SAP HANA Technical Academy

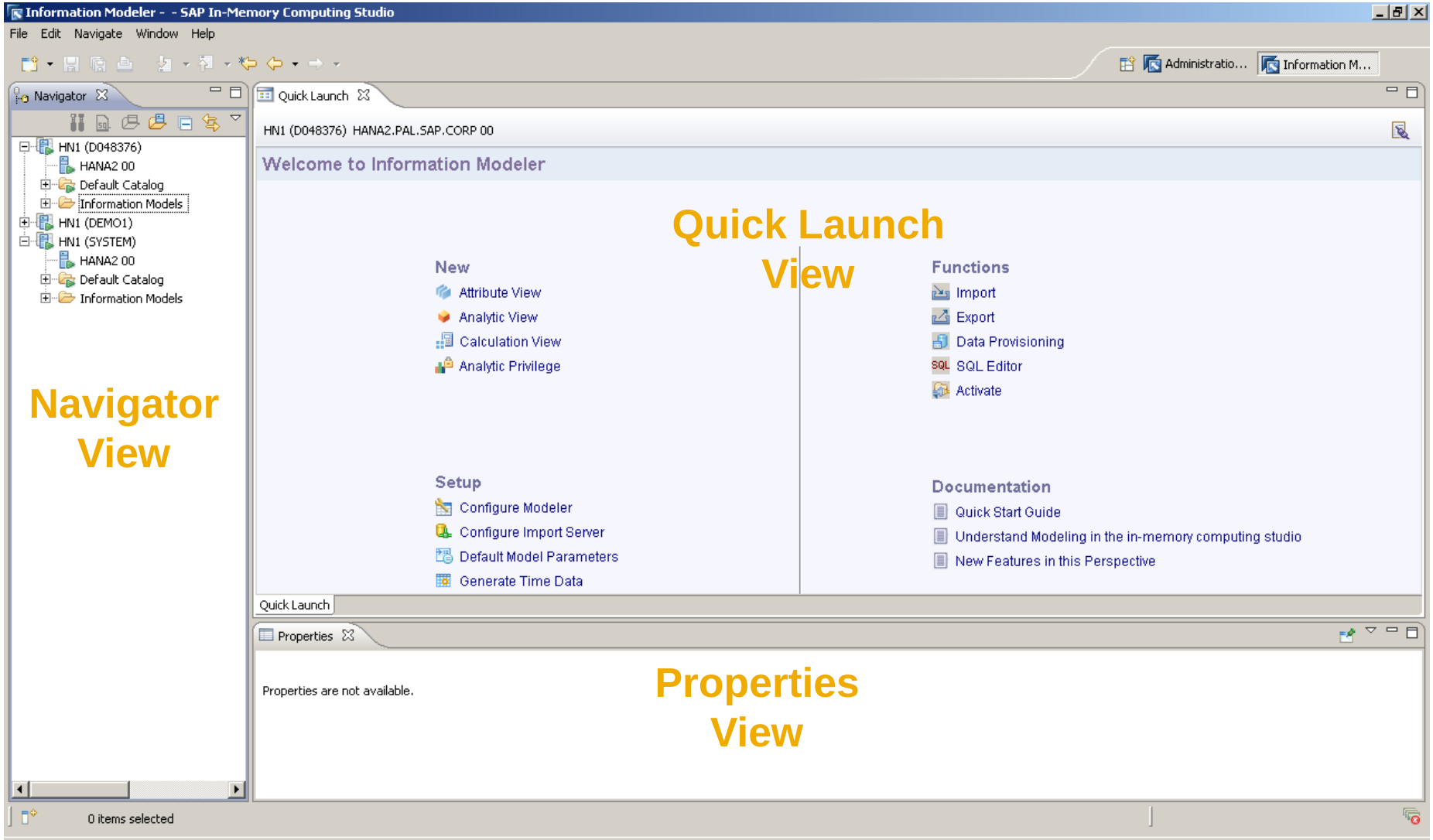
18.6.2014, WU Wien

Agenda

- SAP HANA
  - Introduction and Overview
  - SAP HANA Studio
  - Hands-on labs
- Modeling SAP HANA Views
  - Attribute Views
  - Analytic Views
  - Calculation Views
  - Hands-on labs
- Reporting
  - BusinessObjects Explorer
  - BusinessObjects Web Intelligence
  - Hands-on labs

SAP In-Memory Computing Studio

Look and Feel



SAP In-Memory Computing Studio
Features

Information Modeler Features

- Modeling
  - No materialized aggregates
  - Database views
  - Choice to publish and consume at 4 levels of modeling
    - Attribute View, Analytic View, Analytic View enhanced with Attribute View, Calculation View
- Data Preview
  - Physical tables
  - Information Models
- Import/Export
  - Models
  - Data Source schemas (metadata) – mass and selective load
  - Landscapes
- Data Provisioning for SAP Business Applications (both initial load and replication)
- Analytic Privileges / Security

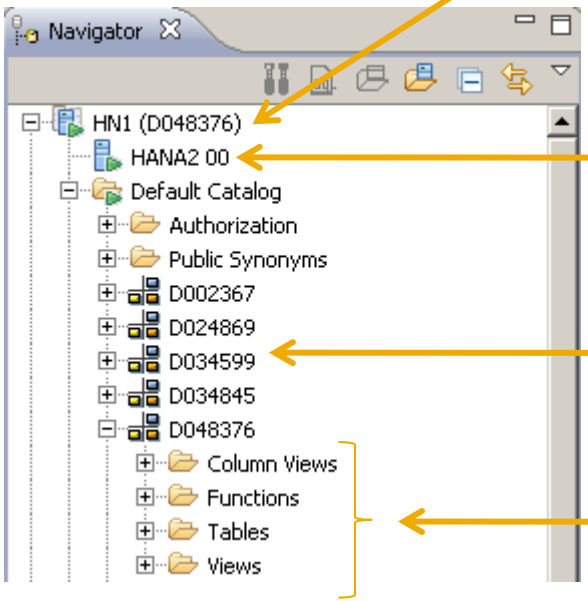
SAP In-Memory Computing Studio
Terminology

Information Modeler Terminology

- Data
  - Attributes – descriptive data
  - Measures – data that can be quantified and calculated
- Views
  - Attribute Views – i.e. dimensions
  - Analytic Views – i.e. cubes
  - Calculation Views – similar to virtual provider with services concept in BW
- Hierarchies
  - Leveled – based on multiple attributes
  - Parent-child hierarchy
- Analytic Privilege – security object

SAP In-Memory Computing Studio

Navigator View - Catalog



HANA Instance (<USER>)

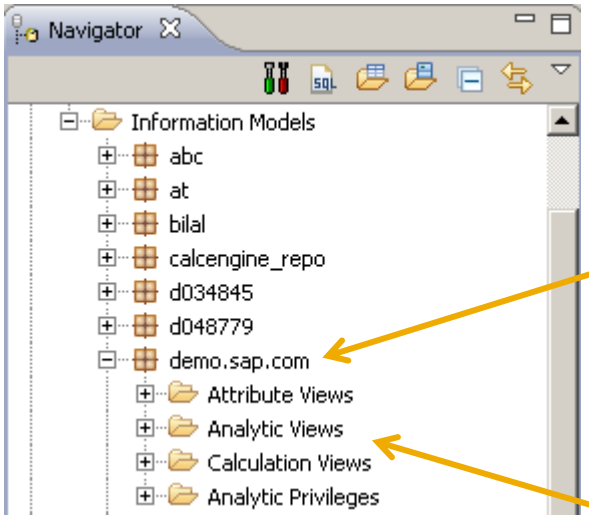
HANA Server Name and Instance Number

User Database schema

Schema Content: Column Views, Functions, Tables, Views

SAP In-Memory Computing Studio

Navigator View - Content

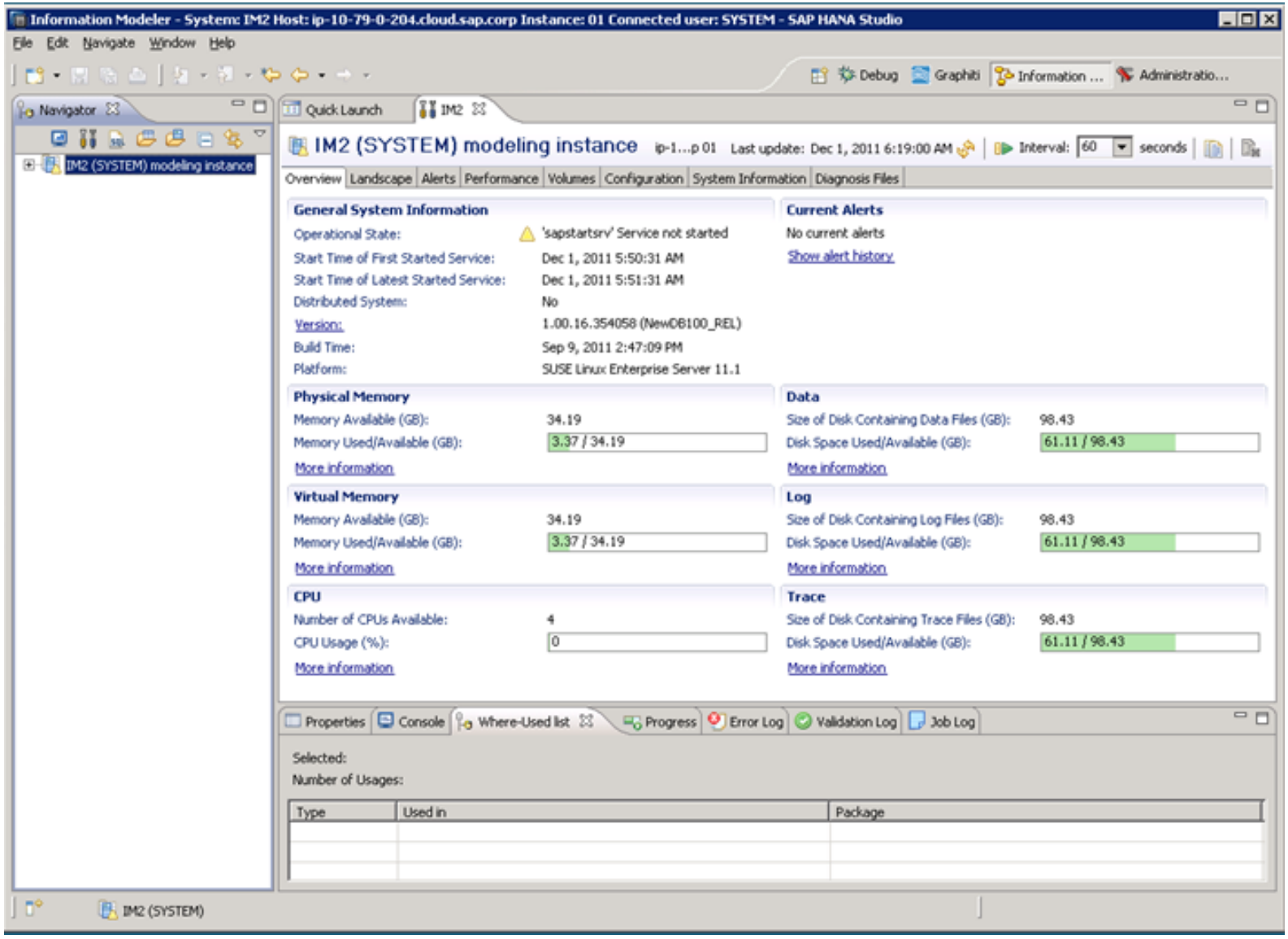


Content is organized in Packages

Attribute Views, Analytic Views, Calculation Views, Analytic Privileges organised in folders

SAP In-Memory Computing Studio

Pre-Delivered Administration Console



Hands-on Lab 1

Go to the first section of the workbook:
SAP HANA Introduction

Labs begin on page 6 / Accessing Cloud systems

Stop at the *Modeling HANA Views* section on page 11

20 minutes

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  - BusinessObjects Web Intelligence
  - Hands-on labs

Row Store vs. Column Store
When to Use Which Store

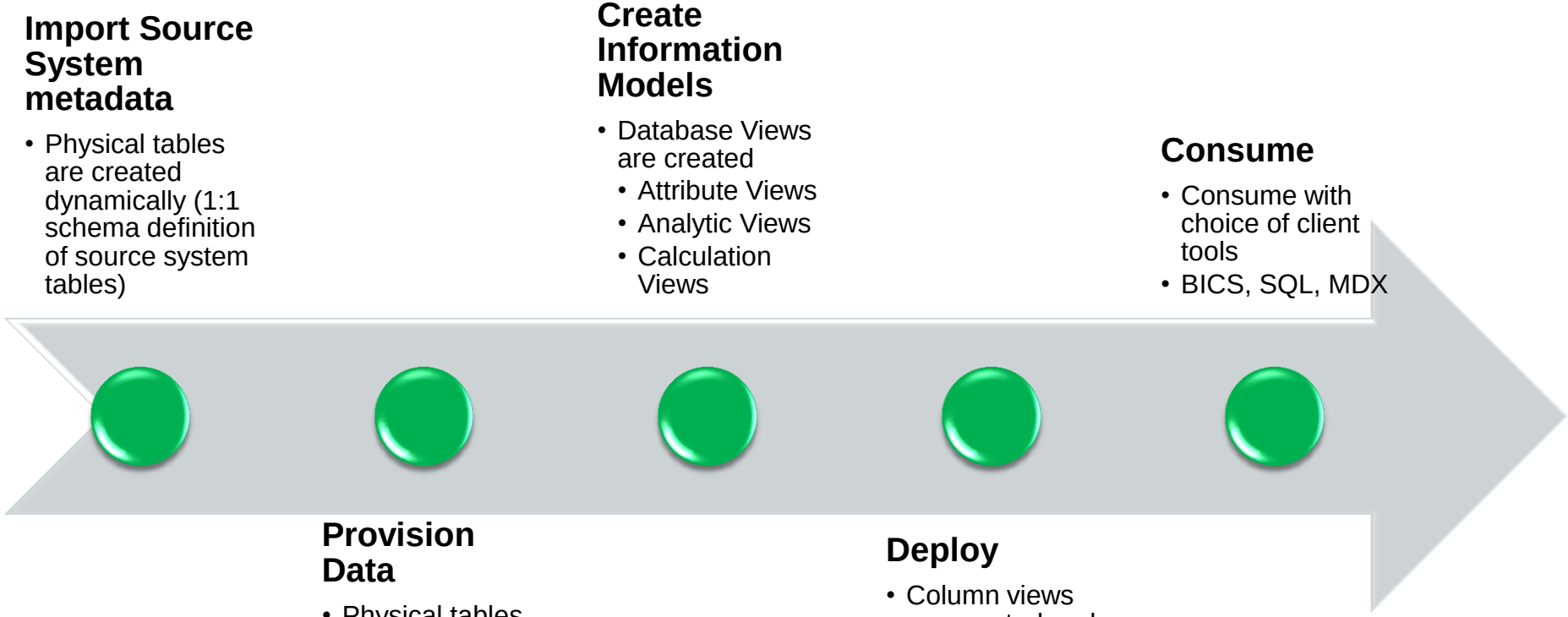
Modeling Only Possible For Column Tables

- This answers the frequently asked question:
  "Where should I put a table – row store or column store?"
  - Information Modeler only works with column tables
  - Replication server creates tables in column store per default
  - Data Services creates tables in column store per default
  - SQL to create column table: "CREATE COLUMN TABLE ..."
  - Store can be changed with "ALTER TABLE …"

System Tables Are Created Where They Fit Best

- Administrative tables in row store:
  - Schema SYS → caches, administrative tables of engine
  - Tables from statistics server
- Administrative tables in column store:
  - Schema _SYS_BI → metadata of created views + master data for MDX
  - Schema _SYS_BIC → some generated tables for MDX
  - Schema _SYS_REPO → e.g. lists of active/modified versions of models

Modeling Process Flow



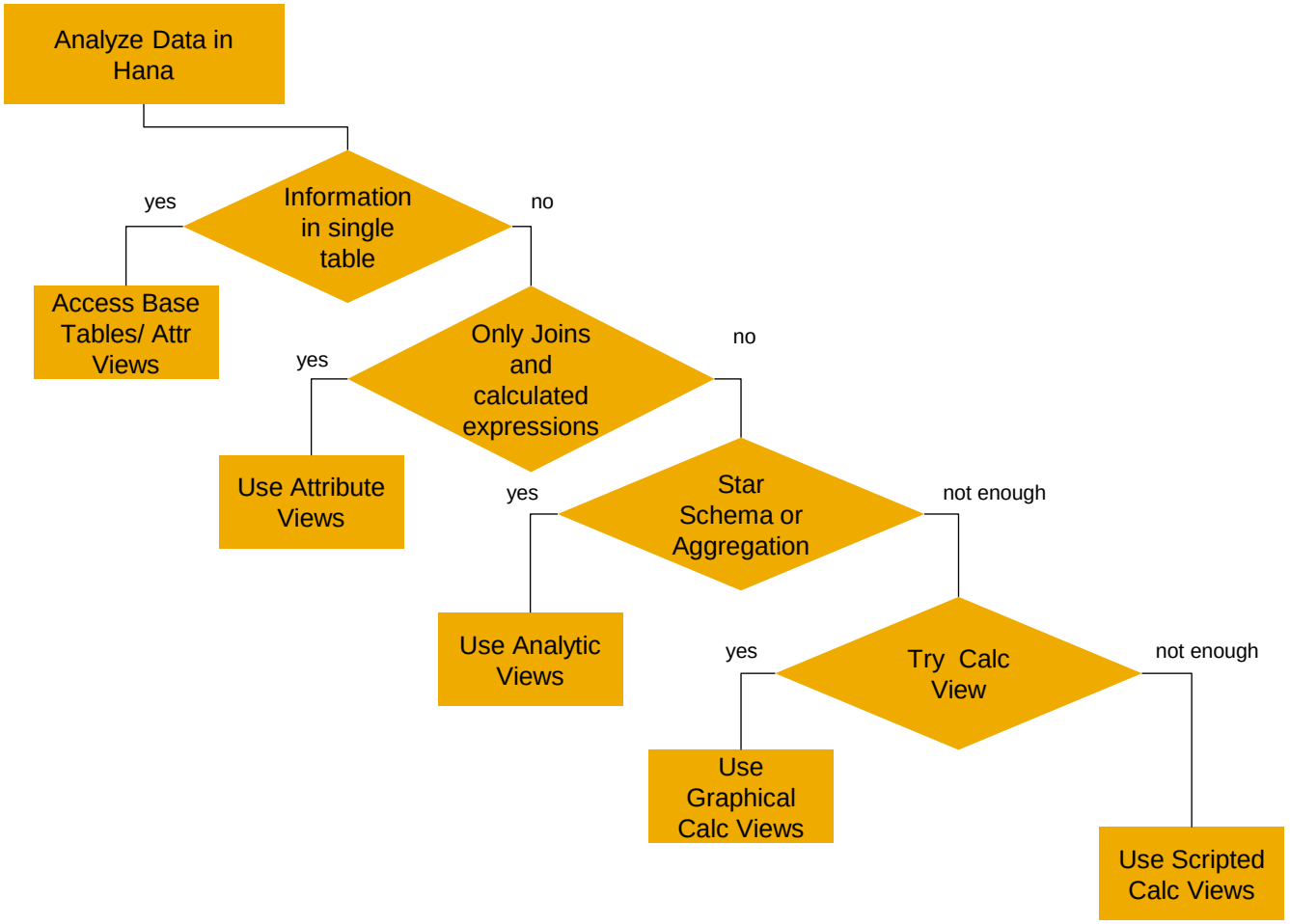
Framework for Modeling within HANA

Base Tables

Attribute views

Analytic Views

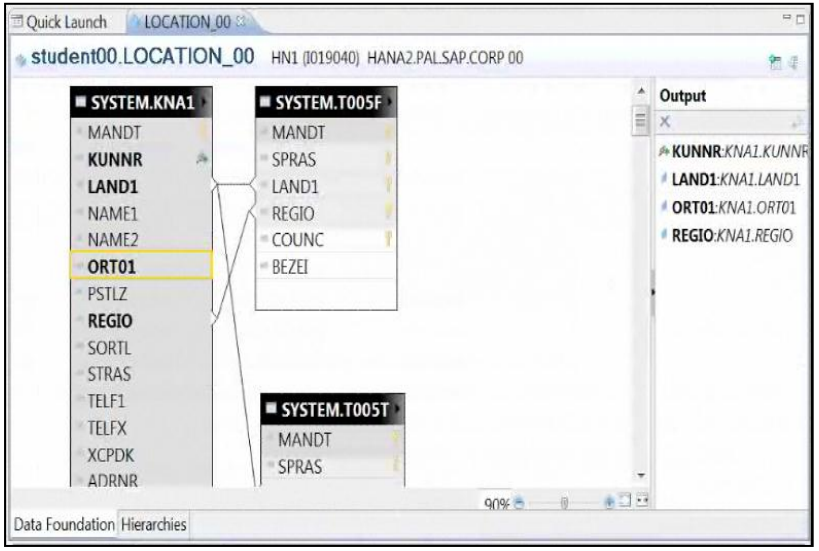
Calc Views



Attribute Views

Attribute View

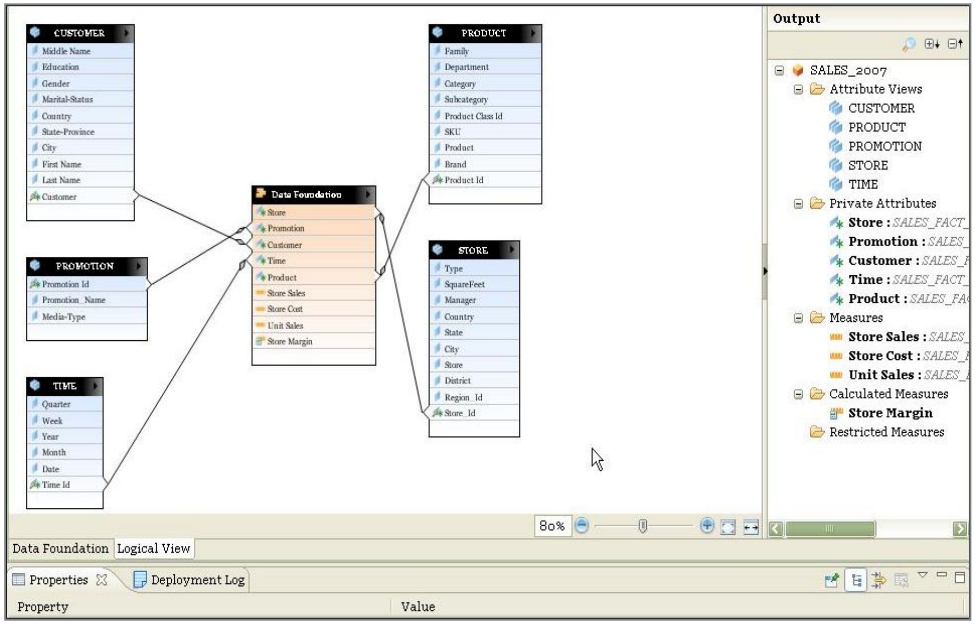
- What is an Attribute View?
  - Attributes add context to data.
  - Attributes are modeled using Attribute Views.
  - Can be regarded as Master Data tables
  - Can be linked to fact tables in Analytical Views
  - A measure e.g. weight can be defined as an attribute.
- Table Joins and Properties
  - Join Types
    - leftOuter, rightOuter, fullOuter, textTable
  - Cardinality
    - 1:1
    - N:1
    - 1:N
  - Language Column



Analytical View

Analytical View

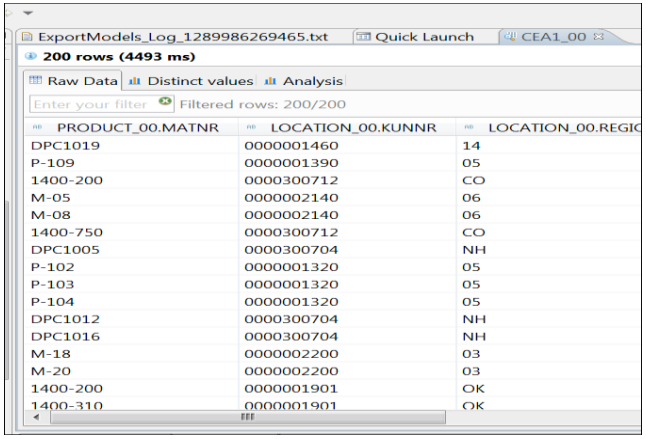
- An Analytical View can be regarded as a “cube”.
- Analytical Views does not store any data. The data is stored in column store or table view based on the Analytical View Structure.
- Attribute and Measures
  - Can create Attribute Filters
  - Must have at least one Attribute
  - Must have at least one Measure
  - Can create Restricted Measures
  - Can create Calculated Measures
  - Can rename Attribute and Measures on the property tab

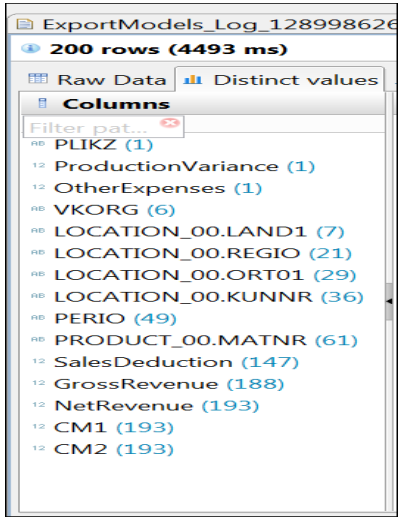


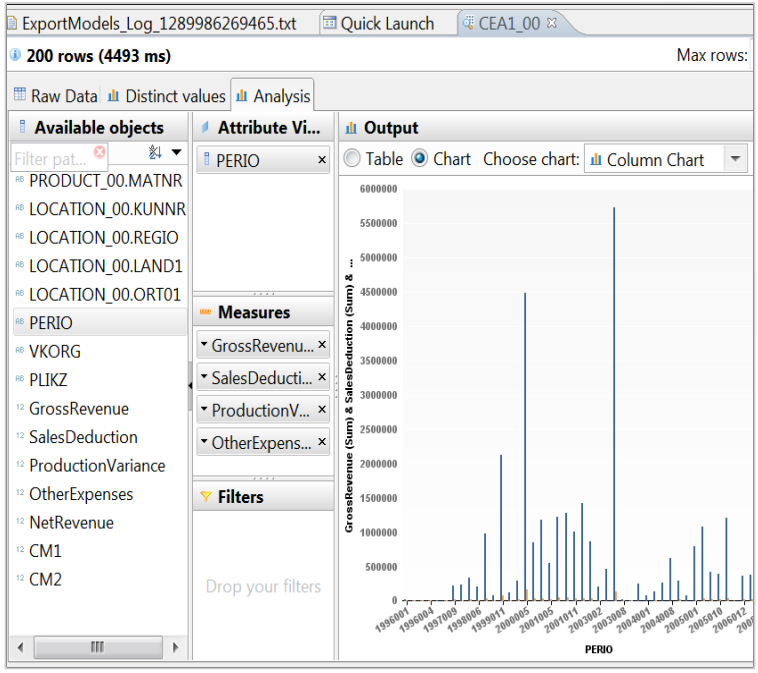
Analytical View

Analytical View: Data Preview

- There are three main views one can select from when previewing data.
  - Raw Data – table format of data
  - Distinct Values – graphical and text format identifying unique values
  - Analysis – select fields (attributes and measures) to display in graphical format.

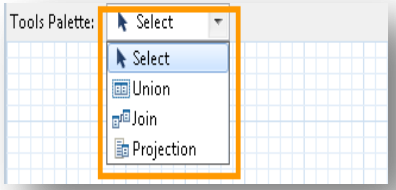


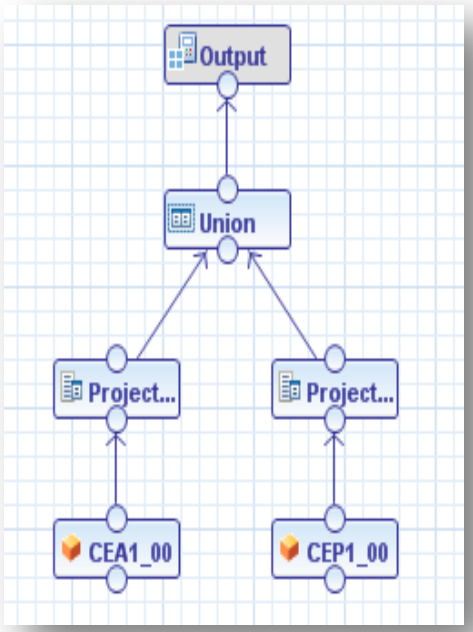




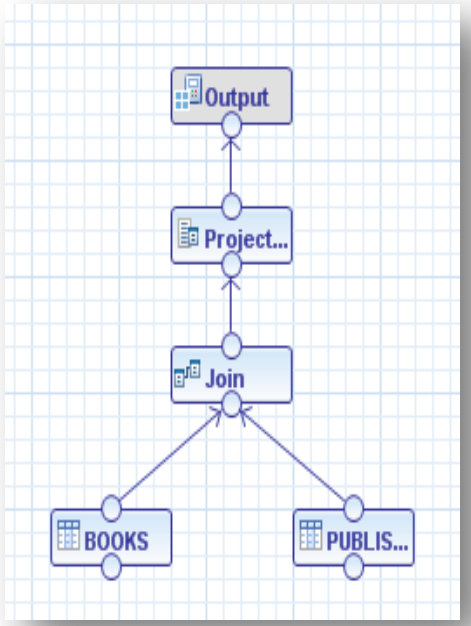
Calculation View
Graphical

- No SQL coding required
- Union, Join, Projection nodes provided
- Join Column Tables (Analytical Views)





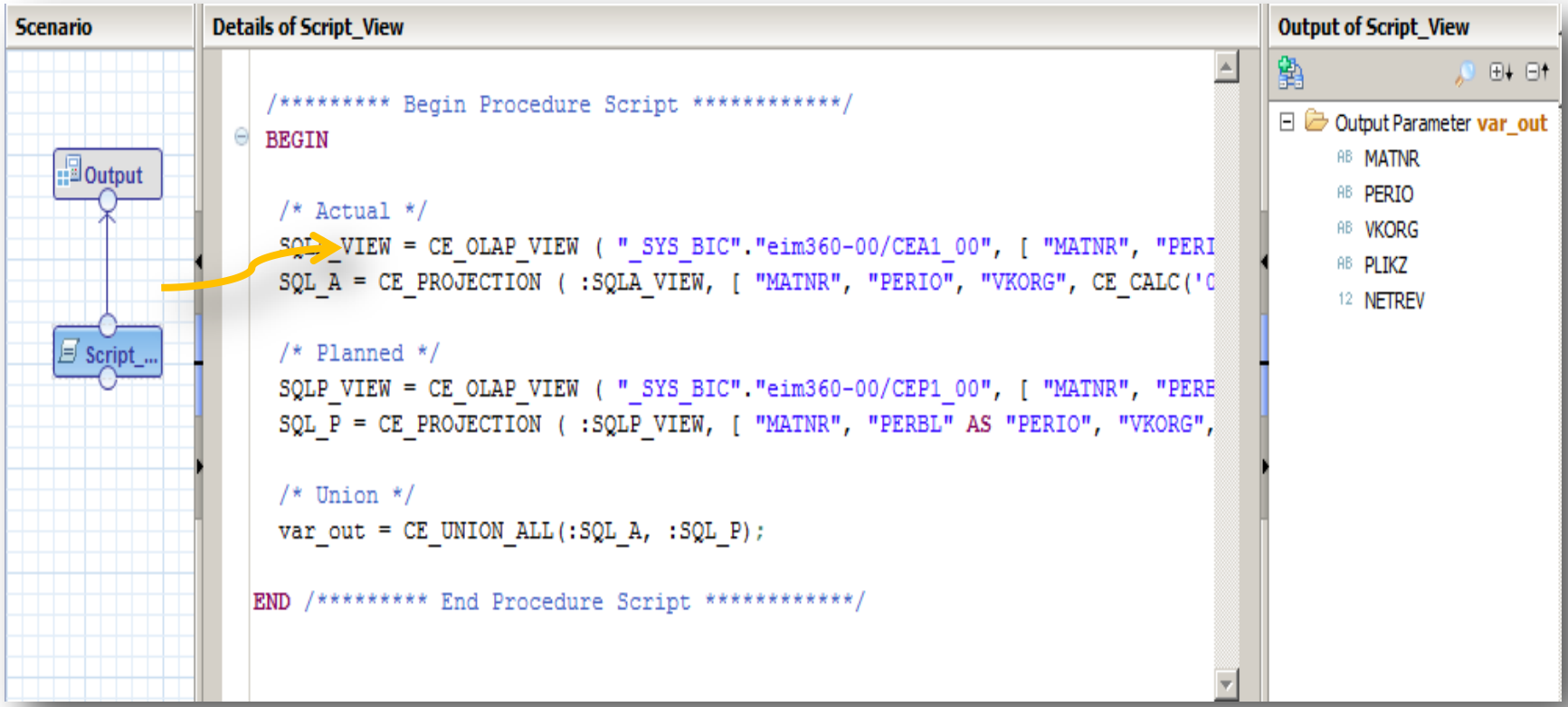
UNION



JOIN

Calculation View
SQLScript (Script-based)

- SQL or SQLScript required to create Script based Calculation Views
- Write SQL Select statements against existing raw tables or Column Stores (preferred)
- Define output structure, activation creates column store based on Script Output



SQLScript / R / BFL (Business Function Library)

Three ways to implement in-memory data mining and statistical analysis

SQLScript

- SQLScript is a set of SQL extensions which allow developers to push data-intensive logic into the database in order to avoid massive data copies to the application server and to leverage sophisticated parallel execution strategies of the database.

R

- Through the R integration solution, developers can leverage open source R's 3000+ external packages to perform wide-range data mining and statistical analysis.

BFL (Business Function Library)

- BFL is the calculation library for the applications built on top of the SAP HANA database. The business functions are written in C++ and executed in database calculation engine. BFL has a roadmap for data mining and statistical algorithms.

SQLScript

- The set of SQL extensions for the SAP HANA database which allow developers to push data intensive logic into the database is called SQLScript.
- These extensions are keys to avoiding massive data copies to the application server and to leverage sophisticated parallel execution strategies of the database.
- SQLScript V2 supports stored procedures, which provides enhanced control flow capabilities and is positioned to be more suitable for pushing complex parts of application logic to the database.
- It can meet some simple requirement for reporting, like join, aggregation, etc. When it comes to data mining and statistic analysis, SQLScript is not suitable for implementing complex algorithms.

Hands-on Lab 2

Go to the second section of the workbook:
Modeling HANA Views

Labs begin on page 11

Stop at the *Reporting from SAP HANA* section on page 56

60 minutes

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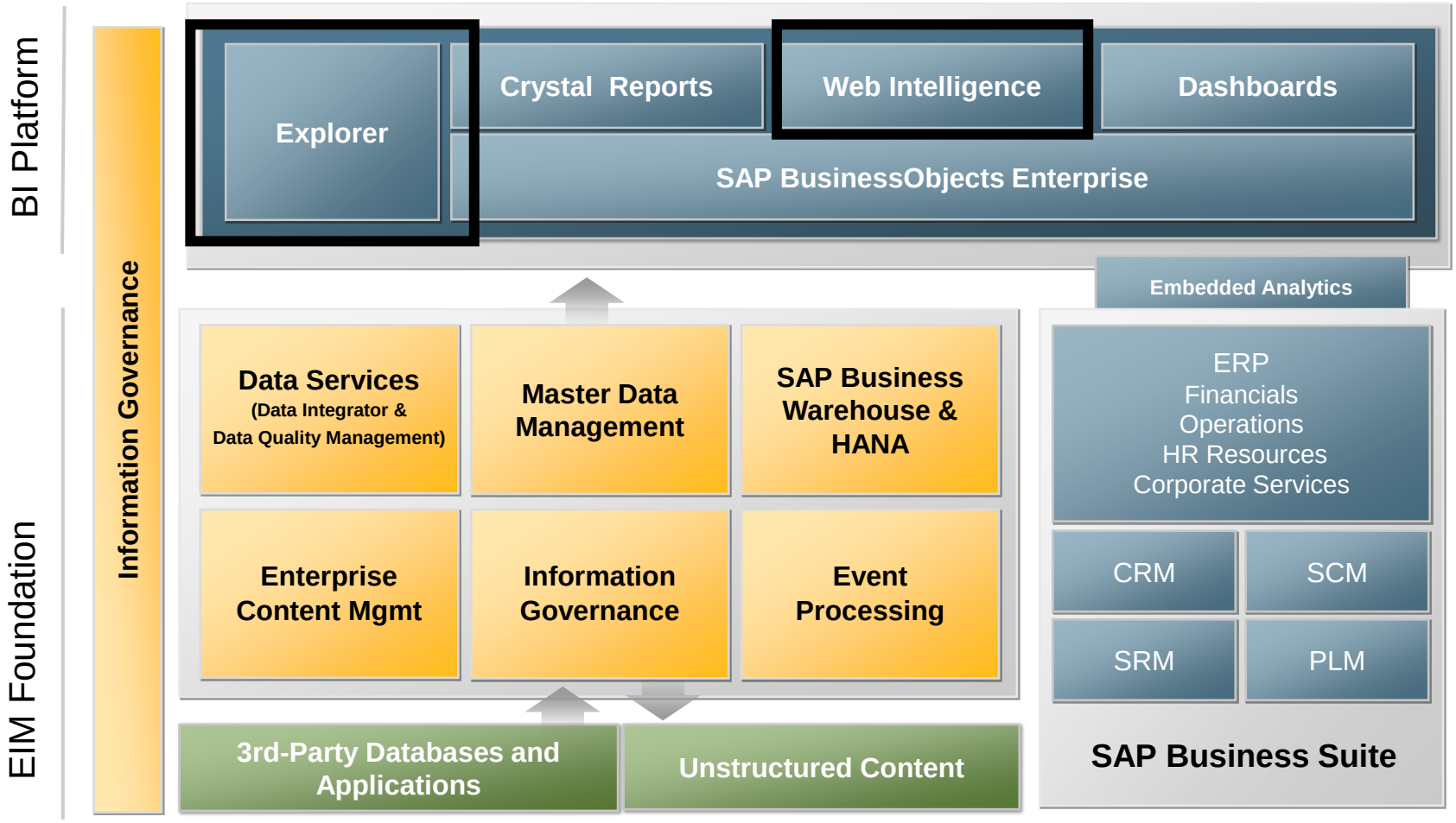
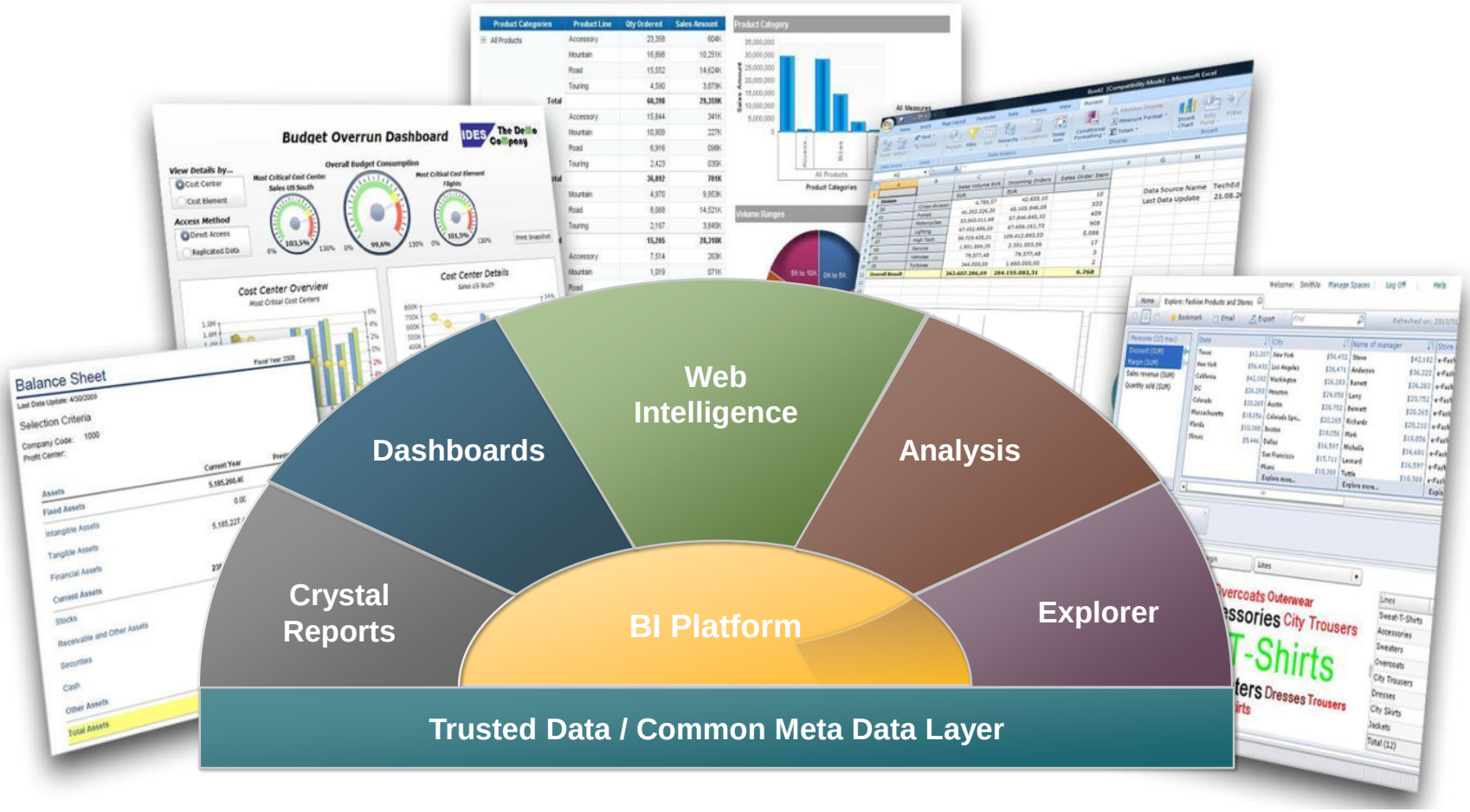
- **Reporting**
  - **BusinessObjects Explorer**
  - **BusinessObjects Web Intelligence**
  - **Hands-on labs**

Business Intelligence and Enterprise Information Management in an SAP Environment

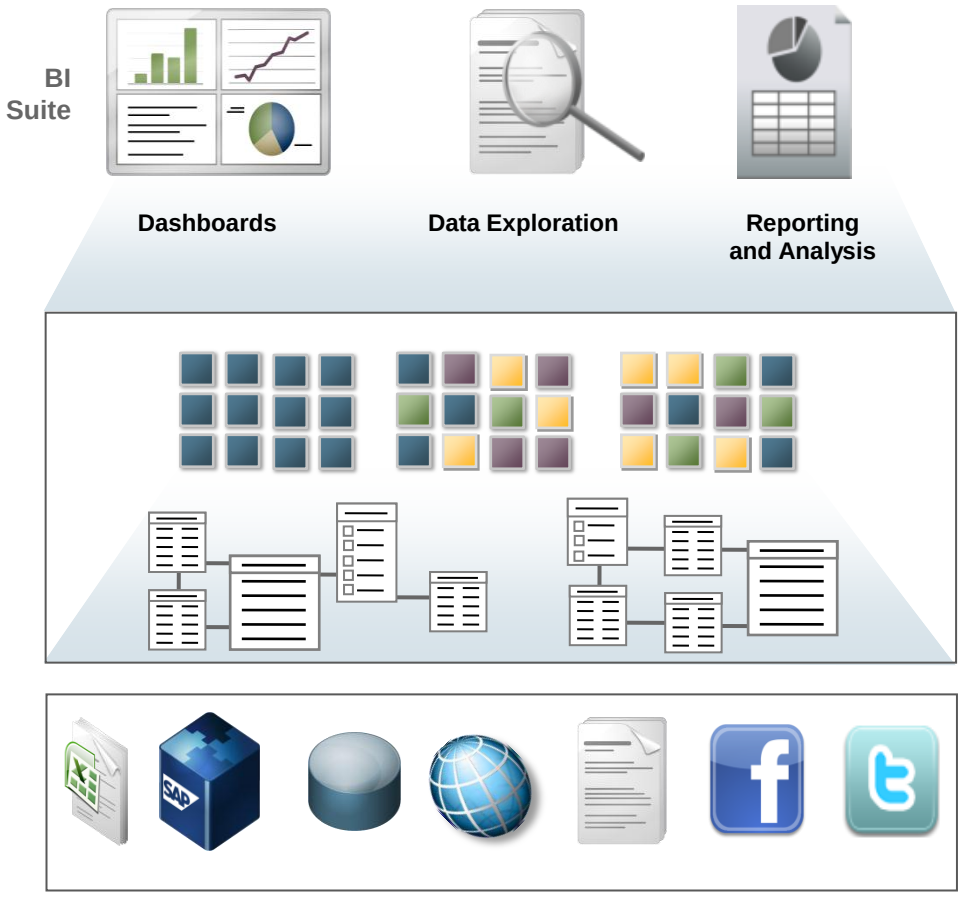
Integrated solutions designed to work together



SAP BusinessObjects BI Platform
One Unified Business Intelligence Suite



Data Under a Single Metadata Umbrella



For business users

- Simplify user experience
- Increase productivity
- Provide trust in information

For IT departments

- Reduce BI delivery cost
- Increase user self-sufficiency
- Leverage one security model

What Is Explorer? It's Search Against BI...

Use familiar key-word search to find business information

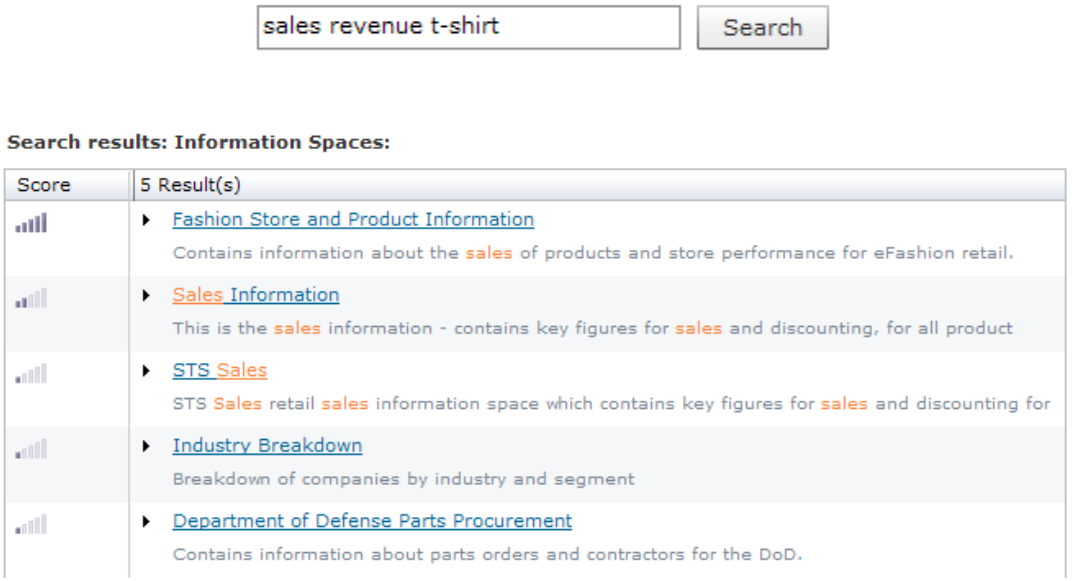
- Answers "on-the-fly" and investigative questions

Searches directly on pre-indexed data

- No previous reports or metrics need exist
- Provides fast search and exploration

Searches across all data sources

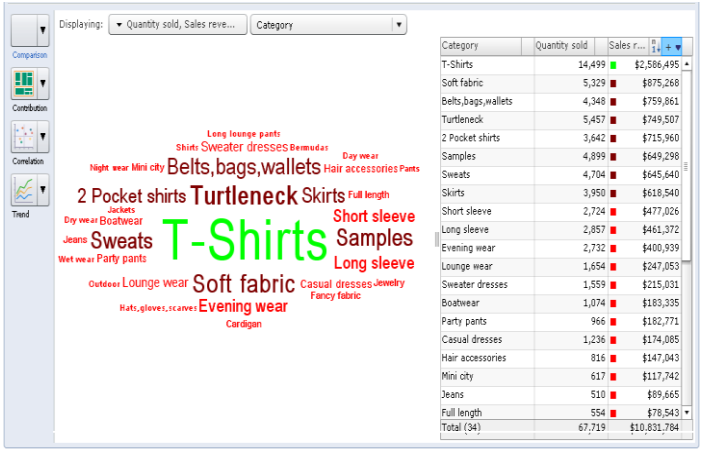
- Any universe accessible source
- Any SAP NetWeaver BW Accelerator accessible source



...and Then It's Exploration Of the Results

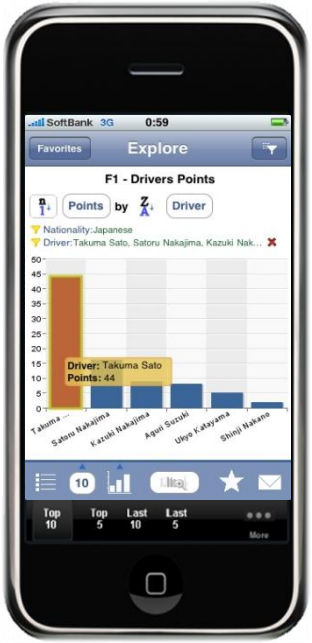
Intuitively explore on data

- No data model or data knowledge required
- Web or Mobile



Automated relevancy of results

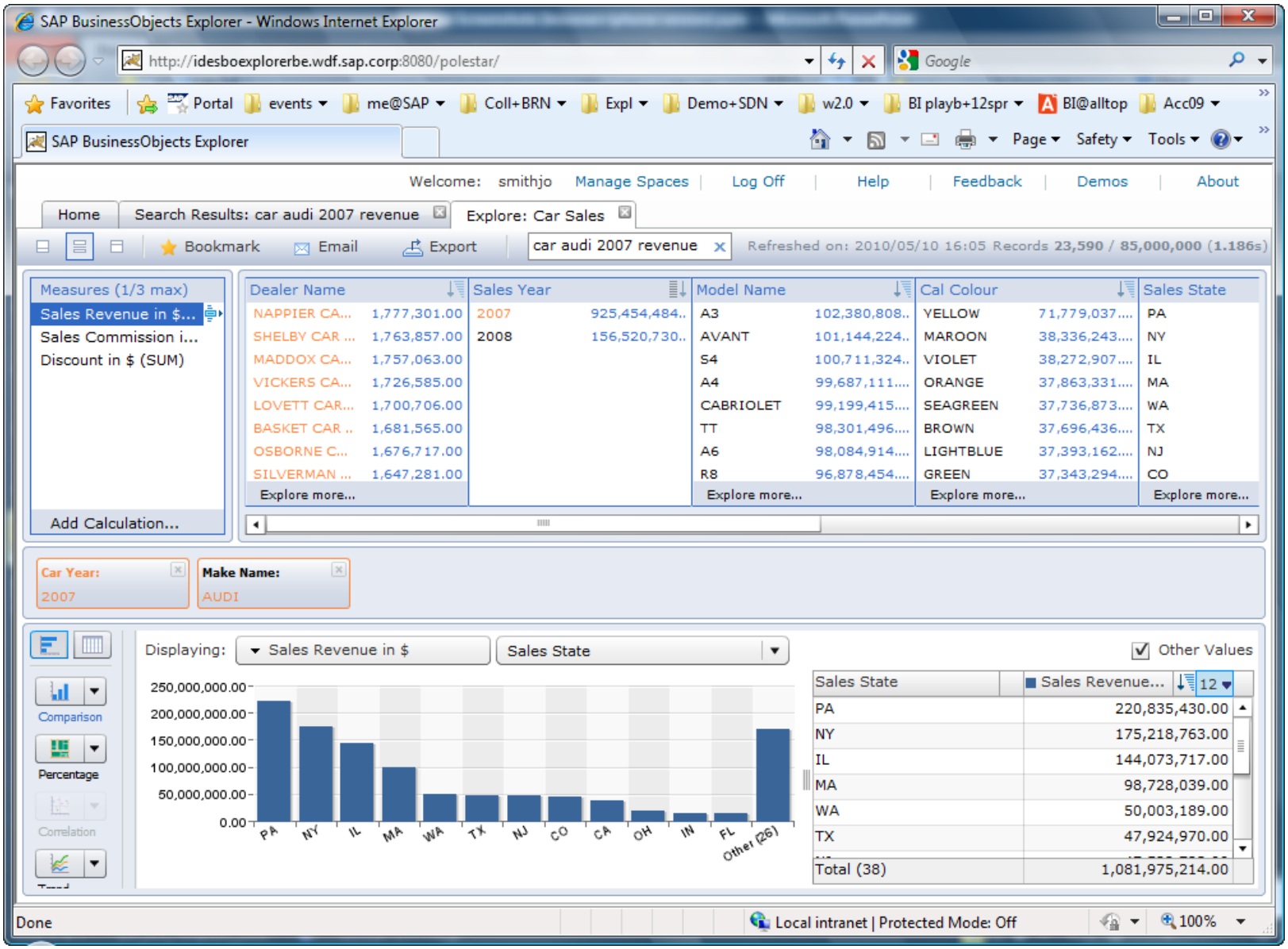
- Most relevant information is displayed first
- Best chart type auto generated



Share insights with others

- Export to CSV or image
- Save it locally as a browser bookmark
- One-click send to email

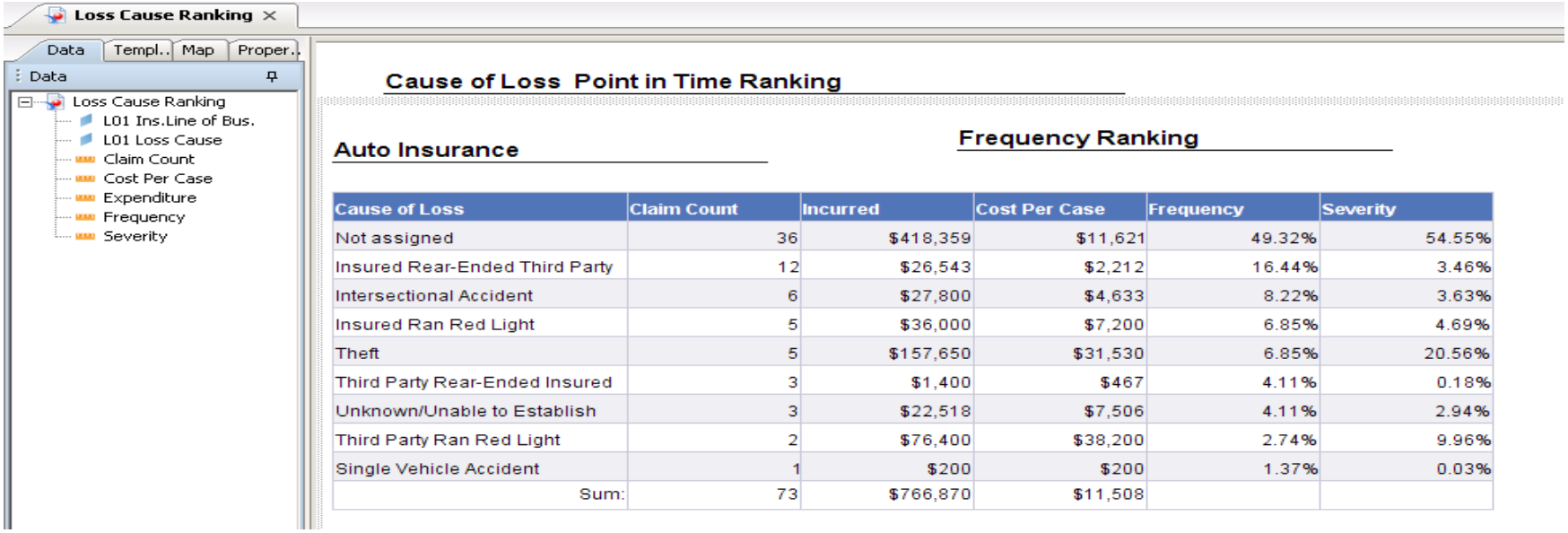
SAP BusinessObjects Explorer Main Screen



Business Objects – Web Intelligence

BusinessObjects Web Intelligence empowers your users with self-service information access and interactivity, while delivering:

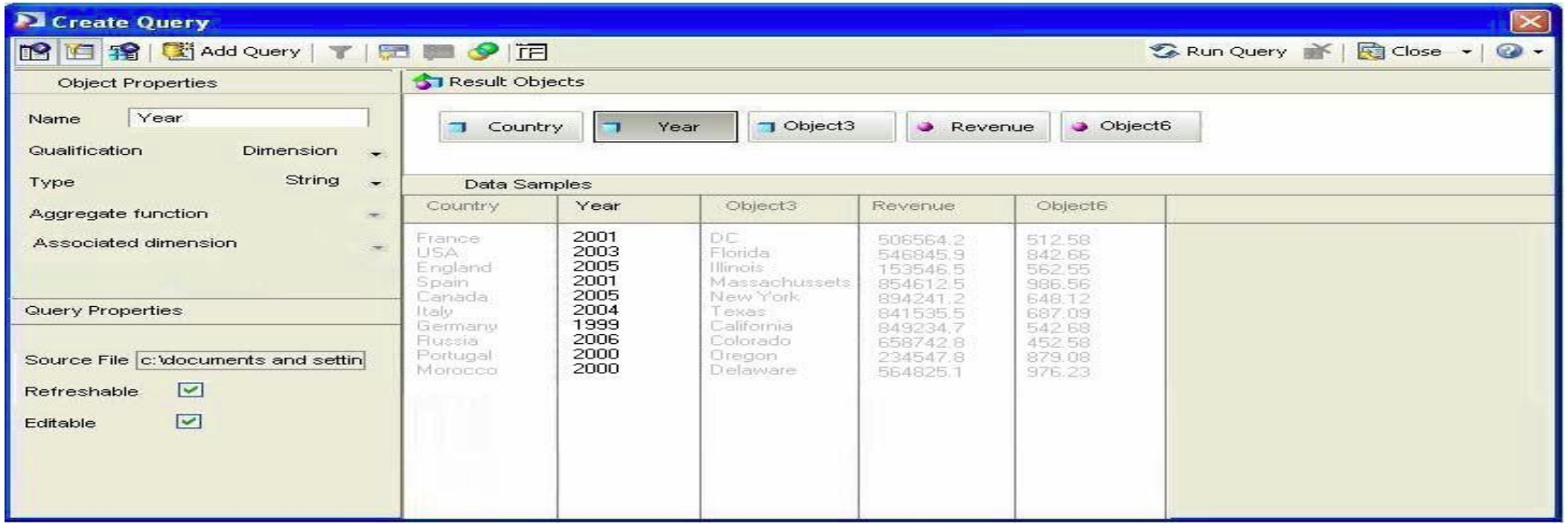
- Powerful on-line and offline ad hoc query and reporting utilizing Semantic Layer
- Integrated and trusted analysis for all users especially power users
- A tool built upon the most complete, trusted, and agile business intelligence (BI) platform



Cause of Loss	Claim Count	Incurred	Cost Per Case	Frequency	Severity
Not assigned	36	$418,359	$11,621	49.32%	54.55%
Insured Rear-Ended Third Party	12	$26,543	$2,212	16.44%	3.46%
Intersectional Accident	6	$27,800	$4,633	8.22%	3.63%
Insured Ran Red Light	5	$36,000	$7,200	6.85%	4.69%
Theft	5	$157,650	$31,530	6.85%	20.56%
Third Party Rear-Ended Insured	3	$1,400	$467	4.11%	0.18%
Unknown/Unable to Establish	3	$22,518	$7,506	4.11%	2.94%
Third Party Ran Red Light	2	$76,400	$38,200	2.74%	9.96%
Single Vehicle Accident	1	$200	$200	1.37%	0.03%
Sum:	73	$766,870	$11,508		

Make Query Building Easy with an Intuitive, Web-Based Interface

- With Web Intelligence, users can access and format information to suit their needs with an easy-to-use, drag-and-drop Web interface.
- Customize the zero-footprint Web interface to meet specific user segments inside and outside of the organization.
- With minimal knowledge of the underlying data structures, users can access and synchronize data from multiple sources (whether structured, text-based, or even Excel spreadsheets, CSV, and txt files), create custom formulas, and use variables within a single report.



Awesome Formatting Options

Year Quarter SubClaim Analysis

Data | Templa.. | Map | Propert..

Data

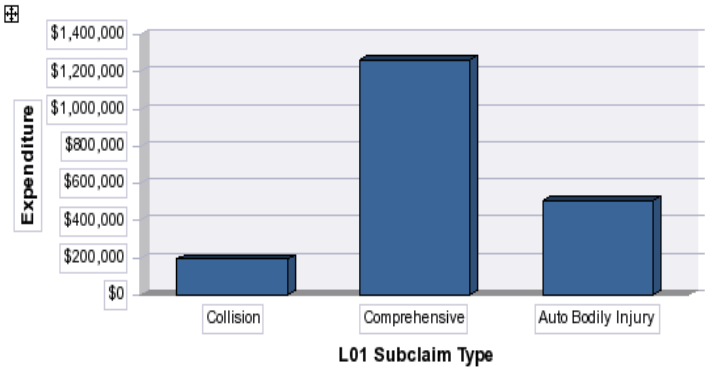
- Year Quarter SubClaim Analysis
  - L00 Claim Number
  - L01 Cal. Year/Quarter
  - L01 Subclaim Type
  - Claim Count
  - Expenditure
  - Initial Reserve

Drop objects here to add simple report filters.

Subclaim Ranking

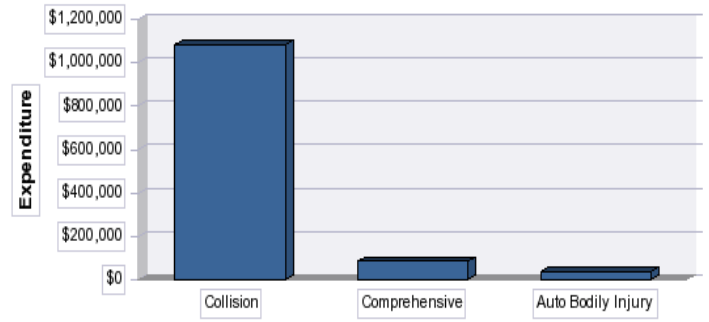
Q2 2008

Subclaim Type	Claim Count	Initial Reserve	Total Incurred	L00 Claim Number
Collision	81	$184,100	$193,294	All Claim Number
Comprehensive	37	$799,000	$1,265,155	All Claim Number
Auto Bodily Injury	18	$525,000	$504,000	All Claim Number
	136	1,508,100	1,962,448.85	



Q3 2008

Subclaim Type	Claim Count	Initial Reserve	Total Incurred	L00 Claim Number
Collision	823	$1,057,000	$1,081,512	All Claim Number
Comprehensive	17	$92,000	$82,500	All Claim Number
Auto Bodily Injury	4	$45,000	$35,000	All Claim Number
	844	1,194,000	1,199,012.48	



Hands-on Lab 3

Go to the third section of the workbook:

Reporting from SAP HANA

Labs begin on page 56

Thank you!

Please fill out the survey before leaving today!

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