

23 IHO – MBSHC Regional Commision

Digital technologies for high speed hydrography

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IHO

International
Hydrographic
Organization

FUGRO



**Only 20.6 % of the world's
oceans have been mapped to
modern standards**

The Nippon Foundation-GEBCO Seabed 2030 Project, July 2021

Trends and considerations

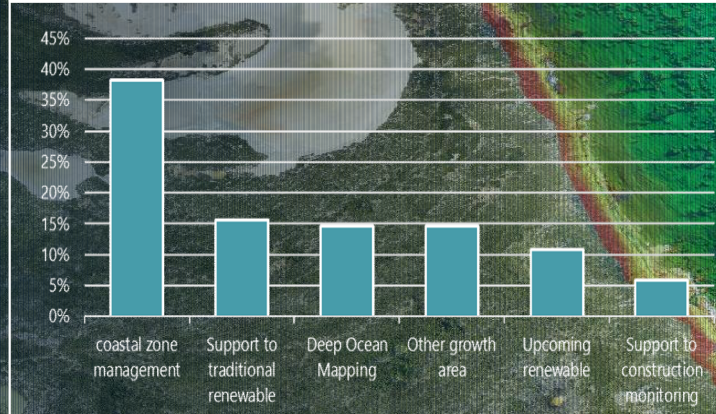
Client pain points

"More national and global programs requiring hydrographic data"

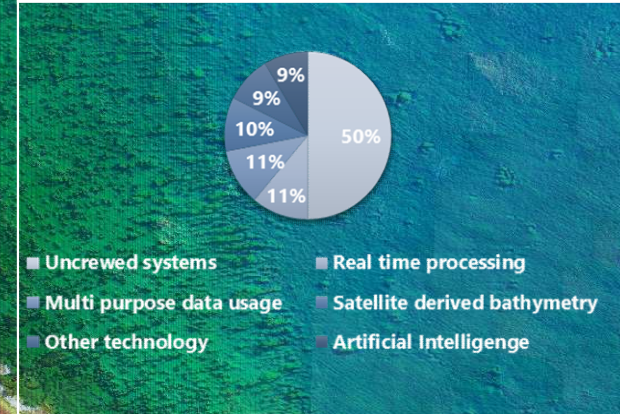
"Need for more sustainable and efficient solutions"

"Increased demand for hydrographic survey and ocean/coastal mapping"

Expected Growth Areas

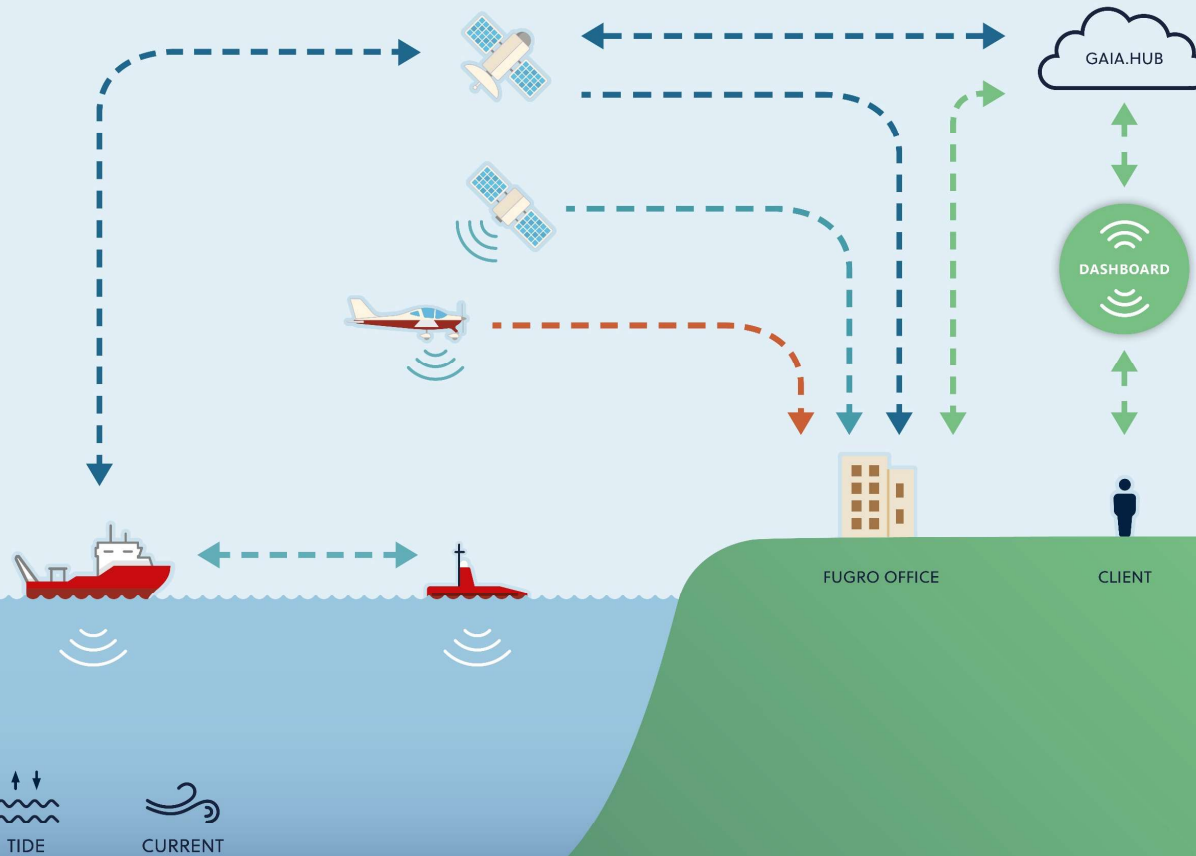


Expected Technology Development



Integrated solution

A range of seabed mapping services for fast and high-quality acquisition of hydrographic and bathymetric data.



BENEFITS



Satellite imagery analysis supports bathymetry and environmental mapping of nearshore environments



Airborne lidar bathymetry captures **fast and high-quality** shallow water bathymetry over large areas



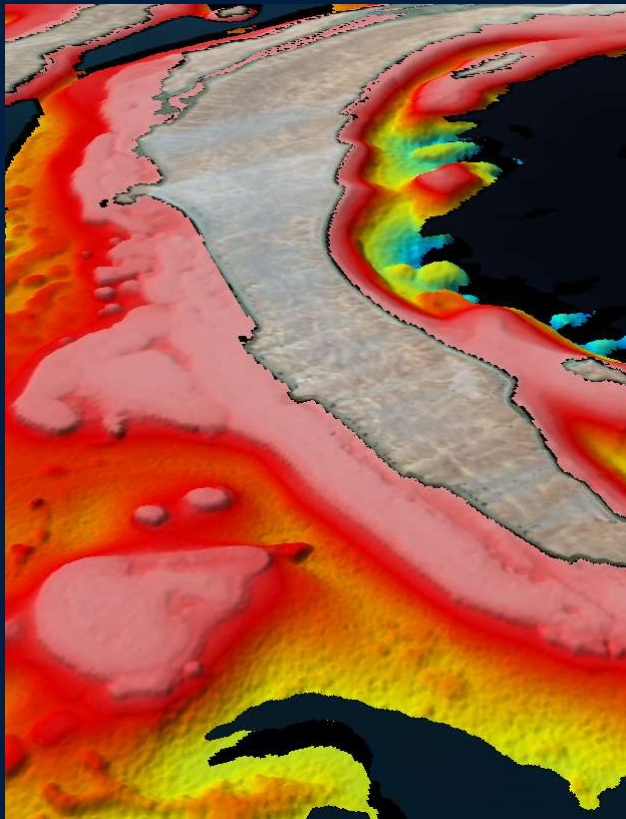
Vessel based multi beam echo sounder acquires **accurate hydrographic data** reaching all ocean depths

FUGRO

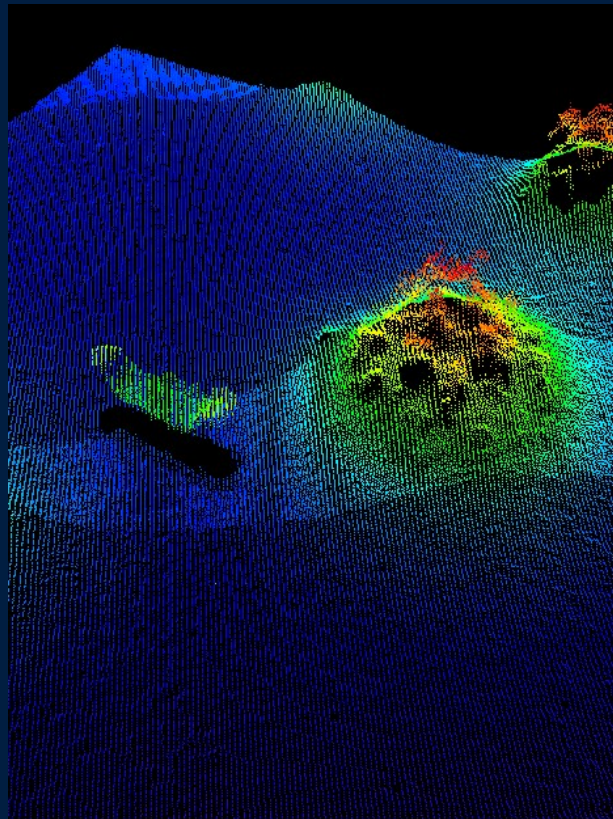
High-speed hydrography survey toolbox

Lower Precision

Higher Precision



SATELLITE IMAGERY



BATHYMETRIC LIDAR



MULTIBEAM

Remote Satellite Analytics

Applications



Planning



Mapping



Monitoring



Analysis

Remote Satellite Analytics

Benefits



Rapid capture & processing flow



Reduced HSSE risk



Low cost compared to lidar or MBES



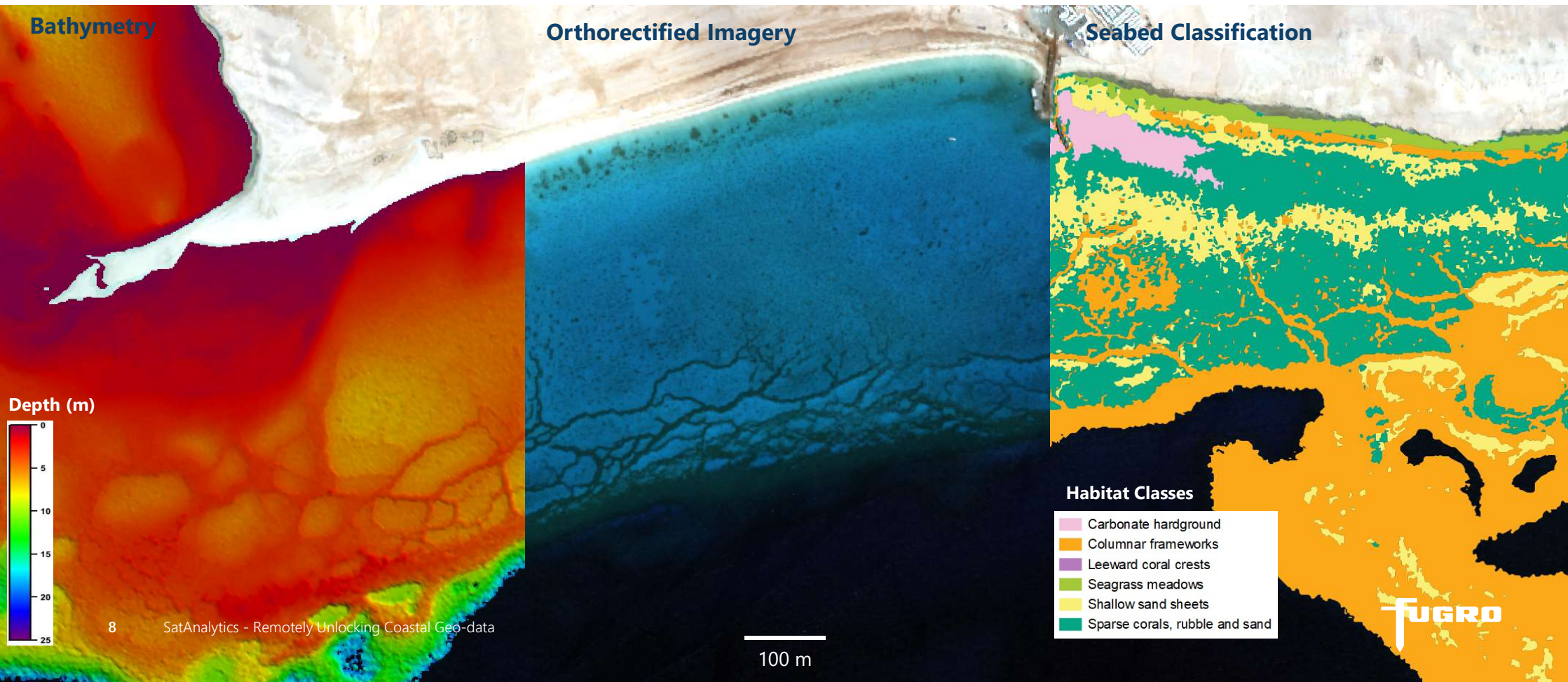
Global coverage



Time series / historical data accessibility

Satellite-derived data innovations – SatAnalytics

Primary Products



Airborne Lidar Bathymetry

Applications

- Nautical charting / Bathymetric mapping
- Coastal resilience / coastal zone management
- Marine and coastal engineering
- Habitat mapping



Airborne Lidar Bathymetry

Key Benefits



IHO Order 1a compliant



Max depth coverage
(3x Secchi depth)



Efficient coverage of
>200 km²/day



Unparalleled experience



Coastal Mapping Innovations

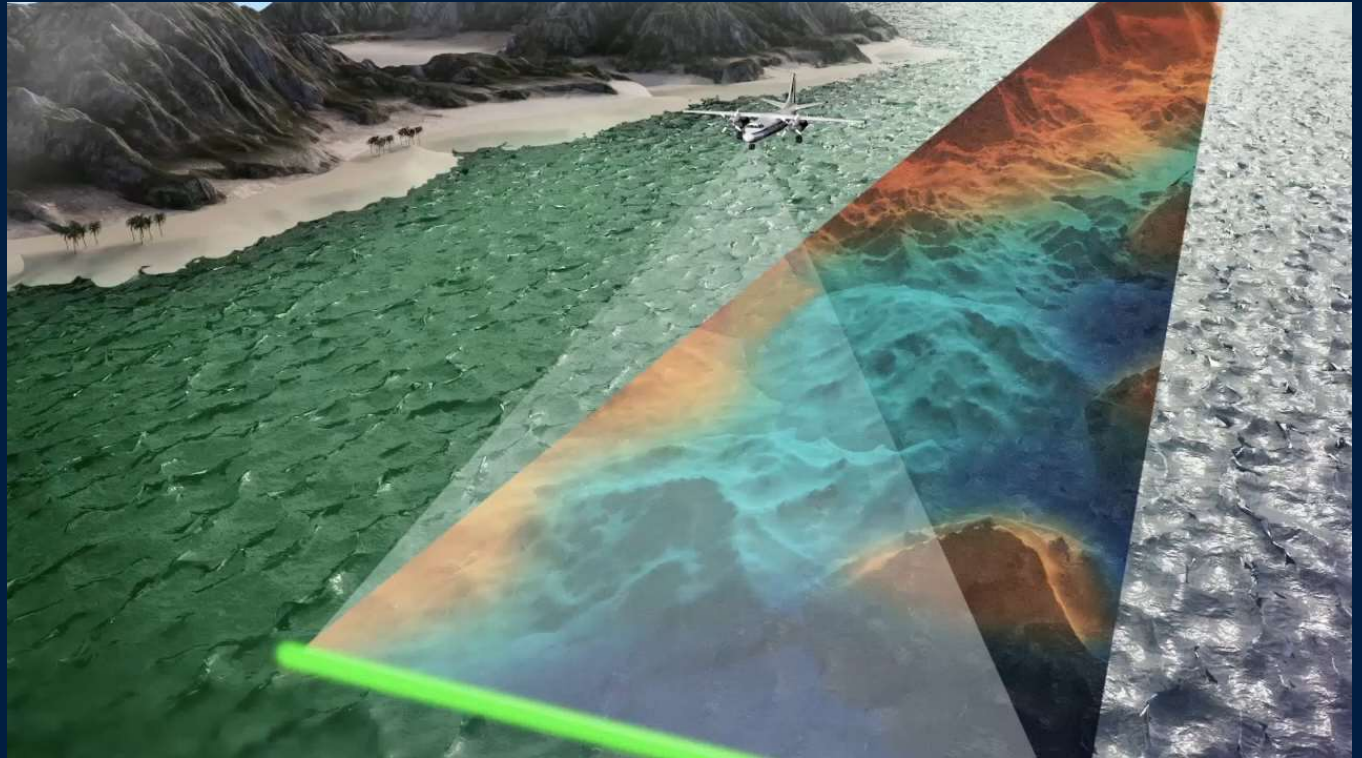
RAMMS: Leveraging robotics, remote operations, sensor integration, cloud automation

More

- Increased data density and depth penetration
- No moving parts
- Small aircraft / UAV deployable
- Streamlined data processing & delivery

With Less

- Compact / energy efficient
- Reduced carbon footprint
- Reduced logistics complexity
- Reduce risks with less personnel



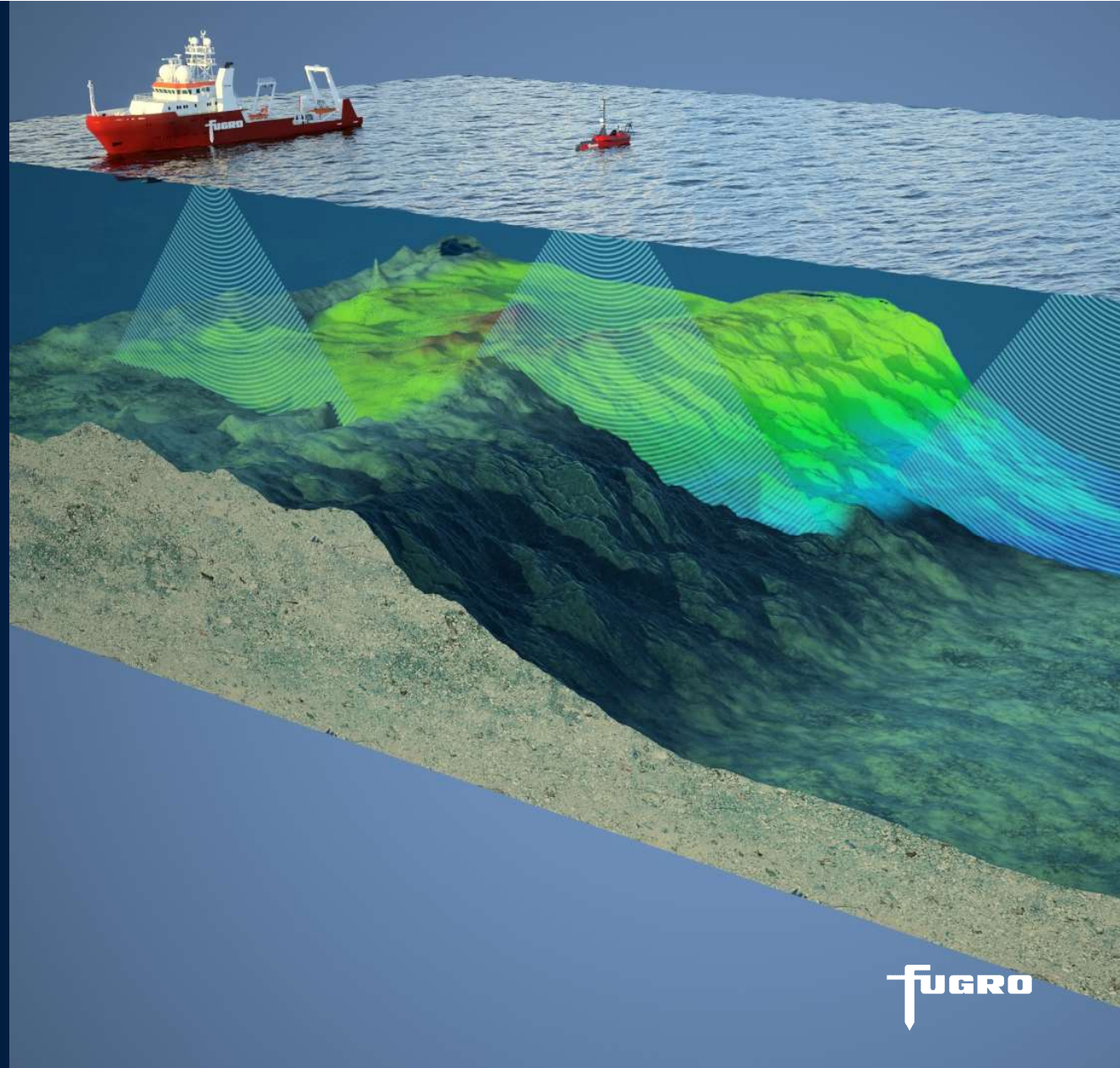
Seaborne Acoustic

Applications

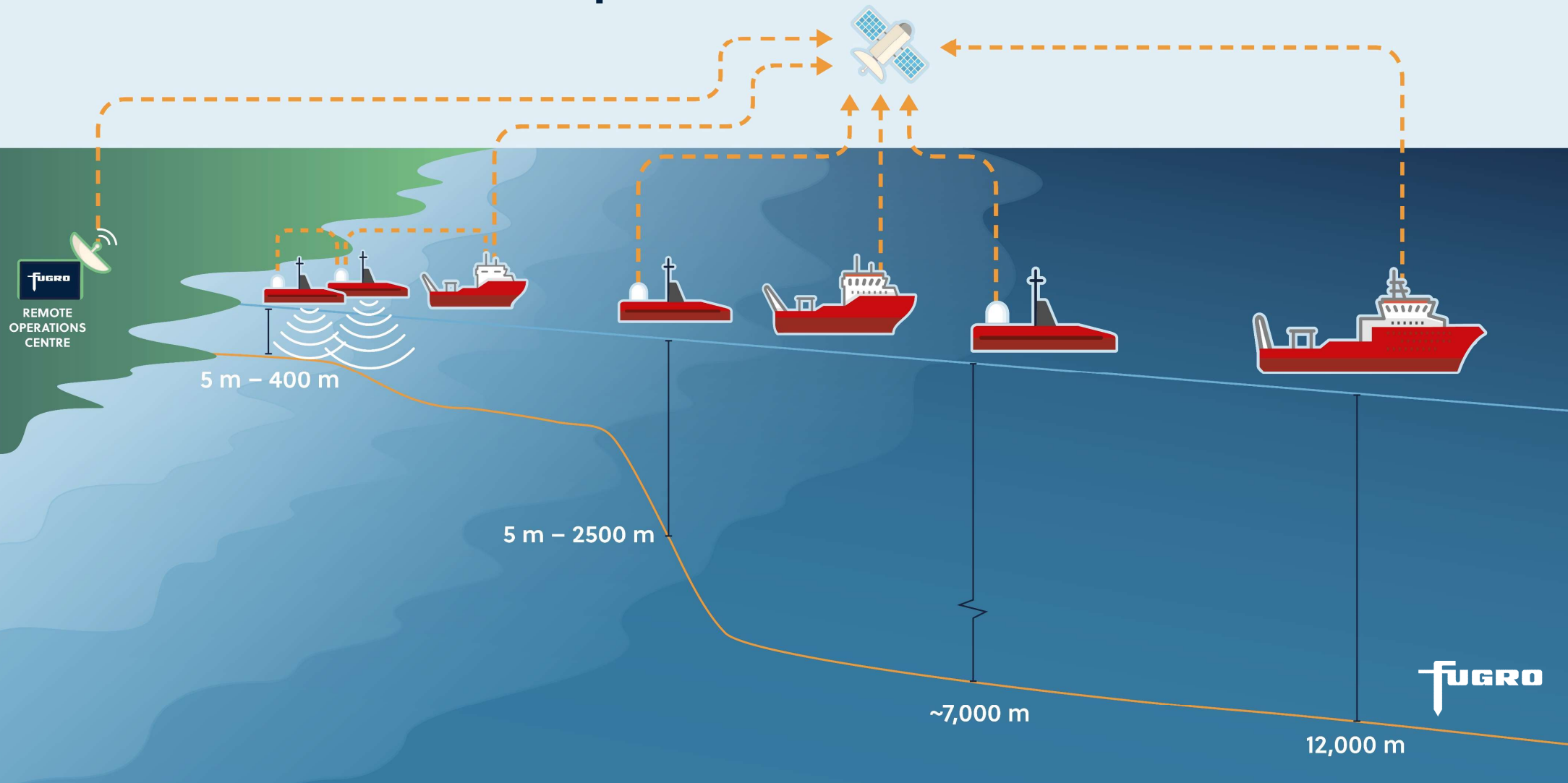
- Nautical charting / Bathymetric mapping
- Marine and coastal engineering
- Ocean Mapping

Benefits

- Meets and exceed international standards
- Full ocean depth capability
- Increase efficiency in shallow
- Force multiplier Increase efficiency in the shallow water



Seaborne Acoustic Capabilities



FUGRO BLUE SHADOW

USV Optimised for Hydrographic
Data Acquisition and Site
Characterisation

Key Features



Force Multiplier for
accelerated acquisition



Remote and autonomous
operations



Dynamic Line Acquisition

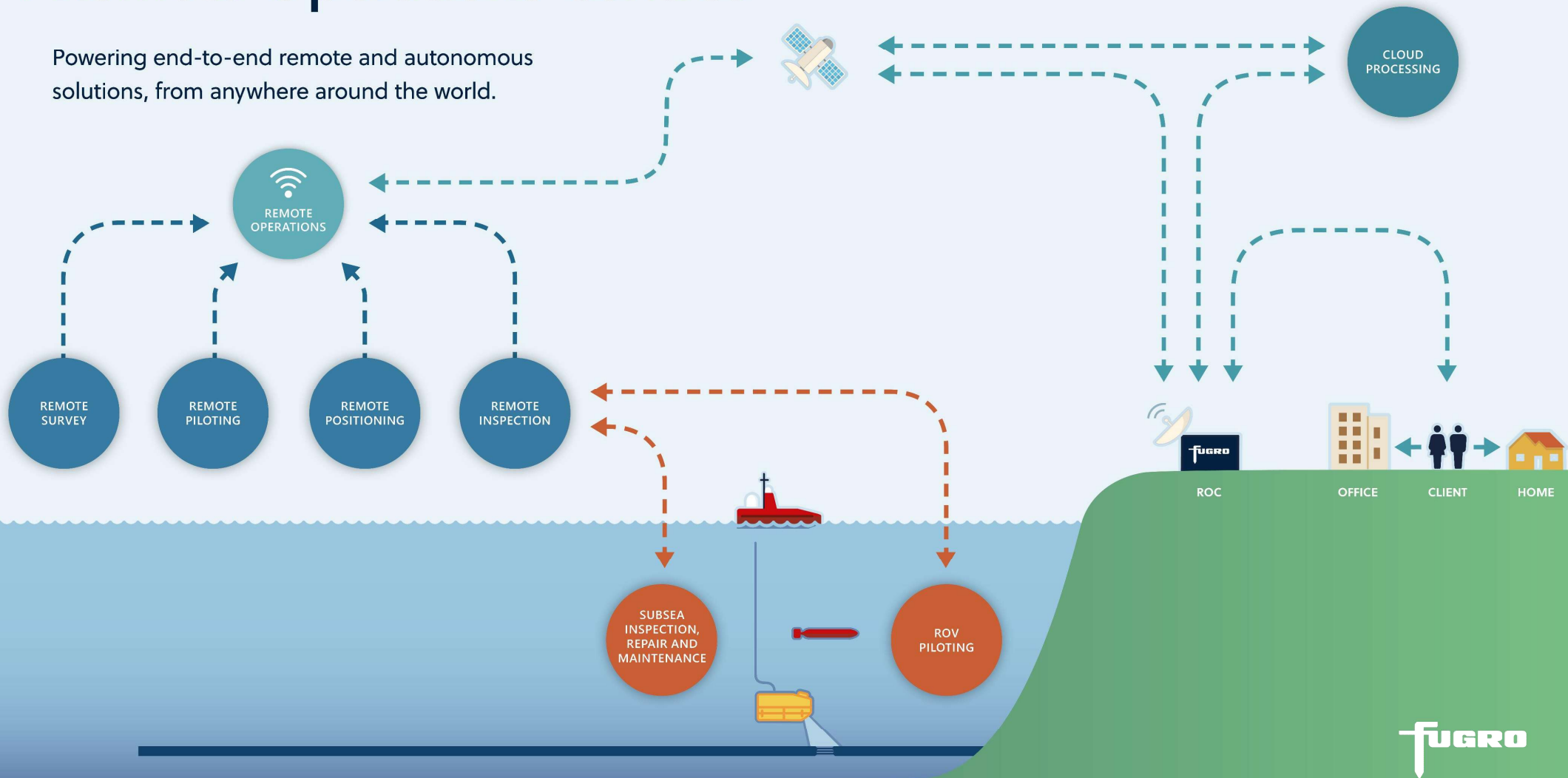


Advanced situational
awareness and collision
avoidance



Remote Operations Centres

Powering end-to-end remote and autonomous solutions, from anywhere around the world.

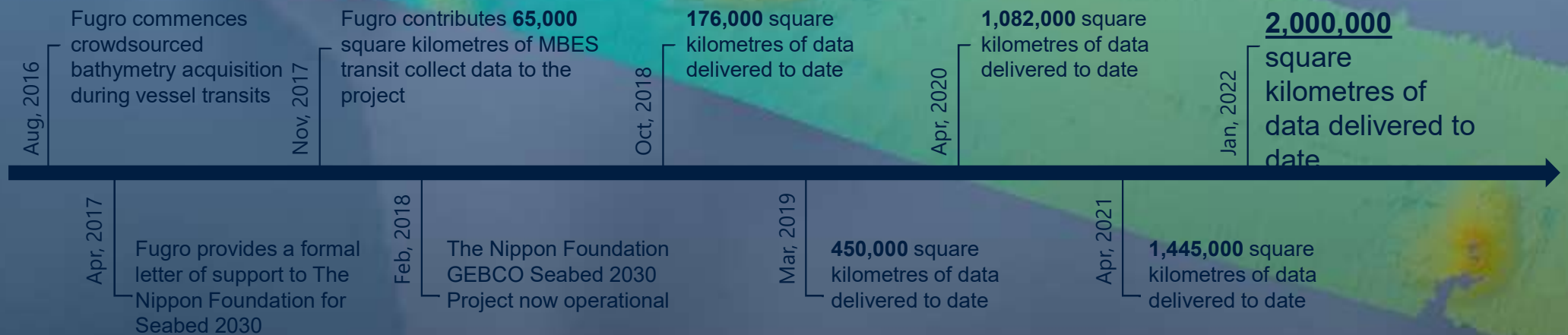


Gaia.Hub Online Data Delivery Portal

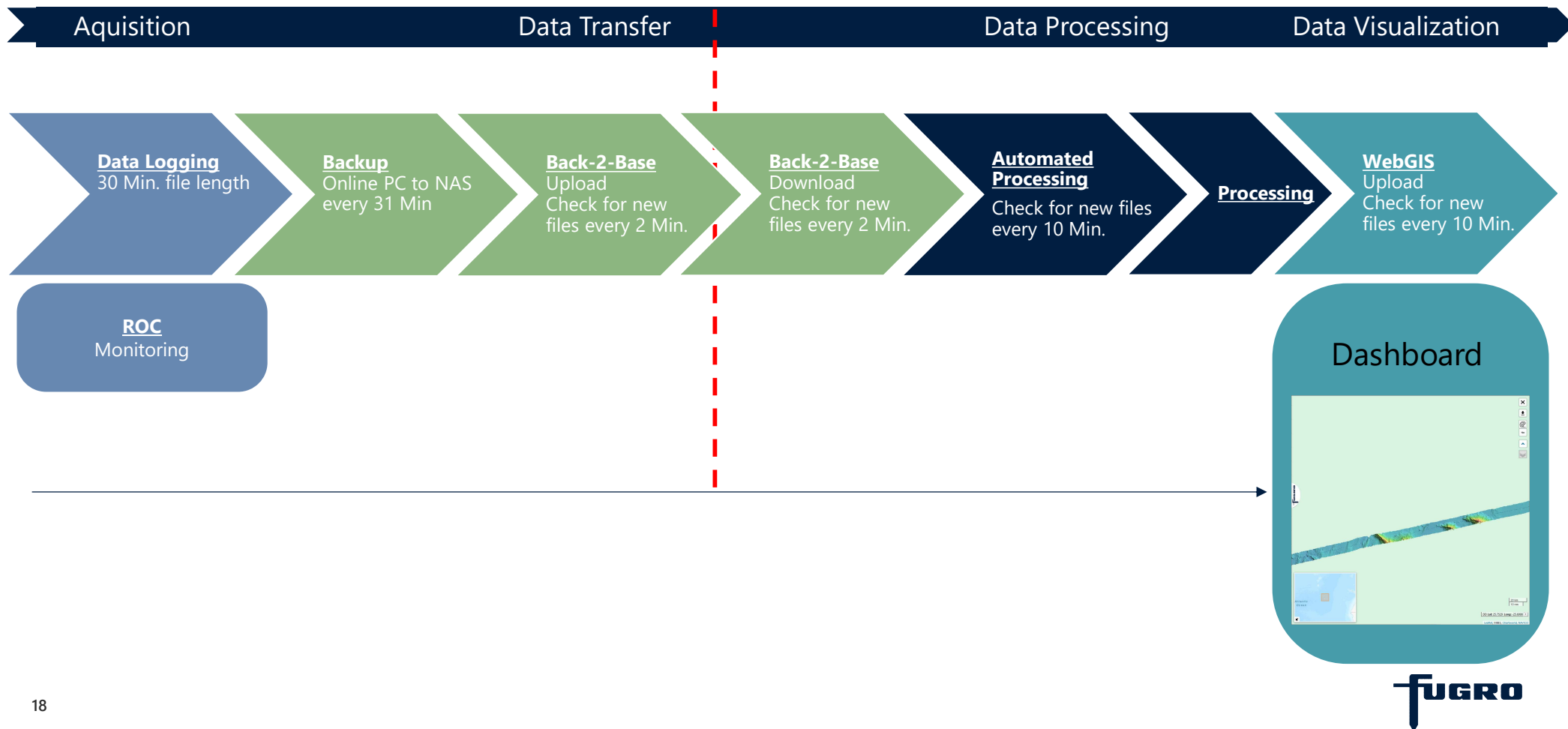
- One source of information
- Accessible from any device at any time
- Large and structured data repository
- Supported by in-house Geo-data experts and experience

Social Commitments

Contributions to Seabed 2030 & IOC-UNESCO "Ocean Decade Alliance"



Remote Survey – Dataflow – Deep Water Bathymetry



Safe and sustainable offshore surveys

With our global track record in providing hydrography services to deliver a tailored survey solution, we collaborate with you to reduce risk for your offshore project. Our continuous improvements in hydrographic survey platforms contribute to sustainable survey operations **for a safe and liveable world.**



