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A Study of Development and Application on S-100 Registry

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Abstract

In this study, a system S-100 GI Registry for managing S-10x products, feature and attribute were developed with S-57 feature catalogue builder. The S-100 GI Registry is a tool that enables more efficient management of newly added feature and attribute, which were not included in IHO S-57 data transfer standard. S-100 GI Registry enables add new feature and attribute for S-10x products like tidal station, dynamic water level data, catalogues of nautical products. S-100 GI Registry contains many registers of hydrographic information together with registers of supplementary information owned by specialist domain experts. S-100 GI Registry and feature catalogue can be utilized by plug & play method to ENC software.

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1. Introduction

The International Hydrographic Organization (IHO) developed the S-52 and S-57 standards for the display of electronic charts and data standardization, respectively, leading to the development and utilization of the Electronic Chart Display and Information System (ECDIS) and other related programs. The importance of ECDIS has grown

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increasingly important on vessels, with the International Maritime Organization (IMO) making the system mandatory from 2012 to 2018.

Recently, the heightened demand for electronic chart information and development of technical industry, IHO released a new standard for following the trends; S-100. S-100 standard can support items such as imagery and gridded data, 3D and time-varying data (x, y, z, and time), and new applications that go beyond the scope of traditional hydrography like bathymetry, sea floor classification and marine GIS. It will also enable the use of web-based services for acquiring, processing, analysing, accessing and presenting data. It is important to recognise that S-100 is not an incremental revision of the current Edition 3.1 of S-57. S-100 will be a new standard that includes additional content and support of new data exchange formats..

2. Structure of the Registry and Registers

GI(Geospatial information) Registry is a web system for managing hydrographic information standardization. It is typically used at feature, metadata, symbol by proposal, review, approval, search function through various of domains. GI Registry is the main system for operating the international standard of maritime safety. It manages the ST items and services for catalogues for developing the product specification based on S-100 standards. Following the broadscale application of IHO S-100 standards, it is predicted to become a international registry about maritime safety and hydrographic information.

GI Registry consists of 4 types of register:

- Feature Concept Register
- Portrayal Register
- Metadata Register
- Product Specifications Register
- Data Producer Code Register

The Feature Concept, Portrayal and Metadata Registers are, in effect, managed lists or dictionaries of items. Selections from these three Registers are used to define Feature and Portrayal Catalogues used in individual Product Specifications.

The Product Specification Register is a list of S-100 based Product Specifications created by recognized organizations describing meta information about the content, purpose, version, location and availability of those Product Specifications. It also includes IHO S-57 Product Specifications that were previously developed.

The Data Producer Code Register is the authoritative list of the codes which can, if required, be stipulated in Product Specifications to identify the producers of a particular data product; for example, Hydrographic Offices for ENC producer codes.

The Data Producer Code Register incorporates the ENC producer codes previously listed in IHO Publication S-62 ENC Producer Codes, together with the S-57 data producer codes that were listed on the Open ECDIS forum website. These downloadable files provide the most up to date records in the registry. IHO Publication S-62 - now titled List of Data Producer Codes is now an on-demand copy of the contents of the data producer code register and is available directly from the GI Registry and from the publications page on the IHO website.

A machine readable XML version of the codes will be available for use in systems when the S-101 ENC Product Specification is published by the IHO.

Within the Feature Concept, the Portrayal and the Metadata Registers each entry is assigned to a recognised domain. The purpose of designating domains and a related Domain Control Body is to ensure that the key stakeholders (as represented by the domains) are consulted in any subsequent proposals to adjust items contained in a Register.

The Feature Concept Dictionary Register presently encompasses domains for nautical charts, nautical publications, inland ENC, sea ice coverage, and marine information overlays (MIO). Other maritime data domains will be included over time as the Registry expands and is used more widely.

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