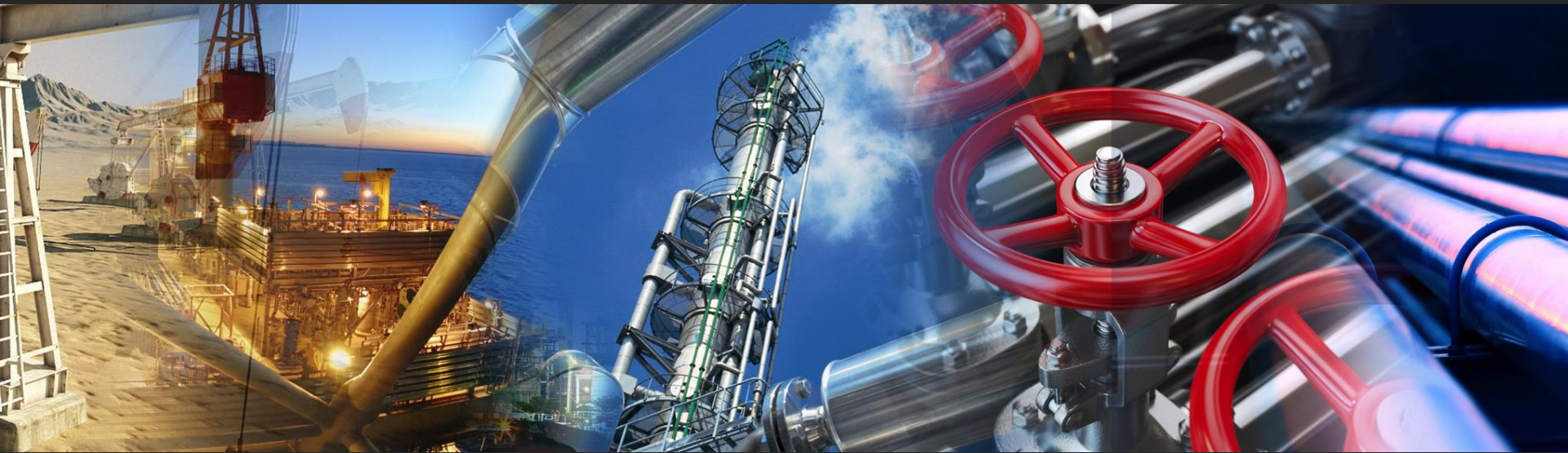




# DASHBOARD®

— INDUSTRIAL INTELLIGENCE —



SUT, Aberdeen November 2018

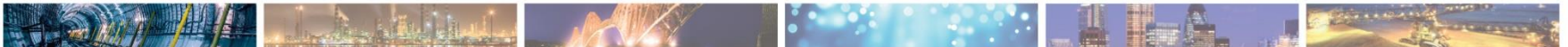
Exeter | London | Glasgow | Houston | Calgary

# Mission - The Digital Age



Delivering increased safety and visibility of assets, processes and infrastructure whilst reducing cost/ risk and increasing efficiency

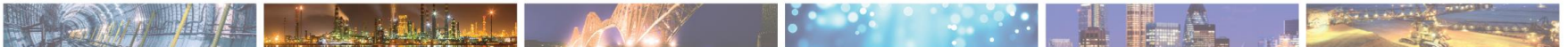
Providing innovative real-time monitoring of subsea and pipeline infrastructure utilising IoT and data analytics with intuitive dashboard visualisations



# Pipeline Monitoring Innovation

## Cutting Edge Computing and IoT Solutions for Pipeline Monitoring

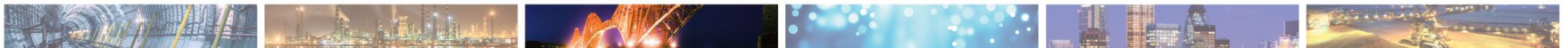
- Subsea of today - successes progress and challenges
  - The future - the possibility & vision
  - The journey - how big are the steps
- The importance of DATA
- Opportunities - Operational and Safety Advantages
- Challenges
- Conclusion - Embrace Technology



# Subsea Challenges Today

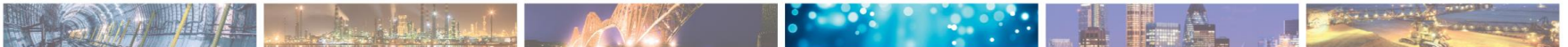


- Aging existing infrastructure, un-connected, data poor
- Manpower intensive with associated HSE, risk & cost impacts
- Large manned vessels, divers, slow ROVs
- Slow off-line, data assessment
- Retrospective, expensive data gathering
- Operationally responsive, not pro-active

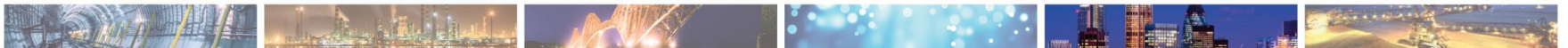
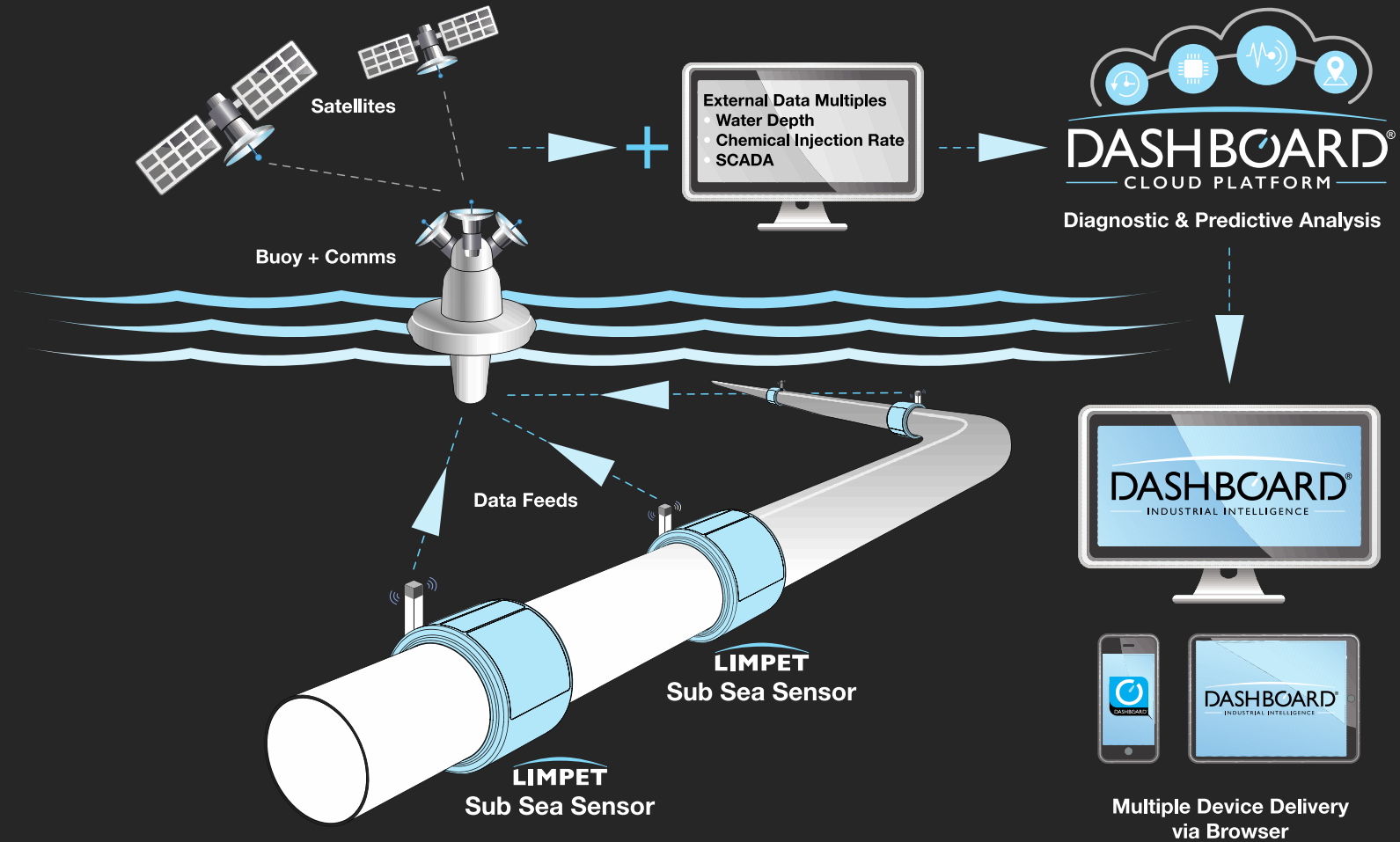


# Subsea Vision - A Digital Future

- ‘Intelligent’ Un-manned offshore facilities and production systems
- ‘Intelligent’ Interactive systems
  - wells, operations, pipelines, inspection, data rich
- Cost effective retro-fit Intelligence to enhance facilities of today
- Real-time visualisation of production
  - pipelines & subsea systems/ multi-phase
    - Reservoir /subsea production
  - fully unmanned and automated systems
- Fully autonomous Underwater Vehicles and robots
- Autonomous FPSOs and Floating LPG
- Digital twins for underwater systems
- Advanced visualisation for topside and subsea systems



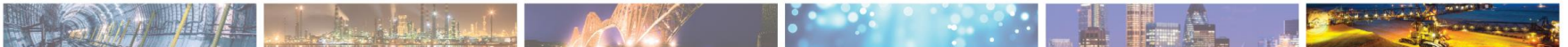
# Subsea Pipeline Monitoring



# The Journey



- Design for the future - New Projects, connectivity and deployment of sensors
- Build digital twins of existing developments - 'old' informs 'new'
- Field trial new sensor technologies / inspection technologies
- Deployment of sensors on existing infrastructure
- Data management, data analytics, Cloud systems, Visualisation
- Establish key contractual relationships, nimble, agile, first thinkers
- Develop in-house skill base

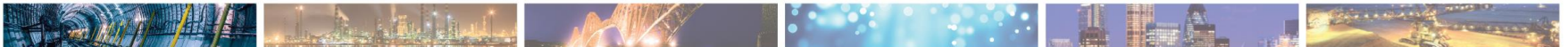
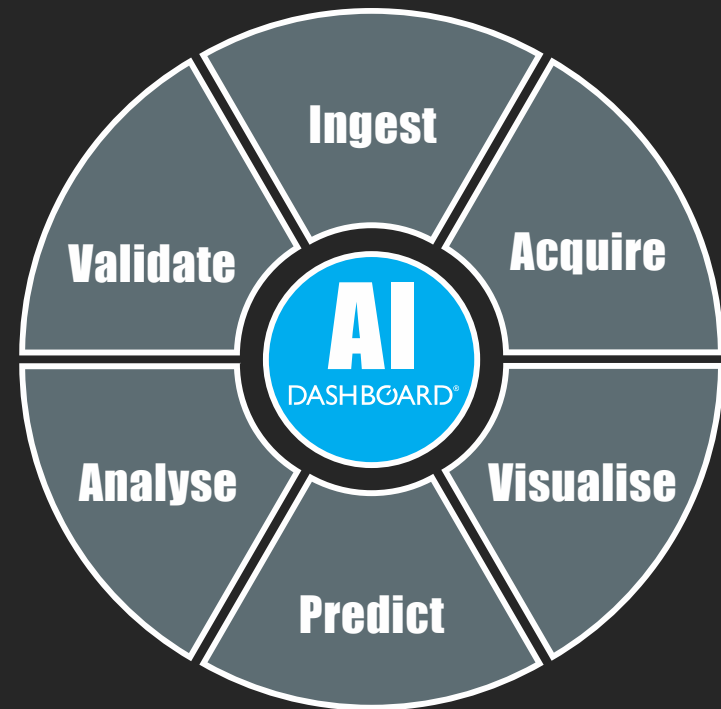




# Methods/ Opportunities



- Integrate data silos
- Validate data integrity
- Acquire IIoT data
- Employ advanced analytics
- Real-time visualisations
- Embed predictive analytics

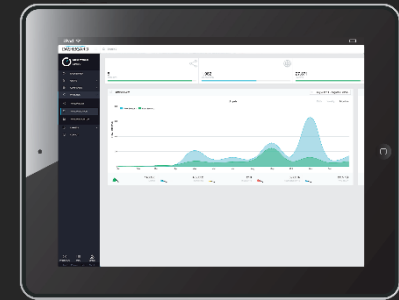




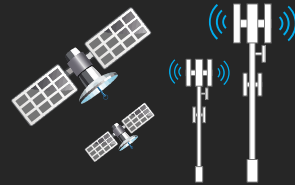
# Be Holistic - An end to end Solution



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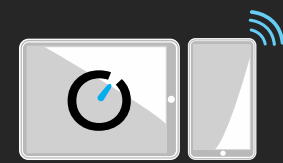
Data Acquisition



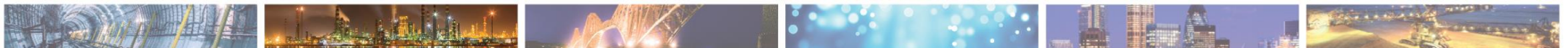
Communications



Analysis



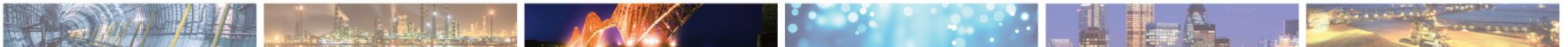
Visualisation



# Challenges



- Achieving that Holistic Vision and autonomy
- Safety Efficiency Reliability Security and Longevity are key
- Overcoming internal reluctance and IT expert systems/ firewalls
- Access to skills and expertise - a new age with new skills needed
- Data analysis, storage and security
- Interfacing with third parties/ other operators/ system integration.
- Emergency response - this is where you often need people.
- What about the old infrastructure - an opportunity to trial 'New'



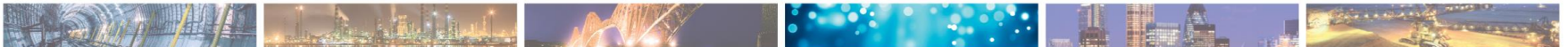
# The Opportunities - Conclusion

*Real time access and visibility* of the right datasets presented in an intuitive way can bring *greater levels of intelligence* to subsea and pipeline Operations and to decision making.

## Provides:

- Enhanced visibility, and more efficient operations
- Greater efficiencies & enhanced safety
- Data analytics and machine learning can be used to recognise patterns, give early warning and enable pro-active interventions
- Efficient, less man intensive, cost effective and safer operations
- Visibility of the whole = Holistic Operations

**The technology is here - embrace it !**



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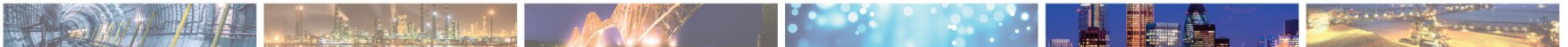
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# *Helping People Make Better Decisions Faster*

