

THE PART, PLACE OF SITUATIONAL AND COMPETENCE CENTERS IN ORGANIZATION INTERMODAL TRANSPORT-LOGISTIC SEA SHIPPING OPERATION

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1. Introduction

Nowadays information and knowledge increasingly become a strategic resource of the society, its driving productive force. The industrial stage of the economy is replaced by a new evolutionary phase, the phase of informatization and its corresponding socioeconomic formation – information society, that makes its most efficient and dynamic development possible when information resources and their processing means that form the basis of corresponding information environment are fully used. Knowledge has become the main resource of accelerated development of the modern information society, and digital economy based on the knowledge gained from the processing of large amounts of information has become its main mechanism of development. Information and communication technologies (ICT) have become the main ones in digital economy. Various classes of cyber-physical systems will be the main component of digital production and digital economy in general. Their widespread implementation will lead to more changes than computers and Internet emergence [1–6].

Specified opportunities open wide prospects to automation and intellectualization of digital production itself as well as its after-sale service and exploitation. The strategic of innovation leadership is essentially different from the strategy of competitive struggle; it has become the leading economic strategy in many foreign companies. It is not connected with the search for continual improvements of its products in comparison with their competitors, but is aimed at creation of an absolutely new product, a new market, search for new customers, even at the expense of the loss of old ones.

The analysis of existing trends of automation, informatization and intellectualization of advanced foreign economies on the basis of the considered strategy of innovative leadership shows that the world's main countries' transition to digital economy may be completed in the next five or ten years and will lead to their VAT doubling as well as their technological uplift both in the output volumes and the services and goods manufactured [1–6].

In Russia, also there are large-scale processes of automation and informatization of various sectors of economic and life-sustaining activities of its population. However, the pace of these processes for objective and subjective reasons is less intensive than in the world. The national technological initiative is taken and the plans of its implementation are being introduced, and some of them have already started to be realized. While understanding the importance of all of these trends, it is necessary to determine both strategic and current (tactical) goals and objectives for our economy and state in general; intense studies of foreign and domestic positive experience and the use of mobilization resources of our country on the basis of accurate and concrete calculation and multi-variant scenario prognoses on the possibilities of their achievements. A significant role is played by the system of distributed situation centers (SDSC) being currently formed, and working according to the unified regulations of interaction and considered by the government to be a sustained foundation for long-term improvement of the system of state, sectoral, municipal and corporate management [1, 3, 7–8].

The integration of the distributed situation centers into the system and organization of their interaction on the basis of the unified regulations are to dramatically increase the efficiency of the informational and analytical support for the implementation of the state policy in the sphere of social-economic and social-political development of the country and national security provision, including among them military and crisis emergencies as well as the effec-

tiveness of support of strategic planning and monitoring of realization of documents of strategic planning in the Russian Federation.

The processes of design, improvement and further development of SDSC demand the implementation of complex interdisciplinary integrated approaches that are based on the relevant regulated project activities that have to be performed according to the domestic legislation in the Centers of Competencies (CC) of federal, regional and municipal state management.

The necessity of the specified Centers of Competencies creation is caused by several reasons. *Firstly*, by the acute shortage of the home state specialists, systems analysts and senior managers who have the required level of expertise, competences and skills in the sphere of complex processing and analysis of multiple data, information and knowledge on social-economic and social-political spheres, as well as expertise, competences and skills in the areas of managerial decision-making in the crisis situation caused by natural disasters, technogenic catastrophes, social-economic and military-political crises. *Secondly*, it is caused by the poor scientific consideration of the issues of automation and intellectualization of smart solutions of the tasks on multi-variant forecasting of the dynamically changing environment connected with the functioning of the objects of military-state management, objectives of complex pre-emptive state modeling of the specified objects, the tasks of their pro-active monitoring and managing. The *third cause* for Centers of Competencies creation is connected with the necessity of having at the federal level experts' support, consulting and auditing of the guiding documents drafts, legal enactments, educational programs, technical and technological solutions connected with the current and project activities of the situation centers [1, 3, 7].

2. Aims, objectives, principals, program for creating and functioning of the regional center of competences

One of the typical characteristics of the development of the modern multi-polar world is fast growing complexity of the relationship, interdependence and interaction of different spheres of life and activities of a human being. These aspects are most acutely revealed under dramatically changing conditions of economic state development, political environment, different large scale accidents, catastrophes and other emergencies, that without taking prompt actions can lead to the reduction of social and economic conditions of the living standards of the country population, slowing down of the pace of the society development, and, perhaps, to the large-scale casualties, material losses and a number of other negative factors.

Under the conditions of the existence of real threats to the national security interests of the Russian Federation organizational mechanisms, information technologies and the systems of prompt forming, making and implementing of the decisions on managing of all kinds of resources that are at the disposal of the state authorities and administration gain the decisive significance. To neutralize threats and minimize losses caused by abnormal, accidental, crisis and other emergencies, state authorities and structures authorized by them must be ready to solve at least the following five groups of inter-related problems [4–6, 8–9].

1. Revealing of potential threats of possible situation as a result of social and economic processes, crises, natural and technogenic catastrophes, developing of the typical variants of solutions for their prevention, localization and stabilization.

2. Development of the proposals and solution projects aimed at increase of the stability of the objects of infrastructure of the national economic complex to the influence of destabilizing and destructing factors of possible abnormal, accidental, crisis and other emergencies.

3. Revealing the trends of occurrence and early detection of the potential threats, multi-variant prognosis of potential consequences of the development of abnormal, crisis and other emergencies.

4. Prompt formation and decision-making on managing the resources aimed at minimization of negative consequences of destabilizing and destructing factors under conditions of the situation emerged.

5. Multi-criteria assessment of the consequences of abnormal, accidental, crisis and other emergencies and development of the solutions aimed at their elimination with minimum losses.

The causes of the specified drawbacks are as follows:

- when SCs creating and developing, model-algorithm and information problems of SDSC functioning with the consideration of the peculiarities of the development of the regions of the country and demanding the fundamental theoretical basis for their solution were not solved at full length;

- the edifice of preparing and in-service training of specialists for SDSC is not available;

- and practical recommendations on implementation of the advanced experience of the use of SDSC in the interests of state strategic management and planning both at the federal level and regional level in particular are not fully worked out.

In the scale of the country, region or sector these drawbacks will lead to unreasonably high and inadequate expenses of intellectual, temporal and material resources; and will, in general, significantly slow down the process of meeting the growing needs in the creation of SDSC to state control under conditions of the formation of the digital economy in the Russian Federation, as well as in crisis and other emergencies.

To strengthen the issues of coordination of research, education as well as production and commerce and innovation activities aimed at improvement and development of existing and prospective SCs within the framework of forming SDSC, it is suggested that a new element - interconnected system of federal and regional Centers of Competences in the spheres of digital economy and management - should be introduced into its structure. The mentioned Centers of Competences are to become the basic ones for the development of project management of digital economy of the Russian Federation aimed at realization of domestic strategies of innovative leadership.

The aim of creating of the Regional Center of competences (RCC) consists of: provision of bodies of state authority and management of the Russian Federation of the regional level with scientifically grounded methodology, new corresponding smart and information technologies of pro-active monitoring, prognosis and decision-making in management, as well as utilizing them with trusted unified multi-functional (TUM) program-apparatus complexes (PAC), designed to solve problems of maintenance of the necessary level of stability of functioning of various classes of social and economic, industrial, technical and technological and natural objects and processes under conditions of digital economy formation as well as potential emergencies caused by social-economic and military and political crises, natural and technogenic catastrophes; in the systemic training of specialists for various areas of activities of SDSC and distribution of advanced technologies of strategic planning and state management in the sphere of responsibility of the regions considering the peculiarities of the digital economy development.

To achieve the stated purpose the solution of the following basic problems that RCC faces is implied [7, 9]:

- conducting research and experimental and design works on the development and implementation of the prospective smart information technologies and support systems for managerial decision-making in regional SCs as well as creating corresponding model-algorithm, software, informational and technical support, necessary and sufficient for the development of the systems of situational management of different levels;

– development of methodology and methods of complex (systemic, pre-emptive) modeling of scenarios of course of events in social and economic, and social and political spheres of the RF legal entity activity and under conditions of potential crises, natural and technogenic catastrophes;

– implementation according to orders from regional authorities of the projects of creation, improvement and development of the regional systems of situational pro-active management and provision of scientific and technical support and their processes functioning including transfer of new technologies and personnel training in this area;

– providing preparation and training of managerial and executive personnel of first reactions formations, representatives of regional authorities and administrations and also economic entities to act under different conditions including emergency situations;

– combination of scientific and technical potentials and development of suggestions on coordination of activity for regional institutes of fundamental science, education and production sector aimed to solve actual tasks in respect of improvement of population quality of life and providing safety of the relevant RF legal entity.

Talking about the principles of creation and functioning of RCC we will combine them on the basis of the level of generalization in three groups: methodological, technological and organizational and technical.

One should refer methodological principles of RCC creation and functioning to the principles of non-terminal decisions, absorption of varieties, hierarchical compensation, complementarity, poly-model and multi-criteriality, self-similar recursive description and modeling of research objects, homeostatic balance of interaction; overcoming of distribution principle; principles laid in the basis of ontologies creation; principles of decomposition and aggregation; principles of rational and multi-criteria compromise while having unrecoverable informational and temporal threshold cuts; principle of interactive decision forming under conditions of uncertainty and inconsistency of initial information.

Objectively oriented approach to the description of subject area of (SA) RCC and relevant regional CC should be referred to technological principles of creation and functioning of RCC; also one can refer to them service-orientated technologies of collection system, integrated processing, data analysis, information and distribution of knowledge; customized user interface automatically adjusted to used audio-and-video recording teleconferencing equipment and forming multimedia output taking into account informational importance of delivered traffics, technical infrastructure of situation center room and possibilities of clients devices; organizational, informational and functional unity within one informational space and unified software platform on the basis of one model of data submission; technology of distributed development, direct involvement of experts (analytics) and engineers with knowledge of conceptual and logical projecting of ontology-orientated knowledge data bases, building of scenarios of intellectual operative and analytical information processing based on the principle “programming without programming”; complex (system) subject-object modeling of investigated SA as well as developing there situations with wide range of descriptive and predictive models (combined use of analytical and imitational, logical and linguistic, logical and probable, logical and algebraic, hybrid models and poly-models complexes); open initial code and absence of license deductions to foreign producers; cross-platform maintenance.

One should refer to the organizational and technical principles of creation and functioning of RCC the principles of systemacity, modularity, adaptability (flexibility), steadiness of development (openness), standardization and unification of “new tasks”, reliability, compatibility, single-step of data and information input, “friendliness”, efficiency (return of investment), safety and principles of reasonable sufficiency of managerial processes.

Taken as a whole while developing RCC to provide technological independence of Russian producers from foreign ones in the field of projecting, creation, operating and modi-

fying of model and algorithmic, technical, informational and software control systems it is reasonable to focus on methodology and system and technical decisions realized by the present day while creating national intellectual analytical platform (NIAP) based on uniform trusted unified multifunctional informational and communicational infrastructure of designing, developing and operating of distributed systems of decision- making support in Automatic Control System by military and state controlled objects (MSCO) on the basis of implementing processor chain “data-information-knowledge-decisions”.

The processes of creation and development of the RCC are related to the sphere of project management and should be based on the development of the corresponding Program for the creation and development of the RCC (hereinafter the Program). We propose to develop nine subprogram for execution this purpose. They are:

Subprogram 1. Development of a complex of technologies for proactive monitoring of situations.

Subprogram 2. Development of a complex of mathematical and information technologies for scenario modeling of emergence and development of emergency situations.

Subprogram 3. Development of a complex of technologies of scheduling for the warning, prevention and elimination of consequences of emergency situations.

Subprogram 4. Development of a complex of technologies for designing and developing situational control systems.

Subprogram 5. Development of a complex of technologies for training, retraining and advanced training of management personnel of executive bodies and business entities, as well as command staff of the forces of "first response".

Subprogram 6. A complex of technologies for the state of emergency aftermath minimization planning.

Subprogram 7. Development of a complex of technologies of ensuring reliability, safety and protection of the Centers of situational management

Subprogram 8. Development of the principles, methods, models and systems of complex monitoring of quality of life and safety of the population of the region.

Subprogram 9. Development of the theory, methods and technologies for ensuring information security of the regional situation center.

Conclusion

Interim results of our investigation have shown some socio-economic effectiveness of the proposed program implementation for the creation and development of the RCC

The main sources of effectiveness of the suggested program are:

- Reduction in the cost and timing of the implementation of projects for the creation of regional Competence Centers through the use of a unified methodology, unified project-technical solutions and software and hardware;

- Increase the effectiveness of the functioning of the RCC and the relevant regional Situation Centers through centralized training and maintaining the high qualification of the Center's staff;

- Improving the quality, efficiency of functioning and competence of the RCC and the relevant regional Situational centers through the use of modern intelligent computer – ICT decision-making, expert systems, mathematical and simulation modeling of the dynamics of the situation and program-targeted operations planning methods and as a result of a significant increase in the level of validity management decisions;

- Offering a wide range of services of the considered class to third parties, including designing and creating turnkey systems, technologies and decision support services in national RCCs and relevant regional Situation Centers, training and retraining of management per-

sonnel for emergency operations, transfer of situational management technologies In emergency situations, etc.

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