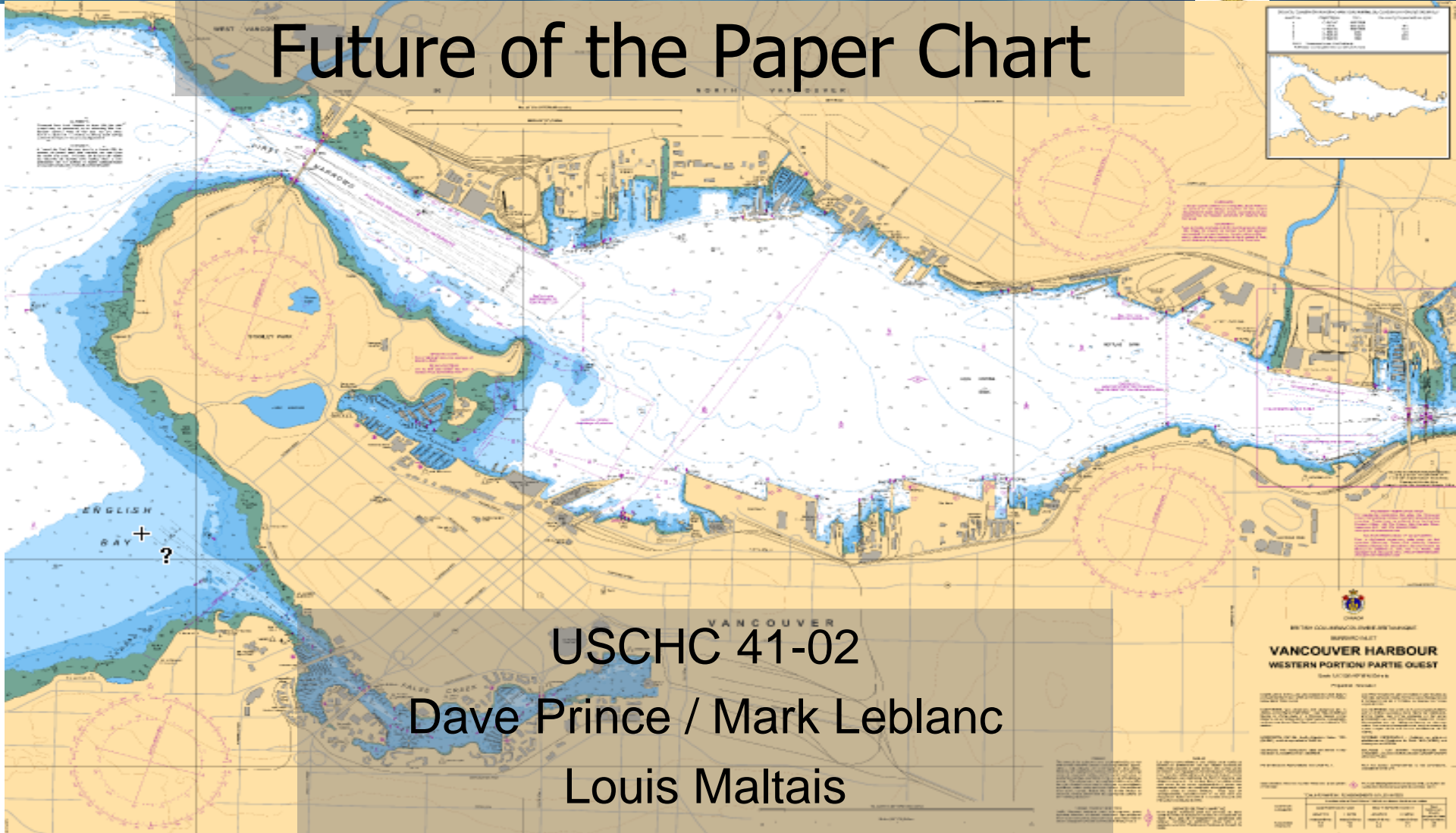




Future of the Paper Chart

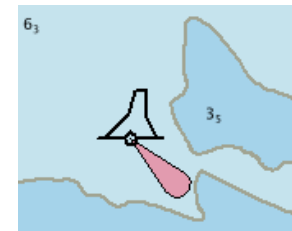
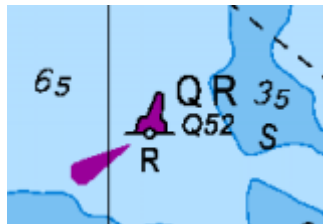


USCHC 41-02
Dave Prince / Mark Leblanc
Louis Maltais



Context

- New Canadian Hydrographic Service Vision/Mission Statement
- Internal CHS Paper – Future Vision of the Paper Chart
- Framework for discussion at both the national and international tables.
- Consultations took place with two broad groups; Canadian chart users as well as hydrographic organizations (HOs) and Canadian/American organizations involved in chart or map production and distribution.
- Commercial shipping mandated to use ECDIS
- CHS must provide paper charts - Canada Shipping Act 2001 and the Charts and Nautical Publications Regulations 1995
- How can this be achieved with “ENC first” production





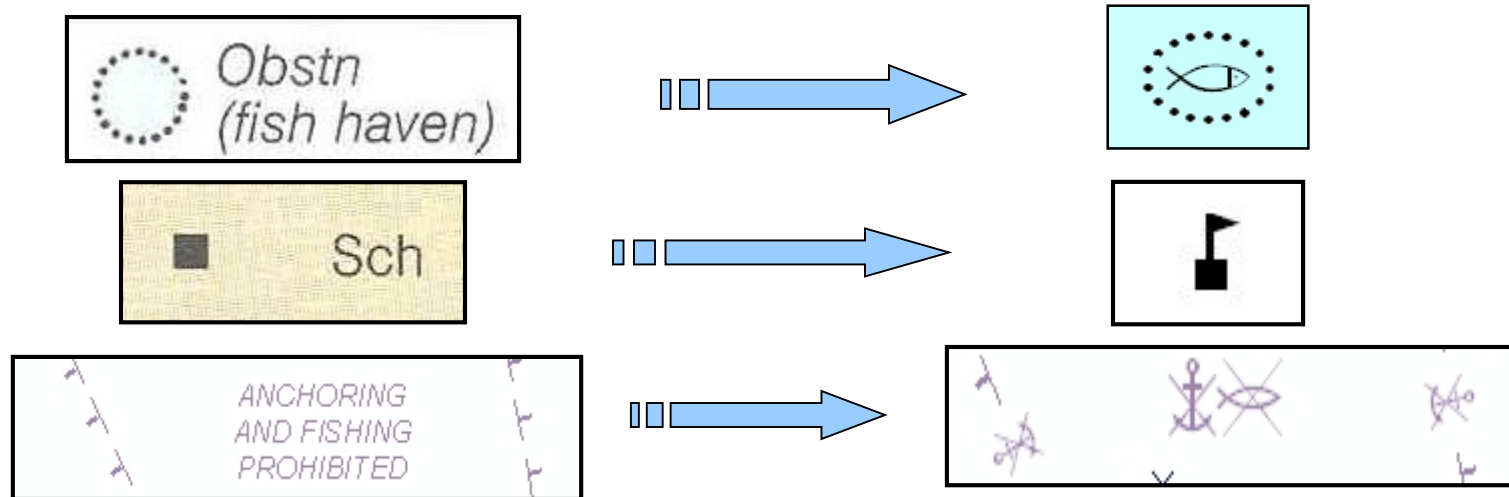
Facts

- Offering three (Vector, Raster, Paper) similar products is costly and work intensive
- Paper charts remain a key product in ensuring safe navigation when ENC's are not available
- Paper charts may be less frequently used for primary navigation but will remain critical to comply to the Canadian Law and as back up.
- Paper chart is a tool for training in safe navigation in the absence of an ECDIS
- The legal requirements surrounding the use of paper charts still represent a major component to be addressed and paper backup will remain.
- CHS is committed to producing ENC/Print-On-Demand/RNC from a single source.



Creative Solutions

- Leverage technology without affecting navigational usability – production service that can display specific object attributes.
- Eliminate extraneous text and requirement to annotate.
- Eliminate time on unnecessary cartographic requirements such as masking and sounding selection
- Use existing ENC symbology (Align S-4 and S-52)





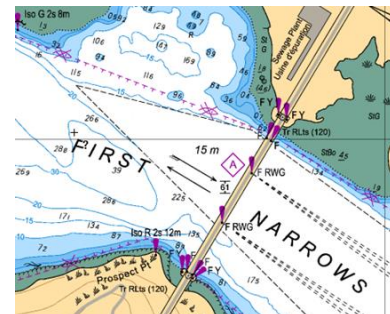
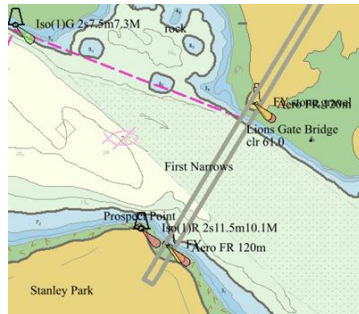
Client Feedback

- Text to identify key landmarks important for ENC and paper
- Land contours and cultural features also important for ENC and paper
- Mariners want an increased sounding density in ENCs and paper charts
- Paper charts could be a closer representation of ENC
- Some charts such as River Charts have too much information – channel centre, soundings and nav aids are critical.
- Mariners would like input into S-100 symbology more intuitive symbols – Does an ODAS Buoy symbol need text “ODAS”
- Extensive symbology not required on charts where a larger scale is available.
- No need to curve test – “compass point” approach for paper charts.
- Overlap can be minimal with GPS positioning.



Goals

- Determine if paper chart products align with the needs of today's mariners.
- Identify key areas for improvement and changes that can be made to meet the shifting demand
- Making CHS processes less labor intensive and more cost effective and aligned with International Standards.
- “One button” ENC to Paper Chart Objective.
- Modernizing paper chart presentation to provide Mariners with more timely up-to-date products.
- Synchronize ENC and paper chart updates and production.





CHS Next Steps

- RFI to Industry to request innovative solutions
- Generate a Paper/POD/RNC chart from an S-57/S-101 file
- Production service that is programmed to give a one button solution
- ENC and paper chart from same database
- Vector data in S-57 or S-101 format following a grid based scheme. (3 scales)
- One production stream with an ENC focus
- One common export file that can serve Paper and Raster. (Examples: Geotiff, Geopdf...)
- Leverage industry Hydrographic/Cartographic Artificial Intelligence to automate the creation of Paper/POD/RNC products.
- Merge IHO S-52 and IHO S-4 symbology
- Fulfill IMO SOLAS 5 requirements and Canada's Charts and Nautical Publications Regulations, 1995.



Discussion Topics

- Database driven production
- “Paper Chart 2.0” prototype
- Paper chart overlaps
- Nav aids names/characteristics/shape
- Maintenance effort required (producer side / user side)
- Frequency of New Editions
- IHO Buy-in

