



The Revolution in Marine Geodata Acquisition

What does this mean for our Future Workforce?

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Peter Aarts

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The Macro Picture

ESG prominence in investment strategies

UN Sustainable Development Goals

Net-zero ambition of countries and companies

Society expectation (MM and Gen Z)



Digitalisation

Robotics and Automation (AI)

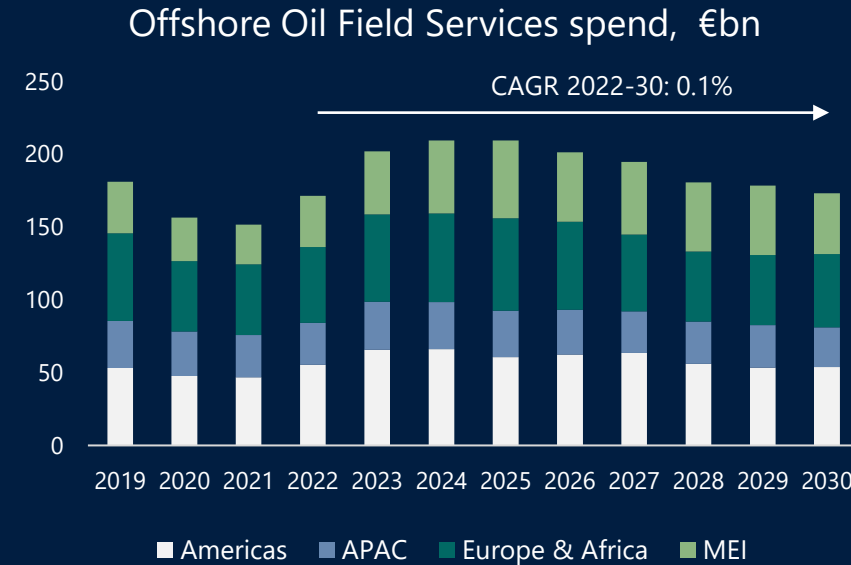
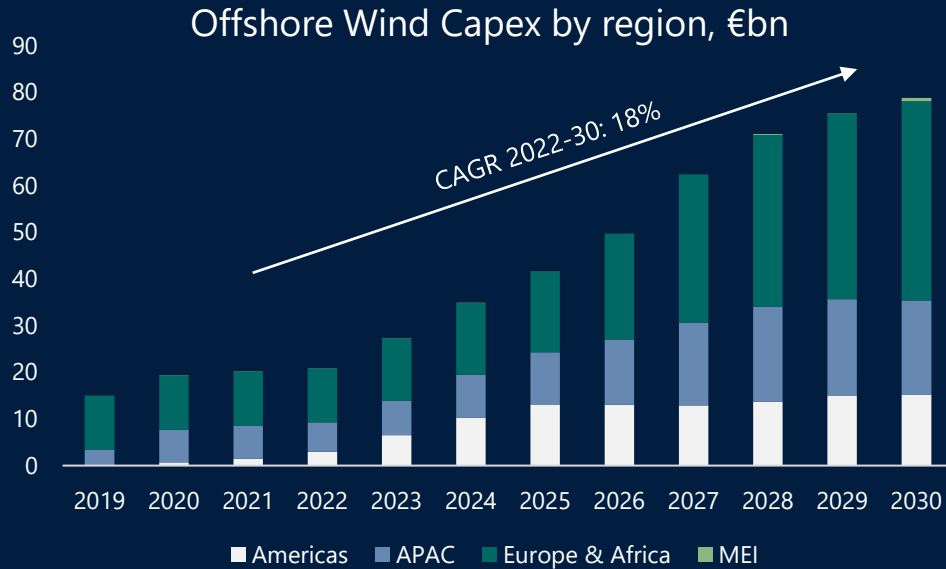
Cloud and IoT (Smart Sensors)

Connectivity & Communications

Remote Operations

Diversity, Equity & Inclusion

Blue Economy - Offshore Energy Market Trends



- Very strong growth in Offshore Wind (Doubling every 4 years)
- Oil Field Services post covid recovery is flat for remainder of decade.
- Other offshore energy markets growing, CCS and Hydrogen. (Green hydrogen levelized cost expect to match blue hydrogen by 2030)

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Addressing this Growth

USV's - A new way of acquiring geodata

Robots controlling Robots



Hydrographic USV's

- Force Multiplier
- VLOS



2020 - Australia

BVLOS

First ROV Pipeline
Inspection (Visual)

2022 Second vessel



2021 – North Sea

Platform and Buried
Pipeline Inspection

2023 Second vessel



2022 – Persian Gulf

New USV market with
UAE Government
approval for BVLOS in
April 2023.

Connectivity: The Key Enabler

Rapidly transforming market.

- **VSAT** enabling greater bandwidth. *B2B* Model
- **LEO** systems provide redundancy, in short term.
 - **Starlink**: *B2C*. "Best Efforts" only. NO SLA/CIR
 - **OneWeb**: *B2B*. Global in 2023. SLA
 - **Project Kuiper**: *B2C?* – Late 2024 services (2026 Deadline)
 - Telesat **Lightspeed**: Funding??



The Future is Not Just USV's

A convergence in operational models.



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The Talent Challenge

Industry Talent Challenges

Diversity, Equity & Inclusion



Diversity of Workforce

- Limited female intake to STEM courses at university
- Retention challenges as careers progress

Offshore industry less (not) appealing

- 2014-2018 Oil & Gas downturn
- Environmentally aware generation.
- Offshore work less desirable
 - People not wanting to work offshore 180 days per year.

Equity & Inclusion

- Gender bias in management. 20% Female – Target 25% in 2025
- Homelife/ Family status
- Health
- Disability

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Mapping the Future Workforce

Essential Offshore Expertise

Offshore experience and skills continue to be highly valued.

- Core technical disciplines required on vessels
- Focus evolving towards preparing, deploying and maintaining critical systems.
- ***Less screen time, more tool time.***



Sensor Trends

Integration and Simplification



Sensor Integrations

Integrated sensors (IMU)

Precalibration

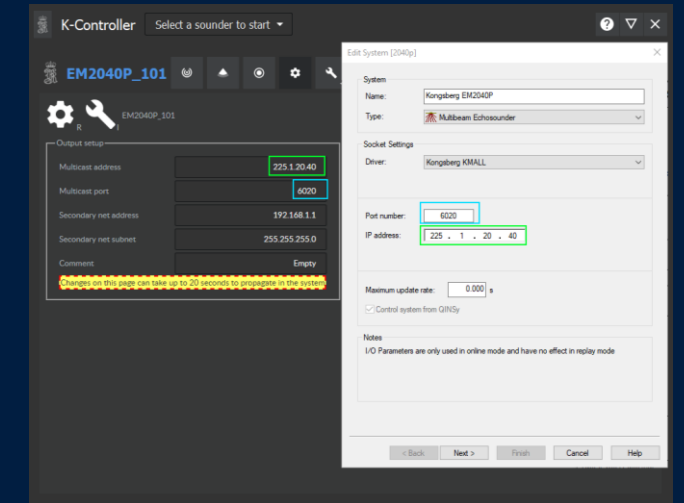
“Plug and Play”



Software Simplification

Users abstracted from configuration complexity.

Non specialist operator model – reduced configurability and QC numerics.



Remote Control Capabilities

Internet enabled clients

Remote Desktop Connection.

Control and Monitoring from ROCs

- Controlling of certain Vessels, Vehicles and Machinery undertaken from ROCs.
- Monitoring of acquisition systems and edge systems.
- Data QC and Validation.
- Processing and Interpretation



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Implications for our Future Workforce

Offshore Career Pathways

Offshore roles continue to be fundamental.

- Automation and remote tools will change focus.
- Offshore roles will change and evolve.
- Convergence of traditional roles supported by cross training.
- Valued skills.



Acquisition Roles Transition Onshore

ROC's become the hub for Geodata acquisition.

- Improved workforce diversity opportunities.
- Stronger onshore technical career paths.
- Improved Work/Life balance compared to traditional offshore roles.



Training the Future Generation

- May not have ever been offshore. (Can not go offshore)
- Optimised training to provide increased maritime awareness.
- Short offshore deployments to gain awareness.





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Conclusions

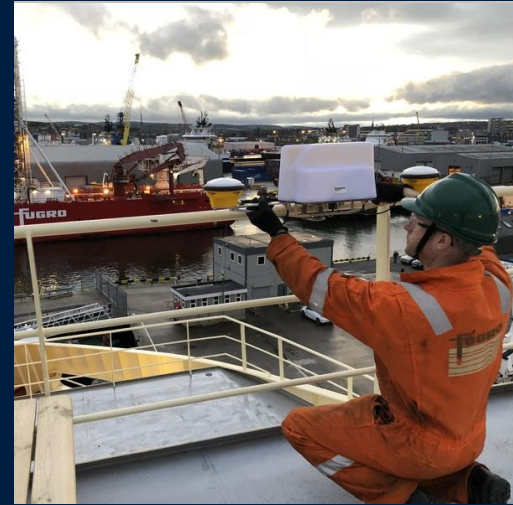
Conclusions



Strong growth in offshore energy sector combined with technological development are driving a transformation.



Operational model for Uncrewed vessels will be replicated on Conventional vessels



Offshore roles will be equipment integrity focused.

- Mobilise,
- Configure,
- Maintain



Remote Operations provides an opportunity to retain people within industry and attract a more diverse workforce..

