

**Convergent Situational Center –
the Cutting Edge Networked Decision Support System**

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At present, there are the following limitations of the group decision support systems, including situational centers (SC), development: the dominant of the causal approaches over the subjective and uncaused; emphasis on the choice of getting solutions from alternatives; skew in the direction of analysis tasks to the detriment of synthesis problems; limited opportunities for continuous development; security with disparities in development management; the fragmented nature of the distributed information fund; absence of semantic interoperability of information-analytical systems; excessive divergence of the processes of collective decisions making; extrapolation character of forecasting; consideration of situational center as a technological design to the detriment of institutional construction; lack of expert-analytical culture, the weakness of advanced technologies for visual analysis of data, the collective unconscious is not taken into account; the insight process cannot be achieved using traditional modeling methods, and etc. One of the main restrictions in advancing SC is that the decision-making processes rarely involve effective situational awareness and virtual collaboration technologies so as to give the participants the power to make the decision-making processes stable (sustainable) and purposeful. The SC decision-making processes can be characterized by the following specific features: weakly formalized and ill-defined problems; poorly predictable and chaotic behaviour of the environment; the decision-making process does not include representatives of business and citizens; unsustainable and divergent discussion; unique problem situations, and others.

To address these issues the author's convergent approach was applied. It is based on the fundamental principles of control thermodynamics, inverse problems solving, holistic discourse, cognitive modeling, quantum semantics, and artificial intelligence. This report presents a further development, which considers group breakthrough thinking processes in distributed SC and introduces cognitive programming approaches. It was confirmed that required stability and purposefulness could be attained if SC's meeting procedures are organized the way that exploits the topological spaces for helping in solution of such kind of problems, when we have to create the model of the situation with only qualitative factors (concepts). The invers problem solving on the topological space, that covers the cognitive model, helps to get the purposefulness of decision-making process. The cognitive modelling could be verified by Big Data analysis technology and it provides sufficient framework of the fundamental principles by incorporation into meeting procedures. The research of the "Eureka Effect" helped to create the technology for support in getting group insight. The quantum semantic approach helps to get holistic discourse SC's meeting. The approach has been implemented in real-world applications.



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