

INTEROPERABLE PROVISION OF RESEARCH VESSEL TRACKING DATA VIA OGC SENSORTHINGS API AND SENSOR OBSERVATION SERVICE

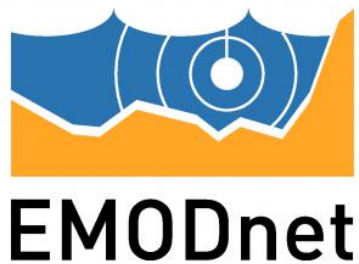
Christian Autermann

IMDIS 2021

April 14th 2020

EUROFLEETS+

- Aims to integrate and advance the European Research Vessel infrastructure
- Fleet of 27 state-of-the-art research vessels
- Several ROVs and AUVs
- Multiple transnational access programs for researchers



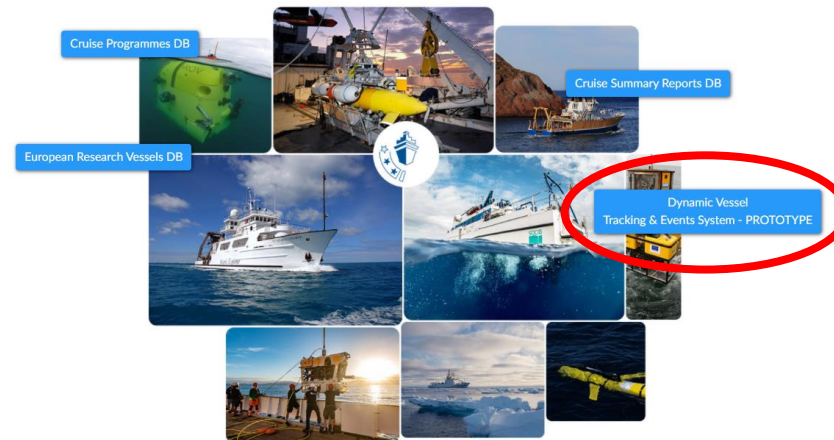
Eurofleets+

An alliance of European marine research infrastructure
to meet the evolving needs of the research and industrial communities

EUROPEAN VIRTUAL INFRASTRUCTURE IN OCEAN RESEARCH (EVIOR)



European Virtual Infrastructure in Ocean Research (EVIOR)



Sharing information on planned, current and completed cruises and on details of European research vessels and specialized equipment. Giving e-access to underway events information, sailing tracks and current position of European research vessels



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EUROPEAN VIRTUAL INFRASTRUCTURE IN OCEAN RESEARCH (EVIOR)



Dynamic Vessel Tracking & Events System - PROTOTYPE [RETURN TO EVIOR HOME](#)

1. Select first which vessel to inspect

- Sarmiento de Gamboa
- Hesperides
- Thalassa
- Garcia Del Cid

2. Select Track

2018-09-23T00:01:04 (226718)

Date	Speed	Bearing
2018-09-23T00:01:04	0.1	319.8
2018-09-23T00:03:06	0.1	319.8
2018-09-23T00:16:19	0.1	319.8
2018-09-23T00:23:26	0.1	319.9
2018-09-23T00:24:27	0.1	319.9
2018-09-23T00:26:29	0.1	319.7
2018-09-23T00:31:34	0.1	319.8
2018-09-23T00:41:44	0.1	319.7
2018-09-23T00:52:55	0.1	319.8
2018-09-23T00:54:57	0.1	319.8
2018-09-23T00:56:59	0.1	319.8
2018-09-23T00:58:00	0.1	319.8
2018-09-23T01:05:07	0.1	319.8
2018-09-23T01:21:23	0.1	319.9
2018-09-23T01:24:26	0.1	319.9
2018-09-23T01:24:26	0.1	319.9

Summary of SSR

View track data

Sarmiento de Gamboa
Link to vessel details

Meteo data at latest position (2018-09-23T04:05:51)

Wind speed: 16.462 m/s
Wind direction: ↑

19.84°C

Air pressure: 1018 hPa

Dynamic Vessel Tracking & Events System - PROTOTYPE [RETURN TO EVIOR HOME](#)

1. Select first which vessel to inspect

- Sarmiento de Gamboa
- Hesperides
- Thalassa
- Garcia Del Cid

2. Select Track

2018-09-02T00:00:23 (226715)

Date	Speed	Bearing
2018-09-02T00:00:23	4.57	165.3
2018-09-02T00:01:26	4.54	165.5
2018-09-02T00:02:28	4.52	165.7

Track info

Sarmiento de Gamboa
Link to vessel details

Meteo data at latest position (2018-09-23T04:05:51)

Wind speed: 16.462 m/s
Wind direction: ↑

19.84°C

Air pressure: 1018 hPa

SELECTED TRACK: 2018-09-02T00:00:23 (226715); VIEW TRACK WEATHER

Click and drag a box to zoom in on the graph.

Table View

Wind speed m/s

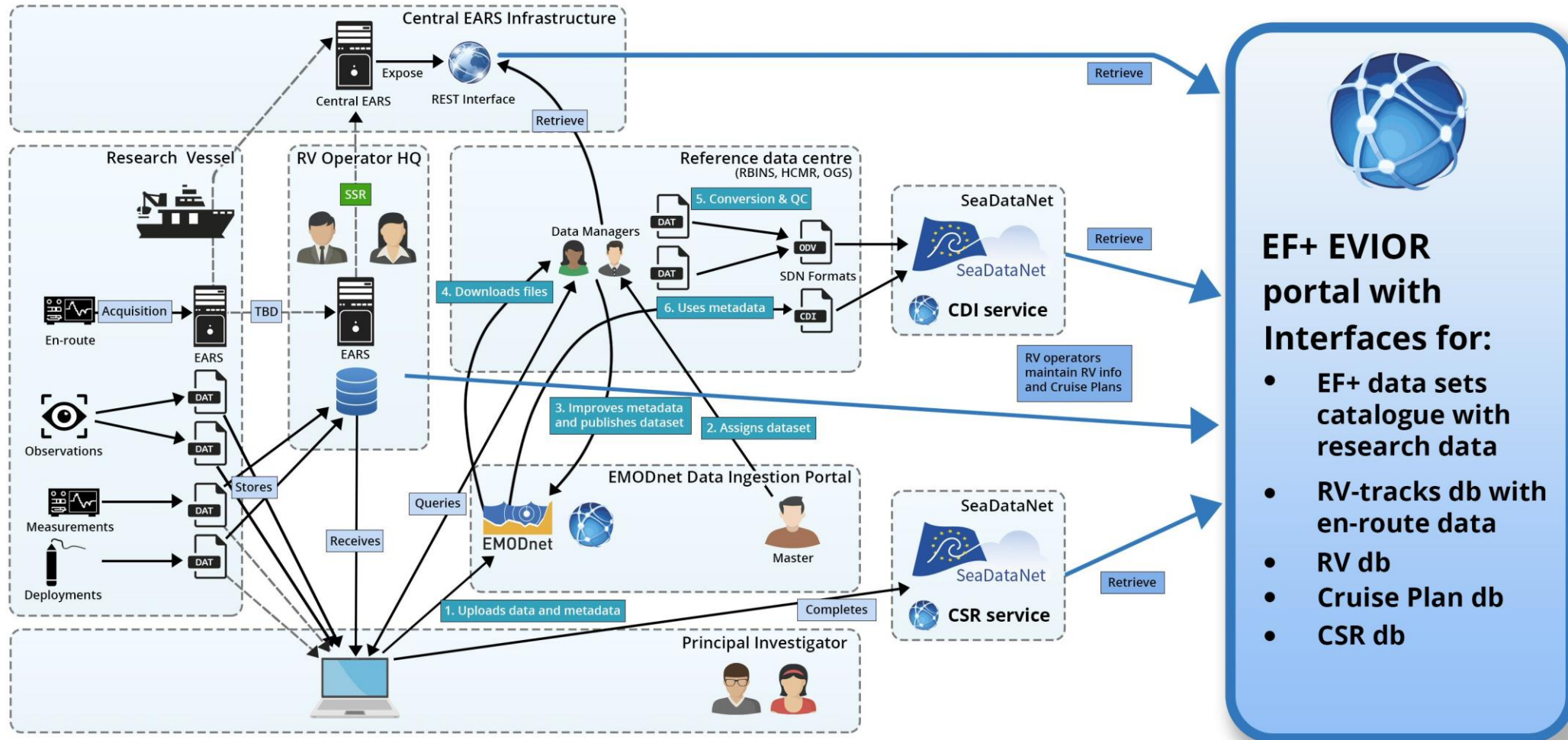
Wind gust (m/s)

Play Fast

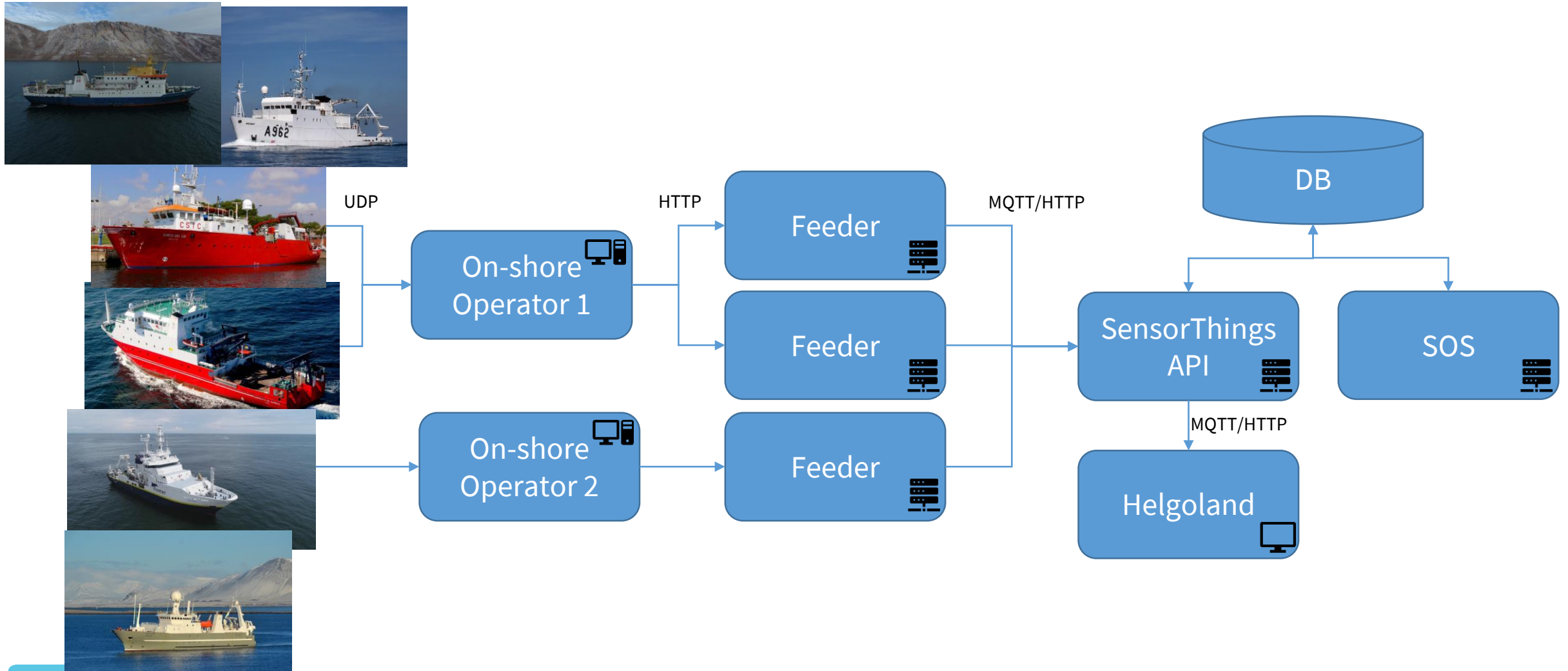
Highcharts.com

Marine information.it

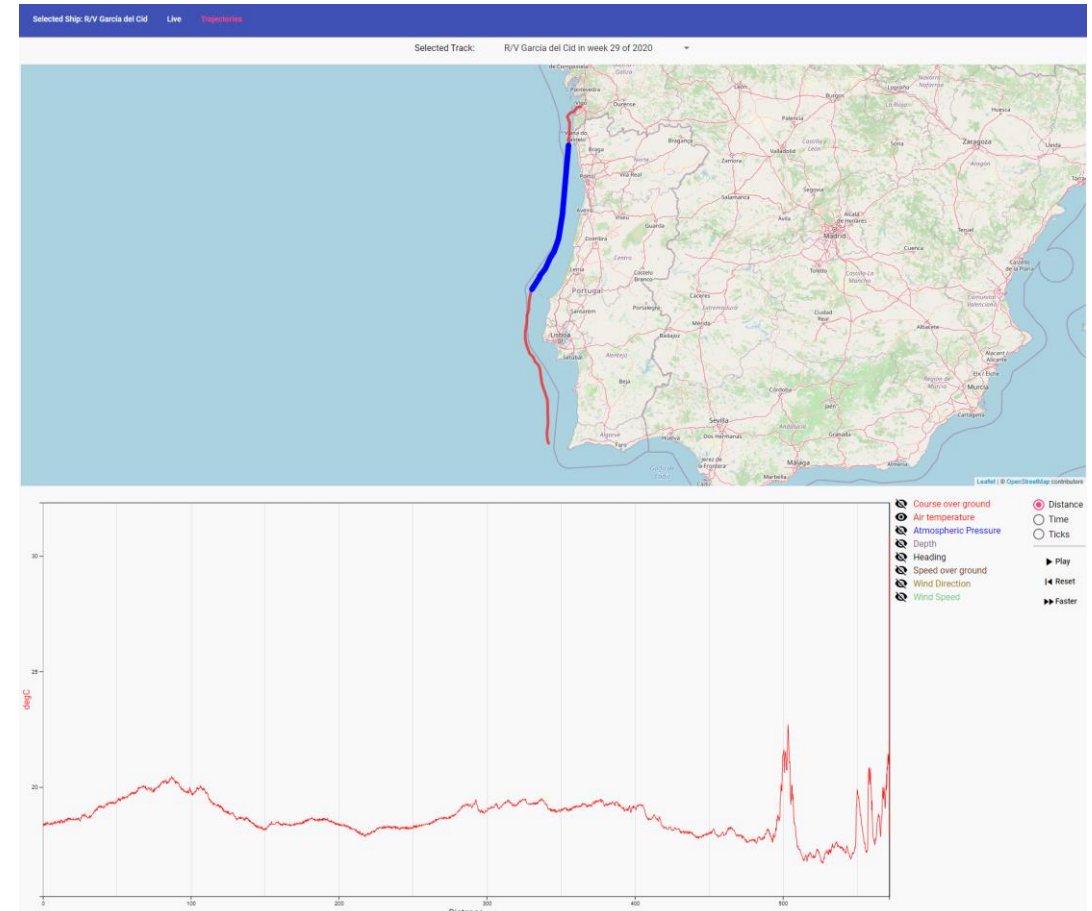
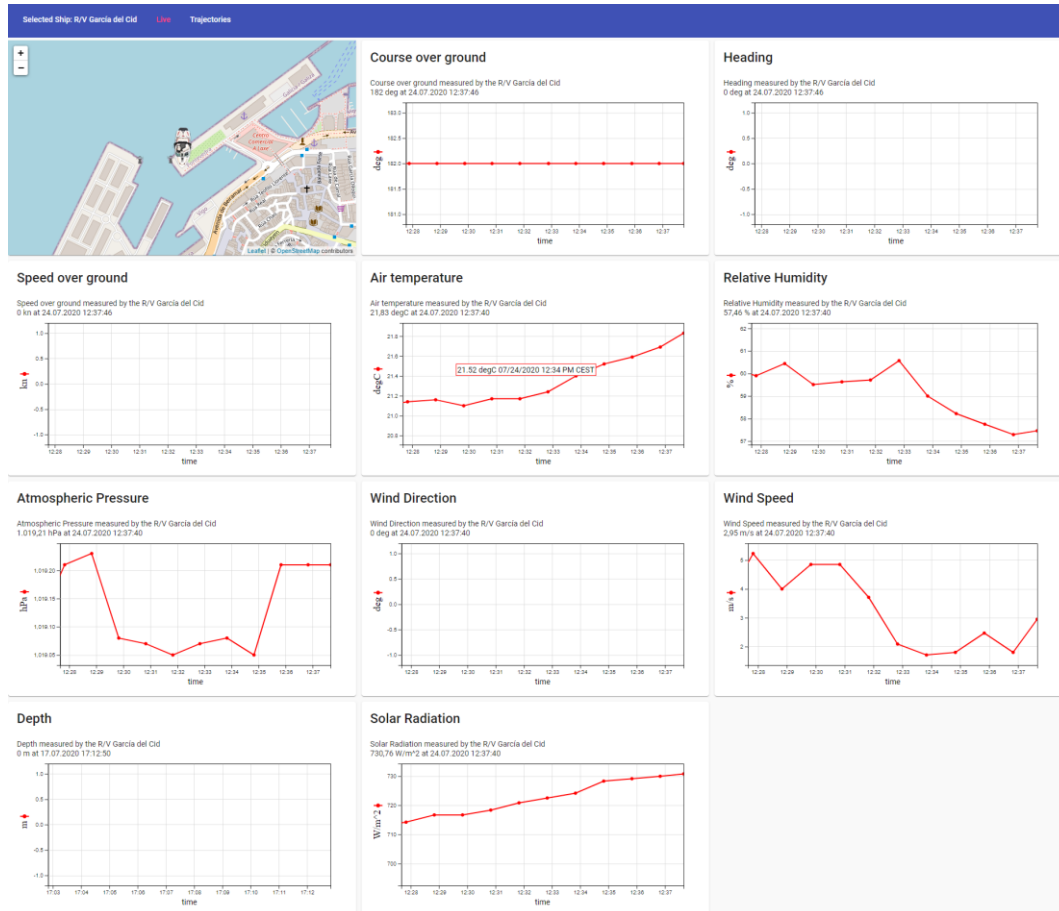
ARCHITECTURE



ARCHITECTURE

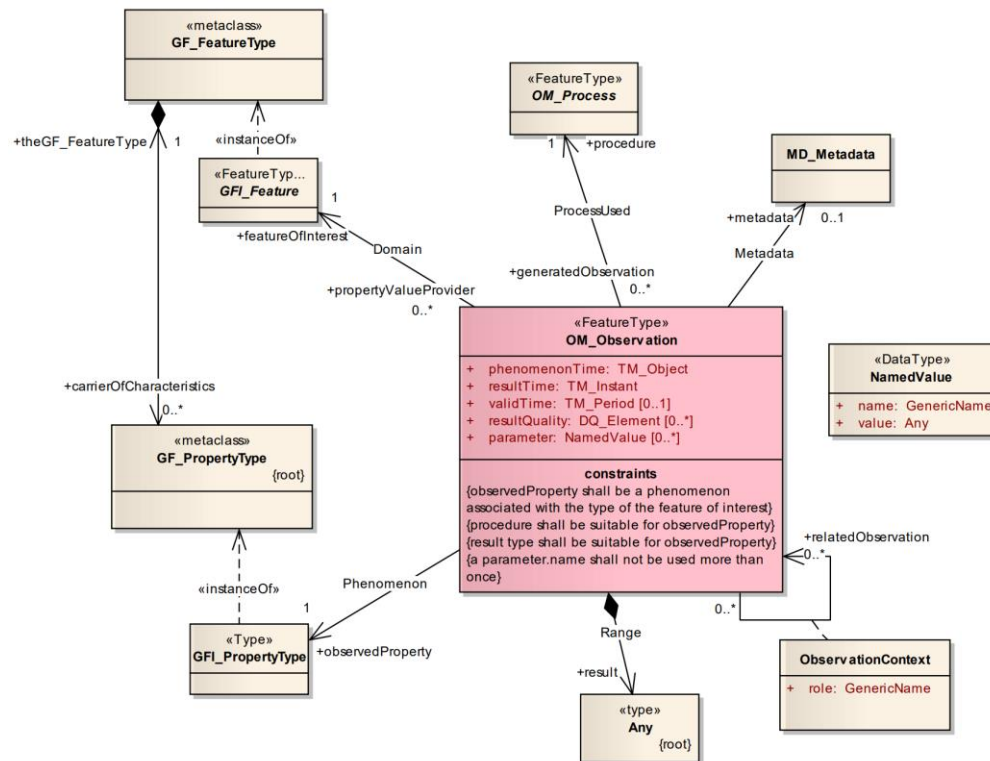


EUROFLEETS+ DASHBOARD

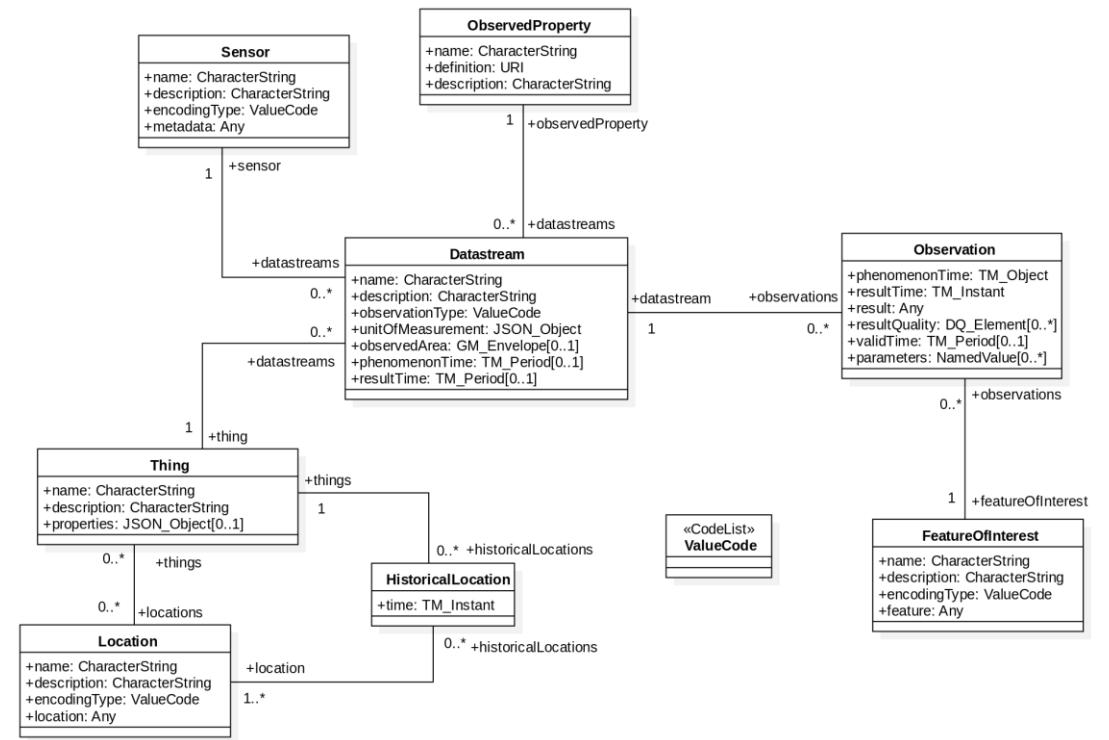


HARMONIZING DATA MODELS

Observations & Measurements



SensorThings API



HARMONIZING DATA MODELS

- Ingestion only via the SensorThings API
 - Initially setup via HTTP
 - Feeding only via MQTT
 - Allow publishing on more topics than the standard allows (/Locations)
- One Procedure and Offering per vessel
 - Vessel = Sensor = Thing = Procedure
- Observation should comply with the Spatial Filtering Profile
 - STA-Implementation was extended to recognize this special observation parameter
- Position updates should be appended to the FOI so that it contains the complete track
 - New configurable feature of our STA implementation: a configured FOI is automatically updated (via Locations and Observations)
- One Feature Of Interest (FOI) per cruise
 - Not really possible, interim solution: one FOI per week

NEAR-REALTIME EVENT DATA

- EARS has the capability to record events data
 - Sensor Calibrations
 - Start/End of Measurements
- Encoded as SensorML
- Several events per day
- Updating the SensorML description in the SOS does not scale
 - New Observation Type with an SensorML event as the result value
 - Handling of event data the same way as the measured data

OUTLOOK

- Deployment to more RV operators
- Federation into the EVIOR portal
- Push-based data flow from EARS to the feeding component
- Richer Metadata (SensorML) descriptions
- Visualization of event data

THANKS!

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