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SINTEF

MINUTES OF MEETING

PURPOSE OF MEETING	PRESENT	ABSENT	FOR YOUR INFORMATION
MarSafe Seminar Vardø 8th and 9th of Sept 2009			
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P	Unrestricted

REFERENCE NO.	INITIATED BY	WRITTEN BY
	Kay Fjørtoft, MARINTEK	Kay Fjørtoft, MARINTEK

PROJECT NO.	DATE	LOCATION	DATE AND TIME OF MEETING
	2009-09-16	Vardø VGS	8th and 9th of Sept 2009

Participants

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				8.9	9.9
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Agenda Day 1

8th of September		
Time	**Program**	**Speaker**
13.00	**Welcome**	**Kåre Simensen, County Executive, Industry, transport and culture.** **Fylkesråd for næring, samferdsel og kultur I Finnmark Fylkeskommune**
13.15	**Introduction to the seminar**	**Kay Fjørtoft, MARINTEK and project manager MarSafe High North**
13.30	**MarSafe – Maritime Communication in the High North**	**Fritz Bekkadal (Technical coordinator), MARINTEK,**
14.15	**Break**	
14.30	**Satellite Services in the High North**	**Gunnar Pedersen, Kongsberg Satellite Services**
15.00	**Coordination and information sharing between different actors in the oil and gas industry.**	**Aud Marit Wahl, Centre for Integrated Operations in the Petroleum Industry**
15.30	**Break**	
15.40	**The Ocean Space Centre**	**Aud Marit Wahl, MARINTEK**
16.00	**The management plan for the Barents region**	**John Morten Klingsheim, The Norwegian Coastal Administration**
16.30	**Satellite based AIS**	**Øystein Helleren, The Norwegian Defence Research Establishment (FFI)**
17.00	**Vardø Radio**	**Telenor – Vardø Radio**
17.30	**Bus transport to Vadsø**	
19.00	**Conference dinner - Vadsø**	
07.45	**Bus transport to Vardø, 9th of September**	

Agenda Day 2

9th of September		
Time	**Program**	**Speaker**
09.00	Introduction to day two	Kay Fjørtoft, MARINTEK
09.15	A case study from an emergency operation in the arctic seas	Beate Kvamstad, MARINTEK
09.45	Norwegian and Russian cooperation on information exchange	John Erik Hagen, The Norwegian Coastal Administration
10.15	Live report from Barents Rescue 2009 exercise in Murmansk	Kjell Johansen and Tore Hongset, Hovedredningssentralen Nord,
10.30	Draft findings from the MarSafe scenarios.	The MarSafe project and findings from the senarios
11.30	Lunch	
12.30	Demonstration of Vardø VTS	Ståle Sveinungsen, The Norwegian Coastal Administration
13.00	The MarSafe – Royal Norwegian Navy Barents Rescue Scenario	To be confirmed
13.30	The County Governor, its responsibilities and challenges in the High North	Kjersti Solvoll, County Governor, Advisor Emergency Preparedness
14.00	Break	
14.15	Work Package 8 – Radio Navigation and Tracking Technologies	Kristian Reiten, Kongsberg Seatex
14.45	Galileo and new space initiatives, and the DINO-project	Kristian Reiten, Kongsberg Seatex
15.15	Break	
15.30	Emerging Technologies for Lightweight Antenna	Pawel Kabacik, Wroclaw University of Technology (WUT)
16.30	Closing up and discussions on the MarSafe aims, new project initiatives and brainstorming session	
17.30	End of seminar	

1 Seminar objectives, Kay Fjørtoft, MARINTEK and project manager MarSafe High North

Kay Fjørtoft presented the objectives for the seminar:

- The seminar will focus technical communication and operational procedures between stakeholders with an assignment to support safety at sea for the mariners.
- The MarSafe project will together with the Royal Norwegian Navy (RNoN) perform tests on communication possibilities onboard one of their frigates.
  - The objectives of the tests are to obtain information on available communication technologies in the High North and document their potentials.
  - Another objective is to identify potential data sources that can be exchanged between and used by different stakeholders for better decision support during an operational setting or in critical situations.
- The scenario will focus technical communication and operational procedures between stakeholders with an assignment to support safety at sea for the mariners:
  - Handling procedures
  - Communication possibilities
  - Information needs
  - Information gathering
  - Decision makers
  - Sharing of data

2 Welcome Speech - Kåre Simensen, County Executive of Finnmark, Industry, transport and culture

- North is the government's main foreign policy priority task
  - The background is the major nutritional opportunities, the unresolved boarder lines with Russia and the safeguarding of the rich marine environment.

- In Finnmark is the creation of Vardo, Traffic an important part of this work for improved monitoring and preparedness.

- Fisheries and Coastal Affairs Helga Pedersen said on NRK that the government will strengthen oil spill preparedness and preventive safety at sea with 200 million in next year's budget:
  - Of this, 5 million go to the realization of a Resource Center for the oil spill and maritime safety at Vardo.
  - "New building blocks in the north" requires that the Coastal Administration will develop new skills and develop expertise in emergency preparedness and combating pollution in the Arctic.

3 MarSafe Objectives – Kay Fjørtoft, Project manager

Kay Fjørtoft presented the MarSafe objectives:

- MarSafe North shall present the crucial needs and indicative solutions for maritime safety management means required to realize our future commitments in the High North, focusing:
  - Nautical operations and Transport
  - Dynamic Risk Assessment and Emergency Response
  - Territorial Security Control and Resource Supervision
  - Infrastructure and Integrated Coastal Zone Management

by utilizing novel underpinning technologies for:

- Environmental Surveillance and Sensing
- Arctic Communications
- Radio Navigation and tracking

MarSafe North
Maritime Safety management in the High North

Nautical operations	Management and control	Communication
• **Nautical operations and transport corridors** • **Transport corridors and areas of increased activity** • **Electronic maps** •**Arctic challenges** –**Meteorological** –**Geographical** –**Environmental vulnerability**	•**Traffic control and traffic data** •**Emergency response** •**Access to metocean data** •**Dynamic risk assessment** •**Information gathering** •**Information integrity and security** •**E-Navigation and supervision** •**Place of refuge, and stranding zones** •**Aids to ship in degraded situation**	•**Technology status for arctic** •**Radio navigation and tracking technologies** •**Sensor and sensing technologies** •**Fixed telecommunication** •**Terrestial wireless solutions** •**Satellite communication** •**Measurement technologies**

4 MarSafe – Maritime Communication in the High North – Fritz Bekkadal

- **Infrastructure alternatives**
  - WiCAN core based on:
    - Existing infrastructure
    - Broadcast stations (44 major & ~2.700 smaller installations)
    - Lighthouses (~200; ~ 100 practical utilizable) & beacons (~ 2.000)

    - VHF stations (~130; 52 used for TMRs VHF Data - each 72 nm range)
  - Extended coverage by Mobile Multi-hop Relay (MMR) & Mesh Networking
  - HEO (Molnyia) satellites to cover the High North (and deep sea)
- **Frequencies**
  - UHF Digital Dividend: 450 MHz, **800 MHz** (Sub-GHz WiMAX)
- **Antenna & RF technologies**
  - Advanced and cost-effective antennas an RF front-ends

5 Satellite Services in the High North - Gunnar Pedersen Kongsberg Satellite Services

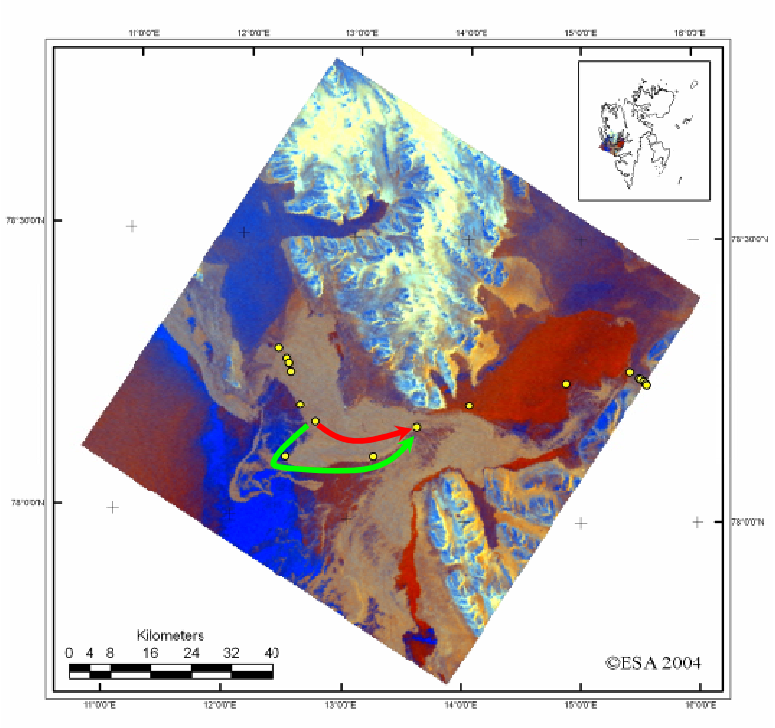
Kongsberg Satellite Services (KSAT) is a world leading commercial satellite centre. Situated in Tromsø, Norway with ground stations in Tromsø, Svalbard, Grimstad and the Antarctic, KSAT is immaculately located for both TT&C, launch support, orbit support and Near real time EO services.

The presentation from Gunnar focused on following issues:

- Satellite based monitoring - SAR
- Combining satellite images with AIS
- Satellite pictures
- Prediction of route
- Integration of environmental information

An example of the benefits of selecting a optimal route was given, and is shown in the example below

Optimal Route



Planned direct route through the ice
6 hours

Actual route around the ice
3 hours

The view from above - halved the journey time

6 Coordination and information sharing between different actors in the oil and gas industry - Aud Marit Wahl

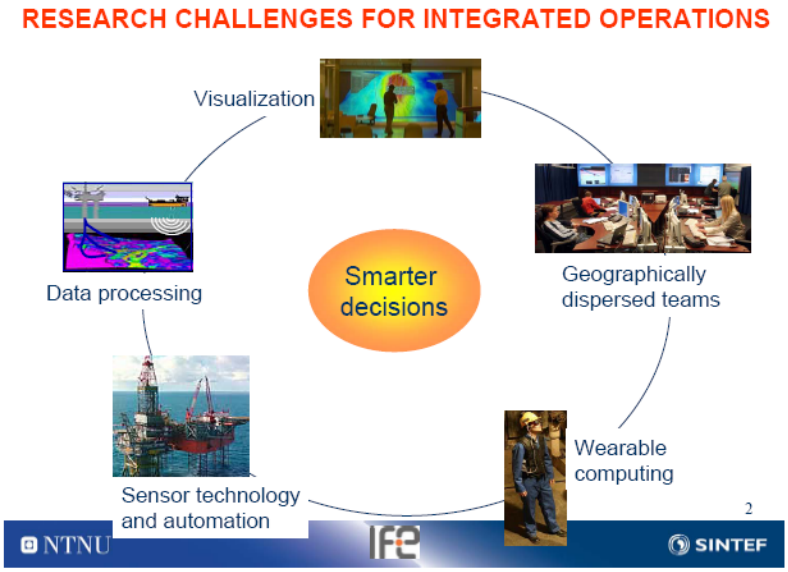
RESEARCH FOR FUTURE INTEGRATED OPERATIONS

Annual budget: 6 million USD (40 million NOK) each of 5 – 8 years
Personnel resources

- 25 research scientists from NTNU/SINTEF/IFE
- 30 Ph.D. candidates (during 5 years period)
- 15 professors
- 5 experts from international leading universities
- Personnel from the industrial partners (pilot projects , workshops etc.)

Research facilities

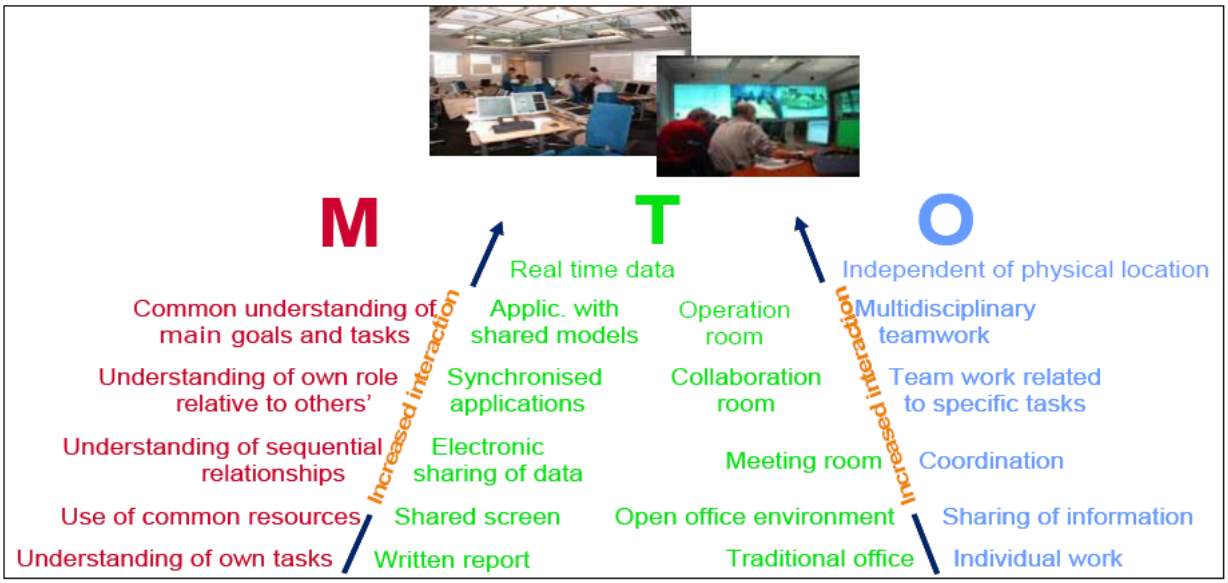
- Research laboratories at NTNU/SINTEF/IFE in Trondheim, Bergen and Halden
- Pilot testing at premises of oil companies and system suppliers



New work processes which use real time data to improve the collaboration between disciplines, organizations, companies and locations to achieve safer, better and faster decisions (**STATOIL**: Ringstad and Andersen, 2007)

Serial	Parallel
Single discipline	Multidiscipline teams
Dependent of physical location	Independent of physical location
Decisions based on experience data	Decisions based on realtime data

Figure 2 Integrated operations change work forms – development trends



7 The World Ocean Space Centre – Aud Marit Wahl, MARINTEK

A New Push for Marine Technology Research in Trondheim,

www.worldoceanspace.com

Trondheim has long been a leading centre of maritime research at international level. The Tyholt complex currently houses advanced marine technology laboratories for testing both ships and

offshore installations for safe oil and gas production and new concepts for extracting renewable energy from the sea. We do research on the challenges presented by floating offshore wind turbines, wave-power installations and underwater turbines capable of exploiting underwater currents, to mention but a few of our technologies.

Today, the Tyholt research centre comprises a Centre of Excellence (SFF): CeSOS (Centre for Ship and Ocean Structures), staffed by 50 researchers from all over the world, NTNU's Department of Marine Technology, which trains about 100 civil engineers a year, and the SINTEF-based institute MARINTEK with its 200 staff, who perform applied research for industrial companies all over the world.

The infrastructure at Tyholt has been under continuous development since the ship model towing tank was established in 1939 and the Ocean Laboratory for testing today's offshore installations opened in 1980. In order to meet the new challenges offered by exploring for and exploiting ocean resources, we now see the need for a new major effort to upgrade Trondheim's maritime research infrastructure.

Whether it would be best to upgrade the existing Tyholt facilities, build new plant close to the sea or locate important parts of the structures out in the ocean itself, is one of the questions that need to be answered by a pilot project that has just been launched.

The advantages of having the facilities on dry land are that it is easy to create controllable, repeatable conditions, which are a prerequisite for this type of research. On the other hand, it would open up quite new possibilities if we could carry out studies at sea. What challenges will face us, and how we will carry out this sort of research in the future, are among the questions to which the pilot project will attempt to find answers.

8 The management plan for the Barents region - Jon Morten Klingsheim, Kystverket

Jon Morten Klingsheim presented some strategically issues from the ongoing work with the management plan for the Barents region. Some of the issues described were:

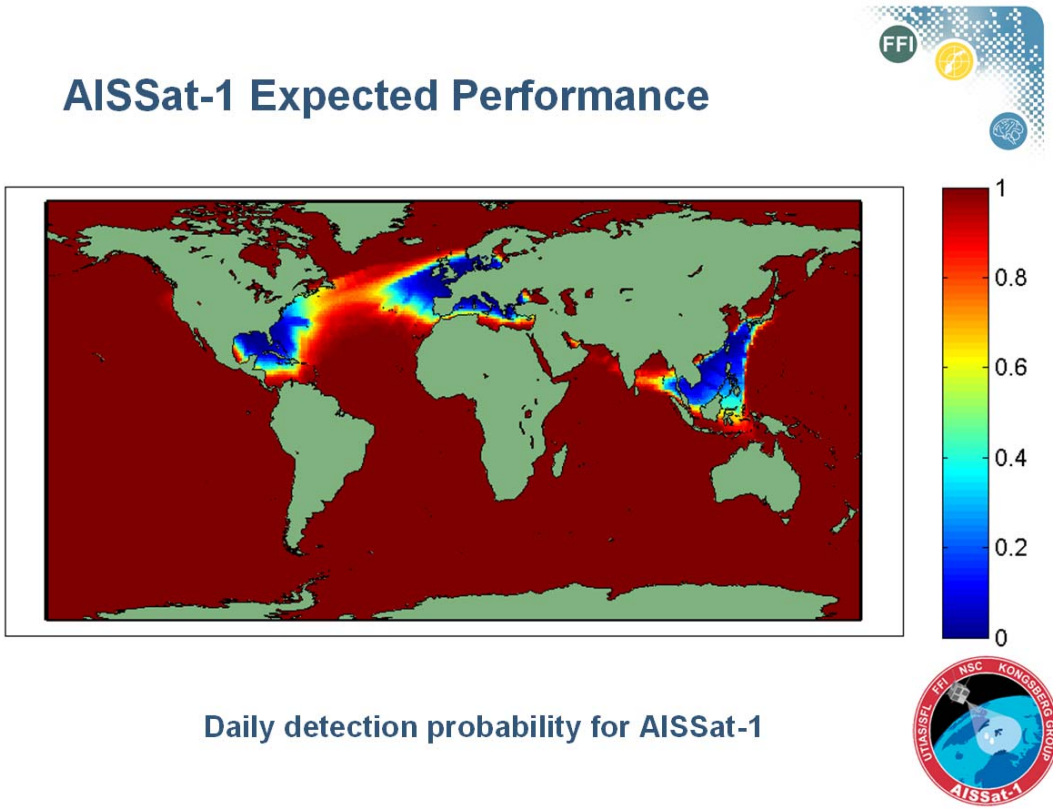
- The marine environment
- Human activity
- Particularly valuable and vulnerable areas, which requires special care
- Consequences of ship traffic in Lofoten – Barents Sea Area
- Climate
- Arctic Ice
- Mandatory Routing and traffic separation scheme
- AIS (Automatic Identification System)
- LRIT (Long Range Identification and Tracking)

Integrated Management of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Island
(Forvaltningsplan for Barentshavet og havområde utenfor Lofoten)

- **Maritime Safety – 9.sept 09**

9 Satellite based AIS - Øystein Helleren, FFI

AIS signals can be detected from space by a standard AIS receiver for altitudes up to 1000 km. However, an AIS sensor in space would cover a much larger area on the ground than the AIS system was originally designed for. The reporting between ships within communication range (~ 20 nm) is organized by a time division multiple access (TDMA)-algorithm to avoid coinciding transmissions, but from space the AIS sensor will see more than one such organized area. With many ships within the field of view interference problems will occur, and the AIS messages from some of the ships may not be detected. *Ref: http://www.sciencedirect.com/science*



Day 2

10 Galileo and new space initiatives – Kristian Reiten, Kongsberg Seatex

• Around 40 AIS base stations along the coastline. Ink. Bear Island and Svalbard
• Around 10 AIS base stations on offshore installations
• Each site has a typical range between 30 and 50 nautical mil, depending on the location of the antenna

What are the AIS to:

• Automatic identification of vessels
• AIS Traffic Monitoring and Surveillance with wider geographical coverage and better positioning accuracy compared to radar
• decreased risk of collisions and Environmental Catastrophes by safe coordination of ship traffic
• More precise navigational advising
• Transmission of Meteorological and Hydrological information
• Electronic transfer of safety messages
• Reducing VHF voice communications
• Creating better statistics of the ship traffic and by this Utilizing the AIS data as a basis for decisions regarding where to prioritise Aids to Navigation (Aton), etc.
• Data storage for possible incident playback when accidents or near-accidents have occurred
• Improved SAR management
• Logistics planning

Why IALA DGNSS

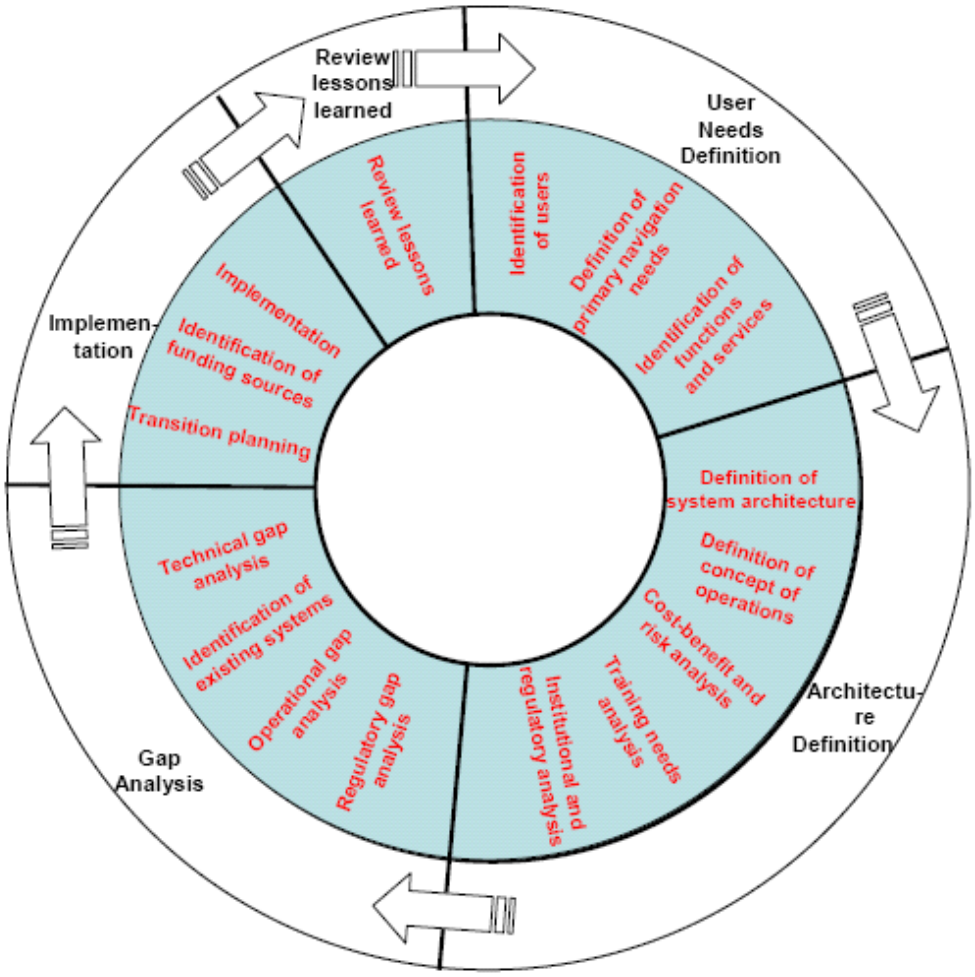
• Existing systems using geo-stationary satellites, which provide poor or no coverage in the far north - (Vardo 71 ˚ 23'N - e = 10.26 ˚)
• Fugro Seastar (Spot Beam and Inmarsat)
• SBAS (EGNOS, MSAS and WAAS)
• Two-frequency Galileo (not operational before 2013)
• Most of the positioning equipment supplied to the offshore industry has IALA recipients in the
• The only system in the area p.t. which provides data integrity
• Requirements from the offshore industry
• Coastline, islands, fjords

11 Cooperation between Norway and the Russian Federation – Barents VTMIS, and e-Navigation - Regional Director John Erik Hagen

- The Russian Federation and Norway has signed an MoU “Barents VTMIS”
- The agreement intends to establish an information exchange system between the Russian Federation and Norway (Barents VTMIS)
- The plan is to have Barents VTMIS operational by 2011, at the earliest

EXAMPLES OF ACTIVITIES SUITABLE FOR REGIONAL CO-OPERATION IN A VTMIS CONSEPT

- Vessel traffic monitoring (SSN, AIS LRIT)
- Pollution response
- Search and Rescue
- Maritime Assistance Service/places of refuge
- Aids to navigation
- Maritime Safety Information (INMARSAT, NAVTEX)
- Port State Control



MSC 86/23/4
ANNEX
Page 7

A COORDINATED APPROACH TO THE IMPLEMENTATION OF IMO'S E-NAVIGATION STRATEGY
OVERALL PLANNING 2009-2012 BY STRATEGY ELEMENT

	2009		2010					2011				2012				
Meetings	**MSC 86**	**NAV 55**	**COMSAR 14**	**STW 41**	**MSC 87**	**NAV 56**	**MSC 88**	**COMSAR 15**	**STW 42**	**MSC 89**	**NAV 57**	**COMSAR 16**	**STW 43**	**MSC 90**	**NAV 58**	**MSC 91**
User needs		final														
Architecture		Correspondence Group				final										
Gap analysis						initial		Correspondence Group			final					
C-B and risk analysis						initial					final					
Strategy Implementation Plan	joint plan of work										outline	2012: Intersessional WG?			final	adoption

12 Velkommen til Vardø VTS – Ståle Sveinungsen, Kystverket

Ståle presented the Traffice centre of Vardø and gave some remarks of the visions and the tasks to come in the future

Vision: The Coastal Administration is developing the coast and the waters to become the world's safest and cleanest

Experiences:
• New TSS-Most ships over 5,000 BT follows the new TSS
• Reporting to the VTS-Almost 100%
• All of Norway from July 1, 2008
• Svalbard summer 2008
• Rescue preparedness
• FOH
• Melkøya
Future tasks and challenges
• Further development of the current monitoring
• Monitoring Svalbard 1 June 2008
• Oil and gas in northern areas
• Northeast Passage
• Collaboration with our neighbours (Info Sharing with Iceland and other)
• Sensors with better coverage
• Expansion of the scope of 1 July 2008
• Navarea 19 2010?
• Melkøya and transshipment.
• Construction and delivery of statistics
• Connection

13 Field tests from KNM Otto Sverdrup – Beate Kvamstad, MARINTEK

- Background:
  - MarSafe North field tests, verification and scenario
- Tests performed:
  - Tracking Galileo and EGNOS
  - Signal-noise ratio on VSAT satellite communication
  - Spot tests on other communication equipment (Iridium, VHF, HF/MF, Inmarsat-C)
- Scenario:
  - Information gathering and normal procedures at KNM Otto Sverdrup during an emergency situation
- Galileo:
  - Two satellites (E031 and E032) was tracked when passing over the area
  - SNR like GPS
- EGNOS:
  - Tracked one satellite (S124)
  - No coverage in Longyearbyen
  - Very unstable until Bjørnøya
  - OK performance from Bjørnøya to the main land
  - Main land performance?
- VSAT:
  - No coverage in Longyearbyen (LNGY)
  - Started to receive weak signals after 1 hour sailings form LNGY – 3 degrees elevation
  - Very unstable until Bjørnøya
  - More stable after Bjørnøya, but still some drop outs
- Iridium:

- Unstable in LNGY, signals received 1 hour after departure
- Not usable on bridge….

- VHF, HF/MF:
  - Most used communication medium in the area

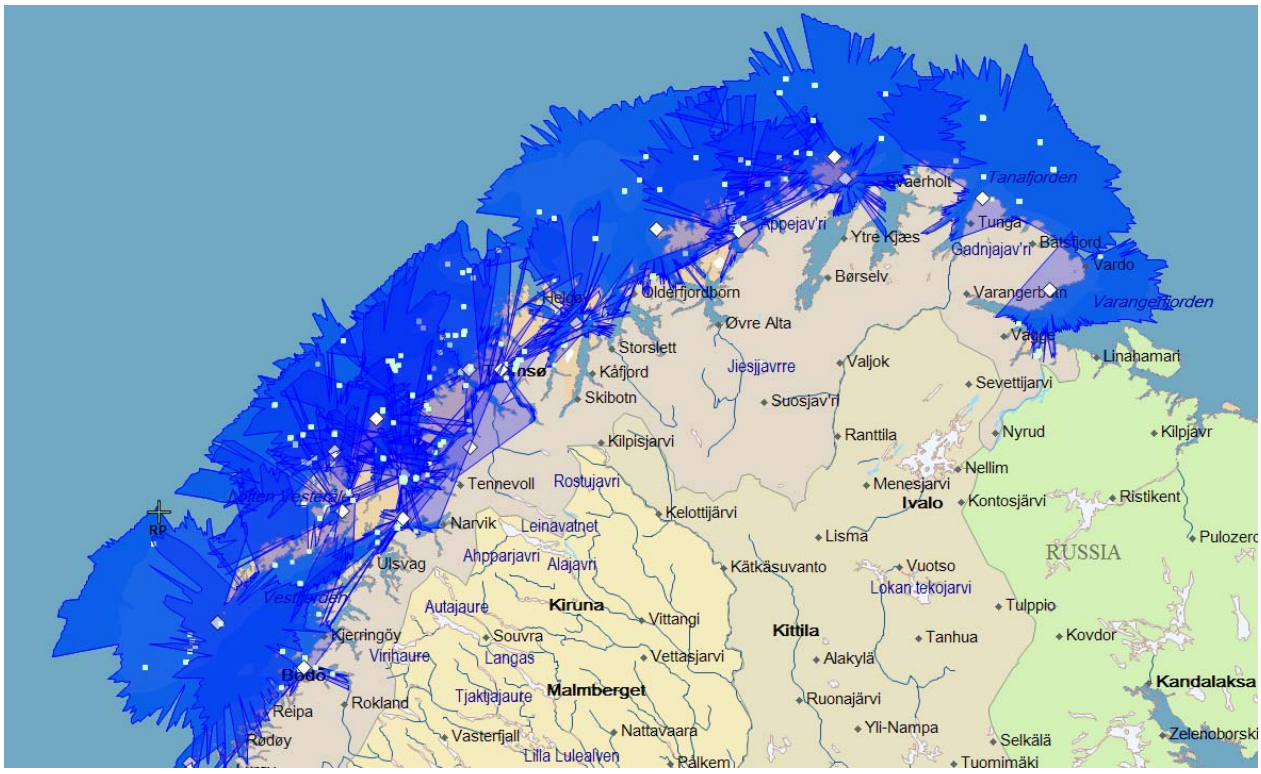
14 Radio Navigation and Tracking Technologies – Kristian Reiten, Kongsberg Seatex

Data collection and analysis

- An analysis of the existing AIS base station coverage along the northern part of Norway has been performed

- 20 days of data sampling. Between the 27th of March and the 14th of April

- The data collection consists of 81.3 million vessel position reports



Recommendations

- Eggum in the vest of Lofoten
- Torsvåg north of Tromsø (new site installed in may)
- Hopen in the south east of Spitsbergen
- Hornsund in the south of Spitsbergen
- Jan Mayen
- Ny Ålesund
- Future offshore installations

15 Status NAVAREA/METAREA XIX 08. September 2009, Bjørn Sundkvist

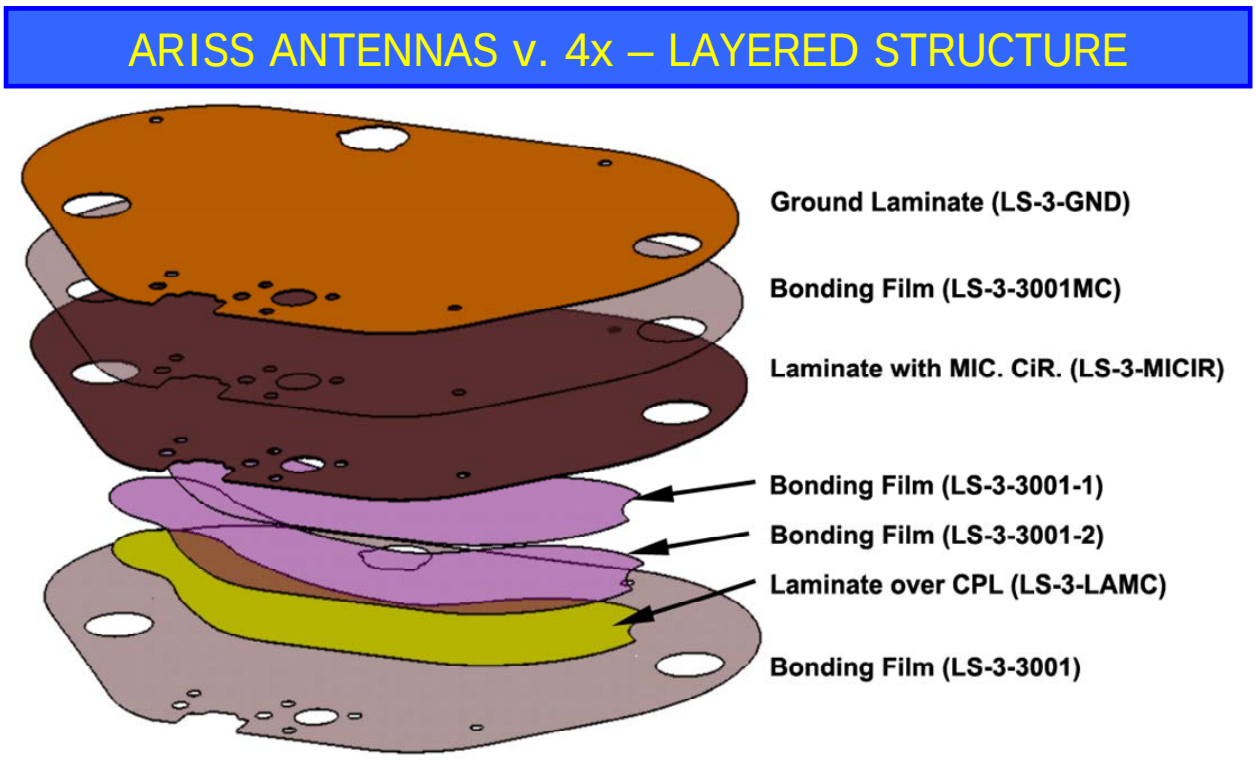
Telenor Maritime Radio is able to establish the following methods of broadcasting for promulgation of MSI in NAVAREA/METAREA XIX:

- Norwegian coastal warnings by NAVTEX 518 kHz from Vardø (V), Bodø (B), and Svalbard (A)
- Danish coastal warnings by national HF NAVTEX on 4209.5 kHz from Svalbard (G) into Danish waters East of Greenland and North of 75° N
- Navarea/Metarea warnings North of Inmarsat coverage (76 North) up to 82° N and 300 nautical miles beyond the limit of NAVAREA/METAREA XIX into NAVAREA/METAREA XX, by international HF NBDP (Narrow Band Direct Printing)
- Coastal and local warnings by voice from Telenor Maritime Radio coast stations, covering Sea Areas A1 and A2.
-

Status-report with reference to WWNWS1/3/1/1

- ***i. Monitor the testing of Arctic NAVAREAS/ METAREAS including status, infrastructure, monitoring of messages and relationships with information providers***
- There has not been any testing of infrastructure in NAVAREA/ METAREA XIX by Telenor Maritime Radio in 2009. Refer to report from Joint IMO/IHO/WMO Correspondence Group to COMSAR 13 about testing in 2008.
- Regular testing of HF NBDP north of 76 North will take place when there are made some investments in new infrastructure (HF transmitter). There are so far no formal agreement with the Norwegian Coastal Administration and the Norwegian Metrological Institute in this matter. As a result, this regular trial testing of HF NBDP will not take place in 2009.

16 Emerging technologies for lightweight antennas, Pawel Kabacik, WUT



Major advancements in material technologies

Conclusions

- availability of 3d numerical tools
- a need for new measurements (also including testing at wider range of environmental conditions at more affordable costs)
- important stimulus coming from new systems and techniques
- new published and unpublished concepts
- consequent work on new concepts with use of new analysis tools, materials and measurement techniques

17 Use of metamaterials in future radio equipmen, Przemyslaw Gorski*

Pawel Kabacik

Definition of metamaterial in electromagnetism

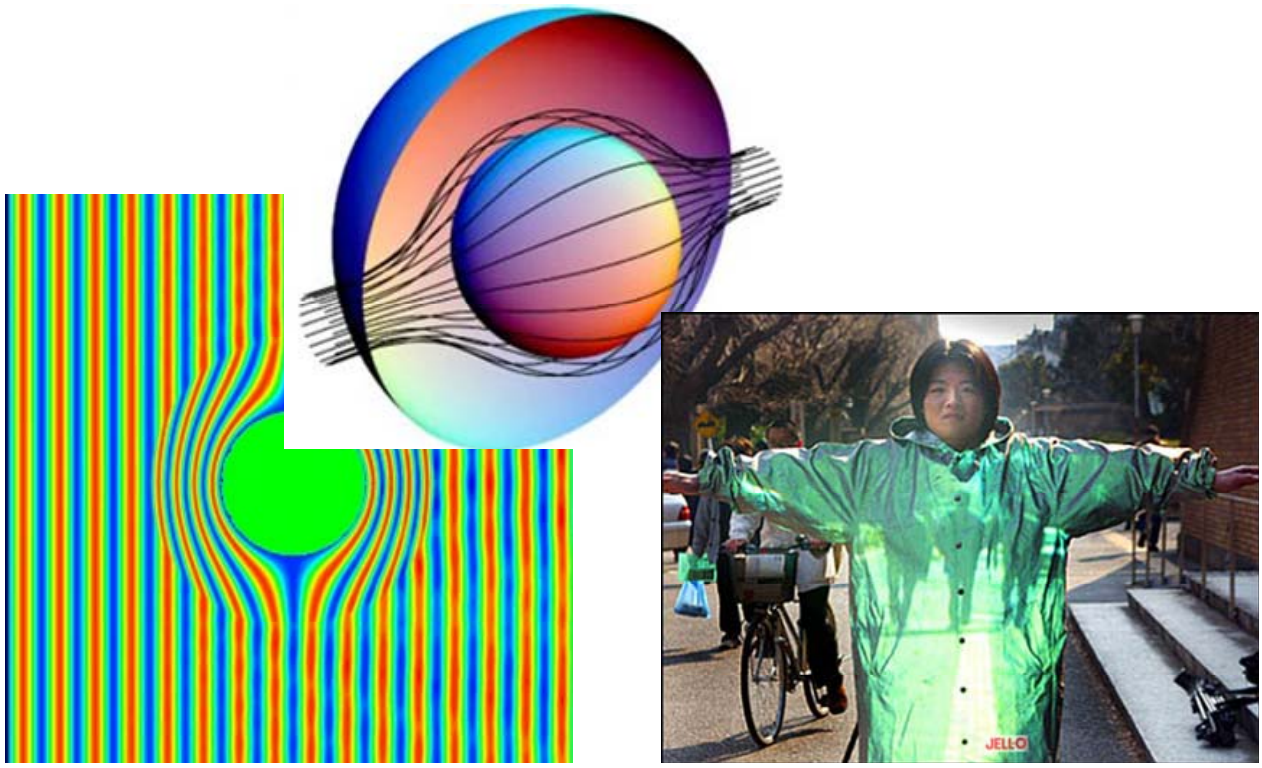
- Metamaterials do not exist in nature
- They have to be manufactured
- Metamaterial properties are manifested only in limited range of frequencies (or speaking more generally in some range of other parameter values)
- Negative refractive index

Objectives for making use of metamaterials

- Increase antenna element gain

- Breakthrough improvements in miniaturization
- Remarkable better performance of antenna subarrays and arrays
- More freedom in packaging integrated circuits of RF-front end/Digital Signal Processing
- Futursitic application: invisibility cloak capabilities

Invisibility capabilities with cloak metamaterial encapsulation

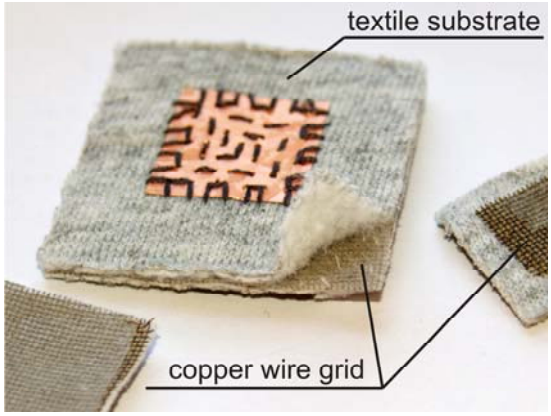


18 Wearable antennas, Tomasz Maleszka, Pawel kabacik, WUT

- Electrical and mechanical requirements
- Flexible/textile antenna technology
- Wearable antenna examples
- Wearable antennas performance
- Applications

- Multiband antennas (multiresonance)
  - Relevant for multisystem applications
- Broadband antennas
  - Due to potential detuning during operation close to lossy materials (ie. human body)
- Efficient radiation
  - Minimum conductive and dielectric losses within the structure
- Repeatable and stable performance
  - Structure immune to detuning during operation
- Circular/elliptical polarized antennas
  - To increase the quality of received signals
- High F/B (*Front-to-Back*) ratio (high gain)

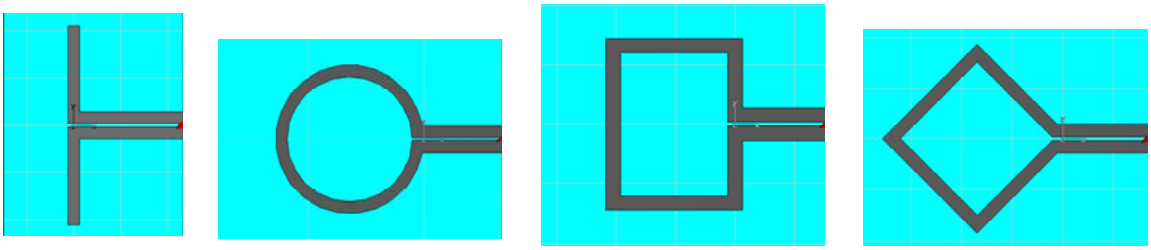
- Relevant for non-WBAN applications

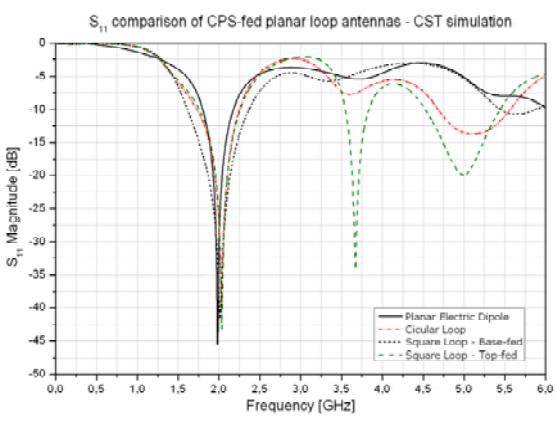


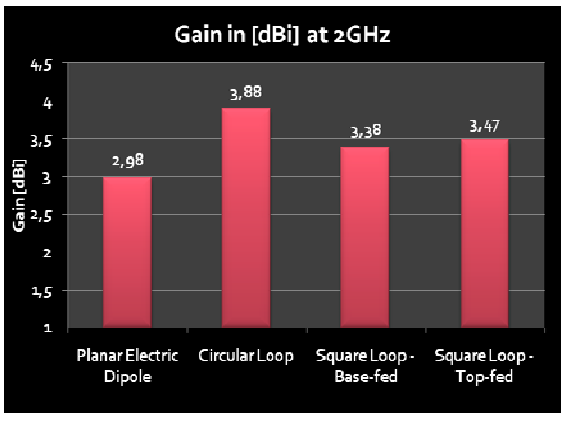
- Wire diameter: **0.2 mm**
- Cell size: **0.32 mm**
- Weight: **0.98 kg/m²**
- Lattice type: **square-linen grid**
- Wires **not fixed** within the grid (allowing bending and stretching)
- Dielectric: **cotton** fabric (ε_r=1.93, tanδ=0.038)
- Copper wire grid fixed to the dielectric with use of **poly-ethylene (PET) foil** and applying high temperature

Antenna models

Conductive yarn embroidery - antenna shapes choice







- Wearable antenna technology requires certain mechanical and electrical parameters to operate properly
- Meeting these requirements demands for use of alternative materials and methods in design and manufacturing processes
- Design process of the wearable antennas must be improved by including:
  - human body model
  - detailed electrical structure of the textile circuit
  - situation of the antenna on the body/garment
- Potential applications of wearable antennas require well defined methods for:
  - Embedding them into clothes, jackets, life vests
  - Relible connections of the antennas to the RF equipment
  - Reliable and compact power supply of RF equipment

19 Viewpoints from maritime actors at Svalbard, report from MarSafe user meeting 3rd of September 2009 – Beate Kvamstad MARINTEK

Two representants from the MarSafe North project held a user meeting at Svalbard. The objective of the meeting was to receive viewpoints on maritime challenges such as e.g. communication from maritime actors operating in the waters around Svalbard. The main viewpoints were presented and discussed amongst the seminar participants.

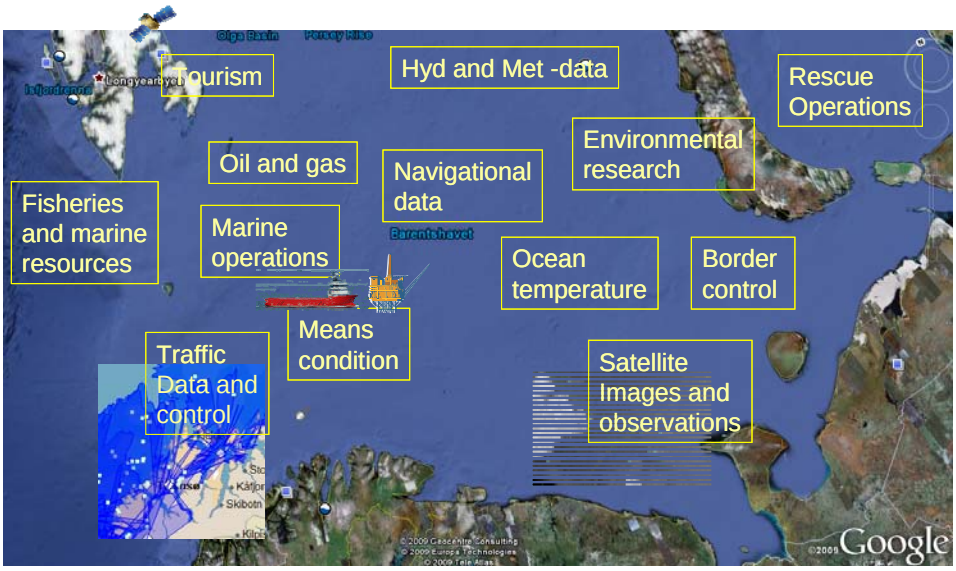
The main actors operating in Svalbard waters are:

- Actors at sea:
  - o Fishing vessels
  - o Supply vessels (Longyearbyen, New Ålesund and Svea)
  - o Coast guard (KV Svalbard)
  - o Over sea cruise ships
  - o Daily expedition cruise ships
  - o Cargo ships (coal)
  - o Pilots
  - o Leisure vessels
  - o Research vessels
- Actors on shore:
  - o Ports (Longyearbyen, Svea, Barentsburg) - Pilots
  - o Sysselmannen
  - o Research stations (UniS, Hornsund)
  - o Weather stations (Bjørnøya and Hopen)
- Viewpoints and experiences from different actors:
  - Port of LNGY:
    - Uses AIS for tracking of ships – privately owned. Wants to expand the coverage
    - area.
    - Vardø VTS and Sysselmannen receives arrival notifications from the ships, this
    - information is not forwarded to the port.
    - Cruise ships will also benefit from receiving AIS information, because they want
    - to see where other cruise ships are.
    - A lot of valuable local knowledge disappeared when the coastal radio station was

    - moved to Bodø.
- Sysselmannen:
    - Has made a report on resource situation for emergency response calling for attention to the resource situation.
    - Information gathering from maritime traffic around Svalbard and redistribution of
    - information.
    - Quality-of-Service information is extremely important! Must be distributed
    - together with the information.
    - Ice information is important, but in many cases 30 minutes is too long……
- Jebsens - Pilot:
    - An early warning on AIS would be helpful in the planning phase – Waiting for
    - satellite based AIS
    - Weather reports in combination with tidal and current information is today
    - collected manually. Automatic information updates would be helpful.
- Det Store Norske:
    - Expects to end the coal mining activities within a few years, wants to find new
    - activities – Container port? Ice breakers?
    - Expects increased traffic in the area, also across the North Pole
- UniS:
    - Have a lot of valuable knowledge and information about ice, ice drift and an
    - overview of dangerous situations. Should this ice information be transmitted to
    - ships? – Real time/near ship monitoring of ice conditions.

20 Summary, Kay Fjørtoft, MARINTEK

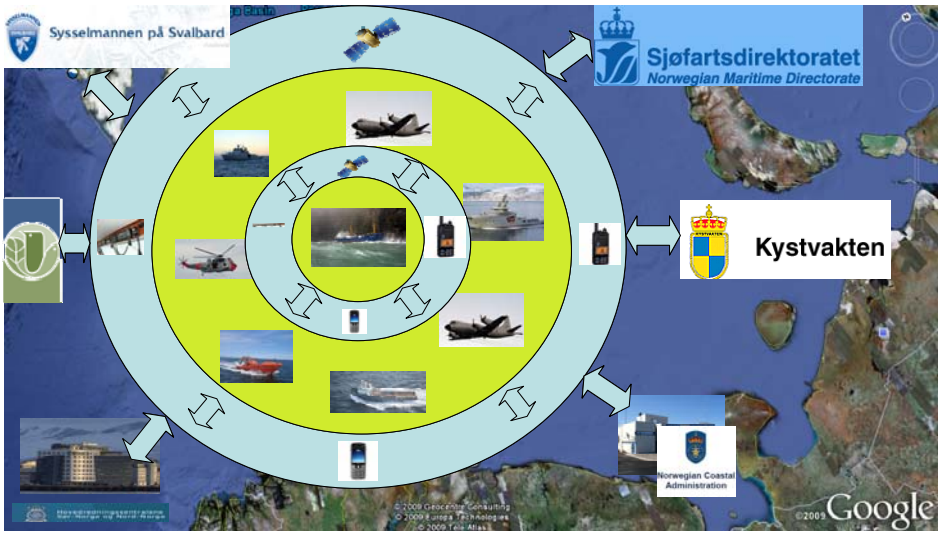
There are many stakeholders that are directly or indirectly users of the High North with different needs of information. One common challenge for all is to send the information between them and report data when needed. The MarSafe project have during the two days been able to find some gaps communicational wise and have also looked in to the coming technologies that will enter the market in a few years time. We have also been able to performe a few tests on a sailing from Longyearbyen to Kirkenes, and also local demonstrations in Vardø.



Information needs

The Petrozavodsk accidents

During the seminar we used the Petrozavodsk accident as a case for the project and have talked to some of the involved in the emergency operation. Some observations were lack of communication possibilities and maybe not as efficient integrated operations as it could have been if more bandwidth was available.



Hvem ble involvert I ulykken:
-Hovedredningssentralen
-Vardø VTS:
-Sysselmannen
-Kystvakta / Forsvaret
-Direktoratet for naturforvaltning
-Rederi
-Sjøfartsdirektoratet

Involvert materiell:
-Kystverkets overvåkingsfly
-Kustbevakningens overvåkningsfly
-Taubåt Beta
-Kystvakta KV Harstad og Svalbard
-Helikopter
-Mob-båt

Databehov:
-Metrologi
-Opplysninger om "Petrozavodsk"
-Beholdning ombord I forulykket båt
-Kommunikasjon mellom involverte aktører
-Media
-Rapportering

At the end of the seminar we discussed a few relevant themes regarding High North challenges. We did not conclude them but are fully aware that the situation is not that changed

communicational wise during the past years, and have also problems to see the consequences of an accident like Full City in the High North.

Themes addressed in MarSafe High North

1. Is it possible to have same communication infrastructure High North as main land?
2. Is it possible to monitor and control the High North oceans at same detail level as main land?
3. Maxim Gorkij accidents – What has changed in 20 years?
4. Full City accident in Langesund 31st of July 2009 - What if this accident happened at Van Mijenfjorden?
5. Petrozavodsk accidents – Lessons learned?