



### INDICATORS OF THE CONDITION AND FACTORS OF DEVELOPMENT OF ICT IN REPUBLIC OF AZERBAIJAN

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#### Annotation

Importance of timely and exact data presentation about conditions of ICT for acceptance of directive and investment decisions in modern information economy is marked. The data reflecting indicators of a condition and factors of development of ICT in Republic of Azerbaijan are resulted.

**Key words:** information-communication technologies, indicators of the condition, factors of the development, Azerbaijan.



### DESIGN AND CONCEPT OF AN INTELLECTUAL SITUATIONAL AWARENESS AND SECURITY SYSTEM FOR RUSSIAN RAILWAYS

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#### Annotation

Architecture and components are offered to design an intellectual system of situational awareness and security for transportation and railroads infrastructure are offered. The concept provides event-based streams processing approach to process the primary data and build a grid application of collecting and analysing railroads data from various sources. An architecture is proposed to support predictive analytics and decision support in real-time on very large data volumes as well as an approach to dynamically optimize the timetables on the railway infrastructure networks.

**Key words:** Streams processing. Situational awareness. Dynamic optimization. Predictive behavior-based modelling. Sensor networks.



### ASSESSMENT OF STRATEGIC DECISIONS OF INFORMATION TECHNOLOGIES SERVICE

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#### Annotation

In the paper an approach to identification of characteristics for assessment of IT strategic decisions is proposed. The main feature of the approach is associated with integration of Balanced Scorecard methodology for IT service (IT Balanced Scorecard) and COBIT standard. Such integration allows to describe a hierarchical structure of characteristics (metrics) for assessment of decisions efficiency in yje field of information technologies.

**Key words:** Information Technologies service, strategic decisions, Balanced Scorecard, COBIT standard, perspectives, corporate contribution, stakeholders, operational excellence, future orientation, cause-and-effect relationships, decision support systems.



## ANALYTICAL MODEL FOR EVALUATING PERFORMANCE MULTIPROCESSING FOR A SET OF PARALLEL ALGORITHMIC STRUCTURE

*K. Gertsenberger, E. Chepin*

### Annotation

The effectiveness of parallel processing depends on the type of algorithm parallelization and hardware architecture. It is important to estimate the projected effectiveness of parallelization of the problem for a particular hardware platform, took place at the earliest stage of development. For this purpose, are encouraged to develop an analytical model predictions of the future performance of hardware-software system. For each parallel algorithmic structures (parallel algorithm) of the submission of the main set is the conclusion the most important performance characteristics: acceleration factor, efficiency and scalability. The adequacy of the developed analytical model for predicting the efficacy of the treatment is confirmed in practice.

**Key words:** analytical model, the prediction of performance, distributed computing, parallel hardware architecture, parallel algorithmic structure, parallel software.



## ALGORITHMS 2DPCA FOR FACE RECOGNITION

*N. Shchegoleva, G. Kukharev*

### Annotation

In article presents algorithms for two-dimensional principal component analysis (Two-dimensional Principal Component Analysis - 2D PCA)-oriented processing of digital images of large sizes in a small sample. Algorithms based on direct calculation of two covariance matrices for all source images without converting them into vectors. Evaluated characteristics of the presented algorithms. We discuss possibilities presented by the use of algorithms in other areas.

**Key words:** Two-dimensional principal component analysis, a two-dimensional Karhunen-Loeve transformation, the face recognition, the use in the business applications.



## RANDOM INCREMENTAL FOREST AND TABLE STRUCTURE RECOGNITION

*P. Kudinov, V. Polezhaev*

### Annotation

The paper proposes a new incremental algorithm for correct classification, based on the construction of a random incremental forest (RIF). The problem of recognizing the structure of statistical tables is considered and classification problems for its resolution are stated. A comparison of the new algorithm with a known algorithm ITI is shown. RIF shows better results for most problems.

**Key words:** Incremental learning; correct algorithms for classification; text mining; information retrieval; classification; decision trees; pattern recognition.



**USING SEDUMI LIBRARY  
FOR ROBUST PORTFOLIO SELECTION**

*A. Isavnin, D. Galiev*

**Annotation**

The article presents the principles of robust portfolio optimization. The SEDUMI library was used for problems solution. Modernized versions of the some portfolio selection models are described. The Markowitz, Telser and Black-Litterman models are overviewed. We compare the results of the efficiency analyses before and after robust optimization. Experiments were conducted at side and growing market trends with highly liquid stocks traded at MICEX. The weak and strong features of the different approaches are reviewed.

**Key words:** Investment portfolio, Robust optimization, Markowitz model, Telser model, Black-Litterman model, SEDUMI.



**OPERATIONAL RISKS CLASSIFICATION  
WITHIN SERVICE-ORIENTED ARCHITECTURE  
OF INFORMATION SYSTEMS**

*I. Pyrlina*

**Annotation**

The study identifies operational risks within service-oriented architecture (SOA) of information systems. As a part of operational risks a new error classification scheme is proposed for SOA applications. It is based on errors of the information systems which are service providers for application with service-oriented architecture. The proposed classification approach was used to classify system errors from two different enterprises (oil and gas industry, metal and mining industry). Besides we conducted a research to identify possible losses from operational risks and estimated losses for each error group per day.

**Key words:** operational risks, losses, error classification, service-oriented architecture, enterprise architecture, oil&gas and metal&mining industries.



**THE TASK OF THE CHOICE OF NUMBER  
AND LOCATION OF THE CENTERS OF DATA STORAGE  
AND INFORMATION PROCESSING ON THE COMPUTER NETWORK**

*O. Esikov, D. Izotov*

**Annotation**

In this article the task of a choice of number and location of centers of data storage and information processing on the computer network by criterion of a maximum of intensity of arrival of requests about information service is formulated. The detailed analysis of singularity of information processes has been carried out on the distributed computer network

**Key words:** centers of data storage and information processing, computer network, modeling of information processes, center of a graph.