

Environmental aspects – Experiences to gain from offshore O&G

Presented at the Marine Minerals seminar by
GCE Ocean Technology and Norwegian forum for
Marine Minerals (NMM) – 3 June, 2021

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Our commitments

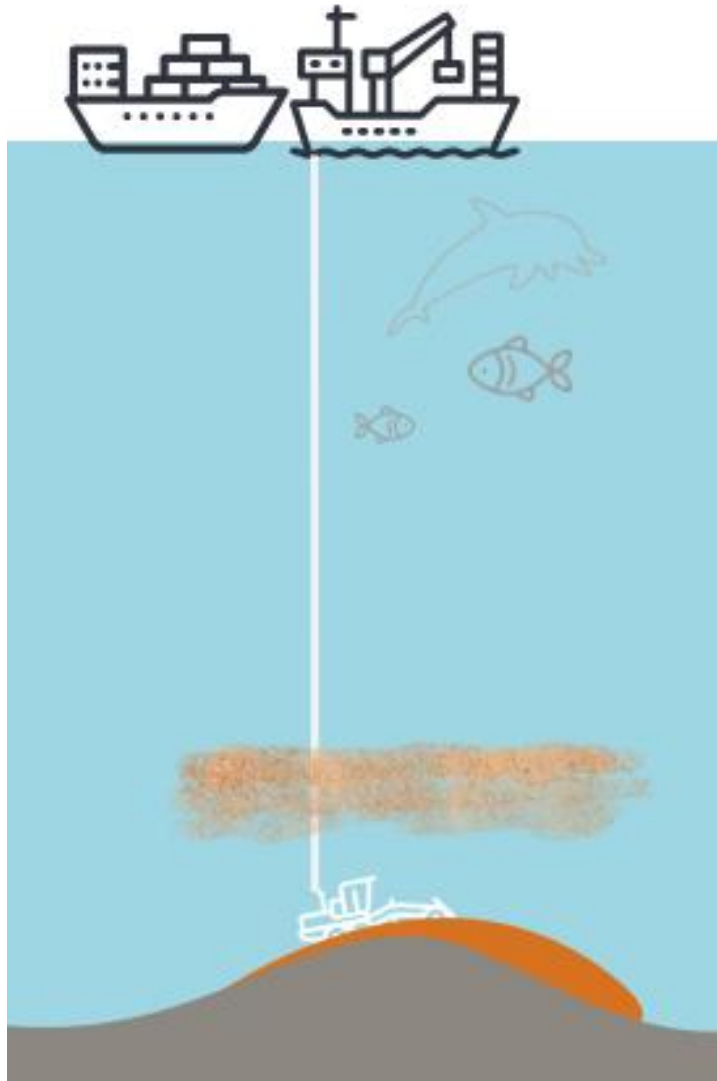
We will conduct our business consistently with the United Nations Guiding Principles on Business and Human Rights and the ten principles of the **United Nations Global Compact**

We are committed to **preventing harm to the environment** and aim for outstanding natural resource efficiency in our business activities. We actively work to limit greenhouse gas emissions from our activities and comply with all applicable environmental laws and regulation.

Equinor support the Sustainable Development Goals (SDGs) and the implementation of the Paris Agreement.



Environmental aspects related to mining of SMS



Key topics:

Plumes

- Modelling of spread and dilution
- Understanding toxicity and effect levels

Ecosystem understanding

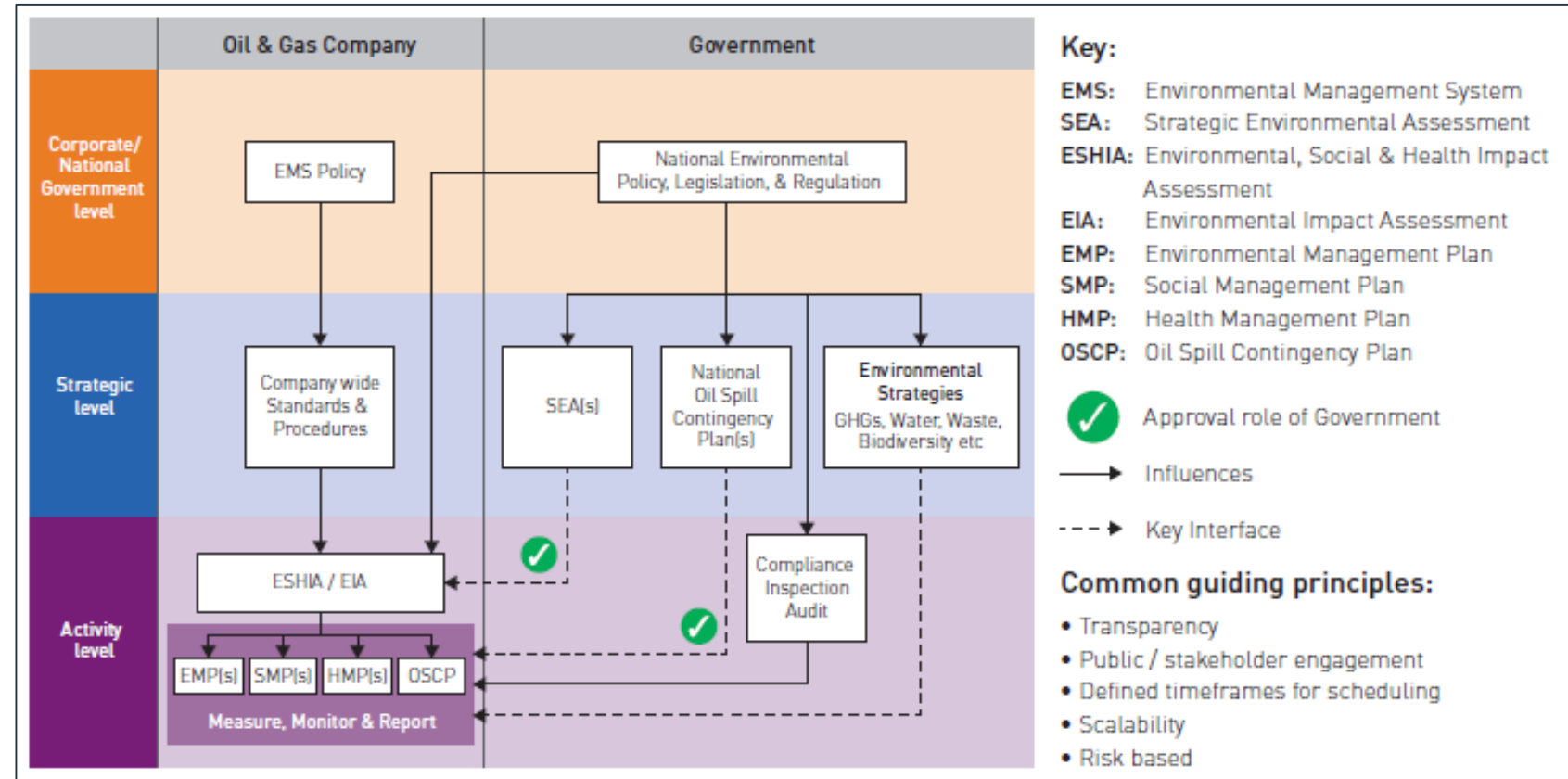
- Ecosystems on active and extinct vents
- Population connectivity
- Potential for regional and global extinctions
- Potential cumulative impacts from multiple projects
- Loss of ecosystem-functions and services

Environmental risk framework

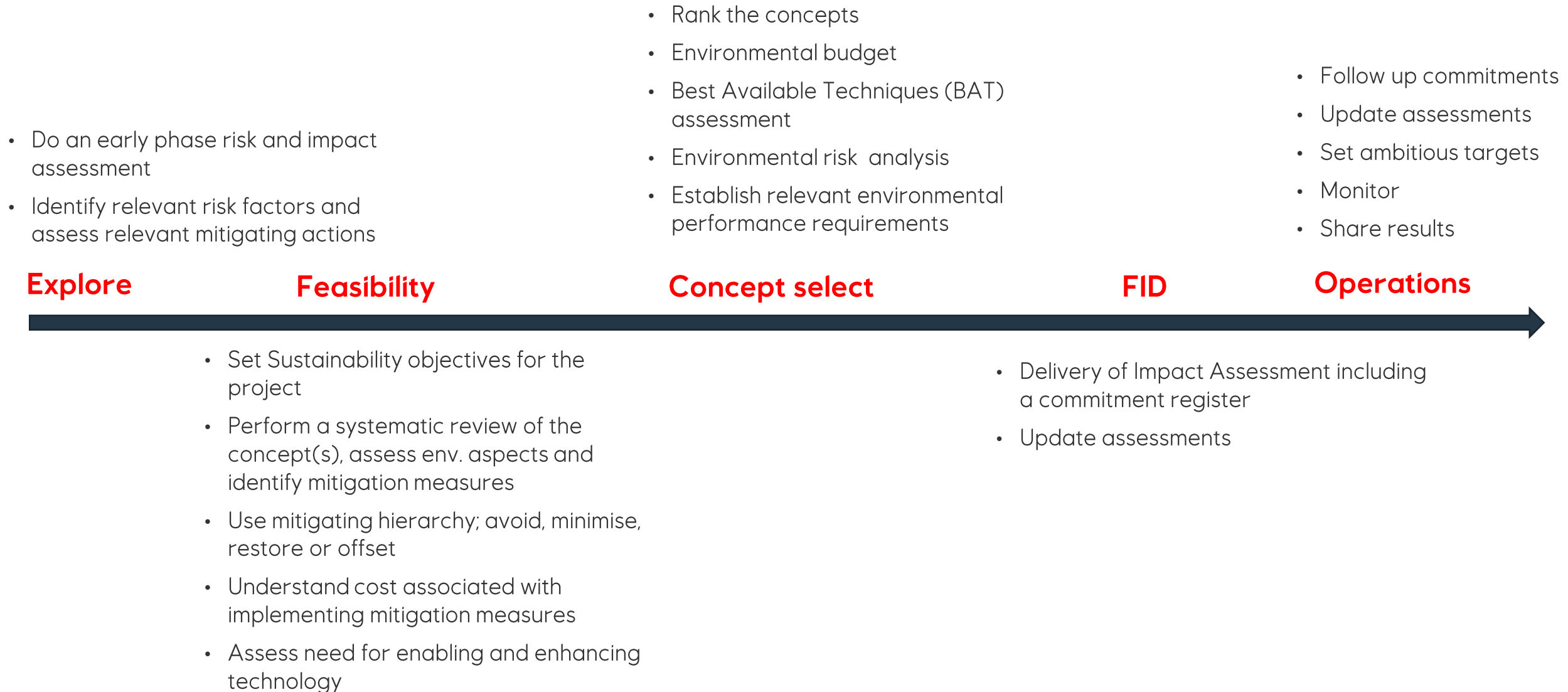
- Proposal for framework for environmental risk assessment

Some of the main challenges

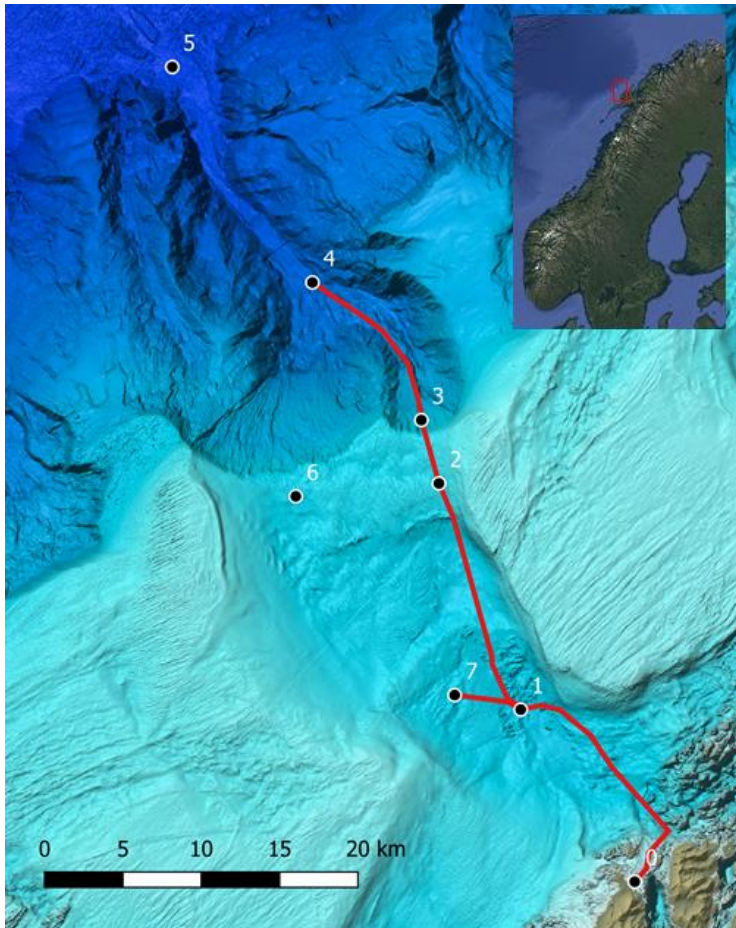
- Where and how big are the SMS resources?
- Progress understanding of the environment
- Understand and mitigate risk from operations
- Regulatory regime not in place



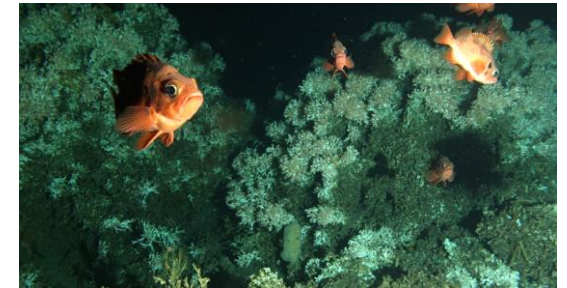
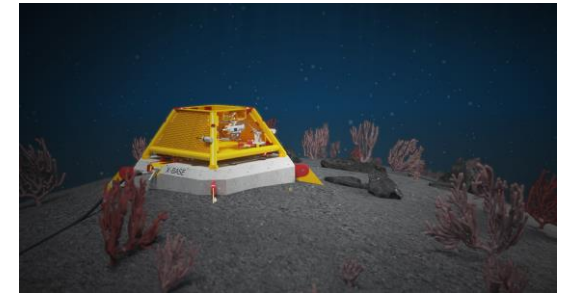
Examples of main focus areas as a project matures – environmental technology



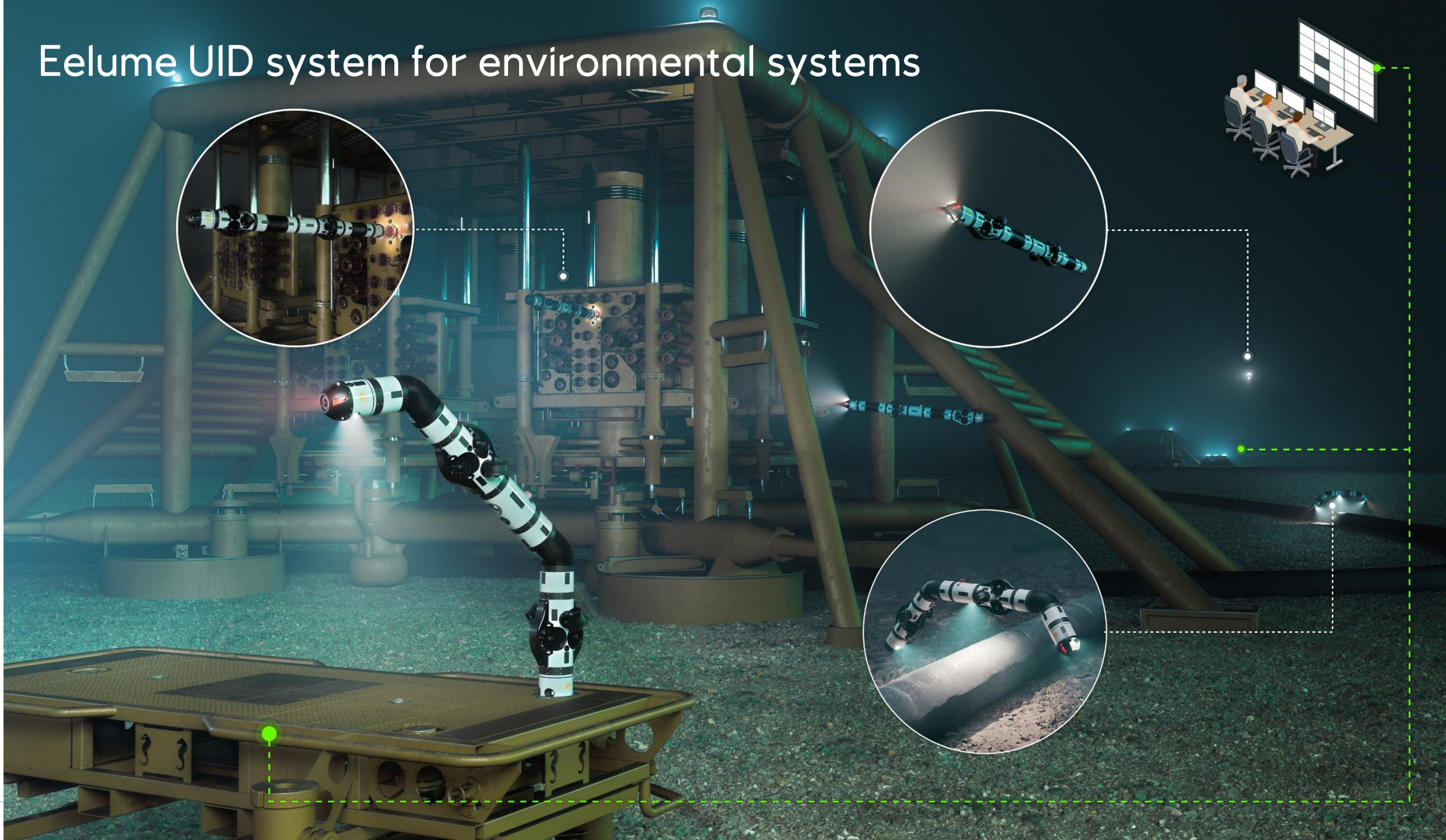
LoVe ocean observatory project



- 7 observation platforms collecting data from shore out to a depth of 2 500 meters.
- Cabled infrastructure, enabling real-time data from the ocean environment
- The objective is to improve understanding of natural variations and build knowledge about the marine ecosystems
- A collaboration with The Institute of Marine Research and several other partners
- Data freely available at love.equinor.com and loveocean.no

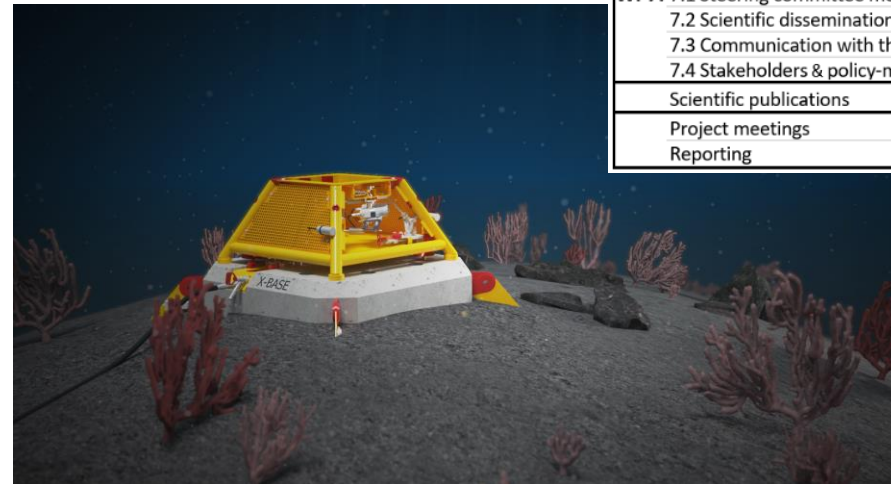
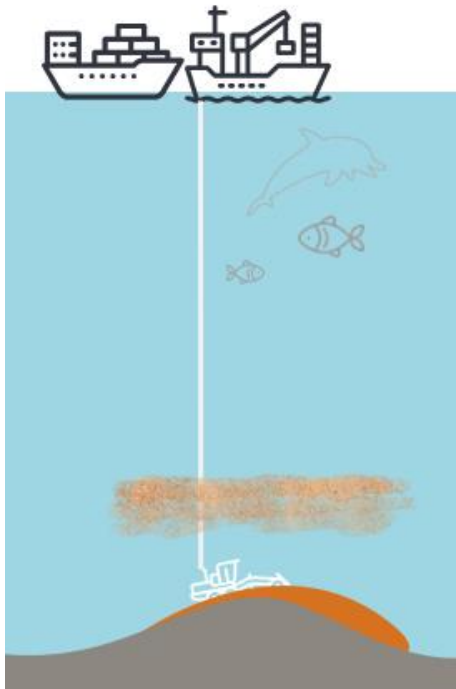


Eelume UID system for environmental systems



Sum-up: How we work with environmental aspects – some examples

- Carry out an early risk and impact assessment
- Identify relevant environmental aspects and assess relevant mitigating actions
- Set targets
- Assess need for development and implementation of technology
- Work integrated and include environmental requirements in design



	21	2022				2023				2024		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
WP1. 1.1 Fieldwork (Research cruises)												
1.2 Benthic community mapping												
1.3 Microbial communities												
WP2. 2.1 Environmental conditions												
2.2 Trophic interactions												
WP3. 3.1 Biophysical model of larval dispersal												
3.2 Genetic connectivity												
WP4. 4.1 Plume characterisation												
4.2 Plume dispersal modelling												
WP5. 5.1 Characterisation of SMS particles												
5.2 Initial toxicity screening												
5.3 Lab sediment community exposure I												
5.4 Lab sediment community exposure II												
5.5 Lab exposure studies with mussels												
5.6 In situ experiments (with WP2)												
5.7 Lab exposure studies with sponges												
WP6. 6.1 Risk framework												
6.2 Risk analysis												
WP7. 7.1 Steering committee meetings												
7.2 Scientific dissemination												
7.3 Communication with the public												
7.4 Stakeholders & policy-makers comm.												
Scientific publications												
Project meetings												
Reporting												

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