

# Crowdsourced Bathymetry (CSBWG8)

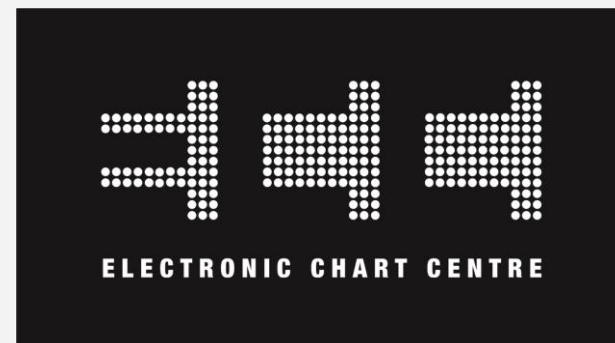
Svein Skjaeveland

# Electronic Chart Centre AS

Owner: Ministry of Trade, Industry and Fisheries

Established: 1999

Employees: 22



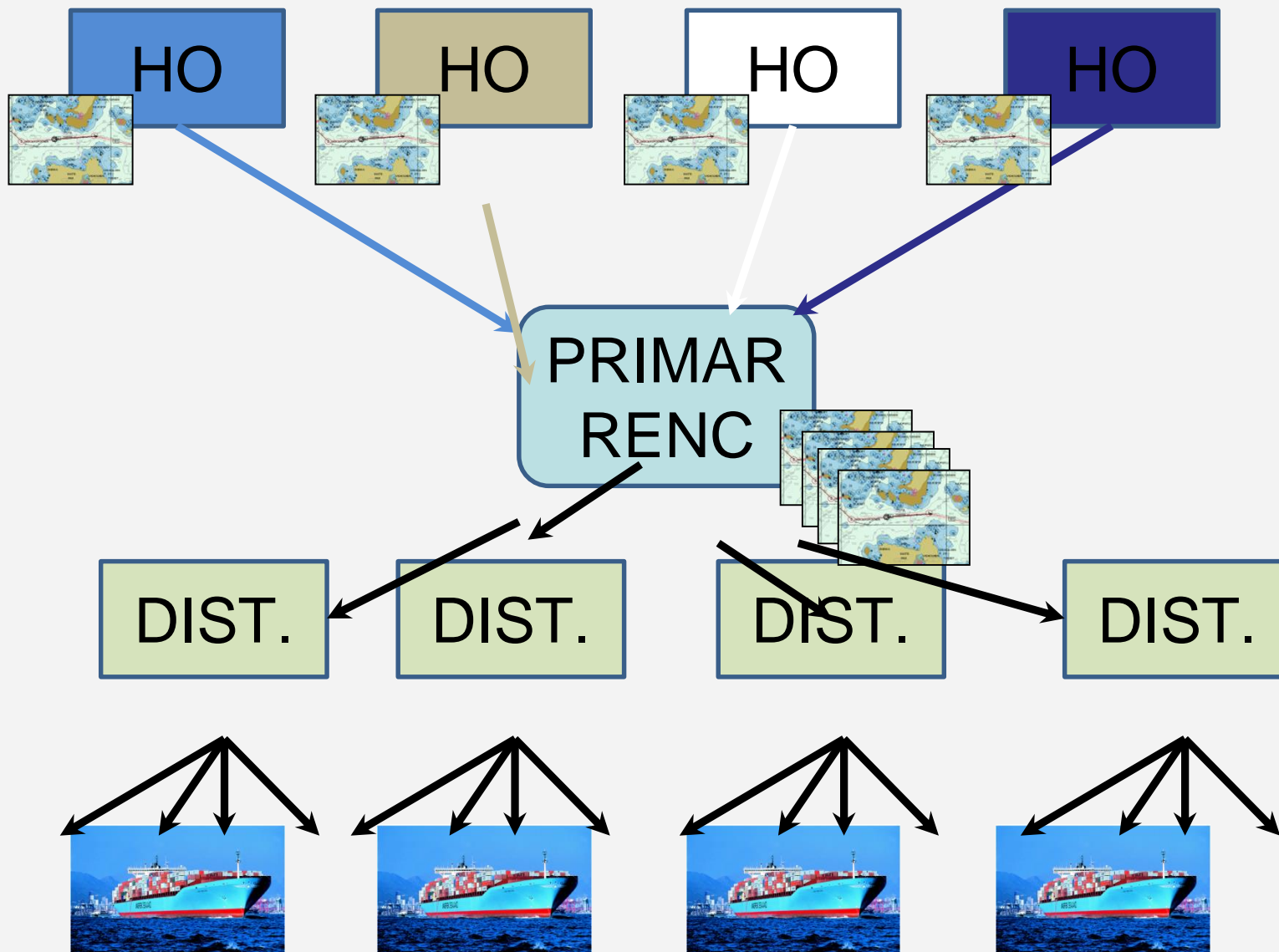
## Tasks:

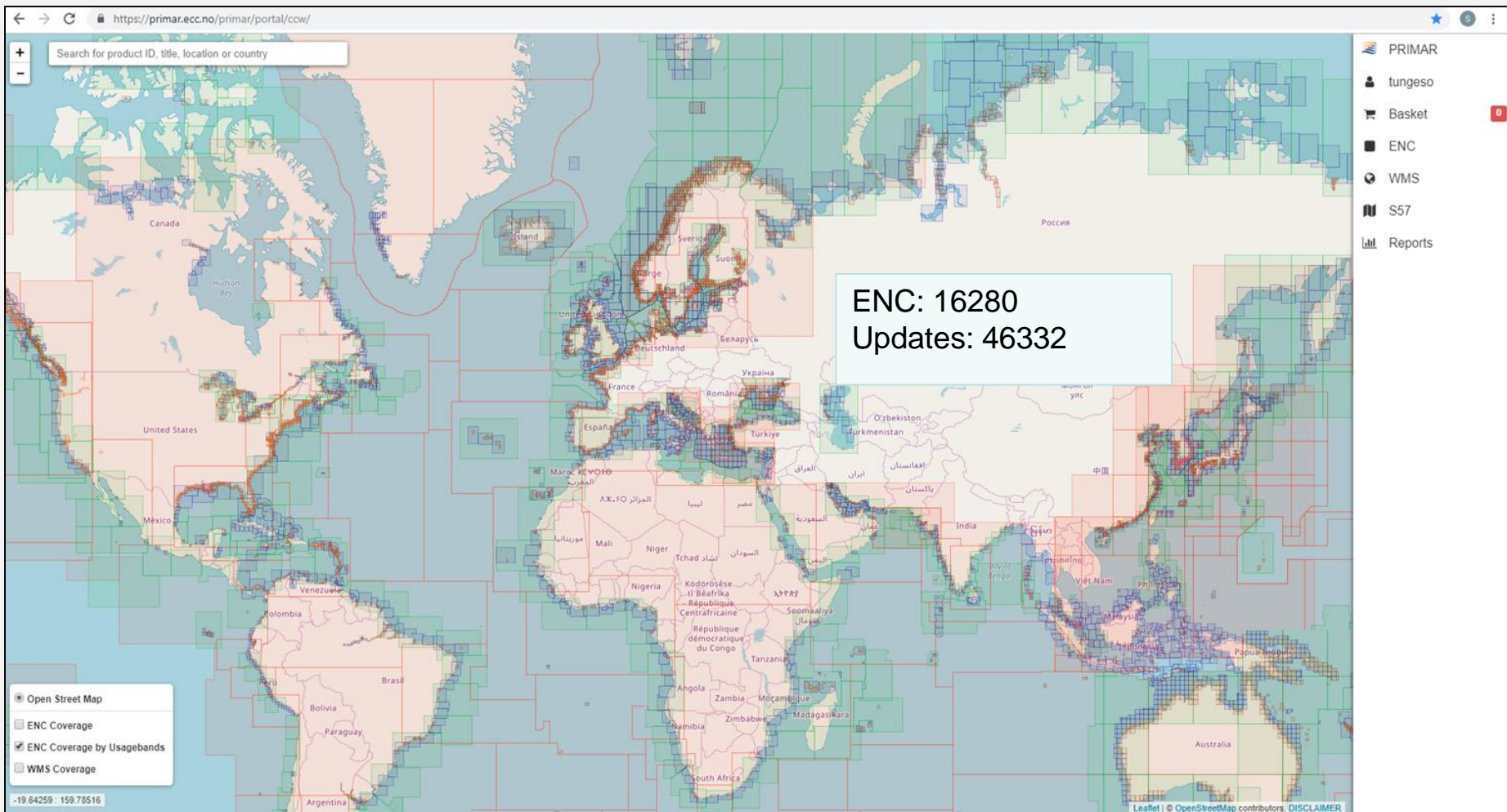
- Contribute to increased safety in the maritime, terrestrial and aerospatial domain.
- Delivery of services to help Norway fulfil obligations related to national/international strategies on safety at sea.

Main customer: Norwegian Hydrographic Service

Main Activity: Development and day-to-day operation of PRIMAR

# ENC value chain – PRIMAR role





# Extracted grids based on ENCs

Extract grid from existing ENCs to improve GEBCO and/or DCDB?

- Explore possibility to generate a product from existing ENCs
- Grid could reflect resolutions defined in Seabed 2030, or other.

## At what resolution are you going to map the oceans?

Seabed 2030 will map the ocean floor at the best possible resolution within practical limits. However, gathering high resolution bathymetric data gets more difficult as the ocean gets deeper. Due to this, we have set an overall minimum requirement for different ocean depths, based on what we can achieve with state-of-the-art multibeam technology.

This table shows the minimum resolutions we expect to achieve at each depth range by Seabed 2030.

Depth range	Grid cell size	% of world ocean floor
0–1500 m	100 × 100 m	13.7
1500–3000 m	200 × 200 m	11
3000–5750 m	400 × 400 m	72.6
5750–11,000 m	800 × 800 m	2.7

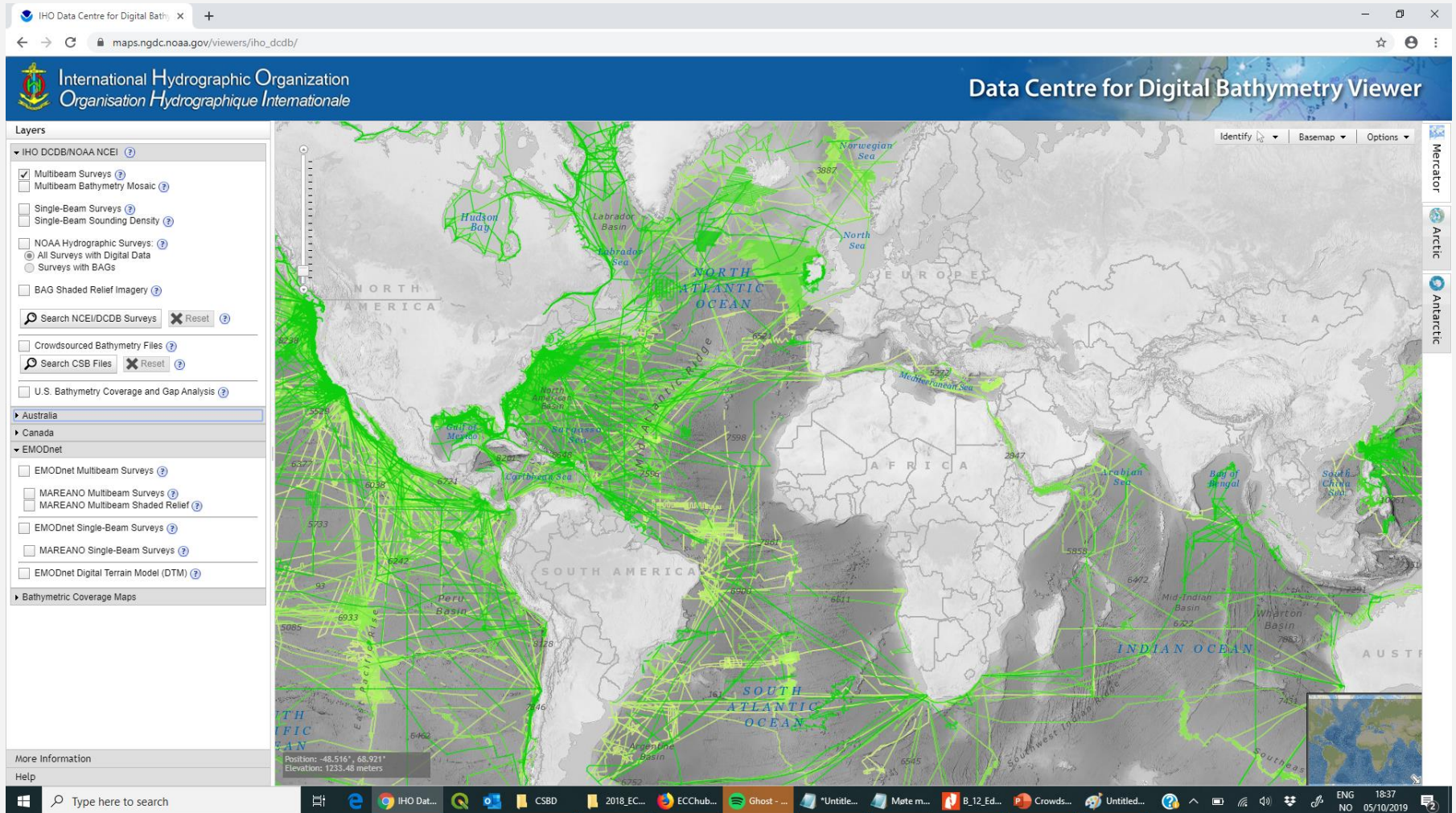
# Extracted grids based on ENCs

- Add web page to PRIMAR GDS to download depth information derived from S-57 ENCs as GeoJSON.
- Will consist of combined information from all S-57 ENC usage bands clipped to ensure best available data are used for any area.
- User select one or more countries from the PRIMAR database based on user access to unencrypted data download.
- API access to the same functionality for automatic support.
- Raster elevation tiles for dynamic use
- Optional ideas:
  - Vector output formats, OGC GeoPackage, ESRI Shape
  - Grid output format, OGC GeoTIFF
  - Selection of usage bands



# IHO DCDB

- [https://maps.ngdc.noaa.gov/viewers/iho\\_dcdb/](https://maps.ngdc.noaa.gov/viewers/iho_dcdb/)



# DCDB Improvements

## 1. Non-Data Coverage and route import

- Add a data or non-data coverage.
- Route import - import planned route and analyze/suggest route changes to cover non-data areas.
  - Could be defined how much a vessel possibly is able/willing to deviate to cover non-data areas.
  - Output could be new route suggestions based on predefined settings informing of how conservative a new route proposal can be or not.

## 2. Survey Quality

- A methodology to select best quality data.
  - Analyze data quality accessible information
  - E.g sensor information like position and motion sensors uncertainty
- Result will be a coverage consisting of best data available (not containing parts of overlapping surveys valued as less quality data).



# DCDB Improvements

## 3. Download only parts of surveys?

- Direct download/access options vs national/organizational download interfaces?
  - End user could connect to DCDB service defining coverage areas where data should be extracted/streamed.
  - Various end user extract functionality could be used – as selection options already covered in DCDB.

## 4. Survey adjustments – national regulations

- Extract only the parts of a survey that will be public available before ingested into DCDB.

# DCDB Improvements

## 5. Online accessibility

- Ability to look at actual selected data in DCDB solution.
  - Display of actual selected data using DCDB interphase only.
  - Possible solutions: Cloud Optimized GeoTiff or elevation tiles.

## 6. Automated ENC comparison

- Solutions to define variations, errors or additional information.
- Feed info to HOs to help them allocate resources cost effective.

## 7. Automated survey comparison

- Solutions to define variations between different surveys.
  - For overlapping surveys primarily

# DCDB Improvements

## 8. Trusted node uncertainty calculation support

- Calculate and generate uncertainty estimates. Add to survey metadata.
- Could also calculate total uncertainty budget if requested.

Possibly over time surveyors (individual vessel collectors) analysis.

# DCDB Comments

- A lot of the data not accessible –unable to pick them.
- User interface:
  - Identity symbols should be available as separated buttons
  - Basemap and Options listing should stay open when picking to approve usability
- NRCAN Multibeam - Identified Features - Zoom brings you to wrong position.

**Thank you for your attention**  
**Questions?**