



Crowdsourced Bathymetry Data Pipeline Infrastructure Update

Data Centre for Digital Bathymetry
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CSBWG6

Objective

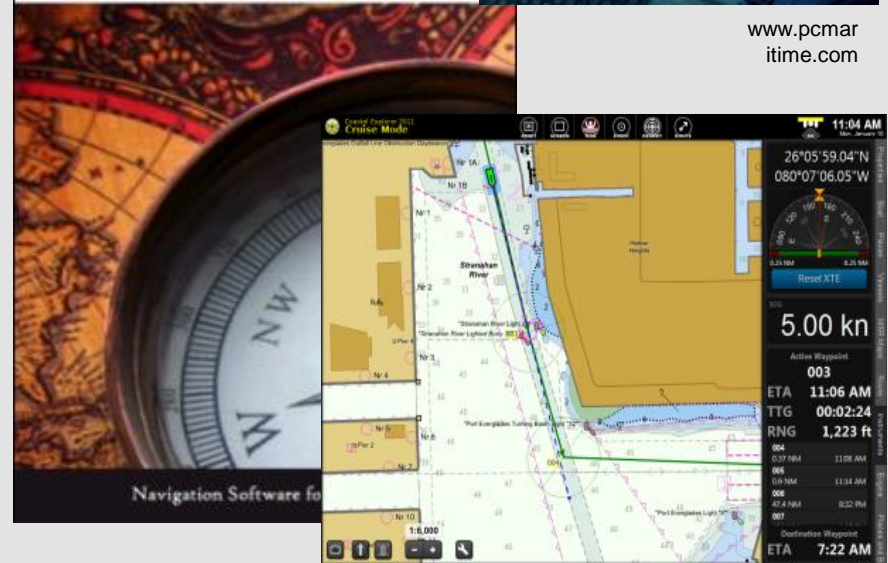
“To enhance the IHO DCDB infrastructure and interface to allow the public to **upload, discover, display and download** CSB data via a web-based interface.”

Rose Point Pilot Project

- NOAA and the DCDB teamed up with Rose Point Navigation Systems.
- Mariners are given an option to enable CSB logging - allowing a modified electronic charting system log file to record *position, depth and time*.
- Mariners can choose to be anonymous or to submit metadata about vessel and equipment.
- The ECS software transmits the data with a trusted node token via HTTPS post when the mariner updates the software or chart catalog.



www.pcmaritime.com



www.rosepointnav.com

Data discovery and access via our map viewer.
Data delivered as a collection of files.

```
{
  "platform":
  {
    "uniqueID": "ROSEP-e8c669f8-df38-16e5-b86d-9a79606e9478",
    "type": "Ship",
    "name": "SS Dinghy",
    "length": 65,
    "lengthUnitOfMeasure": "meters",
    "IDType": "IMO",
    "IDNumber": "1008140"
  }
}
```

CSB data log file (with JSON metadata string)

```
lat,lon,depth,time]
47.666526,-122.098525,21.49,20161017T234638Z
47.666518,-122.098525,11.98,20161017T234739Z
47.666517,-122.098527,14.63,20161017T234839Z
47.666515,-122.098527,17.16,20161017T234935Z
47.666498,-122.098472,19.72,20161017T235044Z
47.666505,-122.098522,20.18,20161017T235141Z
47.666477,-122.098507,20.42,20161017T235241Z
47.666512,-122.098432,20.63,20161017T235342Z
47.666497,-122.098417,20.33,20161017T235443Z
47.666512,-122.098470,20.33,20161017T235548Z
47.666507,-122.098490,20.57,20161017T235644Z
47.666533,-122.098453,20.33,20161017T235832Z
47.666575,-122.098445,20.33,20161018T000042Z
47.666585,-122.098460,20.21,20161018T000236Z
47.666417,-122.098443,18.32,20161018T000337Z
47.666417,-122.098443,15.27,20161018T000438Z
47.666433,-122.098473,12.68,20161018T000538Z
47.666498,-122.098562,10.06,20161018T000638Z
47.666498,-122.098560,12.65,20161018T000738Z
47.666492,-122.098552,15.88,20161018T000839Z
47.666487,-122.098527,18.32,20161018T000939Z
47.666398,-122.098182,20.12,20161018T001038Z
47.666393,-122.098185,20.30,20161018T001045Z
47.666388,-122.098182,20.42,20161018T001046Z
47.666375,-122.098180,20.70,20161018T001047Z
```

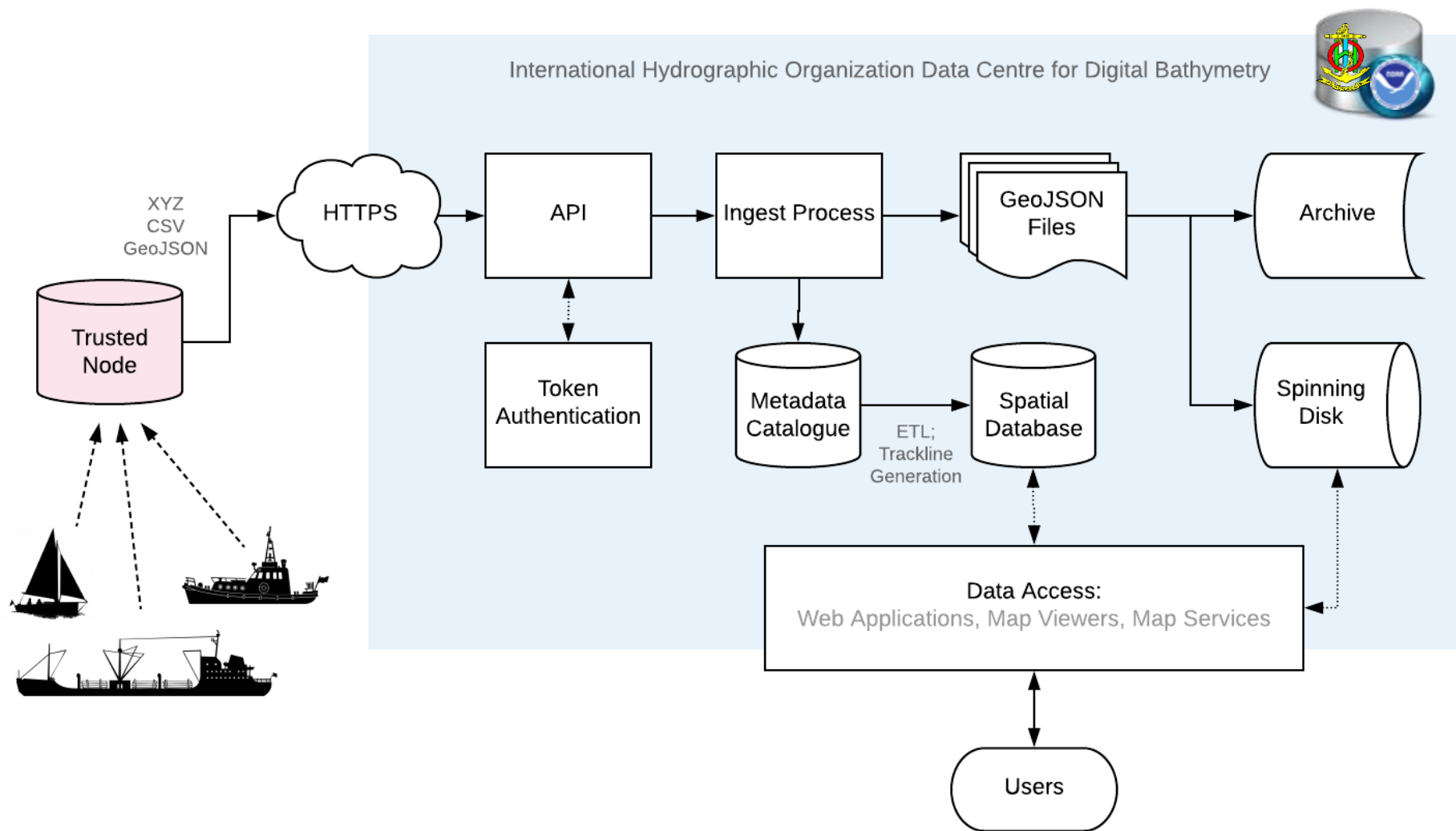


Data and identifying token are submitted to DCDB via HTTP post

Frequent update of viewer



CSB Data Pipeline - Quick Review



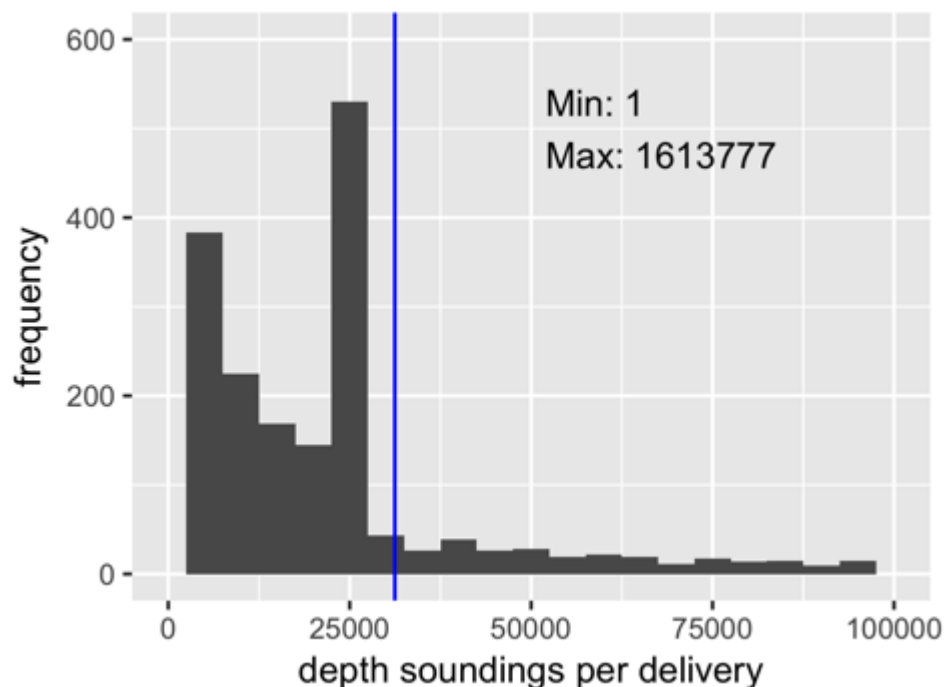
What has come through the pipeline?

as of 6/14/18, over...

117 million soundings

3700 data deliveries

110 unique vessels



Current Pipeline Development Cycle

Goals:

- Harden system to prepare for expansion beyond our current pilot data providers.
- Streamline new contributor onboarding operating procedure. Add test HTTP endpoints to refine contribution before sending to production system.
- Implement option for user to choose delivery format - CSV, Shapefile, S57, KML (format list not finalized).
- Updates to map viewer/integration with IHO DCDB viewer.



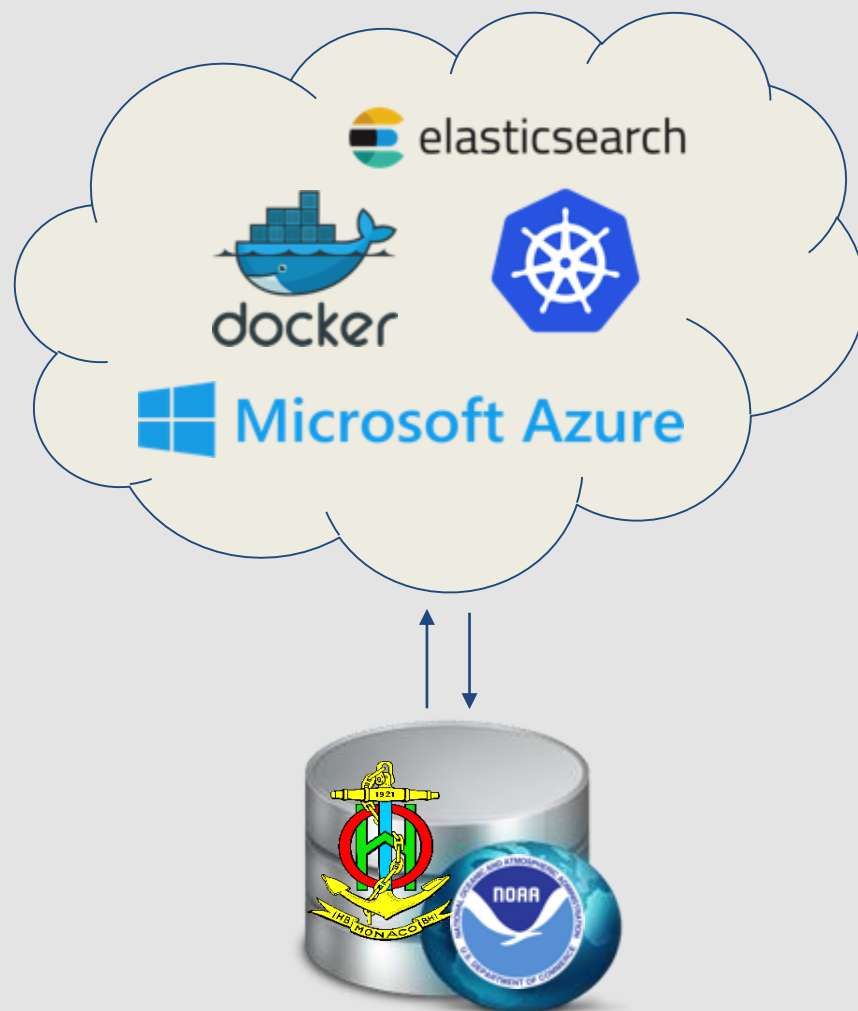
Current Pipeline Development



https://maps.ngdc.noaa.gov/viewers/iho_dccdb/

Pipeline Development: Next Steps

- Build cloud based storage and processing infrastructure.
- Develop bathymetric sounding point store in cloud.
- Develop additional functionality.
 - Geographic file subsetting
 - On demand delivery format conversions



Vision

Store **ALL** bathymetric data as a seamless collection of points

- This includes CSB, multibeam, singlebeam and hydrographic data

Provide services to:

- Generate bathymetric grids of a given area using user-specified resolution
- Show the data density, guiding future data collection efforts
- Query the data collection, providing statistics on the bathymetric measurements surrounding the given location
- Allow the user to extract the raw data from a given area and download in a user-specified format

