Integrale kommunikasjonssystemer for fjernstyring til sjøs

Bernt Fanghol
Sales Director, Telenor Maritime
Telenor Maritime – The Mobile Operator at Sea

Passengers & crew
- Cruise vessels
- Ferries

Offshore operations and crew
- Oil & Gas
- Wind farms

Fisheries
- Aqua farms
- Fishing vessels

Building standardized, cross-industry connectivity solutions
High-speed, Low-latency communication at the oil-field – It’s more than just connecting the sites

- People & Things
- Virtual Reality & Artificial Intelligence
- Remote operation and Autonomy
Prime example of «fjernstyring til sjøs»
ROV operation over 4G

Saves offshore personnel
• Reduces cost
• Improves HSE
• Reduces CO2 footprint
Operating the most complete offshore mobile infrastructure on Norwegian Continental Shelf – First step in a global strategy

Strategic cooperation with Statoil enabled efficient deployment of a complete offshore 4G network
- Field coverage for rigs and vessels
- Dedicated network for Statoil’s operations – using Statoil’s spectrum
- A public 4G and GSM service for everyone else – using Telenor Maritime’s own spectrum

Telenor Maritime holds own frequency rights
- NCS
- UKCS

Continued expansion of coverage
- Johan Sverdrup, Aasta Hansteen, Goliat, Johan Castberg
- Northern Europe
- Globally

4G coverage up to 70 km from the platform
Telenor operates its own satellite fleet and earth station – Thor 7 with dedicated maritime focus.
Fragmented coverage requires smart utilization of available carriers

Seamless connectivity from base to field

- LTE (800/900 MHz) signal
- VSAT data link
- VSAT + 4G data links
- VSAT+4G+3G data links
- LTE / WCDMA (900 MHz) signal
- Land mobile operator
High-speed data everywhere - MDLB structure
Transferring of data from offshore installation / vessel to onshore using 4G / LTE Technology

How to transfer large amount of data when within range of broadband network
Transferring of data from offshore installation / vessel to onshore when out of 4G / LTE reach

How to transfer small/critical amount of data when out of range of 4G network
Wireless network – Transfer of data locally onboard

How can Telenor Maritime transfer data locally onboard using wireless technology?

- Offshore – operational outside 4 nm from shore: 4G network with local RBS and distributed antenna network on the vessel
- Operational need also when in port: WiFi network – 4G RBS have to be switched off inside 4 nm from shore due to regulatory requirements
Machine Type Communication (MTC) will be essential

- Diversified needs demands differentiated solutions
- Extremely low latency for operations in the field
- Can be added vHSS for autonomous operations
IoT – A new way of thinking

- One highway serves multiple IoT applications
IoT – Applicable for all different 3GPP standards

- NB-IoT also for GSM
- Higher BW IoT requires 4G or 5G
IoT devices – Tailored for massive distribution

- Low cost
- High life time
5G Core architecture - Sliced networks

- One physical network
- Multiple logical networks
- Separate Networks may be defined for a number of reasons
Network Separation/Slicing - For User Service Optimization

- CN separation drivers:
  - Characteristics (traffic model)
  - Individual scaling for growth
  - Fast TTM of new specific services
  - Automation per service use case
  - Individual life cycle
  - Operator organizational aspects
  - 5G-ready deployment
  - Mission criticality & Security differentiation
5G – Operational applications will drive virtualisation

- Supports local operation
- Extremely low latency for operations in the field
- Can be added vHSS for autonomous operations
Thank you

Bernt Fanghol
bernt.fanghol@telenor.com
+4790822266