Data Warehouse & Business Intelligence Fundamentals

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Data Warehouse & Business Intelligence Fundamentals

Course Scope

- DW Concept
- DW Architecture
- DW Data Modeling
- Data Integration
- Gathering and Analyzing Requirements
- Business Intelligence
- Deployment, Support and Maintenance

Business Intelligence Part I

- Business Intelligence Definition
- BI without DW?
- DW without BI?
- Business Intelligence Applications
- BI Apps Functionality
- BI Apps Presentation Capabilities
- BI Apps Requirements
- Project Work

Business Intelligence Definition

- **Concepts, methods, and tools for leveraging the organization's internal and external information assets to support improved decision making – strategic, tactical, operational.**

- There is no reached agreement in the industry for BI definition
- Often BI refers to reporting and analysis of data
- That is why I consistently use the phrase "Data Warehouse / Business Intelligence (DW/BI)" with the meaning of a complete end-to-end system.
- Hence the name of the course ☺

BI without DW?

- Imagine a well-looking restaurant with exquisite furnishings without its own kitchen.
- The customers have high expectations, but understand that the food is prepared at several other places and then delivered.
- The customers usually wait for more to receive cold food on nice plates.

DW without BI?

- Imagine you started building a restaurant, but so far you built the kitchen only.
- You ensured the delivery of high-quality products and the service of the best chef around, but you don’t have a place to present the result, yet.
- There is a standing place just outside the kitchen where the customers could taste the menu.

Business Intelligence Applications

- Value-added analytics within the DW/BI system. BI Apps include the entire range of data access methods from ad-hoc queries through standard reports to interactive analyses.
- Usually, they stay on top of the DW (between the DW and the users)
- All BI Apps vendors claim their solutions are open and flexible to read data from any kind of data source with just a few clicks and to present them.
- What most of them don’t say:
  - anything about data size they are capable to work with;
  - provided any level of data integration;
  - whether they provide enterprise solution or just good visualization of small department/user-specific data set;
  - whether they need ETL to their own database or not.

BI Apps Functionality

- Ad-hoc queries
- Standard reports
- Interactive analyses
- Alerts
- Dashboards
- Scorecards
- Presence of an **abstract semantic layer** with business terms that completely hide technical data complexity for business users as well as to establish a common dictionary and way of presentation
- Seamless integration with other applications like:
  - Business Dictionary
  - Data Lineage
  - Data Mining

BI Apps Presentation Capabilities

- Basic calculations on the result set
- Pivot the results
- Roll-up / Drill-down
- Sorting
- Complex formatting
- Charts, graphs
- Compound documents
- User-changeable variables / parameters
- Export to multiple file formats

BI Apps Requirements

- Easy to use
  - easy execution of standard already prepared reports;
  - easy preparation of new reports
- To look good – clear and attractive outlook
- To be correct – to provide accurate information, to ensure audit reports and data lineage
- To perform well – response time <5sec is a good goal;
- To be a long-term investment – should be properly built, documented, maintained, enhanced.

Terminology

- Business Intelligence
- Ad-hoc queries, Standard reports, Interactive analyses
- Alerts, Dashboards, Scorecards
- Data Mining, Data Lineage
- Abstract Semantic Layer

Project Work

- Today
  - Clarify all open questions
- Next steps
  - Create Staging Area data model in a database
  - Create DWH data model in a database
  - Upload all data from CBS model to Staging Area and then to DWH