The E-ROV System
What is the E-ROV?

• A versatile ROV system
• Deployed by vessel & remotely controlled
• Wireless control linked through a moored buoy
• Powered by a subsea battery pack
• No umbilical from vessel or installation
• 2 main building blocks:
  − Skid w/electrical ROV, TMS and a battery pack
  − Buoy with 4G link, moored to seabed and connected to skid
System overview
Also possible to connect directly to a rig/install.
ROV skid

- Consist of a steel frame, battery pack (sides), ROV and TMS
- Fits vessel skidding system
- Easy deployable through the vessel moonpool
Battery pack

- A marinised ‘Tesla’ battery pack
- Battery pack is scalable.
Buoy system

- Surface buoy with antenna and tranceiver (Fugro Oceanor/MCP)
- Kevlar mooring line with fiber cable and chain/buoyancy elements to reduce wave influence
- Inductive connector to the junction box on the ROV skid
Advantages:

• Significant cost reducing impact when operationalised
• Utilise proven technology
• Utilise vessels on hire as «mother» vessels (charging & maintenance)
• Take advantage of the LTE/4G system
• Take advantage of rapid battery improvements for industrial purposes (scalable)
• Flexible – always an option – a very powerful tool
• Minimal interfacing with rigs & platforms
• Keep in-house control of the operations
• Service is scalable to any extent – world wide
• Ethernet communication
• Environmental friendly – fully electrical system.
• Reduced emissions from ROV vessels
LTE / 4G
On NCS
Technical requirement

• Capacity and coverage
  - Typical minimum capacities and coverage:
    • 16 Mbit/s for drilling rigs and LWI/IMR vessels
    • 4 Mbit/s for vessels
    • Within a radius of 40 km
  - Up to 5 drilling rigs may operate within a sector.

• IT security - Encryption of data traffic
  - The LTE solution should support encryption, both communication and signaling links remain encrypted across the network without significant performance degradation. The encryption algorithm should be based on industry standards.
  - CPE equipment should support IPSec.
  - For Company internal traffic CPE Contractor shall be independent of Contractor of the base station equipment.
Technical requirement

• Interface
  – Company’s data network via an Ethernet interface at the facility where the base station is installed
  – The data network of the individual service companies, vessel operators etc. giving services to Company
  – SOIL (Secure Oil Information Link) – an oil and gas collaboration network.
  – Internet

• Frequency band
  – Company has spectrum licenses in the 900 and 1800 MHz band that can be used for services on the Norwegian continental shelf
Drilling activity

- High means up to 5 drilling rigs can operate on the field or in one sector
- Low means up to 2 drilling rigs can operate on the field or in one sector
Coverage for Statoil’s operations on NCS
Base station on following platforms:

☑ = in place

• Åsgard B
• Heidrun B
• Norne
• Troll A
• Snorre A
• Sleipner
• Draupner
• Grane
• Gullfaks A
• Heimdal
• Oseberg A
CPE equipment required for Rig installation
Project plan
Technical qualification

- Conduct a test-pilot
- The pilot will include: Small electrical WROV + Battery pack + 4G Buoy + Control Room + ROV pilots
- Deployed from an IMR vessel on a location with 4G coverage
- ROV, Buoy, Control Room, personnel: -> Rental
- Is this a reliable system?
- Give input to a complete E-ROV spec.
There’s never been a better time for good ideas

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