

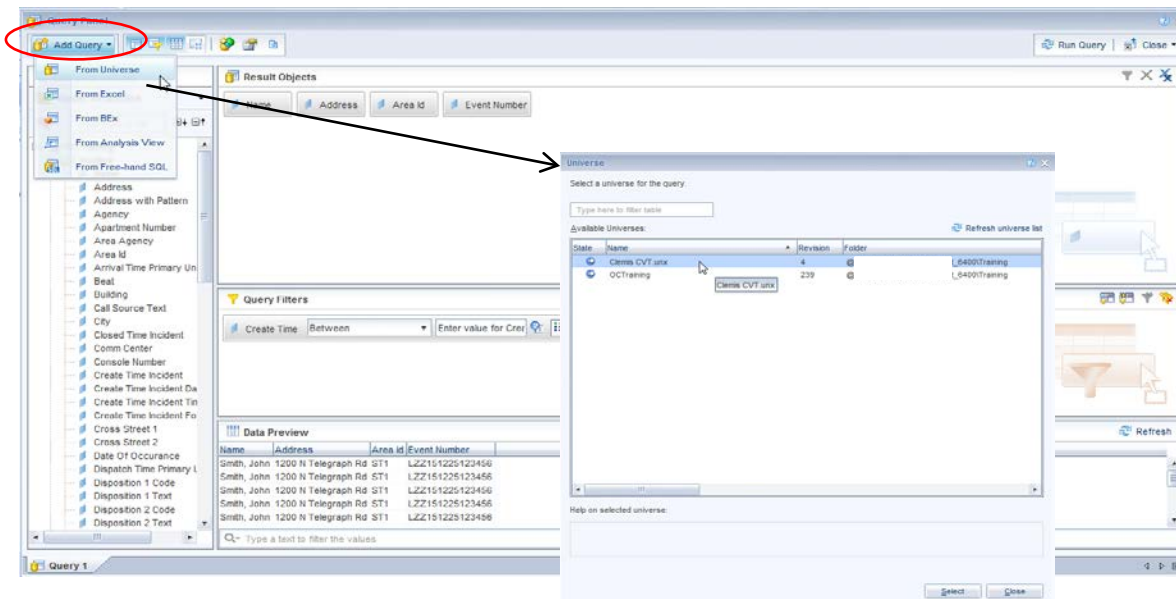
Lesson 1 – Multiple Data Providers

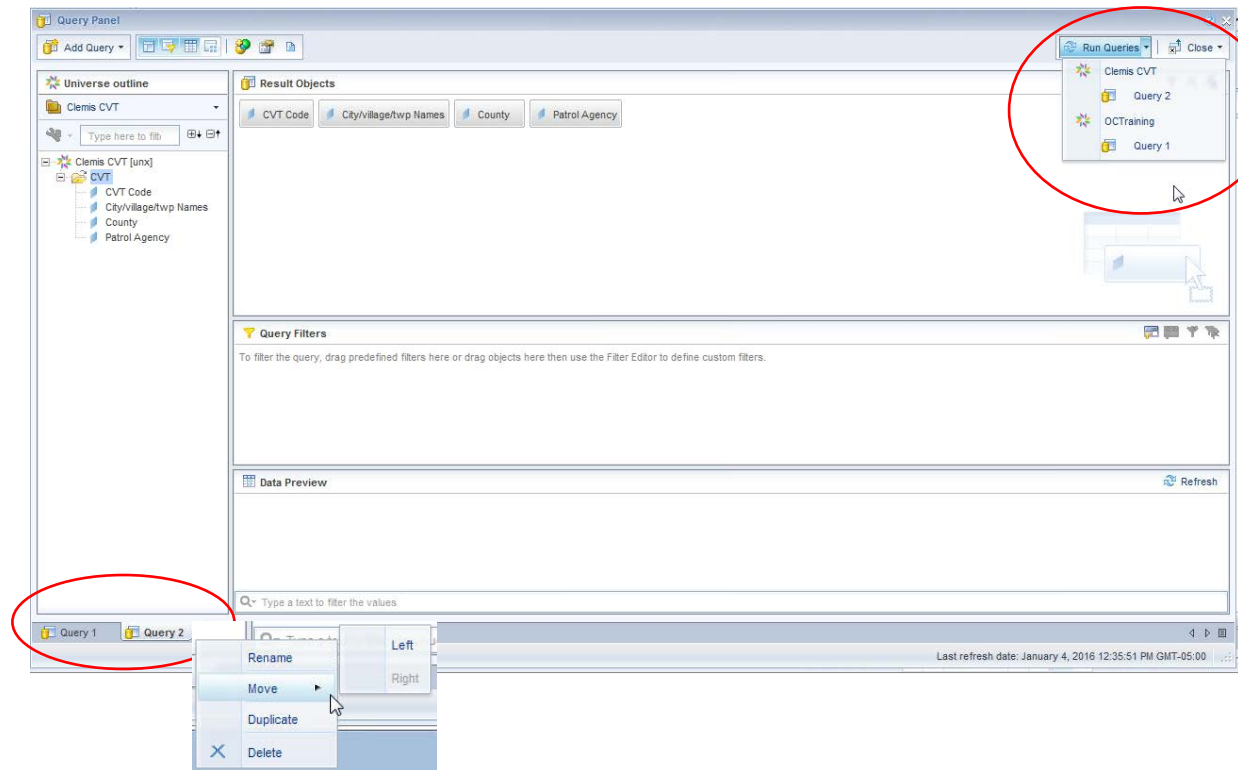
Lesson Objectives

- Creating a document with multiple data providers
- Merging data providers
- Web Intelligence allows for data from different sources to be displayed in the same report either as separate blocks or combined into one block and synchronized.
- By Merging Common Dimension or Attribute Objects and creating new “Merged object” the data blocks can be joined and displayed as one.

Creating Multiple Data Providers

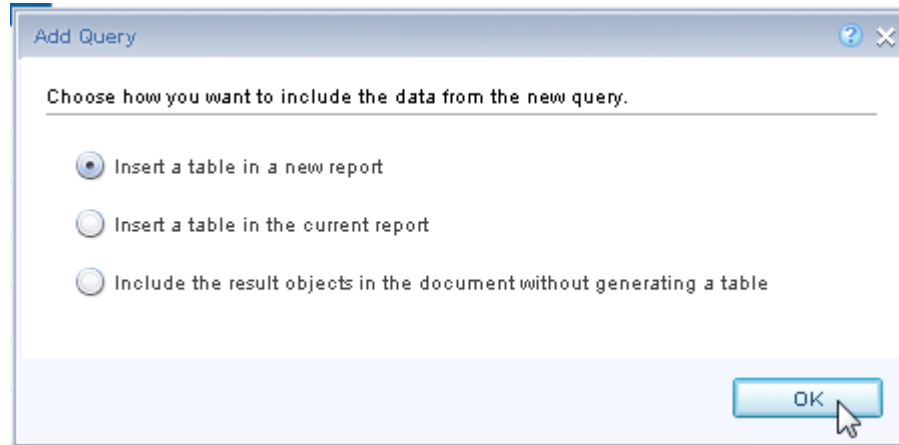
- After an initial query has been run and table produced.
- Return to the **Query Panel** (edit data provider).
- Click the **Add Query** button on the **Query Panel** toolbar.
- Select the **Universe** for the query.
- Populate the new Query panel as required.





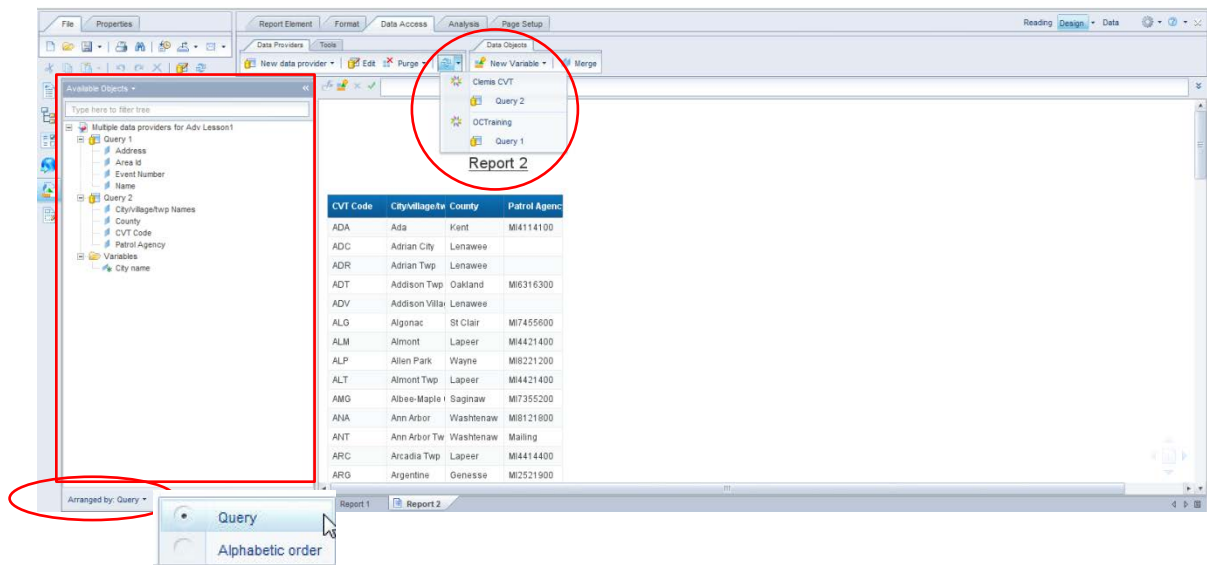
- The query panel now appears with the multiple query tabs listed in the lower left corner (similar to report tabs in the document).
- Click on the query tabs to view or edit the other queries in the document. The query tab speed menu offers:
 - **Rename**
 - **Move**
 - **Duplicate**
 - **Delete.**
- The Run Query button now reads Run Queries.
- Queries can be run independently or all at the same time.

- When running a subsequent query in a document, **Web Intelligence** needs to know where you want to present the additional data.



- In the Add Query window - choose how you want to include the data from the new query in the report:
 - **Insert a table in a new report** – Creates a new report tab with the new data in a **Vertical** table.
 - **Insert a table in the current report** – creates another **Vertical** table in the existing report tab.
 - **Include the result objects in the document without generating a table** – The new objects appear in the **Available Objects** pane of the **Left Panel** but no new table is created. The user must drag and drop the new object to the desired location, or use a template method.

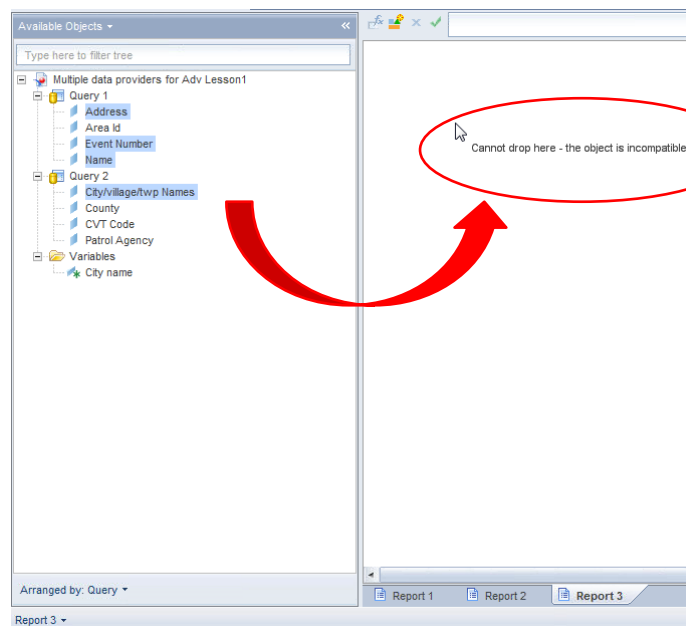
Note – the **Add Query** window only appears after subsequent, additional queries are run. If all queries are identified upfront and run together, a report tab with a vertical table for each respective query will be produced.



- The **Refresh** button reads **Refresh All** with a drop down that allows for the individual queries to be run.
- The **Available Objects** pane can be viewed (**Arrange by**):
 - **Query** to differentiate which objects are being submitted from the different **Data Providers**.
 - **Alphabetic order** of all query objects.
- Drag and drop objects from the Available Objects pane as required.

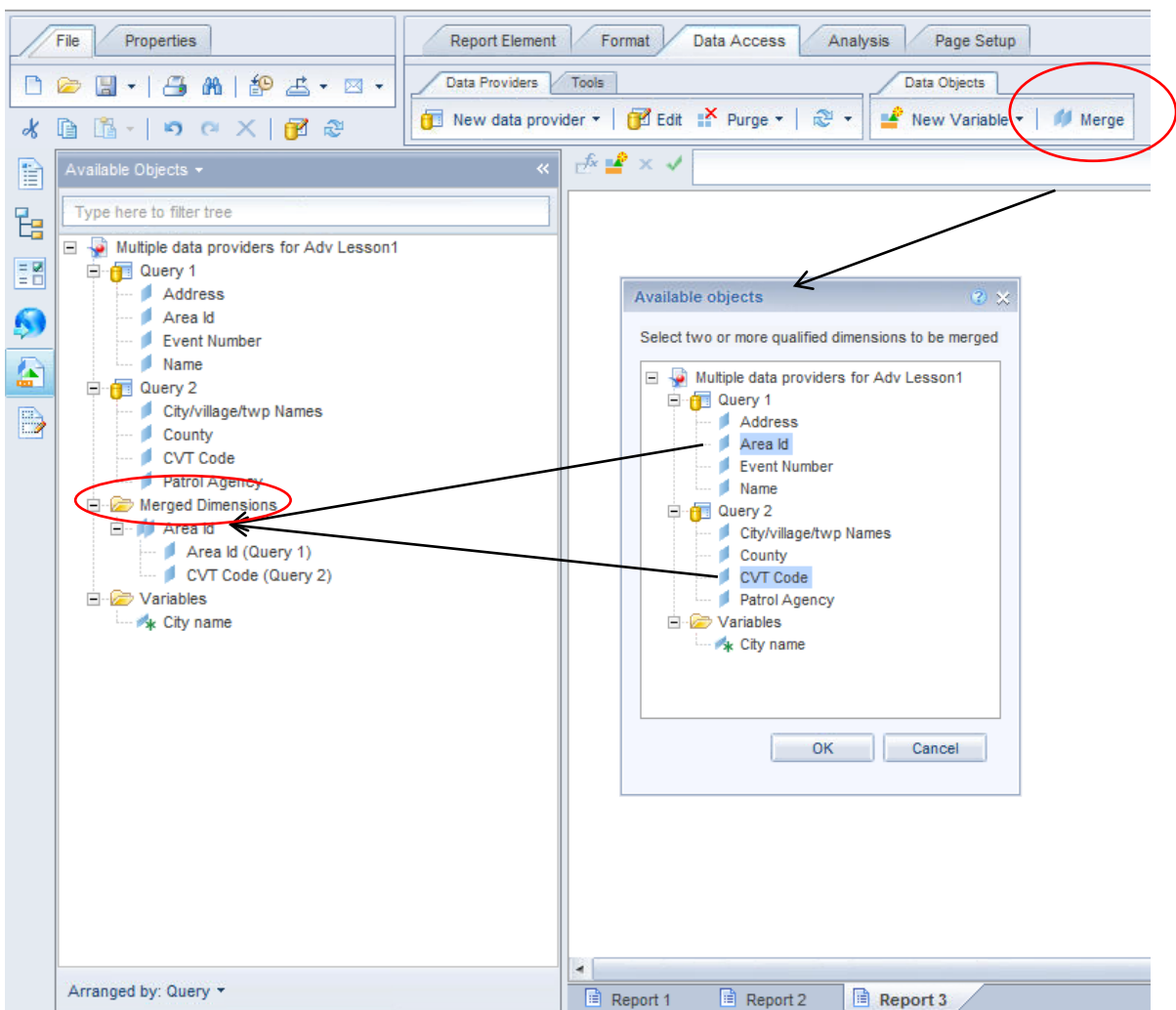
Creating Merged Objects

- In wishing to show a list of **Names, Addresses** and **Event Numbers** (located in the **OCTraining** universe) with the full name of the **Event City** (located in the **Clemis CVT** universe) a Merged object must be created.
- Being that all objects do not exist in a single universe, the user can use any number of Universes and create a “Merged” object(s) that are common between the disparate sources allowing one source to relate to the other.
- Merged objects allow data from multiple sources to be displayed in a single, meaningful block of data.
- Common object values exist in **Area Id** from the **OCTraining** universe and **CVT Code** from the **Clemis CVT** universe.
- Without having Merged Objects between universes a **Cartesian** product will most likely be the result, where the display of all possible combinations of values from unrelated objects occurs.
- In some cases a warning message will appear when attempting to use objects from different sources.



To create a merged object:

- Run all queries that contain the objects to be merged.
- Launch the **Available Objects** window from the **Merge** button in the **Data Objects** Toolbox of the **Data Access** ribbon.
- Use **Control-Click** to multi-select **object(s)** to be merged from the list of objects by query.
- Click the **OK** button.



- Merged objects can be found in a folder called **Merged Dimensions** and are used like other objects in the **Available Objects** pane.

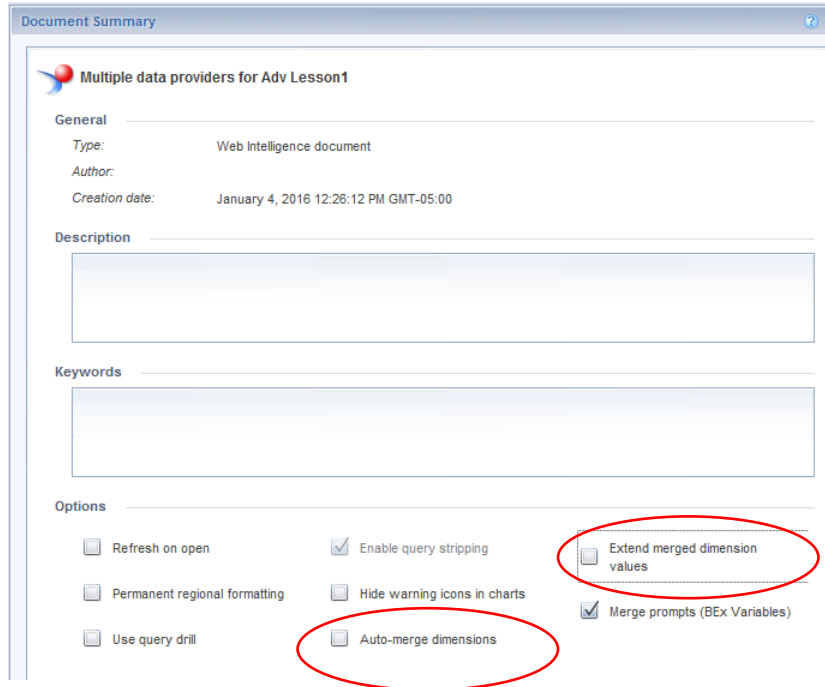
- You can always place measure objects from different data providers in a table.
- In some situations an additional step may be required in order to allow dimensions from different data providers in the same table.
- As is the case between the **OCTraining** and **Clemis CVT** universes.
- Due to universe design, the synchronized block requires a one-to-one relationship between **Name** and **City/village/twp Names**.
- Creating a variable (**City name**) defined as **=City/village/twp Names** as an **Attribute** object associated with the **Area Id** object allows for the full city name to display alongside dimension objects from the **OCTraining** universe.
- In the case of incompatible objects preventing synchronization:
 1. Create a variable at the report level.
 2. Define the variable as an Attribute.
 3. Associate the object with the dimension in the table

Note – refer to lesson 3 Formulas and Variables on how to create a variable

The screenshot displays a Web Intelligence report with two data providers. The 'Available Objects' pane on the left shows the 'City name' variable circled in red. The 'Variable Editor' dialog is open, showing the variable definition: Name: City name, Qualification: Detail, Associated dimension: Area Id, Type: string, and Formula: =City/village/twp Names. The report table shows two columns for 'City name', one from each data provider, with a red box highlighting the 'City name' column in the second provider's data.

Name	Address	Area Id	City name	Event Number	Name	Address	City name	Event Number
Smith, John	1200 N Teleg 01			LZZ1512251	Smith, John	1200 N Telegraph Rd	Ann Arbor Twp	LZZ151225123456
Smith, John	1200 N Teleg 02			LZZ1512251	Smith, John	1200 N Telegraph Rd	Augusta Twp	LZZ151225123456
Smith, John	1200 N Teleg 03			LZZ1512251	Smith, John	1200 N Telegraph Rd	Belleville City	LZZ151225123456
Smith, John	1200 N Teleg 05			LZZ1512251	Smith, John	1200 N Telegraph Rd	Berkley	LZZ151225123456
Smith, John	1200 N Teleg 1			LZZ1512251	Smith, John	1200 N Telegraph Rd	Birmingham	LZZ151225123456
Smith, John	1200 N Teleg 100			LZZ1512251	Smith, John	1200 N Telegraph Rd	Bloomfield Hills	LZZ151225123456
Smith, John	1200 N Teleg 2			LZZ1512251	Smith, John	1200 N Telegraph Rd	Canton	LZZ151225123456
Smith, John	1200 N Teleg 23			LZZ1512251	Smith, John	1200 N Telegraph Rd	Center Line	LZZ151225123456
Smith, John	1200 N Teleg 3			LZZ1512251	Smith, John	1200 N Telegraph Rd	Eastern Michigan University PD	LZZ151225123456
Smith, John	1200 N Teleg 4			LZZ1512251	Smith, John	1200 N Telegraph Rd	Fenton	LZZ151225123456
Smith, John	1200 N Teleg 511			LZZ1512251	Smith, John	1200 N Telegraph Rd	Ferndale	LZZ151225123456
Smith, John	1200 N Teleg 512			LZZ1512251	Smith, John	1200 N Telegraph Rd	Grosse Pointe Farms	LZZ151225123456
				LZZ1512251	Smith, John	1200 N Telegraph Rd	Grosse Pointe Park	LZZ151225123456
				LZZ1512251	Smith, John	1200 N Telegraph Rd	Grosse Pointe Shores	LZZ151225123456
				LZZ1512251	Smith, John	1200 N Telegraph Rd	Grosse Pointe Woods	LZZ151225123456
				LZZ1512251	Smith, John	1200 N Telegraph Rd	Hamtramck	LZZ151225123456

- **Important Considerations when Merging Dimensions from Multiple Data Providers:**



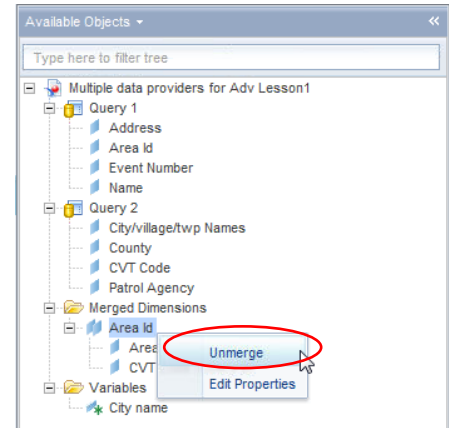
- In order to view all dimension values across all queries that have been merged, it may be necessary to extend merged dimension values across the queries; it is accomplished in the **Document Summary** pane (Document properties).
- Checking the **Extend merged dimension values** checkbox enables “null” values (no matches) to display. An empty cell will appear in a column that has no Dimensional data to display from one query in a table with Measure Objects from another query. Although it does not have the properties it can give the appearance of an outer join between the two Data Providers.
- The **Auto-merge dimensions** checkbox automatically merges same named dimensions when the same Universes are used for the multiple **Data Providers** in the document.
- You can only merge Dimension and Attribute Objects between multiple data sources.
- The dimension objects can have different names in the sources i.e. **CVT Code** and **Area Id**.
- The dimension objects must be of the same Data-type – Character(String)- Character(String), Date-Date, Numeric- Numeric
- The merging function is Case Sensitive – Two **Area Id** values of “**CAT**” and “**cat**” would be treated as different values and would appear on different rows (not be synchronized). The Data provider is case sensitive.

- The format of the values must be the same – **FY09** and **2009** would be treated as different values and would appear on different rows (not be synchronized).

- Any number of queries can be linked by common dimensions.

To merge subsequent objects:

- After first two, you must first **“Unmerge”** the existing merged dimension.
- From the speed menu of the merged object in the **Available objects** pane select **Unmerge**. Continue with the process now of merging 3 objects anew.
- **Edit Properties** allows for re-naming, tooltip info and formatting of the merged object.



- Any number of dimensions can be merged between two data providers.
- Measure objects can only be synchronized to the lowest level of detail that is commonly merged between the multiple **Data Providers**, i.e. if you want a **measure object** to “roll-down” through **Event Year, Event Quarter, and Event Month** you would have to merge all three of the time objects between the multiple providers.



Activity 1-1 – Merging Multiple Data Providers

Combine data from multiple queries using Merged Dimensions

- Create a new document from the **OCTraining** Universe with the following objects and filters.

Objects:

<u>Class\Sub-Class</u>	<u>Objects</u>
1. Incident	Name
2. Incident	Address
3. Incident	Area Id
4. Incident	Event Number

- Create the following query filters so that:

1. Incident Times

Create Time

- The user is prompted to supply both a **Start Date/Time** and an **End Date/Time** based on the **Create Time** object.

Hint – use the **Between** operator.

- Let the query prompt pre-populate with the value(s) chosen the last time the report was run.
- Show the default prompt text for the first and second date operands.

- Name the query “**OCTraining**”.

- Click the **Run Query** button to retrieve results from the server.

- Complete the **Create Time** prompt with a date range of “**January 1, 2016 to January 2, 2016**”.

- Click the Ok button.

The screenshot shows the 'Available Objects' pane on the left with a tree view containing 'Query 1', 'Address', 'Area Id', 'Event Number', 'Name', and 'Variables'. The main area displays a report titled 'Report 1' with a table of data. The table has columns for Name, Address, Area Id, and Event Number. The data rows show multiple entries for 'Smith, John' at '1200 N Telegraph Rd' with various 'Area Id' and 'Event Number' values.

Name	Address	Area Id	Event Number
Smith, John	1200 N Telegraph Rd	01	LZZ151225123456
Smith, John	1200 N Telegraph Rd	02	LZZ151225123456
Smith, John	1200 N Telegraph Rd	03	LZZ151225123456
Smith, John	1200 N Telegraph Rd	05	LZZ151225123456
Smith, John	1200 N Telegraph Rd	1	LZZ151225123456
Smith, John	1200 N Telegraph Rd	100	LZZ151225123456
Smith, John	1200 N Telegraph Rd	2	LZZ151225123456
Smith, John	1200 N Telegraph Rd	23	LZZ151225123456
Smith, John	1200 N Telegraph Rd	3	LZZ151225123456
Smith, John	1200 N Telegraph Rd	4	LZZ151225123456
Smith, John	1200 N Telegraph Rd	511	LZZ151225123456
Smith, John	1200 N Telegraph Rd	512	LZZ151225123456
Smith, John	1200 N Telegraph Rd	513	LZZ151225123456



Activity 1-1 – Merging Multiple Data Providers

- Add another query to the document using the **Clemis CVT** universe as the Data Source.

Objects:

<u>Class</u>	<u>Objects</u>
1. CVT	CVT Code
2. CVT	City/village/tpw names
3. CVT	County
4. CVT	Patrol Agency
5. CVT	

- Name the query “**Clemis CVT**”.
- Run the **Clemis CVT** query only.
- Choose to insert a table in a new report.
- View the **Available Objects** pane by **Query**.

The screenshot shows the SAP Business Intelligence interface. On the left, the 'Available Objects' pane is open, displaying a tree view of data sources. The 'Clemis CVT' source is expanded, showing objects like 'City/village/tpw Names', 'County', 'CVT Code', and 'Patrol Agency'. The main area shows 'Report 1' with a table of data.

Name	Address	Area Id	Event Number
Smith, John	1200 N Telegraph Rd	01	LZZ151225123456
Smith, John	1200 N Telegraph Rd	02	LZZ151225123456
Smith, John	1200 N Telegraph Rd	03	LZZ151225123456
Smith, John	1200 N Telegraph Rd	05	LZZ151225123456
Smith, John	1200 N Telegraph Rd	1	LZZ151225123456
Smith, John	1200 N Telegraph Rd	100	LZZ151225123456
Smith, John	1200 N Telegraph Rd	2	LZZ151225123456
Smith, John	1200 N Telegraph Rd	23	LZZ151225123456
Smith, John	1200 N Telegraph Rd	3	LZZ151225123456
Smith, John	1200 N Telegraph Rd	4	LZZ151225123456
Smith, John	1200 N Telegraph Rd	511	LZZ151225123456
Smith, John	1200 N Telegraph Rd	512	LZZ151225123456
Smith, John	1200 N Telegraph Rd	513	LZZ151225123456



Activity 1-1 – Merging Multiple Data Providers

- Add a report in the document.
- Create the following table in **Report 3**:
 - **Name** from the **OCTraining** query.
 - **Address** from the **OCTraining** query.
 - **City/village/tpw** names from the **Clemis CVT** query.
 - **Event Number** from the the **OCTraining** query
- The table cannot be created because the objects are incompatible.
- Create a **Merged** object comprised of **Area Id** from the **OCTraining** query and **CVT Code** from the **Clemis CVT** query.
- Name the new object **Merged – Area Id**.
- Make a variable named “**City- full name**”.
 - Formula - **=[City/village/tpw Names]**.
 - Qualification – **Detail**.
 - Associated Dimension – **Merged - Area ID**.

Variable Editor

Variable Definition

Name: City - full name

Qualification: Detail

Associated dimension: Merged - Area Id

Type: string

Formula

=[City/village/tpw Names]

Available objects

- Area Id
- Event Number
- Name
- Clemis CVT
 - City/village/tpw Names
 - County
 - CVT Code
 - Patrol Agency

Functions

- Aggregate
- All
- Character
- Data Provider
- Date & Time
- Document
- Logical
- Misc.

Operators

= < <= > >= > .

+ - / * ; ()

Values...

Prompts...

:

After

All

And

Description

City/village/tpw Names

City village township long name

OK Cancel



Activity 1-1 – Merging Multiple Data Providers

- Create the following table in **Report 3**:
 - **Name** from the **OCTraining** query.
 - **Address** from the **OCTraining** query.
 - **Merged – Area Id** from the **Merged Dimensions** folder.
 - **City - full names** from the **Variables** folder.
 - **Event Number** from the the **OCTraining** query
- Duplicate the table to right of itself.
- Remove the **Merged – Area Id** column from the duplicated table.

Name	Address	Merged - Are	City - full name	Event Number	Name	Address	City - full name	Event Number
Smith, John	1200 N Telegraph Rd	01		LZZ1512251	Smith, John	1200 N Telegraph Rd	Ann Arbor Twp	LZZ1512251
Smith, John	1200 N Telegraph Rd	02		LZZ1512251	Smith, John	1200 N Telegraph Rd	Augusta Twp	LZZ1512251
Smith, John	1200 N Telegraph Rd	03		LZZ1512251	Smith, John	1200 N Telegraph Rd	Belleville City	LZZ1512251
Smith, John	1200 N Telegraph Rd	05		LZZ1512251	Smith, John	1200 N Telegraph Rd	Berkley	LZZ1512251
Smith, John	1200 N Telegraph Rd	1		LZZ1512251	Smith, John	1200 N Telegraph Rd	Birmingham	LZZ1512251
Smith, John	1200 N Telegraph Rd	100		LZZ1512251	Smith, John	1200 N Telegraph Rd	Bloomfield Hills	LZZ1512251
Smith, John	1200 N Telegraph Rd	2		LZZ1512251	Smith, John	1200 N Telegraph Rd	Canton	LZZ1512251
Smith, John	1200 N Telegraph Rd	23		LZZ1512251	Smith, John	1200 N Telegraph Rd	Center Line	LZZ1512251
Smith, John	1200 N Telegraph Rd	3		LZZ1512251	Smith, John	1200 N Telegraph Rd	Eastem Michigan University PD	LZZ1512251
Smith, John	1200 N Telegraph Rd	4		LZZ1512251	Smith, John	1200 N Telegraph Rd	Fenton	LZZ1512251
Smith, John	1200 N Telegraph Rd	511		LZZ1512251	Smith, John	1200 N Telegraph Rd	Ferndale	LZZ1512251
Smith, John	1200 N Telegraph Rd	512		LZZ1512251	Smith, John	1200 N Telegraph Rd	Grosse Pointe Farms	LZZ1512251
Smith, John	1200 N Telegraph Rd	513		LZZ1512251	Smith, John	1200 N Telegraph Rd	Grosse Pointe Park	LZZ1512251
Smith, John	1200 N Telegraph Rd	514		LZZ1512251	Smith, John	1200 N Telegraph Rd	Grosse Pointe Shores	LZZ1512251
Smith, John	1200 N Telegraph Rd	A		LZZ1512251	Smith, John	1200 N Telegraph Rd	Grosse Pointe Woods	LZZ1512251
Smith, John	1200 N Telegraph Rd	ANT	Ann Arbor Twp	LZZ1512251	Smith, John	1200 N Telegraph Rd	Hambamck	LZZ1512251

- Save the document as “Activity 1-1 Advanced - Multiple data providers” to the “BOBJ Activity **Folder for OC Training**”.
- Close the document.

Summary

In this chapter we have examined the following topics:

- Creating reports using multiple **Data Providers**.
- Merging different **Data Providers** through common objects.
- Creating **Data Synchronization** work-arounds.
- Displaying combined data in a single block.