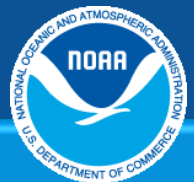


The Future of Navigation in the United States

Marine Board Fall Meeting
November 19 , 2013

RDML Gerd Glang, NOAA
Director, Office of Coast Survey

Office of Coast Survey



US Charting is at a Pivot Point

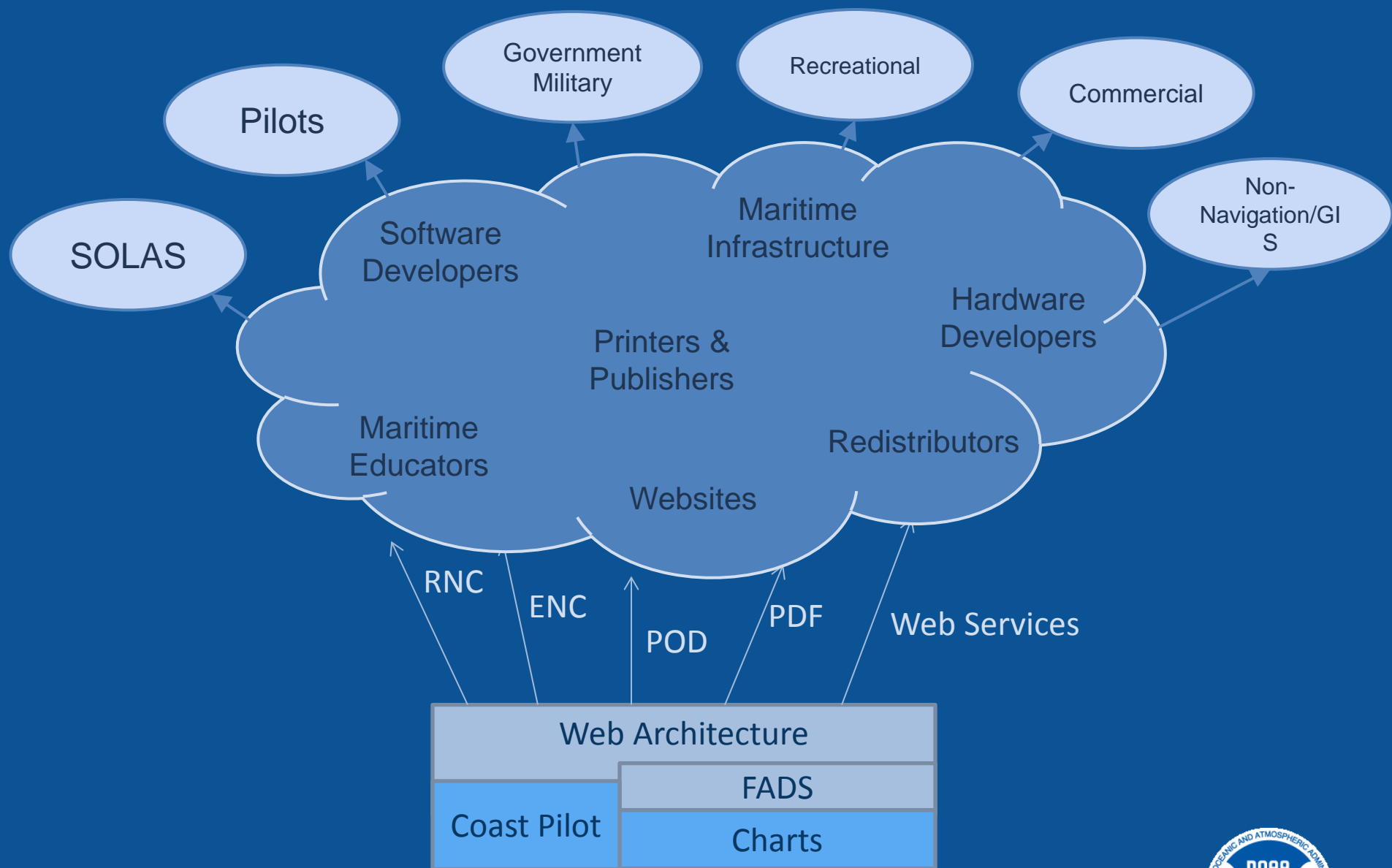
- NOAA announced in October that it would cease government printing of paper charts effective April 13, 2014
 - Paper charts are still required to meet carriage requirements on most ships
 - Paper charts will still be printed by Print-on-Demand from private printing partners
- Why is this important?

Opportunity to Shift to Digital Focus

- In Distribution
 - We can update charts with new information between new editions, so that changes are available sooner.
- In Content
 - Electronic charts can contain more information than can fit on paper
 - Precise positioning of critical features
- In Function
 - Better support for water level integration with charts to manage under keel clearance risk
- In Operation
 - Is there an upcoming opportunity to streamline the Notice to Mariners systems?

FY14 – FY19 Strategic Priorities

- Transform Charting
 - On-demand, fully-corrected, and fit-for-use
- Innovate Hydrography
 - Expand partnerships, sources, and technologies
- Change Navigation
 - Deliver new standards, products, and services
- Be the Experts
 - National source of ocean mapping data and expertise

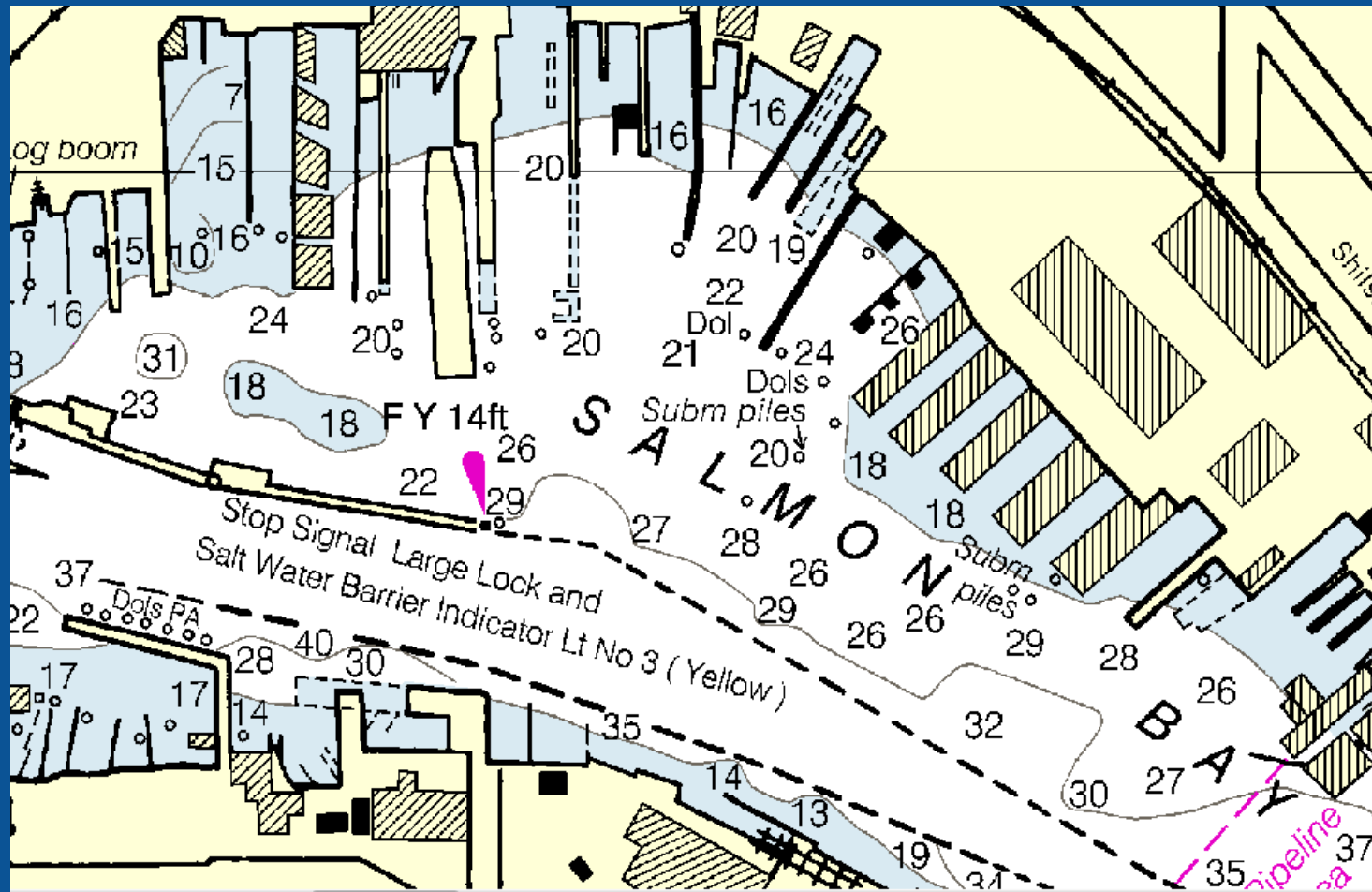


NEW PRODUCTS & SERVICES

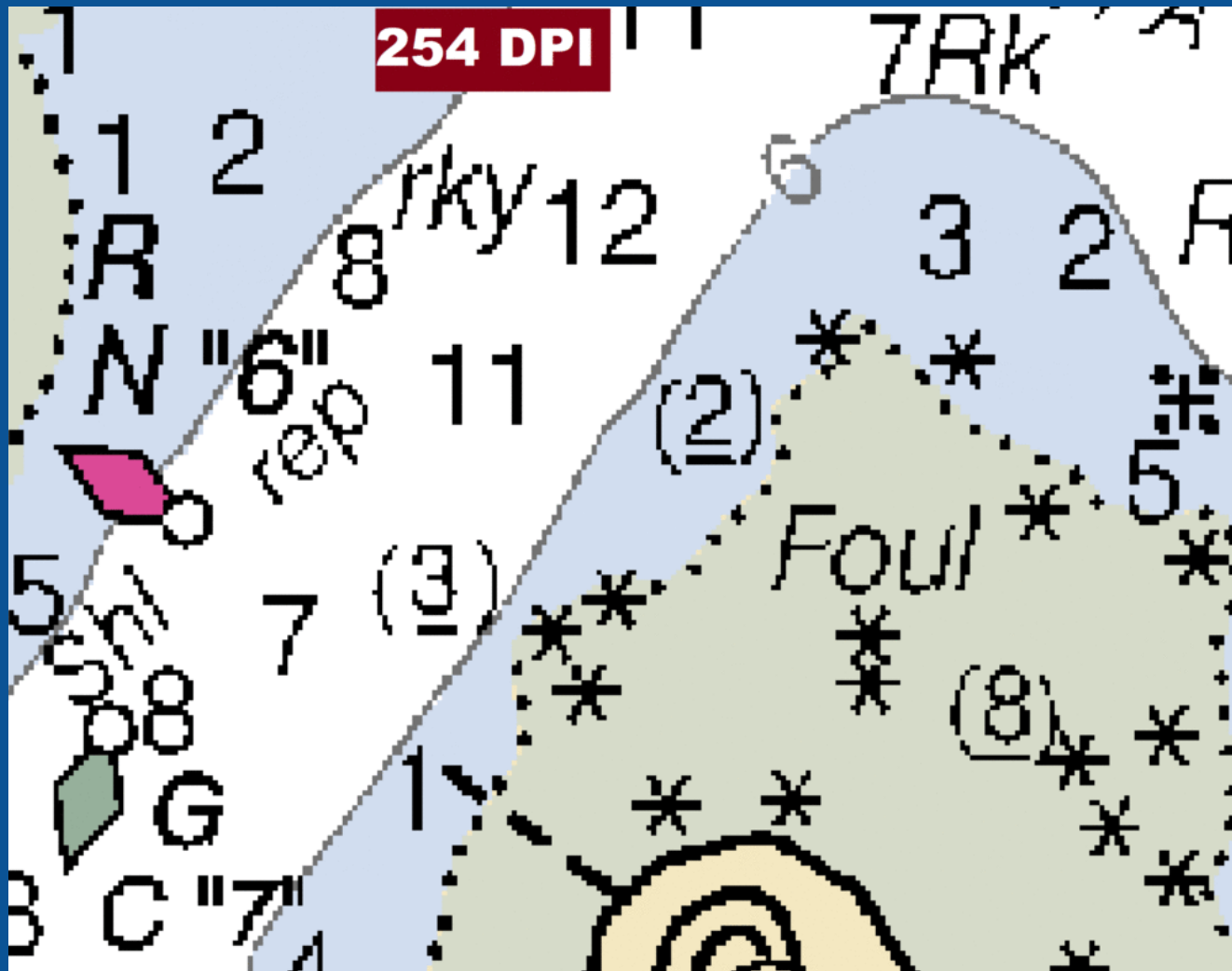
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NOAA Navigational Charts in PDF



400 DPI NOAA RNCs



FUTURE PRODUCTS & SERVICES

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NauticalCharts.gov

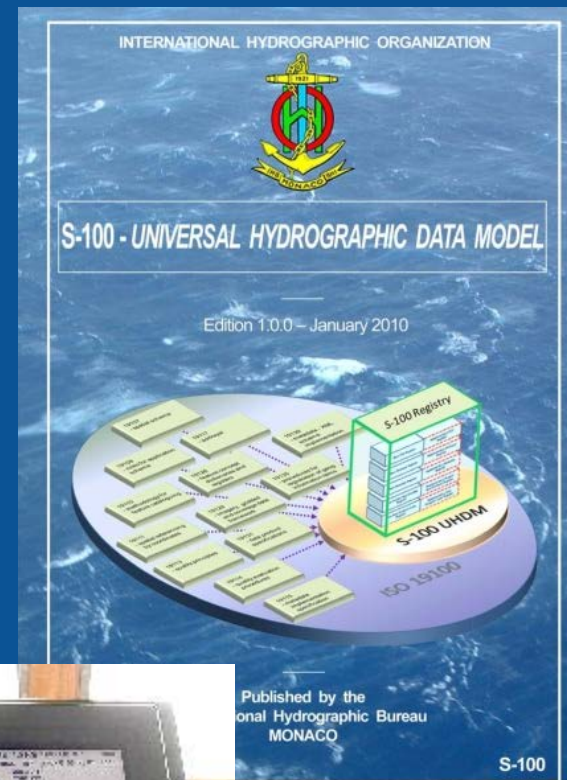


- Common distribution point for NOAA, NGA, and USACE navigational charts
- Shared web mapping services
- Clearly demonstrates interagency coordination
- Supports ECS software, mobile apps, redistributors, and customers directly
- Currently seeking approval from DOC CIO, with letters of support from NGA and USACE



S-100

- Under testing with IHO
- Will be more flexible, extensible than S-57
- May contain weather, modeled tides and currents
- Expect implementation in 2018

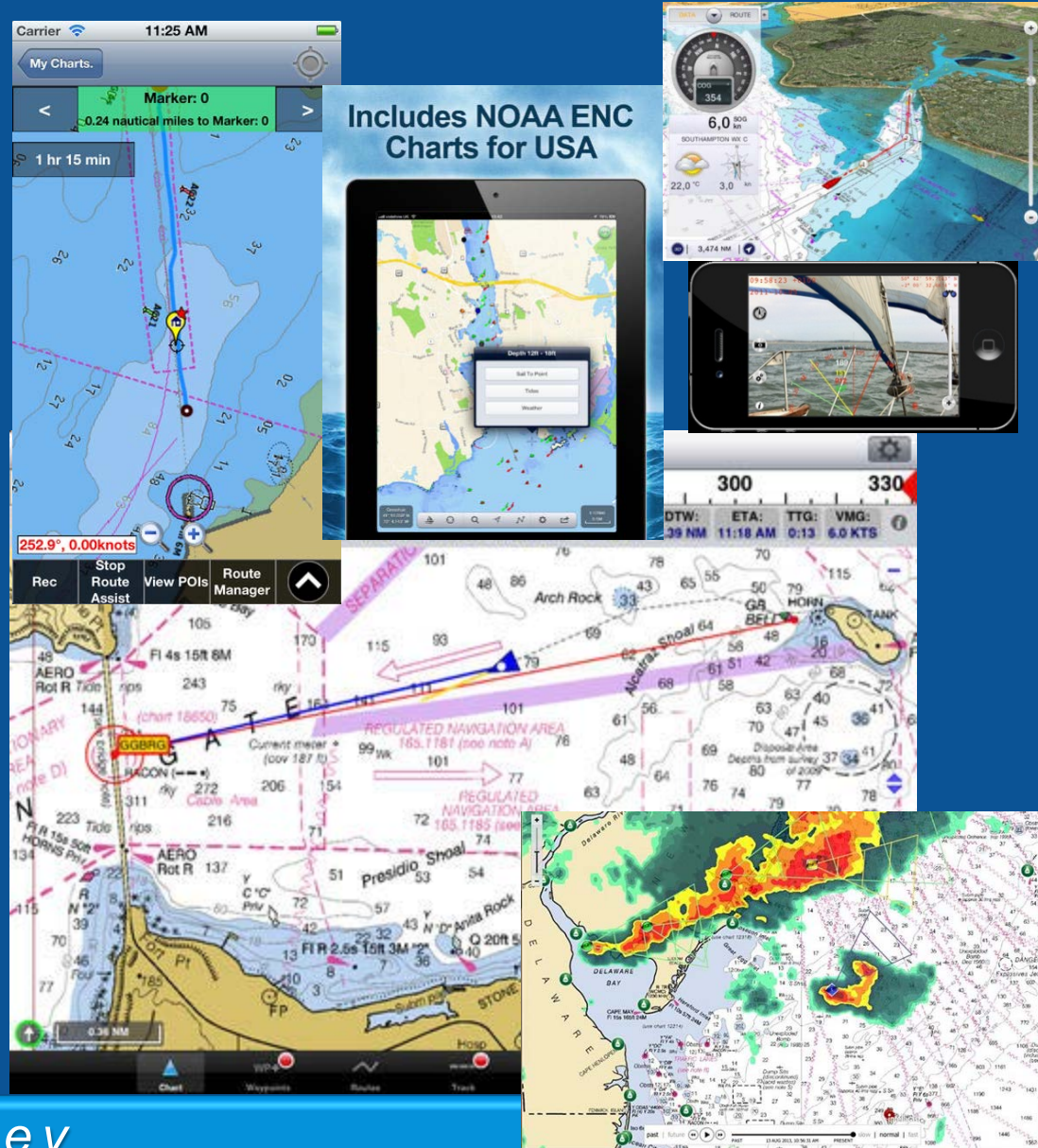


Bathy overlays for precise navigation

- The form and limitations of traditional chart products do not support maneuvering in ports.
- Working with the USACE and our own hydrographic team, we are developing a high resolution bathymetric overlay for dynamic areas
- Compatible with ECS, Pilot carry-aboard units, but not necessarily ECDIS
- Pilot project in lower Mississippi. Expected pilots in LA/LB, Norfolk.

Embrace Unregulated Navigation Technology

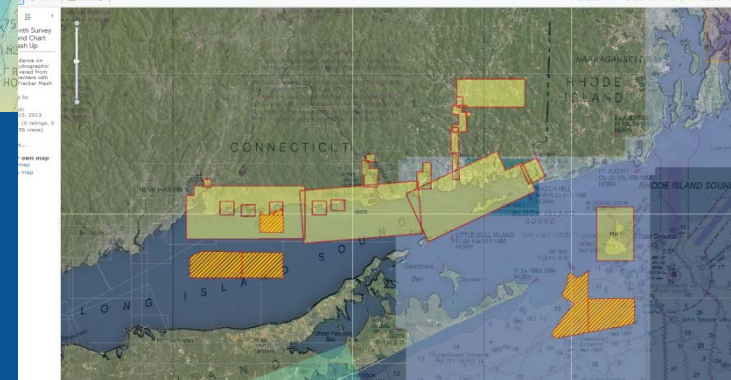
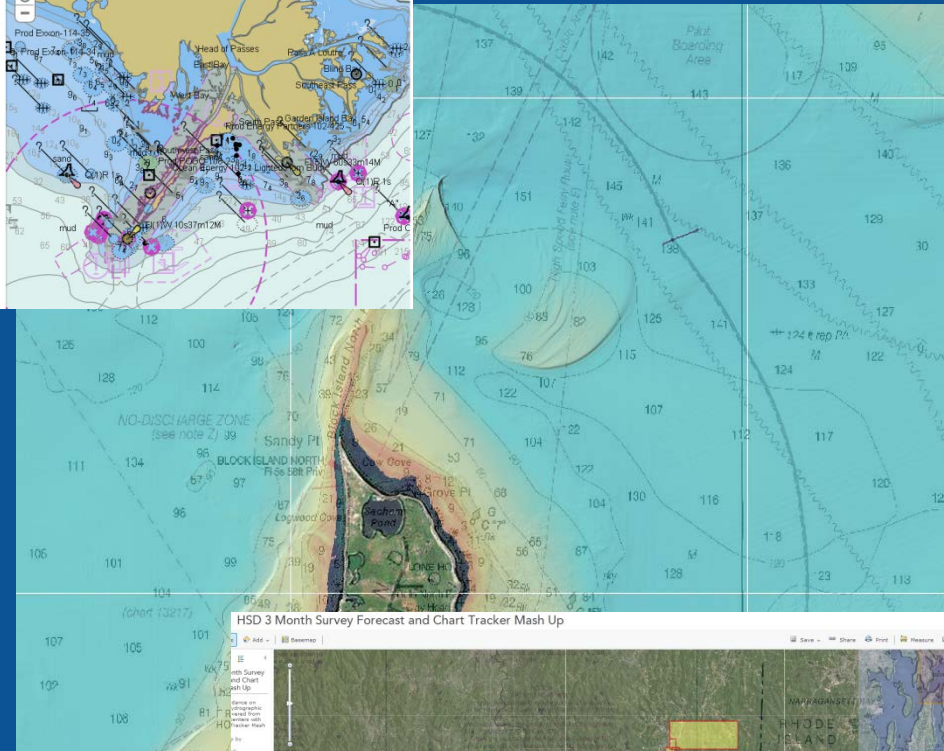
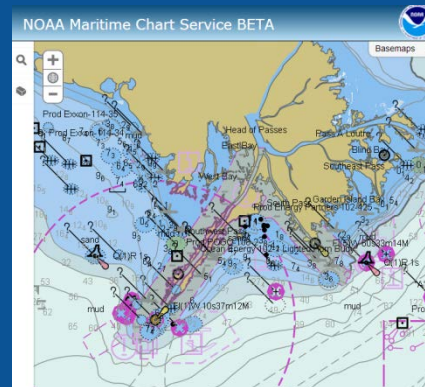
- Tremendous source of innovation
- Medium for chart delivery to millions of customers
- Connectivity creates new opportunities



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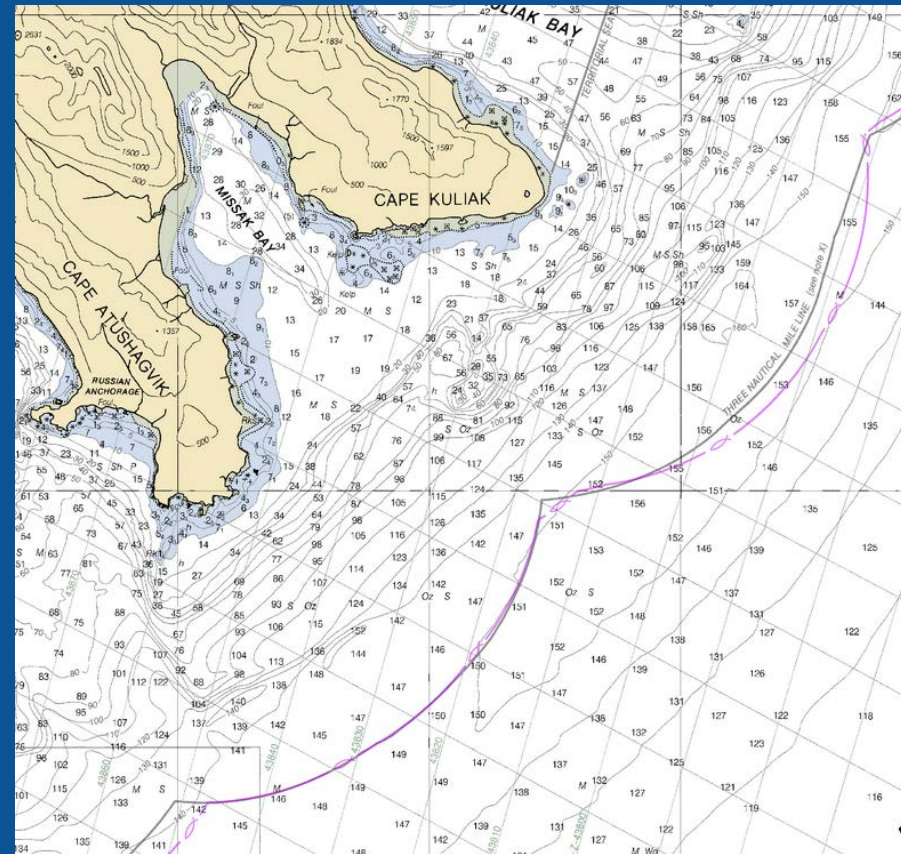
Web Services for Coordination and Distribution

- Newly developed web service allows us to host ENCs as a layer
- Adding a geographic component to all planning and coordination functions
- Ease of access to a wide variety of authoritative datasets



Boundary, Traffic, and other overlays

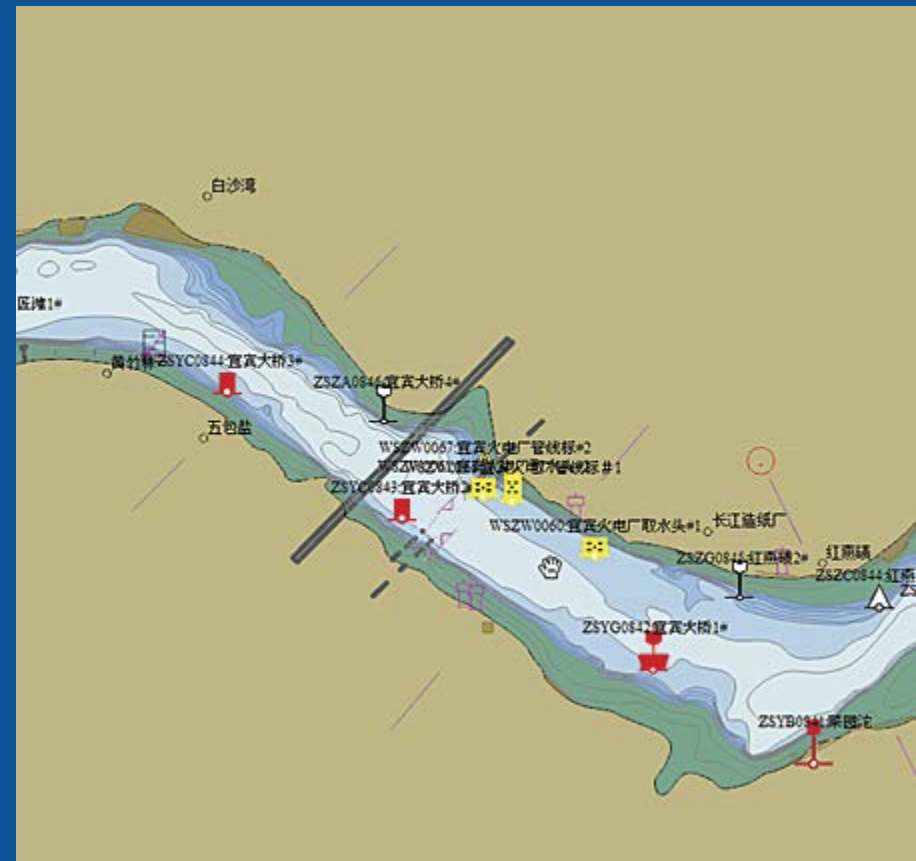
- There is unmet demand for information to be “put on the chart”
- We are working on a model whereby additional layers can be “added” to a printed chart
- Also published as an ENC overlay



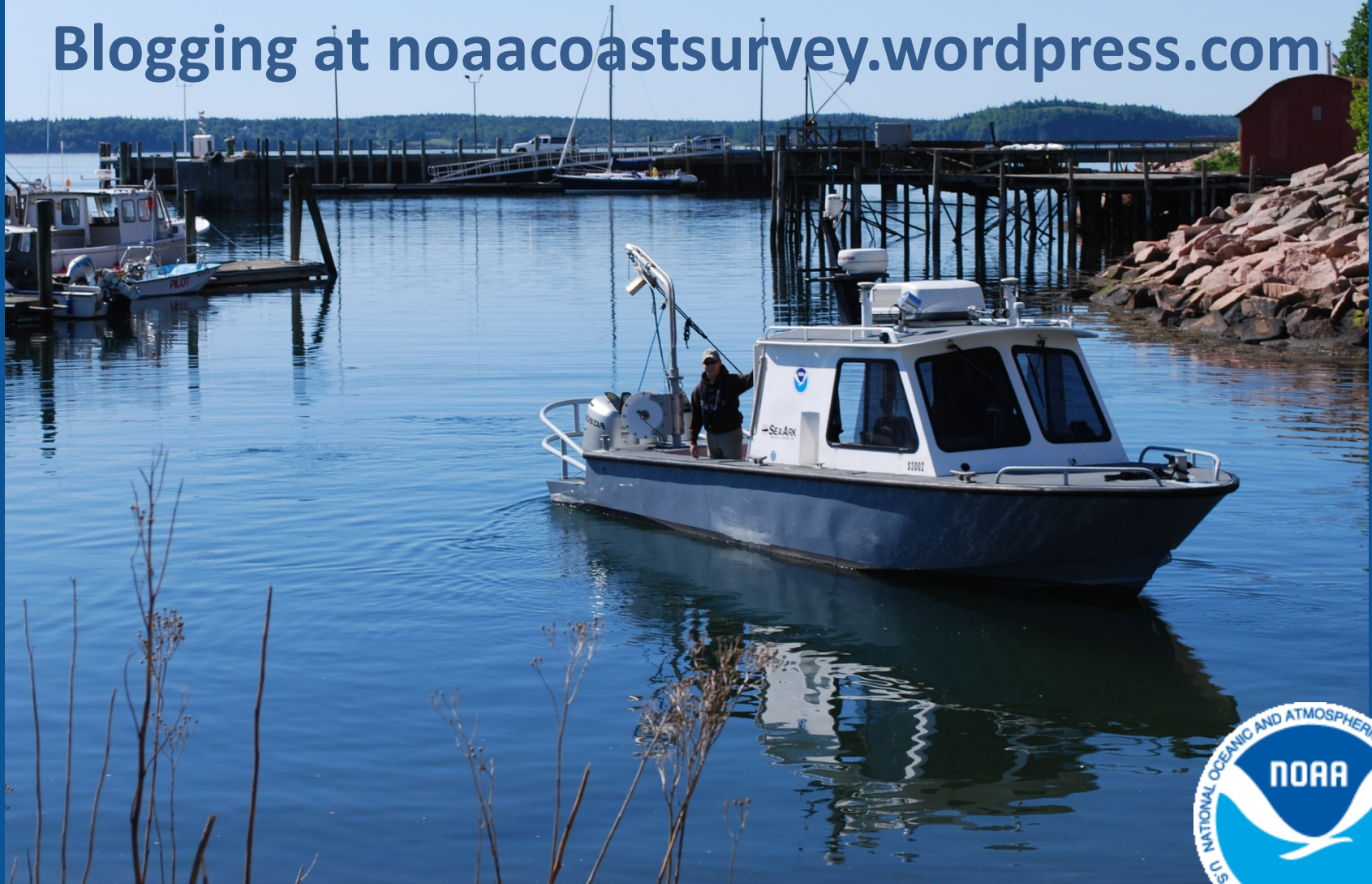
Future of Navigation-Changiang (Yangze) River Authority in China



- 2600 km river system with heavy traffic and large water level fluctuations
- The CRA has implemented an award-winning charting and navigation system.
 - All vessels are intermittently network connected
 - Navaids position changes can be updated to all ships within 1 day by innovative web services
 - Water levels are integrated with the chart system so that charted depths and contours are changed with changing water levels.



www.nauticalcharts.noaa.gov
Twitter @nauticalcharts
Blogging at noaacoastsurvey.wordpress.com



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Backup Slides



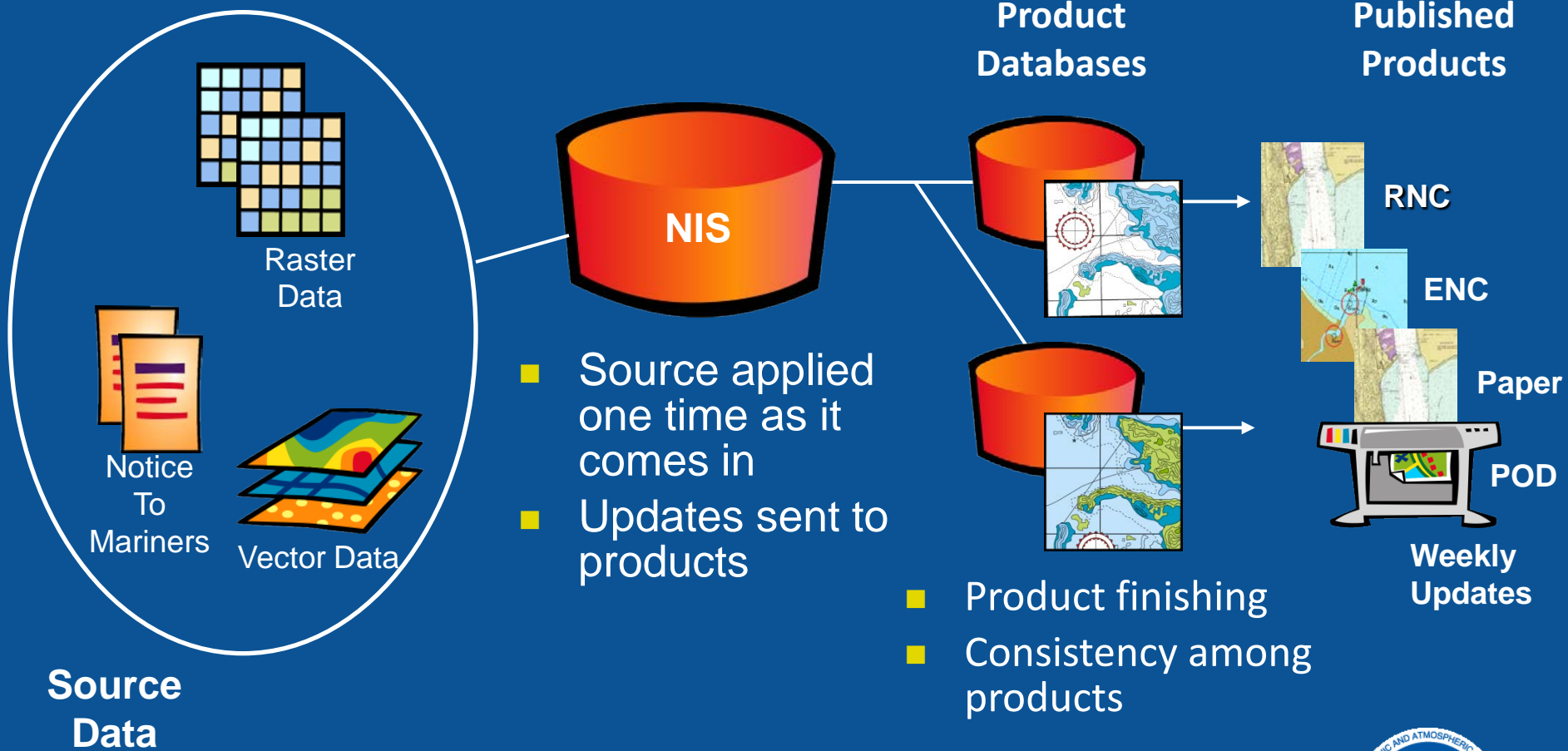
e-Navigation Principles

- Provide free and media-neutral navigation information
- Simplify user experience
- Support up-to-date information
- Standards-based interfaces and products
- Flexibility, Interoperability
- Enable private sector “Navigation Enterprise”
- Authoritative information

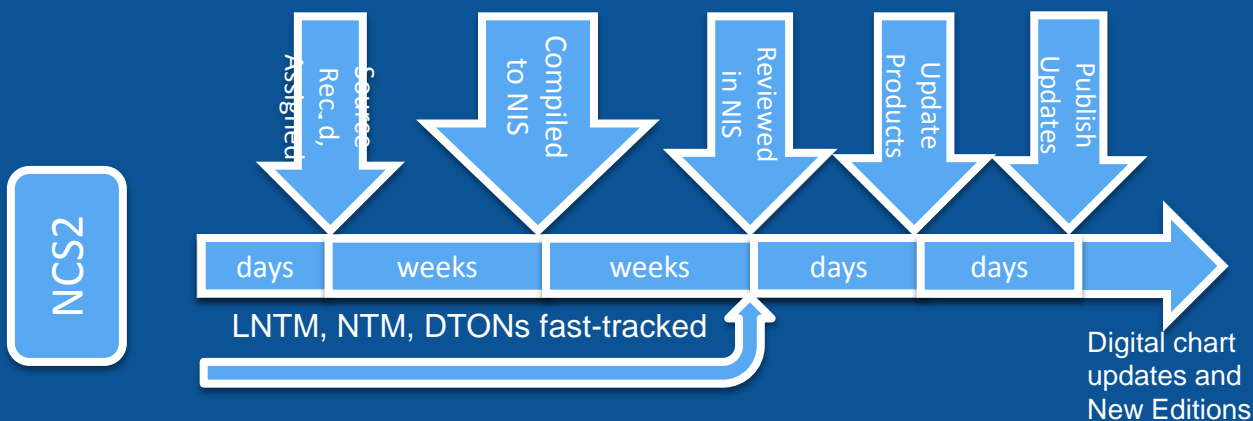
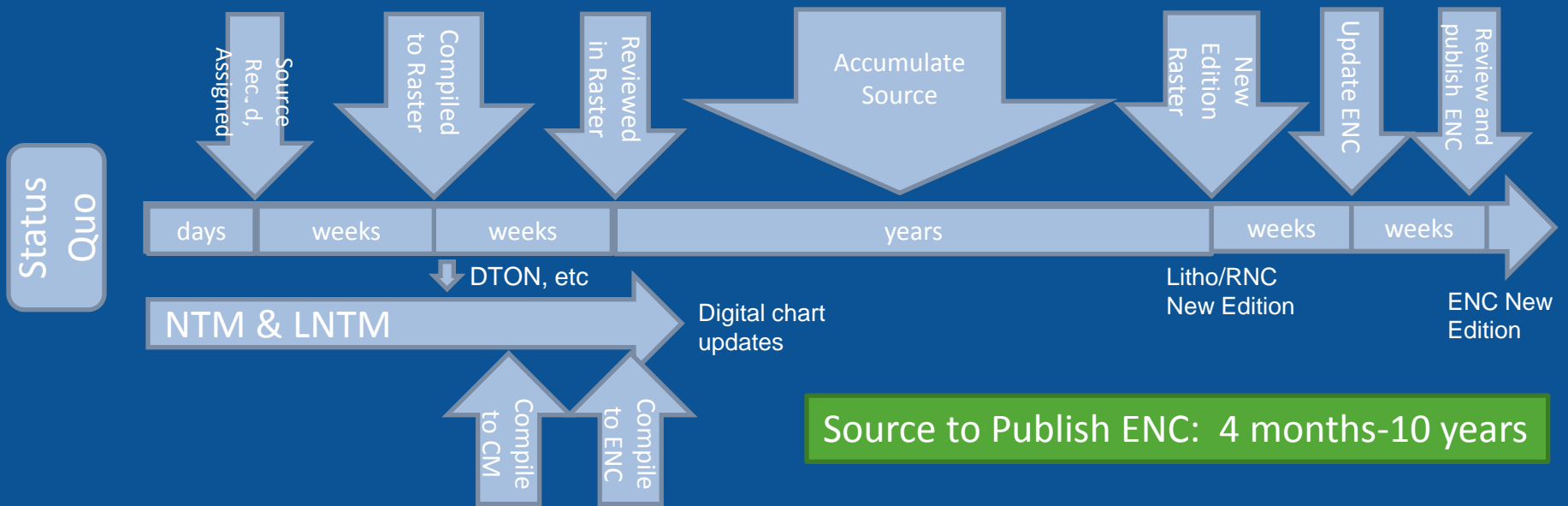
Recognize and Serve Broad User Base

- SOLAS Vessels Port to Port
- Military and Government Vessels
- Pilots and Precision Navigation
- Light Commercial (Tugs, Fishing, etc)
- Recreational
- Non-Navigation use

NCS2 System Cartoon



NCS2-A new way of doing business



**Source to Publish ENC:
2 months-6 months**