A Study on the Establishment of the National Spatial Data Infrastructure

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Abstract

Several research projects funded by National GIS Master Plan have started to produce several outcomes that need to be applied in the real world situation. To make the project results more useful and to improve upon the current results, it is necessary to integrate the project outcomes produced under various circumstances into a consistent and coherent structure.

Keywords : National GIS Master Plan, National Information Infrastructure

1. Introduction

Several research projects funded by National GIS Master Plan have started to produce several outcomes that need to be applied in the real world situation. To make the project results more useful and to improve upon the current results, it is necessary to integrate the project outcomes produced under various circumstances into a consistent and coherent structure.

2. National spatial data infrastructure

There exist several definitions for the terms such as national information infrastructure, national spatial data infrastructure, spatial information database, framework data, spatial data clearinghouse, and meta data. Several research projects have approached these terms in their own context without providing a coherent structure that can comprehensively explain each terms and the concepts behind them while depicting the overall relationship among the concepts. It is the goal of this research to provide a coherent structure that can integrate all of the concepts mentioned above and to put each of them in their appropriate place within the broad structure

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of national spatial data infrastructure.

National Information Infrastructure (NII) includes not only physical facilities that transmit, process, and display information such as voice, data, and graphics, but a condition that these physical facilities are integrated and linked. Constructing national information infrastructure means laying a basis upon which progress in information technology can be shared in public and private sector. National Spatial Data Infrastructure (NSDI) is the means to assemble geographic information that describes the arrangement and attributes of features and phenomena on the Earth. The infrastructure includes the materials, technology, and people necessary to acquire, process, store, and distribute such information to meet a wide variety of needs.

3. NSDI foundation

Mechanisms to integrate and exchange digital spatial data are a fundamental component of NSDI. NSDI is comprised of NSDI foundation, framework data, spatial data clearinghouse, and partnerships. The is comprised of spatial data themes that are the minimal directly observable or recordable data to which other data are spatially referenced and from which other digital spatial data may be compiled. Framework data can be referred to as those sets of data, integrated with the foundation, that form the basis for spatial information and analysis. The spatial data clearinghouse acts as an intermediary between spatial information suppliers and users. A fundamental goal of clearinghouse is to provide access to digital spatial data through metadata. The clearinghouse functions as a detailed catalog service with support for links to spatial data and browse graphics. The partnership concept means a comprehensive cooperation program among government agencies, local governments, and private sector. The four fundamental elements in sharing spatial information through partnerships are sharing of responsibilities, sharing of costs, sharing of benefits, and sharing of controls.

4. NGIS organizational structure

This research provides a national strategy to construct a national spatial data infrastructure, as well as a detailed report on important elements in NSDI. This study suggests that an organization be created to develop NSDI vision and push the vision forward. This organization can tentatively

be called Task force for NSDI development. Based on thorough analysis of NGIS organizational structure, this study recommends that the existing NGIS structure should be modified to accommodate the new role as a driving force for NSDI development.

This study also provides a comprehensive report on the construction of framework data at the national level. The goals and necessary plans for building national framework data, as well as the role of the government in promoting the framework data development, are described.

In conclusion, the necessity for clearinghouse, its role in spatial data distribution, and the requirements for implementation have been discussed in detail. Based on the discussion, this study provides a basic structure to implement spatial data clearinghouse at the national level.

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