Building An Online System For Managing, Analyzing And Serving Of Geospatial And Geodynamic Data Of Turkey Based On The User Preferences

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A geospatial data infrastructure comprises geospatial databases and data handling facilities, also data producer and consumer interactions. Geospatial data's being produced, managed and served globally is depend on the technical policies, standards, human resources, and technology.

The aim of the study is to propose a Geospatial Data Infrastructure to make geodetic and geodynamic data of Turkey manageable and analyzable on web. Proposed Geospatial Data Infrastructure has a multi-tier architecture which is compliant with INSPIRE, including data layer, service layer and application layer. Data layer consists of records, data and metadata about user generated and GNSS related data. For this purpose, PostgreSQL object-relational database is used, and PostGIS is also used to extend PostgreSQL capabilities to store, manage and serve geospatial data on online platforms.

Service layer follows the principles of Service Oriented Architecture (SOA) to build Network Service Architecture. SOA consists of different services with different purposes, and these services work with harmonization and exchange data easily. Interoperability and continuity of these services can be achieved by Extended Markup Language (XML) based Open Geospatial Consortium (OGC) Standard Services; such as Web Map Service (WMS), Web Feature Services (WFS), Web Processing Service (WPS), Web Coordinate Transform Service (WCTS), Web Map Tile Service (WMTS). In SOA architecture data transfer in between client and server is provided by Representational State Transfer (REST) which is proxy independent and uses Hyper Text transfer Protocol (HTTP) Methods. GeoServer is being employed to interpret and to respond user requests, as a web map server.

Application layer offers two main and many other sub-functionalities that only main functionalities are emphasized here; collecting user request and user data, and visualizing response which is interpreted with respect to user preference.

Keywords: GNSS/GPS, Geospatial Data, Web Based System Architecture, OGC web services