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## DEVELOPMENT OF A MODEL AND AN ALGORITHM FOR INFORMATION FLOWS MANAGEMENT IN SITUATION CENTERS

*I. Vakhmyanin, N. Ilyin, E. Novikova*

### Annotation

The article contains description of development of mathematical model for data flows in situational control centers. Optimal algorithm of data flow control is described also. New integrated software and hardware solution VIRD (an acronym for «Visualization of Information using Distributed Displays») was developed using this optimal algorithm. This solution was installed in the Situational Control Center of Administration of Penza Region.

**Key words:** visualization, situational center, situational room, control center, control room, data flow model, BI, business analysis, data flow model, control software, VIRD.

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## METHOD OF THE DECISION OF DISTINCTION OF DIGRAPHS PROBLEM ON THE BASE OF COMPLEXITY

*V.A. Kokhov, V.V. Kokhov*

### Annotation

The method of the decision of distinction of digraphs problem is offered. The basis of this method is defined on matrix model of complexity, which takes into account the quantitative and qualitative characteristics of digraph fragments. The model for the first time allows to calculate the importance of each digraph fragment of digraph in its total complexity. The results of the decision of problems of distinction and definition of similarity for digraphs are given.

**Key words:** Digraph; complexity of digraphs; distinction of digraphs problem; model of complexity; similarity of digraphs; arrangement of paths.

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## COMPONENT ARCHITECTURE WITH RUNTIME TYPE DEFINITION

*E. Gringkrug, A. Shakurov*

### Annotation

The article focuses on the component-based approach to software design and development. By analyzing the main ideas of this approach, their implementation in the major modern component technologies, their limitations and promising lines of development we suggest a new component architecture which extends capabilities of the existing component technologies. The main principles for building such and architecture are described.

**Key words:** component, component-based development, interface, implementation.

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## ONTOLOGICAL ENGINEERING IN SYSTEM DESIGN OF CORPORATE INFORMATION SYSTEMS

*N. Lychkina, A. Idiatullin*

### Annotation

The article deals with a through service-oriented design of integrated information-analytical systems based on architectural approach using ontological modeling framework of the Enterprise architecture. It describes the complex ontological models of the enterprise: a model of meta-ontology, model of the business environment and the ontology of strategic information systems - in accordance with the scheme of an enterprise architecture framework, the ontology of strategic decision making.

**Key words:** enterprise information systems, decision support system, ontology, semantic network of models.

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**INFORMATION TECHNOLOGIES  
FOR FINANCIAL RISK MANAGEMENT**

*S. Avdoshin, E. Pesotskaya*

**Annotation**

Most of financial operations are used in uncertainty and require risk management. Risk management system should consist of the proved technique and methodology risks management and technology base supported by IT system. The choice of program software for risk management seems to be a hard task for the company staff and requires involvement of professional specialists.

**Key words:** Information Technologies, financial risks, risk-management, software.

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**PREDICTION OF BANKRUPTCY PROBABILITY DEPENDING  
ON VARIATION OF FINANCIAL COEFFICIENTS  
IN DYNAMICS**

*T. Bogdanova, J. Alekseeva*

**Annotation**

System of logistic regression models is suggested which takes into account variation of financial coefficients in dynamics. Besides it comparative analysis of predictive accuracy is performed for the system of models on the basis of learning and control samples of manufacturing companies.

**Key words:** logistic regression model, financial performance of the company, prediction of bankruptcy probability, learning sample, control sample, variation of financial coefficients in dynamics.

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**ABOUT A NEW APPROACH TO SEMANTIC TRANSFORMATION  
OF NATURAL LANGUAGE REQUESTS  
OF SEARCH SYSTEMS**

*A. Kirillov, V. Fomichov*

**Annotation**

The article considers the existing approaches to information search and their main disadvantages. A new approach to information retrieval based on semantic transformation of search queries is elaborated. According to the proposed approach, the classes of natural language queries are selected, a formal model of a problem-oriented system of primary items of conceptual level and a method of constructing a semantic expansion of the search query are proposed, an application of this method is illustrated.

**Key words:** semantic search, semantic analysis, theory of K-representations, natural language requests, search systems.