

# Gaining Benefits in the Era of Offshore Digitalization

Ken Richardson



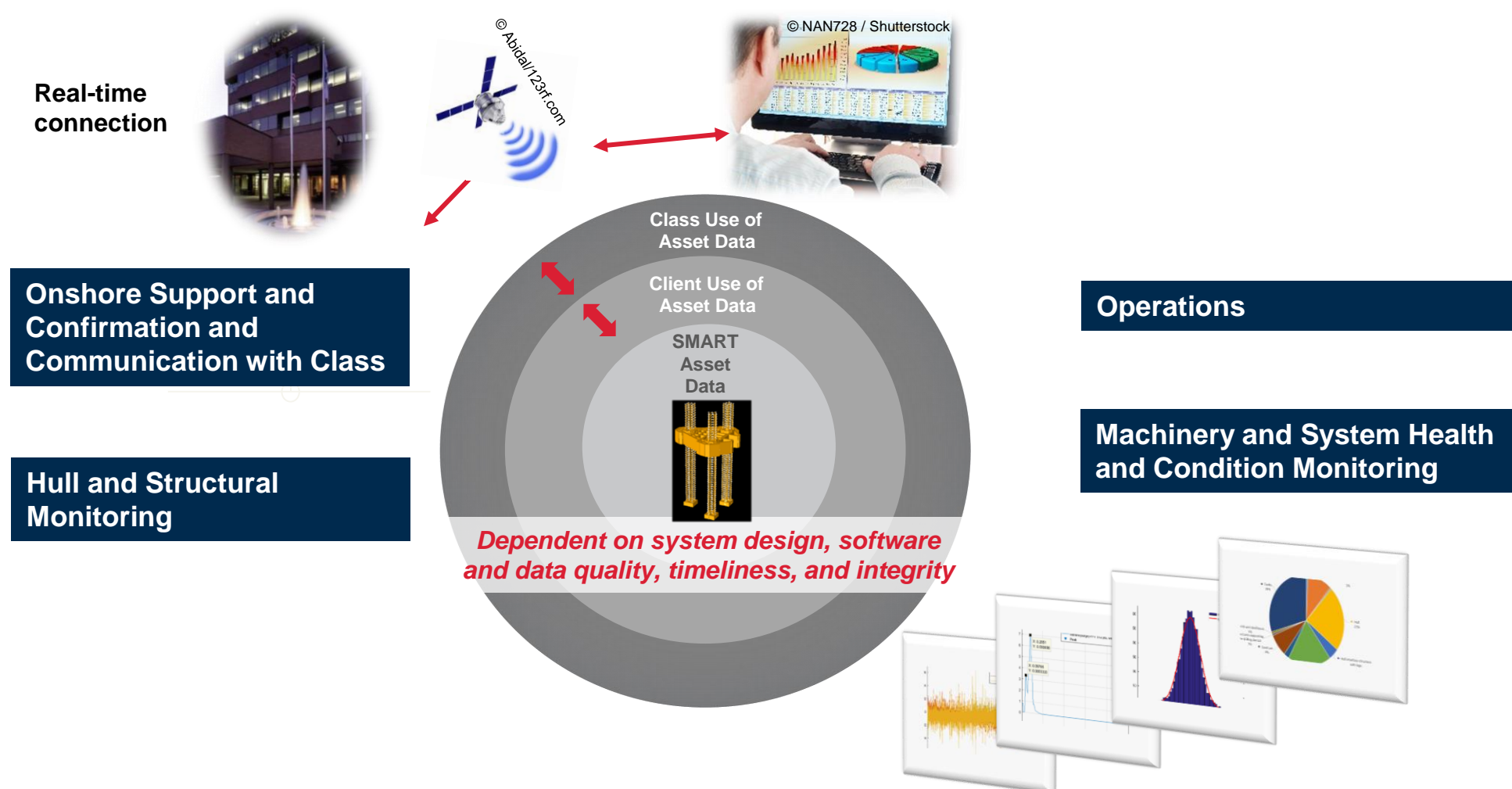
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# Agenda

- Data Enabled Asset
- Asset Integrity and Performance
- Leveraging Experience and Lessons Learned
- The Digital Twin
- Class Perspective

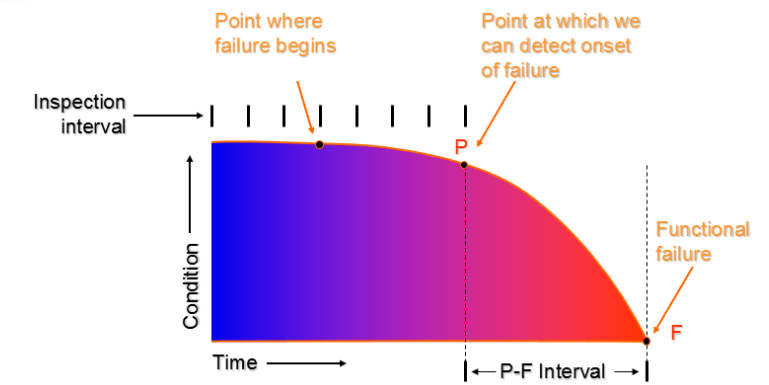
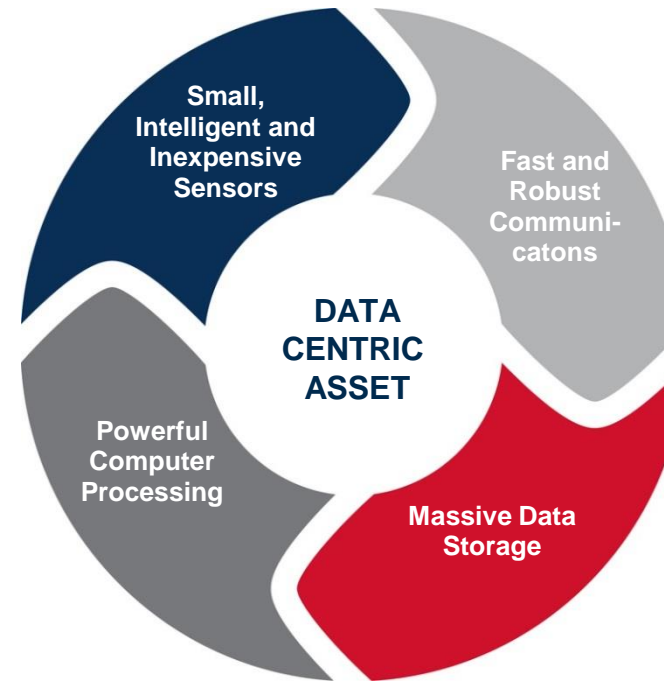


# The Data-Enabled Asset



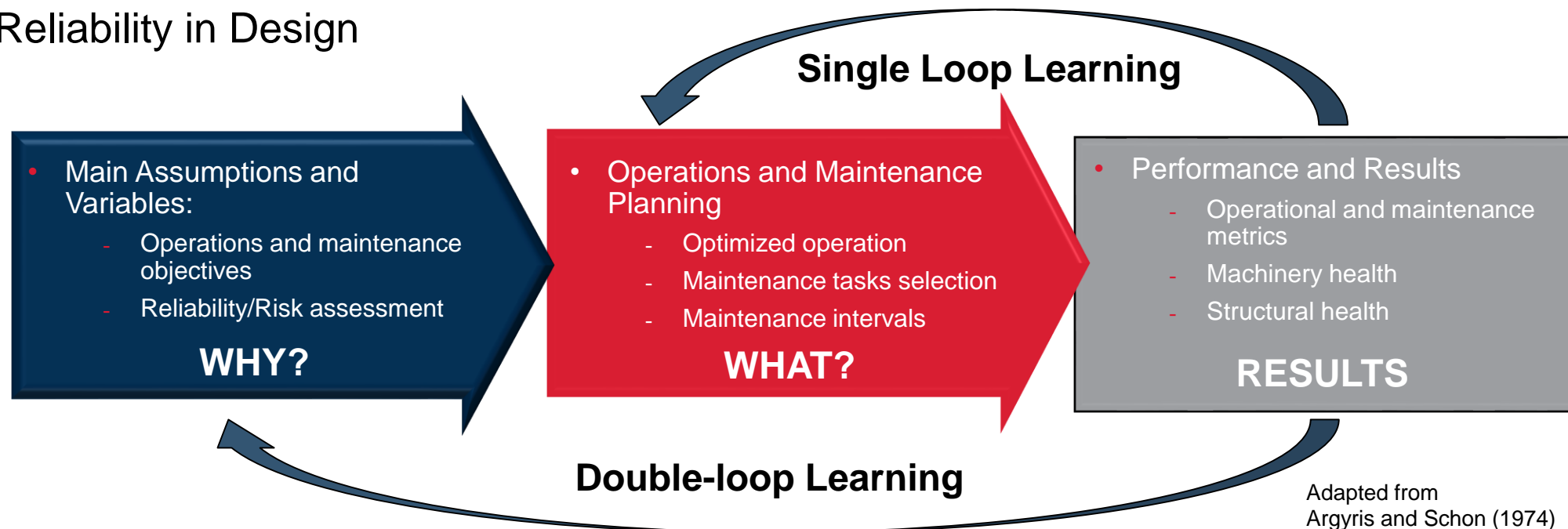
# Asset Integrity and Performance

- Operations/Safety
  - Performance prediction
  - Energy/Efficiency management
  - Autonomous capabilities
- Machinery and System Health
  - Condition and performance monitoring
- Hull and Structural Monitoring
  - Strength and fatigue monitoring
  - Condition assessment and life extension support



# Leveraging Experience and Lessons Learned

- Direct Operational Feedback
  - Optimized operations
  - Improved uptime
- Inform Subsequent Generations of Design
  - Reliability in Design



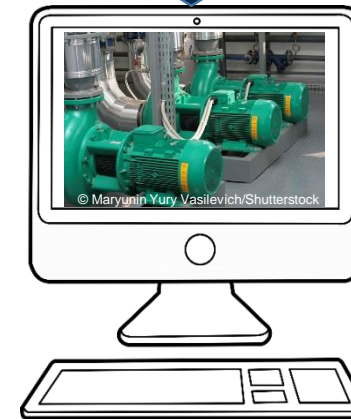
# The Digital Twin

- Analytics on sensor data
  - Feedback to operations and maintenance
  - Track and trend condition over time
- Modeling and predictions for more proactive decision-making

## Onboard Asset



Operational  
and  
Performance  
Data



Digital Twin

# Class Perspective

- Leverage Data-centric Programs for Survey credit
- Minimally disruptive Survey via PMP crediting
  - PM – Chief engineer's overhauls via planned maintenance
  - CM – Condition monitoring results
  - Smart functionality and real-time monitoring providing objective information for survey crediting



1978

- Experimental Survey based on Preventative Maintenance Program

1984

- Survey based on Preventative Maintenance Guide (Updated 85, 86, 87, 95)

2003

- Preventative Maintenance added to Rules (Part 7, App.14)
- Guide for Surveys Based On Reliability Centered Maintenance

2012

- Reliability Centered Maintenance added to Rules (Part 7, Appendix 14)

2016

- Guide for Surveys based on Machinery Reliability and Maintenance Techniques

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# Summary

- Is your asset data-ready?
- Data-centric decision points to support asset integrity and performance improvements
- Direct feedback on operations and maintenance, plus inform subsequent generations of design
- The Digital Twin – mirror operational asset with analytics and simulation capabilities
- Supports alternative crediting of class requirements