



i-Nord

An Integrated System for Monitoring and Management of Resources in Artic Waters

SENSORCOM-2008

August 25 31 2008 -Cap Esterel, France

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SINTEF-ICT

NNN-New nerve system for Northern Waters



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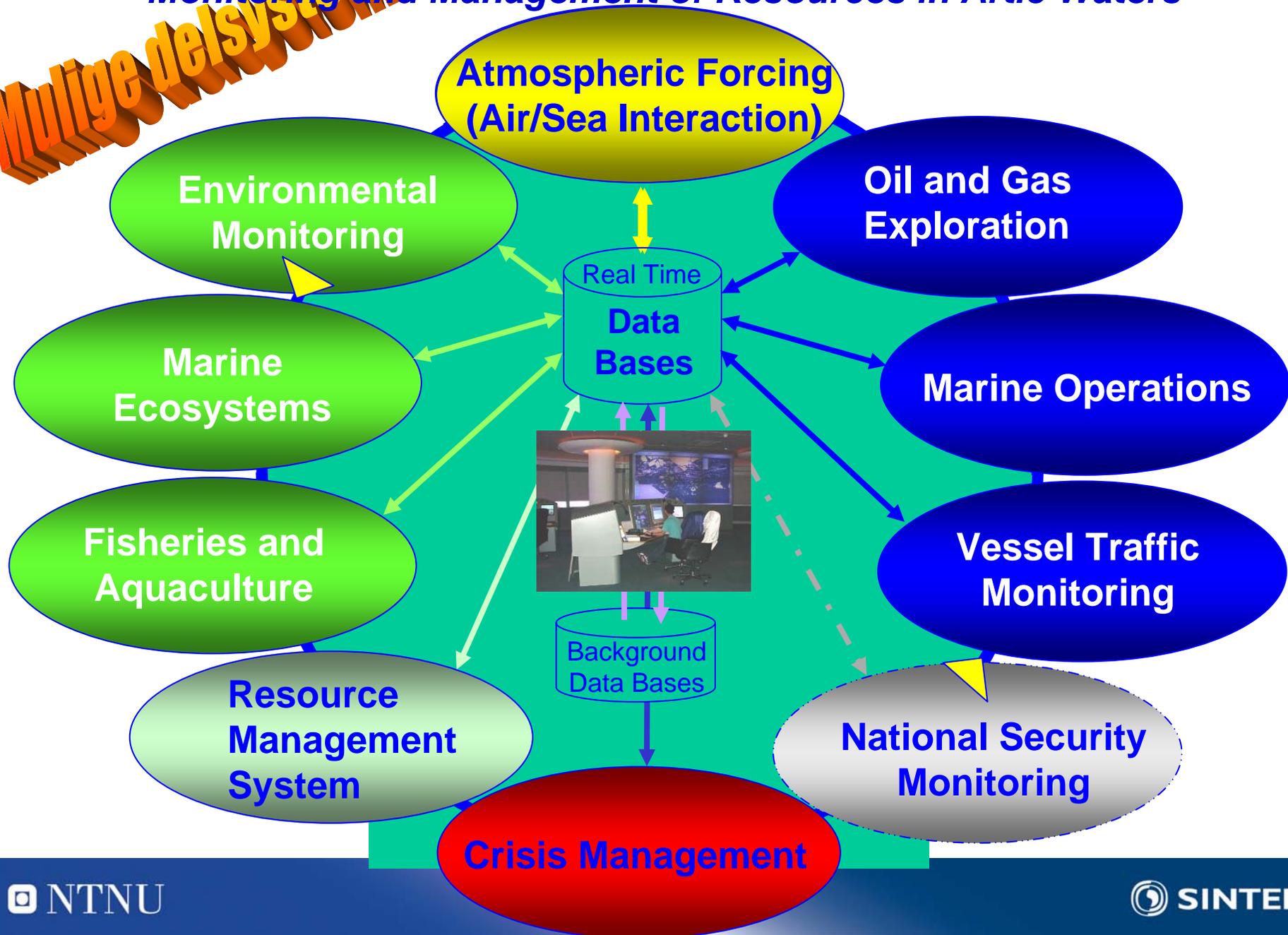
a) Virkeligheten vi ser i Nordområdene etter 2015



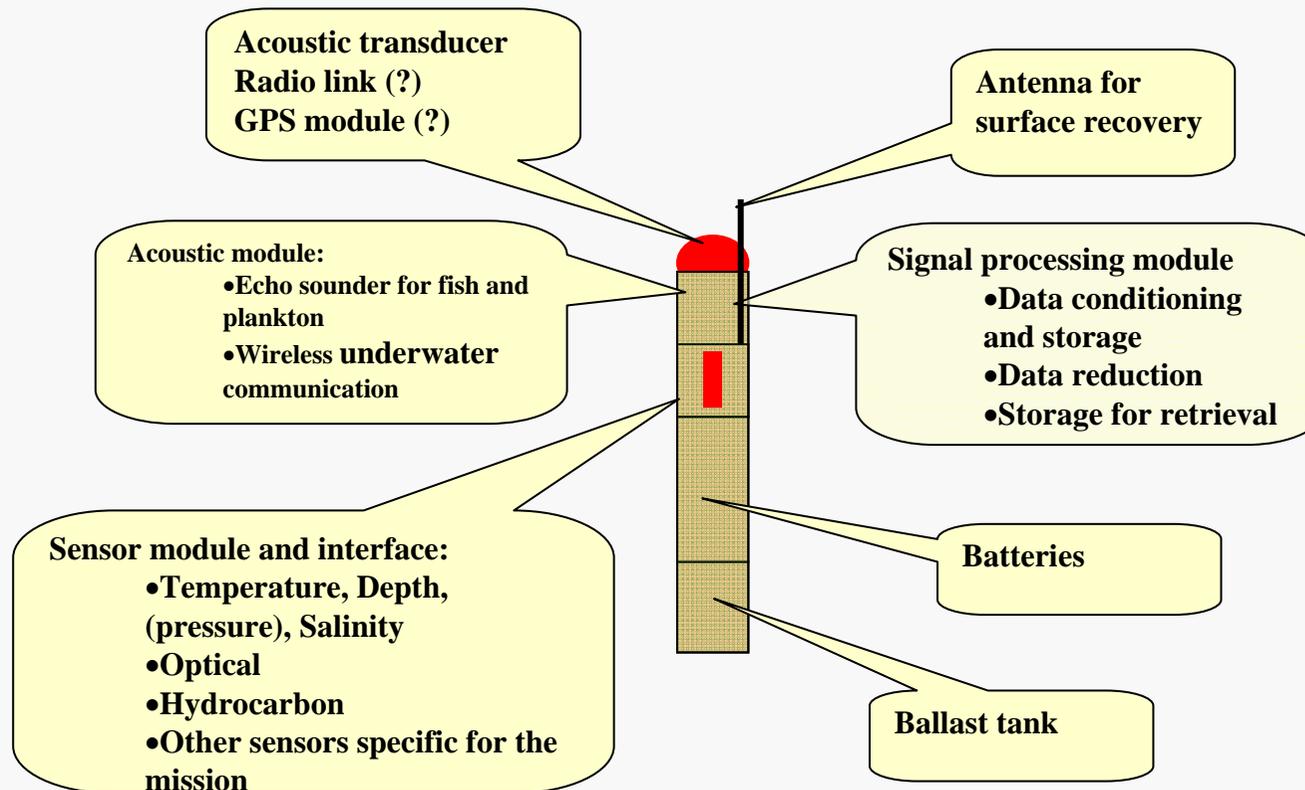
b) Integrert systemstøtte for Norges ledende rolle i Nordområdene

Mulige delsystemer

An Integrated System for Monitoring and Management of Resources in Arctic Waters



Generic Marine Sensor Unit (GMSU)



Future developments in marine environmental surveillance

- Autonomous sensors
- Acoustic underwater sensor network
- Linked to terrestrial data network

New possibilities in marine science

What needs to be done?

- **Recent developments in information technology and communication technology give new possibilities for observation and surveillance of the marine ecosystem.**
- **The challenge is to make use of new sensor and communication technology in marine observation systems.**
- **R&D objective: Adapt new ICT technology for observation and surveillance of the marine ecosystem.**

Main areas for R&D

- **Methods and models for optimal use of data**
 - Develop methods for efficient extraction and storage of large amount of data
 - Enable key data to users
 - Develop model based sampling methods that utilizes the data flow according to the optimal usage of the infrastructure
- **Telecommunication over and under water.**
 - Acoustic systems for underwater communication
 - Radio system for onshore communication
 - Integration of radio and acoustic systems
 - Further development of acoustic systems with respect to increased data rate, longer coverage and improved security. Model based adaptive systems,
- **Sensor technology**
 - Oceanographical parameters: Temperature, salinity, oxygen, currents etc.
 - Environmental parameters, PCB, radioactivity, hydrocarbon,
 - Acoustic and optical sensors for measurements of fish and plankton.
 - Smart sensors
- **Energy, storage and harvesting**
 - Low power electronics and sensors
 - Battery technology
 - Energy harvesting from the environment, vibrations, waves, temperature gradients etc