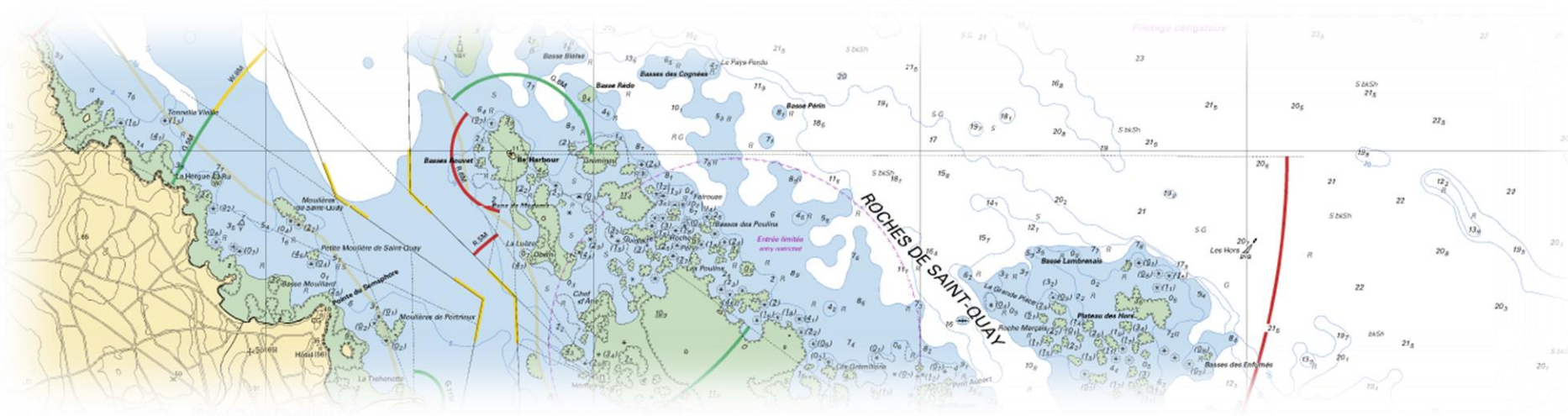


UNIFIED CARTOGRAPHIC SOURCE (FCU)



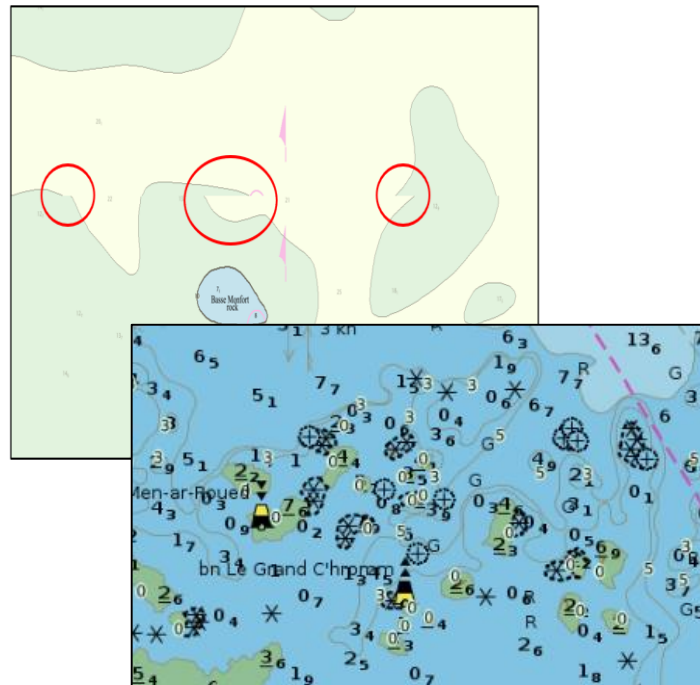
Impact of multiple-scale content on ECDIS

Discontinuities/clustering can occur between 2 adjacent ENC's when displayed

- within the same usage band : **inconsistent compilation scales** and different charting methods
- between two different usage band : cartographic discontinuities
- within Shom's ENC scheme and **between Shom's ENC's and ENC's produced by other HO's**

Consequences result :

- difficulty in using the nautical charted information by mariners and other users
- **risk of navigation error when displayed on an ECDIS**

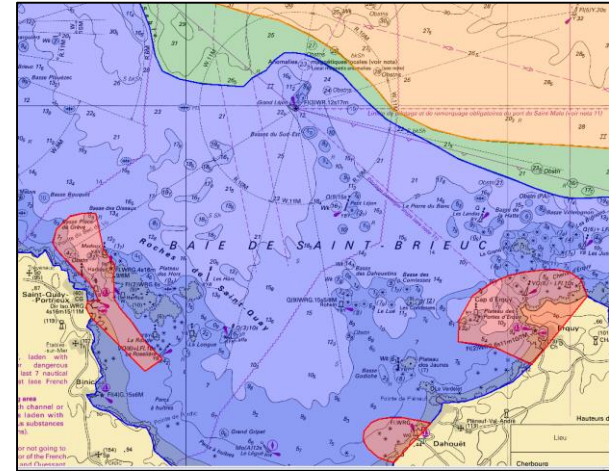


To avoid this: data-centric approach instead of products orientated approach

A single charting scale per area

In one area, the scale will be adopted taking into account :

- Known hazards and bathymetry
- Navigation practice and density
- Economic activities (harbour, wind farm, etc.)



Limited number of compilation scales: 6

Result is a **unified cartographic source (FCU)** as the assemblage of the areas of different scales (compilation of the layers).

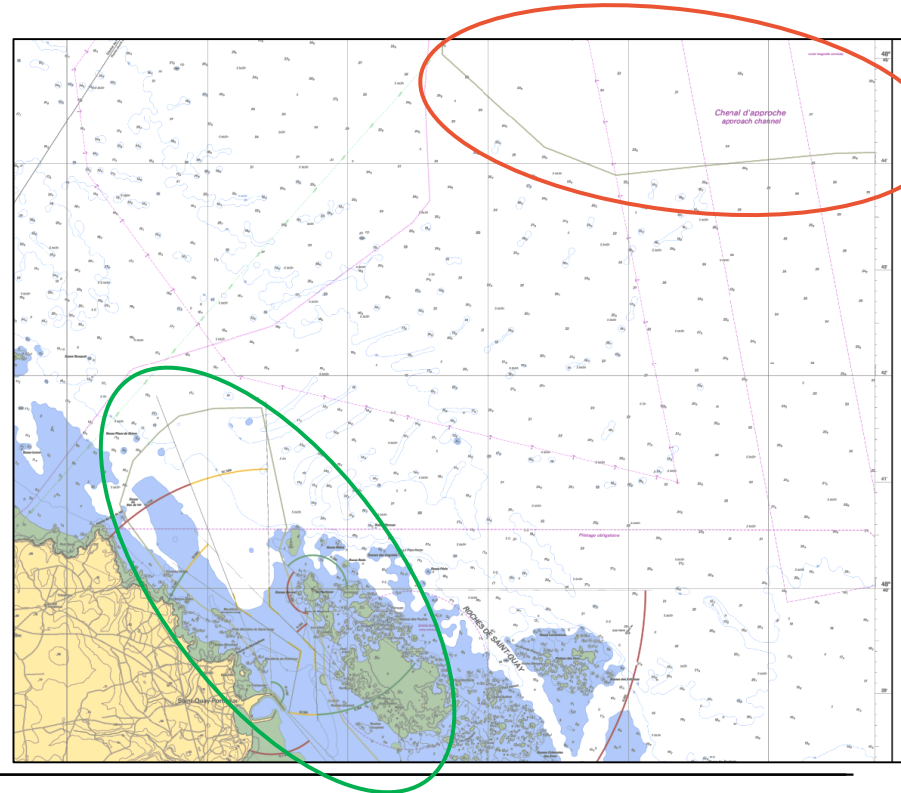
Gamme	maximumDisplayScale S-101 (CSLC S-57 – Compilation)	minimumDisplayScale S-101
UB1	1 : 1 500 000	/
UB2	1 : 350 000	1 : 1 500 000
UB3	1 : 90 000	1 : 350 000
UB4	1 : 22 000	1 : 90 000
UB5	1 : 8 000	1 : 22 000
UB6	TBD ^(*)	1 : 8 000

Chart (paper/ENC) building from unified cartographic source

A chart will be a view/extraction from the **unified cartographic source (FCU)** :

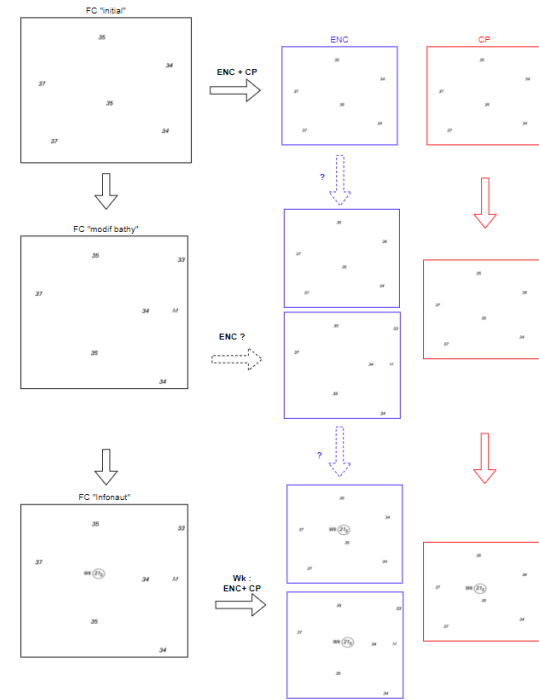
- Where FCU scale is the same or **smaller than** chart scale → use directly the unified cartographic source for content
- Where FCU scale is **higher than** chart scale → use a minimal depiction in the chart

Objects will be connected across scale layers by the cartographer



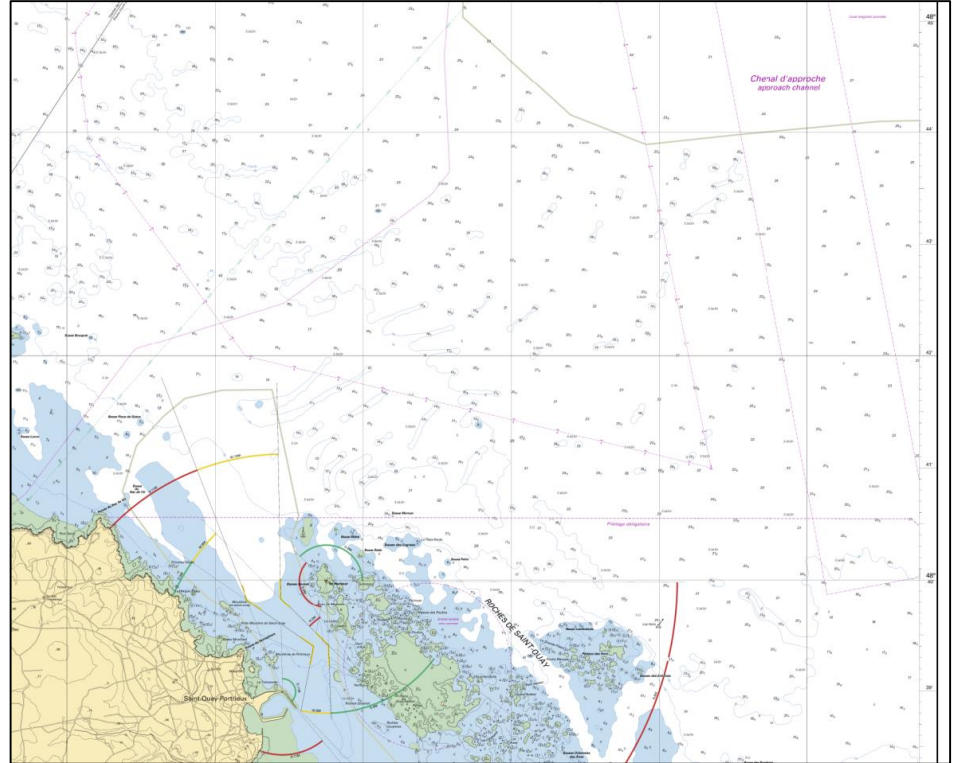
Flow maintenance

- All new information is integrated into the FCU
- Easier chart editing : **Edition of chart = snapshot of the FCU**
- Updates (by NtM or ERs) is still under development (problems of products evolving at a different rhythm from the FCU)



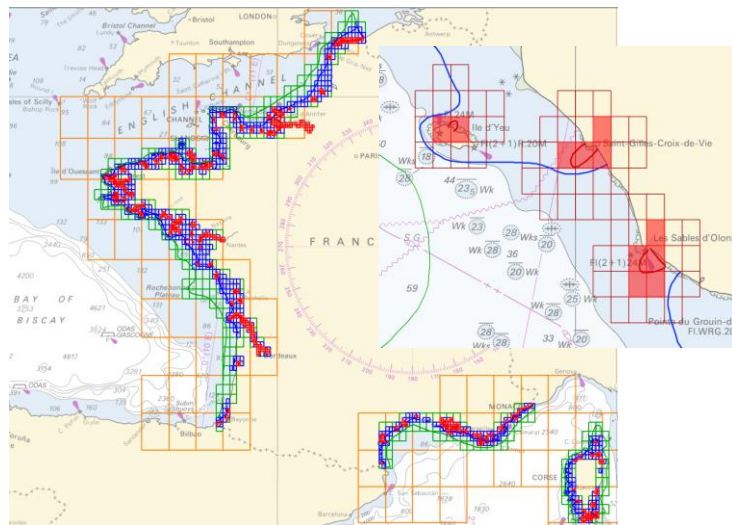
FCU : Data-centric approach benefits

- Improved **safety of navigation** (use of appropriate scale)
- **No discontinuities** (seamless representation)
- Easier and less time consuming maintenance
- **Possibility to automate** paper chart production and/or **chart on demand**
- Cartographer focus on **most sensitive areas**



FCU : Technical elements

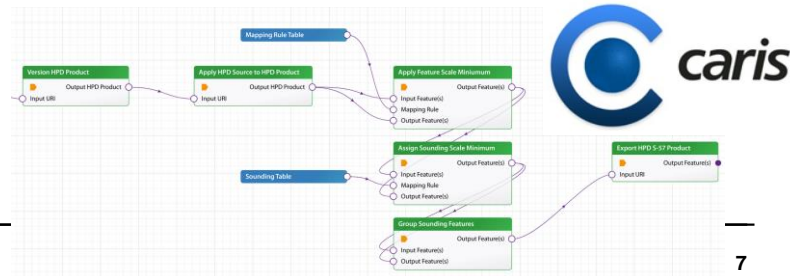
- Use of **gridded** cartographic Source
- **Automation** :
 - HPD 4.1 tools (Process Designer, etc.)
 - Soundings selection (**CALHYPSO**)
 - Topography (from IGN databases in France)
 - **CCB ESRI** (for paper charts) – trial in S1 2024



ArcGIS Maritime



CALHYPSO



Evolutions and perspectives



**Start of production :
mid-2024**

- Consultation with **mariners**, **regulatory authorities** (in progress) and foreign countries where France is PCA
- Possible interactions with **other HOs and within RHCs to harmonize scales**
- **Adaptation of nautical charts** (paper charts, charts on demand, ENC, etc.)

No impact on the transition to S-101 during dual-fuel period



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*Liberté
Égalité
Fraternité*



L'océan en référence

Thank you ! Any questions ?