Establishment of the Marine GIS Information Service System in Taiwan Coastal Area

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ABSTRACT

The overall planning of this study is to establish a complete Taiwan Marine GIS Information Service System that can combine the Marine Meteorology Information Service to establish a marine industrial related information distributed service network. ArcIMS that have the advantage property of Internet GIS disperse storage, internet protection, internet edit and electric conversation of database requirement adopted the GIS software in this study. The querying function in this system included Marine Climate, Water Depth Harbor, Bottom Geology, Ocean Protection Area, Navigation Mark Layers, Seabed Pipeline, and Environment Querying System in Three Dimensions, Ships Announce Information System and Global satellite tracking web system. This service system of GIS can provide navigational safety for tourism and recreational applications, marine search and rescue operation, coastal engineering planning and marine resources investigation usages. This service network can truly be a full-function service. Web pages linkages according to the openness of other marine related databases in the Nation were also established.

KEY WORDS: Marine GIS Information Service System, rescue operation, marine resources investigation usages

INTRODUCTION

Due to the lack of marine professional system within the government omization presently, there are many problems between the ocean technology and industrial development, the lack of attention for marine geographic information within the development of the National Geographic Information System and marine related tasks distributed are not applied and established effectively in every institutions. So how to promote the marine related geographic information application, strengthen the national lands information in marine prediction areas, achieve the goal of sustainable operation, provide the overall marine geographic information were the important study at present. The objects of this study are the tourism at nearshore coast, disaster protection and sailing safety that based on new coastal development policy. Futhermore, the marine GIS information service system is to establish with combining marine database that could advance the ocean study and promote the industry at first in Taiwan.

The main purpose of marine GIS information service system in this study provide the major function including of sailing safety, tourism application, disaster protection, engineering planning and resource survey. The system were also combining the present marine database in Central Weather Bureau and establishing the data analysis service net related to the ocean industry. The marine GIS information service system can also provide the reference for the government, academic unit, company and individual using with completed geographic information.

LITERATURE OF MARINE GIS INFORMATION SYSTEM

Ocean scientist successfully applied the marine GIS information system in searching the disappeared objects since 19 century (Caswell, 1992). The topography of economical marine classified by Langran and Li and Mason 1994 studied the application of prediction for climate changing of ocean property in medium scale (~20 km). The related technology and true case are studied in Panama Canal Authority of Panama - Waterways Authority of New South Wales and German Waterways and Shipping Administration.

The marine GIS in Taiwan was applied firstly at Zang-Bing industrial area since 1991 which studied the influence for environment after exploitation by Tainan hydraulic testing institution. Related application of marine GIS studied after that time in Taiwan. Such as the studied results of storm module with GIS by the Industrial Technology Research Institute (ITRI, 1993), the GPS and GIS applied in fishery planning at coastal area (Shie and Lee 1993), and the planning study of the marine monitoring and ocean environment database (Chinese Ocean Underwater Technology Association, COUTA, 1994). The study of spatial exploitation planning system (Yen, 1996), and the possibility of establishment for marine GIS in national park (Lin, 1996). The establishment of water depth investigation for coastal area and environment database under sea (COUTA,1998), the establishment of geographical information database in harbor area and coastal room(Shie and Lee 1999), the study of establishment for artificial structure (Liu,2000) and the establishment of coastal tourism safety information and monitoring system (COUTA,2003).

Although every application of marine GIS spread in studying process, but lack of completed marine GIS information service system