

◆  
**THE ROLE OF THE SUBJECTIVITY  
IN BUSINESS PROCESSES**

*V. Chebotarev, A. Gromov*

Annotation

The article is devoted to the research of the subjectivity, the subjective structure and the reflectiveness in the business-process management of the company. This research was made with the financial support of the government of the Russian Federation (Ministry of education and science of Russia) in frames of the contract №13.G25.31.0096 «The creation of high technological production of cross-platform systems for processing the non-structured information on the base of freeware for increasing the efficiency of company innovation activity management in modern Russia».

**Key words:** subjective structure, business process, systems thinking, interactive modeling, business architecture.

◆  
**MATHEMATICAL BASES  
OF THE PRODUCTION-CONSUMPTION THEORY:  
DEFINITION OF A TYPE, STRUCTURE  
AND PARAMETERS OF MODELS**

*M. Ivlev*

Annotation

Within the production-consumption theory of goods in open social-economic systems the mathematical models describing the goods conformity to inquiries of the consumer are offered. Basis of models is the finite planar focused graph with flows. The way of the minimum splitting of the graph on sets of independent arches covering it is founded, rules of tops are formulated. On the basis of the analysis of components of the focused graph the criterion functions and necessary restrictions for the solution of a number of optimizing tasks are defined.

**Key words:** theory of production-consumption, problem of optimization, finite planar focused graph with flows, criterion functions and restrictions.

◆  
**SIMULATION OF MASS EVENTS  
(ILLUSTRATED BY THE XXII WINTER OLYMPIC GAMES 2014)**

*V. Abrosimov, V. Lebidko*

Annotation

The basic principles of modeling the organization of events using a multi-agent technology developed. Identified characteristics of events, shows the practical importance of modeling. Visitors events and support staff are the agents that exhibit in meeting the goals of the collective property of the behavior based on their own autonomy. On the model of access to the sports events at the Olympic Stadium in Sochi the possibilities simulate the effects of different critical situations.

**Key words:** simulation, modeling, mass action, multi-agent approach, Olympic Games, Sochi, queue, crowd.

◆

## APPLYING METHODS OF CONSTRAINTS SATISFACTION PROBLEMS SUITABLE FOR SOLVING THE SCHEDULING PERIODIC MAINTENANCE PROCESSES

*A. Fedotova, M. Ovsyannikov, V. Taratukhin*

Annotation

The article describes the methods of planning maintenance analysis, problem statement, maintenance, formation constraints, methods of constraints satisfaction problems suitable for solving the scheduling periodic maintenance processes. Methods are chosen and the technique of the problem decision, based on a combination of search methods and preliminary restriction of search space is formulated. Algorithms of methods realization are offered.

**Key words:** maintenance and repair of equipment, methods of the scheduling periodic maintenance processes, methods of constraints satisfaction problems, periodic maintenance processes, combinatorial problem, methods to find solutions, backtracking, axioms, domain ontology.

◆

## ON SOLUTION OF SMALL SAMPLE SIZE PROBLEM WITH LINEAR DISCRIMINANT ANALYSIS IN FACE RECOGNITION

*V. Mokeyev, S. Tomilov*

Annotation

Effectiveness of linear discriminant analysis of face recognition in case of small sample size is described. For computing of discriminant components is offered to use the generalized method of Jacobi that allows not to lose discriminant information. The efficiency of proposed approach is demonstrated by experimental researches with ORL database.

**Key words:** face recognition, linear discriminant analysis, small sample size, database ORL.

◆

## ALGORITHMS OF FORMING SPECTRAL REPRESENTATIONS OF SOUND SIGNAL BASED ON U-TRANSFORM

*V. Gai*

Annotation

This article discusses algorithms of multilevel (roughly-accurate) signal representation using filters Walsh system Hartmut. Given the characteristics of the implementation of computer algorithms. Advantages of the proposed algorithms build decomposition: low computational complexity and simplicity of implementation.

**Key words:** digital signal processing, Walsh transform, U-transform.

◆

## RELIABLE PLAGIARISM DETECTION SERVICE WITH LIMITED NUMBER OF SEARCH QUERIES

*V. Dyagilev, A. Tskhay, S. Butakov*

Annotation

The paper describes improved architecture for plagiarism detection service. It also shows experimental results which support the advantages of the proposed approach. The proposed novel architecture assumes moving Internet search out of core system to the infrastructure of plagiarism detection service provider. In contrast to traditional outsourcing this approach guarantees that provider never gets the original document. In this case the proposed architecture never violates copyrights protection requirements for the documents submitted for the checkup. The experiment shows applicability of the proposed approach on the documents with different level of plagiarism.

**Key words:** plagiarism detection, service architectures.

◆  
**INFORMATION SYSTEMS  
FOR CORPORATE PLANNING  
AND BUDGETING**

*D. Isaev*

Annotation

In the paper integrated information systems for corporate planning and budgeting are considered. Four groups of practical tasks exceeding the bounds of typical functionality of special-purpose planning and budgeting information systems are allocated. Several classes of information systems (simulation, statistical analysis, financial analysis and modeling, group decision making, business intelligence), which may provide the completeness of corporate planning and budgeting are denoted as solutions complementary to special-purpose planning and budgeting systems.

**Key words:** planning, budgeting, strategic management, performance management system, information system, analytical application, simulation, statistical analysis, financial analysis and modeling, decision making, business intelligence systems.

◆  
**MEASUREMENT OF MATURITY LEVEL  
OF A PROFESSIONAL COMMUNITY**

*F. Krasnov, R. Yavorskiy*

Annotation

In this paper we consider formal model of an online community as a combination of social and semantic networks. An approach is suggested to measurement of maturity level of a professional community based on two groups of parameters, which characterize competency level and density of contacts correspondingly. We present preliminary results of the pilot testing of the proposed approach for evaluating several city IT-communities in Central Russia. The paper is based on the authors' experience and achievements obtained in their work to develop Virtual Skolkovo online community.

**Key words:** professional community, online community, social network, semantic network, parameters of online communities, rating of communities.

◆  
**APPLICATION OF ADVANCED  
INFORMATION TECHNOLOGIES  
FOR OPERATIONAL ANALYSIS  
OF SOCIO-ECONOMIC DATA**

*K. Latyshev, V. Sidorenko*

Annotation

The paper is devoted to modern methods of presentation and analysis of socio-economic data by means of Spatial-OLAP-systems. The modern innovative cost-effective solution, based on well-known software of leading software vendors, is proposed for complex analysis of «real time» socio-economic geo-referenced data. There are no analogous solutions in the academic and business communities at the present moment.

**Key words:** Spatial-OLAP-system, analysis of socio-economic data.