ENTERPRISE INFORMATION SYSTEMS

- Building of enterprise information systems
- Lifecycle
- EIS procurement method
- Economic assessment of EIS procurement

EIS building

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 87 - 146.
- 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 265 - 280.
- 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 198 - 229.
- 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 47 - 57.

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The IS/IT lifecycle is relatively short.

- Planning - months and years
- Procurement (purchase/development) - months to a few years
- Implementation - months to a few years
- Operation and maintenance - 6-8 years
- Disposal

- Enterprise IS lifecycle < 10 years

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IS acquisition options:

- Purchase a finished IS from the supplier
- Develop own custom IS
- Get own custom IS developed by outsourcing.

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IS acquisition

- Advantages and disadvantages of IS purchase
- Advantages and disadvantages of own IS development

It is generally known that the more standard the application the more advantageous the price as compared with development

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IS acquisition

What must be taken into consideration when making a decision on the acquisition method:

- Adapt the business processes to the system or the system must fit precisely
- Who will maintain the system and how
- We have adequate development capacity

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General trends in the area of IS requirements

- The enterprises are increasingly dependent on ICT (production downtime in case of IS failure…)
- An IS accident or failure has severe economic consequences
- The user requirements are increasingly precise
- Increase of emphasis on the tracking of investments in IT and their ROI
- Increase in competition between the suppliers
- Legislation

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Own IS development

- Short development time
- Option to develop the application precisely according to own requirements
- It is necessary to have one's own development department for creation of the IS
- It is necessary to measure the labour-intensity of IS creation
- It is necessary to measure the quality
- Developer qualification requirements
- The development department may become incessantly over-dimensioned after implementation of the IS
- The enterprise can become completely dependent on a group of individuals
- It is difficult to measure the overall IS costs

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Purchase of the IS from the supplier:

- Adapting the IS to the business targets
- Maintenance of older systems
- Increase of IS complexity
- A balance between the requirements of the client and the project risks
- Declining corporate budgets for IS
- Foreseeability of deadlines
- Predictability of total IS costs
- Variants: Classic - In-house installation, ASP, SaaS, Cloud, Proof of purchase

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Supplier solution of IS acquisition

Acquisition costs

1. HW price
2. SW price
3. SW implementation cost
4. Annual maintenance fee 10-25% of the SW price

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IS implementation phase, variant 1

- Initial study -> Feasibility Study
- Global analysis and design
- Detailed analysis -> “functional specifications”
- IS development and testing
- Implementation - deployment, training, manuals
- Transition + testing time, testing
- Operation - guarantee service
- Operation - post-guarantee service, technical support

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IS implementation phase, variant 2 (Gála, Pour, Šedivá):

- Application planning and preparation
- Application analysis and design
- Application implementation
- Transition, migration
- Application operation and use
- Application development and optimisation

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Application planning and preparation

- Initial analysis
  - Assess the intended application project in the perspective of the overall IS/IT concept
  - Evaluation of the extent to which the designed application covers the objectives of the company
- Planning of the application project - Project plan
- Selection of the application provider
- Initial study

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Application analysis and design

- Analysis of business processes
- Analysis of the existing databases
- Analysis of existing applications
- Design of changes in the business processes
- Database design
- Application design

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Application implementation

- Detailed specifications of the modules
- Prototypes
- Customisation of typified software
- Research and final development
- Acceptance procedure

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Preparation for transition, migration

- Detailed specification of the migration plan and schedule
- Installation of application software and other technologies
- Data migration
- Organisational preparation of application transition
- Handing over proceedings

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Application operation and use

- Handover of application for transition
- Infrastructure administration
- User support
- Application operation monitoring
- Design of application changes

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Further application development and optimisation

- Change procedure control
- Design and deployment of partial application updates
- Assignment of a new project

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IS implementation phases (Sodomka)

- Performance of analytical works
- Selection of the system and implementation partner
- Conclusion of the contractual relationship
- Implementation
- Use and maintenance
- Development, innovation and “retirement”

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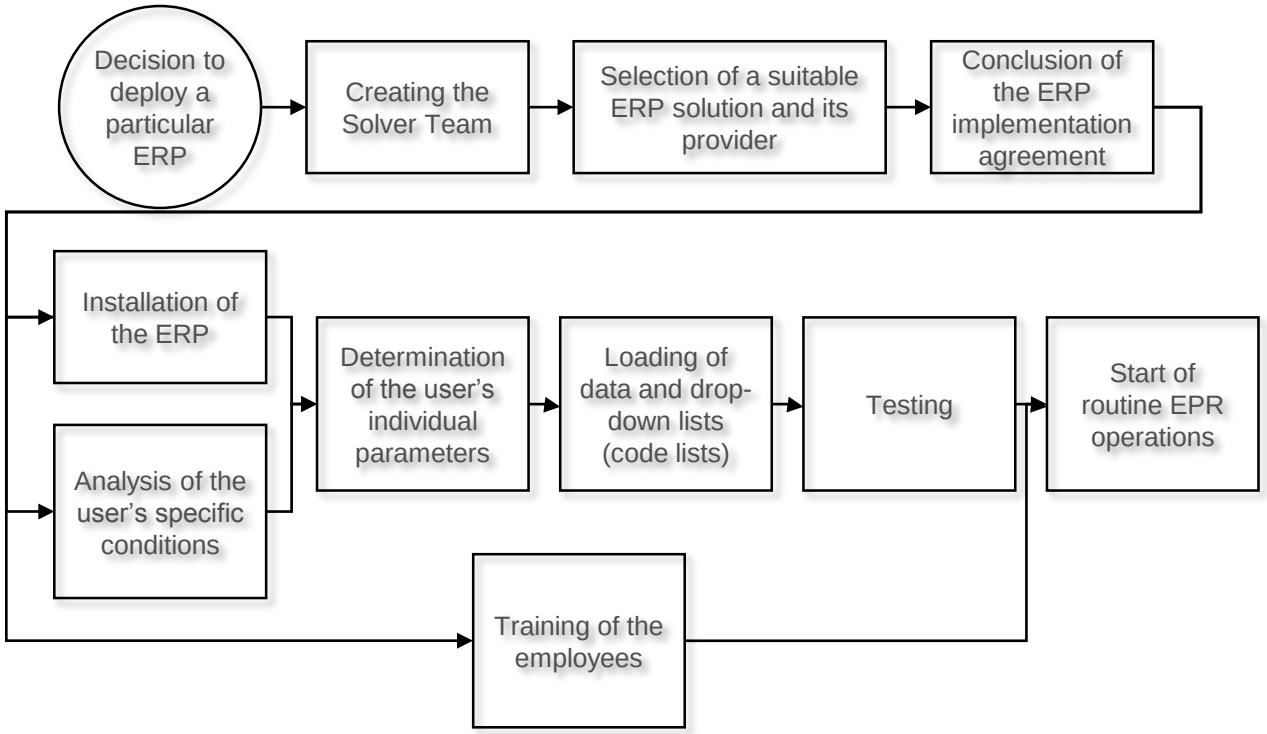

Source: Basl, 2008, p. 194

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IS development approaches

- Task-centric
- Value-centric

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Work-down

- IS development methodology - according to the given plan (schedule), which is broken down into specific tasks
- The tasks are gradually realised

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Work-down

- Application to projects with well-known design and low risks
- The advantage of this approach is control and overview of the procedure

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Value-up

Development is interaction-based with emphasis on the value of the IS to the customer in each interaction, which may gradually increase.

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Value-up

- Focus on continuous generation of value
- Involvement of the customer in the solution of a project
- We expect uncertainty and are ready for it
- The sources of value are the individuals - we increase creativity by acknowledgement
- We encourage performance by means of a group of responsibilities for the results and effectiveness of the team

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Comparison of the approaches

Work-down	Value-up
The plan and design must be error-free, effort to prevent changes to the plan	Change is natural. Planning is done throughout the entire project period
The primary measure is completion of tasks.	The primary measure are the results, which are valuable to the customer.
Quality is defined by fulfilment of the specification. For this reason, it must be correct from the outset.	The quality depends on the value to the customer, and its perception may change. The customer may formulate quality only when he gets functional software.
The tasks are defined beforehand and we need not consider deviations	A deviation is an integral part of the process flows. We must comprehend and reduce deviations.
Limited time, resources and functionalities determine what you can achieve	Limitations may be but need not be related to time, resources and quality. It is necessary to identify the weak spot that lowers the quality and work on its elimination.

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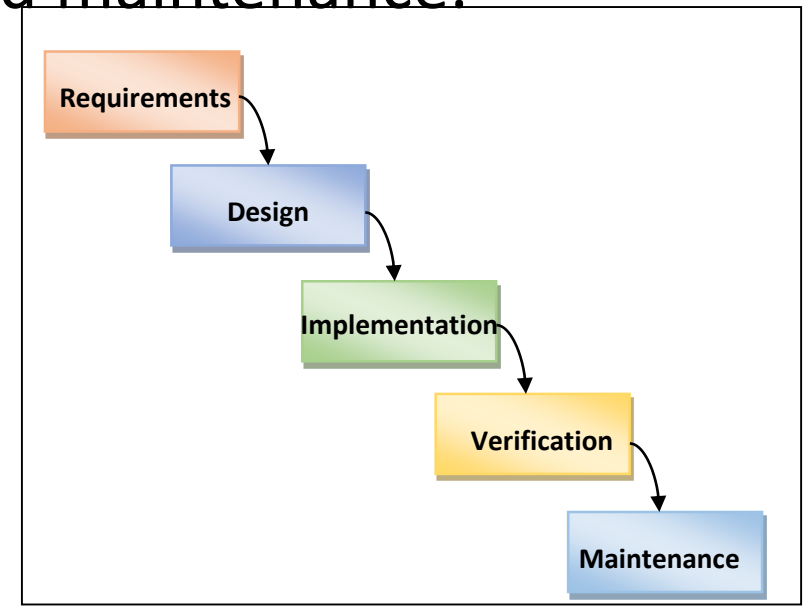
The waterfall model is a sequential development process in which development is considered as a continuously sloping flow (just like the flow of a waterfall) through the phases of analysis of requirements, design, implementation, testing (validation), integration and maintenance.



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Agile methodologies are groups of methods initially intended for development of software based on iterative and incremental development. It allows quick development of software and is at the same time capable of responding to a change in the requirements during the development cycle. According to these methodologies, the correctness of the system is validated only by quick development, submission to the customer and subsequent modifications according to feedback. The agile approach is not limited only to programming, but has also found its place in Business Intelligence and marketing planning. The opposite to the agile approach is the Waterfall model.

The techniques used by the agile methodologies were often used already earlier, but the terminology was not used until February 2001. At the time, software engineering and development experts met in Utah to discuss the lite development methods. They compiled the Manifesto of agile programming, in which they defined the approach to the development process currently known as agile programming.

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Structure of IS/IT expenditure

- HW
- SW
- Personnel
- HW service
- Application SW development
- SW Maintenance
- Communication services
- Processing of agenda
- Overheads - material, energy, labour

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IS post-implementation phase:

- SLA - Service level Agreement
- Maintenance - Service fee. It is usually calculated from the licence fee and entitles the customer to upgrade, update, sometimes also a hotline.

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IS expenditure

- Are we spending too much?
- Are we spending too little?
- Are we comparable with the competitors in terms of expenses?
- Is the structure of our IS expenditure in order?

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IS expenditure

- The expenses have their bottom limit and saturation level.
- We talk about saturation in a state where an increase in the costs no longer leads to an increase in the performance or quality.

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TCO = Total Cost of Ownership

1. Investments
2. Technical support
3. Administration
4. Activity of the end-user

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ROI = Return on Investment

ROI = revenues / investments * 100 [%]

- If the ROI = 100 %, the revenues have fully covered the investments.
- If the ROI > 100 %, the project is generating profit.
- If the ROI < 100 %, the project is generating a loss.

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Effectiveness

$$\text{Effectiveness} = \frac{\text{Attained value of the target}}{\text{Planned value}} * 100\ [\%]$$