Web Based GIS Application for Coastal Atlas

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An atlas is needed to disseminate information about coastal ecosystems of Sri Lanka among government and local decision-makers to visually analyze and explore data for coastal and ocean planning activities. An atlas of coastal ecosystems (ACE) will go a long way in filling the existing information gap related to the geographic and spatial (geospatial) characterization of coastal ecosystems. Various types of maps related to coastal ecosystems exist from the standpoint of particular interests, including geomorphology, demarcation of coastal plains, and coastal erosion among many others. The users of this atlas of coastal ecosystems should be able to access relevant information (as maps or attribute data) whenever they needed. For different usages, maps should store as separate layers, such as land-use layer, stream networks, transportation, contour layer, etc. By using this atlas, users should be able to create maps on their own. Most Geographic Information Systems (GIS) require at least a slight knowledge about the subject except Web based Geographic Information Systems (Web GIS). To use Web GIS, users will require only the knowledge about internet browsing. From the Web based atlas, maps and layers can be overlaid by clicking some checkbox in the Web page and final maps can be saved in picture format (jpeg format). Therefore a Web GIS was proposed. A Web GIS is a combination of internet and geographic information system as well as it is an online tool to represent spatial information over the internet with the ability of sharing, interconnecting integrated geospatial information through World Wide Web and it allows the public to access spatial information with added functionalities like zooming and querying the information in the form of an interactive map. It holds the potential to make distributed geographic information available to internet users from all over the world without requiring any knowledge about GIS. The proposed solution was developed as a client/server application. As the first stage of this project, coastal Divisional Secretariat Divisions (DSD) in Puttalam district was chosen and a large number of data layers were used (e.g.: land use/land cover, infrastructure, hydrology, etc.). Basic web programming used to develop the interface of the application along with the UMN Map Server. All the spatial data layers were imported into PostgreSQL spatial database (PostGIS) and attribute data such as texts were stored in non-spatial database. QGIS was used to generate basic UMN Map Server map files and editing of the data files. In the final stage, map files and interfaces were joined together to achieve the Web GIS application with functionalities like zooming and querying. As a result of such application, geo-spatial information can be distributed through large number of users.

Keywords: Web GIS, Map Server, PostgreSQL, PostGIS, QGIS