

The New Standard S-100 and CARIS Hands-on Approach

NIOHC

Mar. 14-17, 2016

Chittagong, Bangladesh

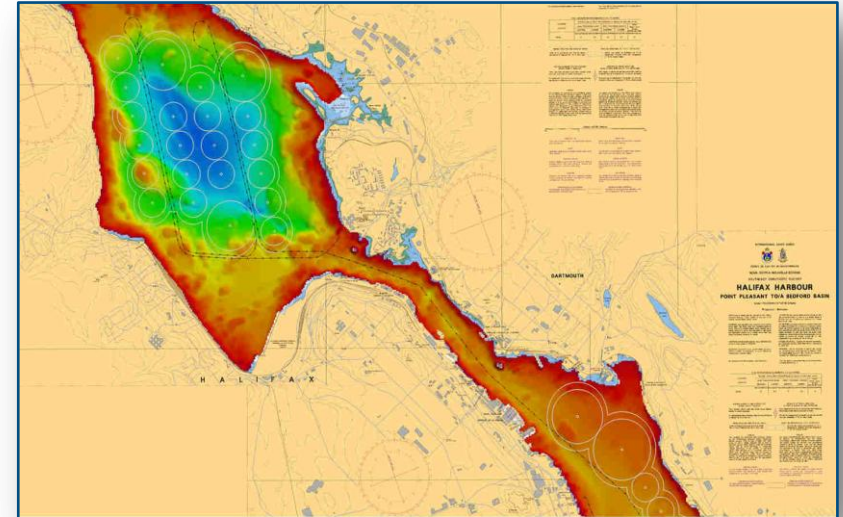
Presented by: Alejandro Gerones, CARIS

- Introduction
- Familiarization with S-100 products
- Use cases
- Education and knowledge transfer
- Conclusions

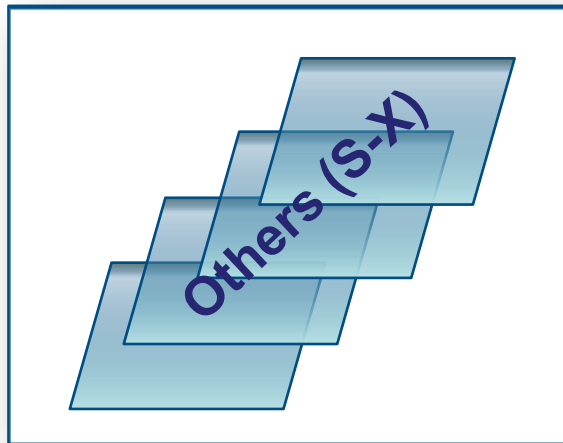
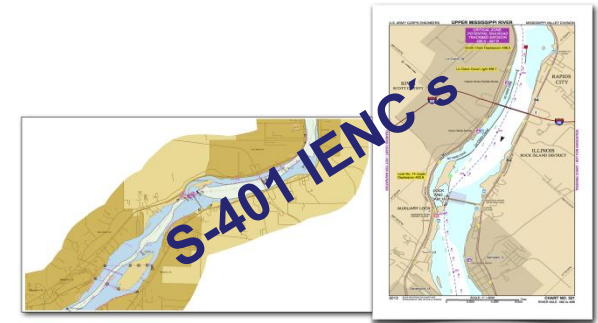
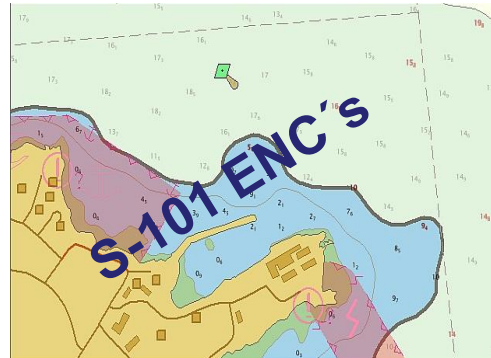
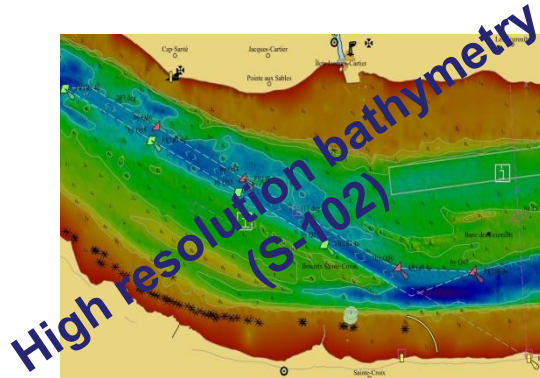
- S-100 purpose
 - Support a greater variety of:
 - Hydrographic-related digital data sources
 - Products
 - Customers
 - “Beyond the scope of traditional hydrography”
 - Easier integration with geospatial solutions
 - For data and products
 - Greater use and lower cost of implementation
- S-100 benefit
 - Support sustainable resource management and economic development (i.e. the Blue Economy)



- S-100 Products: an incomplete list
 - S-101 ENC
 - S-102 Bathymetric Surface
 - S-111 Surface Currents
 - S-112 Real Time Tidal Data Transfer
 - S-121 Maritime Limits and Boundaries
 - S-401 Inland ENC
 - S-411 Sea Ice
 - S-412 Met-Ocean Forecasts
 - ...

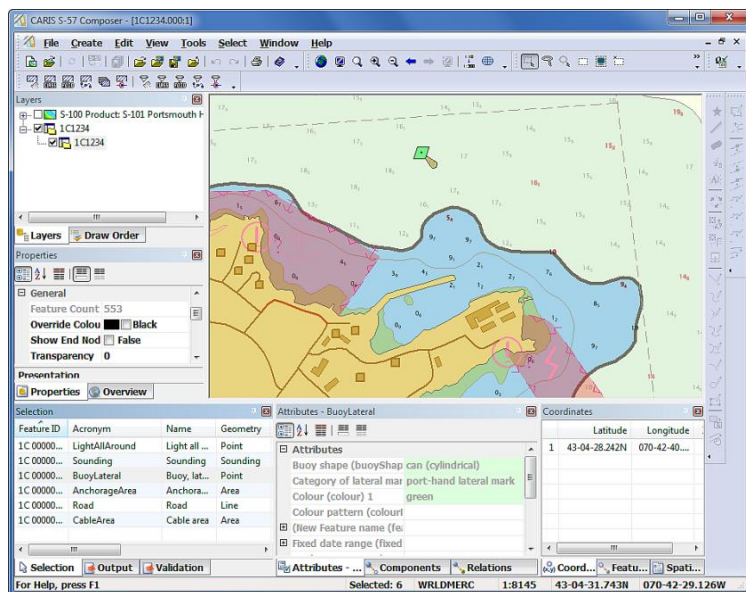


S-100 data products need to be created and tested

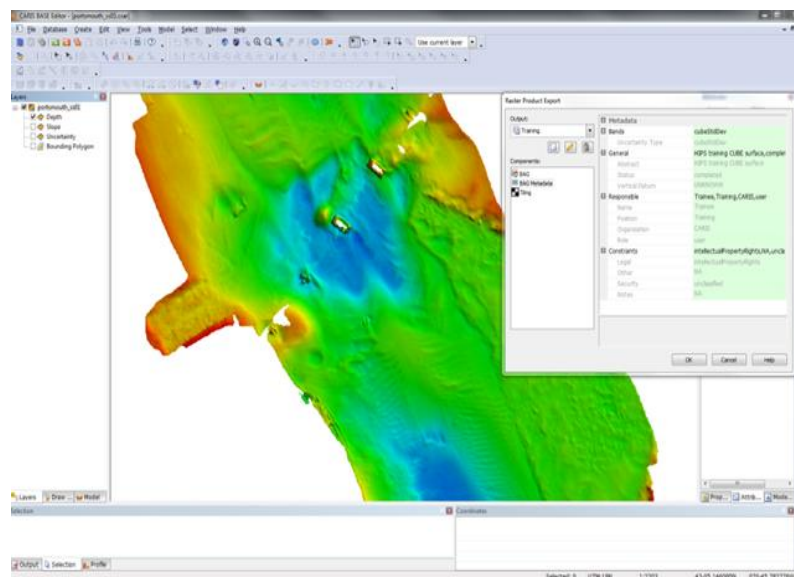


- Tools are needed for creation of sample products based on S-100
 - Needed: different data sets for testing
 - Needed: run trials in S-100 enabled ECDIS
 - Needed: support interoperability with other geospatial applications
 - Needed: flexibility to support expansion and modern navigation requirements

Agencies can currently experiment with creation of products using existing CARIS production tools

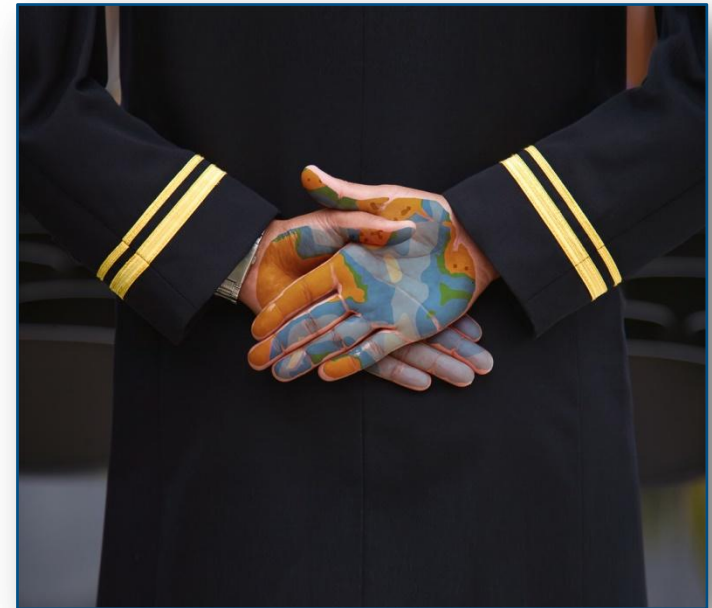


CARIS S-57 Composer allows for the creation of S-100 datasets



CARIS Bathymetry DataBASE for creation of S-102, S-111, S-112 datasets

- Agencies can take a hands-on approach to working with S-100
 - Experiment with existing production tools
 - Gain familiarity with new complex and multiplicity attribute types
 - Work with information objects and assign S-100 portrayal to features
 - Work with the expanding registry of S-100 product specifications
 - Create sample S-100 datasets
 - Export content in exchange formats
 - ISO 8211 for S-101 ENCs
 - GML for other S-100 overlays



S-101 ENC Workflow

Create New
Product

S-101

Import
from S-57

S-101

Create
Features

S-101

Export to
S-100 File

S-101

View S-100
File

S-100
(000)

Map S-57 to S-101

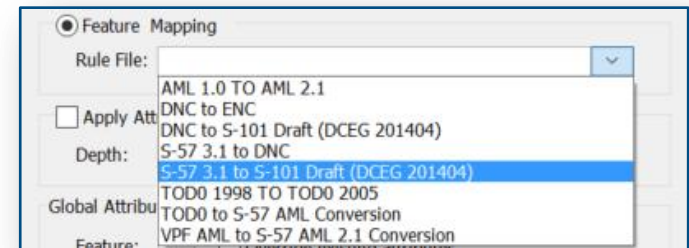
S-57
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- Can't map something that did not exist.
- Current conversion not 100% automatic.
- Some manual input still necessary.
- Tools allow to finish the product.

S-100
(000)

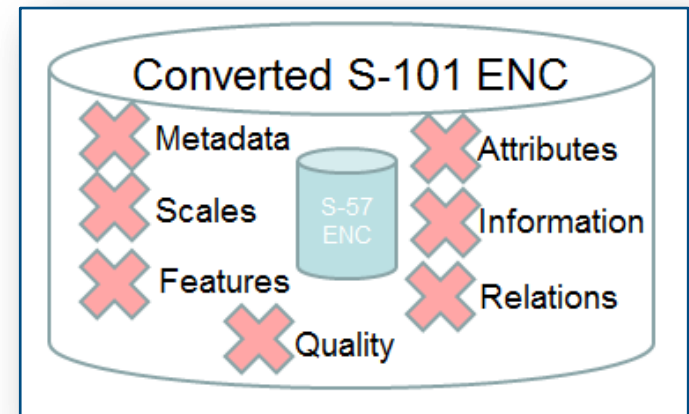
Currently, CARIS S-57 Composer users can

- Perform automated conversion from S-57 ENC (and others) into S-101
 - S-101 is a superset of S-57 ENC
 - Only a part of the solution



But...

- Still need to completely populate the product...
 - Features
 - Attributes
 - Information
 - Relations
 - Metadata ...



- Users can access familiar tools to create features and attributes using S-100 encoding
 - Complex attributes
 - Multiplicity of attribute values
 - Boolean attributes
 - Data & Time Range attribute values
 - Feature names
 - Information objects

1. Complex Attribute

Attributes - ContiguousZone

Attributes	
In Dispute	(New Nationality 1)
Fixed date range	20150202,20150101
Date end	20150202
Date start	20150101
Scale minimum	

Attributes - Co... Components Relations

2. Multiplicity

Attributes - AnchorBerth

(New Periodic date range 1)	
Radius	
Status 1	1 (permanent)
Status 2	6 (reserved)
Status 3	8 (private)
Status 4	9 (mandatory)
(New Status 5)	

Attributes - AnchorBerth Components Relations

5. Truncated Dates

Attributes - AnchorageArea

Date end	
Date end	20150202
Date start	20150101
Periodic date range 1	----0501,----1101
Date end	----0501
Date start	----1101
(New Periodic date range 2)	
(New Restriction 1)	

Attributes - An... Components Relations

Creation of a Special Purpose General Beacon attributes in S-57 Composer

Beacon, special purpose/general (BeaconSpecialPurposeGeneral)...

Attributes

Beacon shape: beacon tower

Category of special purpose: pipeline mark

(New Category of special purpose)

Colour 1: orange

(New Colour 2)

Colour pattern

Condition

Elevation

(New Feature name 1)

Radar conspicuous

Radar conspicuous

Coordinate

☒ Geographic ☐ Ground

Latitude: Longitude: Depth (Metres):

OK Cancel

Define

- Beacon shape
- Category of special purpose mark
- Colour

Beacon, special purpose/general (BeaconSpecialPurposeGeneral)...

(New Nature of construction)

(New Periodic date range)

Radar conspicuous

Reported date

(New Status 1)

Topmark: orange, upright cross (St. George's Cross)

Colour: orange

Topmark/daymark shape: upright cross (St. George's Cross)

(New Shape Information)

Vertical length

Topmark

Topmark

Coordinate

☒ Geographic ☐ Ground

Latitude: Longitude: Depth (Metres):

OK Cancel

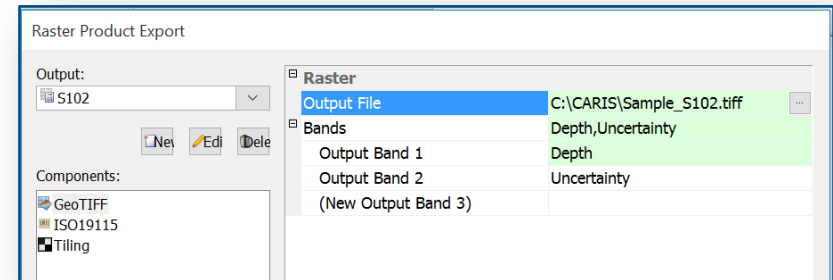
Define further attribute values

- Define the Topmark attribute (this is a complex attribute)

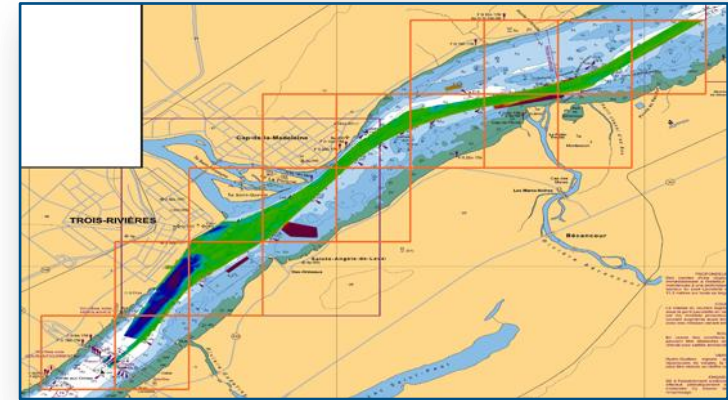


Define position
Digitize location

- Available solution allows:
 - Bathymetry from multiple sources needs to be prepared and deconflicted into a single surface
 - Apply tiling scheme
 - S-102 Ed. 1.0 metadata needs to be produced
 - Production to be completely automated
- Specification revisions expected by the working / project group

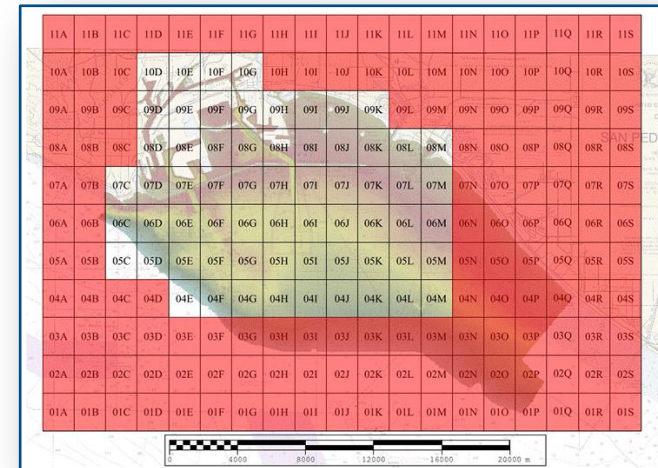


- CHS High Definition Bathymetry Trials ²
 - Test in collaboration with software manufactures, mariners and other users
 - Data in 32 bit GeoTIFF
 - 18 HD bathymetry cells
 - Datasets available for tests and trials



² Source: <http://charts.gc.ca/data-gestion/bathymetry-trials-developpment/index-eng.asp>

- NOAA pilot project to produce 'harmonized data' to support precise navigation ³
 - Project area: Port of Los Angeles and Port of Long Beach, California
 - Producing S-102 and IENC overlays
 - Overlays and other sources (e.g. environmental observations and forecast products) feed into UKC system



³ Sources: <https://noaacoastsurvey.wordpress.com/2015/03/23/developing-products-for-precision-navigation/>
http://www.nauticalcharts.noaa.gov/mcd/enc_overlays.html

The endless dilemma?

Bad data vs No Data

Better Data

Currently working with Canadian organizations to equip vessels with real-time processing tools



- Example: Common Operating Picture (COP) for Oil Spill Response
 - Uses open standards to Integrate spatial data with other information
 - Used to improve response to oil spill incident and minimize impact ³



³ IOGP, IPIECA, Resource Data Inc, OGC; Recommended practice for Common Operating Picture architecture for oil spill response – Final Report

- S-100 / S-101 webinars and on-site trainings (Q1 2016)
 - General familiarization with S-100 concepts and theory
 - Hands-on experience with creating S-101 features and products
- S-100 / S-101 self-paced online training (2016)
 - Deliver theory and exercises through online access
 - Similar to other S-57 ENC and chart production courses (www.caris.com/elearning)



The poster features a dark blue background with a subtle pattern of concentric circles and lines, resembling a globe or a network. The text is white and yellow. The 'caris' logo is at the top left, followed by 'presents' in a smaller font. The main title 'CARIS WORLD TOUR 2016' is in large, bold, white letters. Below the title, a list of dates and locations is provided. At the bottom, there is a call to action to find out about the latest CARIS technology and to join the tour, with a link to the website.

caris
presents

CARIS WORLD TOUR 2016

April – Busan, Republic of Korea
April – Alexandria, United States
May – Bologna, Italy
June – Valparaiso, Chile
July – Wellington, New Zealand
August – Kuala Lumpur, Malaysia
September – Seattle, United States
October – Rio de Janeiro, Brazil
November – Shanghai, China
November – Galway, Ireland

Additional dates to be added

Find out about the latest CARIS technology
Hands-on software exercises / detailed demonstrations / information sessions

Join us at the CARIS 2016 World Tour
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- S-100 allows the use of marine spatial data, “beyond the scope of traditional hydrography”
- Various S-100 based product specifications at various stages
- Now is the time to assess requirements for transition to producing S-101 ENCs, and other products
- Marine GIS solutions have evolved to support familiarization and trials for some products; continuing to evolve to support others
- Education and training is needed for data producers to build capacity
- A hands-on approach now will help agencies prepare for full implementation in future



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