Geospatial Service Web: Towards Integrated Cyberinfrastructure for GIScience

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ABSTRACT

Geospatial cyberinfrastructure has been proposed to support advanced GIScience research and education activities. However, heterogeneous and distributed geospatial resources create enormous obstacles for building unified and interoperable geospatial cyberinfrastructure. In this paper, we propose Geospatial Service Web (GSW) to underpin the development of future geospatial cyberinfrastructure. GSW excels traditional spatial data infrastructure in that it goes further by providing a highly intelligent geospatial middleware that integrates various geospatial resources through the Internet based on interoperable Web services technologies. The development of the GSW will focus on the establishment of a platform where data, information, and knowledge can be shared and exchanged in an interoperable manner. Theoretically, we describe the conceptual framework and research challenges for GSW, which are followed by the introduction of our recent research efforts for building GSW. A research agenda for building Geospatial Service Web is also presented in the paper.