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BLUE INSIGHT

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

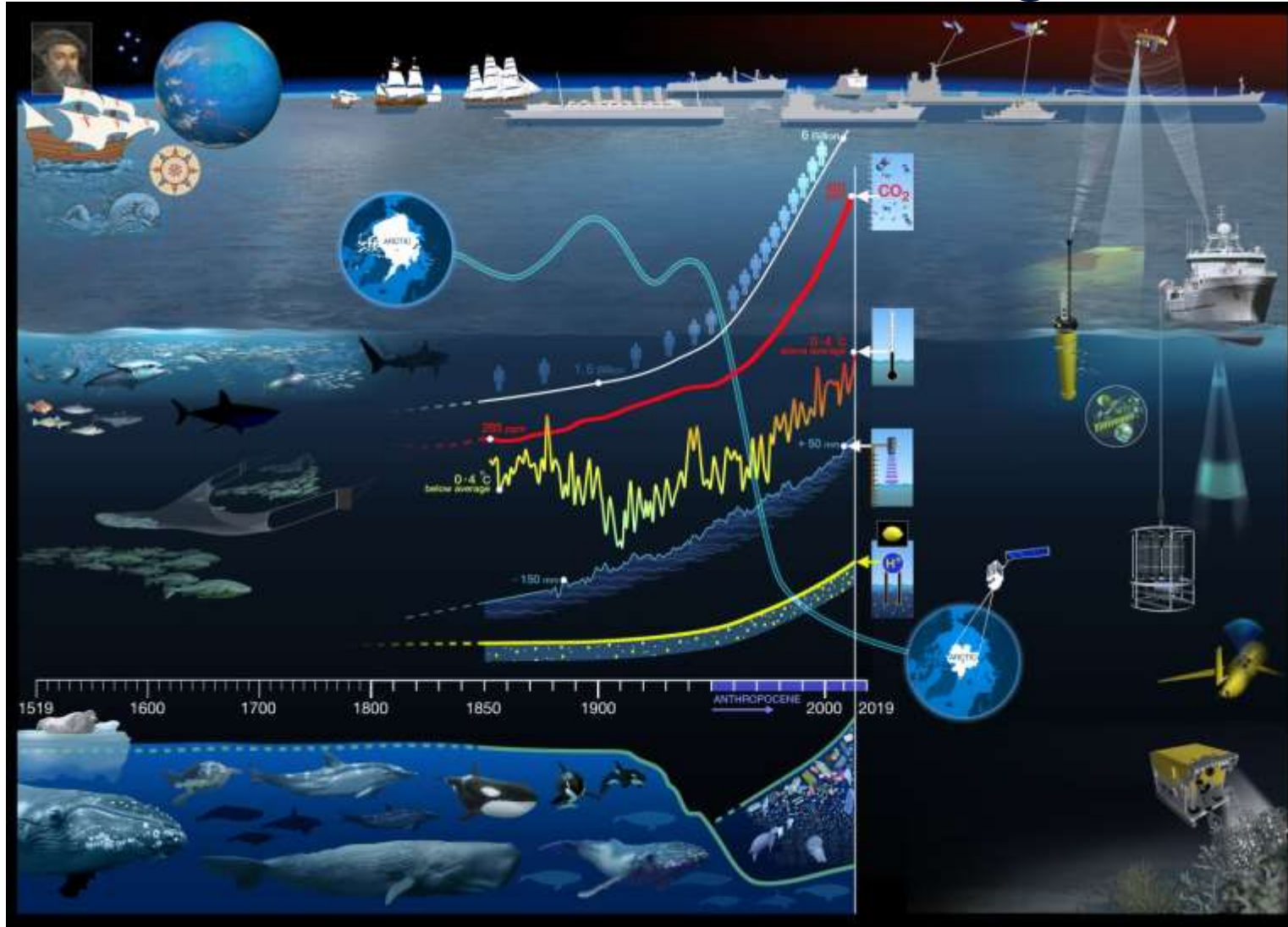
September 29th, 2022
11th FerryBox Workshop,
Helmholtz-Zentrum Hereon
Geesthacht, GERMANY
-and online-

Peer Fietzek, Snr BD Mgr Ocean Science



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500 Years of Ocean Change



Source: Glynn Gorick, VLIZ,
<https://www.seachangeproject.eu/>



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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

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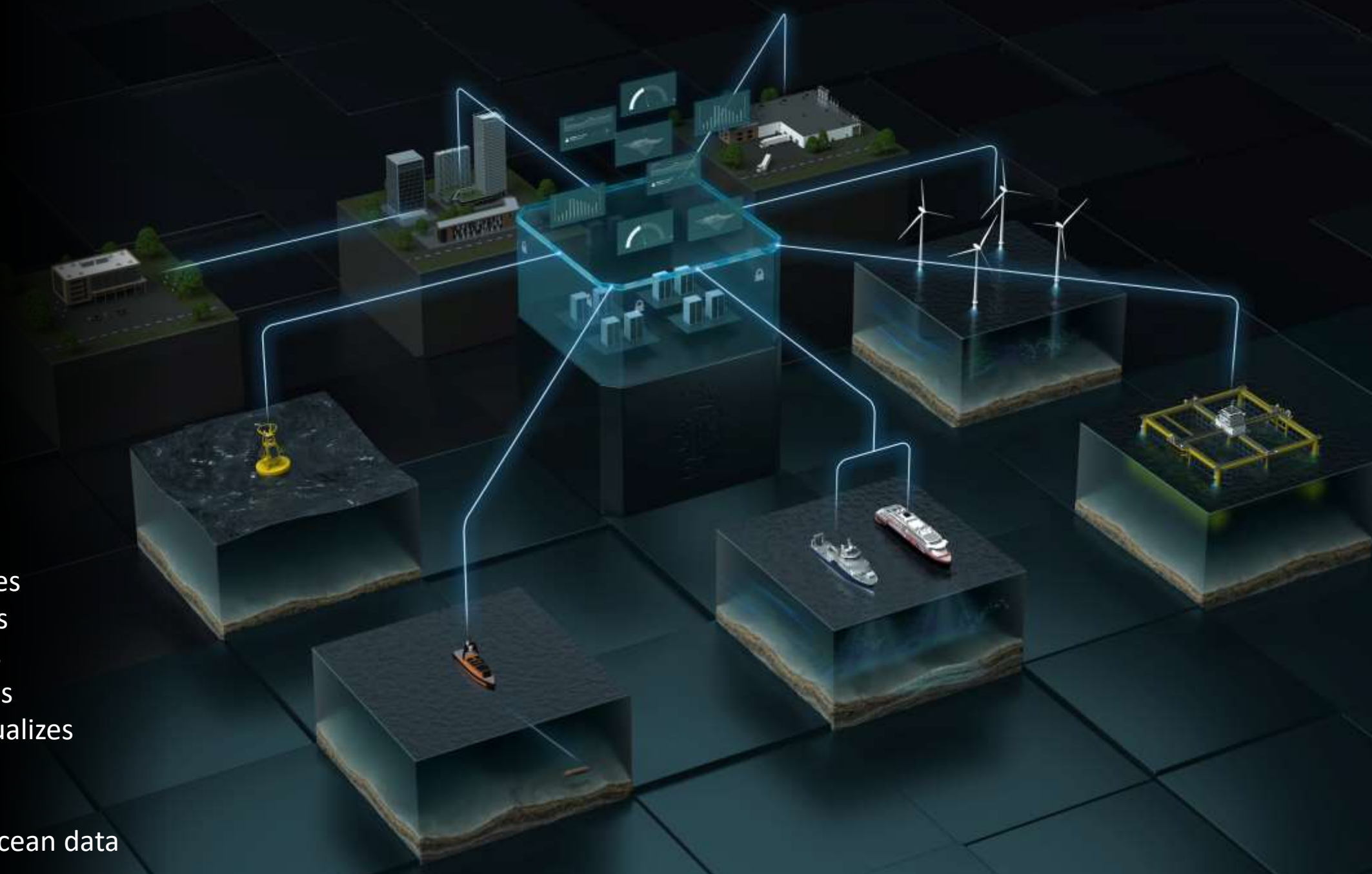


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Blue Insight

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

ocean data

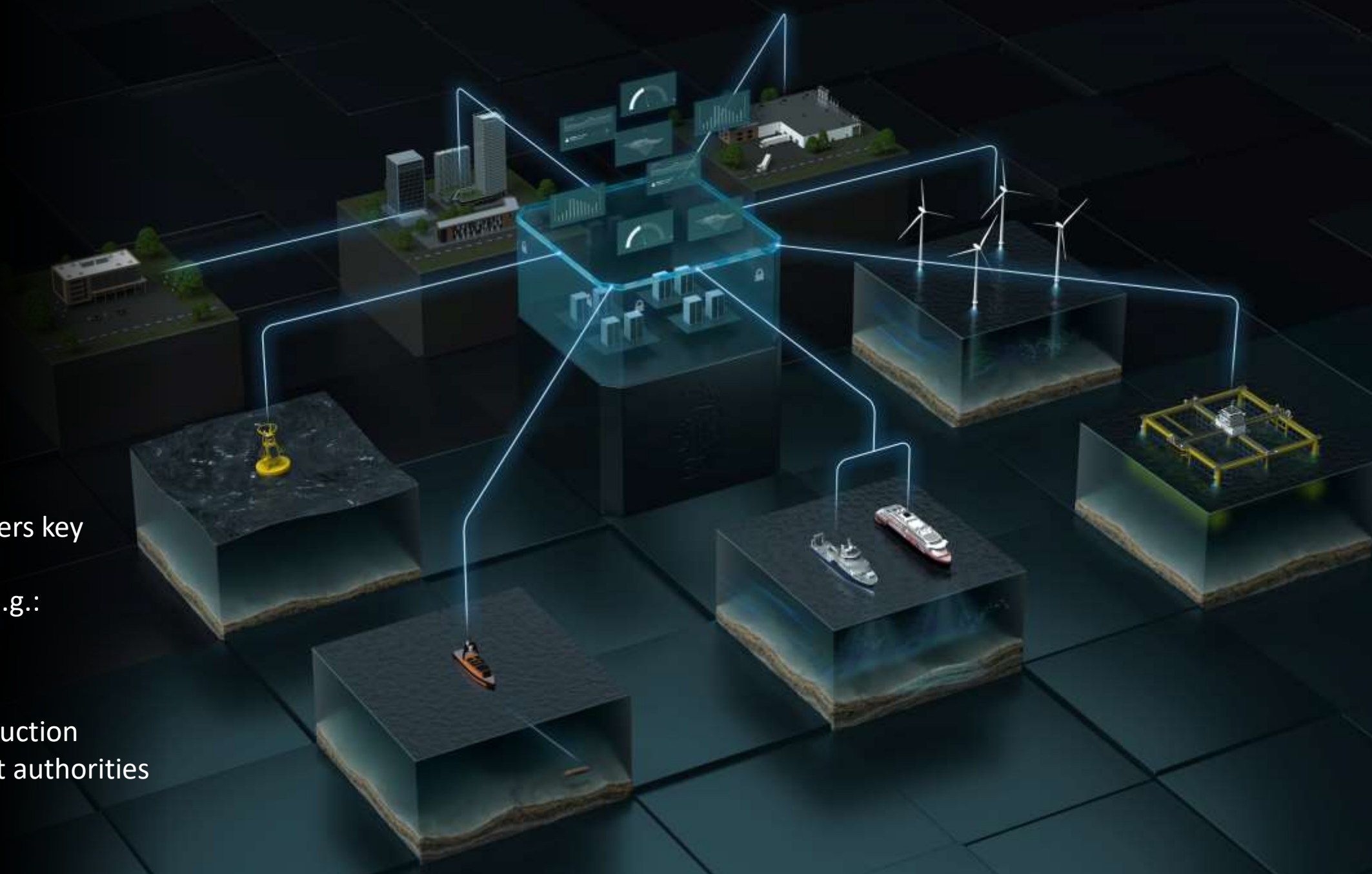




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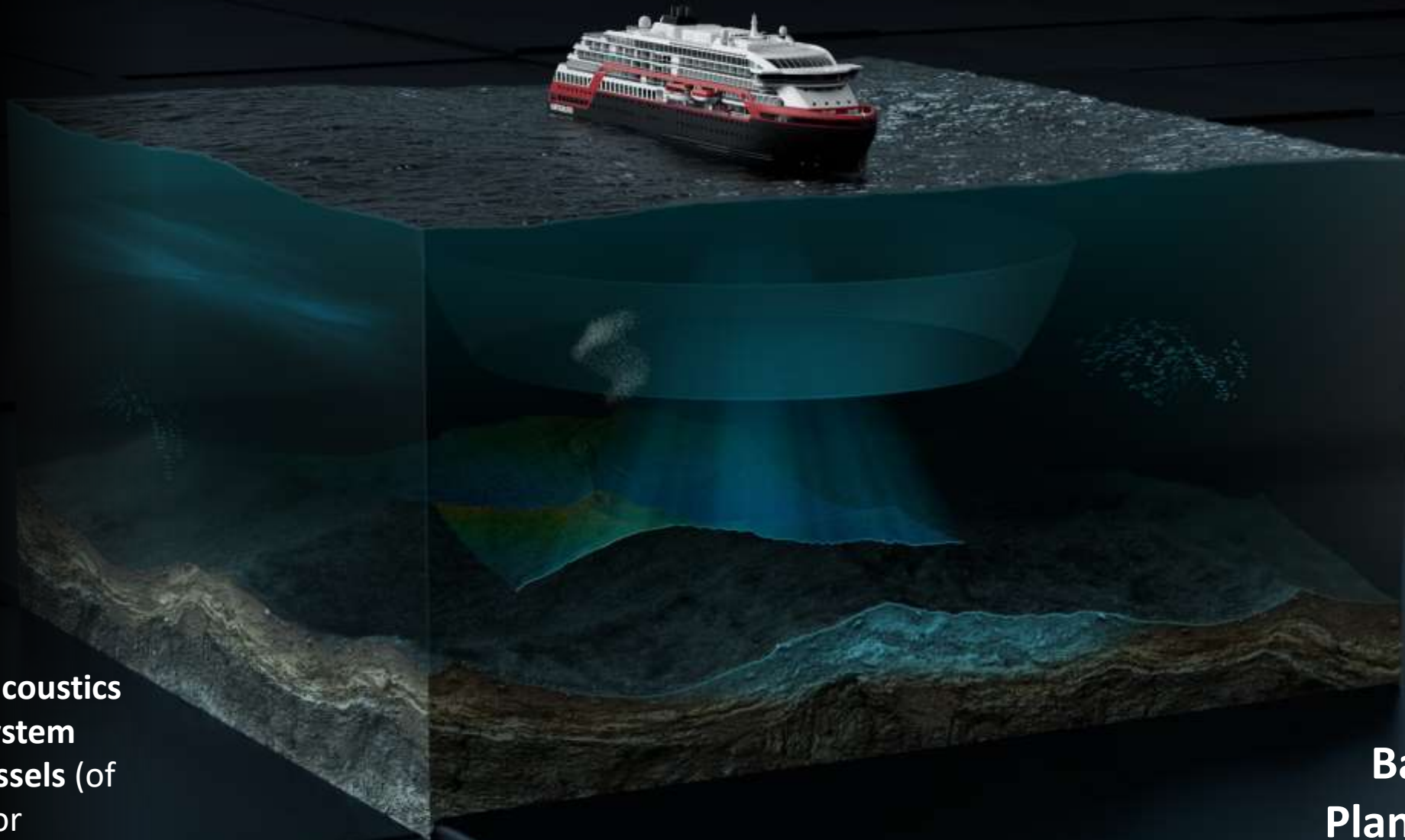
Blue Insight offers key value to **ocean stakeholders**, e.g.:

- Aquaculture
- Fisheries
- Energy production
- Government authorities
- Researchers





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Underwater acoustics
enables **ecosystem**
surveys by **vessels** (of
opportunity) or
unmanned platforms.

Currents
Clines
Bathymetry
Plankton, Fish



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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





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Sensors: Water analyser

FerryBox system and $p\text{CO}_2$ delivered by partners NIVA & UIB





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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

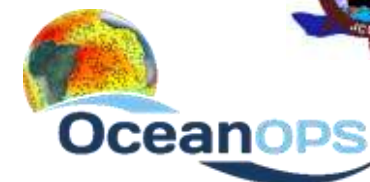
Automated collection of metocean data onboard a vessel, combination with meta data and seamless transfer to a NOAA ERDDAP (Environmental Research Division's Data Access Program) Server (through NOAA PMEL, i.a.) for ingestion into the Global Telecommunication System (GTS; "openGTS").



Core



Data Forwarder





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

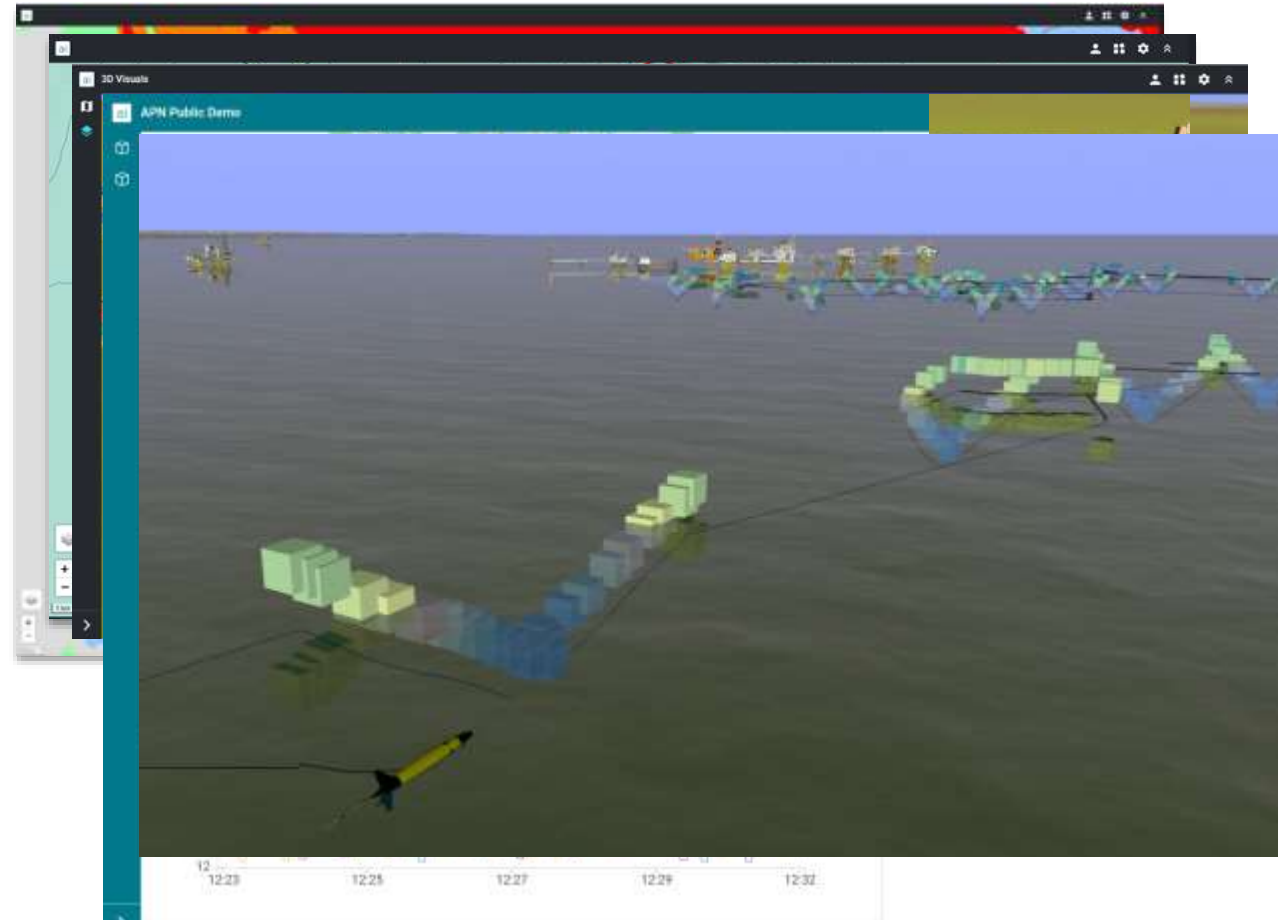
Ocean View, a flexible map-based solution with fleet overview combining real time- and historical data in a map with user selectable input of external layers and objects, such as ice maps, wind, currents etc.



Core



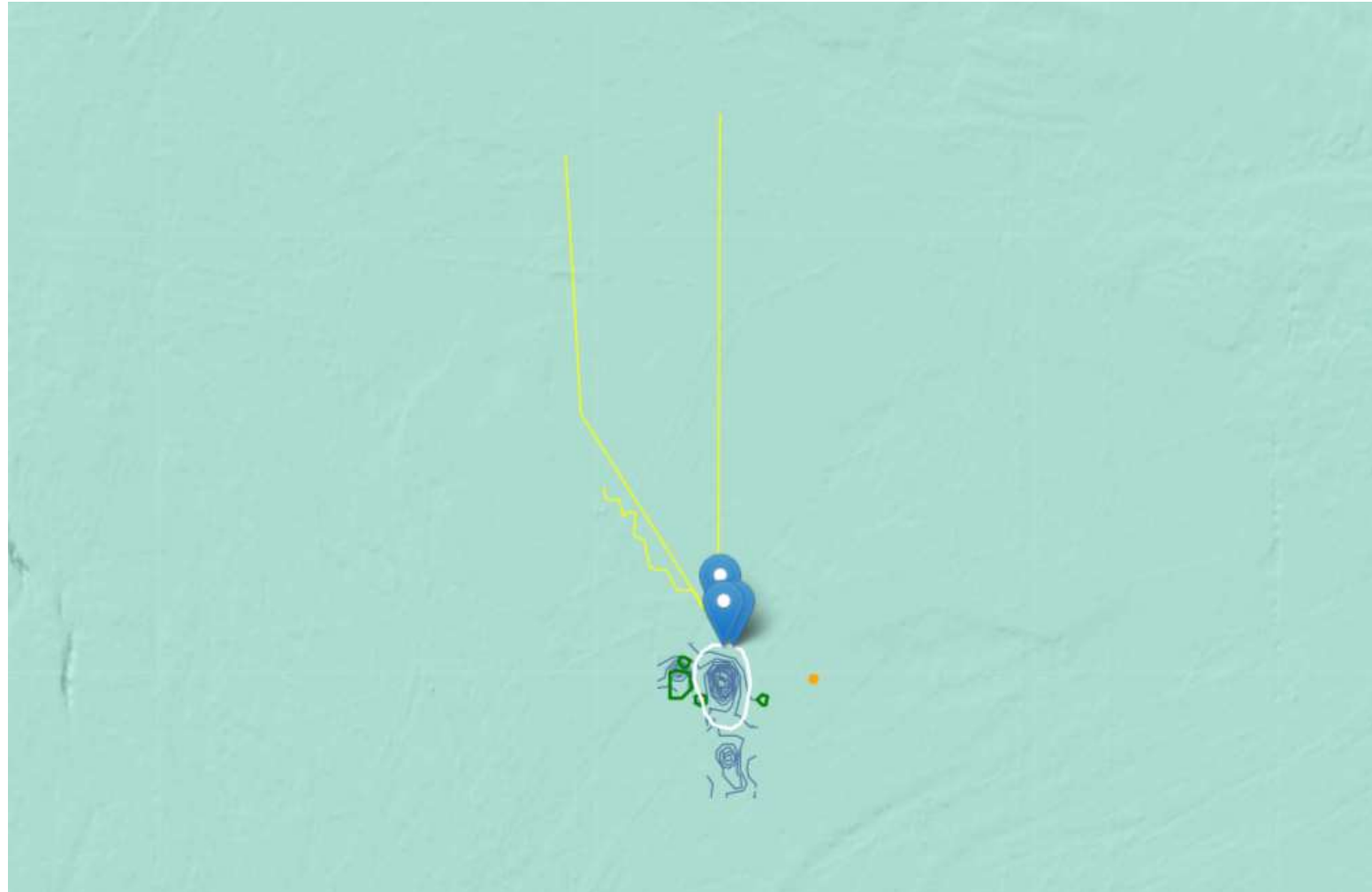
Ocean View





GLIDER project & Akvaplan-niva

Customer success stories





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NOAA Fisheries / Alaska Fisheries Science Center

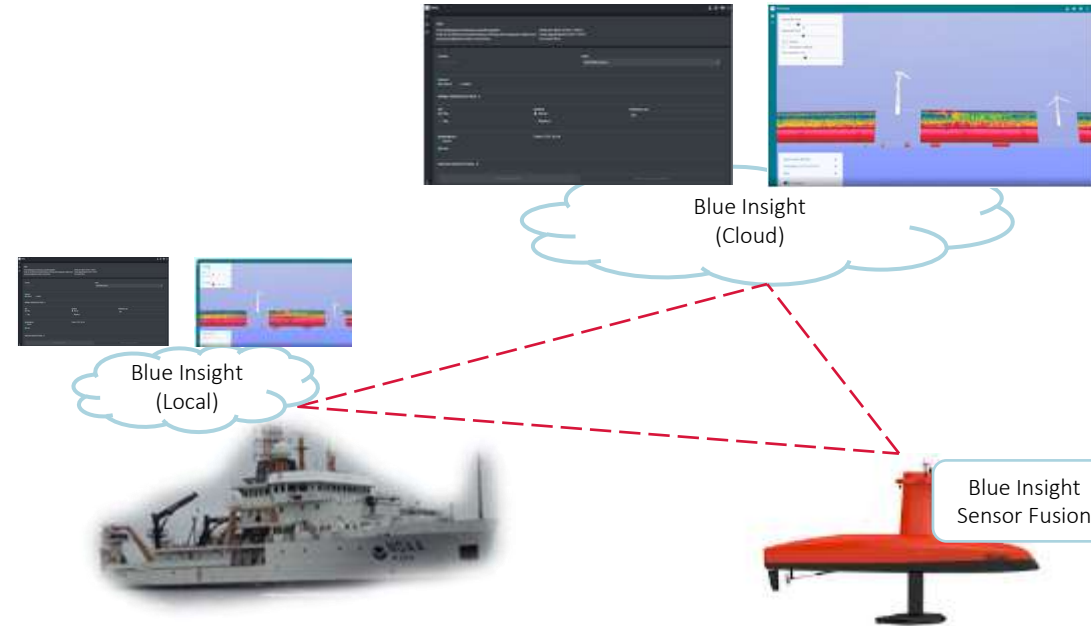
Customer success stories

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.



Sensor Fusion



Ocean View



Sensor Remote



Data Forwarder



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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)



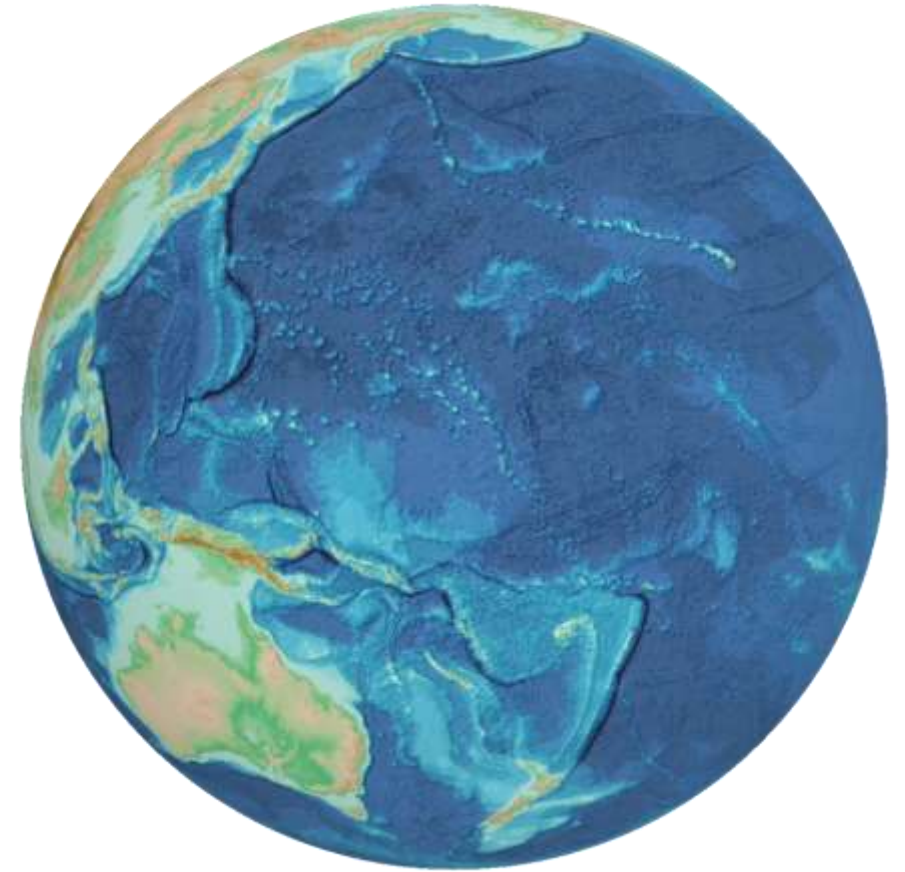
Core



Data Forwarder



Analytics





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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



Bred enighet om Oslofjorden: - Fakta har makta



Sensor Fusion



Ocean View



Sensor Remote



Data Forwarder



Analytics

Linked to an interactive exhibition at the “Besøksenter Oslofjord”





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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

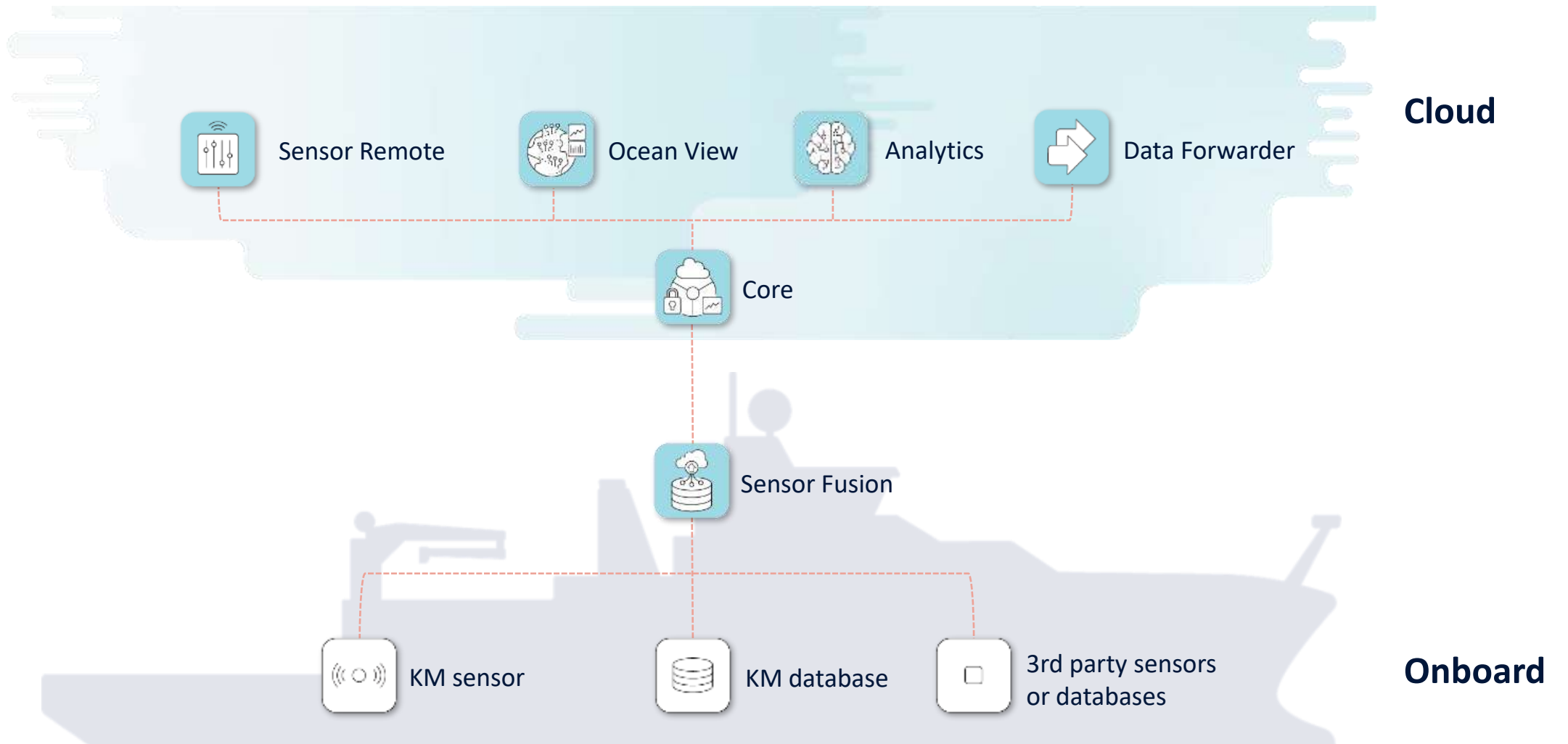


Sensor(s),
FerryBox:

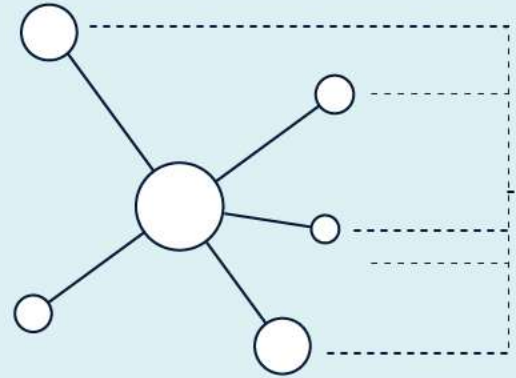


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Generic System Overview



Core components of the digital infrastructure are DNV GL qualified



- 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



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)





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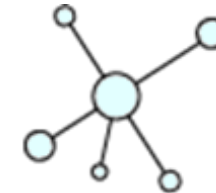
Improved efficiency

- 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

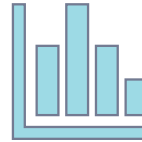
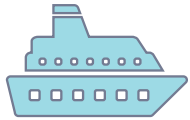
- No vendor lock-in
- Collaborative ecosystem with APIs for 3rd party integration & interaction
- Usable across platforms, sensors, parameters and marine applications

Seamless acquisition, integration, management, analysis, visualization, contextualization and sharing of ocean data



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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'



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Thank you

www.kongsberg.com/maritime
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Further information

- L. Bildøy, P. Fietzek and T. Algrøy (2022) [New Digital Tools for Ocean Observing – Cloud-based Platform supports Science, Industry and Collaboration](#), Sea Technology, May 2022, Volume 63, No. 5, p. 16-20.
- <https://www.kongsberg.com/maritime/products/ocean-science/blue-insight/>