

# 수로정보 표준기술 운용을 위한 등록소 설계 연구

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## Study of Registry Designing for the Hydrographic Data Standard Technology Operation

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**요 약** : 국제수로기구(IHO)는 항해안전과 해양환경보호를 위한 적절하고 효율적인 수로 데이터 및 정보사용을 지원하기 위해, 전자 수로 데이터를 위한 S-100 표준을 개발하였다. 이전 모델인 S-57의 경우, 차세대 전자해도(ENC) 생산 조건의 바탕이 되기에는 비효율적이라고 판단되었다. S-100 표준의 가장 핵심적인 특징은 표준화 등록소와 그것을 이루고 있는 등록부의 활용이다. 이 온라인 등록소는 편리하게 실제 항해 시스템에 적용될 수 있는 세계 공통의 표준을 제공한다. 현재는 IHO가 유일한 등록소를 소유하고 있으며, 도메인 전문가들에게 접근이 허용되고 있다. 그러나 S-100 표준이 국제기구에 의해 운영되는 국제 표준인 만큼, 필요 시 즉각적인 데이터의 수정 및 갱신이 불가능하고 시간 소모가 많다. 따라서 국내 사용자와 항해자들의 항해 안전성을 고려하여, 독자적인 표준기술 개발을 위한 개별적인 등록소가 국내에도 자체적으로 필요하다고 판단하였다. 이 연구는 IHO에서 편찬된 S-99를 바탕으로 하여, 정의 및 수로데이터를 제공하는 목적에 부합하는 웹사이트 디자인을 통해 등록소를 설계하였다.

**핵심용어** : S-100 표준, 공간 정보 등록소, 등록부, 전자해도, S-99

**ABSTRACT** : *The IHO developed the S-100 standard for Digital Hydrographic Data in order to assist the proper and efficient use of hydrographic data and information for the safety of navigation and the protection of marine environment. The former model, S-57, was considered outdated to be utilized as the basis for the next-generation Electronic Chart(ENC) product specification. The key feature of the S-100 standard is the use of Registry and its components, Registers. This online-based Registry provides a universal standard that can be implemented in the actual performance of the navigation system with convenience. In the current situation, the only registry is owned by the IHO and it is available to domain experts. However, since S-100 is an international standard operated by an international organization, the process of the changes and updates of the data requires time before immediate implementation when demanded. Therefore, regarding the safety of navigation of the domestic users and mariners, a separate domestic registry is necessary to develop a domestic Information Registry. This study specifically aims to build a Registry based on IHO published S-99 through designing an adequate website dedicated for its purpose to provide collection of definitions and hydrographic data.*

**KEY WORDS** : *S-100 standard, Geospatial Information Registry, Register, ENC, S-99*

### 1. Introduction

In 1 January 2010, the International Hydrographic Organization(IHO) developed a framework geospatial standard for Digital Hydrographic Data, under the name of S-100, in order to assist the proper and efficient use of hydrographic data and information for the safety of

navigation and the protection of marine environment. The previous S-57 standard had to be replaced with S-100 for the former was considered outdated to be utilized as the basis for the next-generation ENC product specification.

Unlike S-57, S-100 is structurally more flexible and is able to fully facilitate the use of imagery and gridded data types, enhanced metadata and multiple encoding formats. It also provides the user a more flexible and dynamic maintenance

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regime via a dedicated on-line registry (IHO,2010).

S-100 provides the data framework for the development of the next-generation of ENC products, as well as other related digital products required by the hydrographic, maritime and GIS communities.

## 2. Necessity of Hydrographic data Registry

The S-100 Geospatial Registry is necessary considering its purpose to standardize the hydrographic information in a global database, and a concrete international standard leads to consistency of data in navigation system and safety. S-100 standard becomes the basis of the S-10x products which includes both human-readable standard and machine-readable standard, which uses the catalogue of data which is drawn from the registry.

In case of the domestic data registry, the necessity is more closely related to developing a testbed for registry development. When certain data is required by domestic user, it is a time-consuming process to await the international standard to react to the demand immediately. Since the hydrographic data may directly relate to the safety of navigation, it requires an alternative registry that is more highly responsive to the domestic users. In order to achieve this, Registry should be designed for the purpose of developing and testing domestic Hydrographic data standard technology.

## 3. Hydrographic data Registry Operation System

The structure of S-100 Geospatial information Registry is hosted on an IHB server, owned by the IHO. Registry is formed by five types of register components which are Feature Concept Register, Portrayal Register, Metadata Register, Product Specifications Register and Data Producer Code Register. Each registers are divided in to Main Register and Supplementary Register, and managed lists of data, which contains definitions, content information, or product specifications.

The Registry is operated and managed by the Registry manager who is appointed by the IHB. The role is to provide registry access for the manager, control bodies, Submitting organizations and register users; ensuring that information about items in the registers are accessible for users including those items that are valid, superseded, or retired; and

maintaining a backup routine of the database(IHO, 2010).

All the changes or additions to the contents of the Register are proposed by Submitting organizations, which represent groups, such as from government, industry, academia, and other relevant user groups.

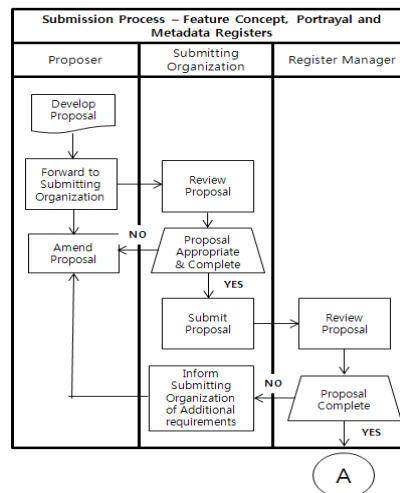


Fig. 1 Submission Progress of Feature, Concept, Portrayal and Metadata Registers

## 4. Registry Design result

The result of registry creation can be summarized as below:

- Design of domestic Registry
- Further plan for implementing the Registry design domestically

## 5. Conclusion

In conclusion, the Geospatial information Registry owned by IHO is expected to provide a universal hydrographic standard in a convenient method, but on the other hand, since it is a Registry operated by international scale, it is expected to be less responsive for the domestic users. Therefore, it is considered to be necessary to design a domestic Geospatial information Registry that can later lead to the development of technology that is compatible to the IHO S-100 Geospatial information Registry.

## Reference

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 [2] IHO(2011), Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry