



Service Approach to deliver hydrographic information.

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Canadian Hydrographic Service

2018 NOAA Open House



\$1.5 Billion **National Oceans Protection Plan**

1 Supports safe and clean marine shipping

2 Builds partnerships with Indigenous and coastal communities

3 Increases economic opportunities for Canadians

4 Improves marine safety

5 Protects the marine environment





Canada's Ocean Protection Plan: A world-leading marine safety system that protects Canada's coasts

<https://pm.gc.ca/eng/news/2016/11/07/canadas-ocean-protection-plan-world-leading-marine-safety-system-protects-canadas>



Canada's Ocean Protection Plan: A world-leading marine safety system that protects Canada's coasts - Vancouver, British Columbia - November 7, 2016...

- ... Make navigation safer by **providing modern hydrography and charting in key areas of high traffic commercial ports and waterways, dynamic products, and ...**

<https://www.tc.gc.ca/eng/canada-oceans-protection-plan.html>

Modern hydrography for charting in priority areas

- Major Canadian ports will have access to increased charting and electronic and navigation tools to allow ships to operate more efficiently and safely.
- *This new investment will allow the Canadian Hydrographic Service to increase surveys, deliver dynamic information for water levels, tides, and currents, and quickly produce high resolution electronic navigation charts and navigational products over the next five years for mariners. Over 20 of the highest traffic commercial ports and waterways in Canada, covering two thirds of Canada's total cargo vessel traffic, will have updated navigational information.*



2018 Context

Wärtsilä acquires Transas to accelerate its Smart Marine Ecosystem vision

Wärtsilä Corporation, Press release, 19 March 2018 at 10:00 AM E. Europe Standard Time

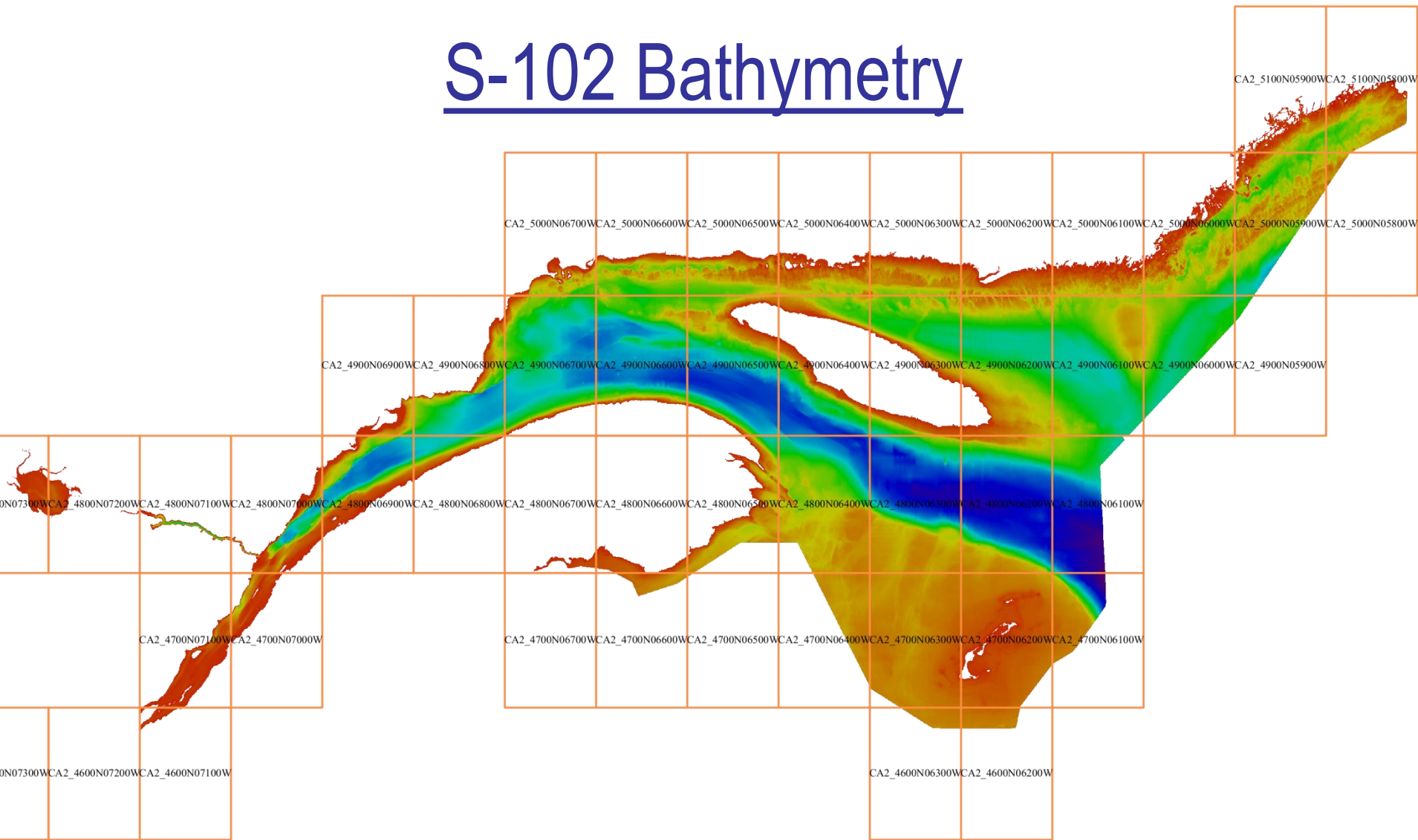
Wärtsilä's Smart Marine Ecosystem is a vision whereby smart vessels connect with smart ports and beyond to deliver three fundamental industry benefits: maximising the use of resources and operational efficiency, minimising environmental impact and risk, and achieving the highest levels of safety and security. Through data integration, greater connectivity and cloudbased technology, Wärtsilä aims to resolve inefficiencies in the shipping sector resulting from overcapacity, sub-optimal fuel consumption, and waiting times at ports and other high-traffic areas.



Autonomous ships
Internet of things
Big Data
Artificial intelligence

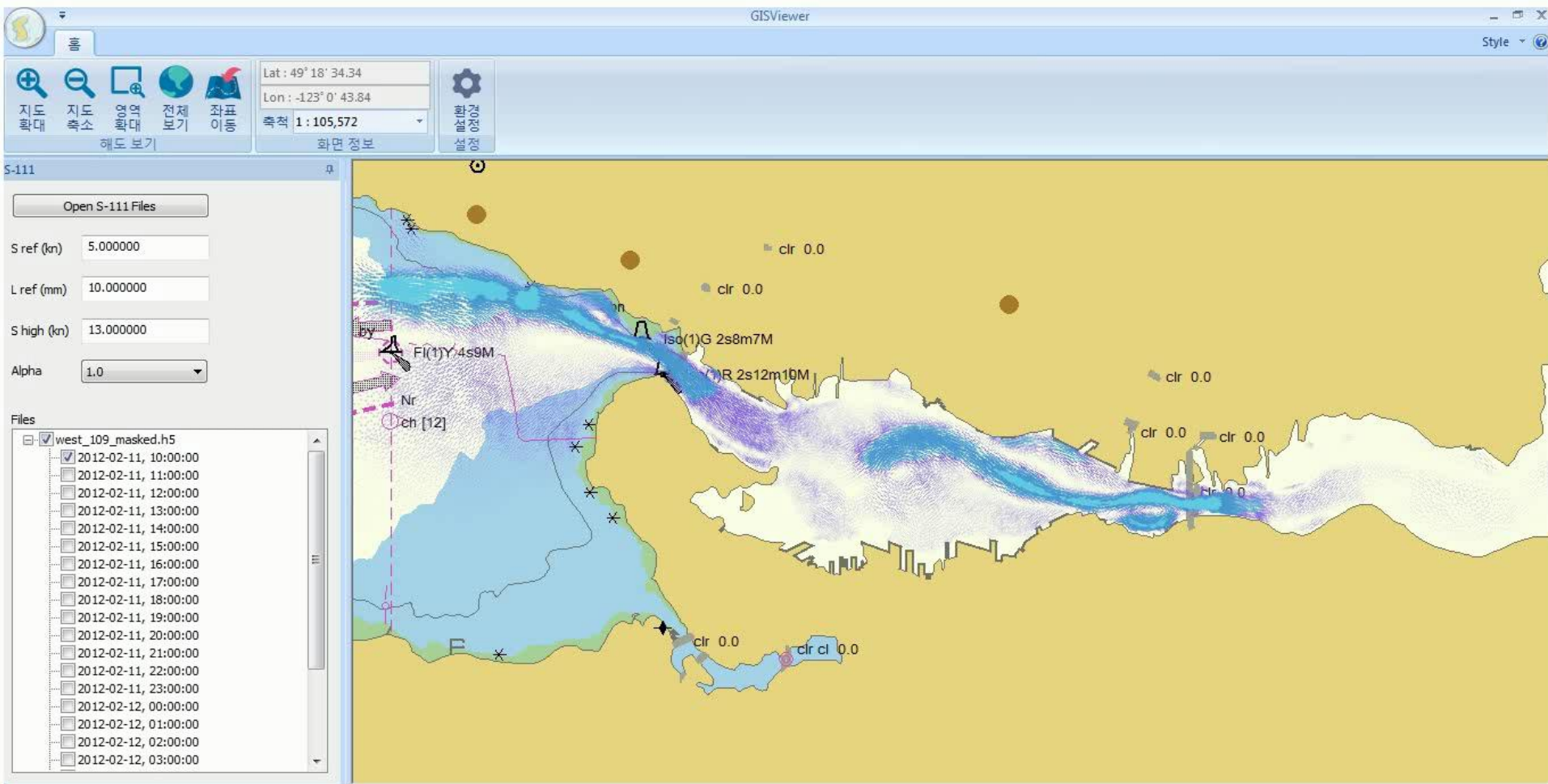


S-102 Bathymetry



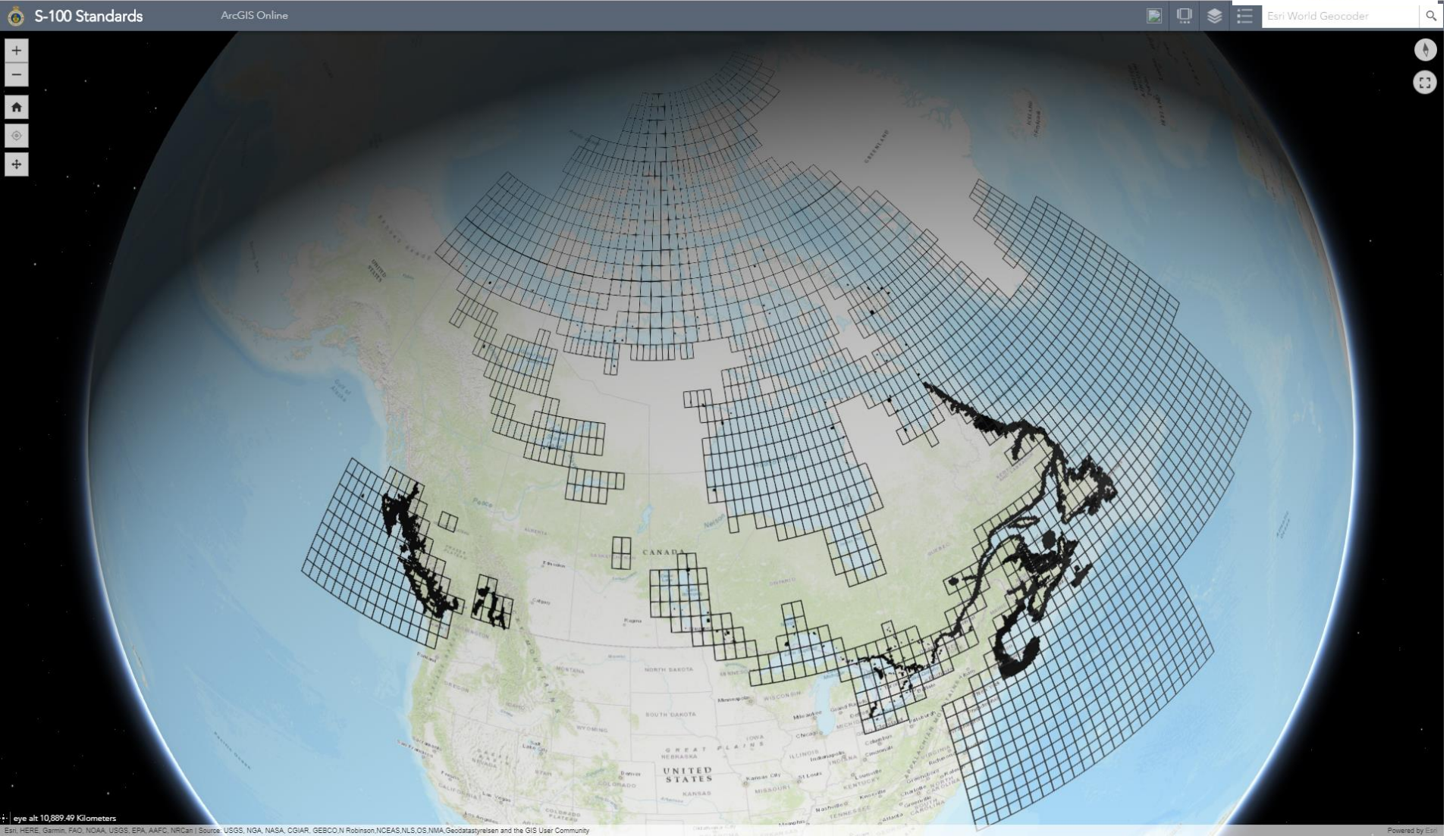


S-111 Surface currents





Common Scheme for S-100





S-100 as a Service



- Modern business don't sell products anymore, they sell services(Netflix, spotify...)
- Data centric model
- Benefits of existing services for water levels
- Invest in dissemination of information
- Emerging international standards, IHO S-100, IMO MSP...
- Teledyne CARIS desktop study 2017-2018
- Leveraging existing expertise



Exploration project

The Dream Team



- Authoritative Data Producer > Canadian Hydrographic Service
- GIS Technology experts > Teledyne CARIS
- Distribution business experts > Primar
- Distribution technology experts > Electronic Chart Center
- S-100 experts > South Korea (upcoming staff exchange)



Expected outcomes

- Fills the gap between survey and ENC to access HD bathy
- New way to access Arctic Multibeam tracks
- Estimates of the value chain for bathymetry (Costing model)
- Evaluation of cloud technology to distribute data
- Testing of the CHS S-100 schema
- Validation of the service approach for model results, currents and tides.
- Plans and costs estimates to move to operational service.