Conceptual Model of a Marine and Coastal Spatial Data Infrastructure for Mozambique

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SUMMARY

In Mozambique, with the third-longest coast in Southern Africa, marine data users face a considerable void since the data available at the national institutions for marine and coastal management is scarce or even inexistent. When data exist, it is not accessible to all technicians due to the inexistence of a store data system and to the lack of a data sharing policy among all national institutions. The development of a National Marine and Coastal Spatial Data Infrastructure (MCSDI) would be of great importance to store the data collected by each institution, avoiding data duplication and, consequently, waste of public funds. For this purpose, a database is proposed based on a conceptual model of marine and coastal spatial data. This database will contribute to the development of a MCSDI for Mozambique, enabling the access, by all technicians, and eventually the public in general, to all marine and coastal data available in the country through a thematic geoportal. Access to the data will be established and controlled by the National Institute of Hydrography and Navigation (INAHINA). The MCSDI will be a handy tool for addressing the share, the access, and the use of interoperable spatial data and spatial data services across the various levels of public authority, through a set of web services: (i) discovery services to enable the search for spatial data sets and services, based on the content of the corresponding metadata and to display the content of the metadata (Catalogue Service for the Web); (ii) view services to display, navigate, zoom in/out, or overlay viewable spatial data sets and any relevant content of metadata (Web Map Service); and (iii) download services to allow access to copies of spatial data sets, or parts of such sets (Web Feature Service and Web Coverage Service). This infrastructure will add value for maritime navigation safety, port management, protected areas and species, fisheries, marine resources, maritime spaces, and seafront. It will also contribute for coastal flooding risk assessment, natural disaster forecasting, climate change adaptation, coastal and port management, ocean governance, socio-economic and technological development. This work resulted in the development of a OMT-G (Object Modelling Technique for Geographic Applications) conceptual

data model based on the UML language for marine and coastal data, transformed into a physical model using PostgreSQL/PostGis and the SQL programming language. In the process, the ISO 1903 and 19109 standards were considered. The technical specifications S100, S102 and S122 of the IHO, and GIS technologies such as Geoserver, Geonetwork, ArcGis, Qgis, and Saga were also used.