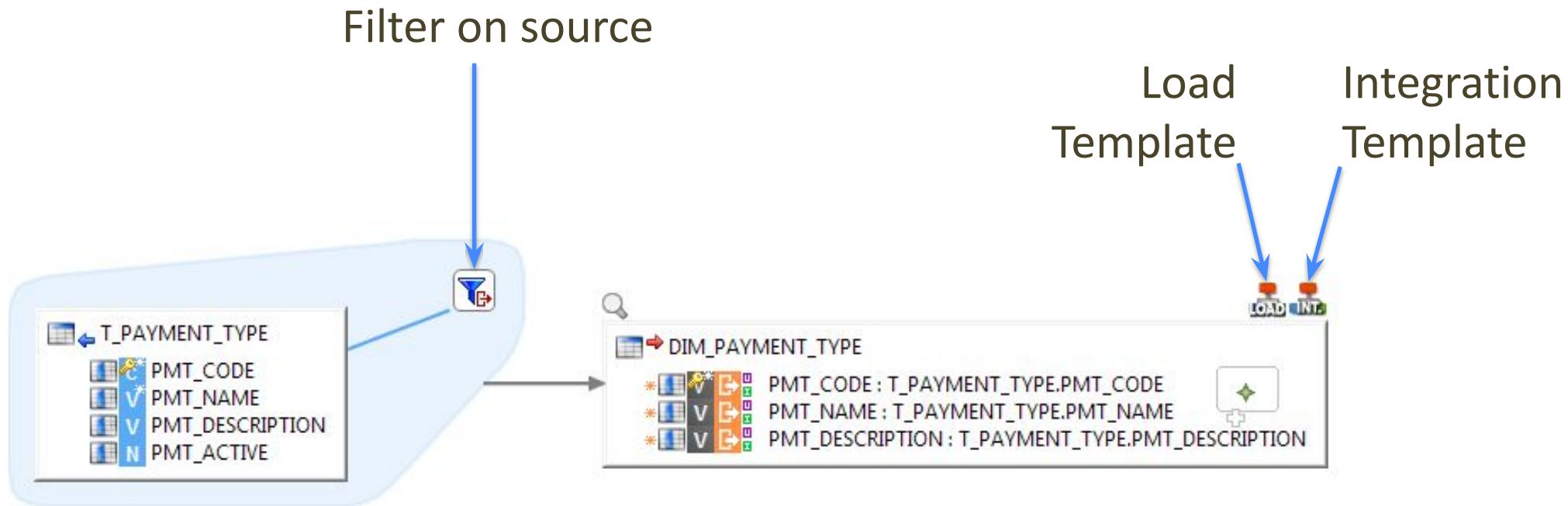
Related tutorial exercises

Create a Mapping

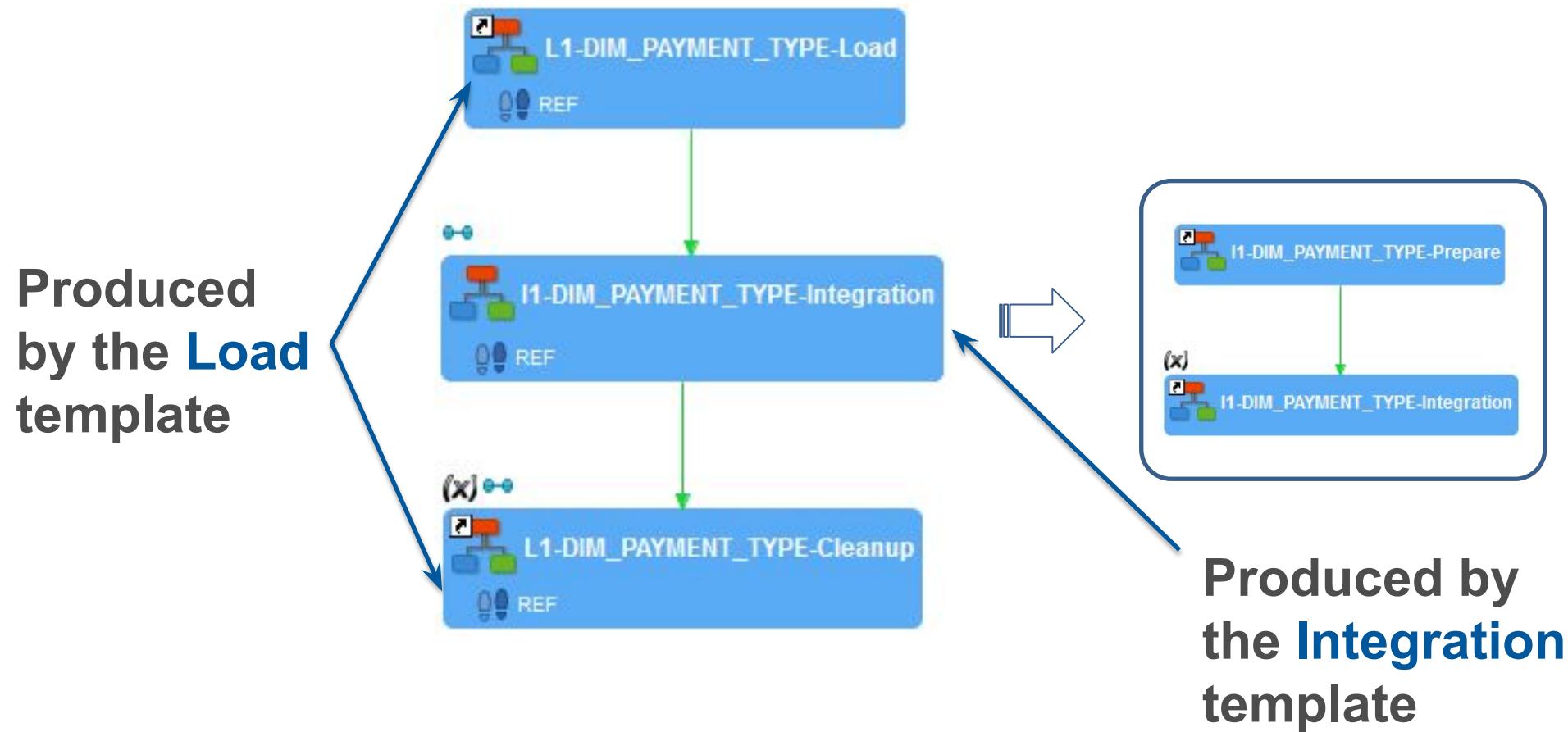
- with a filter
- with complex expressions



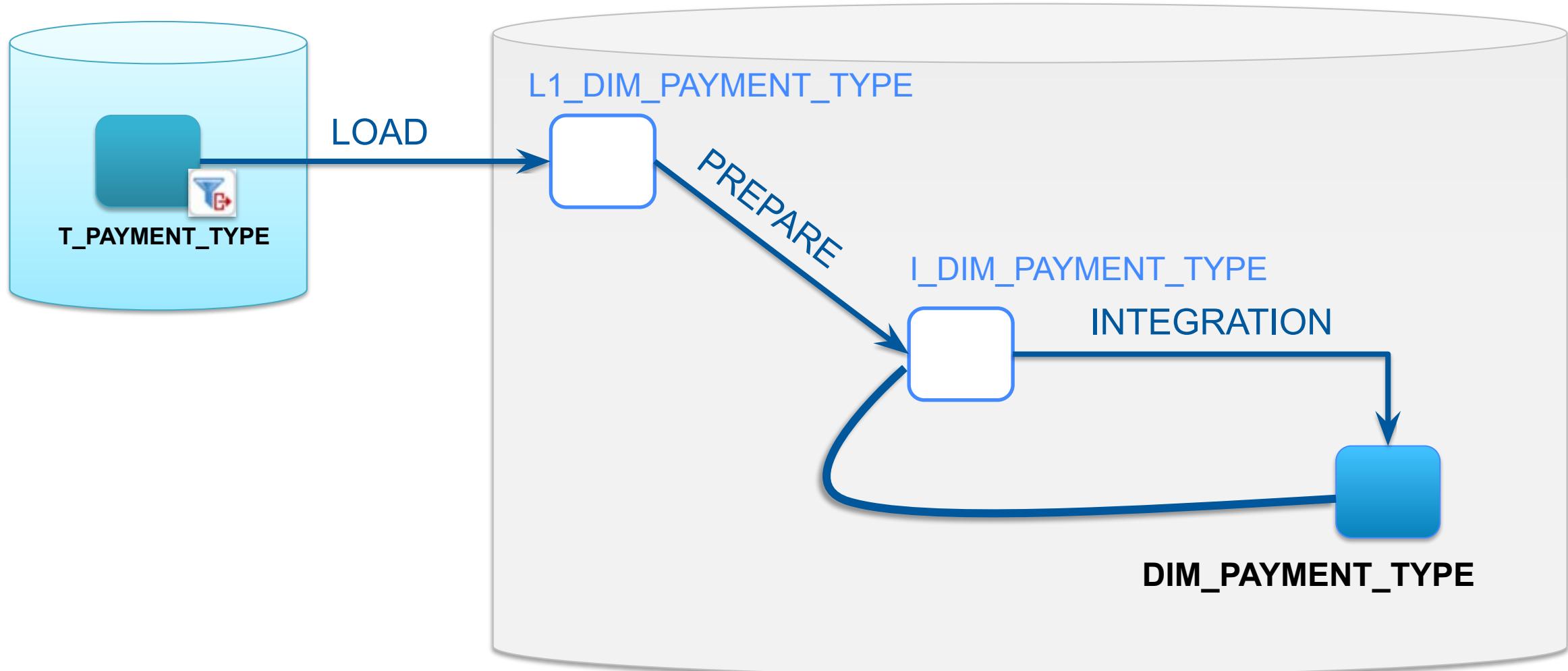
Analyzing the result - Filter



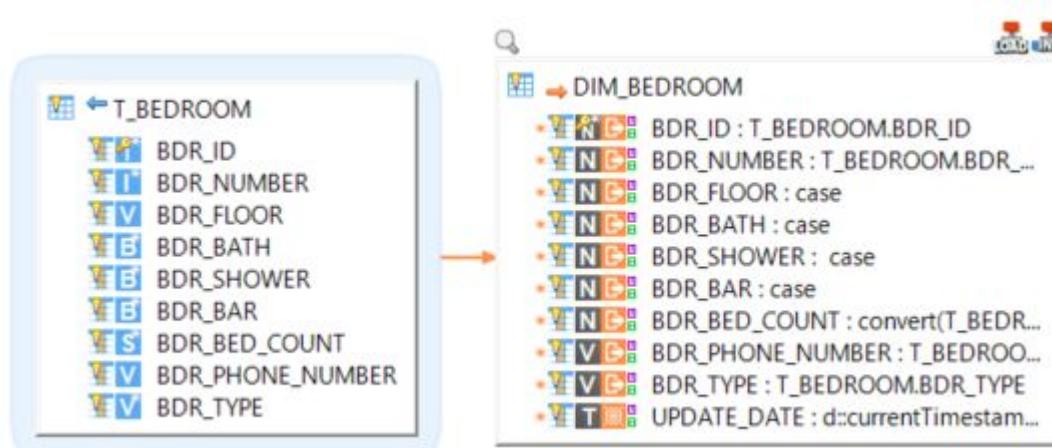
Analyzing the resulting process



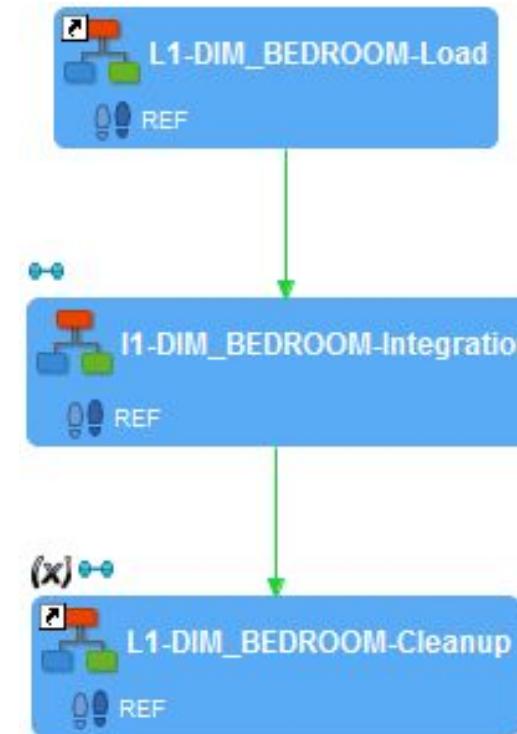
Understanding the result



Analysing the resulting process - Bedroom



Execution on “Source”

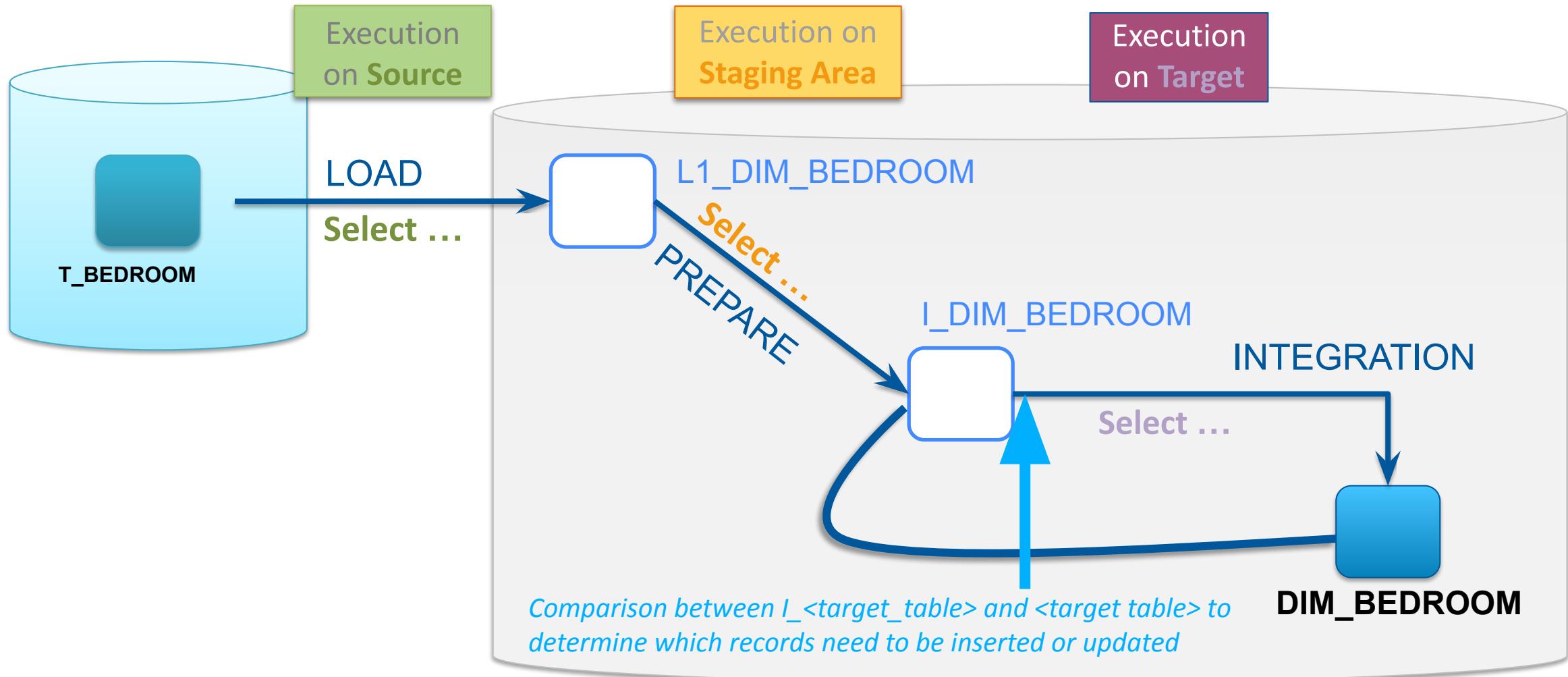


Execution on
“Staging Area”



Execution on
“Target”

Understanding the result



To go further

Document Type	Link
Stambia.org article Updating a table metadata	https://stambia.org/doc/77-development-hints-and-tips/metadata/185-updating-a-table-metadata
Stambia.org article Exists and not exists in mappings	https://stambia.org/doc/220-development-hints-and-tips/exists-not-exists/538-exists-not-exists-in-mappings



Questions?

