

# ASUG SAP BusinessObjects **USER CONFERENCE**

September 10-13, 2012  
Orlando, Florida

**Business Intelligence**  
for a **PASSIONATE**  
**COMMUNITY**



## **Session 0611 - Preparing for Life on Planet UNX**

Alan Mayer – Solid Ground Technologies

# Learning Points

- Learn the pros and cons of the new semantic layer
- Discover the steps required for conversion
- Understand the limitations of this latest version

# Agenda

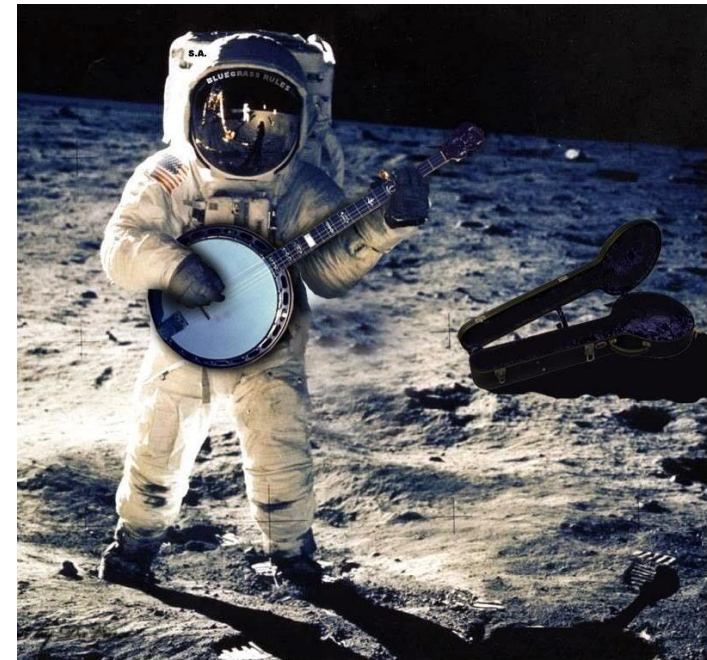
- **Introduction**
- Architecture
- Migration
- Features
- Publishing
- Other Considerations
- Wrapping Up

# Introduction



# Setting Expectations ...

- This session will not show you how to build a universe from scratch
  - Could do that in another presentation
  - Not a planet-building discussion
- We will show you how to live on Planet .UNIX
  - How to shift from your existing .UNV world
  - What to expect
  - Real life experience spices up the conversation



# Agenda

- Introduction
- **Architecture**
- Migration
- Features
- Publishing
- Other Considerations
- Wrapping Up

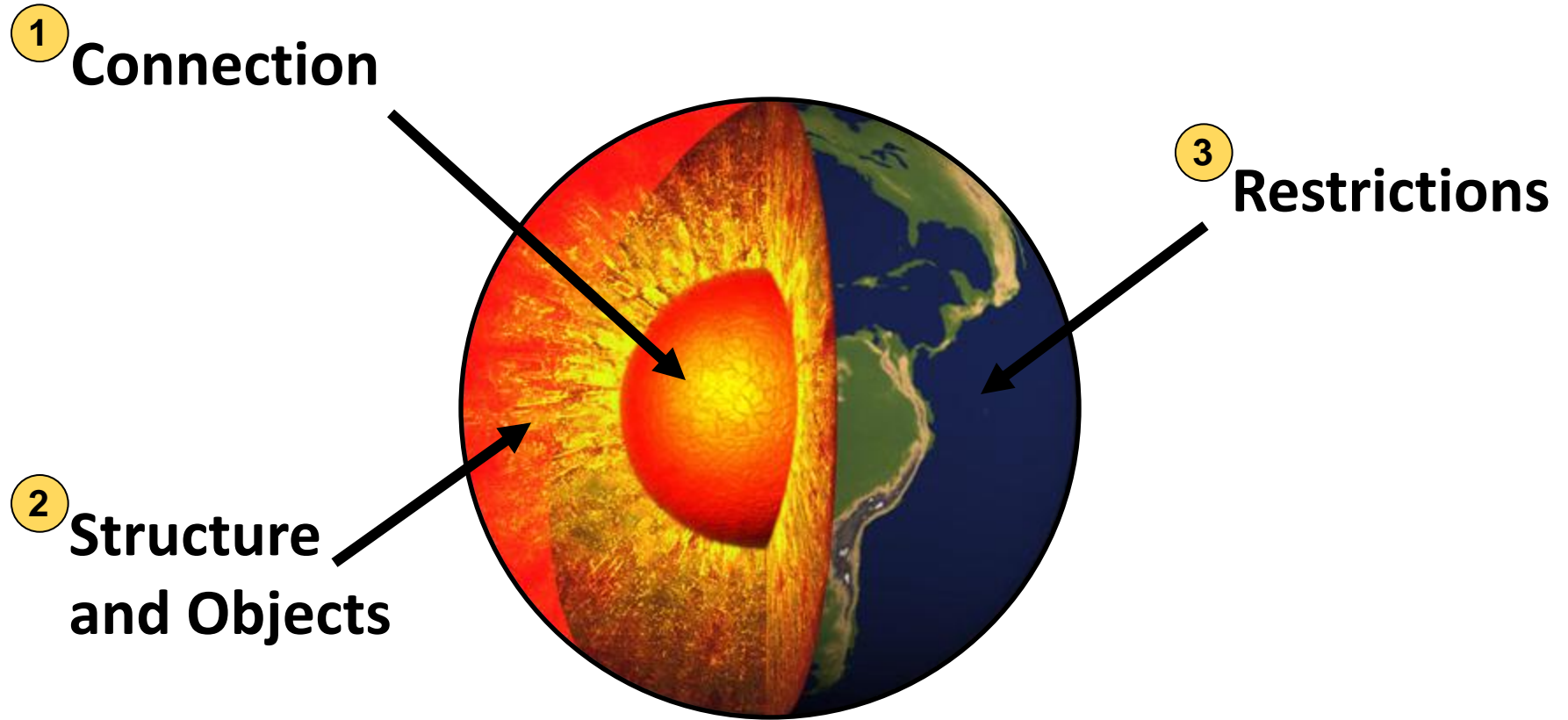
# Gazing at the Planets



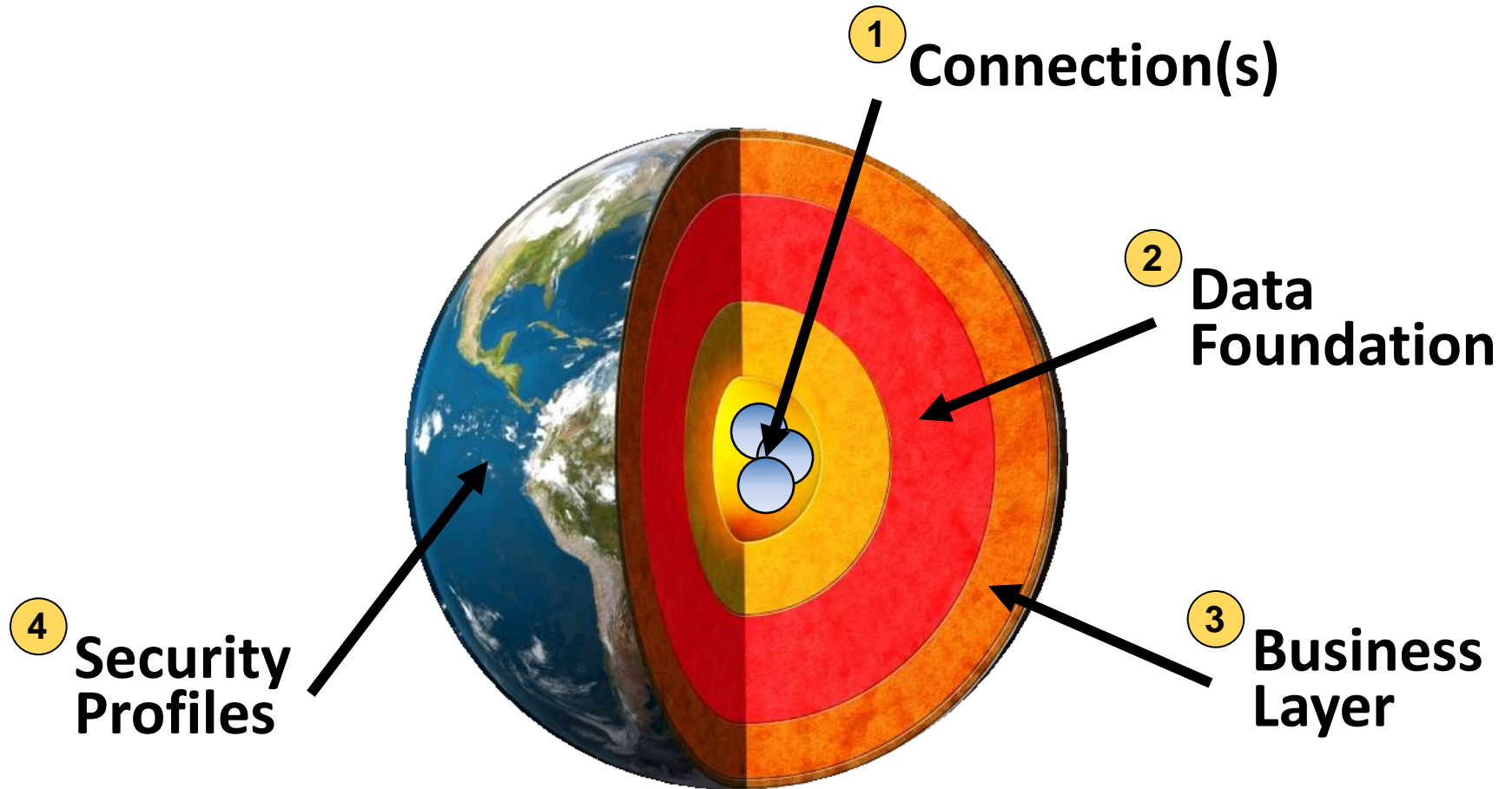
Planet **UNV**



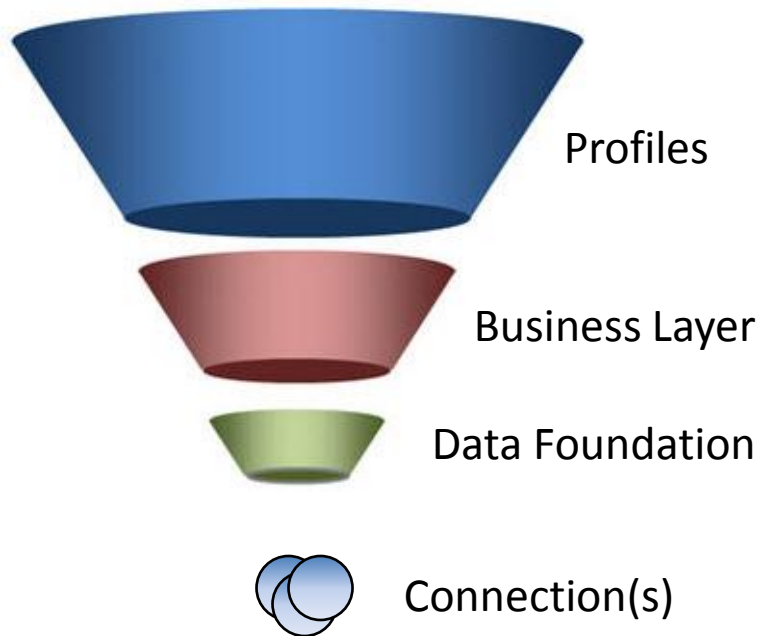
Planet **UNX**







# Another Look at Planet .UNX



Many views can be based on a single Business Layer

**.blx**

Business Layer built from one foundation

**.dfx**

Data Foundation constructed from one or more connections

**.cnx, .cns**

Connections created from many data sources

**Project**

# Do the Planetary Math

$$\begin{array}{r} .cnx \text{ or } .cns \\ + .dfx \\ + .blx \\ \hline = .unx \end{array}$$

**Question:**

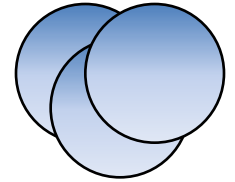
Do layers come with a cost?

**Answer:**

No.

The .unx file representing the final universe is compiled from all previous layers

# Connections

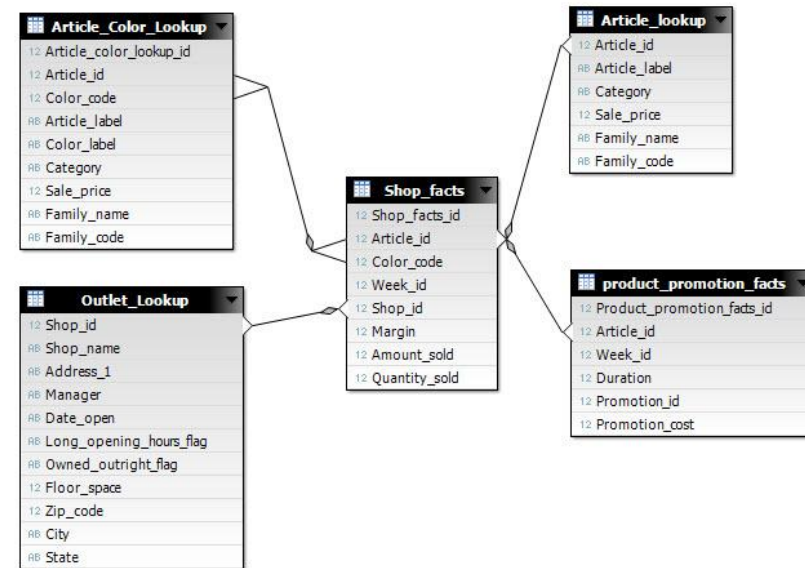


- Universe connections play the same role as in XI 3.1
- More data sources available since 4.0 was released
  - SAP ERP (Feature Pack 3)
  - Essbase OLAP (Feature Pack 3)
  - CSV files (Feature Pack 3)
  - Stored Procedures (Feature Pack 3)
- New Features
  - Connection folders
  - May not seem like much, until you manage hundreds of connections



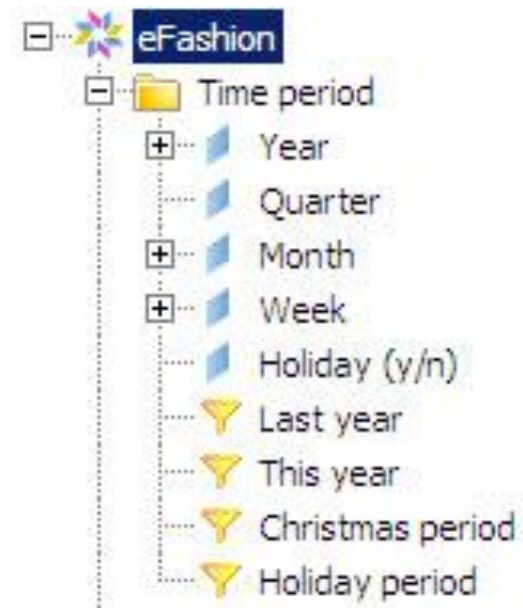
# Data Foundation

- Similar to the Structure Panel in XI 3.1
  - Tables, derived tables, views, joins
- Many new features have been added
  - The most exciting will be covered later in this presentation
- Why separate data structure from objects?
  - Separation = Greater control, more flexibility
  - Remember connection separation in XIR2?
  - Many universe developers could benefit from the same common data layer



# Business Layer

- Similar to the Classes and Objects Panel in XI 3.1
- Enhanced to support OLAP-based data sources
  - Analytical dimensions
  - Hierarchies (**not** v3.1 hierarchies)
  - Named sets
  - Calculated members



# Profiles

- XI v3.1 Universe Restrictions have been split into **PROFILES**

v3.1 Universe Restriction Window

## Data Security Profiles control the Data Foundation layer

- Replacement connections
- Query timeouts and rows
- Query options
- WHERE clause restrictions
- Replacement tables / views

**Edit Restriction - New Restriction**

Restriction Name: New Restriction

Connection | Controls | SQL | Objects | Rows | Table Mapping

You can specify an alternate connection to be used for the universe.

Name: eFashion

Description: eFashion retail Data Warehouse dated 14 Oct 2007. 89,000+ row fact table. Version 13

Connection Folder:

Connection: efashion-webi

New... Edit... Test

☐ Click here to choose stored procedure universe

Reset OK Cancel Help

# Profiles, cont'd

- Business Layer Profile controls which objects are hidden

**Former Hidden Objects pains are resolved!**

Users with hidden objects can now refresh queries

Controlled by AUTO\_UPDATE\_QUERY parameter

## v3.1 Universe Restriction Window

**Edit Restriction - New Restriction**

Restriction Name: New Restriction

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New... Edit... Test

☐ Click here to choose stored procedure universe

Reset OK Cancel Help



# Name Changes

- Changes made since XI v3.1
  - Classes → Folders
  - Detail objects → Attributes
  - Hierarchies → Navigation paths
  - Prompts → Parameters
  - Self joins → Column filters
  - Universe Designer → Universe Design Tool (.unv)
- Why changes now?
  - To be even more difficult to learn (new tool, new terms ...)
  - To better align with existing SAP definitions and tools
    - Hierarchies mean something totally different in SAP BW
  - Some names came from lesser known products
    - Business view terminology, maybe?



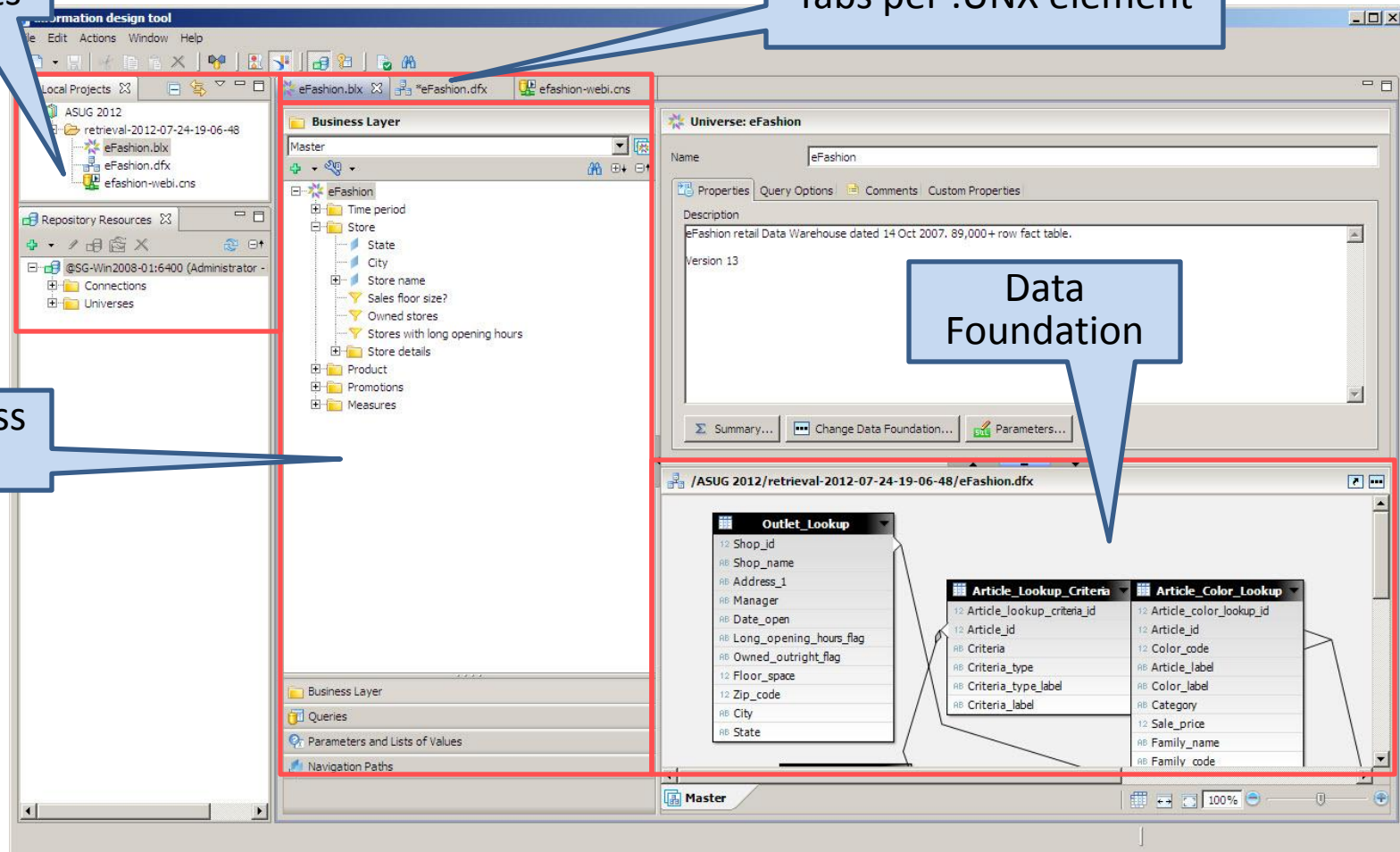
# Information Design Tool (IDT)

Projects

Tabs per .UNIX element

Business Layer

Data Foundation



# Security Changes (CMC)

Needed to create profiles

Used for federated (multi-connection) universes

Sharing / synching layers after publishing project

## Applications

▼ Specific Rights for Information Design Tool	Implicit Value	✓
Administer security profiles	Not Specified	<input type="radio"/>
Compute statistics	Not Specified	<input type="radio"/>
Create, modify, or delete connections	Not Specified	<input type="radio"/>
Publish universes	Not Specified	<input type="radio"/>
Retrieve universes	Not Specified	<input type="radio"/>
Save for all users	Not Specified	<input type="radio"/>
Share projects	Not Specified	<input type="radio"/>



# Agenda

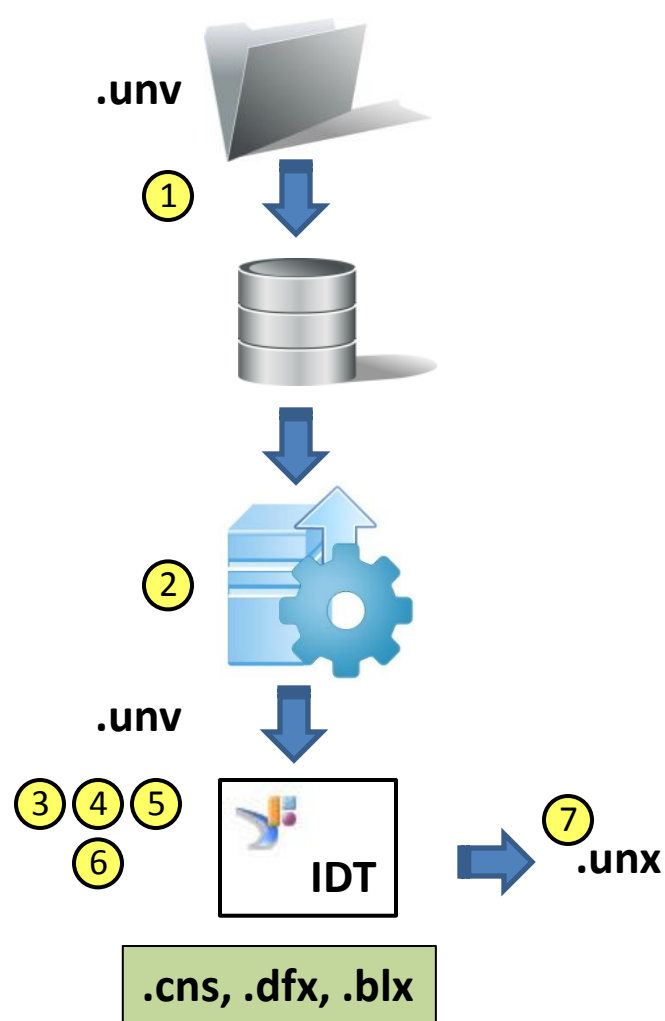
- Introduction
- Architecture
- **Migration**
- Features
- Publishing
- Other Considerations
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# Converting .UNV to .UNX

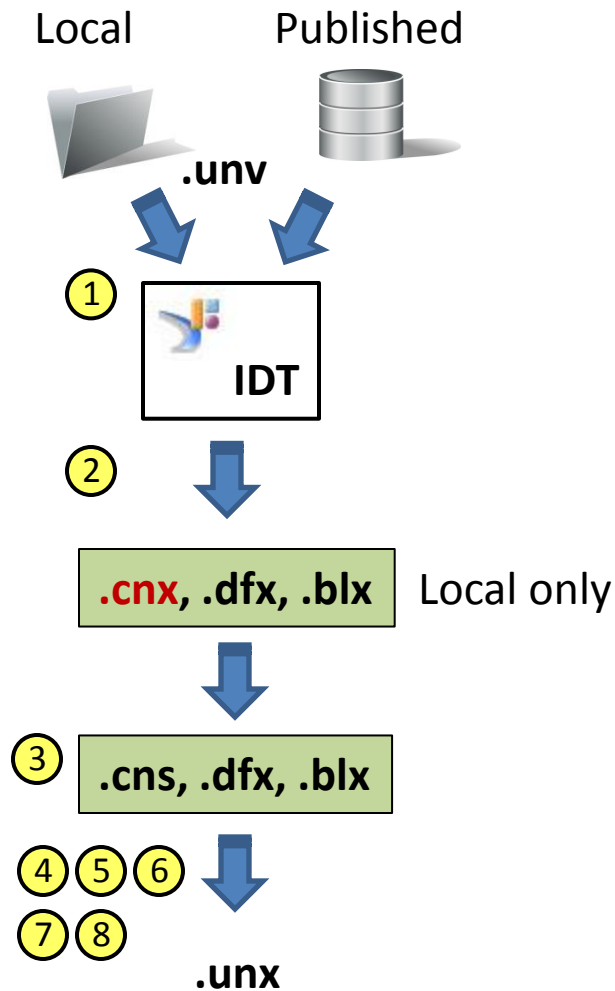
- Two different approaches to converting legacy universes
- Select the migration strategy based on where the universe is located
  - Approach #1: Universe exported to XI v3.1 Repository
  - Approach #2: Universe created in BI 4.0

# #1: Legacy Universe in Previous Versions



- 1 Export any locally stored universes to the legacy repository (system database)
- 2 Use the Upgrade Management Tool (UMT) to migrate to BI 4.0
- 3 Convert .UNV to .UNIX using the Information Design Tool (IDT)
- 4 Refresh structure of the Data Foundation layer (.dfx)
- 5 Run an Integrity Check without publishing
- 6 Fix any discrepancies (see next section)
- 7 Publish business layer

## #2: Universe Created in BI 4.0



- ① Select the legacy universe (published or local) using Information Design Tool (IDT)
- ② Convert that universe using Information Design Tool (IDT)
- ③ Create secured connection (.cns) – local universe only
- ④ Adjust Data Foundation layer with secured connection – local only
- ⑤ Refresh structure of the Data Foundation layer (.dfx)
- ⑥ Run an Integrity Check without publishing
- ⑦ Fix any discrepancies (see next section)
- ⑧ Publish business layer

# What's Converted?

- Schema
  - Tables
  - Aliases
  - Derived tables (including nested)
  - Joins (self joins → column filters)
  - Connections (local → .cns, secured → .cnx)
- Classes and Objects
  - Classes → folders
  - Dimensions
  - Measures
  - Details → Attributes
  - Conditions → Filters
  - @ Functions (@Select, @Where, @Variable, @Derived\_Table, @Aggregate\_Aware)



# What's Converted – cont'd?

- Universe Restrictions
  - Objects → Business security profile
  - All others → Data security profile
  - Derived tables (including nested)
  - Joins (self joins → column filters)
- Others
  - @Prompt → Optionally converted to named parameters (Business Layer only)
  - List of Values
  - Universe controls → same default restrictions in Business Layer (BL)

# What's Not Converted ?

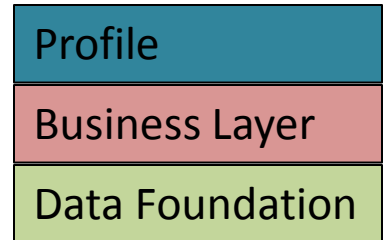
- Linked universes
  - More on this later in the presentation
- Custom Strategies
- Customized .PRM file values
- @Prompt in Joins
  - Self-joins only that refer to an object using a List of Values

# Agenda

- Introduction
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- **Features**
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# Features Overview

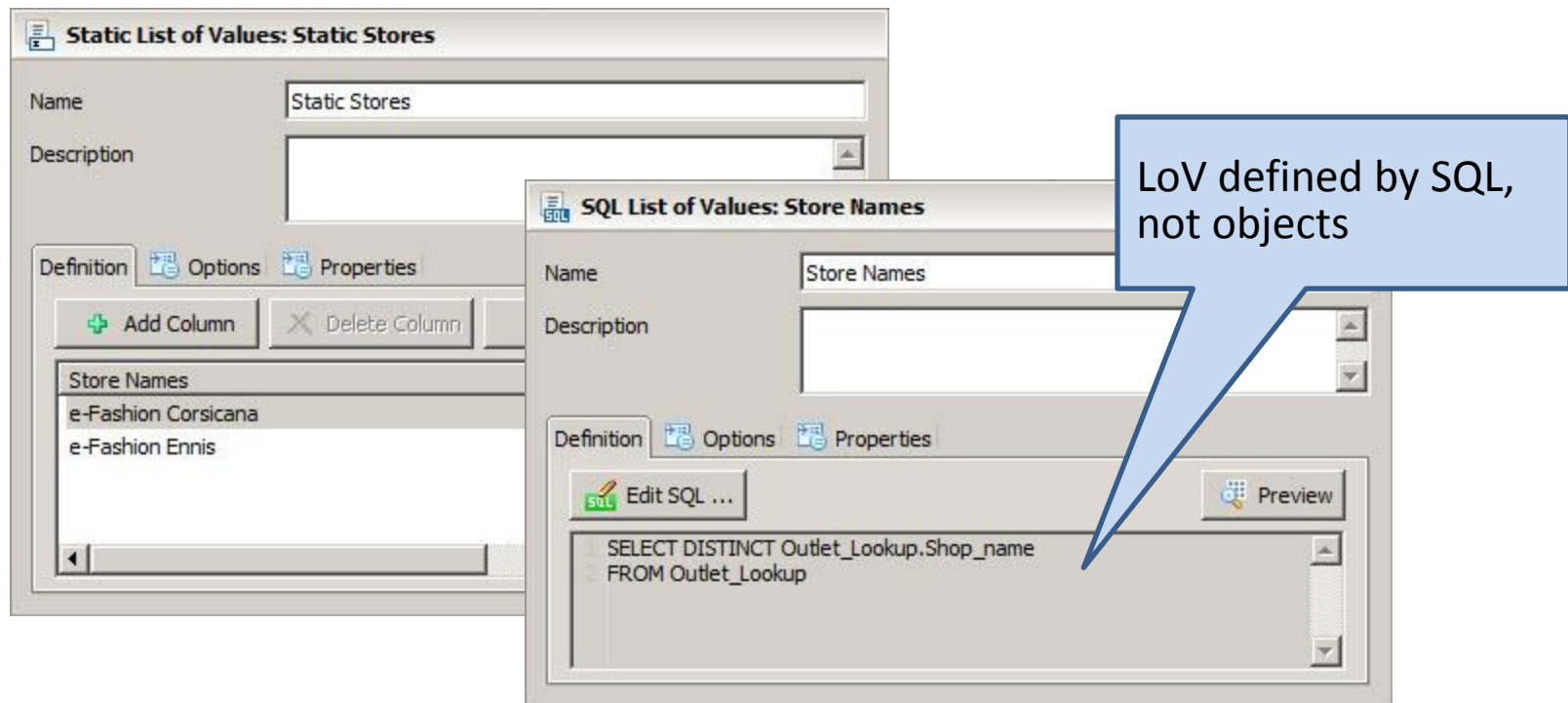
- Features will be discussed by layer
  - Data Foundation
  - Business Layer
  - Profiles
- Advice is given for each feature
  - When to use
  - Whether to use
- All recommendations are based on my experience
  - Your mileage may vary ...





# List of Values (LoV)

- Can be created in the Data Foundation
  - Inherited by all Business Layers based on that foundation
  - Defined by custom SQL or static values



# Parameters

**Parameter: Select Store(s)**

Name: Select Store(s) ☐ Hidden

Description:

**Options** Custom Properties

**Prompt Options**

☒ Prompt to users

Prompt Text: Select store(s)

Data Type: String

☒ Allow multiple values

☒ Keep last values

☐ Index aware prompt

**List of Values**

Associated List of Values: Store Names (Shop\_name)

☒ Select only from list

**Default Values**

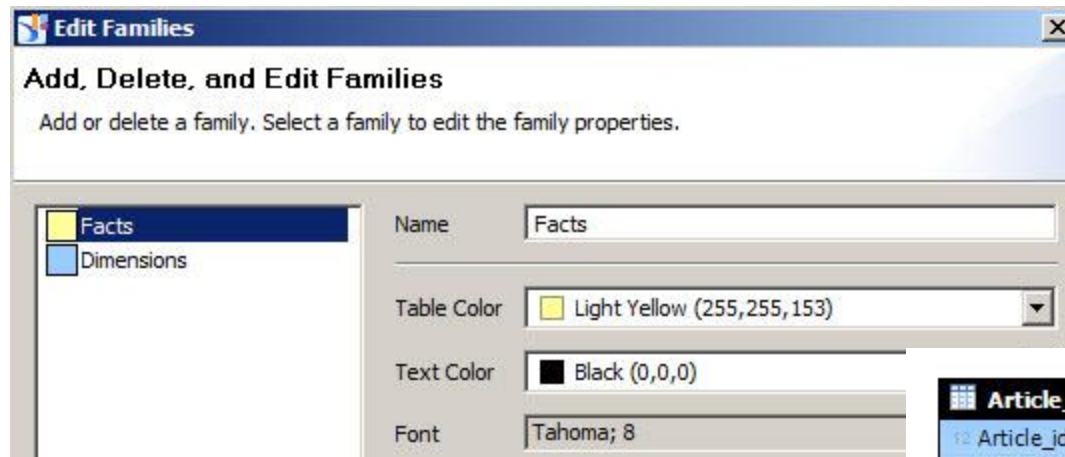
☐ Set default values

Parameters can be inherited by all Business Layers

Can use LoV defined in the foundation

# Families

- Tables can be grouped by type
  - Select a color for every family
  - Defined by custom SQL or static values

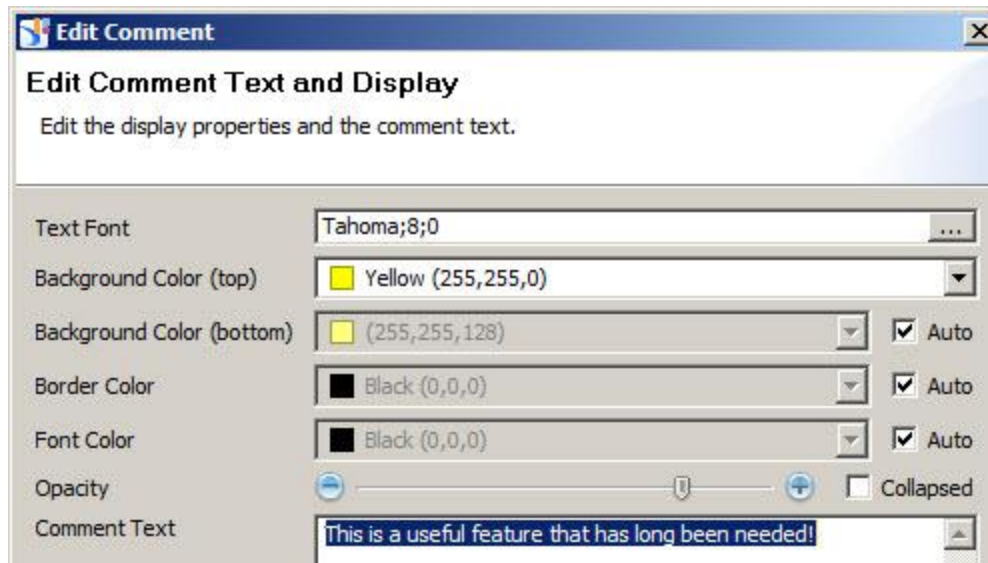


Article_lookup	
12	Article_id
AB	Article_label
AB	Category
12	Sale_price
AB	Family_name
AB	Family_code

Shop_facts	
12	Shop_facts_id
12	Article_id
12	Color_code
12	Week_id
12	Shop_id
12	Margin
12	Amount_sold
12	Quantity_sold

# Comments

- Now added like tables or joins
  - Can be created, formatted, and MOVED
  - Great for annotating the foundation

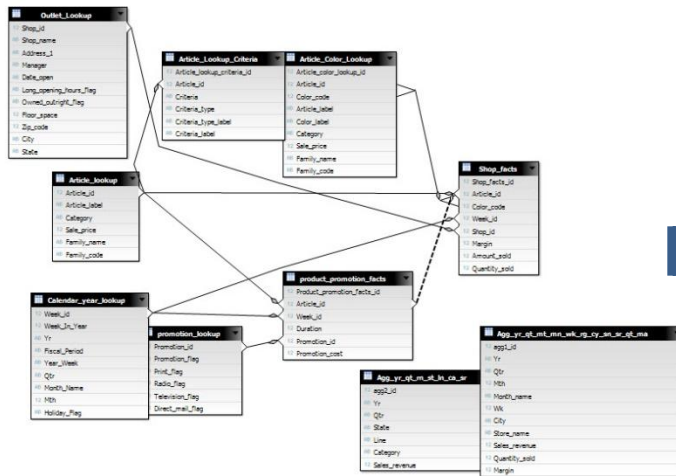


This is a useful  
feature that has long  
been needed!

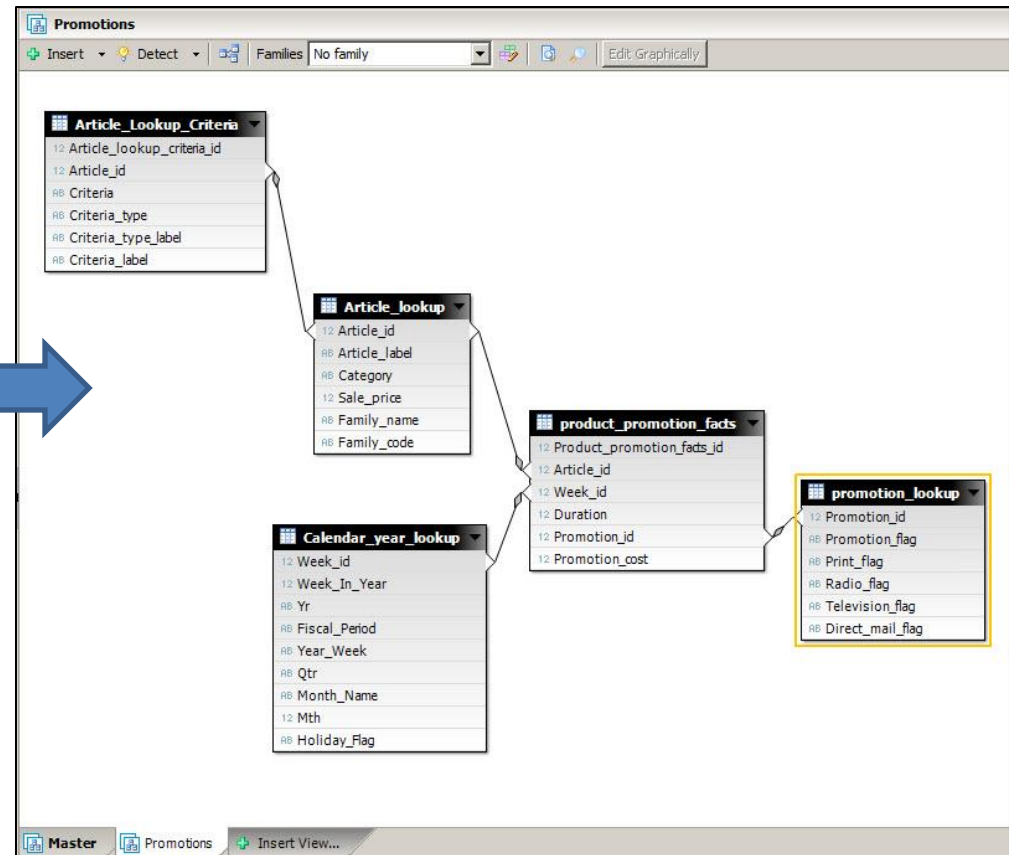
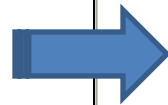


# Custom Views

- Easily separate sections of a complex schema
  - Does not affect SQL that is generated
  - Alternate view



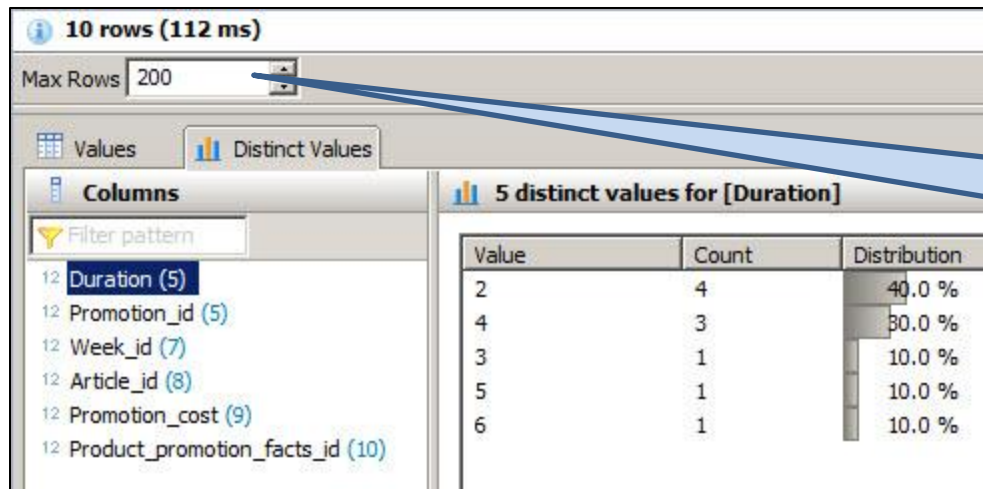
**Master View**



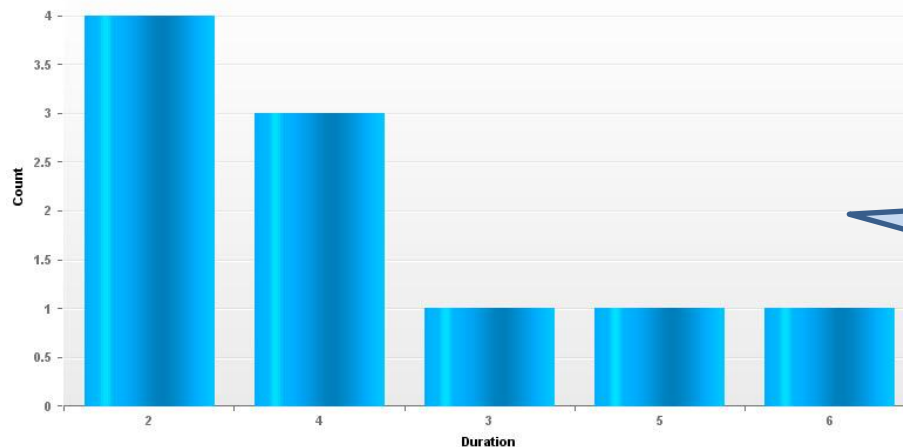


# Data Profiling

- Data can be profiled per column



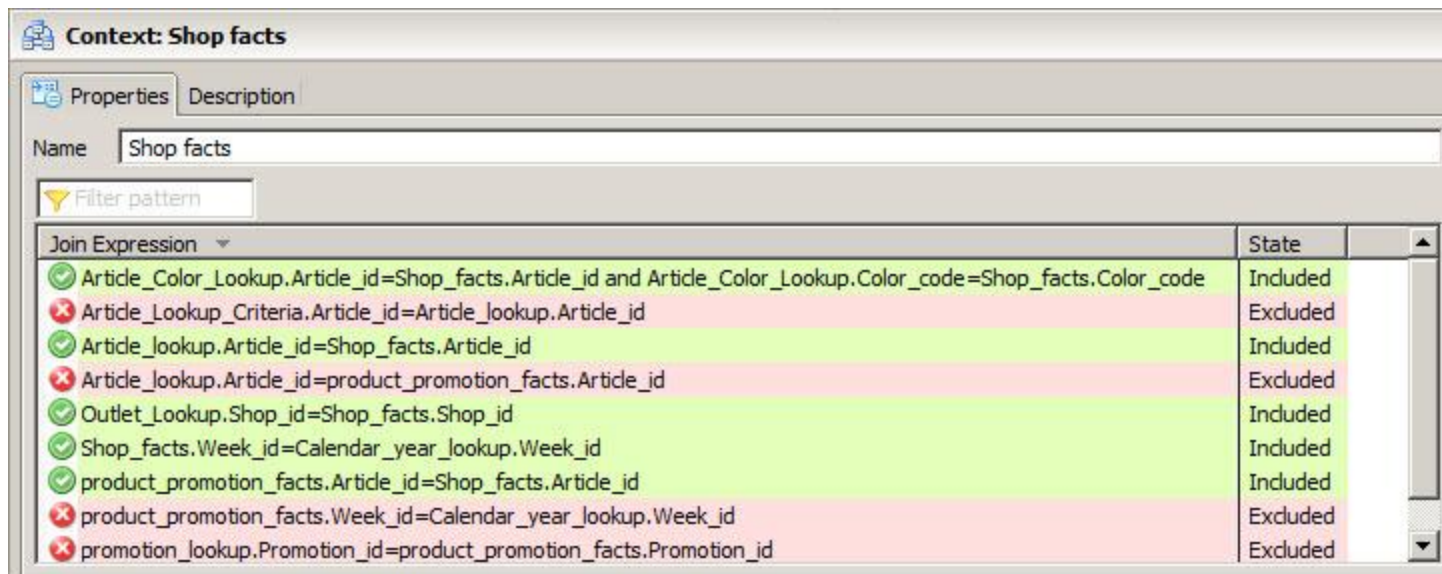
Adjust this value higher for more meaningful distributions



Value distribution can be shown as a Bar or Pie chart

# Contexts

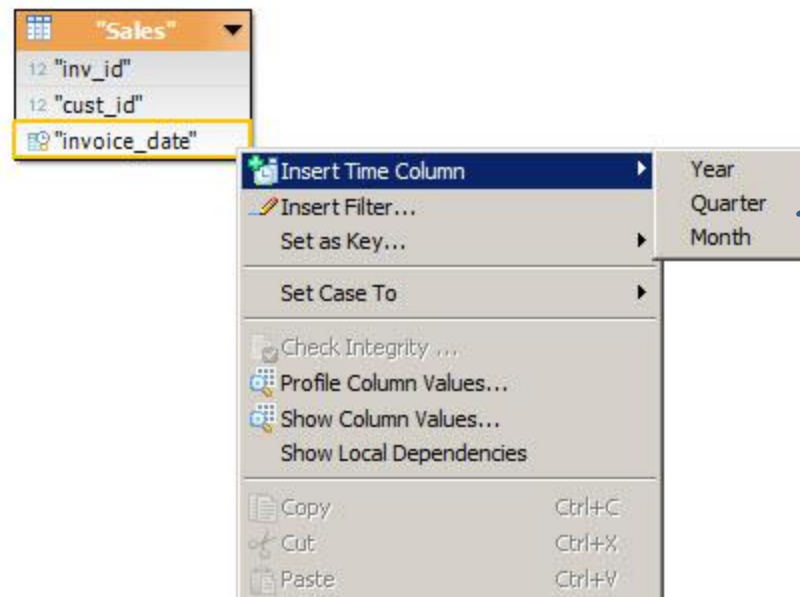
- Joins in a context can be:
  - Included (part of the context)
  - Excluded (never part of the context)
  - Neutral (implicitly included)
- New joins that are added after contexts are defined are neutral
  - Always included in all contexts
  - Makes join and context maintenance a bit easier



Join Expression	State
Article_Color_Lookup.Article_id=Shop_facts.Article_id and Article_Color_Lookup.Color_code=Shop_facts.Color_code	Included
Article_Lookup_Criteria.Article_id=Article_lookup.Article_id	Excluded
Article_lookup.Article_id=Shop_facts.Article_id	Included
Article_lookup.Article_id=product_promotion_facts.Article_id	Excluded
Outlet_Lookup.Shop_id=Shop_facts.Shop_id	Included
Shop_facts.Week_id=Calendar_year_lookup.Week_id	Included
product_promotion_facts.Article_id=Shop_facts.Article_id	Included
product_promotion_facts.Week_id=Calendar_year_lookup.Week_id	Excluded
promotion_lookup.Promotion_id=product_promotion_facts.Promotion_id	Excluded

# Calculated Columns

- New columns can be added to existing tables
  - Calculated = consisting of columns from the same table
- Special example of this are time-part columns
  - IDT automatically creates the column for you
  - Only works for DateTime columns

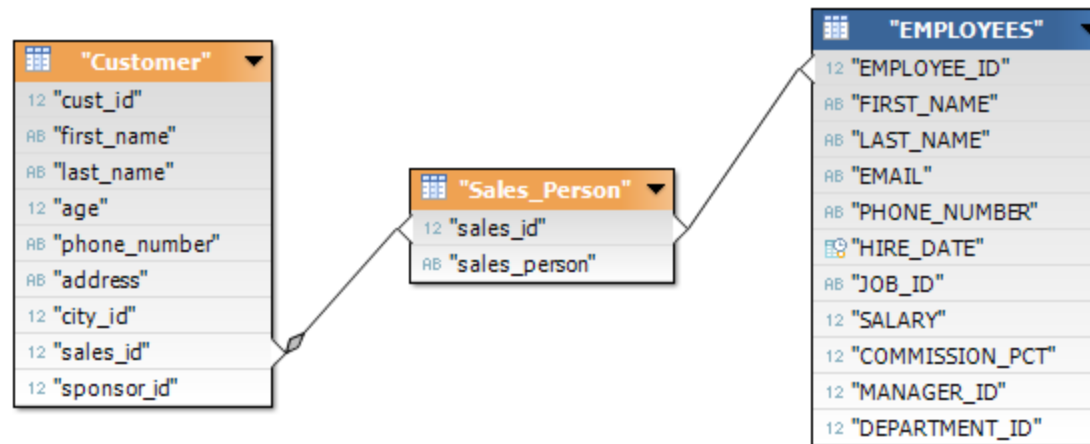


Different from XI 3.1?

Absolutely! Created in the **DATA** schema, not as objects

# Federation

- Foundations can be based on multiple connections
  - Must decide BEFORE data foundation is created
- Special rules in effect for the resulting foundation (and business layer)
  - Joins between tables of two or more sources must be ANSI-92
  - Same goes for calculated columns, derived tables
  - Universes against SAP BW, SAS require multisource foundations



# Federation, cont'd

- But what about database-specific functions
  - Analytical functions
  - DECODE
- Create DB-specific derived tables, calculated columns

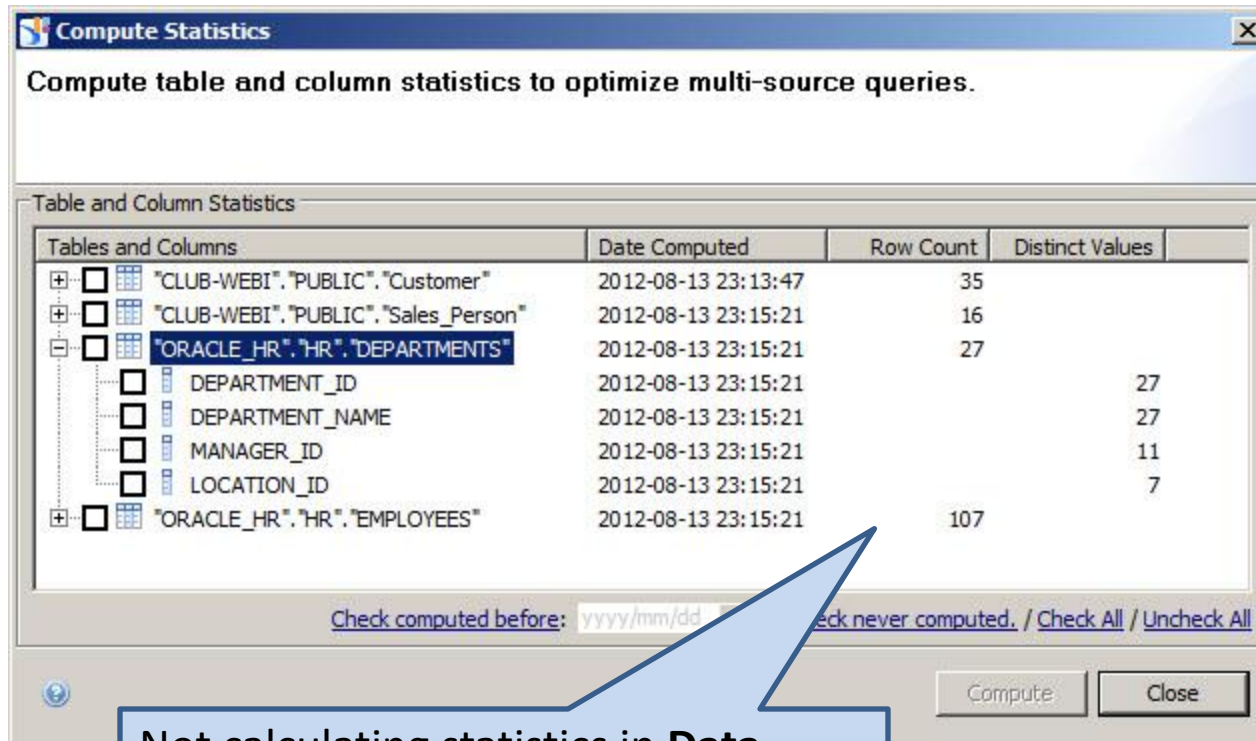


# Should I Federate?

- This is cool!
- Any downside?
- A few things to consider ...
  - Based on Data Federator technology
  - It must logically combine data from all sources
  - Tries to push down logic to each data source
  - Not good for large data sets per connection
  - Could bottleneck
- Recent IDT features help
  - Compute Statistics on resulting universe



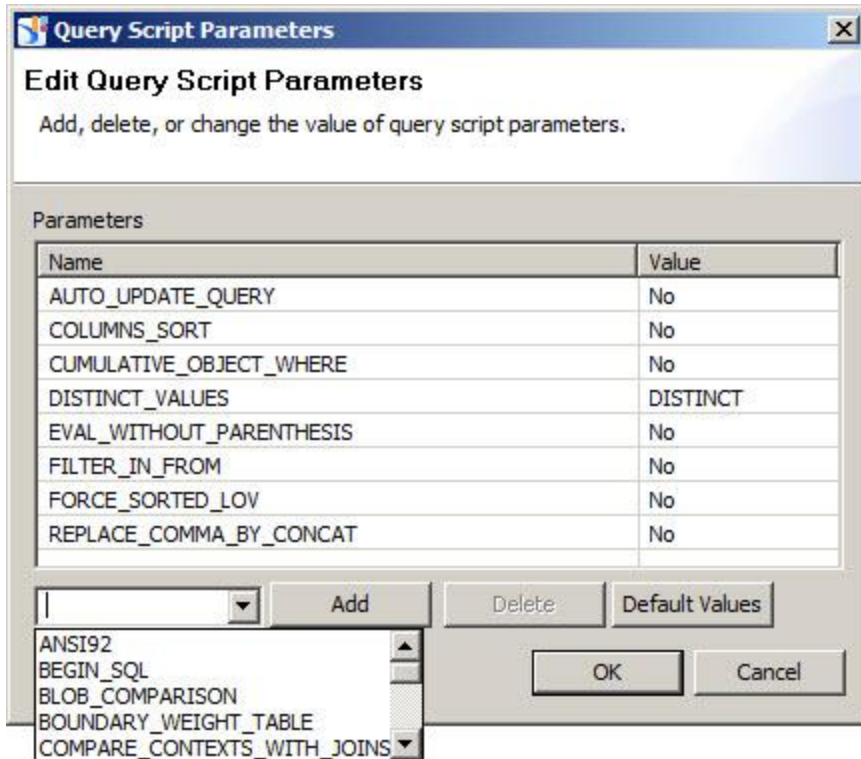
# Compute Statistics



# SQL Parameters

Business Layer

## Business Layer



Query Script Parameters

Edit Query Script Parameters

Add, delete, or change the value of query script parameters.

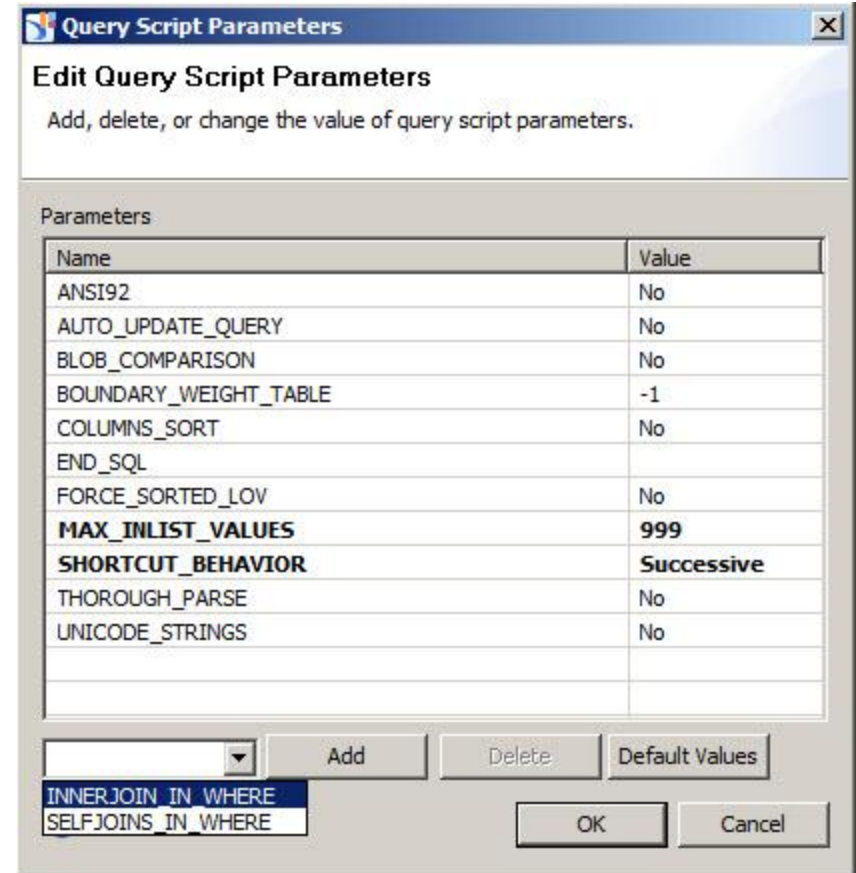
Parameters

Name	Value
AUTO_UPDATE_QUERY	No
COLUMNS_SORT	No
CUMULATIVE_OBJECT_WHERE	No
DISTINCT_VALUES	DISTINCT
EVAL_WITHOUT_PARENTHESIS	No
FILTER_IN_FROM	No
FORCE_SORTED_LOV	No
REPLACE_COMMA_BY_CONCAT	No

ANSI92  
BEGIN\_SQL  
BLOB\_COMPARISON  
BOUNDARY\_WEIGHT\_TABLE  
COMPARE\_CONTEXTS\_WITH\_JOINS

Add Delete Default Values OK Cancel

## Data Foundation



Query Script Parameters

Edit Query Script Parameters

Add, delete, or change the value of query script parameters.

Parameters

Name	Value
ANSI92	No
AUTO_UPDATE_QUERY	No
BLOB_COMPARISON	No
BOUNDARY_WEIGHT_TABLE	-1
COLUMNS_SORT	No
END_SQL	
FORCE_SORTED_LOV	No
<b>MAX_INLIST_VALUES</b>	<b>999</b>
<b>SHORTCUT_BEHAVIOR</b>	<b>Successive</b>
THOROUGH_PARSE	No
UNICODE_STRINGS	No

INNERJOIN IN WHERE  
SELFJOINS IN WHERE

Add Delete Default Values OK Cancel

# List of Values

Business Layer

**Business Layer Object List of Values: artic066**

Name: Article

Description:

Definition Options

☒ List of values based on the Query Panel ☐ List of values based on a custom hierarchy

Edit Query...

**Result Objects for Query**

SKU number

Traditional ways to define the list

**Business Layer Object List of Values: artic066**

Name: Article

Description:

Definition Options

Options

- ☒ Allow users to edit list of values
- ☐ Automatic refresh before use
- ☐ Force users to filter values before use
- ☐ Allow users to search values in the database

New options ...



# Custom Properties

- Additional attributes can be recorded per object
  - Attribute and value added
  - Attributes for universes, folders, objects

Can't easily retrieve this information through reporting apps **<yet>**.

SDK-based retrieval a possibility

Dimension: Location ID

Name: Location ID Active

Description:

Data Type: Numeric Show Script... Show Values...

SQL Definition Keys Advanced Source Information Custom Properties

Objects	Value
Secret	No

+ Add X Delete



- @Execute
  - Added in BI 4.0 SP04
  - Runs a List of Values (LOV) query
  - Used to add LOV results as a filter or WHERE clause
  - List of Values defined in Data Foundation or Business Layer

WHERE Customers.last\_name IN @Execute(Big\_Spenders)

Big\_Spenders:

```
SELECT
  c.last_name
FROM
  Customer c, Invoice_Line il, Service sv, Sales s
WHERE
  c.cust_id = s.cust_id and s.inv_id = il.inv_id and il.service_id=sv.service_id
GROUP BY c.last_name
HAVING sum( il.days * sv.price) > 50000
```

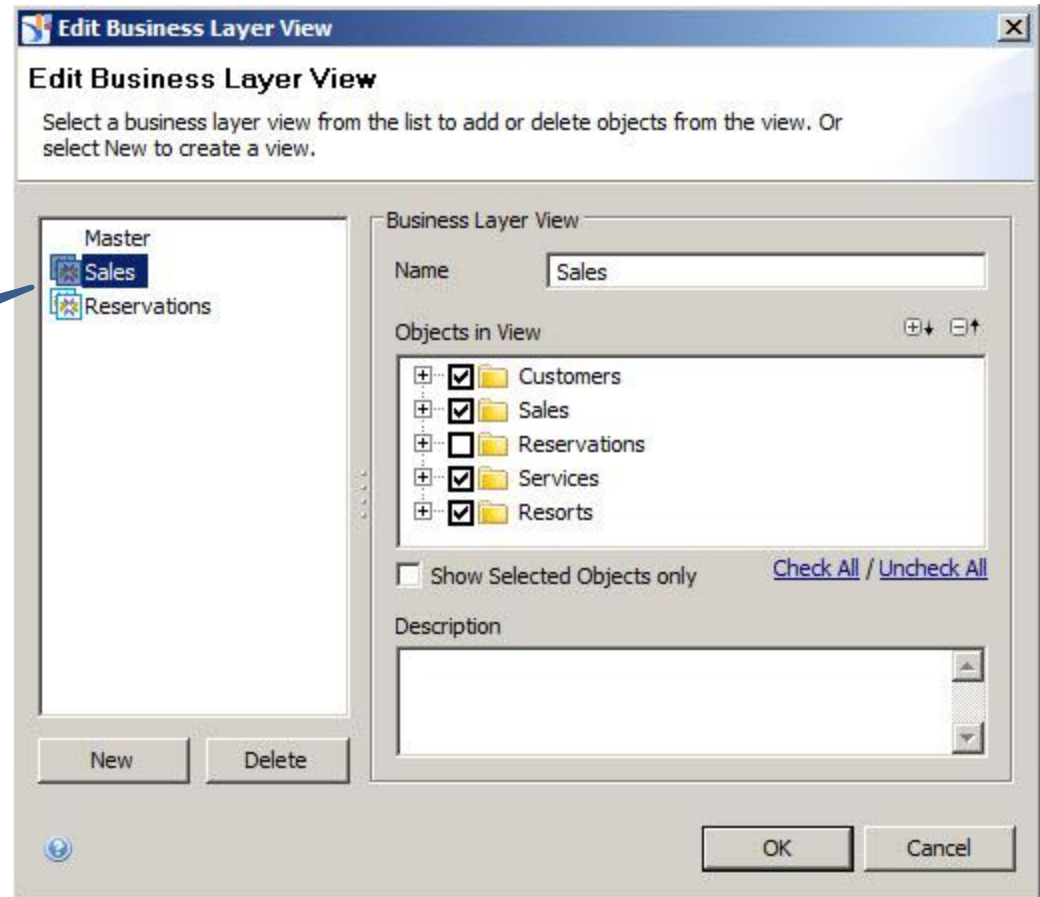
# Parameters

- Prompts can be named, saved, and inherited
  - Prompts were embedded in objects and joins in XI 3.1
  - Parameters are inherited from the Data Foundation layer

The screenshot shows a configuration window for a parameter named "Sales floor size sqFt?". The window has a title bar with a question mark icon and the text "Parameter: Sales floor size sqFt?". Below the title bar, there are fields for "Name" (containing "Sales floor size sqFt?") and "Description" (empty). A "Hidden" checkbox is to the right of the Name field. Below these fields are two tabs: "Options" (selected) and "Custom Properties". The "Options" tab contains several sections: "Prompt Options" with a checked "Prompt to users" checkbox, a "Prompt Text" field (containing "Sales floor size sqFt?"), a "Data Type" dropdown (set to "String"), and three checkboxes: "Allow multiple values" (checked), "Keep last values" (checked), and "Index aware prompt" (unchecked). Below this is the "List of Values" section with an "Associated List of Values" field (containing "Static Lov from Sales floor size sqFt? (Column 0)") and a checked "Select only from list" checkbox. At the bottom is the "Default Values" section with a "Set default values" checkbox (unchecked) and an empty text field.

- Views represent selected classes and objects
  - Similar to Object universe restrictions in XI 3.1
  - Those restrictions **HID** objects
  - 4.0 Views **SHOW** selected objects

These views can be referenced by Business Security Profiles



# Data Security Profile

- Adjust various universe aspects by user or group
  - <Almost> the same as XI 3.1 universe restrictions
  - **NOTE:** Object restriction is missing!!

The screenshot shows a configuration window titled 'Data Security Profile Name' with the value 'High Limit'. Below the title are tabs for 'Connections', 'Controls', 'SQL', 'Rows', and 'Tables'. The 'SQL' tab is selected. Under the 'Query' section, there are three options:

- ☒ Limit size of result set to: 10000 rows
- ☒ Limit execution time to: 20 minutes
- ☐ Warn if cost estimate exceeds: 5 minutes

# Business Security Profile

- Much more powerful
  - Allows classes / objects to be used OR restricted

Business Security Profile Name:

Create Query | Display Data | Filters

Business Layer Views	Status
Sales	Granted

Insert Granted   Insert Denied   Delete   Display

Objects	Path	Status
Services		Denied
Resorts		Denied

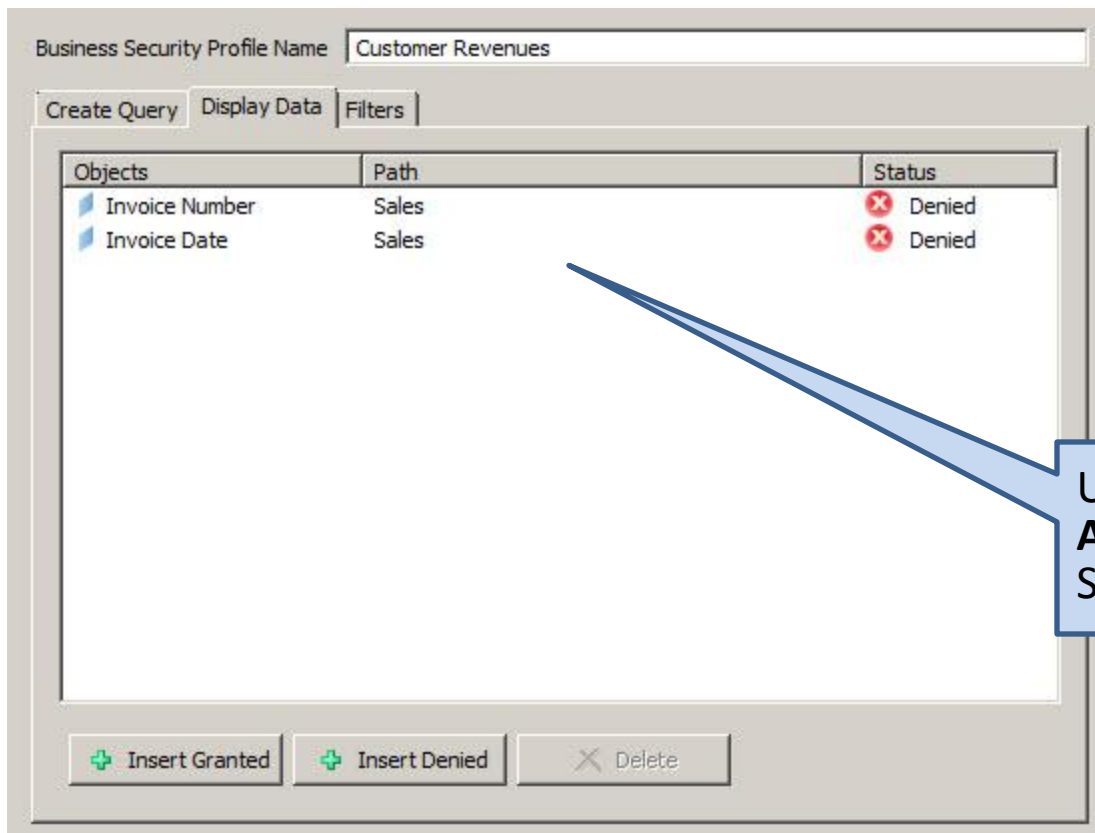
Insert Granted   Insert Denied   Delete

Universe views can be fine-tuned here



# Business Security Profile, cont'd

- Data can be displayed ... or not
  - Very useful for hiding confidential / secret information



# Business Security Profile, cont'd

- Data can be filtered as well
  - Filters added to the resulting SQL Query

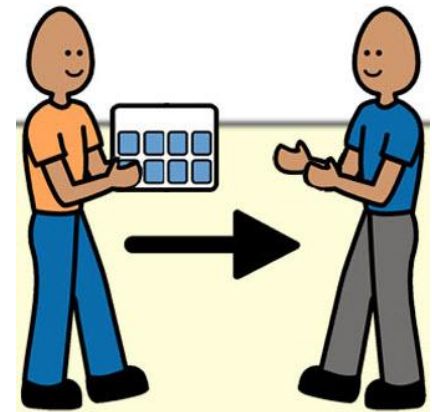
The screenshot displays a web-based interface for managing a Business Security Profile. At the top, a text field labeled "Business Security Profile Name" contains the text "Customer Revenues". Below this, there are three tabs: "Create Query", "Display Data", and "Filters", with the "Filters" tab currently selected. The main area of the interface is titled "Filters to apply" and contains a single filter entry, "US Customers", which is preceded by a yellow funnel icon. At the bottom of the interface, there are three buttons: "Insert" (with a yellow funnel icon), "Edit" (with a pencil icon), and "Delete" (with a blue X icon).

# Agenda

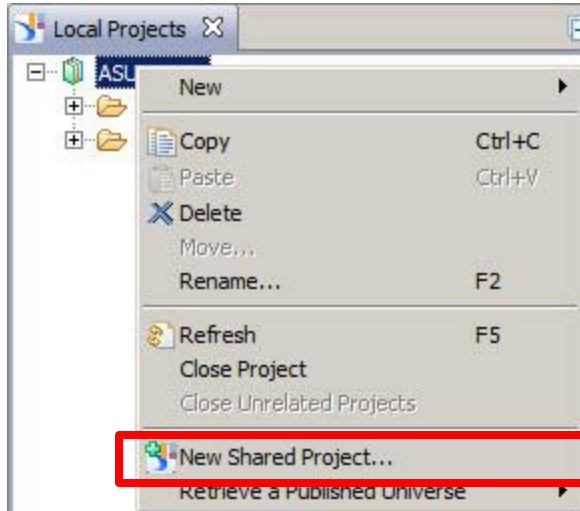
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# Share your Solution ... In Pieces!

- Developers can share projects
  - Layers can be uploaded to repository (synchronized)
    - Connections
    - Data Foundations
    - Business Layers
  - Many developers can contribute to final project
  - Methods available to resolve discrepancies
  - In XI 3.1, sharing done on a connection and universe basis



# Sharing a Project

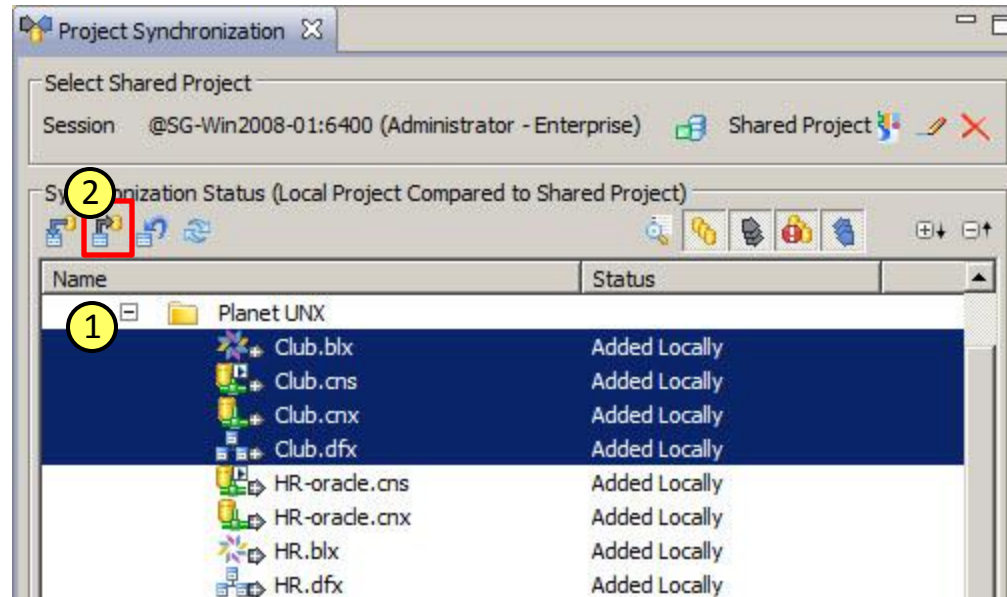


Right-click on any project within the Local Projects pane to share



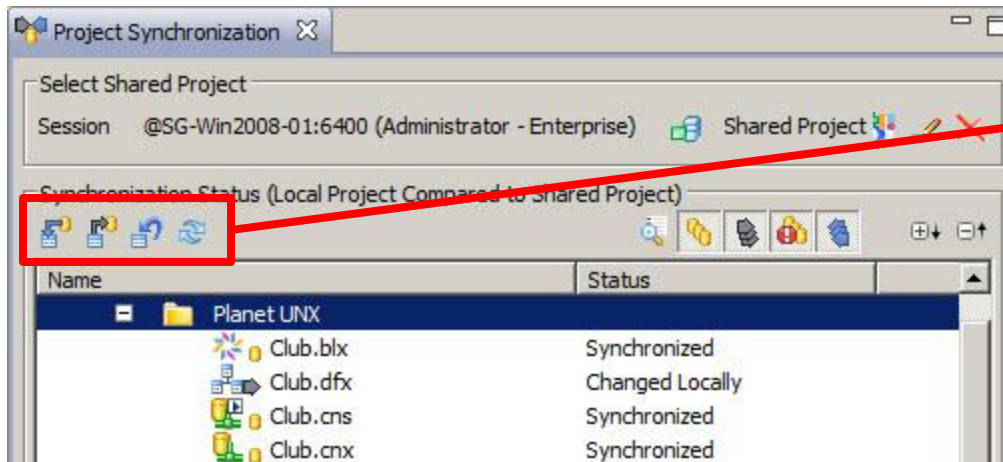
# Synchronizing a Project

- Layers within the shared project not shared
  - Highlight the layer to be shared
  - Use the **Save Changes on Server** button to synchronize



# Resolving Discrepancies

- Projects can easily get out of synch
  - Local definitions will change as work progresses
  - Other developers may post modified layer
- Use Project View controls to adjust the published project



Get changes from server



Save changes on server



Revert changes



Refresh

# Agenda

- Introduction
- Architecture
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- **Other Considerations**
- Wrapping Up

# Other Considerations

# Agenda

- Introduction
- Architecture
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# Wrapping Up

Thank you for participating.

Please provide feedback on this session by  
completing a short survey via the event  
mobile application.

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