

## ABSTRACTS

**Chapter 1. Towards a Precise Model of DSM Economics.** This chapter deals with questions about a precise model of DSM economics and the circumstances in which application of this technology brings real profits. A model of DSM economics has been proposed. It includes the costs of introducing a DSM solution in a company, the costs of maintaining the DSM solution as well as costs and profits related to software development with DSM. It identifies also a list of parameters which have impact on differences in profitability of DSM application. Then, in order to make a comparison with traditional software development, it presents a reference model of resource distribution. Analysis of the profits of software development with DSM is made in terms of the reference model units. The analysis presented in the chapter suggests that DSM approach is profitable in the circumstances of large amount of similar projects in a given domain and small changeability of requirements and technology. However, when making decision about introducing this technology, the investment and maintenance costs should be taken into account.

**Chapter 2. Multi-robot systems scheduling under uncertainty constraints.** Scheduling of multi-robot in a multi-product job shop can be seen as a multi-objective (time and money) allocation problem of shared renewable and non-renewable resources, and represented in terms of sets of decision variables, their domains and sets of constraints, i.e., as a constraint satisfaction problem. Both accurate and uncertain decision variables are taken into account. The considered cases illustrate its implementation in two kinds of standard, routine-like questions: “what implies the conclusion?” and what follows from premises?”.

**Chapter 3. Preliminary results of the evaluation of the usability of e-banking services for individual customers in Poland in mid-2008.** Contents: the basic aim of this chapter is conducting preliminary analyses for the fourth stage of research concerning the analysis and evaluation of individual e-banking services in Poland in mid-2008. It begins with an introduction which specifies the place of the present research in the author’s series of studies, justifies the undertaken research and defines key notions used in this work. Next, the author performs an analysis of individual banking websites for selected banks in Poland by means of a scoring method and a scoring method with a preference scale. The subsequent step is the analysis of the obtained findings and drawing conclusions concerning further studies, necessary at this stage.

**Chapter 4. Artificial and Business Intelligence in the logistic process management of the economic organization.** Foundations of the logistic process reengineering regarding the emergency stock management of the electric grid components are presented in this chapter. The

reengineering of the process consists of the defying the target organization structure, designing procedures, setting up optimal sizes of the stock items and their territorial collocation within the electric company's sites. Also, the foundations of the IT system for emergency stock planning and controlling must be trace out. The proposed system utilizes the methodologies and algorithms of the Artificial and Business Intelligence.

**Chapter 5. The Knowledge Management and The Quality Management.** Among methods management, particularly raised both in theory, as and practice, are: the knowledge management and the quality management. Every of these methods has his followers and enemies ... The aim of this chapter is to present conceptions of knowledge management and quality management, make a comparison of both methods, and to proof the truth of the thesis that a combination of these two methods of management improves the functioning of the enterprise.

**Chapter 6. The controversy surrounding forms and patterns of e-documents use.** The aim of this chapter is the analysis of problems surrounding the e-document technology use in the e-administration. Standardization solutions of the basic elements of this technology are shown.

**Chapter 7. On the Use of Quasi-Context Sensitive String Grammars for Strategic Management.** A model of the application of quasi-context sensitive string grammars for the computer support for strategic management in a company (based on Balanced Scorecard) is presented in the chapter. The goal of BCSPRS system (Balanced ScoreCard Pattern Recognition System) is the analysis and recognition of patterns representing changes of values of strategic measures in time-series. The model of BCSPRS system is based on the syntactic pattern recognition approach with the use of GDPLL(k) grammars. The model is efficient computationally and it can be used for the recognition of even very complex patterns. Additionally, the model provides a self-learning feature: the knowledge base about the patterns to be recognized can be automatically extended by the proper grammatical inference algorithms.

**Chapter 8. The role of knowledge in the organization of learner for example IT company.** The companies belong to the IT sector so. High-tech which is based on the processing and use of knowledge. The distinctive features are dynamic IT industry, technological changes which is also equivalent to the rapid devaluation of knowledge organization. Enterprise IT is forced to continually raise organizational culture and continuous improvement competence of their employees. In the event of a gap in the organization, enterprise IT needs to quickly buy lacking knowledge of the market jurisdiction because the vulnerability risk of falling. In particular the role of IT companies accounted for the employees with the knowledge which is based on the development of the company. This chapter describes the role which meet the knowledge workers, describes selected issues knowledge management in the company information.

**Chapter 9. System of plant monitoring over network.** The chapter presents a method of creating an interactive system for monitoring technical parameters of plant objects over network, as well as its construction. Our application is equipped with relational database systems and dedicated diagnostic software. Data transmission is realized with the use of the standard ZigBee.

**Chapter 10. Experience database based on a workflow system.** Experience database as part of corporate memories is important as element of knowledge management in an organization, but still many organizations do not have such database despite of the fact they possesses many other informatics systems. This chapter proposes a way of introducing an experience database for organizations, which have a process management system. The solution is illustrated on jBPM system from JBoss, but there are also clues how to implement on other workflow systems.

**Chapter 11. The synthesis of science and business supported structural funds in strategy of development Department of Information Technology Management.** The chapter presents strategy implemented in Department of Information Technology Management and the policy of supporting of research and development activity and didactics supported by structural funds dedicated for Science and Higher Education. Funds are expected from supporting programs: Operating Program Infrastructure and Environment Program, Operating Program Innovative Economy, Operating Program Human Capital. It presents long-wave strategy of Department of Information Technology Management and possibility what funds secure for growth of potential of Institution and present as innovative department in structure of the Technical University.

**Chapter 12. Supporting communication and documentation process in Adaptive Project Management with IT tools.** Proper and effective communication is one of the most important elements, which determine project success. It assures essential links between people, ideas and information necessary to achieve success. Project documentation is the integral part of communication which, depending on the approach, may have more or less expanded form. This chapter describes the approach to communication and documentation issues in two traditional project management standards and in adaptive project management framework. It also describes potential IT and communication tools and techniques for supporting communication and documentation processes, especially in the case of large or distributed project teams.

**Chapter 13. New technologies in business from enterprise's point of view.** Statistics concerning introducing new technologies to business were presented, based on researches conducted by National Institute of Telecommunications in 2008. Existed correlations were shown, as well as comparisons between statistics on an influence of computers and Internet on efficiency of business from enterprise's point of view.

**Chapter 14. The model for the Internet mortgage market prognosis.** The idea of this report is to build the model which will help to make prognosis for the number of mortgages sold on the Polish internet mortgage market. Due to the great number of variables, also linguistic ones, influencing the market, traditional models and statistical methods proved to be of little use. Thus an attempt of constructing models integrating the analytic approach with the soft (fuzzy) one was undertaken by the authors. The first part of the chapter presents the Polish internet mortgage market. Next the model and its behaviour in a rapidly changing environment are described. The last part lists suggested changes in the model resulting from an inadequate reaction of the model to the changing environment the modification of one of the main variables of the model.

**Chapter 15. Real challenge of knowledge management in organization – employee's motivation and commitment.** In spite of the fact that XIX century generates unlimited option of access to the best technology, about the success or failure of knowledge management system decides employee motivation and commitment. Presented hereafter analysis of knowledge management success factors proves that motivation is the decisive incentive for successful knowledge management endeavour. However, recognition of the motivation as the key factor is not enough for success achievement. Therefore in this chapter author focused attention on explanation of the significant difference among intrinsic and extrinsic motivation. Proposed also how competent application of right motivators may influence employee behaviour and performance improvement. For change of employee behaviour in accordance of situation processes related to the commitment are discussed.

**Chapter 16. Developing smart set of experience: an example.** In the chapter we first introduce the background related to Set of Experience knowledge representation and then provide a case study in the area of renewable energy. In the case study, several Sets of Experience of

geothermal energy were collected for the construction of a geothermal decisional experience. This experience is then implemented in an ontology model aiming for prediction purposes.

**Chapter 17. Computer-Aided Logistics Management.** Within a company logistics system we can distinguish material flows, i.e. flows of materials and products, as well as flows of respective data which enable supply chain optimisation. The effective management of an integrated logistics chain requires the usage of logistics information system tools. This chapter presents the significance of IT systems in logistics management. The characteristics of the basic classes of logistics IT support systems are described and their impact on the processes are discussed.

**Chapter 18. External events that influence the capital investments.** This chapter concerns analysis of factors influencing the attractiveness of share buying. The risk-return trade-off concept is one of the most important principles. All investors like the idea of achieving high returns on the investments, most tend to dislike the high risks that are associated with anticipated high returns. Various factors effect the investment effectiveness. This chapter shows some external factors influencing investors decisions when they choose shares to their investment portfolio. The report discusses market events that influence share price, which future growth is the main reason for their purchase. The chapter presents analysis of questionnaires conducted on stock investors of Polish capital market in which responders answered questions about factors determining them to shares purchase.

**Chapter 19. E-learning as a tool supporting education of 50+ people.** Considerations on the basis of the MAYDAY project. The chapter concerns e-learning courses in the context of educating people after 50. Firstly, the chapter presents advantages and disadvantages of e-learning with a special emphasis on 50+ participants. Secondly, the analysis of training delivered within the MAYDAY project is given and finally, there are enclosed some recommendations and suggestions for creating courses for 50+ people.

**Chapter 20. Identification of requirements pertaining to computer-based information system supporting sales.** A problem of requirements identification for computer-based information system supporting sales in a building materials company is addressed in the chapter. Requirements management approach is applied for the identification. Application of the approach makes it possible to formulate complete system of requirements with regard to computer-based sales support system adjusted to actual user's needs. Identified requirements comprise the most important part of the contribution. The identification requires great effort, even in case of moderate level of supported activities' complexity. However, the effort is worth bearing because of final ability to choose hardware and software components which address enterprise needs accurately.

**Chapter 21. The evolution of support processes maturity.** The chapter concerns the evolution of the support organization. It spans six dimensions: processes, services, projects, technology, knowledge management and organization culture. Particular attention is paid to processes. The joint research program of Gdansk University of Technology and GE Money Bank is described along with assumptions for decision support in the evolution with the knowledge-based model.

**Chapter 22. Ontology utilization for IT project complexity assessment.** The chapter regards the multi-agent system for the IT assessment that encompasses AI tools such as expert systems and artificial neural networks. The text deals with yet other major part of the system – ontology. The description deals with issue of assessing the complexity of IT projects as the outcome of parameters such as development and management areas, documentation and phases of a corporate architecture development. The goal is to verify the model of ontology management.

**Chapter 23. Identification of Potential sources of problems pertaining to software implementation.** Decision support with regard to software implementation process management is discussed in the chapter. Detailed problem of key parts of software identification due to software utilisation security is addressed. Knowledge about the key parts makes it possible to concentrate efforts on them when implementing software. Thus, limited resources can be more effectively applied and software can be successfully implemented on time. Addressed problem is also utilised for presentation of mathematical approach suitability for decision support in case of software implementation process. Applied DEMATEL method delivers results which confirm usefulness and potential of the approach.

**Chapter 24. Semantic descriptions within business process modelling.** Clearly defined semantics for each model element are necessary, if process models from various modellers are combined, searched and translated or if it is planned that the semantics in the models should be automatically validated and used for the configuration of an information system. This problem can be met while linking the elements of business process models with the concepts of ontology. The linkage of model elements with ontology instances can also be referred to as a process of semantic annotation. This semantic extension will be carried out exemplified by the EPC.

**Chapter 25. Process change management in IT project for example a financial institution.** This chapter applies the changes in IT projects, which are very frequent and costly especially in the activities of financial institutions, which must respond to the many factors that are causing changes. Banks on the grounds that it introduced them in computers very early, because already in the early 60's has considerable experience in managing change. These systems have evolved over the years, together with emerging technologies and needs - cash machines (1964), authorize the payment card (1970), Internet (1994), competitiveness, networks of banks - the electronic contact. Because these changes are many, and the high quality of information systems that support processes in banking and the need for continuous operation must be maintained, there is the problem of effective management of change. There is no dedicated methodology, which deals with this issue, but there are several approaches to a greater or lesser extent, include the management of change in IT. The report proposes a process approach to change management as a way to solve this problem.

**Chapter 26. Simulation framework design to efficiency analysis of Java Enterprise Edition application models.** In this chapter efficiency analysis method of Java EE application models was presented. Efficiency's measures of such kind of applications were described. Furthermore, discrete-event simulation modelling method Event Graph and its extension LEGOS were presented as well. Moreover, model of Java EE application was presented. An implementation of proposed model in Java and SimKit package was presented. In the chapter, a design of simulation application was also described. The chapter encompasses description of simulation experiment used in efficiency analysis of Java EE application and example of results from such experiment.

**Chapter 27. The influence of load prediction methods on the quality of service of connections in the multiprocessor environment.** This chapter is devoted to the performance analysis of the multiprocessor teletraffic processing environment under control of different resource allocation algorithms. It is assumed, that the quality of service of incoming traffic is measured as the average delay of connections imposed by the processing. In order to minimize the average delay each incoming connection is directed to be processed on the server, which average load while processing this connection will be minimal. Applied connection allocation algorithms differ in the method of prediction of the average future load.

**Chapter 28. Interface to Clustering by Directions algorithm which facilitates formulating web search queries.** This chapter concerns formulating queries in search engines. It describes techniques of supporting users of search engines in preparing web search queries. Moreover, the chapter describes Clustering by Directions algorithm, which is designed by the author of this chapter. The algorithm is designed to show users different directions in which search can be continued. These directions are represented by words which serve as suggestions for modification of the current query. Users can select words and they can add them to their query in order to make it more accurate. The chapter presents an interface to the algorithm. The interface is based on a tag cloud, which indicates affiliation of words to directions and different significance of terms.

**Chapter 29. Auto detection of intrusions in service-oriented systems.** In this chapter a method of intrusion detection in service-oriented systems, based on the analysis of traffic related to lower layers of ISO/OSI reference model, was presented and discussed. The proposed approach is based on the assumption that the application of traffic shaping may be applied to change characteristics of the original traffic exchanged among services in gain to simplify and reduce computational complexity of intrusion detection procedures. The efficiency of the proposed approach, called autodetection of intrusions in service-oriented systems, was illustrated by quantitative investigations in simulation environment. Obtained results show that the proposed attempt is prospective and will be generalized as well as intensively studied.

**Chapter 30. Functional requirements for security level evaluation methods and algorithms in SOA and SOKU environment.** The chapter contains the characteristic of SOA and SOKU architecture. The description focus on the security related problems of both architectures, especially security level evaluation and maintenance has been addressed. The last part of the chapter brings on proposition of the reference model for security evaluation of the SOA and SOKU systems.

**Chapter 31. Adopting ERP system to company from building industry sector.** The main aim of this chapter is a presentation of ERP system adoption to organization based on the example of a company from building industry sector. The author of this chapter concentrated mainly on the scope of programming changes done to the standard package in the researched company and on advantages and disadvantages of system modifications. The first part of the chapter contains definition of ERP system “modification”. The second part describes the selected company together with the process of system implementation, the analysis of discrepancies between the standard application functionalities and business processes, furthermore the scope of programming changes done to meet the needs of the company. The last part is concentrated on advantages and disadvantages of modifications done to the implemented standard package Oracle J.D. Edwards EnterpriseOne.

**Chapter 32. Building enterprise architecture as an environment for verification of multi-agent system knowledge bases’ structure.** The chapter documents results of research on model of multi-agent system for evaluation of information technologies (IT\_MAS). Such system is being developed in Gdansk University of Technology by Information Technology Management Team. Multi-agent system is supposed to support manager level specialists during decision processes when there is identified need to buy or change any information technology. For the purpose of model knowledge bases’ structures and functionalities verification, it was adopted for implementing knowledge about managing IT projects. Authors focused on building enterprise architecture projects and decision support in choosing best project managing methodology. Key parameters were analysed and pre-processing for one of them was done.

**Chapter 33. Creation of Enterprise Architecture as a verification environment for agent system for IT evaluation.** Researches that are provided by authors of this concept focus on IT projects management and are supported by agent system. Full concept exploiting agent system after about one and a half year research made on Gdansk University of Technology at Department of IT Management. Authors had defined full-functional agent system to support evaluation of information technology. The main goal of the researches is to reach such system that can generate high quality evaluation that is able to support managers decision which methodology of IT project should be used and which information tool should be chosen to this project. Authors define categories of agents that perform special functions in the system and assessed possibilities of transferring management function to agent system too. After that they allocated tasks to agents exactly as real working team. This approach made a possibility to generate basic elements of the system like agents responsible for relation with customer, agents responsible for searching knowledge bases and agents responsible for evaluation. This article tells about possibility of using agent system for IT evaluation when IT project is about creating Enterprise Architecture.

**Chapter 34. Service and service decomposition model - theoretical basis of IT Service Management.** The publication contains different definitions of Service – one of the fundamental IT Service Management term. It describes types of Service's attributes and introduces so-called "distinguish functions" in order to propose different categories of Services. It proposes both general model of Service decomposition and practical model based on CMDB implementation limitations. It summarizes obtained results and gives some remarks about future research, for example operational support model or SLA&OLA.

**Chapter 35. Econometric estimation of the parameters as the method of pre-processing in the agent systems.** In the chapter a concept of multi-agent system for information technology evaluation is presented. Model, designed originally for decision support in IT area, was adopted for processing chemical data. Knowledge-based environment which could generate forecast about air pollution level was built. The model was positively verified from its structure and functionalities perspective. During research though some assumptions were made based on experts remarks only. Authors decided to check some of them using econometric methods. Chapters presents the idea of verifying weights for every of entry parameters. These values, describing their influence on result conclusion, were estimated basing on econometric model.

**Chapter 36. Modelling of information systems for analysis and identification of dynamic scenes based on digital optics Hilbert.** This chapter contains a general description of modelling technology and design of information systems that can be applied for dynamic scenes' elements identification - objects and textures. Whole philosophy of the system is based on the procedures and properties of digital Hilbert optics and information technologies of vector signature descriptions and morphological filtration in discrete Hilbert-Foucault transform domains.

**Chapter 37. The cause of failure in many IT projects, is a defective or wrong modelled change implementation process.** Project scope is the most change-sensitive area. Clear and proper change definition, gives possibility to prepare the procedure of the implementation and makes decision of taking such an action, more possible. The article describes use of function point method, for estimation the changes made in the project scope.

