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**Loginov M.P.**

It is noted that the current method of roadmapping has not been formalized yet, so the development of the methodological foundations and the systematization of the approaches to roadmaps application are actual. The main characteristics of roadmapping method are systematized, the types of roadmaps and their features are specified, the classification and the approach to roadmap maturity level determination are suggested, the method of constructing a roadmap is presented.

**Keywords:** roadmap, method, roadmapping, classification, level of maturity, method of construction, foresight.

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**Sidelnikov Yu.V.**

The paper suggests the further development of the expertology terminological structure, the new paradigms of expertology, the expert approach to synthesis and analysis of the subject area terminological structure, the possible ways of the conceptual and terminological apparatus further development. The possibilities of the approach developed are demonstrated on the example of such an interdisciplinary direction as expertology. The results obtained are based on the theory of definitions as the branch of mathematical logic.

**Keywords:** expertize, expertology, terminological structure, theory of definitions, concept, term.

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**Zatsarinny A.A., Ilyin N.I., Kolin K.K., et al.**

The evolution of the ideas of the situational centers appointments and functional capabilities is shown, taking into account the provision of holistic information support of decision-making processes in networked environment, the collective and artificial intelligence technologies development, the cognitive approach, the experts' procedures, and the convergent control. The matching is substantiated of situational centers development stages with evolution of scientific rationality notion and with change of technological paradigms. The system of distributed situational centers of the development is suggested to provide for the strategic consolidation of the state, business and society.

**Keywords:** artificial intelligence, cognitive center, polysubject environment, self-organization, situational center, center of the development.

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**Sirotyuk V.O.**

The features of forming and characteristics of patent databases are considered. The classification of patent information is given. The threats to information security of patent information and the ways of its leakage in the patent office are revealed. The formalized definition is introduced of the mechanism of patent database protection, and models and methods are proposed of constructing the optimal mechanisms of patent information fund database structures protection at different levels of their representation — conceptual, logical and physical. The results obtained were used at the construction of the Eurasian Patent Office information security management system.

**Keywords:** patent information, classes of patent information, patent database, patent information fund, information security, protection methods, protection mechanisms.

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**Kurako E.A., Orlov V.L.**

The methods of updating programs and the problems arising when updating program complexes are considered in systems with cascade structure. Updating methods are suggested which allow to develop the tools, minimally dependent on the systems served.

**Keywords:** software update, web-services, multi-version, information systems.

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**Ryabchikov M.Yu.**

The issues are considered of choosing the rational strip heating modes in strand-type tower furnaces taking into account the predicted fuel consumption and substandard products share. To solve them it is proposed to use mathematical heating simulations of the condition of heated metal and operating space. During the simulations adaptation process the data are obtained on the correlation between furnace external heat losses and the operating space temperature. It is shown that the attainable level of fuel economy is connected with the share of substandard products, and the parameters of this connection are determined on the basis of data on the outlet strip temperature.

**Keywords:** heating simulation, steel strip, galvanization, adaptation, heat exchange simulation structure, substandard products.

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**Zak Yu.A.**

The problem is considered of selecting the technological mode control parameters under conditions in which the dependences of output quality parameters and economic production parameters in a static mode under constraints are presented in the form of fuzzy-regression mathematical models. The coefficients of input variables and of control actions and the free terms of these equations are fuzzy sets with a membership function of a rectangular, triangular or trapezoidal shape while the values of all variables are real numbers. The deterministic equivalents of the formulated problems are obtained in the form of several problems of linear programming and methods for their solution, which are illustrated by a numerical example, are considered.

**Keywords:** production management, fuzzy-regression model, membership function of a rectangular, triangular or trapezoidal shape, linear programming.

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**Galyaev A.A., Lysenko P.V., Yakhno V.P.**

The problem is considered of planning the object trajectory that passes through an area of random search. The peculiarity of the problem is that the search area is unknown a priori, but known are the algorithmic and technical characteristics of search means. Two variational formulations of the integral risk minimization problem are proposed, in the absence and in the presence of limitations to the length of the trajectory. Software modules are developed to get numerical solutions of these problems.

**Keywords:** mobile object search, motion planning, the optimal law of evading detection.