ENTERPRISE INFORMATION SYSTEMS

- EIS Classification
- PIS concept
- Terminology
- EIS Architecture

EIS Classification

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 73 - 85.

- 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 123 - 135.

- BASL, Josef and Roman BLAŽÍČEK. Enterprise information systems: the enterprise in the information society. In *Management in the information society*. 2nd edition Prague: Grada, 2008. Management in the information society. ISBN 978-80-247-4307-3. Pages 52 - 63.

EIS Classification

The enterprise informatics applications mean the solution of the management, trading, manufacturing and other processes and functions of the enterprise through the use of the information and communication technologies, i.e. application and basic software, technical and communication resources and the related services, provided to their users. (Gála, Pour, Šedivá, 2009)
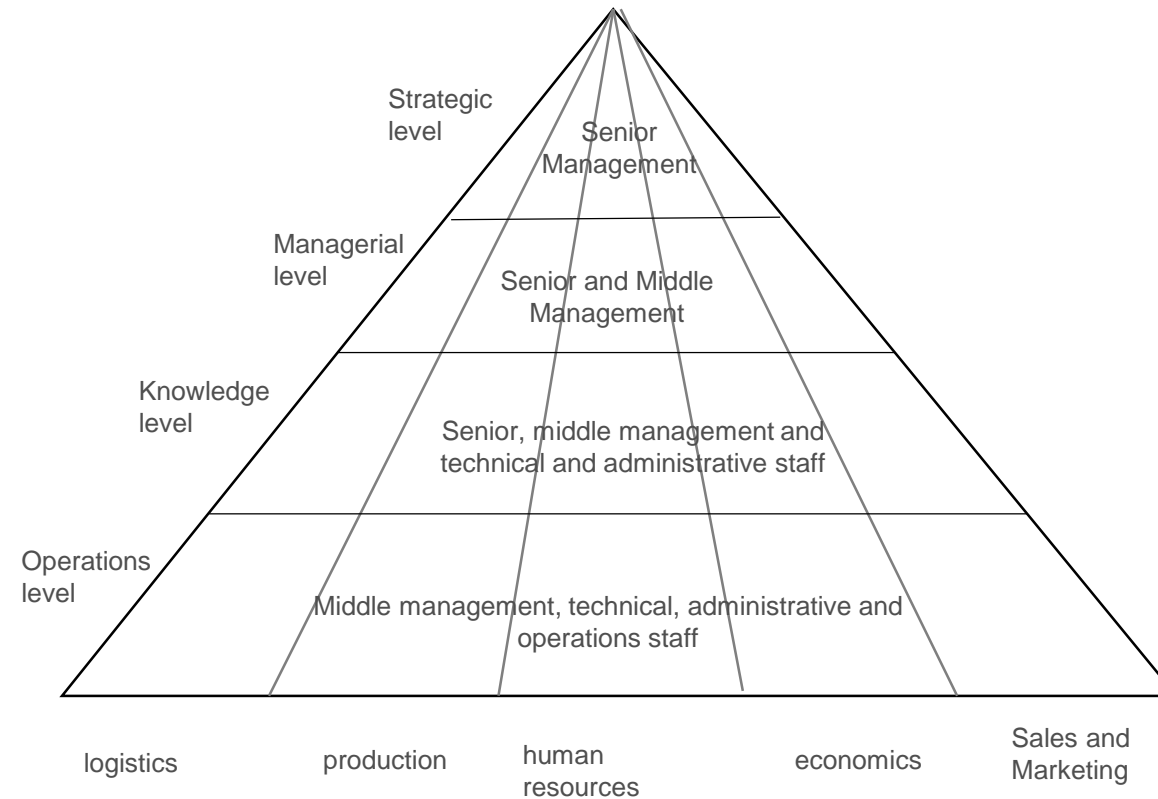
EIS Classification

EIS application aspects:

- Determination - the target circle of application users, for instance, electronic trading for traders, analytical applications for the managers

- Data - the data used - structured in databases, unstructured in the documents

- Functionality - what transaction, analytical or special functions

- Business processes - supported processes - management of production, finance, personnel

- Technology used - the IT used for development and transition

EIS Classification

Organisational levels that require a specific information processing method:

- Operations level
- Knowledge level
- Managerial level
- Strategic level

EIS Classification

Source: Sodomka, 2010, p. 74

EIS Classification

Operations level

Requires the processing of information concerning routine corporate agenda, such as realisation of manufacturing contracts, purchases, sales, receipt of payments, accounting documents.

The typical user of such information is the accountant, operations worker, etc.

EIS Classification

Knowledge level

It includes not only the EIS client applications, but also personal IT resources, such as office applications, software for team collaboration - groupware. These applications support the growth of the organisation's knowledge level and mainly manage the document flow

The typical users of this information are the managers and technical staff.

EIS Classification

Management level

Requires information necessary for fulfilment of administrative tasks and support of decision-making, particularly in the case of the middle and senior management.

Typical users of this information are managers.

EIS Classification

Strategic level

It is necessary to collaborate in the identification of long-term trends both within and outside the organisation. Their main objective is to postpone expected changes and determine whether the enterprise is capable of responding to them or not.
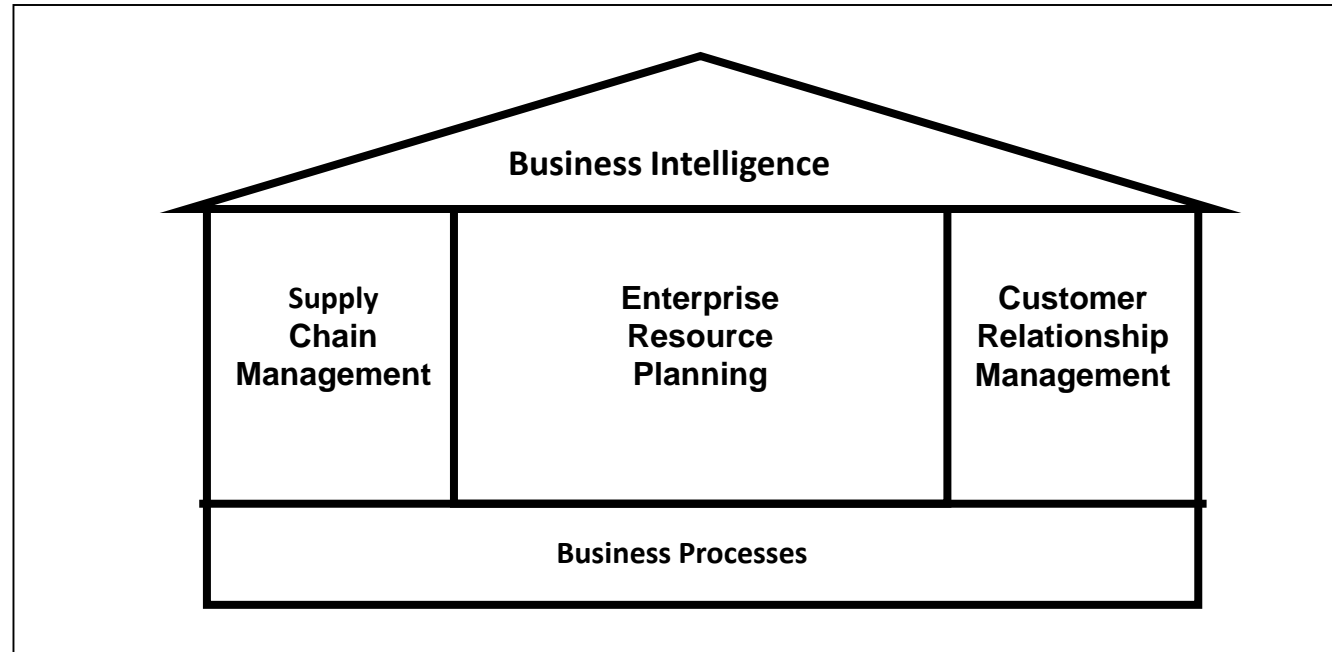
The typical users of this information are the owners and managers.

EIS Classification

Holistic - process classification of the EIS (Sodomka 2010):

- ERP – Enterprise Resource Planning
- CRM – Customer Relationship Management
- SCM – Supply Chain Management
- MIS – Management Information System

EIS Classification

Source: Sodomka, 2010, p. 78

EIS Classification

ERP – Enterprise Resource Planning

EIS core focused on the management of internal enterprise processes.

It makes it possible:

- To create and update extensive databases - Goods, suppliers, customers, employees, assets, accounts, etc.

- Realise processes of operational character - business transactions, procurement, sales, orders, accounting

- Create and present overviews, statistics and basic analyses

EIS Classification

CRM – Customer Relationship Management

Customer relationship management; management of processes targeted at customers.

It makes it possible:

- Evidence and analyses of business contacts
- Customer Relationship Management

EIS Classification

SCM – Supply Chain Management

Supply Chain Management, management of processes toward the suppliers. Sometimes, APS is also an integral part of it.

It makes it possible:

- Ordering

- Logistics

- Warehousing

EIS Classification

MIS – Management Information System

Used to analyse historical data from which extensive statistical spreadsheets can be created.

It makes it possible:

- Analysis, scrubbing, storage of the data
- Search for relationships between the data
- Create a cross-sectional application of all-enterprise character (administration, legislation, HR management, marketing, quality…)

EIS Classification

Other terminology, use in the EIS:

- ECM - Enterprise Content Management - management of documents, web content, workflows

- DMS - Document Management System

- SRM - Supplier Relationship Management

- E-government

- E-business

EIS Classification

Other terminology, use in the EIS:

- WF - Workflow
- HRM - Human Resource Management
- APS - Advanced Planning System
- MRP - Material Resource Planning
- BI - Business Intelligence
- ASW - Application Software

EIS Classification

Other terminology, use in the EIS:

- CAD - Computer Aided Design
- CAM - Computer Aided Manufacture - automated support for management of manufacturing processes
- CAQ - Computer Aided Quality - control of the manufacturing process and product quality
- GIS - Graphic Information System

EIS Architecture

What is the meaning of "Information System Architecture"?

EIS architecture defines the conceptual framework of the EIS solutions, gives a certain direction to the building of the EIS and is a suitable communication resource between the company management and the EIS suppliers.

It must be:

• Illustrative

• Comprehensible

• Simple

EIS Architecture

What the architecture must support for the EIS to fulfil the required targets:

- Strategic enterprise targets
- Meet the requirements of the users
- Integration - data, SW, HW,...
- Openness and parametrization of the system (capability of the system to accept changes)
- An IS that is comprehensible and transparent to the users
- Effectiveness and reliability of data processing (response rate, data protection...)

EIS Architecture

IS architecture ensures mutual understanding:

investor - solver - user

EIS Architecture

IS global and partial architecture

- Global architecture - basic diagram that expresses the rough form of the future IS (for instance, method of procurement, factual orientation, relationship to the management level…)

- Partial architecture - more detailed design from various system perspectives

EIS Architecture

Partial architectures

- IS functional analysis, functional specifications - verbal description of functions
- Process architecture - corporate processes and data flows (for instance, in the form of a Data Flow Diagram - DFD)
- Data architecture - design of the database (ERD - entity, relationships...)
- Software architecture - SW components
- Hardware architecture - HW components and networks; can be centralised, decentralised, distributed...
- Technological architecture - description of the technological solution, for instance, defines the processing method (batch, interactive, RT, event)

EIS Architecture

Technological architecture - historical development

- Mainframe architecture

- File sharing architecture

- Client/server architecture

- Two-layer architecture (user, database)

- Three-layer architecture (user, business logic and data layers)
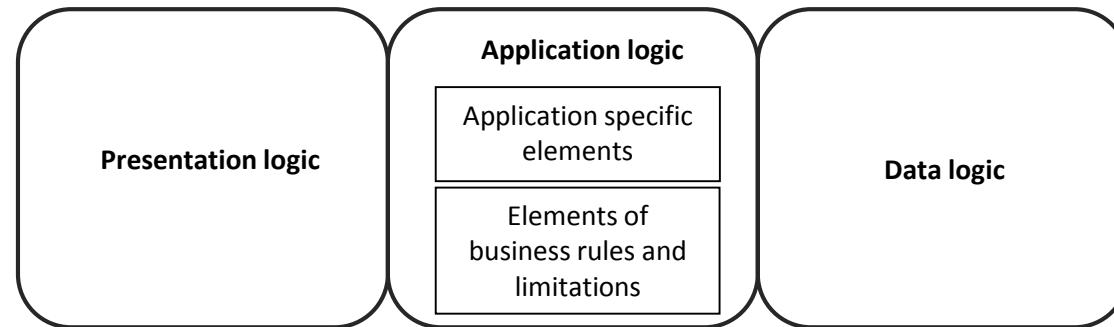
EIS Architecture

EIS data processing model

The current IS architecture uses a three-layer client - server logic

The layers of this architecture are:

- Presentation logic - user interface.

- Application logic - creates the environment for application functions.

- Database logic - provides management of database operations

EIS Architecture

Presentation logic	Application logic	Data logic
	Application specific elements	
	Elements of business rules and limitations	

Source: Gála, 2008, p. 55
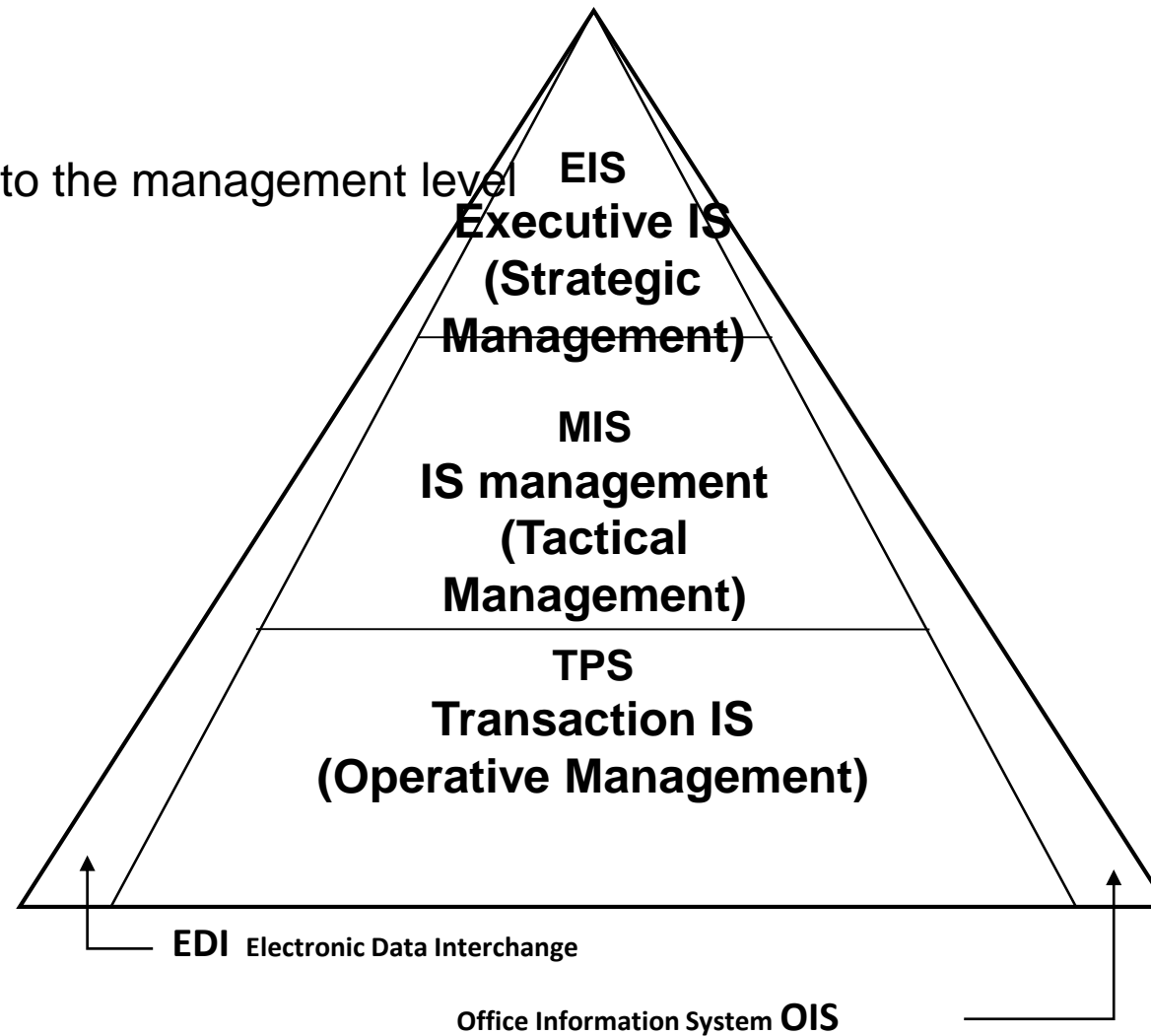
EIS Architecture

Management level of the manufacturing enterprises

The following breakdown of management levels can also be found in literature on management of technological processes:

- Managerial control level -> EIS

- Dispatch control level -> MIS

- Process control level -> TPS

EIS Architecture

IS global architecture according to the management level

EIS
Executive IS
(Strategic Management)

MIS
IS management (Tactical Management)

TPS
Transaction IS (Operative Management)

EDI **Electronic Data Interchange**

Office Information System OIS

EIS Architecture

Typical EIS functions
- long-term planning,
- economic analysis of the company's overall business,
- evaluation of the business plans,
- preparation of innovation projects,
- formulation of strategic projects using project management methods,
- support of the specification of the company's marketing strategy,
- management reporting,
- analysis of the market situation, etc.

EIS Architecture

MIS

Characteristics:

- Evidence of processes
- Processing of economic analyses
- Dominant evidential and analytical work

EIS Architecture

Transaction Processing System (TPS)

The objective of the TPS is support for the major activities of the company at operative management level - operational level.

Monitoring of transactions = individual manufacturing operations.

Specific according to the character of the enterprise.

Successor to batch processing.

EIS Architecture

OLTP - On-Line Transaction Processing

Transaction - sequence of operations, which form an indivisible unit.

Characteristics:

- A - Atomicity - the database transaction is indivisible and is executed as a single unit

- C - Consistency - no integrity limit is breached during and after execution of the transaction

- I - Isolation - the operations within the transaction are hidden from external operations. Transaction Rollback - no other transaction is affected, otherwise it must also be rolled back.

- D - Durability - Changes that are made as a result of a successful transaction are really stored in the database and cannot get lost