SAP BW

Lesson 08: Enterprise Reporting Part 1

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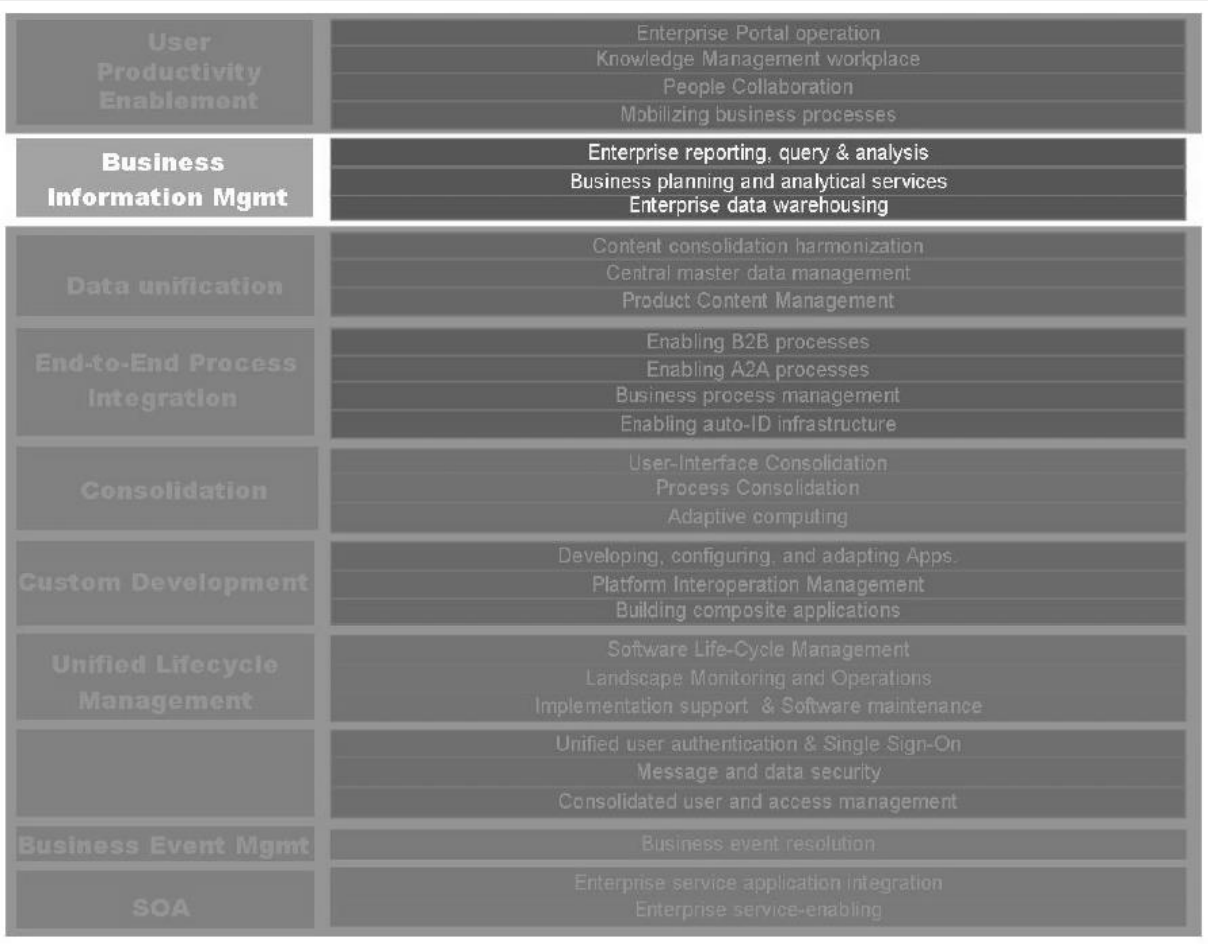
Introduction to BI Enterprise Reporting

Business Information Management – IT Practices

- Business Information Management is about managing all types of information (structured and unstructured) from integration to delivery - with a focus on achieving transparency and broad reach within and outside of the organization.

- In the Business Information management IT practice, there are three IT scenarios:
  - Enterprise Reporting, Query and Analysis
  - Business Planning and Analytical Services
  - Enterprise Data Warehousing

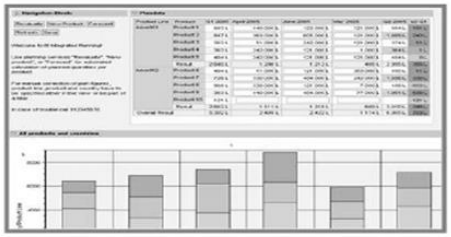
Business Information Management – IT Practices

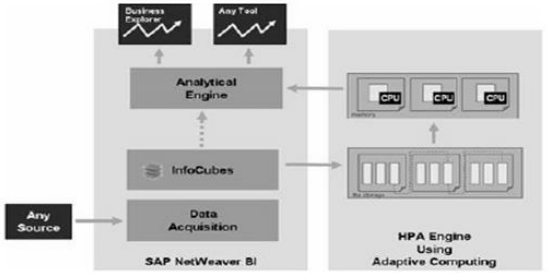


Enterprise Reporting, Query and Analysis

SAP NetWeaver BI provides a foundation for reporting and analytics in business applications.

- **Enterprise Reporting, Query & Analysis**
  - High Focus on User Productivity
  - Formatted Reporting
  - Intuitive Ad-hoc Analysis
  - Advanced Excel Integration
  - Model-driven BI Applications
- **Business Planning and Analytical Services**
  - Business Planning integrated in BI Platform and Suite
- **Enterprise Data Warehousing**
  - High Performance with BI Accelerator
  - Flexibility by enhanced data modeling capabilities
  - Data Transfer Process
  - Real-Time Data Acquisition
  - Web-based Administrator Cockpit





Enterprise Reporting, Query and Analysis

Reporting, analysis, and interpretation of business data is of central importance to an organization in guaranteeing its competitive edge, optimizing processes, and enabling it to react quickly and in line with the market.

SAP BW Reporting is a analyzing tool which supports decision making in an organization.

Say in Retail Area, users will have below demands:

- Checking ranges of goods in order to identify slow moving items and big sellers
- Analyzing regional locations to investigate the profitability of different branches
- Investigating the effectiveness of market analyses
- Evaluating customer surveys and complaints
- Analyzing warehouse stock levels
- Analyzing shopping carts using cash register receipts

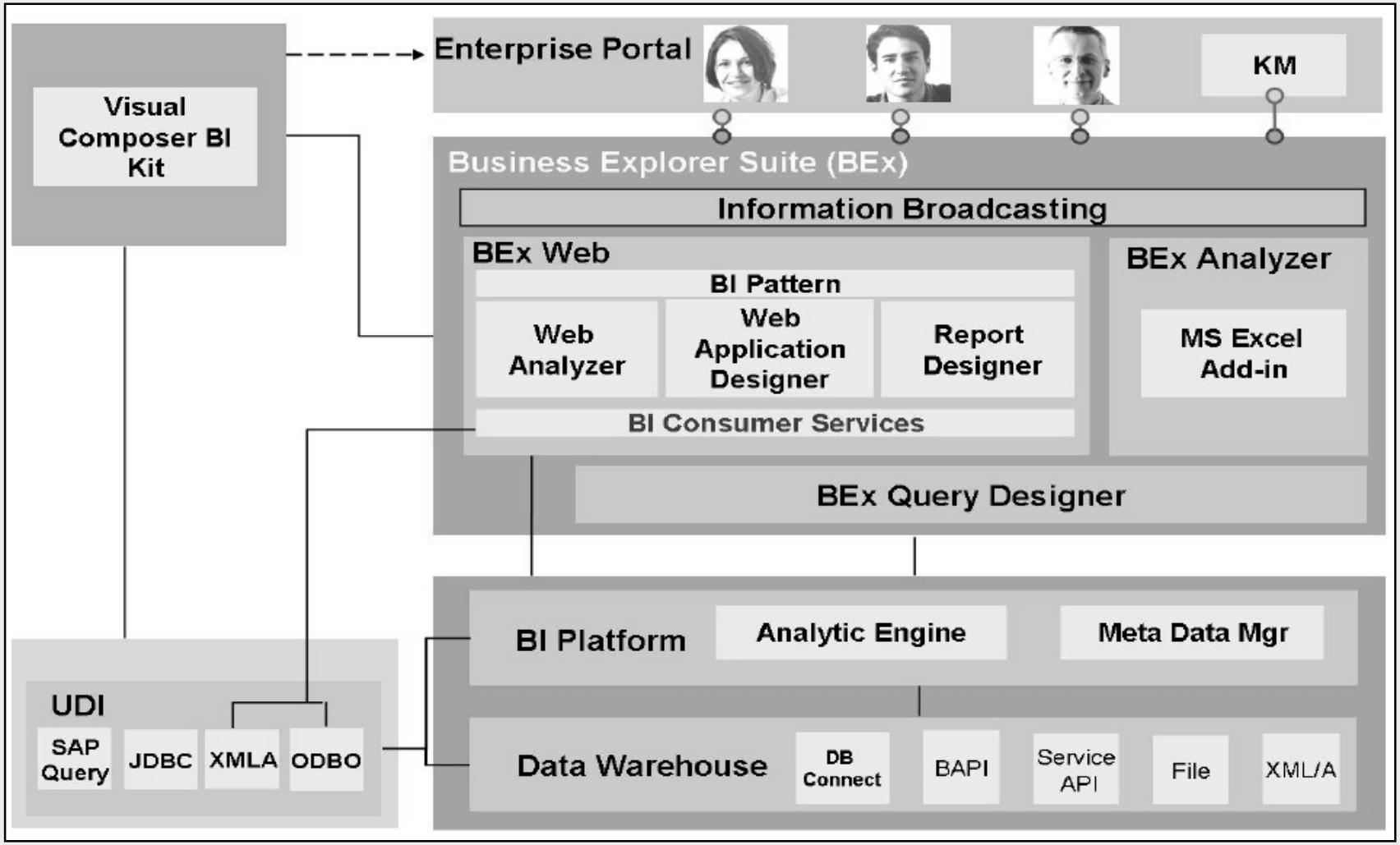
Enterprise Reporting, Query and Analysis

- BW reporting is based on multidimensional data sources which makes it possible to analyze data based on multiple dimensions.
- BW reporting facilitates trend analysis of historic and current data at different level of details and perspectives.
- BW reports can be accessed via Web and in MS Excel.
- BW reports can be used by a large spectrum of users at different locations as per their roles.

BW Reporting - Challenges

- To effectively design queries and reports meeting client's business requirements.
- Design optimized reports which executes in a acceptable time frame.
- Creation of a global report satisfying needs of users performing same role across the globe.

BW Architecture



Introduction to BEx Reporting

- Business Explorer (BEx) is the SAP BW component that provides flexible reporting and analysis tools.
- It enables end users to locate reports, view reports, and analyze information.
- Reports can be displayed using MS Excel and can also be published on web using BEx tools.
- It consists of the four tools for analysis and reporting activities.
  - BEx Query Designer – To create queries
  - BEx Analyser – To modify queries
  - BEx Browser – To organize queries
  - BEx Web Application Designer – To display queries on Web and create web applications

BEx Query Designer

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BEx Query Designer

- It is used to design queries on InfoProviders according to the clients requirements.

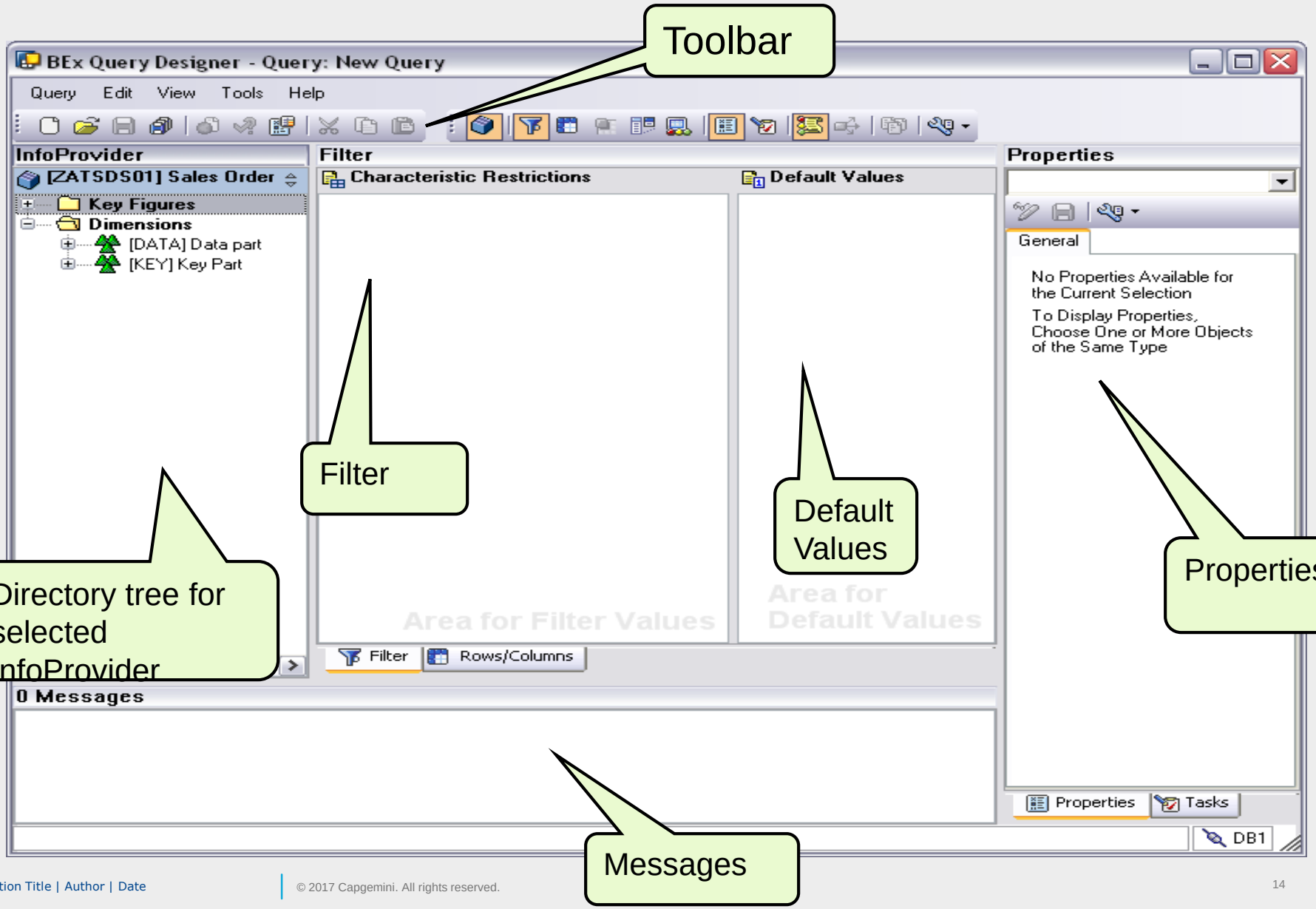
The Open Dialogue Box

BEx Query Designer

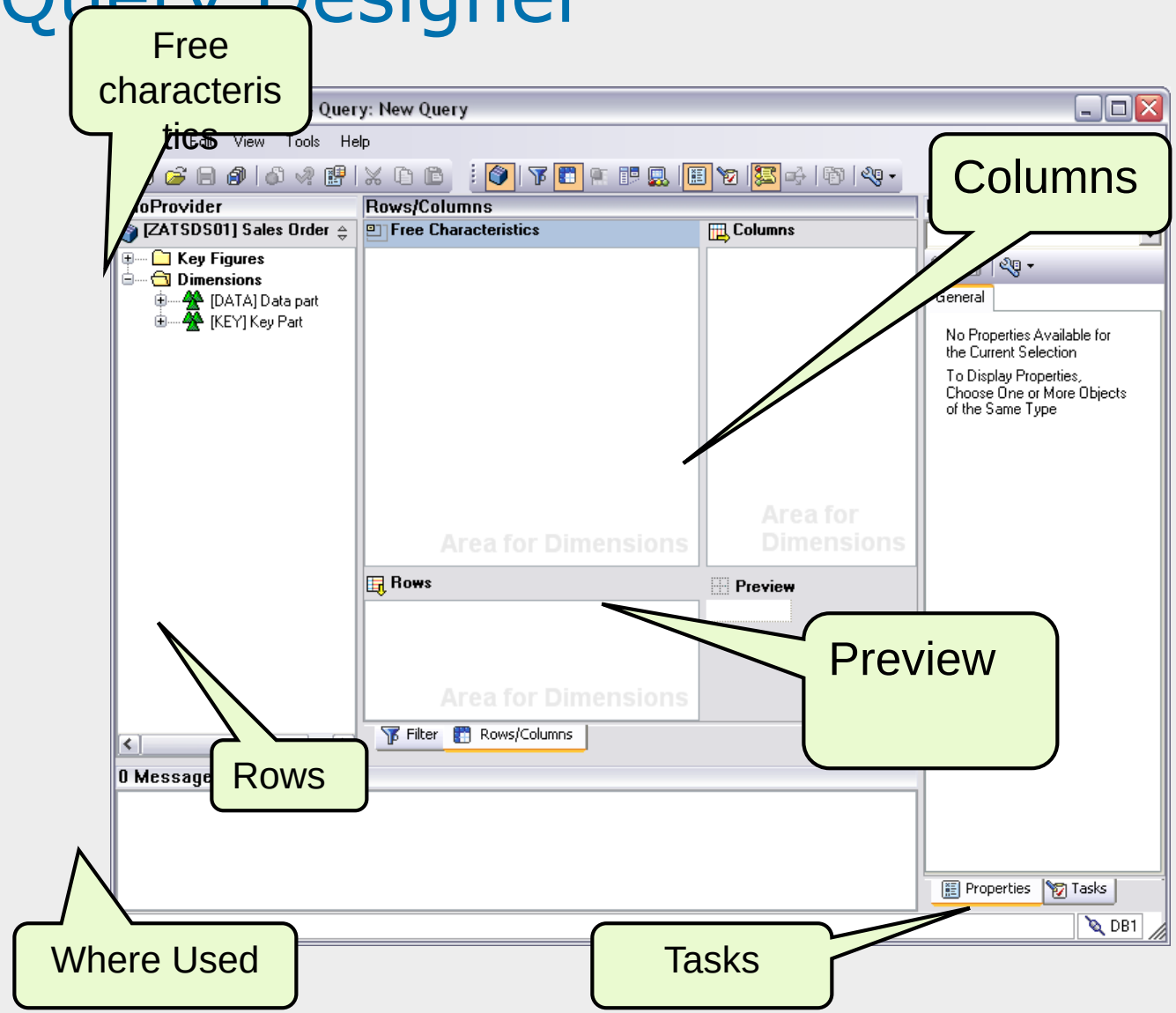
The Query Designer is divided into 11 sub areas.

- Directory tree of the selected InfoProvider
- Characteristics Restrictions / Filters
- Default Values
- Properties
- Messages
- Free Characteristics
- Columns
- Rows
- Preview
- Task
- Where used

BEx Query Designer



BEx Query Designer



BEx Query Designer

Directory tree of the selected InfoProvider

- This section contains key figures and characteristics (grouped in dimensions) of the InfoProvider on which query is being created.

Filters

- Filter selection has a restricting effect on the entire query.

Default Values

- In this pane you define the characteristic filter values which should be used for the initial view of the result set. The user may choose to modify these filters in the result.

Properties

- The settings relevant to the currently highlighted query object are displayed. You can also make changes to the setting here.

BEx Query Designer

Messages

- This pane is where informational or error messages are displayed.

Free Characteristics

- Free characteristics can be used to drill down or drill across the report as required. They don't appear when the report is originally executed, but the user has the ability to use the free characteristics to slice and dice the data further.

Columns

- Usually Key indicators to be analyzed will be taken in columns.

Rows

- The characteristics on which the key indicators to be measured will be taken in rows.

BEx Query Designer

Preview

- This area gives a preview of the query results area.

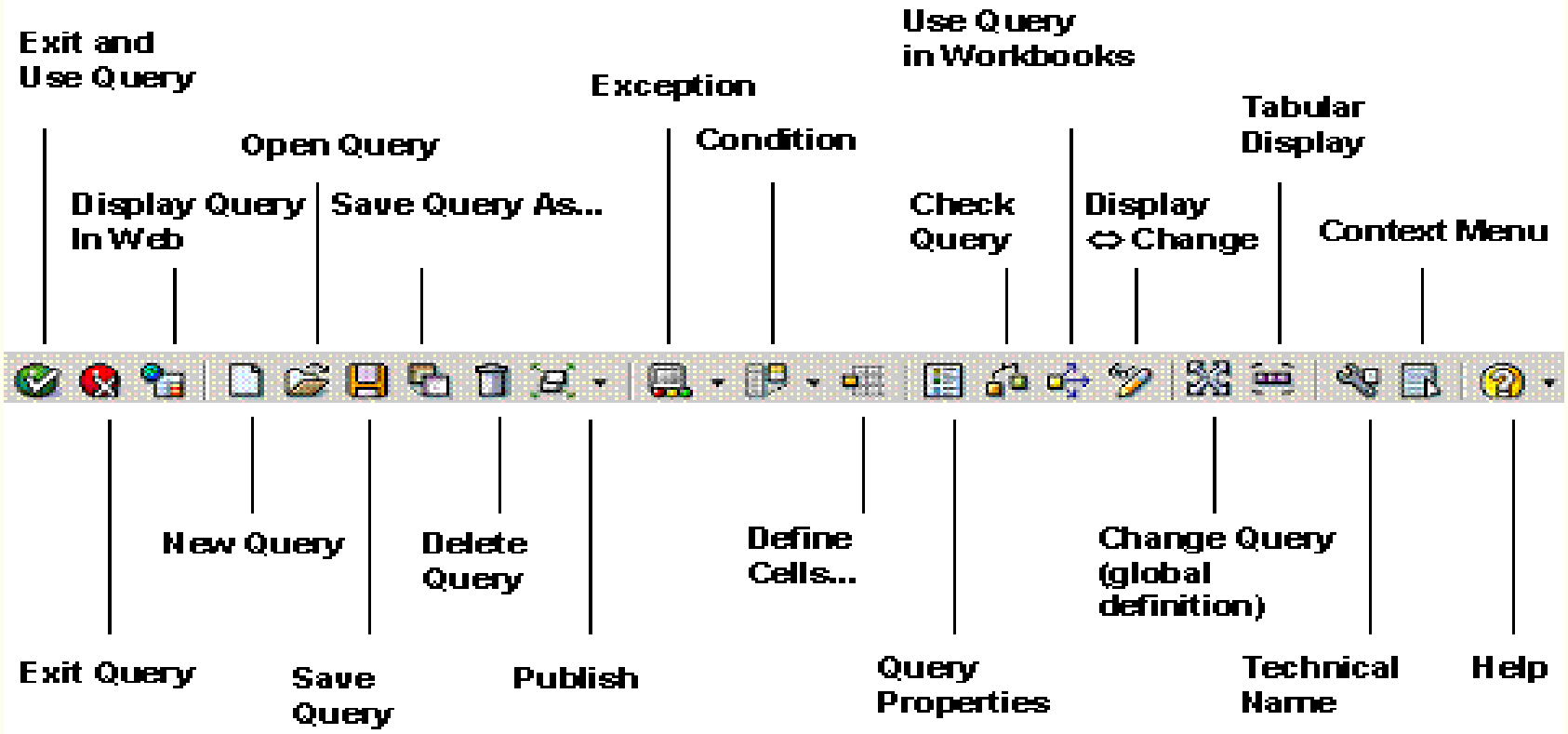
Tasks

- A list of suitable tasks relating to highlighted query object are displayed here, you click on any of the tasks in the list to go directly to the settings.

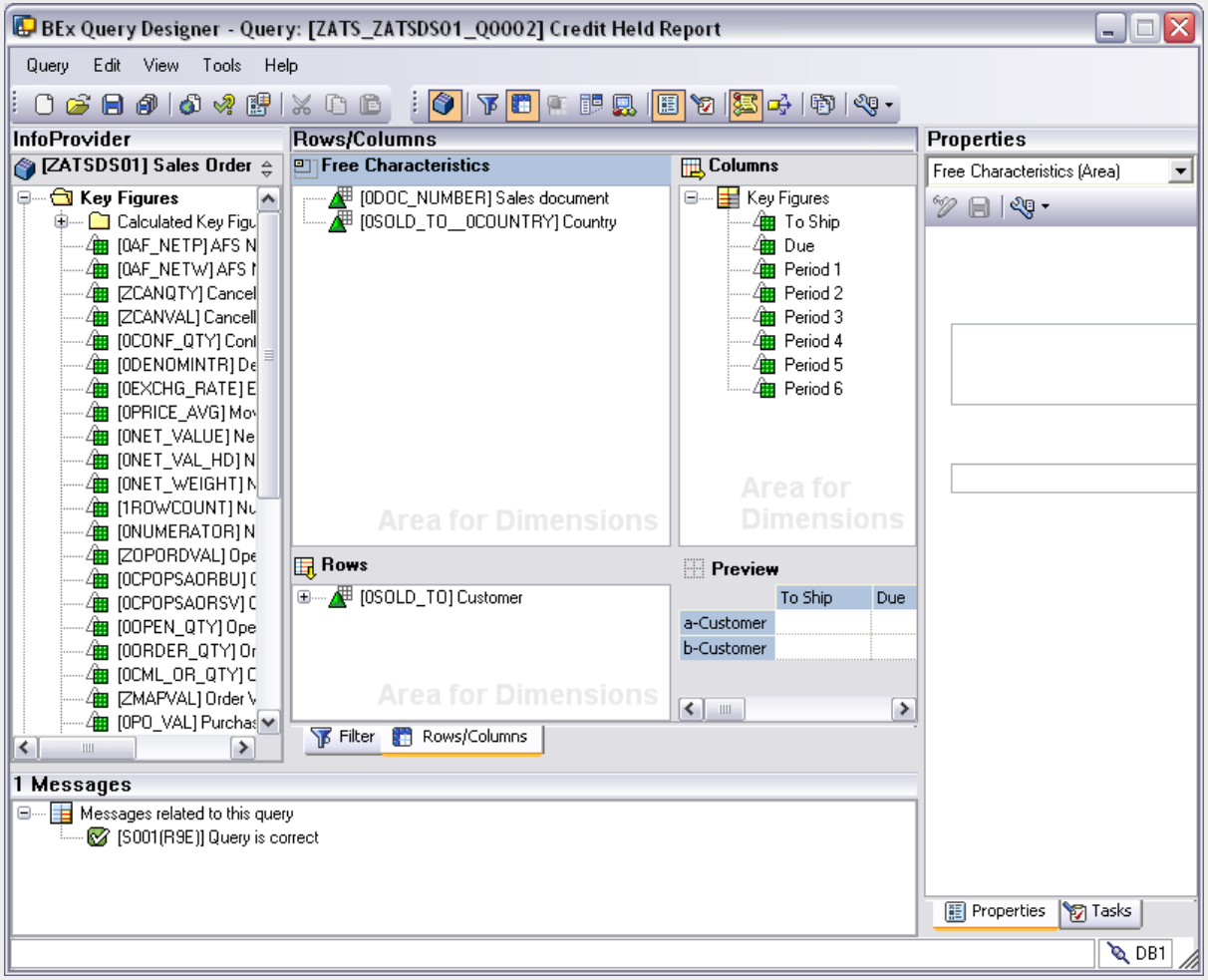
Where Used

- Provides information relating to the use of the query object

BEx Toolbar



Sample BEx Query



InfoProviders in BEx Query Designer

- InfoProvider is the generic term used to describe any objects or views relevant to reporting.
- These include objects that physically store data - the data targets, such as InfoCubes, DataStore Objects, and InfoObjects (characteristics with attributes or texts).
- They also include objects that do not contain any physical data, such as InfoSets, VirtualProviders

Note: Characteristic InfoObjects have to be included in the InfoProvider tree in the Data Warehousing Workbench to make them available as data targets for flexible updates and as InfoProviders for reporting and MultiProviders.

Elements of BEx Queries

BEx query designer provides several components which can be used for designing queries.

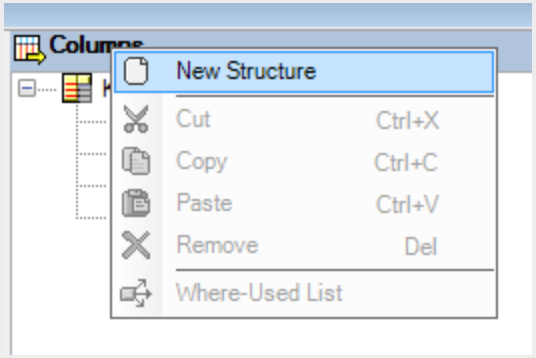
- Structures
- Restricted Key figure
- Calculated Key figure
- New Selection
- New Formula
- Variables

Elements of BEx Queries

- Some of the query elements can be reused in queries which are based on the same InfoProviders.
- The reusable query elements are:
  - Variables
  - Restricted key figures
  - Calculated key figures
- Structures can be defined for reuse.

Structures

- A structure forms the basic framework of the axes rows or columns in a query.
- It consists of structural componentslike characteristics, keyfigures, formulas and selections.
- Set up of the structure determines the sequence and number of key figures or characteristic values in the columns and rows of the query.



Structures

- Within a query definition you can use either no structures or a maximum of two structures. Of these, only one can be a key figure structure.
- You can combine structures freely with other characteristics on the axes.
- Structure can be defined as local or reusable.

Restricted Key figures

- Key figures of an InfoProvider can be restricted for reuse by selecting one or more characteristics, these are called as restricted key figures.
- The key figures that are restricted by one or more characteristic selections can be basic key figures, calculated key figures, or key figures that are already restricted.
- By using restricted key figure query result can be focused on certain value or range of values of the characteristic.
- Restricted Key figures can be used as reusable objects for all queries in an Info Provider.

Restricted Key figures

- When selecting value ranges for the characteristics, the following options are available:
  - Between
  - Greater than or equal to
  - Less than or equal to
  - Greater than
  - Less than

- You can include values in the selection or exclude values from the selection by selecting these options in the context menu of the relevant filter.

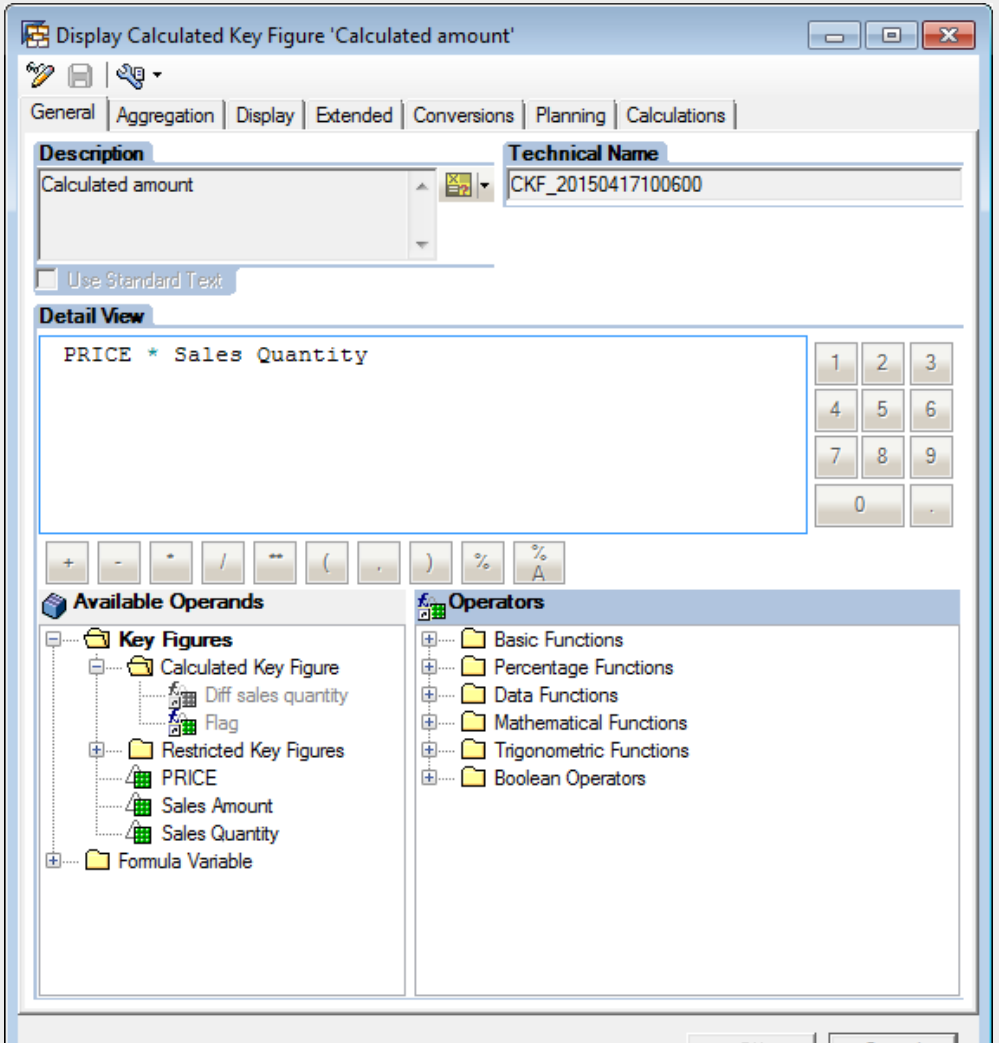
Calculated Key figures

- Calculated Key figures are used for performing complicated calculations on key figures for information analysis.
- Calculated key figures consist of formula definitions containing basic key figures, restricted key figures or calculated key figures.
- Calculated Key figures can be used as reusable objects for all queries in an InfoProvider.

Calculated Key figures

The functions available for creation of Calculated Key figures are:

- Data Functions
- Percentage Functions
- Mathematical Functions
- Trigonometric Functions
- Boolean Functions



Calculated Key figures

Important Percentage Functions:

- Percentage Variance (%):
  <operand1> % <operand2> - Gives the percentage variance of operand1 from operand2.
- Percentage Share (%A):
  <operand1> %A <operand2> - Gives the percentage share of operand1 from operand2.
- Percentage Share of Result (%CT):
  %CT <operand> - Specifies how high the percentage share is in relation to result.
- Percentage Share of Overall Result (%GT):
  %GT <operand> - Specifies how high the percentage share is in relation to overall result.

Calculated Key figures

Important Data Functions

- COUNT(<Expression>):
  Delivers value 1 if the <Expression> is <>0, Otherwise 0.
- NDIV0(x):
  Is equal to 0 with division by 0, otherwise x.
- NODIM(<Expression>):
  Delivers purely numerical values of <Expression>, suppresses units and currencies.
- SUMCT<operand>:
  Delivers the result of operand in all rows or columns.
- SUMGT<operand>:
  Delivers the overall result of operand.
- SUMRT<operand>:
  Delivers the report result of operand.

Calculated Key figures

Important Mathematical and Trigonometric Functions

- Maximum
- Minimum
- Absolute Value
- Sine
- Cosine

Boolean Operations

- Is less than (<)
- Is greater than (>)
- Is not equal to (<>)
- Is less than or equal to (<=)
- Is greater than or equal to (>=)
- Logical NOT,AND,OR,XOR

Key figure Properties

Display Section

- Use Highlighting to highlight a key figure
- Hide options can be used to hide a key figure

Number Format

- Scaling factor can be used incase of high value of a key figure
- Number of decimal places

Calculations

- For Result
- For Single Value

Currency Translation

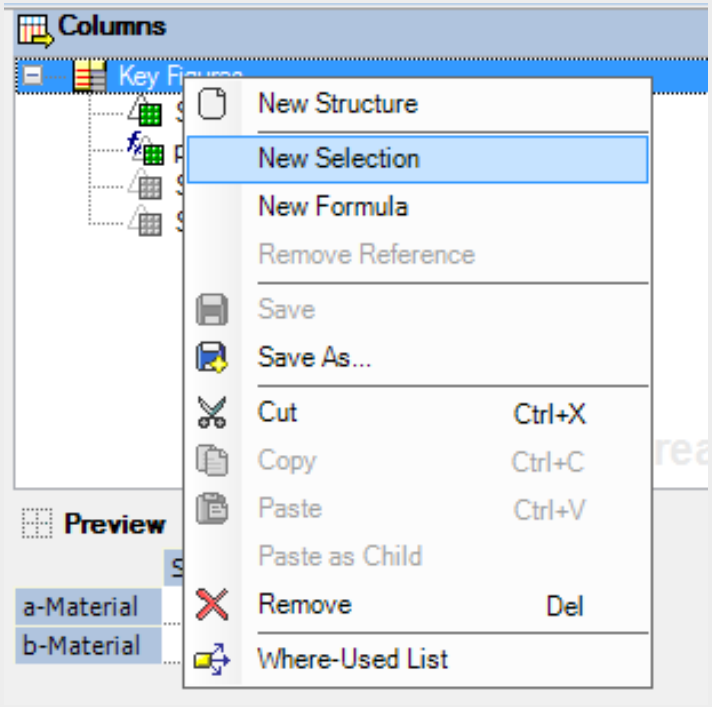
Characteristics Properties

- Display As : Options available are Key, Text, Key and Text, Text and Key and No Display.
- Display of Results : Options for supressing results and normalization.
- Display Hierarchy : Options for hierarchy display
- Sort Order : Options for sorting characteristics.

New Selection

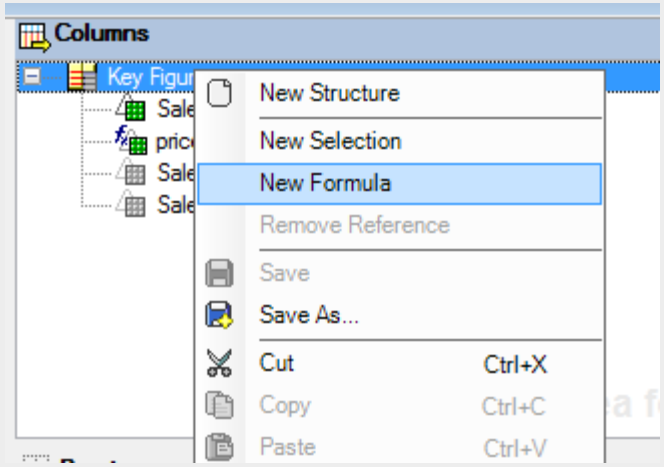
New Selection can be used for characteristics, key figures or for creating local restricted key figures.

They can be created on structures.

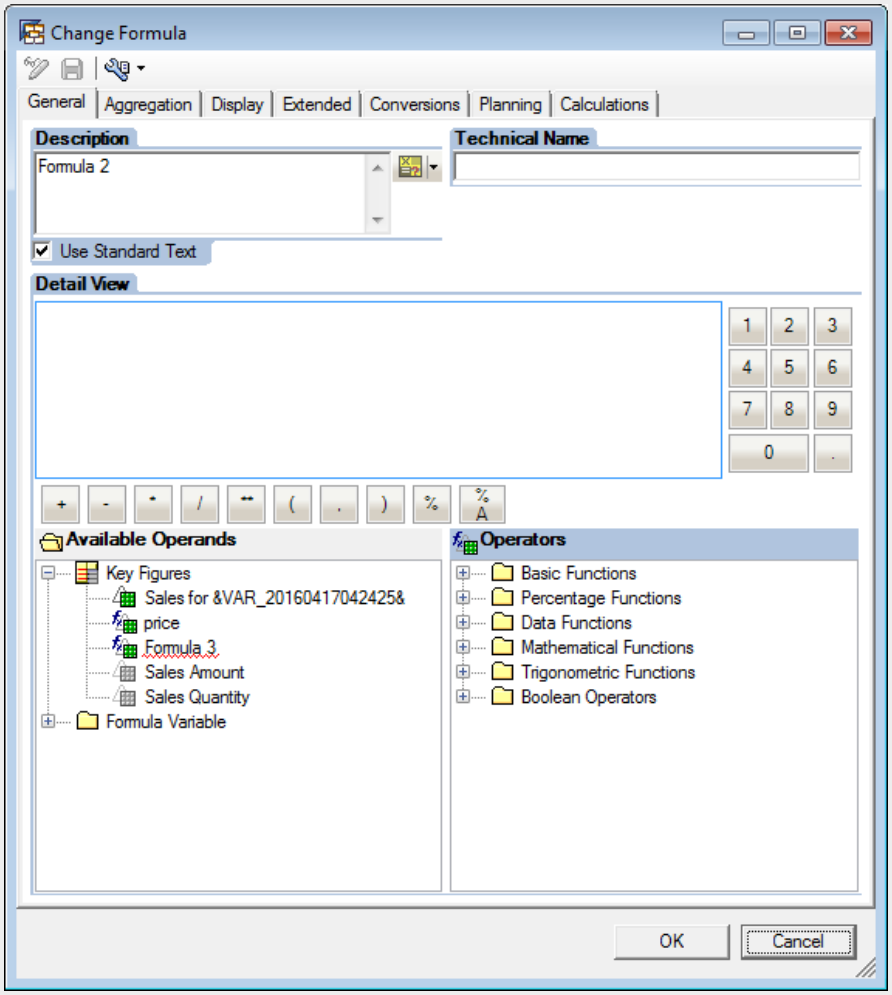


New Formula

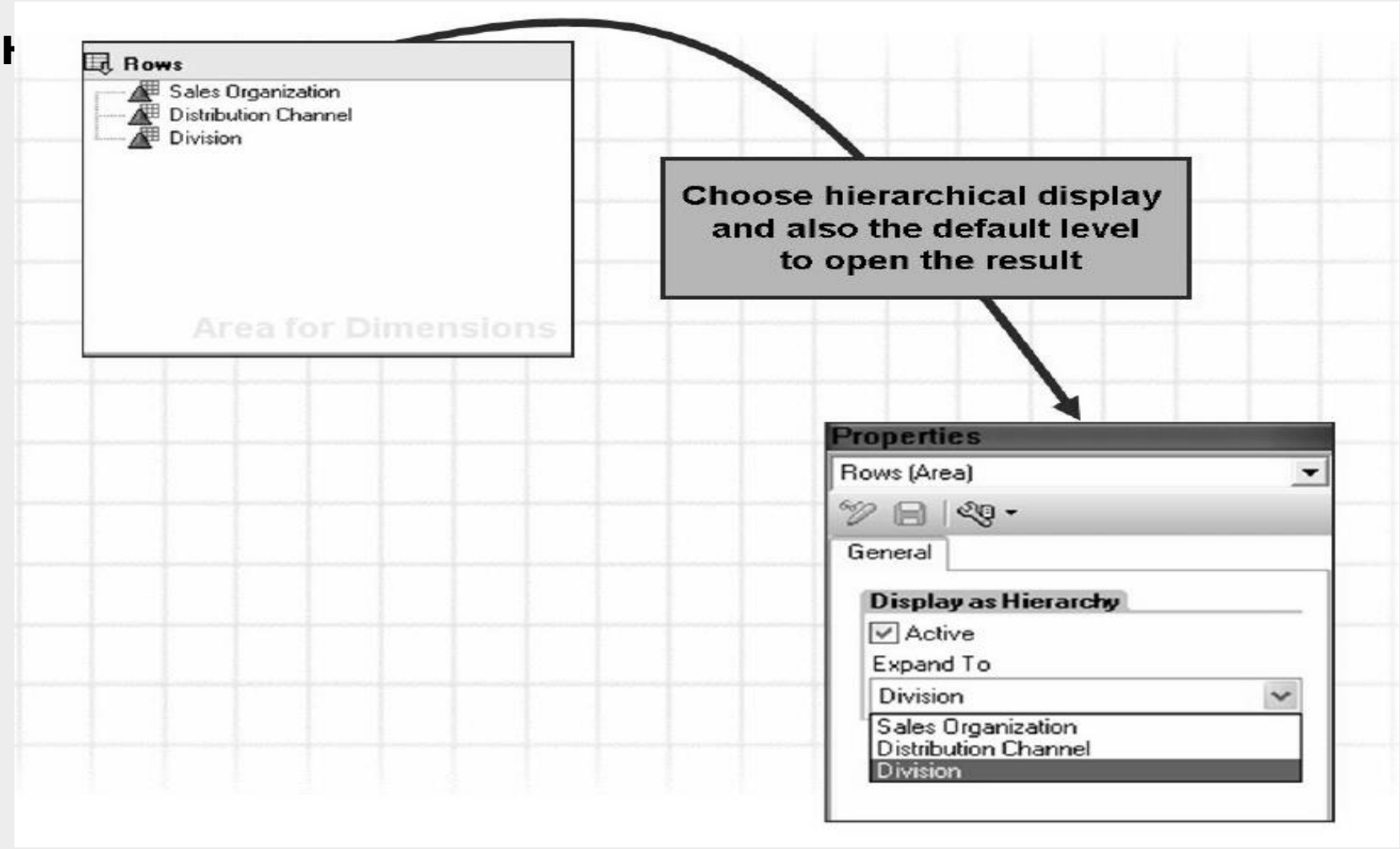
- Formula allow arithmetic operations to be defined using one or more basic key figures or formula variables or calculated key figures.
- New Formula can be defined only on structure elements



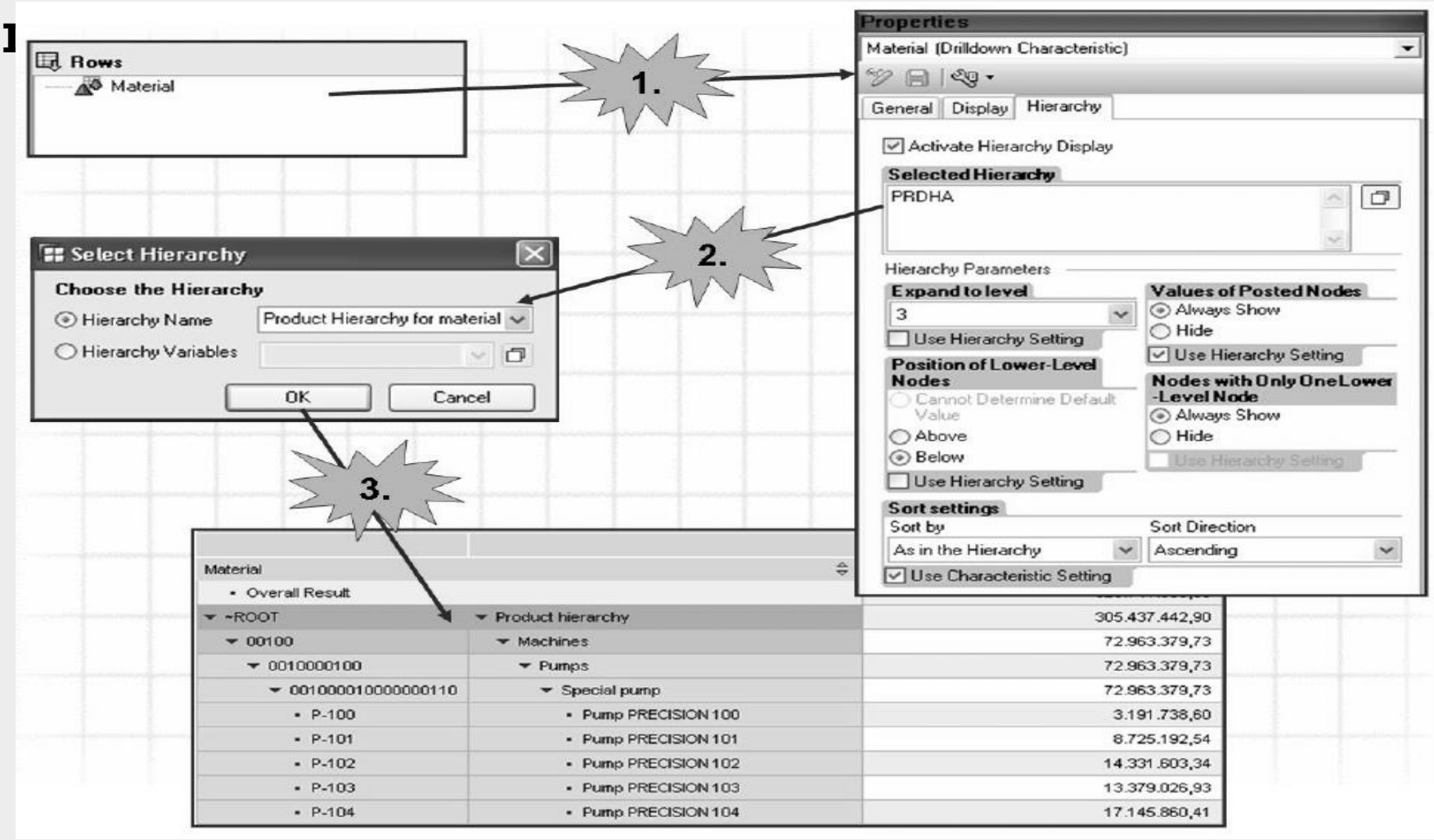
New Formula



Integrating Hierarchies into Reports



Integrating Hierarchies into Reports



Variables

- Variables are parameters of a query that are filled with values only when you execute the query or Web application.
- They serve as place holders for characteristic values, hierarchies, hierarchy nodes, texts and formula elements, and can be processed in different ways.
- The processing type determines how a variable is filled with a value for the runtime of the query or Web application
- Variables are reusable objects, if we create a variable for a Characteristic InfoObject we can use that variable in all the InfoProviders that use this characteristic.

Variable Types

There are different types of variables depending on the object for which the variable is defined as placeholder.

Types of variables are:

- Characteristic value variables
  - Characteristics value variables are used to select values of characteristics in the query at runtime.
  - Variables can be used to select single values and value ranges.
- Hierarchy variables
  - Hierarchy variables represent hierarchies and can be used wherever hierarchies can be selected.

Variable Types .. Contd..

- Hierarchy Node Variables
  - Hierarchy node variables represent a node in a hierarchy and can be used wherever hierarchy nodes are used.

- Text variables
  - Text variables represent a text and can be used in descriptions of queries, calculated key figures and structural components.

- Formula variables
  - Formula variables represent numerical values and can be used in formulas.
  - Numerical values are used for selecting exceptions and conditions and one can also use formula variables here.

Variable Processing Types

- The processing type of a variable determines how a variable is filled with a value at runtime.

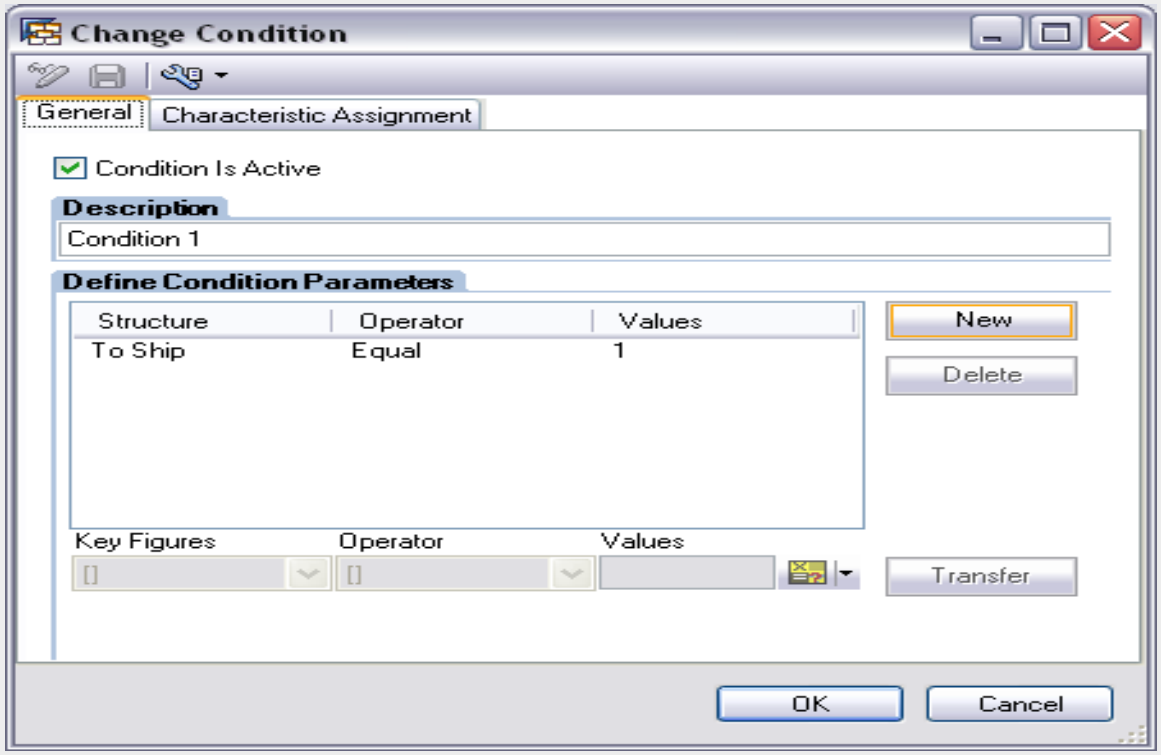
- The following processing types are available:
  - Manual Entry/Default Value
  - Replacement Path
  - Customer Exit
  - SAP Exit
  - Authorizations

Conditions

- Conditions can be formulated in the query designer to make data analysis more efficient.
- On defining condition, the data in the query is filtered accordingly so that only the part of the results area that you are interested in is displayed.
- With the help of conditions, we can analyze combinations of characteristics using ranked lists. Example: Displaying ten best customers by sales revenue.
- We can define multiple conditions for a query, and then activate or deactivate them in the report itself to create different views of the data.

Conditions

- Example: The sales department wants the flexibility to restrict a report so that only 'Top 10' materials as per Gross Sales are displayed.

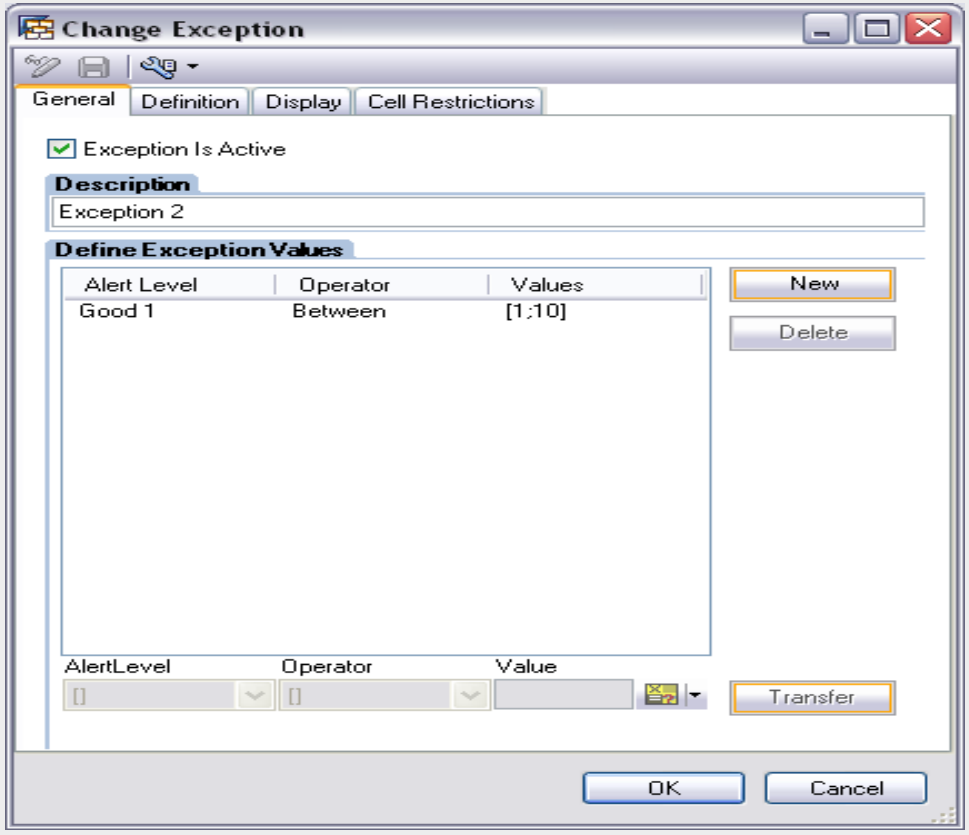


Exceptions

- Exception function in reporting enables you to select and highlight unusual deviations of key figure values in a query.
- The exception reporting function allows users to detect variances early on, thus giving a chance to react effectively and immediately.
- The results that vary from defined threshold values and interval are marked in different colors in the worksheet so you can identify them instantly.

Exceptions

- Gross sales below 1000$ is Bad, between 1000$ and 5000$ is Medium and sales 5000$ above is Good.



Cell Editor

- Cell Editor is used when complex calculations are needed to be performed, and it cannot be accomplished by restricted and calculated key figures. It gets enabled only if the query definition contains two structures.

- Cell-specific definitions allow you to define explicit formulas, along with implicit cell definition, and selection conditions for cells and in this way, to override implicitly created cell values.

- Help on cells can be defined via Cell Editor.

Cell Editor

- Cell is the intersection between two structural components. The formulas or selection conditions that you define for a cell always take effect at the intersection between two structural components.

- For each cell you can define a custom selection, a custom formula, or a custom cell definition.