ABSTRACTS

R.N.Akhmetov, V.P.Makarov, A.V.Sollogub 7-17
TsSKB-Progress State Research and Production space Rocket Centre
sollogubav@mail.ru

TARGET EFFICIENCY FEATURES OF EARTH OBSERVATION SPACECRAFT BASED ON REFACTORING AND REVERSE ENGINEERING METHODS

This work contains features of refactoring and reverse engineering methods application meant for target efficiency of Earth Observation Spacecraft during such phases of lifetime as designing, flight-engineering testing and operation. Results of such methods application for Resurs-DK1 Earth Observation spacecraft are given herein.
Key words: *refactoring, reverse engineering, observation, spacecraft, lifetime, designing, flight-engineering testing, operation.*

A.V. Boukhanovsky, S.V. Ivanov, S.V. Kovalchuk, Yu.I. Nechaev 18-27
St.-Petersburg state research university of information technologies, mechanics and optics
avb_mail@mail.ru, svivanov@mail.ifmo.ru, kovalchuk@mail.ifmo.ru, nechaev@mail.ifmo.ru

ONTOLOGY OF KNOWLEDGE INTEGRATION ON THE BASIS OF IPSE TECHNOLOGY IN INTELLIGENT ENVIRONMENT WITHIN «CLOUD» MODEL

The formalized ontology system model of knowledge integration on the basis of iPSE (Intelligent Problem Solving Environment) technology is considered. The model is implemented within the framework of the open systems concept in intelligent cloud computing environment. The developed model of ontology takes into account extension of the iPSE technology functionality by means of event workflow (WF) modification. The directions of the practical applications of developed ontology knowledge system are specified within an implementation of the information representation and processing concept in the tasks of extreme situation control in complex dynamic environment.
Key words: *ontology, knowledge integration, intelligent technologies, cloud model, workflow, extreme situation, complex dynamic environment.*

I.N. Gabdrakhmanov, V.N. Kuchuganov, D.V. Medvedev, M.N. Mokrousov, N.V. Soboleva 28-38
Izhevsk State Technical University named after M.T. Kalashnikov
kuchuganov@istu.ru

TECHNOLOGY OF GENERATION ONTOLOGY OF DATABASE USING ONTOLOGICAL EXPLANATORY DICTIONARIES

The possibility of the use of previously developed a relational database to create domain ontology with a view to its use in the construction of interfaces based on knowledge. Developed domain ontology includes concepts that describe the properties, objects, relationships, processes, situations, plots. The scenario for ontology mapping is proposed to take a relational database using known algorithms produce RDF-dump database and automated method of extracting knowledge about the relationship between the concepts based on a database schema using ontological dictionary. Describes a basic set of tools manager interface, and gives examples of tools.
Key words*: ontology, database, knowledge extraction, RDF, R2RML, ontological vocabulary.*

S.I. Kretov 39-49
Russian Academy for Entrepreneurship Research Center, Moscow
kretsi@org.ru

TOWARDS SYSTEM ANALYSIS OF THE RUSSIAN INNOVATION MECHANISM

This article is an abstract of the monograph “Innovations as a Form of Evolution of Consciousness (Complexity Theory)” published in 2012 in LAP LAMBERT Academic Publishing (Germany).Three

categories: "pattern of organization", "system structure" and "the process of functioning of the system" are three distinct but inseparable characteristics of any complex system. Interconnected investigation of each complex system aspects make impossible to understand the essence of socio-economic phenomena, the identification of its theoretical framework and practical process of its implementation and improvement. Pattern of organization of innovation system, refracted in the practice of financial management of applied researches and development in Russia for the successful modernization of the economy based on domestic and foreign innovation is an objective category. It is located on the same platform with other essential objective laws of economics in particular and Nature in the whole. In the most general form of pattern of organization of the innovation system is the same for all types of economies. Structure of the innovation system and actual processes of its functioning can be attributed to the concepts that have common characteristics as a set of objective socio-economic laws. They form the innovation system, as categorically segregated system capable for autopoesis.
***Key words**: modernization, innovation, pattern of organization of the system, the system structure, the process of the system, autopoezis, bifurcation point.*

S.A. Piyavsky, V.B. Larukhin 50-60
Samara State University of Architecture and Civil Engineering
spiyav@mail.ru, vladimir.larukhin@live.ru

MATHEMATICAL MODELING CREATION FOR CURRICULUM BASED ON ONTOLOGY. PART 1

This article delivers a mathematical optimal formation model of curriculum based on the solution of multi-criteria optimization problem. A mathematical model of optimal curriculum shaping based on the solution of multi-criteria optimization. In combination with the previously developed ontology of the educational process, it allows us to offer information technology of forming curriculum at various levels of training in universities personalized for each students.
***Key words:** high school, educational process, curriculum, education plan, applied ontology, mathematical modeling, multi-criteria optimization*

I.Y. Denisova, P.P. Makarychev 61-72
Penza State University
irs@sura.ru, Makpp@yandex.ru

THE ONTOLOGICAL RESEARCH OF E-LEARNING PROCESS AND DESIGNING OF SUPPORT TOOLS

The ontological research of e-learning process is done in the work. The conceptual model of e-learning is constructed in which linguistic uncertainty of expert representations about carrying out studies is considered that will allow to reflect knowledge and personal expert's experience in the system of e-learning support more fully.
***Key words:** ontology, education system, e-learning, educational content, systems of e-learning support.*

N.M. Borgest, A.A. Gromov, A.A. Gromov, R.H. Moreno, M.D. Korovin, D.V. Shustova, S.A. Odintsova, Y.E. Knyazihina 73-94
Samara State Aerospace University named after academician S.P. Korolyov (National Research University)
borgest@yandex.ru

ROBOT- DESIGNER: FANTASY AND REALITY

The concept of aircraft design automation system based on artificial intelligence elements has been actively developed at the "Construction and Design of an Aircraft" department of Kuibyshev Institute of Aviation (now SSAU) between the late 80s and early 90s, getting high appreciation (for example "From the editors" in the "Ontology of designing" scientific journal #2, 2012). The results of those works were published in "Automation of the preliminary design of an aircraft" by N.M. Borgest in 1992. Unfortunately the changes of the political system of the country put a stop to that research. Researches in this field were able to be continued only with the opening of a new specialty "CALS support" for students as well as the "Ontology of designing" for master's degree, "Aircraft" at the department. The paper describes the modern approach to the creation of design automation systems and shows the results, achieved by the authors in the field of creating such systems for the aircraft preliminary design automation.
***Key words:** robot designer, 3D model, CAD, project matrix, thesaurus, plane.*