Chapter 41
The Integration of Same E-Technologies for Solving Complex Problem in Subject of World State

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ABSTRACT

The chapter discusses the perspective approach to addressing cross-sectoral integration and use of fragmented sectoral statistics within a single, thematically invariant monitoring system and a new concept of the complex infrastructure of the territory (CIT). For formalized representation of CIT proposed four-level information and a mathematical model. Propose a method for integrating of same E-Technologies (OLAP, Data Mining and GIS technologies) for solving complex monitoring infrastructure and all problems' in subject of world state.

INTRODUCTION

The problem of operational control decision-making in various spheres of human activity started today on a new level of complexity. This is due, primarily, a continuous increase in the volume and dynamics of information flows, requiring a careful analysis on the part of decision maker's person (DMP). Obviously, the DMP need such software tools, which in a certain scale territorial coverage, would allow to effectively analyze and monitor controlled systems, taking into account current realities of the information society. We should not simply consider fact ology happening, but also have the means to perform the following control tasks:

1. Installation information links, dependencies and influences between different segments of built and natural environments, economic sectors and industries and definition channels through which

DOI: 10.4018/978-1-4666-9845-1.ch041

these effects occur. Such a task can be called the problem of constructing a communicative space, followed by the ranking data communications on levels of efficiency.

2. Construction of analytical sections and samples for any combination of thematic layers. The information space is multidimensional and to deal adequately with it entirely for further development of any local control decisions, often simply impossible and impractical. In this case, the DMP to provide reasonable means to solve the problems of expert abstraction, generalization, classification, and thereby minimize the maximum information space, which is considered a controlled process. However, it should be borne in mind that in a resonant medium, excluding from consideration any irrelevant at first glance processes, there is a risk thereby misses important factors and patterns. One solution to this problem is the simultaneous construction of several analytical sections with different subjective points of view on the same process. Subsequent comparison of the results of analysis and decisions increases the probability of finding the system-laws.
3. Find hidden trends, resonances and the relationships between various human processes (identifying high-order nonlinearities). The possession of such relationships will allow controllers to develop of solutions, which in some cases will effectively achieve its goals for sufficiently soft reaction control object (this is due to invisibility of control actions and their low intensity).
4. Automated report generation, visual and optimally saturated with useful information.
5. Provide analytical works very different specificity. And at the DMP should be able to build a picture of their individual subordinate infrastructures, which could include personal experience (my understanding of the situation, knowledge of the interactions, the experience of making decisions in similar situations, etc.). Thus, it is a formalized means for accumulating knowledge and control experience.

BACKGROUND

Another important factor in determining the nature of human life is playing grounds. Numerous systems formed as a result of this activity, closely tied to territorial geographical aspect. Taken separately spatial plot, not even a large extent, can simultaneously include a significant number of human systems as interconnected and disparate. Territorial aspect allows the DMP to consider the totality of the unity of the system of natural- natural, anthropogenic and techno genic systems, combining them into a single integrity.

Obviously, to solve all these problems need information and analytical decision support system that allows you to handle large heterogeneous data sets, finding them hidden or implicit dependencies, perform spatial coordinate data using digital cartographic models territory. Also it is obvious that the basis of such a functional system should be based on the technologies of geographic information systems (GIS), of On-Line Analytical Processing (OLAP) and of Data Mining. They must be integrated at the level of general mathematical models and data structures.

In this article, we propose a method integrating technologies OLAP, Data Mining and GIS into a single integrated system for monitoring infrastructure of the territory, as well as multi-level mathematical model allowing formalizing and captured in real time the specifics of various points of view, criteria and management objectives.

For terminology identification system unity of various socio-economic sectors, we propose to use the notion of a complex infrastructure of the territory (CIT) by Bozhday and Bershadsky, defined as a