



Biota Guard

Real time Environmental Monitoring

KLIF, Helsingør - 2012.02.03

Agenda



- Short introduction of Biota Guard & service
- Real time environmental monitoring
- Biota Guard Arctic subsea

About Biota Guard AS

- Established in 2005
- Award winning technology and service company within environmental monitoring.
- Technology based on more than 10 years of R&D within marine biology and ecotoxicology at IRIS Biomiljø.
- Patented technology
- Markets
 - Offshore oil and gas industry
 - Land based industry with discharge to sea
 - Aquaculture industry



Biota Guard

AWARD
SUBSEA
UPCOMING COMPANY
OF THE YEAR 2010

AWARDED

BIOTA GUARD AS

The Subsea Upcoming Company of the Year Award is a co-operation between NCE Subsea, Sparebanken Vest, CONNECT Vest and Underwater Technology Foundation. The objective is to contribute to the development and commercialisation of new and growing companies with products, concepts and services within the subsea industry value chain in the Bergen area subsea cluster.

Biota Guard AS has been evaluated by the jury for their performance on the following criteria categories:

- ✓ CONNECT Springboard (B, Pre-springboard or alternative process)
- ✓ Economy
- ✓ Technology and services
- ✓ Market and competition
- ✓ HSE
- ✓ Influence on the society

In the evaluation Biota Guard AS's degree of maturity and existing and future business potential has been considered.

THE FUTURE OF SOLUTIONS

The jury, Bergen 08.06.2011

TROND OLSEN
NCE SUBSEA

TOR WILGOHS KNUDSEN
UTF

ØYSTEIN BREDHOLT
SPAREBANKEN VEST



A tool for increased environmental awareness



Early warning leak detection

- Superior sensitivity compared to field proven conventional sensors
- Quick response to reduce the consequences of an environmental incident
- Pinpointing the source by eliminating noise



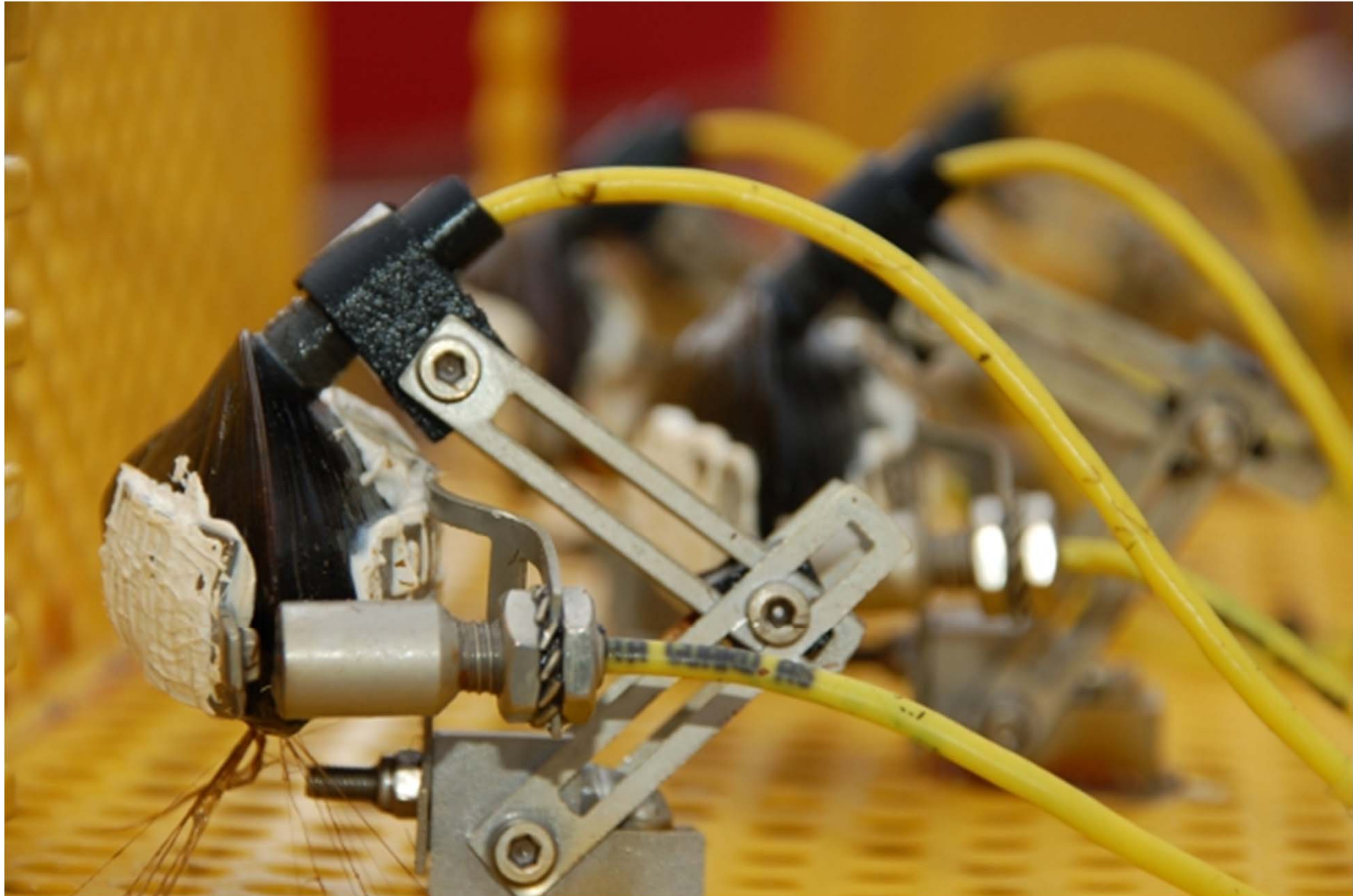
Long term environmental effect monitoring

- Unique ability to respond to a mixture or “cocktail” of contaminants
- Continuous monitoring in real-time enables detection of chronic effects
- Factual based response to strict regulation
- Creating baselines for the environment

Highly sensitive biosensors are integrated with chemical and physical sensors



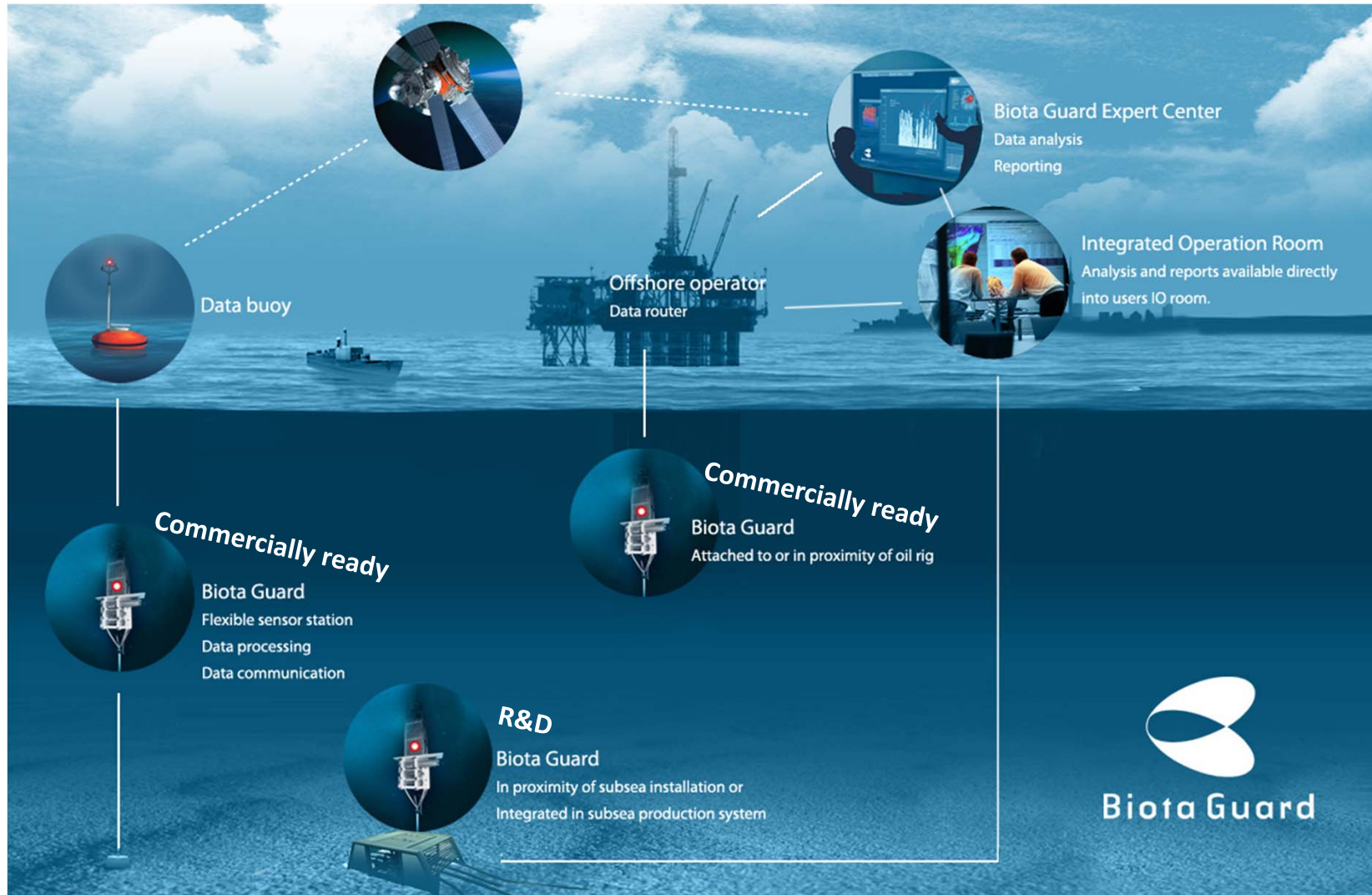
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Data extracted in real time, integrated in client's IO room and supported by Expert Center



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Biota Guard Arctic Project 2009-2012 (Petromaks)



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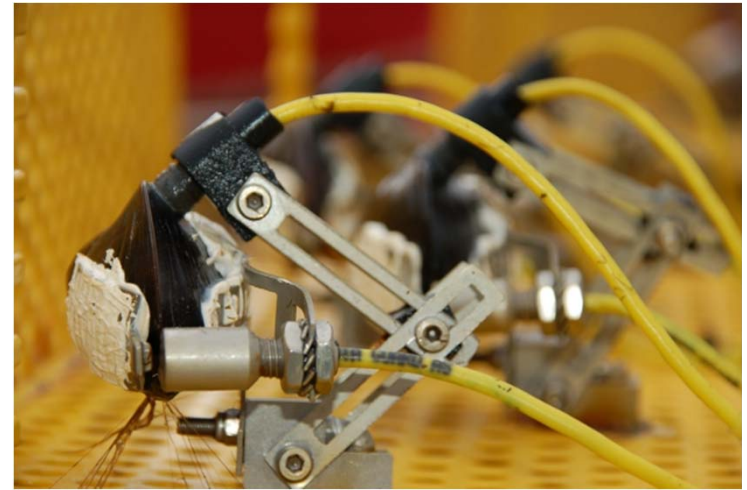
- **Project objective:**
 - *Develop, test and demonstrate to the offshore oil industry an integrated environmental monitoring system for arctic subsea application*

- **Main goals:**
 - Develop a technical concept for real time environmental monitoring of a typical subsea oil production field.
 - Identify and develop 2-3 new biosensors for arctic subsea operation.
 - Design, test and demonstrate the Biota Guard system for subsea operations.
 - Demonstrate a fully automated real time analytical framework.
 - Communicate and display environmental data through Biota Guard IO framework



Biota Guard Arctic Results (so far...)

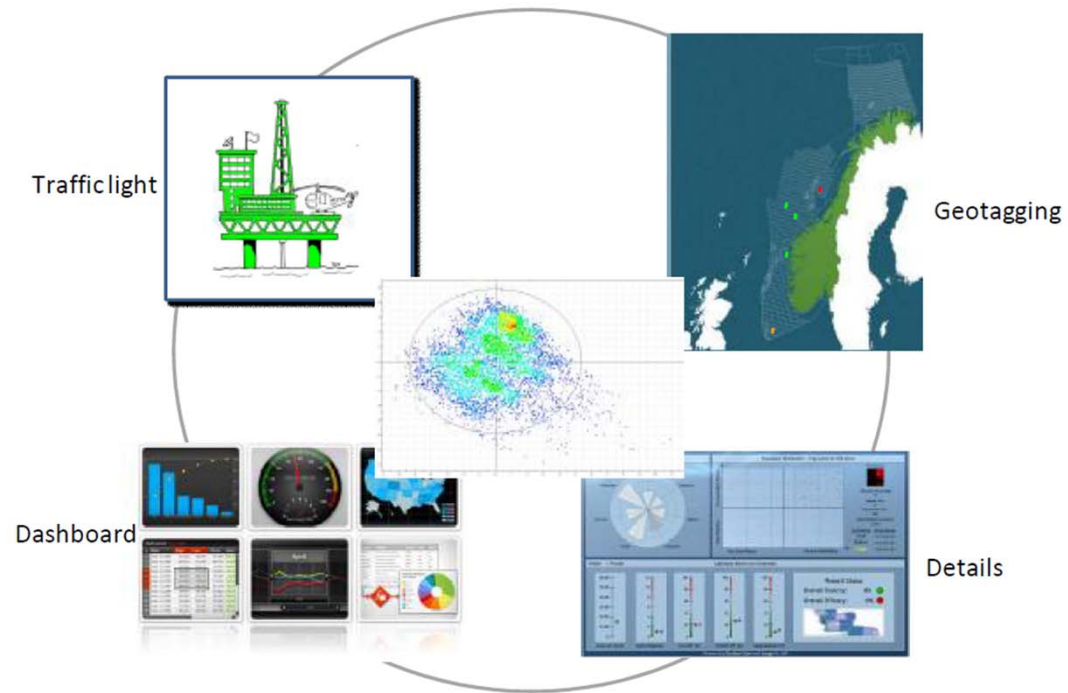
- Biota Guard Subsea System is being evaluated by DNV new technology qualification procedure.
- Subsea sensor array tested at 500 meters for 3,5 months.
- New biosensors species (*Modiolus modiolus*, *Arctica islandica*) tested sensitive to oil and tested in field.
- Fully automation of multivariate approaches in Biota Guard Expert Center.



Thank you



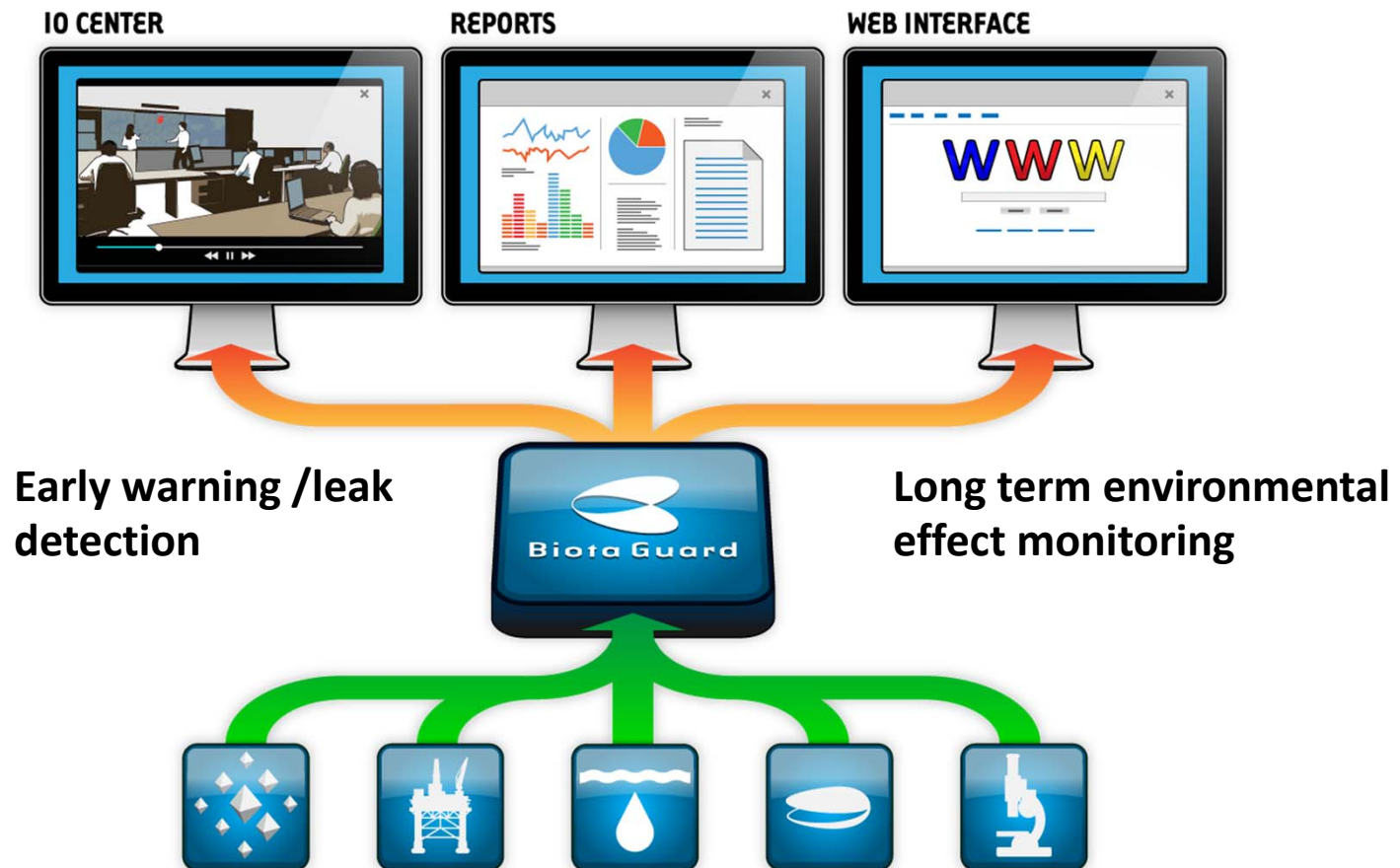
Biota Guard Arctic project



Biota Guard Integrated System



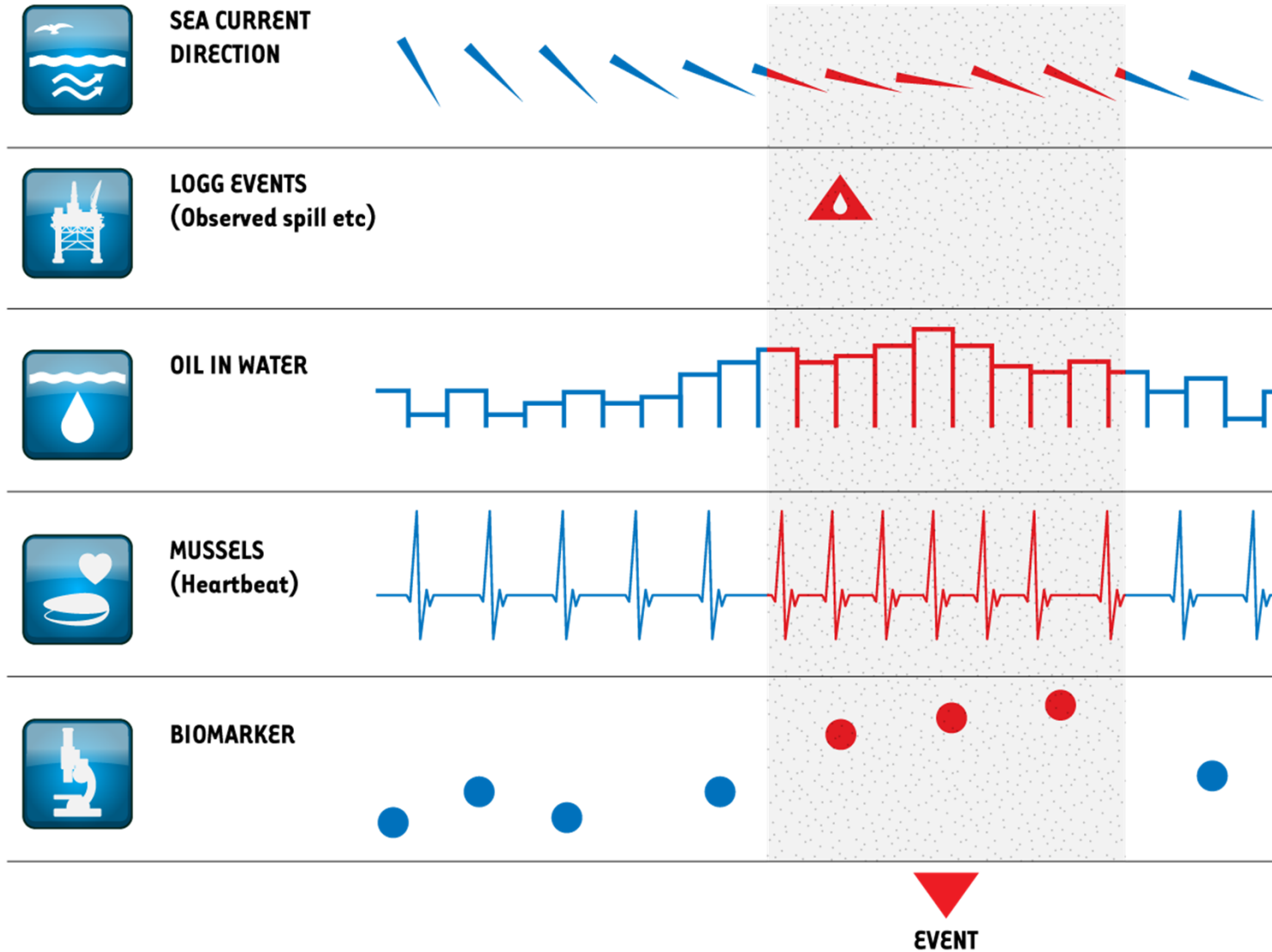
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Holistic approach



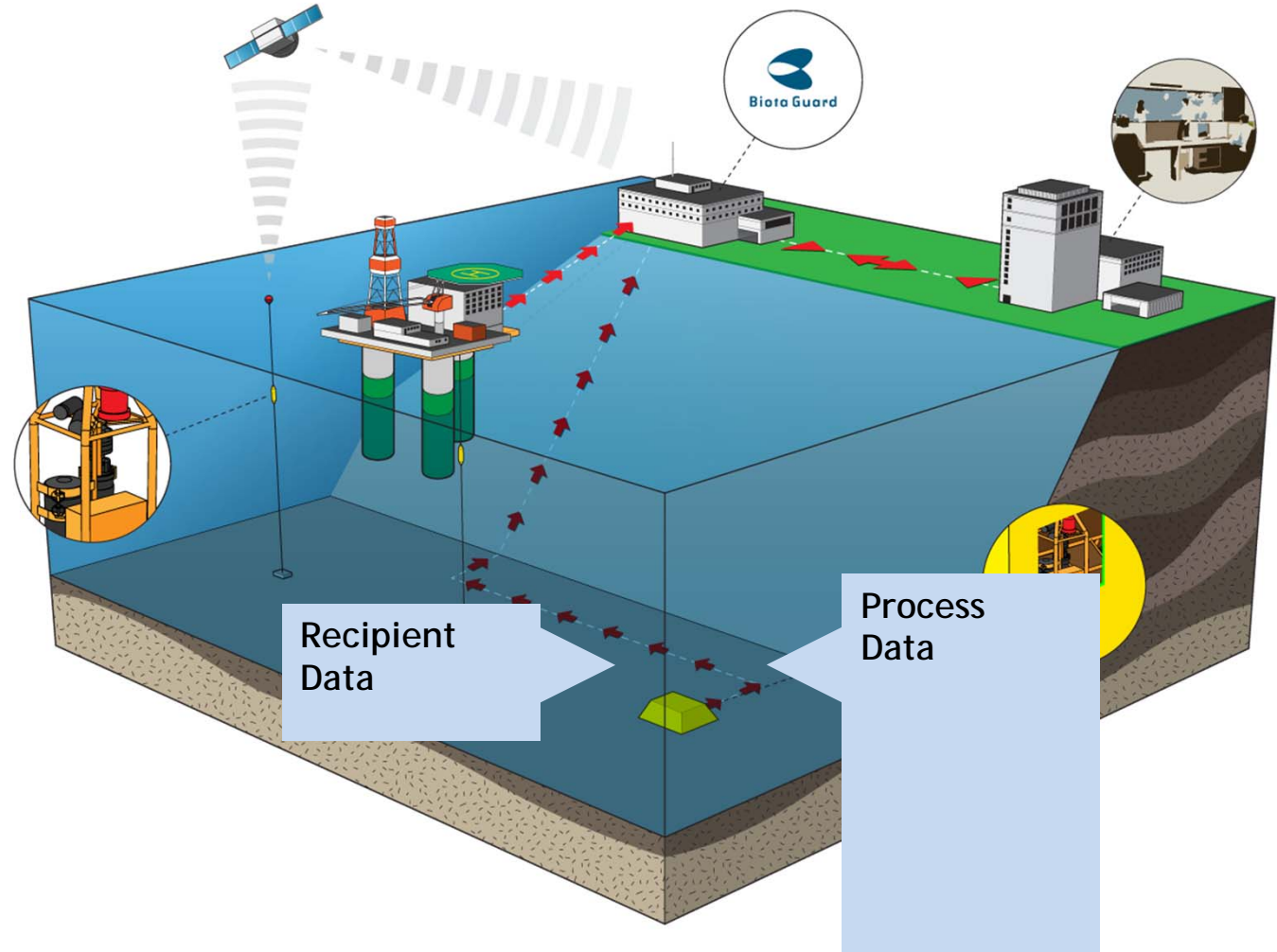
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Subsea operations



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Thank you

R&D and future targets



- Biosensors for subsea applications

- Evaluate the sensitivity of bivalves to key chemicals
 - Ethylene glycol, MEG
 - Combination of dispersant and oil