INTRODUCTION TO BUSINESS INTELLIGENCE

Lecture 4

Agenda

Business Intelligence systems

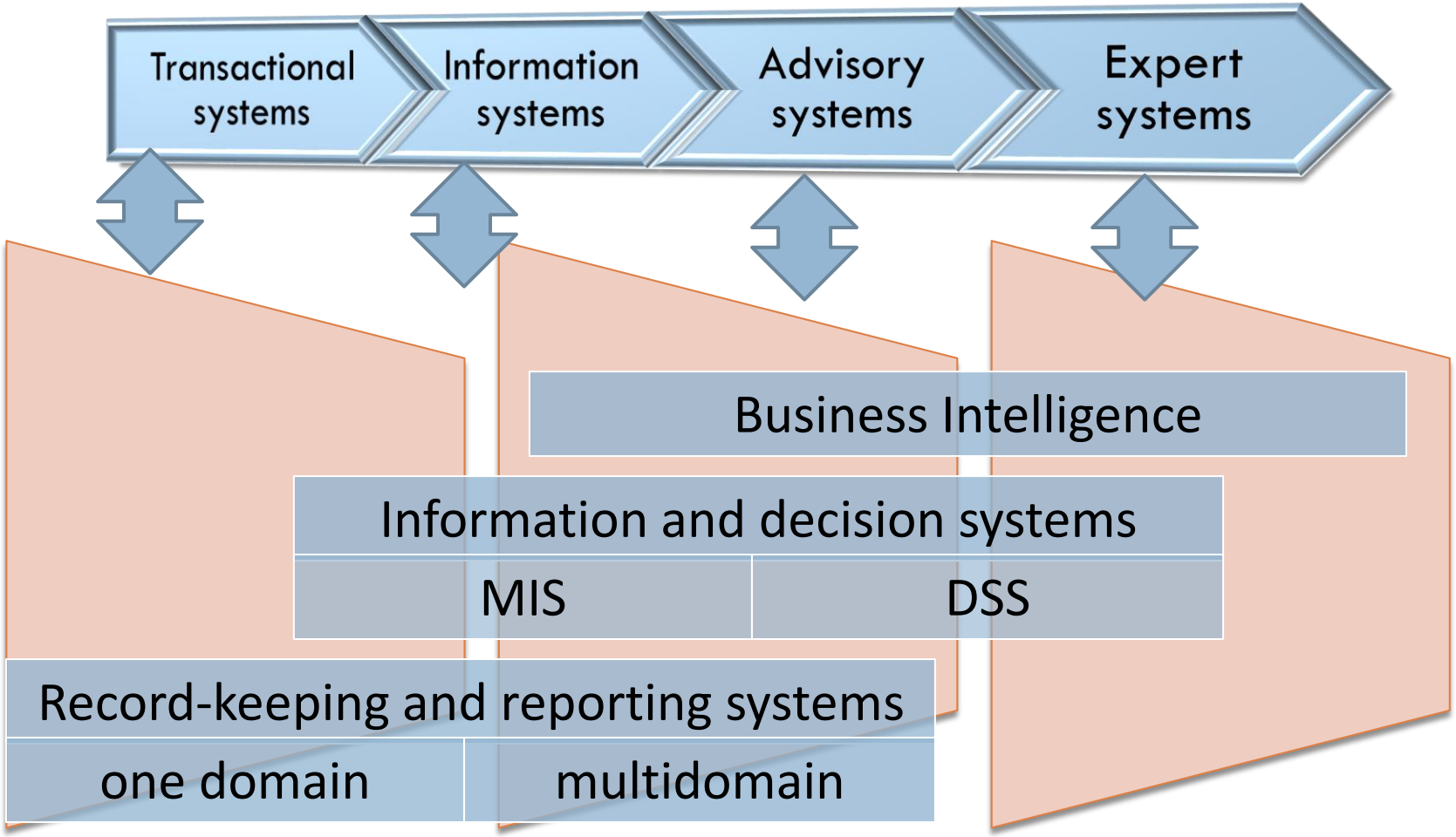
Data warehouse evaluation criteria

Business Intelligence systems

Business Intelligence

A set of concepts and methods supporting decision making using support systems that are based on facts (Howard Dresner, 1989)

Business Intelligence



Business Intelligence term (1)

A management concept aimed at providing managers with information of adequate quality and at the right time.

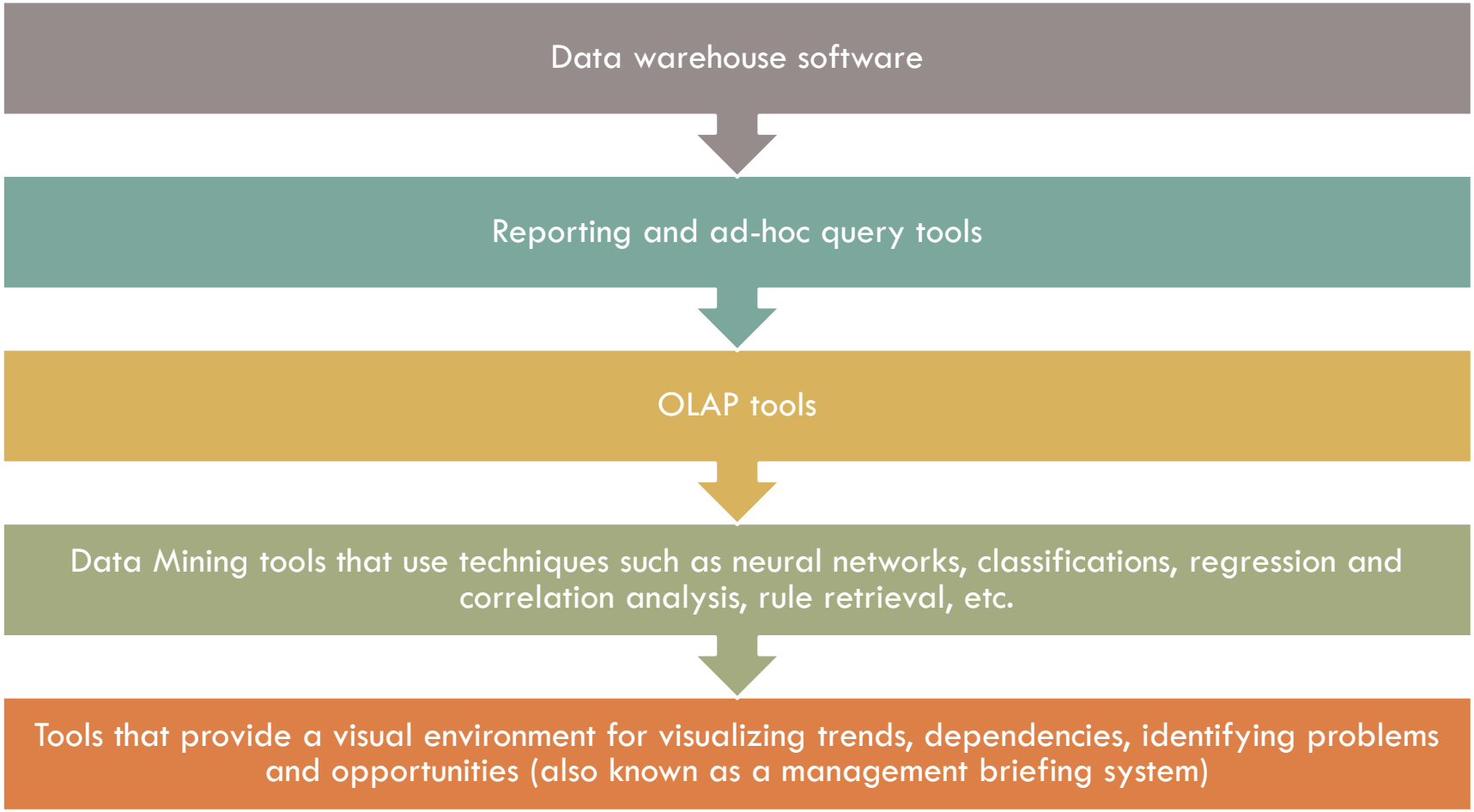
A set of methods and processes aimed at improving decision making in enterprises and increasing experience and knowledge of business participants, as well as data collection, management and analysis and information distribution.

Business Intelligence term (2)

An IT solution in the narrow sense, meaning tools and applications for reporting and presenting the company's results, as well as enabling data analysis (simple and multidimensional OLAP) and Data Mining and Text Mining.

An IT solution in a broad sense, including software solutions for reporting and data analysis and data and text mining, also technological and software, including data warehouses and multidimensional OLAP servers along with appropriate tools for collecting data as well as managing and administering individual elements of the BI system.

The software that makes up the Business Intelligence system



Business Intelligence application classes according to SAP

- Data warehouses
- Analytical applications for business planning and simulating market behavior scenarios
- Applications supporting communication and supervision of the implementation of strategic goals and operational in the company, including those supporting the implementation of the Balance Scorecard
- Personal, intelligent work environment supporting the implementation of the tasks of a given employee and a tool for his dialogue with the structure and organization of the company
- Systems searching for unstructured economic information on the Internet
- Specialized knowledge management systems

Business Analytics

All types of analytical tools and applications for broadly understood enterprise performance management

They divide into two categories:

- Performance management tools and applications
- Data warehouse platforms

Category of the performance monitoring application

Universal analytical tools (BI)

Tools for the analysis of spatial data stored in databases of spatial information systems

Analytical applications designed for specific areas of business management

Business Analytics taxonomy

Analytics tools and applications for performance management

Aplikacje analityczne

Financial and strategy management (budgeting, planning, consolidation, profitability and ABC costing, scorecard - BSC)

Customer relationship management (sales, marketing, customer service, price optimization, contact center, website analysis)

Supply chain management (production planning, service, etc.)

Workflow management

Business Intelligence

Inquiries, reports, OLAP

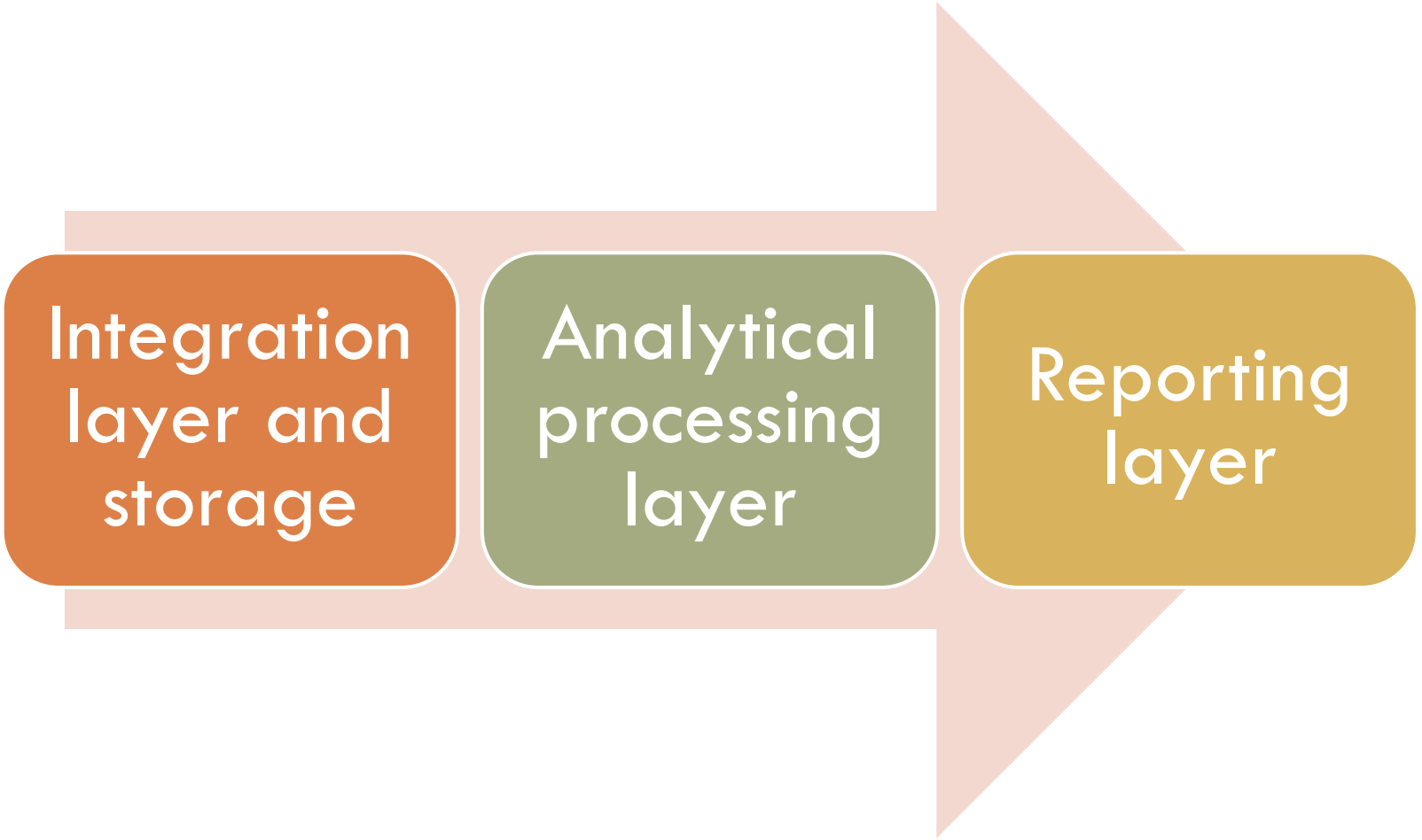
Advanced analytical tools (including Data Mining, statistical tools)

Tools for spatial data analysis

Data warehouses - platforms

Building and management tools

Architecture of the BI system



Architecture of the BI system. Integration and storage layer

ETL tools - data integration

Data warehouse - integrated database

OLAP aggregates - preparation tools and special multidimensional structures for aggregate data

Architecture of the BI system. Analytical processing layer

Basic reporting tools

Multivariate Analysis (OLAP) Tools

Advanced analytical tools such as Data mining and Text mining

Analytical applications:

- Domain oriented, focusing on specific domains of the company's operations (e.g. warehouse logistics)
- Problem oriented, targeting one or more specific methods (e.g. analysis of financial liquidity)
- Industry-specific, specialized in supporting issues in specific industries (e.g. in banking, insurance, retail)
- In the form of modules that are the superstructure of ERP systems
- Comprehensive, i.e. based on specific concepts of overall enterprise management (e.g. Balance Scorecard)

Architecture of the BI system. Reporting layer

File servers, storing and making the results of the analyzes available to decision makers

Information portals with dashboards operating within the organization's intranet network

Tools and means of automatic information distribution

Architecture of the BI system
Administrative layer (independent)

- Data access management tools
- Metadata repository content management tools
- Metadata repository access management tools
- Tools for monitoring the performance of ETL processes and analytical processes
- Configuration tools
- Personalization tools

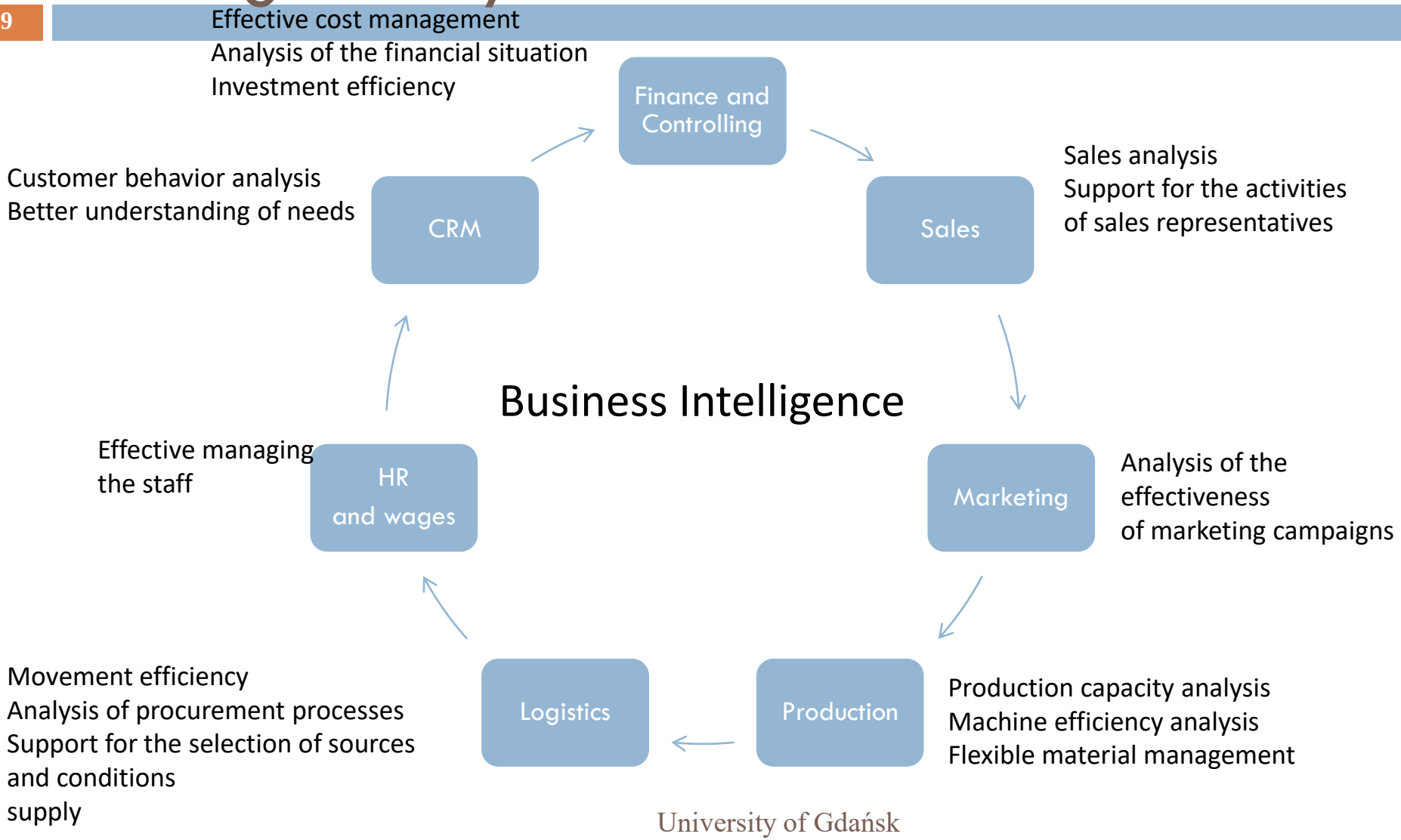
Business Intelligence applications

Improving the efficiency of the organization through:

- Improving the efficiency of the organization through:
  - Business process performance monitoring
  - Exchange of knowledge and experience between project teams and company departments

- Organizational efficiency is related to the theory of change. If there is a decrease in efficiency, it should be repaired by introducing changes.
- Decrease → Repair → Start → Operation

Areas of application of Business Intelligence systems

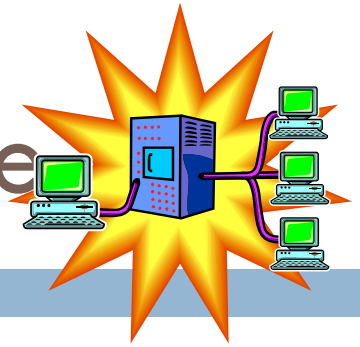


Business Intelligence systems based on the Balance Scorecard

- The four sets of Balance Scorecards allow you to create four business perspectives:
  - Financial
  - Customer
  - Economic processes
  - Development and growth

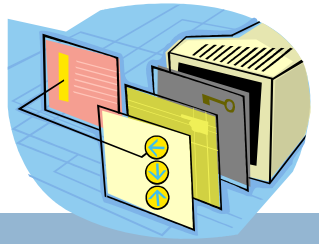
Data warehouse evaluation criteria

Quality of the data warehouse



- Data warehouse quality is usually evaluated in 5 perspectives:
  - Data
  - Time
  - Action
  - Design
  - Tools

Assessment - data



- Accuracy - compliance with reality
- Completeness - non-empty values
- Consistency - in terms of the adopted data format
- Verifiability - the ability to check the values

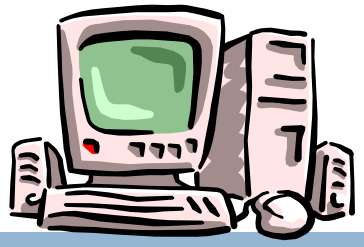
Assessment - time

Timeliness - data consistent at a given time

Volatility - meeting time requirements

Delivering data on time - at the right time

Assessment - action



Transactional availability - at what time the system is available to users

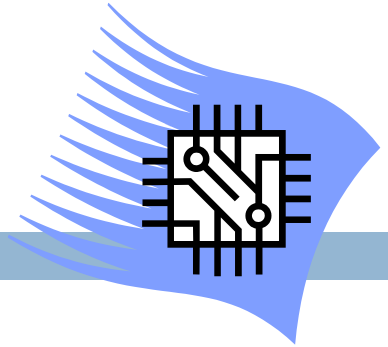
System availability - at what time the system is available

Availability - data for users

Interactivity - interaction with the user

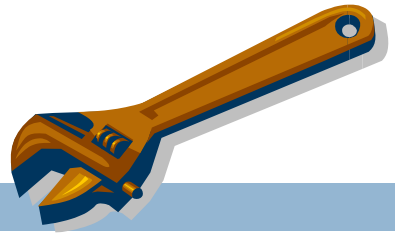
Security - authentication, authorization, accounting

Assessment - project



- Correctness of the scheme - adequacy to the real world
- Completeness of the scheme - the mapping of the enterprise
- Minimalism - simplicity
- Interpretability - transparency
- Verifiability - the ability to detect inconsistencies
- Quality of metadata - expandability, completeness

Assessment - tools



- Speed - efficiency
- Functionality - user requirements
- Usability - ease of use and advanced functions
- Reliability - errors and the possibility of their diagnosis
- Ease of maintenance - system upgradeable
- Portability - operation of client applications on multiple platforms

Question?

- Typical Business Intelligence systems distinguish the following layers:
  - physical
  - integration and storage
  - analytical
  - session