ENTERPRISE INFORMATION SYSTEMS

- ERP II
- BI - Business Intelligence
- MIS - Manager Information System
- EIS - Execution Information System
- DW - Data Warehouse

ERP – Enterprise Resource Planning

Literature:

- SODOMKA, Petr, Klčová, Hana. *Information systems in entrepreneurial practice*. 2nd edition (segments 42 and 43) 2. Brno: Computer Press, 2010. ISBN 978-80- 251-2878-7. Pages 407 - 458.
- GÁLA, Libor, Jan POUR and Zuzana ŠEDIVÁ. Business informatics. 2nd edition (segments 42 and 43) 2. Prague: Grada, 2009. ISBN 978-80-247-2615-1. Pages 215 - 250.
- BASL, Josef and Roman BLAŽÍČEK. Enterprise information systems: the enterprise in the information society. In *Management in the information society*. 2nd edition Prague: Grada, 2012. Management in the information society. ISBN 978-80-247-4307-3. Pages 93 - 98.
- TVRDÍKOVÁ, Milena. Application of information technologies in corporate management: tools for improvement of the quality of the information systems. In *Management in the information society*. 1st Ed. Prague: Grada, 2008. ISBN 978-80-247-2728-8. Pages 95 -122.

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BI - Business Intelligence:

- What is BI?
- What BI solves and its objective
- BI components
- BI producers

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BI represents a set of tools enabling users to use integrated access to data in enterprise information systems and their analysis to better understand the business and customers.

The term BI can best be translated as business intelligence.

The MIS provides IS/ICT support for senior and operative decision-making, which may take the form of unified, object-oriented databases designed for this purpose or simple analyses done in the database transaction systems. Sodomka 2010.

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BI is a specific type of informatics that almost exclusively supports analytical, planning and decision-making enterprise operations and organisations as well as those built on the principles that best suit these activities. Gála 2009.

BI is an expression for the processes, knowledge, applications, platforms, tools, technologies, which support the comprehension of data, their relationships and processes. Basl 2008.

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BI products during deployment provide their users with the following:

- Current information about the state of suppliers, buyers, sales, warehouses, work in progress, etc., without waiting for processing of the relevant periodical closing accounts in the transaction systems;
- Independence - because they eliminated the need to search for information across multiple management levels, which can lead to unwanted "hum" and where processing can be unnecessarily lengthy and possibly can be drawn simultaneously from multiple data resources
- Flexibility - asking for information that cannot be specified in advance

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BI products differ from traditional IS products in the following aspects:

- They are specially designed for executive staff
- They are capable of specifically accessing information databases and also capable of generating reports
- Provision of on-line analytical resources
- They provide access to a broad area of internal and external data
- Their use is simple
- They are used directly by executives without assistance
- They also present information in graphic format

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BI products differ from traditional IS products in the following aspects:

- They are intended primarily for analytical applications and the selection of data from the resource databases and their organisation must also match this
- They store only data that is relevant for analysis of the necessary detail level - granularity
- They are multi-dimension based - evaluation according to all sorts of aspects, dimensional structures and their combinations
- They are based on the use of the time dimension - storage of data in individual time frames
- They have a higher data quality requirement

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Data selection and organisation:

- Only the relevant data are selected from the resource databases. Decision on what shall be selected from the data resources.
- Transformation of data into new analytical database structures.
- Consolidation of data from various data resources.
- Achievement of the necessary data quality, exclusion of errors, inaccuracies.

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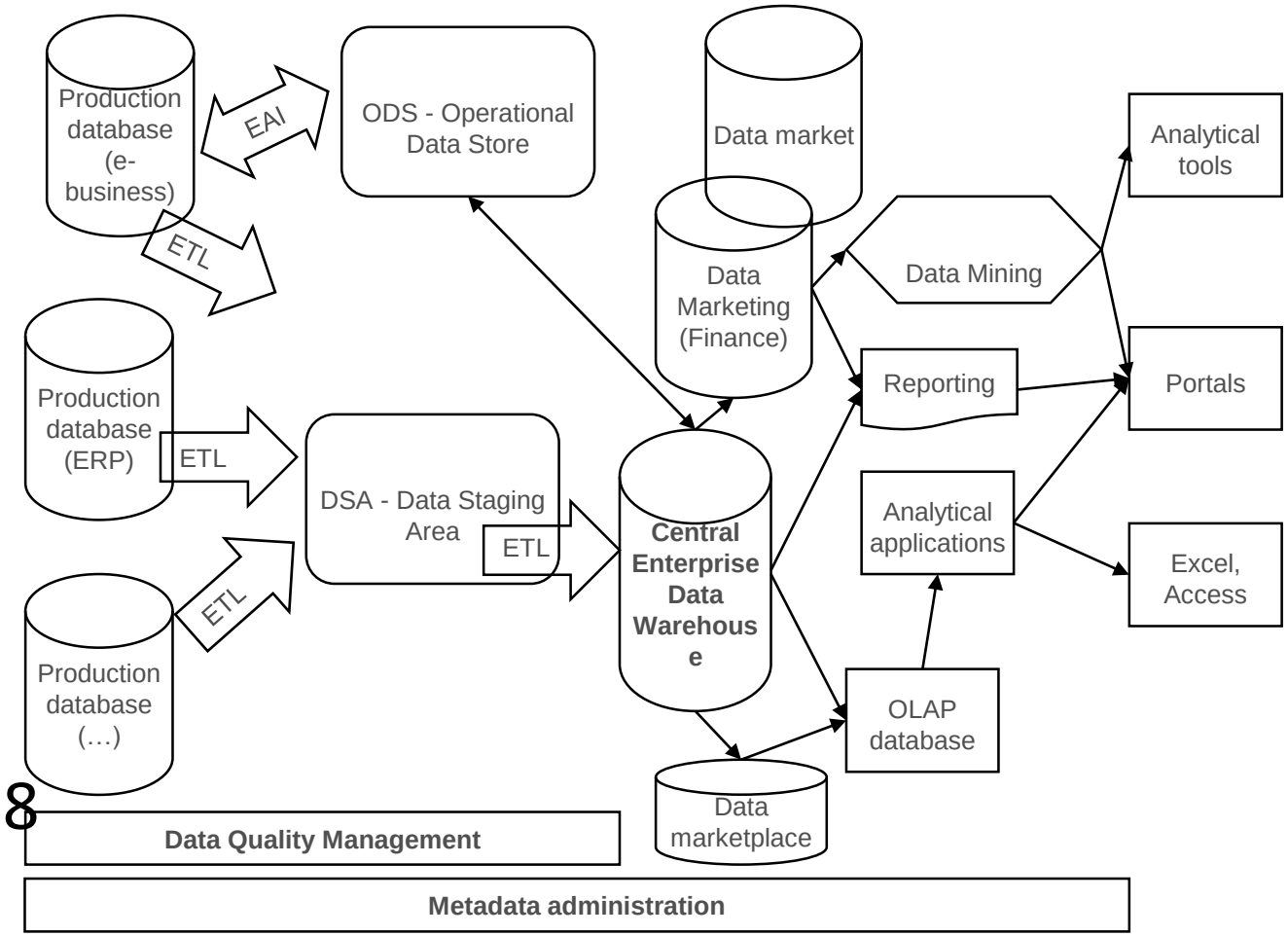

Source: Gála p. 218

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Major components of BI:

- Production (source) databases
- ETL - Extract, Transform, Load
- EAI - Enterprise Application Integration
- Data Staging Area - DSA
- Operational Data Store - ODS
- Data Warehouse - DWH

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Major components of BI:

- Data Market - DMA
- OLAP Database
- Reporting
- Analytical applications
- Data Mining
- Tools for data quality management and administration of methods

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Major components of BI:

Production source databases - are databases designated as primary from which the BI gets data and that do not fall under the BI. They are OLTP - Online Transaction Processing. An example may be the ERP, CRM, SCM, HRM and Logistics databases, but also standard Excel files, or text files with a fixed structure - Flat files. They are often very heterogeneous.

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Major components of BI:

ETL - Extract, Transform, Load - these are the so-called data pumps and are one of the most important components of the entire system. Its task is to select data from the source system - extract, convert them to the desired format - transform and load them into the data structures of the data warehouse. These tools work in batch mode - daily, weekly, monthly, etc. They comprise 60-80% of BI costs.

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Major components of BI:

EAI - Enterprise Application Integration - used in a layer of the source applications, their target is to integrate primary business systems. They are usually bidirectional and work at two levels:

- for integration and distribution of data
- sharing of selected functions

Unlike ETL they work in real time and thus form a Real-Time Warehouse.

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Major components of BI:

Data Staging Area (DSA). Used as a data staging area for data from the manufacturing systems and their task is to support quick and effective data extraction. DSA is used for initial storage of untransformed data. It is a non-mandatory component of BI, which is applied in continuously loaded manufacturing systems:

- The data are not aggregated
- A consistency test is not done
- They do not contain history
- They have precisely the same structure as in the source systems

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Major components of BI:

Operational Data Store (ODS) - a further non-mandatory component of BI. Unlike DSA, they contain consolidated, consistent data, which is also aggregated in some cases. The difference between DSA and ODS is in their uses. DSA are used only for temporary storage of data prior to its processing in the DW. ODS serves as a database that supports the analytical process.

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Major components of BI:

Data Warehouse (DW). The Data Warehouse is an integrated, subjectively oriented, permanent and timed data compilation, arranged for support of management needs:

- Subject-oriented - data are distributed by type, not by the applications. For instance, an employee is stored only once.
- Integrated - data are stored within the whole enterprise.
- Permanent - Their concept is Read-Only, no additional data are created here.
- Time differentiated - the history is also stored here.

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Major components of BI:

Data Marts (DMA) are intended for a limited number of users (department, division, branch). The essence are thus decentralised data warehouses. They are problematic or thematically oriented data warehouses, which allow flexible Ad-Hoc analysis. The result is shortening of the payback period, reduction of costs and a significant reduction in their implementation risk.

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Major components of BI:

OLAP Databases - They comprise one or more associated OLAP cubes. Unlike the DW, they usually already contain preprocessed aggregated data according to the hierarchical structures of dimensions and their combinations.

Reporting - Client application in which SQL queries are used to create:

- Standard reports - periodical
- Ad-Hoc reports - one-off

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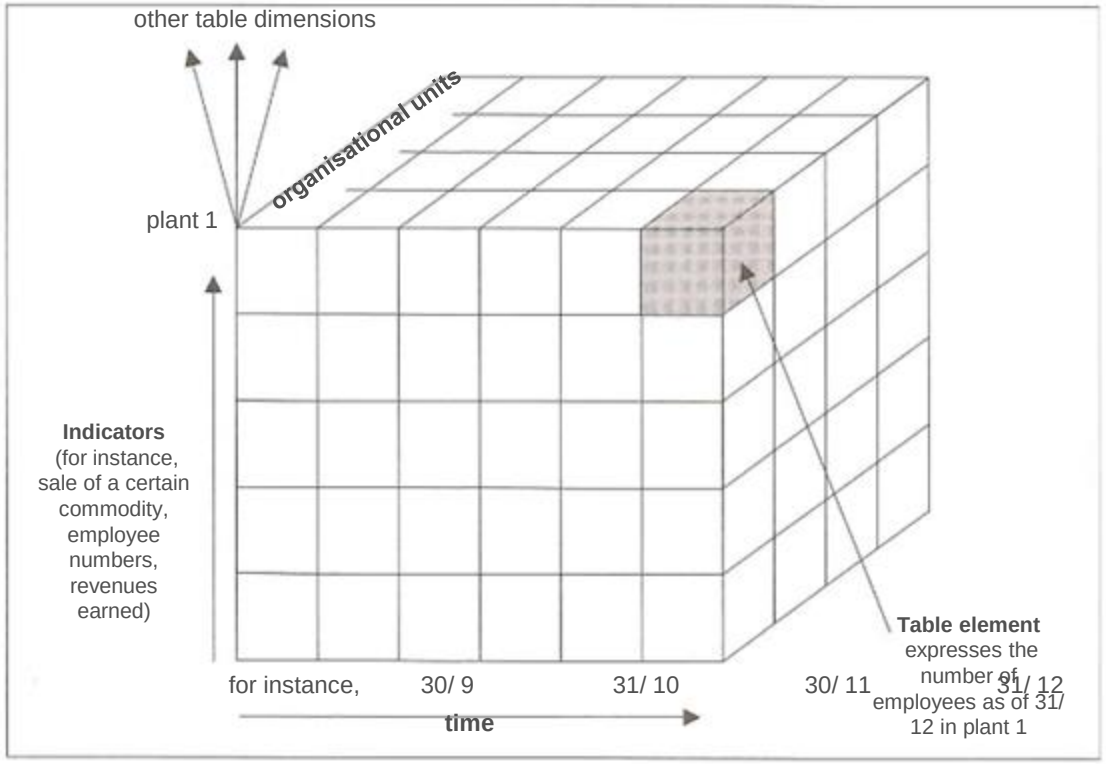
Major components of B

OLAP Databases:



Source: Gála p. 224

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Major components of BI:

OLAP Databases - Online Analytical Processing Databases offer effective access to the data in a simple structure suitable for the analytical work of the managers. The basis is a multidimensional table that allows quick change of the previews of the individual dimensions.

OLAP variants

- MOLAP – Multidimensional OLAP - storage of data in multi-dimensional binary OLAP cubes
- ROLAP – Relational OLAP – multi-dimensional using relational databases
- HOLAP – Hybrid OLAP – combination of preceding approaches. Detailed data in the relational database aggregated in the binary OLAP cubes
- DOLAP – Desktop OLAP – allows connection to the central databases and download of the necessary cube sub-set on a local computer.

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Major components of BI:

Analytical applications – the following are significant for them:

- they are designed specifically to provide management information
- provision of a tool for on-line analysis of trends, drill up, drill down, slice and dice.
- They are easily operated
- Typical – Excel, Access, Portals, Oracle Discover

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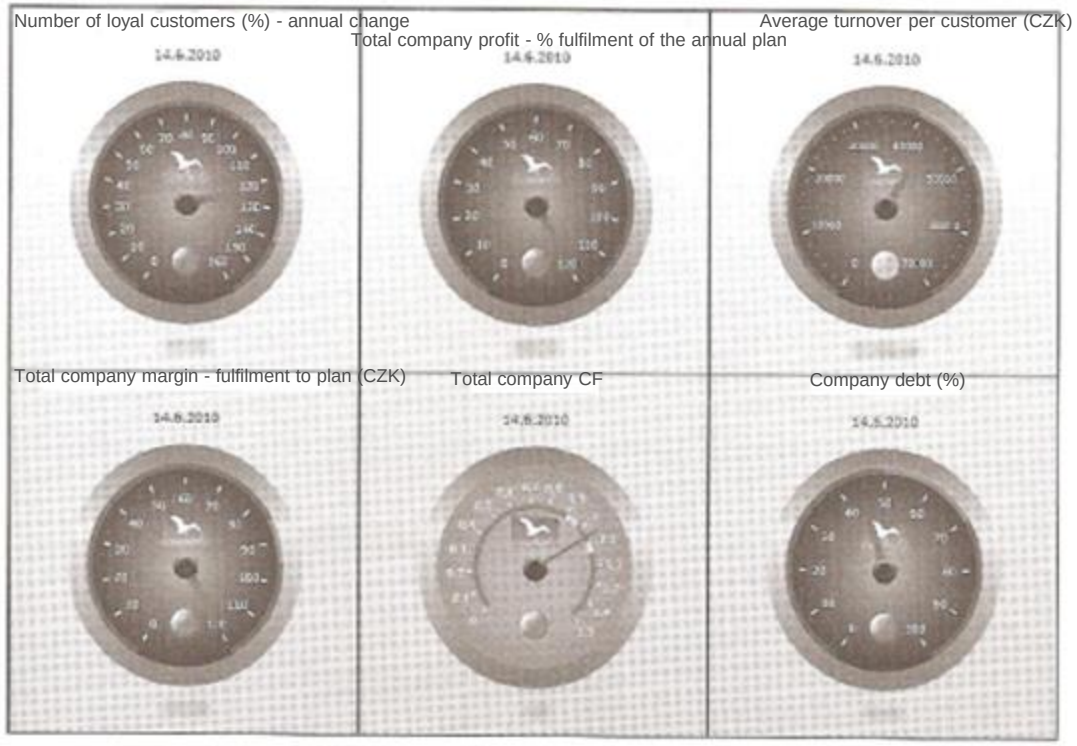
Example of the BI dashboard



Source: Sodomka p. 427

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Major components of BI:

Data Mining - the following are significant for them:

- They are used to identify new facts
- Test the hypotheses
- They are based on statistical techniques
- Neuron networks
- Clustering

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Significant producers of BI systems:

Oracle, IBM – Cognos, Microsoft - SQL Server, SAP – Business Object, QlikTech, Arcplan, Board, Panorama, Tableau Software

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Significant producers of BI systems:

Source: www.systemonline.cz

Výpis: Vše A B C D E F G H CH I J K L M N O P Q R S T U V W X Y Z

Název	Datová kvalita, vkládání, konverze a čištění dat	Datové sklady	Data mining	Business intelligence
ABRA Software a.s.	⊖	⊖	⊖	⊕
Accenture Central Europe B.V., organizační složka	⊕	⊕	⊕	⊕
ACREA CR, spol. s r.o.	⊕	⊖	⊕	⊕
Adastra, s.r.o.	⊕	⊕	⊕	⊕
Algotech BSC, s.r.o.	⊕	⊕	⊕	⊕
ALTEC a.s.	⊕	⊕	⊕	⊕
Altus software s.r.o.	⊕	⊕	⊕	⊕
AMBICA s.r.o.	⊕	⊕	⊕	⊕
Anywhere s.r.o.	⊕	⊕	⊖	⊕
Aquasoft spol. s r.o.	⊕	⊕	⊕	⊕
ARBES Technologies s.r.o.	⊕	⊕	⊖	⊕
Asseco Central Europe, a.s.	⊕	⊕	⊕	⊕
Asseco Solutions, a.s.	⊕	⊕	⊕	⊕