



Hydrographic Services and Standards Committee

Report of the Test Bed Projects in Support of S-101 Development and
Implementation

to HSSC 5, Shanghai, China, Nov 2013

Proposal by KHOA(Korea Hydrographic and Oceanographic
Administration)

Introduction

- ✦ In 2010, the IHO adopted S-100 as the over-arching standard for the production and exchange of hydrographic-related data.
- ✦ Using S-100 as the base, TSMAD is developing several standards for hydrographic information products including S-101 which will become the standard for the 'next generation' ENC to be used with ECDIS.
- ✦ In order to progress the timely development and implementation of S-101, the IHO needs active participation from member states. In particular, support is required from member states in carrying out test bed projects to further the development process.



Background

- ✦ Beginning in 2008, the Korea Hydrographic and Oceanographic Administration (KHOA) started conducting S-100 related projects in order to evaluate the impact of the S-100 standard on the production of nautical chart-related products and services.
- ✦ In particular, KHOA has been closely monitoring the development of the S-101 standard by TSMAD.
- ✦ KHOA has also been actively engaged in developing a standardized management system for producing customized S-57 ENC's and environmental information overlays in the East Asia region



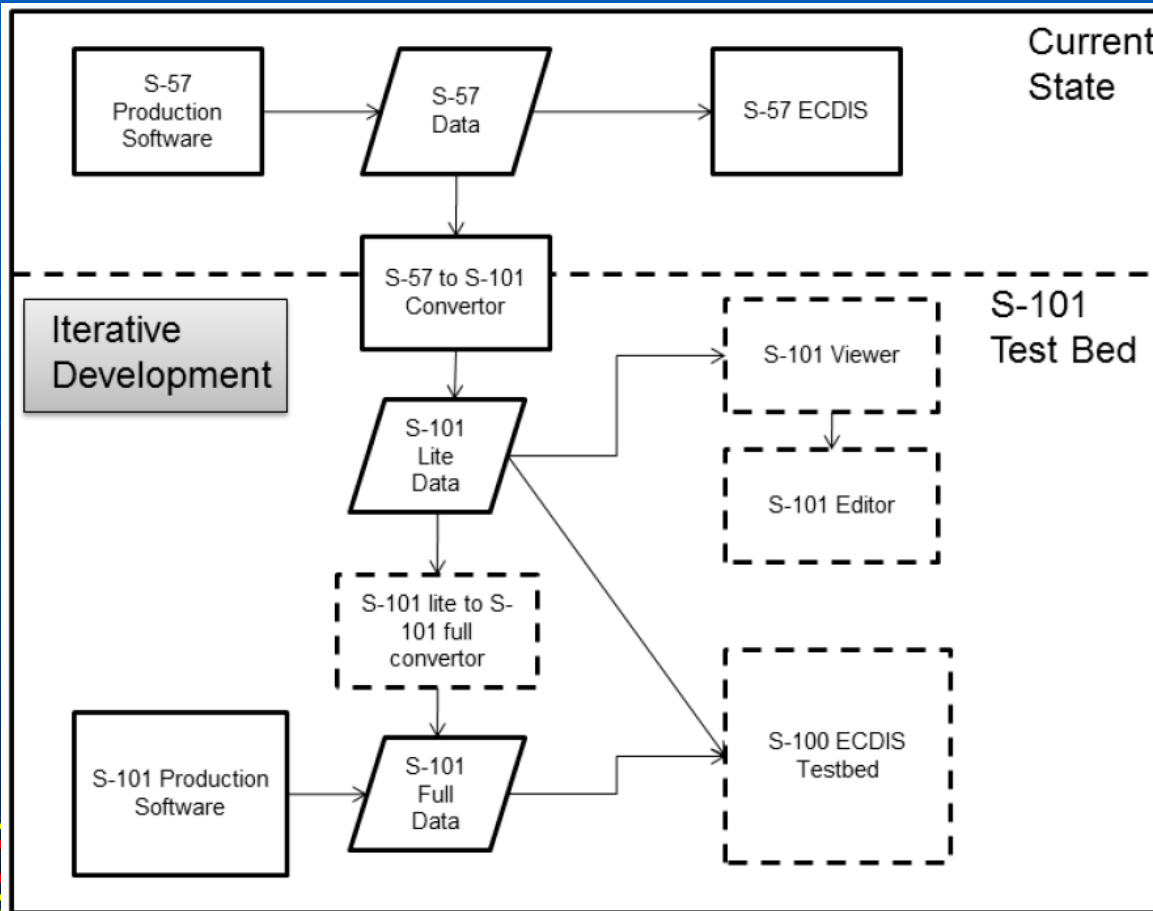
Background

- ✦ In addition, the ROK Ministry of Trade, Industry and Energy, conducted a research and development project on the development of next generation ship navigation system based on S-100 (introduced at the IHO Stakeholders Forum held in 4th HSSC meeting, Sep 2012).
- ✦ Included in this project was the development of augmented reality system in a transparent panel form, closed-circuit TV (CCTV), and an ECDIS capable of using S-10X information.
- ✦ Recently, KHOA recognized the need to conduct S-101 test bed projects as well.



Planned Testing Process for S-101 Development

- ✦ In May 2013, a “Project Concept Map for S-101 Test Bed” was initially proposed during TSMAD 24/ DIPWG 4.



The initial Project Concept Map of S-101 Test Bed

[Source : TSMAD24-DIPWG4_S-101 Information Paper]

The Official S-101 Information paper(English) in the TSMAD Web Page of IHO

MISCELLANEOUS

HIHWG Report on ENC - RNC data conversion

S-101 information paper (English)

S-101 information paper (French)

Defence Geospatial Information Working Group (DGIWG) Liaison Brief to the International Hydrographic Organisation (IHO)

Planned Testing Process for S-101 Development

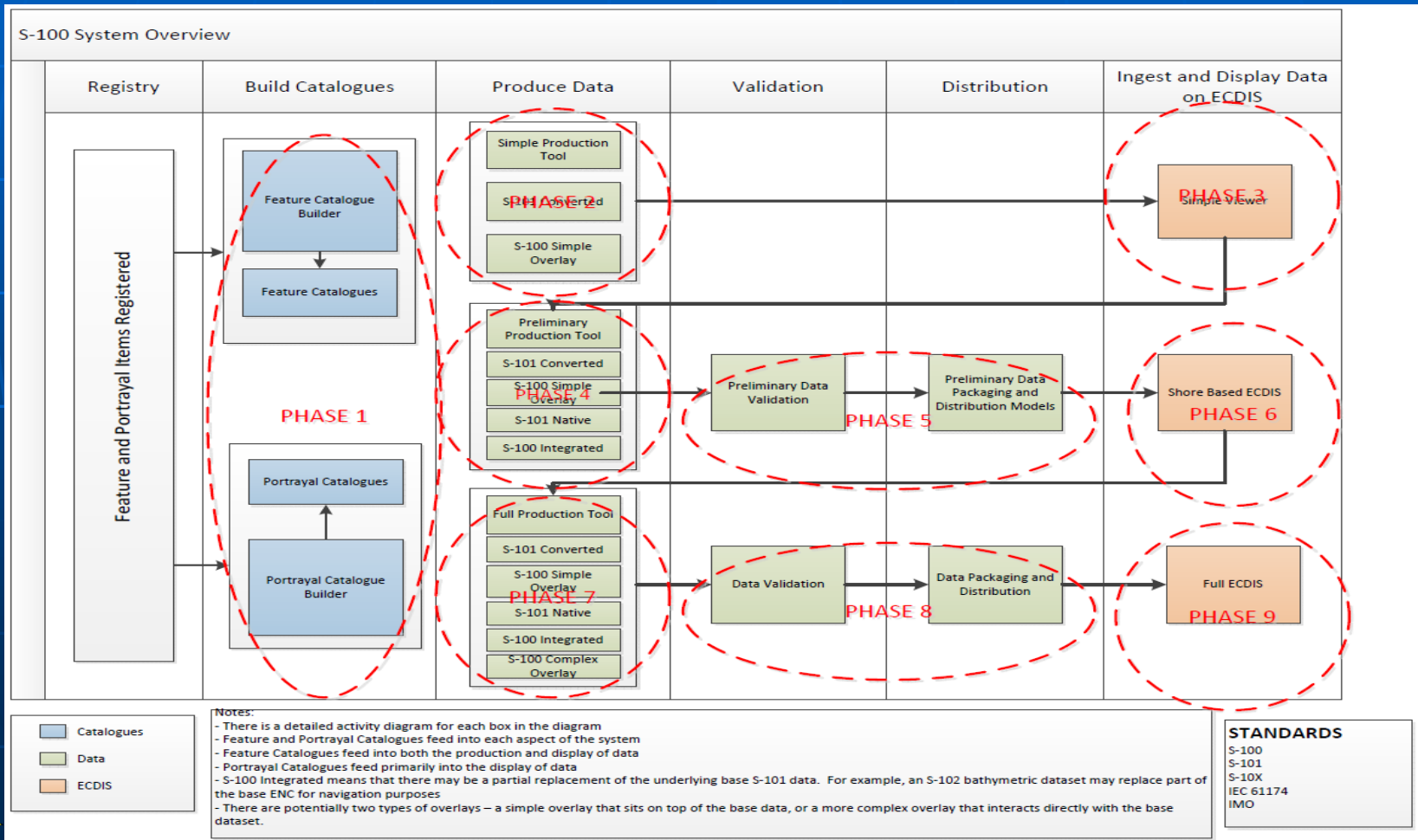
- ✦ More recently, an overarching test strategy for both S-100 and S-101 was agreed during a two-day S-100 Test Strategy Meeting held on 9-10 September 2013 at the UKHO.
- ✦ One of the key outcomes was a revised phased-approach to S-101 Test Bed development that follows a more iterative development process.
- ✦ This test strategy diagram will be used to further develop a testing framework document, and help determine the various types of test scenarios and datasets that will be needed throughout the S-100 /S-101 Test Bed Process.



Planned Testing Process for S-101 Development

★ S-100 System Overview Test Flow Diagram

[Source : Minutes of the S-100 Test Strategy Meeting, UKHO, 9-10 September 2013]



S-101 Test Bed Projects by KHOA

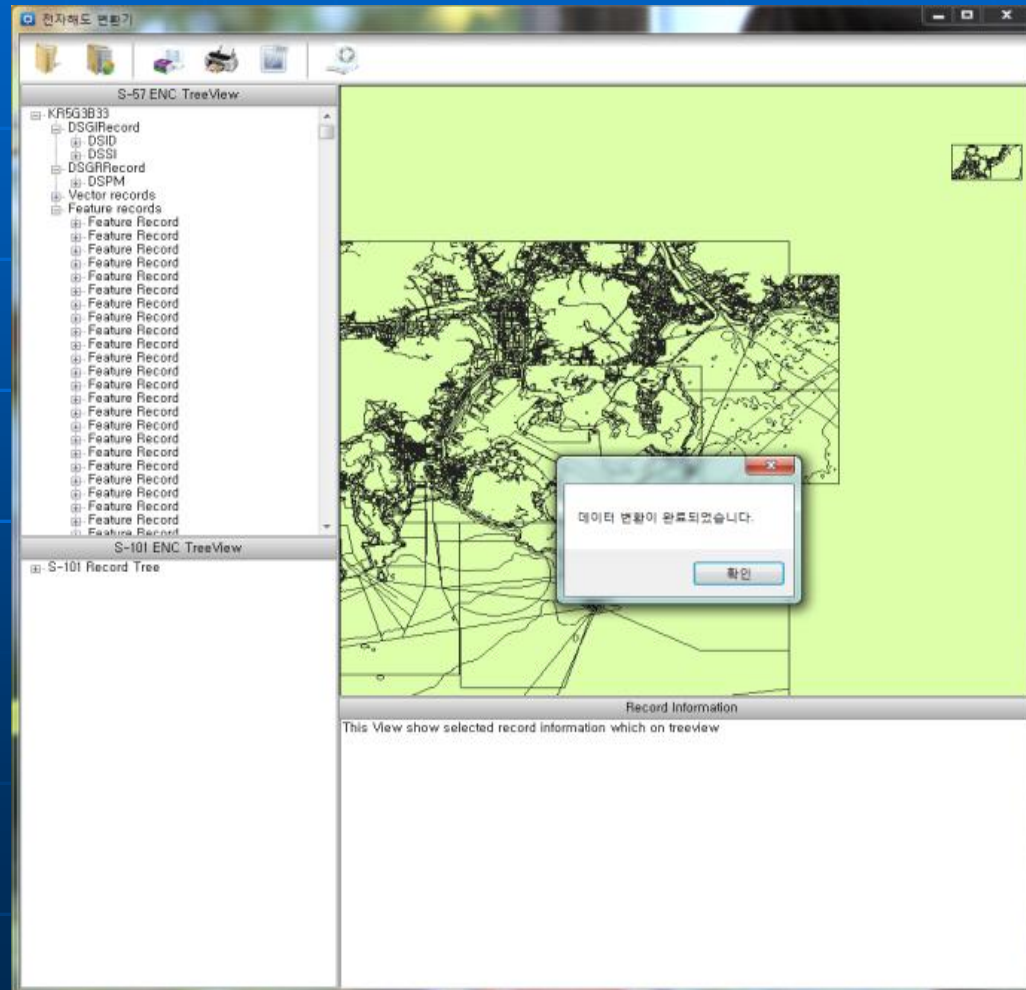
- ✦ In support of the development and implementation of S-101, three test bed projects are being planned and will be conducted by KHOA.
 - S-57 to S-101 Converter
 - Based on Feature Catalogue Ver. 0.5
 - S-101 Attribute Editor
 - Based on Feature Catalogue Ver. 0.8
 - S-101 Viewer
 - S-57/S-52 ENC Viewer including a S-101 ENC Loading Module, without S-101 Portrayal Module



S-101 Test Bed Projects by KHOA

✦ S-57 to S-101 Converter

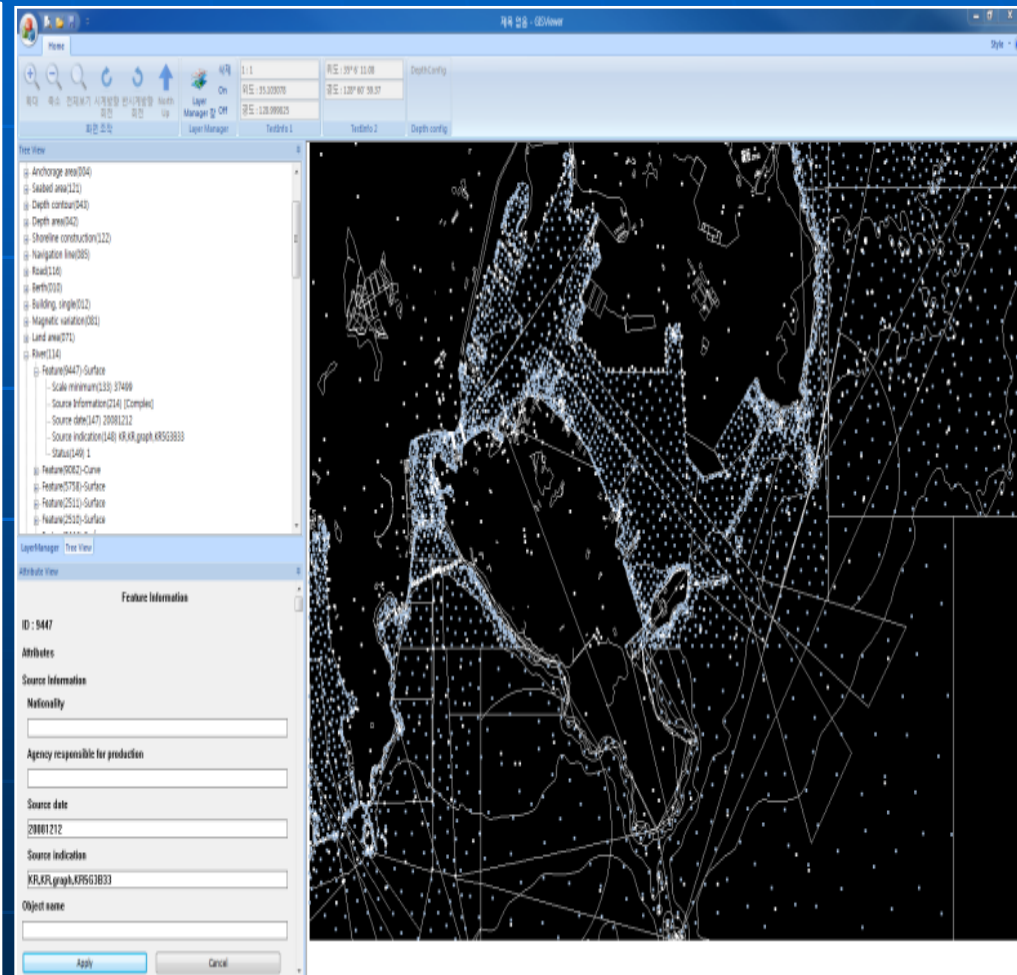
- During an initial research project carried out in 2012, KHOA developed a converter based on the S-101 Feature Catalogue 0.5 version.
- This version was first created by TSMAD when the S-101 standard was initially being developed.
- The converter was then used to convert a KHOA S-57 ENC into the so-called "Lite" S-101 ENC.



S-101 Test Bed Projects by KHOA

✦ S-101 Attribute Editor

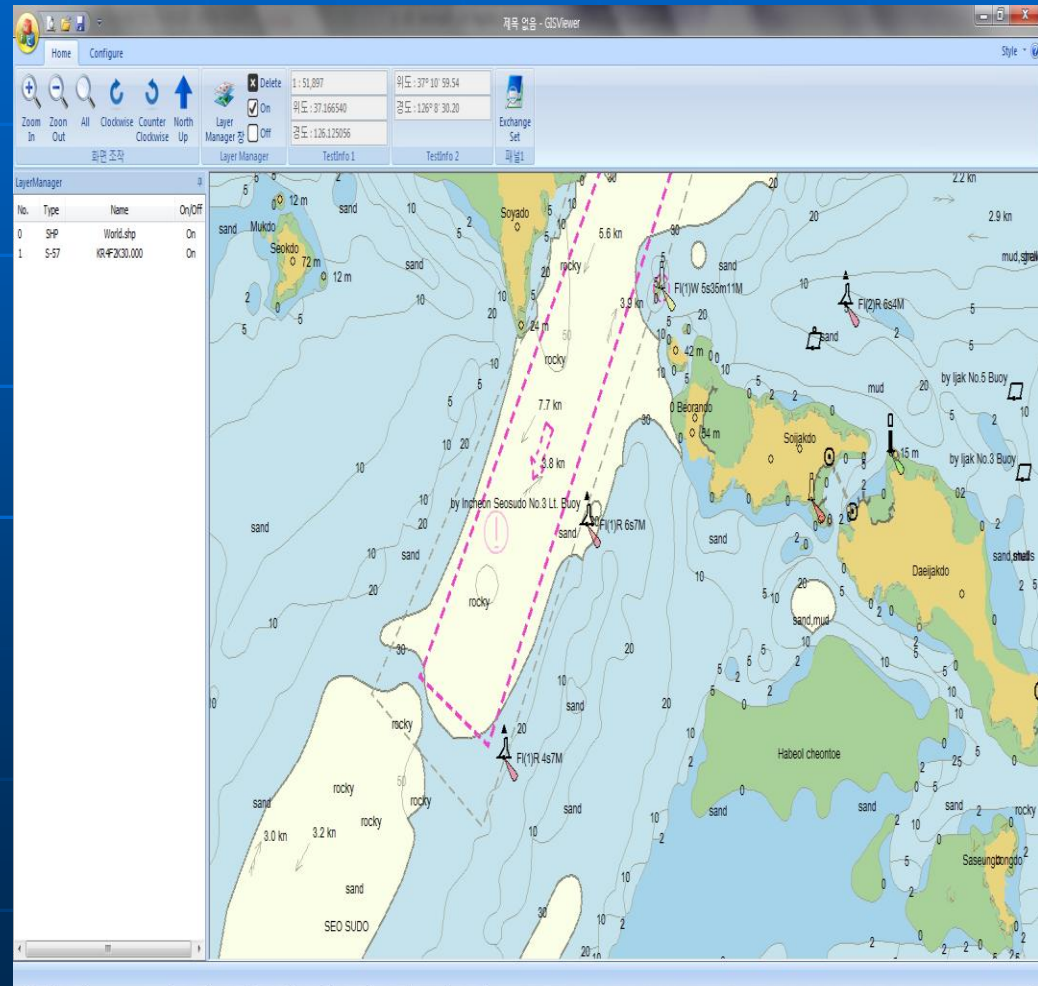
- In conjunction with 'next generation' ECDIS development, KHOA is developing an S-101 attribute editor in order to fill in the gaps of the so-called "Lite S-101 ENC".
- This is a necessary step in order to construct a so-called 'Full S-101 test dataset' for use in developing and testing the 'next generation' ECDIS.
- Ideally, the results of this project can be used to produce a future edition of IHO S-64 (Ed. 3.0) that contains S-101 related data sets required for ECDIS type-approval testing.



S-101 Test Bed Projects by KHOA

✦ S-101 Viewer

- This viewer is software that can display S-101 ENC's by utilizing the internal data structure SENC and Portrayal Engine, and applying the Feature Catalogue and Portrayal Catalogue.
- Once S-101 Portrayal Catalogue is complete, the development of S-101 Viewer can be finalized
- This KHOA project will contribute to an "Action Item" from the recent S-100 Test Strategy Meeting that there should be more than one simple viewer
- There should be at least three ECDIS manufacturers involved in producing a shore-based and 'full ECDIS.' In this regard, KHOA plans to work with Hyundai e-Marine.



Analysis/Discussion

- ✦ TSMAD prepared a Master Plan for the development and implementation of S-100.
- ✦ In addition, an S-101 “Roadmap” is also being prepared that currently lists the following phases and dates
 - S-101 First Draft (October 2013)
 - Initial Test Bed (2013 - 2015)
 - S-58 and S-64 (2014)
 - OEM Review (2014 - 2015)
 - OEM Implementation (2015 - 2017)
 - ECDIS On Shore Trials (2015 - 2016)
 - S-101 Final Draft (2016)
 - ECDIS Sea Trials (2017)

- The three KHOA S-101 test bed projects are intended to contribute to accomplishing these overall objectives and timelines.
- In addition to the ‘Initial Test Beds’ during 2013 - 2015, KHOA plans to conduct other types of test bed projects that may be necessary to meet the planned S-101 ‘Full Implementation’ scheduled for 2018.



Justification and Impacts

- ✦ The KHOA S-101 test bed projects are being conducted to assist TSMAD in the development and implementation of the S-101 ENC standard.



Action Required of HSSC5

- ✦ The HSSC is invited to:
 - Recognize the need for conducting test bed projects as a crucial step in the development and implementation of S-100 and S-101 standards.
 - Endorse the benefit of KHOA conducting test beds in support of the development of S-101.
 - Instruct TSMAD to include the KHOA S-101 test bed program as part of the TSMAD Work Plan.



THANK YOU

