Making digital technology easier to work with

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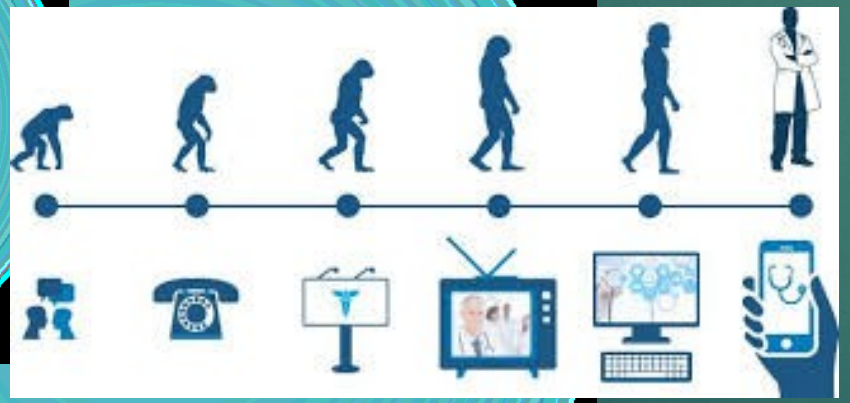
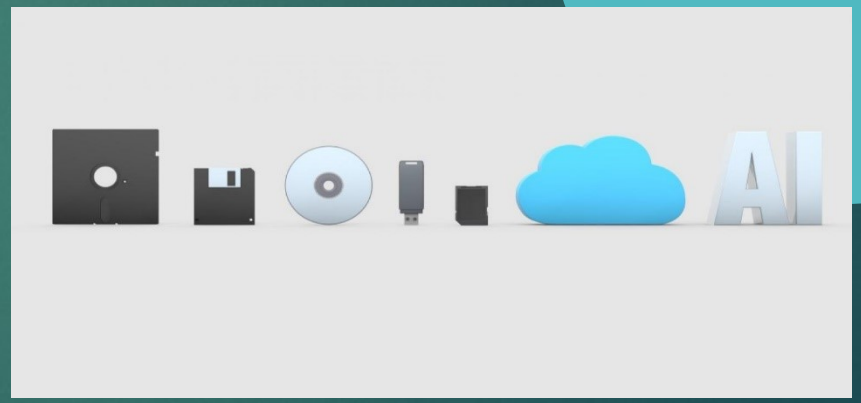
Development

Across the globe, technology is driving the most significant changes to business processes and ways of working since the industrial revolution.





The connected ship

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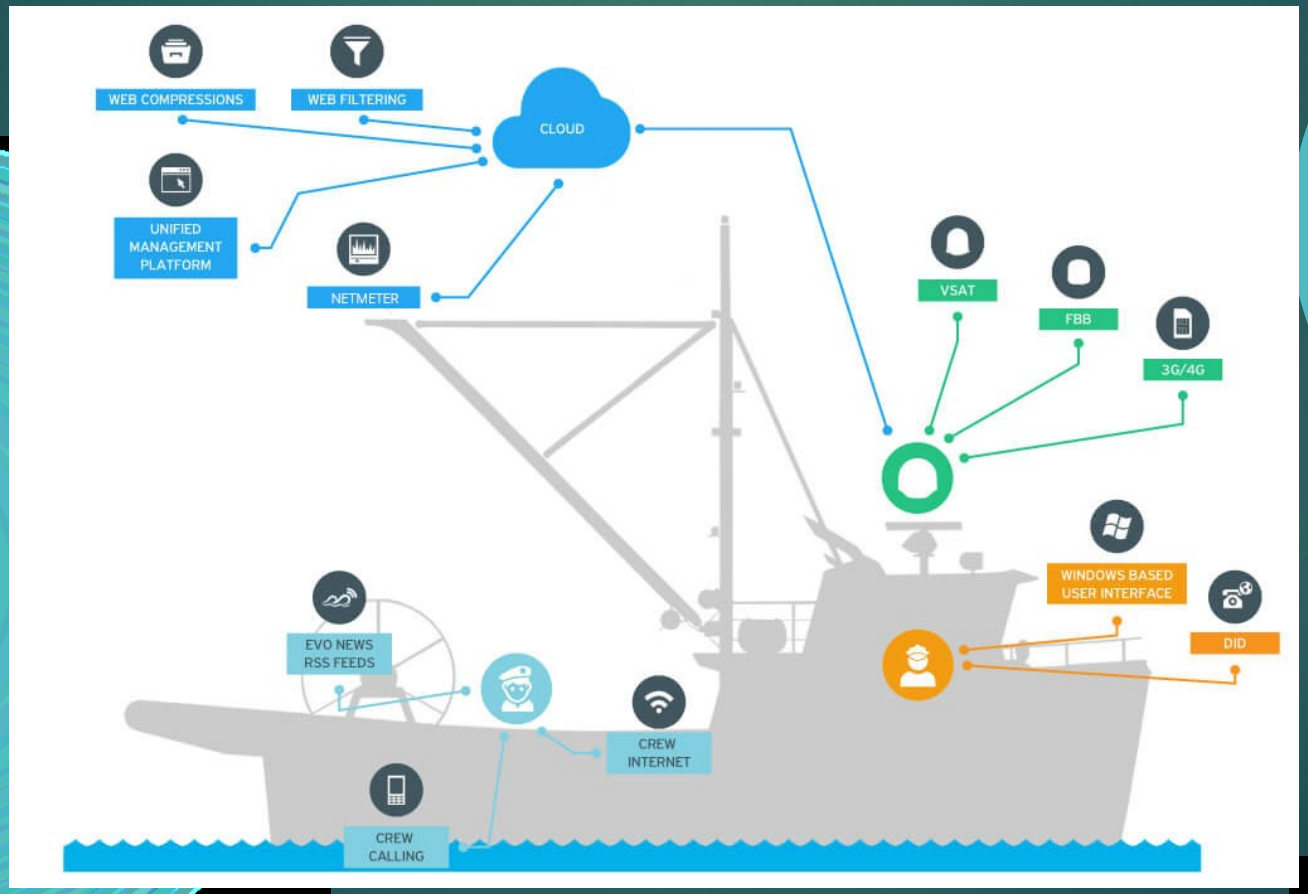


The connected ship

- 24/7 screening.
  - Fleet Positioning.
  - Performance monitoring.
  - Vessel operations optimization.
  - Efficient maintenance.
  - Condition monitoring utilizing appropriate sensors.
- Immediate corrective actions for IT systems.
- Crew welfare.

Finally, we have a remote asset management.

The satellite business

- According to a recent report from Northern Sky Research (NSR), there will be nearly 1 million satellite units in service by 2023, demanding over 160 satellite transponders.

- "Bandwidth demand is rising across most ships, and with more capacity available globally, the industry is in a race to meet the needs for seafarers, crew and passengers that want to stay connected," said Claude Rousseau, NSR Research Director.

Stay connected

Digital tools currently available/used

- Messaging system.

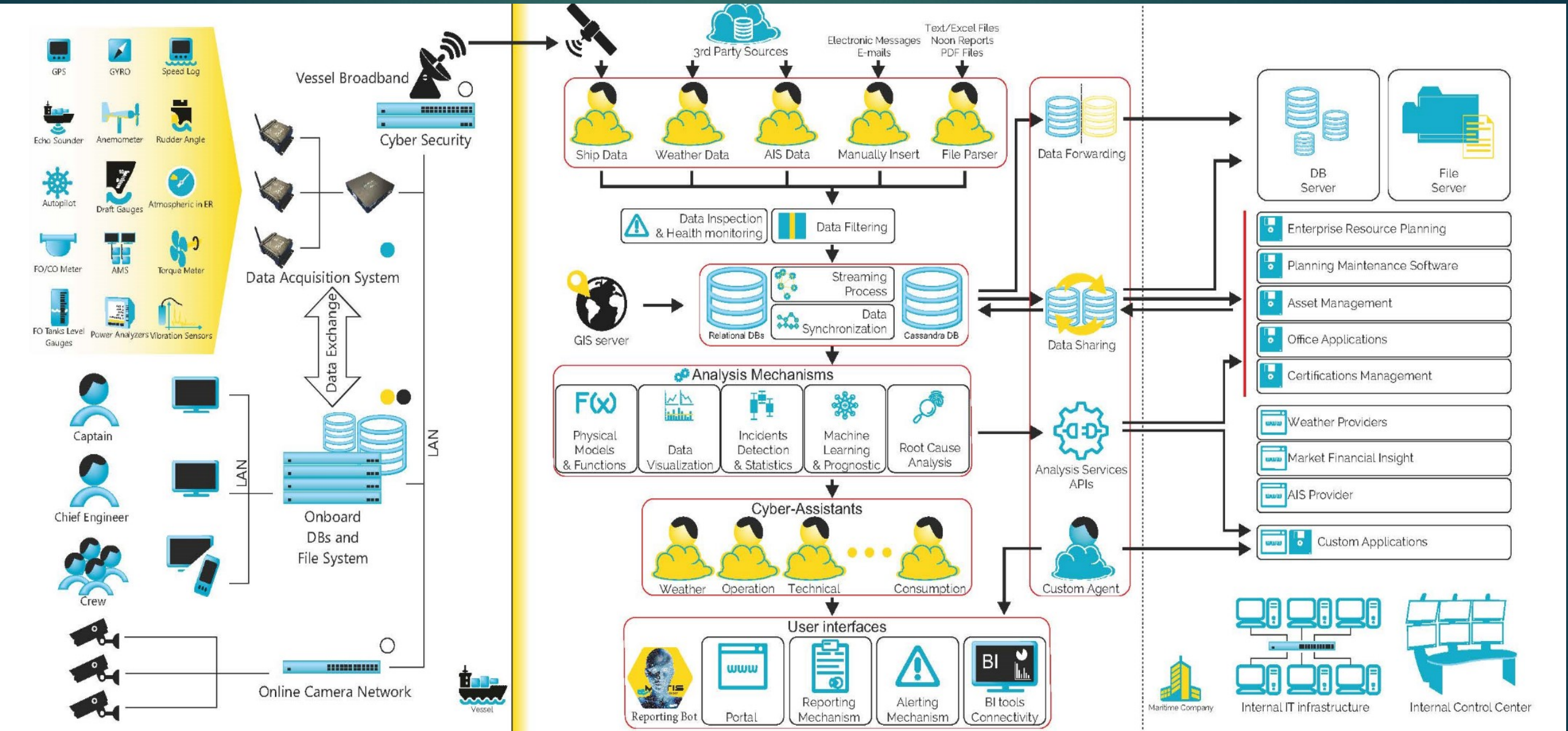
- **ERP**, is an **acronym** that stands for enterprise resource planning (**ERP**). It's a business process management software that manages and integrates a company's financials, supply chain, maintenance, operations, reporting, manufacturing, and human resource activities.

- Remote monitoring systems.

Digital Transformation

- Digitalization is one of the key focus areas in industry today.
- It is changing the way companies work: it's tearing down walls, changing business models and it's happening rapidly.
- Technologies such as the internet of things (IOT), big data, automation and robotics seems that will lead to significant changes for the industry.

Remote monitoring



Big data

- The “Big Data” problem prediction, phrased by researchers Michael Cox and David Ellsworth of Nasa in 1997, was born in the field of space-engineering, when massive information generated by supercomputers could not be processed and visualized by the technology of that time.
- Since then, computing capacity and information technology has tremendously evolved.
- However the challenge of the manipulation and management of such big data still exists.

Big data

- Big data is a term that describes the large volume of data – both structured and unstructured – that occur on a day-to-day basis.

- The amount of data is not important.

- The issue is not generating data, which actually are created by fleet's operations, its interactions with third parties and all the activities going on in its shore offices.

Big data

- The main challenges that pop up about Marine Big Data are:
  - Sound competitive conditions (the privacy issue)
  - Human resources (specialists who handle and analyze data)
  - Technology (data integration tools and collection bases)
  - Data quality (security and reliability)

Big data

- What organizations do with the data matters. Big data can be analyzed for insights that lead to better decisions and strategic business moves.
- It is about turning valuable data into actionable insights and knowledge, using it for the purpose of operating efficiency, revenue generation and improving services.
- The real challenge doesn't lie in how/where this large amount of data is stored and managed; it's actually in how it is cleansed, structured and analyzed to make it useful for strategic decision-making.

Big data

- Compared to the Aerospace industry, the Shipping sector is not seen as a high-tech industry, but there are attempts at "filling the gaps", one being the start of a data revolution. Ships have already started "talking" through sensors, exchanging high volumes of data through the satcom system, system connection and so on…

- The value of Maritime Big Data analytics can only be realized when an organizational and cultural change happens, necessarily accompanied by the appropriate analytical tools, skills and practices to put them to good use.

Big data

- Classification Societies and International organizations are investigating the challenges and advantages of a structured collection, storage and analysis of big data in the Maritime Industry.
- Big Data analytics will enable the industry to drastically enhance the ship's safety and environmental protection.
- Big Data will feature in all the strategic aspects of the business life-cycle of a ship: from design to manufacturing, operation and decommissioning.
- However, it appears that the only way to achieve this ambitious result would be to enforce a centralized control of the entire process.

e activities

- Electronic exchange of information on cargo via platforms.
- Electronic ship clearance.
- Electronic crew handling.
- Electronic ship certificates.
- Electronic surveys.

Internet of Things

- The **Internet of things** (**IoT**) is the extension of Internet connectivity into physical devices and everyday objects. Embedded with electronics, Internet connectivity, and other forms of hardware (such as sensors), these devices can communicate and interact with others over the Internet, and they can be remotely monitored and controlled.

- This technology can improve the cargo handling based on satellite coverage, common sensor technology and the power of cloud computing, collecting data including voyage, weather, maintenance, machinery and state of cargo.

Machine learning

- As of now in shipping industry we see machine learning techniques, in the area of performance assessment, fault diagnosis, predictive diagnosis and optimization in service.

Cyber Security

Cyber Attack

- Maersk says global IT breakdown caused by cyber attack on June 2017
  - The attack came as computer servers across Europe and in India were hit by a major ransomware attack.
- Cosco's operations in the US were hit by a cyber-attack on July 2018.
- On September 2018, the Port of Barcelona reported a cyber attack, which however did not disrupt any ship movements, but '*affected only internal IT systems*'.

Cyber Security

- Policies and procedures on how to treat visitors on-board.
- Appropriate countermeasures in order to protect the vessel.
- Policies for Pc's on board (USB policies, Access Rights etc.).
- Network Zoning to avoid pivoting between devices:
  - Business VLAN for daily operations – communications.
  - OT Systems VLAN for monitoring systems (Ships performance etc.).
  - Crew VLAN for crew welfare.
- Cyber security continuous training for all users (on board and onshore) in order to be able to identify the risks.

Digital Transformation

- Maritime has traditionally been a slow sector to adapt to digital technologies and adopt new ways of working.

- Changes affect the Maritime Industry, where the technological tools, human skills and cultural approach are not and might not yet be mature for this kind of revolution.

Digital Transformation

- What is clear is, not only that some maritime companies are not responding to the increasing digitalization, but that industry executives have plenty of work to do to prepare procedures, skillsets and security to take best advantage of the opportunities offered.

Digital Transformation Benefits

- Record keeping
- Time saving
- Cost reduction
- Cleaner transport
- Higher customer satisfaction
- Operational stability
- Incident investigation
- Security and error prevention

Digital Transformation Benefits

- Optimization of fleet management.
- Automation of processes.
- Increase of business performance.
- Improvement on operational efficiency.

Digital Transformation Benefits

- The use of modern management solutions, potentially cloud-based ones which offer one central source of information for the office and the fleet is already bringing great benefits in terms of improved data and information exchange, as well as reduction of communication expenditures.

Decision making

Future Shipping

- The changes will affect the structures and business models of the industry as well as production.
- Shipping will be marked by much greater integration of individual business models, becoming part of overall logistics platforms.
- The new technological means to process masses of data and link them intelligently with algorithms make possible an entirely new level of communication and networking.
- The networking of vessels and ports is an enormous opportunity for shipping. This makes it possible to control and organize logistics chains in real time, reduce waiting times, and predict ship arrivals more accurately

Future Headquarters

Superintendent

Future Headquarters

Technical Manager

Any questions?

Thank you