BLUE INSIGHT

A digital platform specialized on ocean data in support of science, industry and collaboration

September 29th, 2022
11th FerryBox Workshop,
Helmholtz-Zentrum Hereon
Geesthacht, GERMANY
-and online-

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500 Years of Ocean Change

Source: Glynn Gorick, VLIZ, https://www.seachangeproject.eu/
The Ocean Observing Value chain of the New Blue Economy

End user, societal and economic information needs and requirements related to the ocean

End user and societal services and benefits realized:
Ecosystem services, efficiencies, safety, etc.

FerryBox Systems and Ops

Observing technology
- Sensors
- Platforms
- Systems
- Navigation
- Positioning
- Transmission/Comms tools

Observations
- Measurements
- Operations
- Deployments
- Field services

Data
- Management
- Handling/Transmission
- Visualization
- Storage
- Synthesis
- Sharing

Information delivery
- Prediction
- Analysis/Assessment
- Machine learning/AI
- Product/Service delivery

Blue Insight

Source: GOOS / MTS / NOAA Industry Dialogues – background whitepaper V1
Blue Insight

- collects
- integrates
- manages
- analyzes
- visualizes
- contextualizes
- shares

ocean data
Blue Insight offers key value to **ocean stakeholders**, e.g.:

- Aquaculture
- Fisheries
- Energy production
- Government authorities
- Researchers
Underwater acoustics enables ecosystem surveys by vessels (of opportunity) or unmanned platforms.
One Ocean Expedition
Customer success stories

Challenge
Broadcast live ocean data from a mixture of KM and 3rd party instruments onboard Statsraad Lehmkuhl.

Solution
Efficient data distribution from vessel to the public through sensor fusion.

Sensor Fusion  Data Forwarder

Installations on other vessels, e.g.:
Silver Arctic – owner: Silver Line
(Norwegian Polar Institute supply vessel)

© by Alfred Andreassen (MarineTraffic.com)
Sensors: Water analyser
FerryBox system and $p\text{CO}_2$ delivered by partners NIVA & UIB
Supporting the VOS Scheme

Challenge
Limited number of Voluntary Observing Ships (VOS) collecting and transmitting meteorologic and oceanographic data automatically to improve:
- Awareness and forecasting of (extreme) weather events
- Safety of life at sea
- Data availability for climate studies

Solution
Automated collection of metocean data onboard a vessel, combination with meta data and seamless transfer to a NOAA ERDDAP (Environmental Research Division’s Data Access Program) Server (through NOAA PMEL, i.a.) for ingestion into the Global Telecommunication System (GTS; “openGTS”).
GLIDER project & Akvaplan-niva
Customer success stories

Challenge
Efficiently manage and collect data from a fleet of unmanned vehicles while providing services to industrial and academic users.

Solution
Ocean View, a flexible map-based solution with fleet overview combining real time- and historical data in a map with user selectable input of external layers and objects, such as ice maps, wind, currents etc.
GLIDER project & Akvaplan-niva
Customer success stories
**Challenge**

NOAA operates an iXBlue DriX USV in tandem with NOAA ships while conducting acoustic-trawl surveys. Scientists need to determine if and when they should instruct the mothership to sample the biomass detected by the USV.

**Solution**

Enabling remote control and monitoring of EK80 onboard the USV for optimized deployments and data collection to assist decision making.

The solution works over Iridium or MBR when in range. In order to work over a low-bandwidth link, the solution includes a data decimation component.
Seabed 2030 and Mapping
Customer success stories

Challenge
Map the global seafloor by 2030; ingesting donated data to create a public map database.

Solution
Seamless data flows and 1-stop secure solution to allow a large number project stakeholders to work on the data in the cloud (integration of Qimera in Analytics module)
Frisk Oslofjord 2.0
Customer success stories

- Autonomous robotic operation
  - AUV
  - ROV
  - USV
- Automatic ML Classifiers
- Underwater stations
  - Biomass
  - Currents (ADCP)
  - Chemical
- Utility vessels (School ship, ferries)
  - RV Ny Vigra III
  - RV Rognfjell
- Ecological Digital Twin solutions
  - UiO
  - Institute of Marine Research

Linked to an interactive exhibition at the “Besøksenter Oslofjord”
Modules - Overview

Sensor Fusion
Collect onboard data and make it cloud ready

Core
Cloud framework: Security, storage, dashboards

Sensor Remote
Sensor status and remote control

Ocean View
Web-based 2D and 3D visualizations

Analytics
Automated QC and analysis; machine learning

Data Forwarder
Convert formats, automate distribution

Sensor(s), FerryBox:

CUSTOMER RELATIONSHIP
Generic System Overview

Cloud
- Sensor Remote
- Ocean View
- Analytics
- Data Forwarder

Core
- Sensor Fusion

Onboard
- KM sensor
- KM database
- 3rd party sensors or databases
Core components of the digital infrastructure are DNV GL qualified.

Limited hardware requirements on the vessels, i.e., an edge computer and transmission solution.

Examples:
- National data centers (e.g. NMDC)
- International data centers/providers (e.g. EMODnet, Mercator Ocean Int., GEBCO)
- International scientific programs (e.g. Argo)
- Meteorological networks (e.g. GTS)
- Commercial solutions (e.g. Sofar Ocean)

- Automated data streams
- Data visualization
- Remote operational control of sensors
- Remote adjustments to data recording configuration
- Seamless data sharing across cloud solutions and user databases
- Automated data analysis based on artificial intelligence
- Flexible solution that can be tailored to customer requirements
Blue Insight

Improved efficiency
- Streamlined data collection
- Automated analysis of large data sets
- Supports time critical tasks

Better collaboration
- Built-in user management for secure & efficient data sharing
- Full ownership & control of data
- Supports decision making processes

Open ecosystem
- No vendor lock-in
- Collaborative ecosystem with APIs for 3rd party integration & interaction
- Usable across platforms, sensors, parameters and marine applications

Seamless acquisition, integration, management, analysis, visualization, contextualization and sharing of ocean data
FerryBox Community Key Value Propositions

Modern concept for onboard data collection

- Onboard: Hardware and operations
- Cloud: Processing, handling, etc.

Enhanced efficiency through the automation of

- Data QC
- Visualizations
- Data transfer and sharing
  - Dissemination
  - Repositories, information services

Service product by the largest marine technology specialist organization in the world

- Reliability
- Data security
- ‘Resources on demand’
Thank you

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Further information

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