

CREATION OF THEMATIC ISD OF RUSSIA NATURAL PROTECTED TERRITORIES

MEDVEDEV A.

Institute of geography Russian academy of sciences, MOSCOW, RUSSIAN FEDERATION

The problem of integration of spatial data, particularly thematic, is the most acute in geographical research and other earth sciences. The concept of integration is to unite, organize, search and retrieve data accumulated over recent years in all major areas of geographical research. Spatial Data Infrastructure (SDI) is created to implement the outlined objectives at the national level.

National park «Valdai», which main activities are nature protection and conservation, was chosen as an example of attempts to create a thematic SDI. European experience (program INSPIRE) for thematic SDI creation of protected territories was used in this work. Since the Russian standards for this subject area do not yet exist (but they are necessary), the developing of a standard for the composition of spatial data set on protected natural territories becomes an urgent task. INSPIRE is selected as a basis of data specification standard for this domain: INSPIRE Data Specification on Protected Sites. Implementation of standards for the thematic subject areas is needed to ensure the properties of interoperability of data sets and geoservices, to overcome the problems of integration, accessibility and quality of spatial data.

In accordance with the provisions of the Directive INSPIRE, as well as the International Committee for Standardization ISO, information modeling domain is put behind the idea of SDI. According to ISO 19101 important component for presentation of informational and computational levels of computer systems is a conceptual modeling, which is the creation process of abstract descriptions of the surrounding world and the related ontological concepts.

In other words, there was a need to develop a conceptual scheme, which would determine the basic characteristics and the relationship between them that protected natural objects must have for the most complete spatial modeling in the SDI.

The result of the Federal Law "On protected natural territories" analysis was a data scheme that contained the minimum set of required objects and their characteristics (in the form of classes, their attributes and relationships), designed for protected natural territory.

The analysis of the INSPIRE data specification was needed to select the most appropriate applicational scheme (INSPIRE data specification contains 3 different data schemes).

The next step of conceptual modeling was to integrate the obtained data schemes into a single application circuit. The basic scheme was considered to be the INSPIRE application scheme, as the most worked through. Integration consisted in representation of objects and their attributes scheme shapefiles and data scheme required elements on the most relevant objects and attributes of the scheme INSPIRE. In the absence of similar objects in the database scheme INSPIRE produced its expansion through the introduction of additional objects and attributes.

On the basis of the derived scheme a scheme of a geodatabase was produced. While creating the scheme of a geodatabase the following subtasks were solved:

1. the choice of a means for geodata database development;
2. the choice of a specific format for database presentation;
3. an establishment of the way for geographical objects presentation in the database (raster, vector);
4. the choice of the basic types of spatial objects (points, lines, ranges, raster cells);
5. the filling of database by the means of data import from shape files.

A visualization possibility of the constructed geodata database was given to the user by viewing its