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GRIDS BECOME HYBRID
AND MORE COMPLEX

Dr Khorshed Alam   14NOV17

How to unlock the power of digitalization

SAFER, SMARTER, GREENER

Key digitalization challenges for players in the shipping market

ADAPT

to market and financial pressures

PRIORITIZE

the value of faster, greater streams of data

SECURELY SHARE

information and working in new ways

ALIGN & OPTIMIZE

new technologies with an ageing infrastructure

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Data is the new raw material of business

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What digitalization means for the shipping industry

Raw data from across the value chain

Using data to predict failures and avoid costly corrective maintenance

Enabling control of an increasingly complex hybrid power system

Facilitate integration of variable renewables

Benchmark against new technological standards & results

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DNV GL knows how to unlock the power of digitalization

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DNV GL provides first-class solutions to meet customer challenges

Maximise revenue

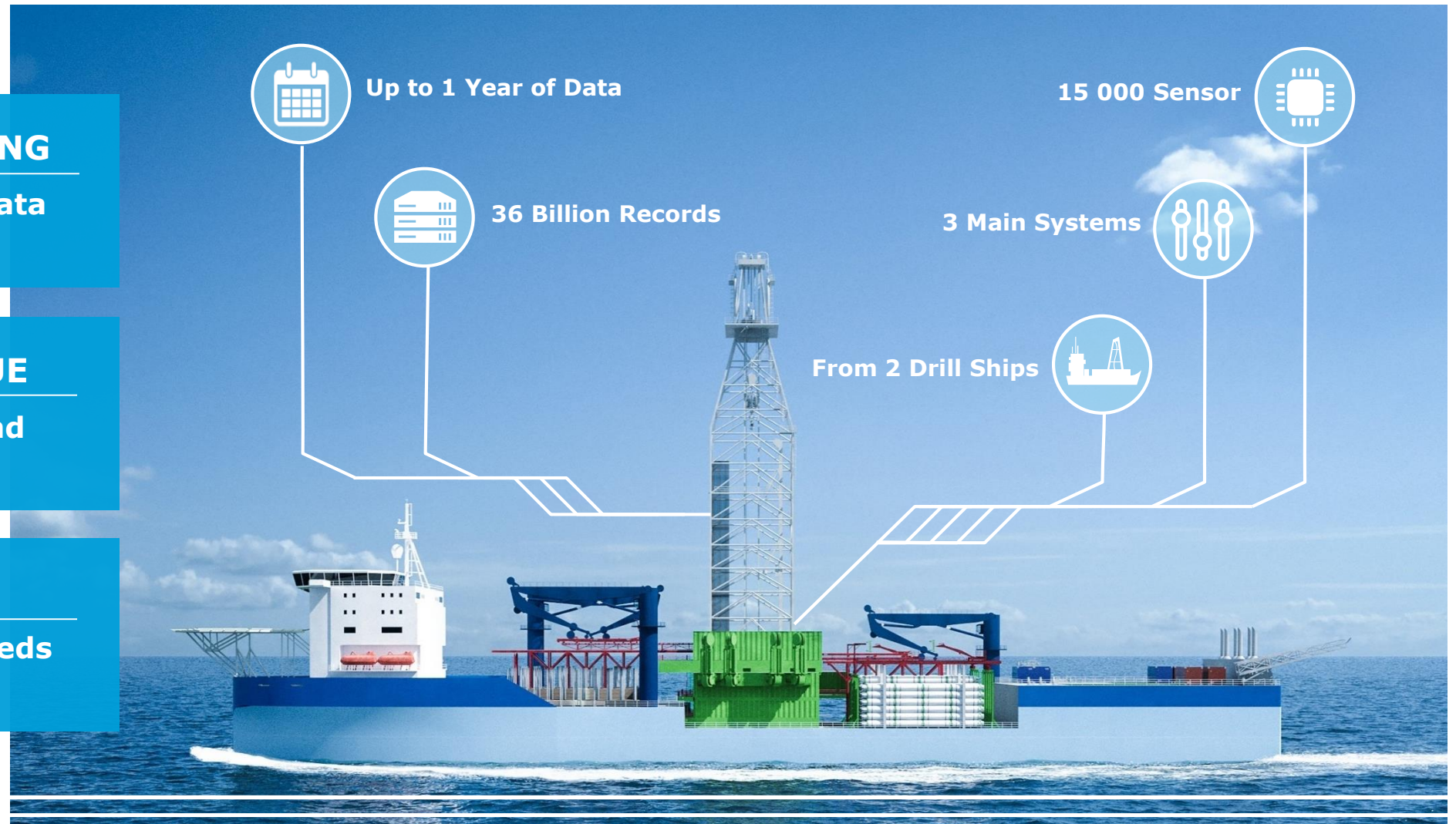**Optimise efficiency**

Reduce operational costs

Manage risks
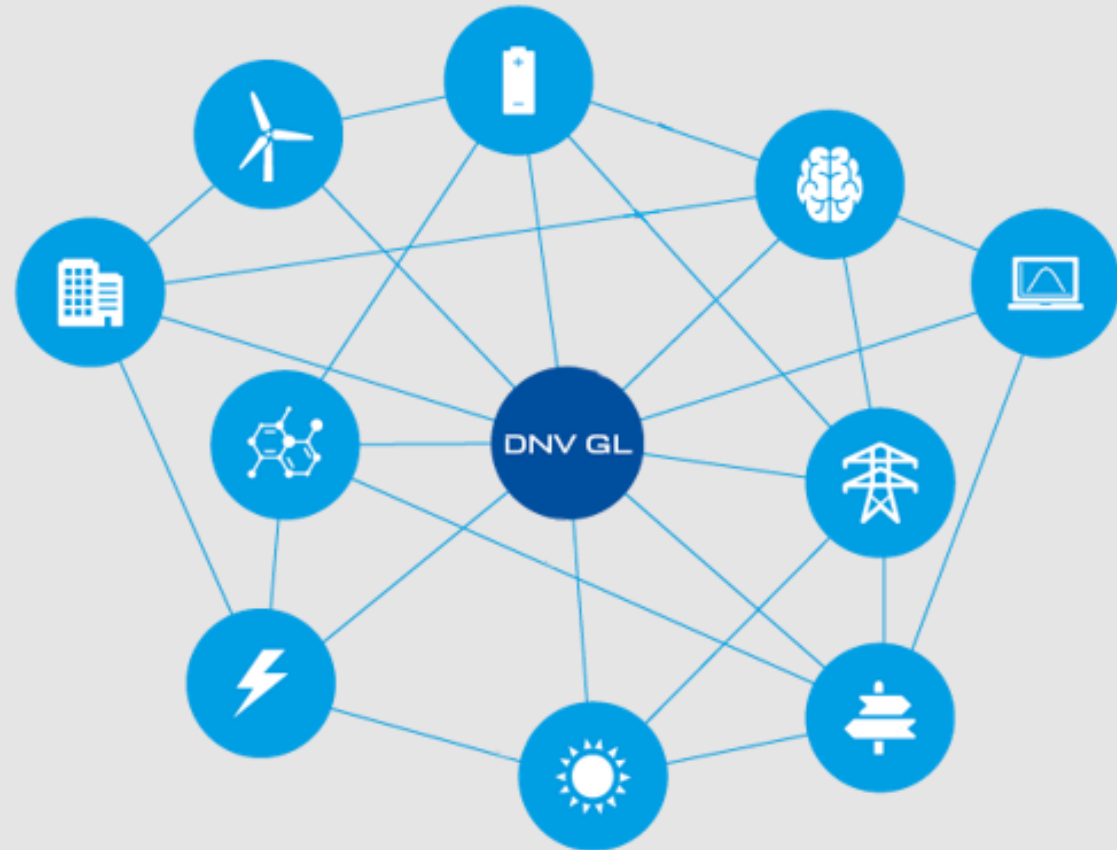
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DIGITAL TWIN: dynamically track asset condition and performance

PRECISE MODELLING

using accumulated data

INCREASED VALUE

with predictions and optimization

FORECASTING

future results and needs

Up to 1 Year of Data

36 Billion Records

15 000 Sensor

3 Main Systems

From 2 Drill Ships

DNV GL's digitilization solution for ship management and operations. The most innovative in the industry.

Ship Management

ShipManager Technical
Easy-to-use planned maintenance system with fleetwide technical asset management

ShipManager QHSE
Quality/safety management support for documentation, audits, inspections, findings, incidents, certifcates and safety tasks

ShipManager Procurement
Complete procurement and stock control solution for all purchase activities in shipping companies

ShipManager Projects
Supports dry dock and other projects with planning, tendering and project management
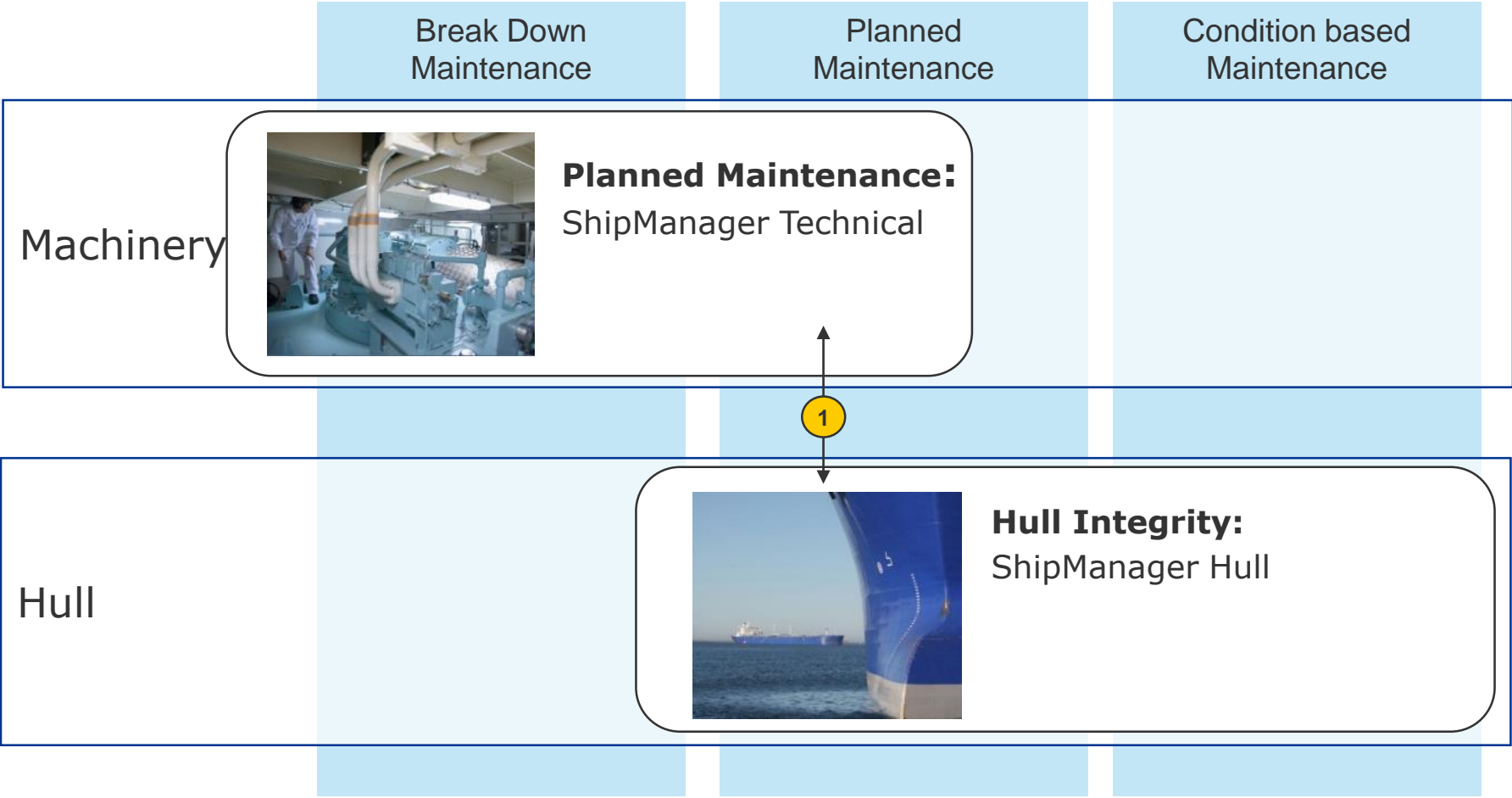
ShipManager Crewing
Supports full crew management incl. planning, dispositioning, certificates, appraisals., rest hours, ...

ShipManager Analyzer
Business Intelligence solution, gets information out of your different operational data for flexible and powerful reporting and analysis

ShipManager Hull
Advanced hull integrity solution supports inspections and thickness measurements based on interactive 3D ship –specific model

ShipManager Survey Simulator
Training and guidance for hull inspections based on interactive 3D vessel models

Integrations
ShipManager integrates with other key business systems such as Accounting / Finance / ERP or Document Management Systems / Sharepoint

Ship Operations

Navigator Port
The Master's digital assistant for port clearance, port information, passage planning work & rest records etc.

Navigator Insight
Onboard voyage reporting tool with intelligent data verification and onshore distribution features

ECO Insight
Portal for fleet performance analysis and optional expert advice (Maritime Advisory)

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Building the foundation for a more advanced technical management

	Break Down Maintenance	Planned Maintenance	Condition based Maintenance

Machinery

Planned Maintenance:
ShipManager Technical

Hull

Hull Integrity:
ShipManager Hull

①

① Central task management in ShipManager possible, as arising maintenance jobs will be exchanged

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- UTM measurements generate tens of thousands of data points

- **What is a smarter way to manage this hull-related data?**

OR
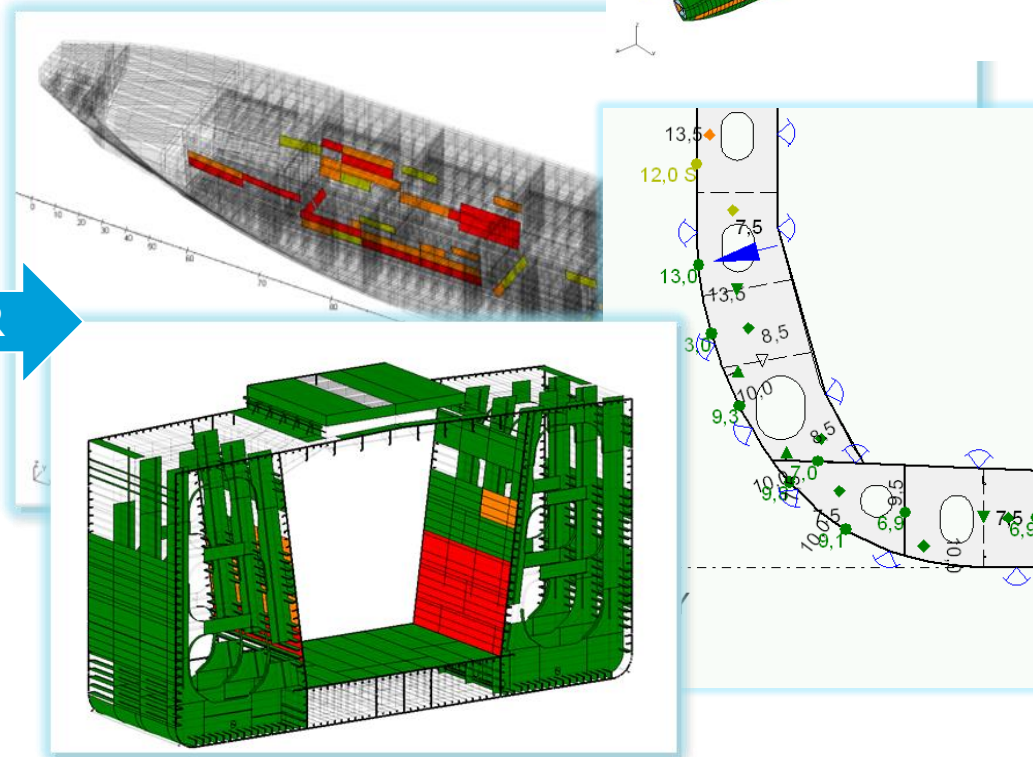
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DNV GL solution: ECO Insight is more than just dashboards, it will give outside in view on your performance

Your vessel data
- Voyage data
- Performance data
- Master data
- Baselines

Navigator Insight

Optional: your existing reporting system

External industry data
- Global AIS data feed
- Global ship registry data
- Satellite weather data
- Fuel sampling data feed
- Engine expert data

Data management

Advanced analytics

Benchmarking

- Map
- Voyage
- Hull & Propeller
- Engine & Systems
- Fuel Quality
- Environment

Fleet Performance Center
- Dashboards
- My Dashboards
- Custom reports
- Push messages
- Push reports
- Mobile app
- Log abstracts
- Environmental reports
- API to internal systems

Some output formats are only available when Navigator Insight is used as onboard data collection

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Our Safety Insight gives you the data perform barrier management digitally

Customer data

- Vessel master / data
- Equipment data / PMS
- Inspections data
- Accident/near miss data
- Vessel voyage data

External partner data

- Class data
- ISM data
- PSC data
- Vetting data
- Global AIS data feed
- Satellite weather data
- Crew competence data
- …

Data management

Advanced analytics

Top concerns

- Navigational Error
- Fire in engine room
- Fire in non-machinery space
- Damage to cargo
- Loss of stability
- Mooring operations

Report	Improve	Investigate

- Dashboards
- My Dashboards
- Custom reports
- Push messages
- Push reports
- Mobile app
- API to internal systems

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Being cyber security ready has never been more critical

Data and system failures
have direct business impact

> **Complexity** of the systems has increased
>
> **Exposure** of the power systems is higher
>
> **Vulnerability** of cyber attacks
>
> **Disruption** can effect systems and societies
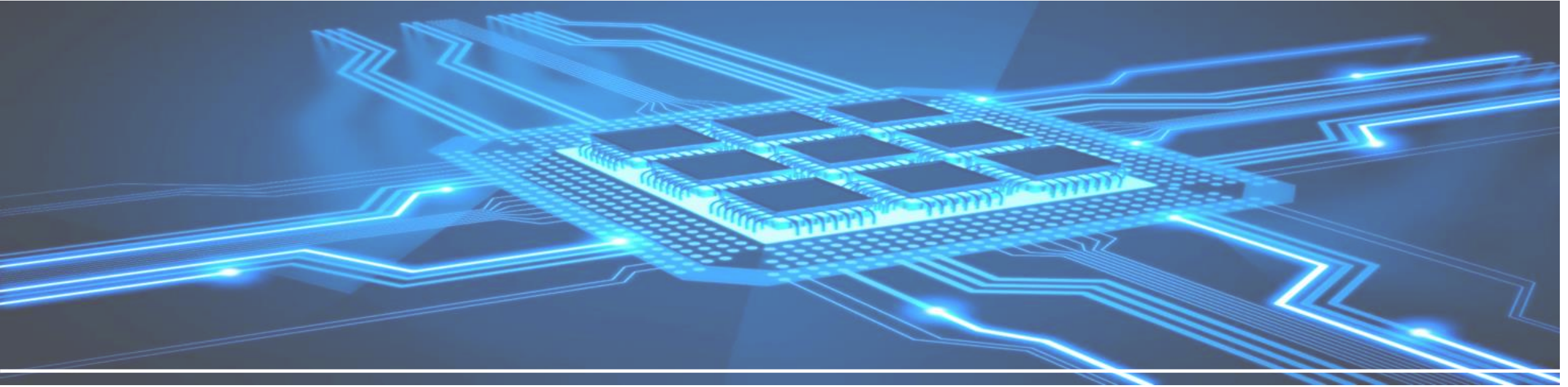
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Cyber Security Testing of Control Networks

To secure the safety and integrity of industrial control systems by probing these networks for possible vulnerabilities and testing their robustness.

Typical Tests:
- Stress and robustness testing
- Penetration testing and testing of network segregation
- Screening running services, patches and firmware
- Authentication weaknesses
- Portable media security
- Known and unknown vulnerabilities
- Traffic anomalies
- Degradation of networked equipment

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Be prepared for the risk of cyber threats

Domain expertise
to bridge the gap
between IT and OT

Comprehensive approach
of cyber-security services

10 years of experience
within cyber security

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Veracity – DNV GL's Data Management Platform

Veracity industry data platform

We provide trusted integration, profiling, benchmarking, quality assurance and management of data between providers and consumers

Our unique platform elements

Asset data
Ingest, storage and integration

Data quality
Assessment

Analytics
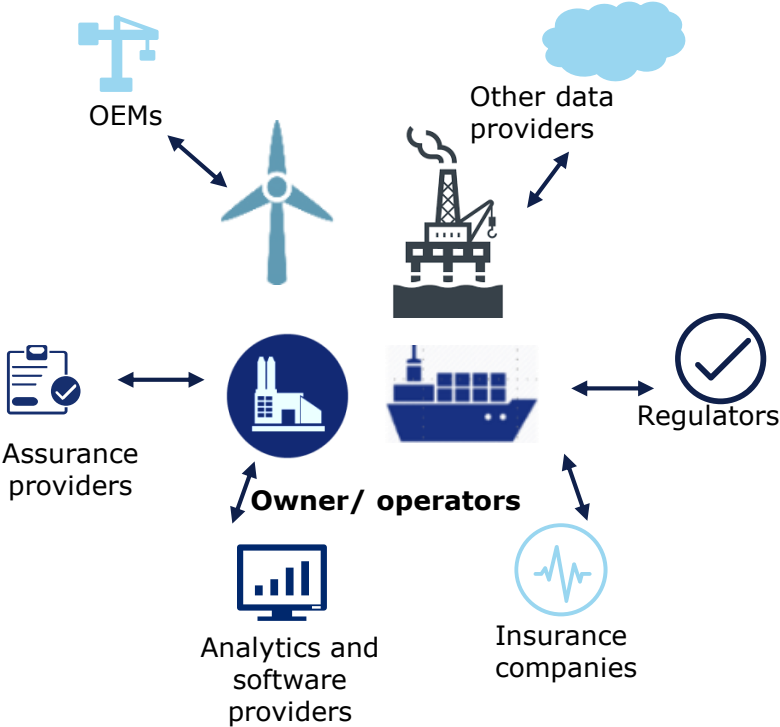DNV GL and third party analytics providers

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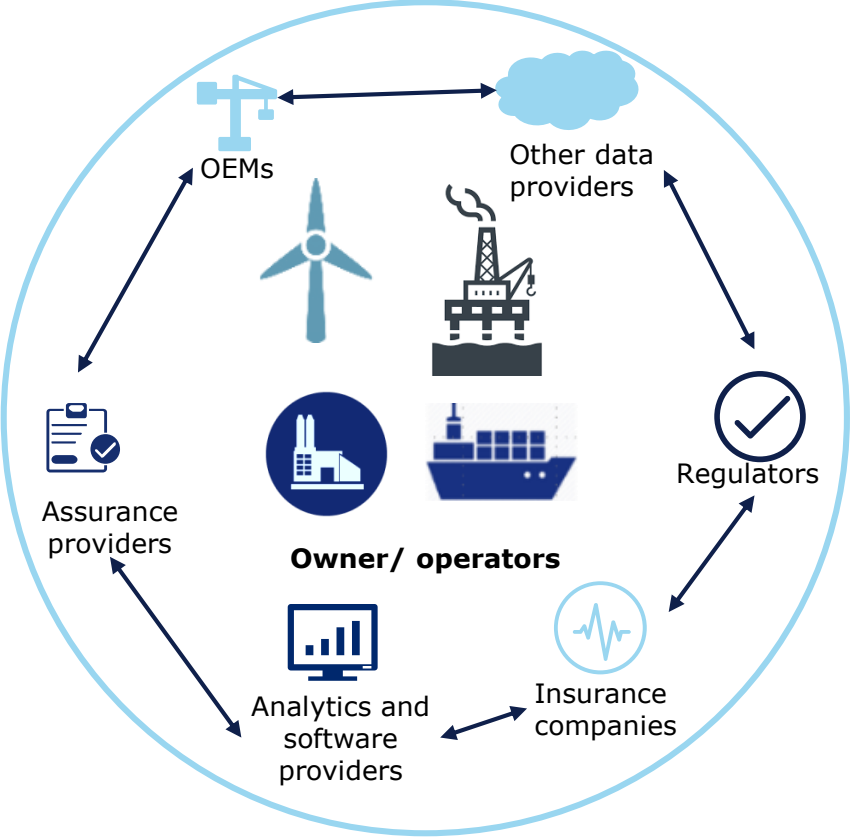# Veracity – the ecosystem facilitator

Current situation with data silos
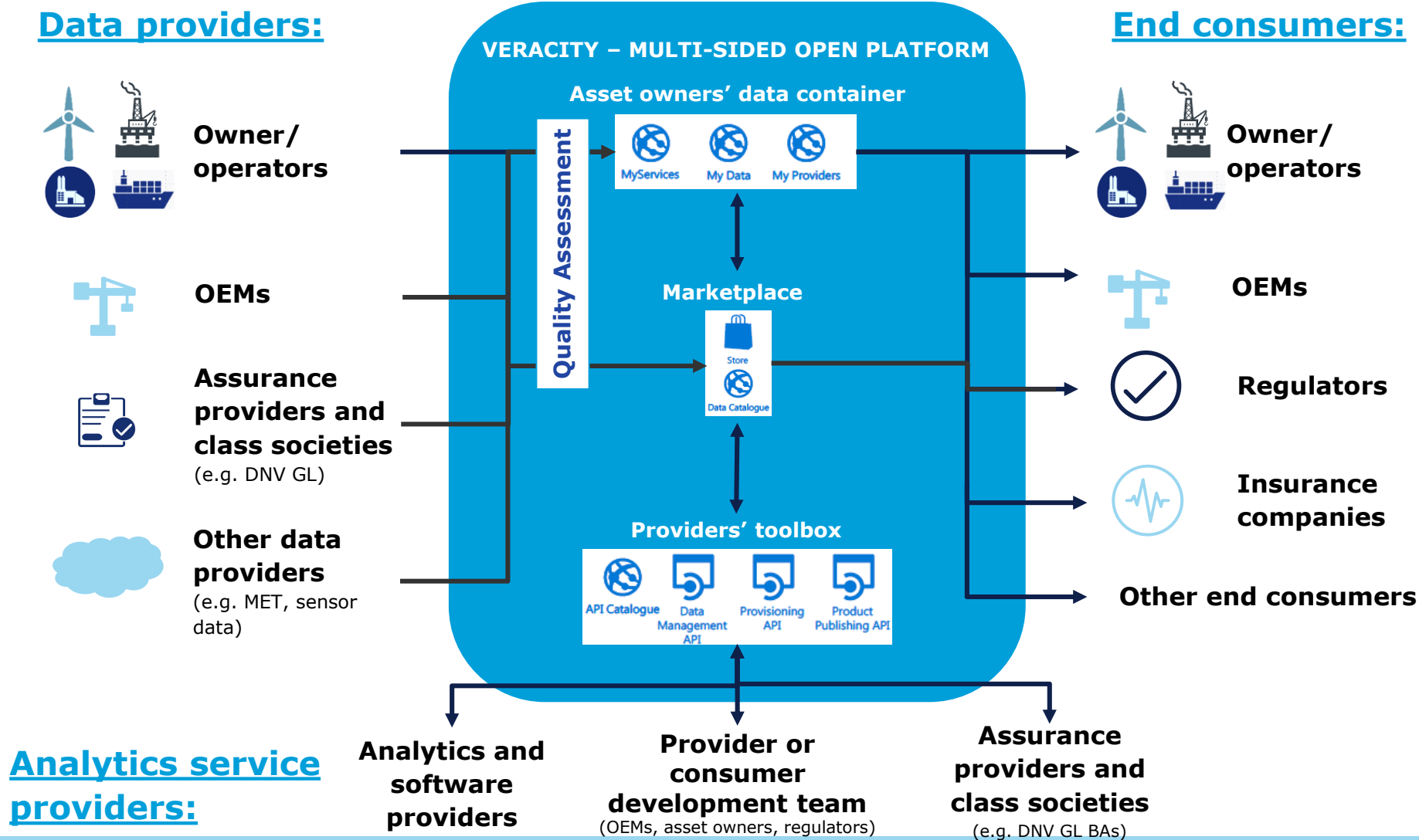- Limited collaboration with lack of trust

VERACITY as the ecosystem
- Increased collaboration to unlock and enrich value of data

OEMs

Other data providers

Assurance providers

Regulators

Owner/ operators

Analytics and software providers

Insurance companies

Veracity will create a trusted, value-unlocking eco-system for the players in the core industries

Data providers:

- Owner/operators
- OEMs
- Assurance providers and class societies (e.g. DNV GL)
- Other data providers (e.g. MET, sensor data)

Analytics service providers:

End consumers:

- Owner/operators
- OEMs
- Regulators
- Insurance companies
- Other end consumers

VERACITY – MULTI-SIDED OPEN PLATFORM

Quality Assessment

Asset owners' data container
- MyServices
- My Data
- My Providers

Marketplace
- Store
- Data Catalogue

Providers' toolbox
- API Catalogue
- Data Management API
- Provisioning API
- Product Publishing API

- Analytics and software providers
- Provider or consumer development team (OEMs, asset owners, regulators)
- Assurance providers and class societies (e.g. DNV GL BAs)

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There is a better way to do it - find it!

Thomas Alva Edison

- Use the right tools to support the implementation of your management system(s)

- Overcome typical challenges

- Make better use of information

- Facilitate organizational learning

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Thank you

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