

Unleashing the power of data to optimise vessel performance

8 September 2020 • 09:00-09:45 BST

Presentation & sponsor documents:

Page 2: Tor Skeie, Marlink

Page 8: Juan Gil, OSM Maritime Group - Maritime & Technology

Page 12: Dr. Ranjan Varghese, Steel Ships

Page 19: Dr. Dimitrios Dalaklis, World Maritime University (WMU)

Page 26: Marlink company information

Part of
**Vessel
Optimisation
Webinar Week**

7-9 September 2020

Sponsored by



MARITIME
OPTIMISATION
& COMMUNICATIONS

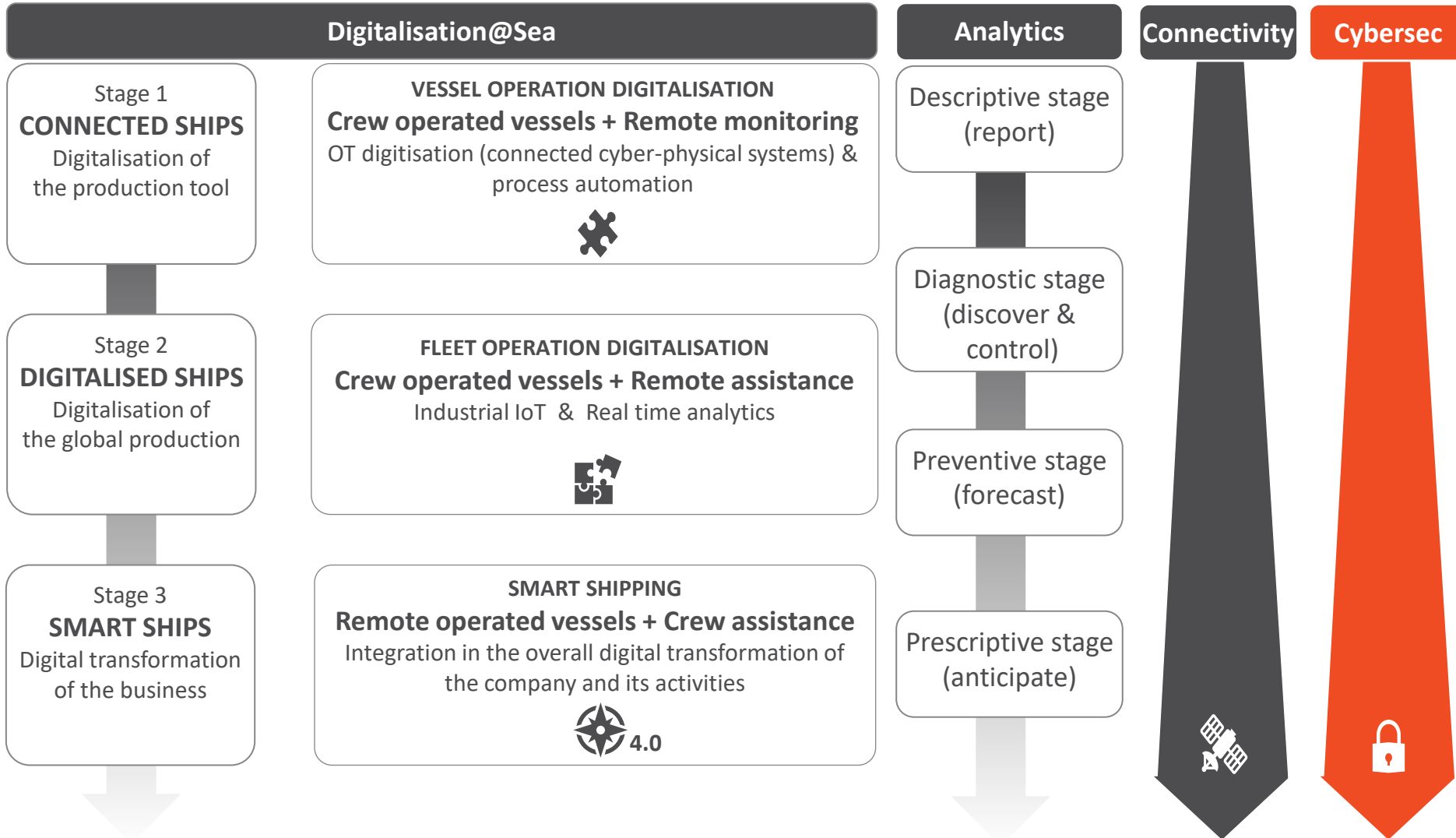
riviera >>>

Unleashing the power of data to optimise vessel performance

Tor Skeie, Vice President Maritime IT Solutions
8 September 2020



Digitalisation@Sea Journey



Business Opportunities driven by OTs

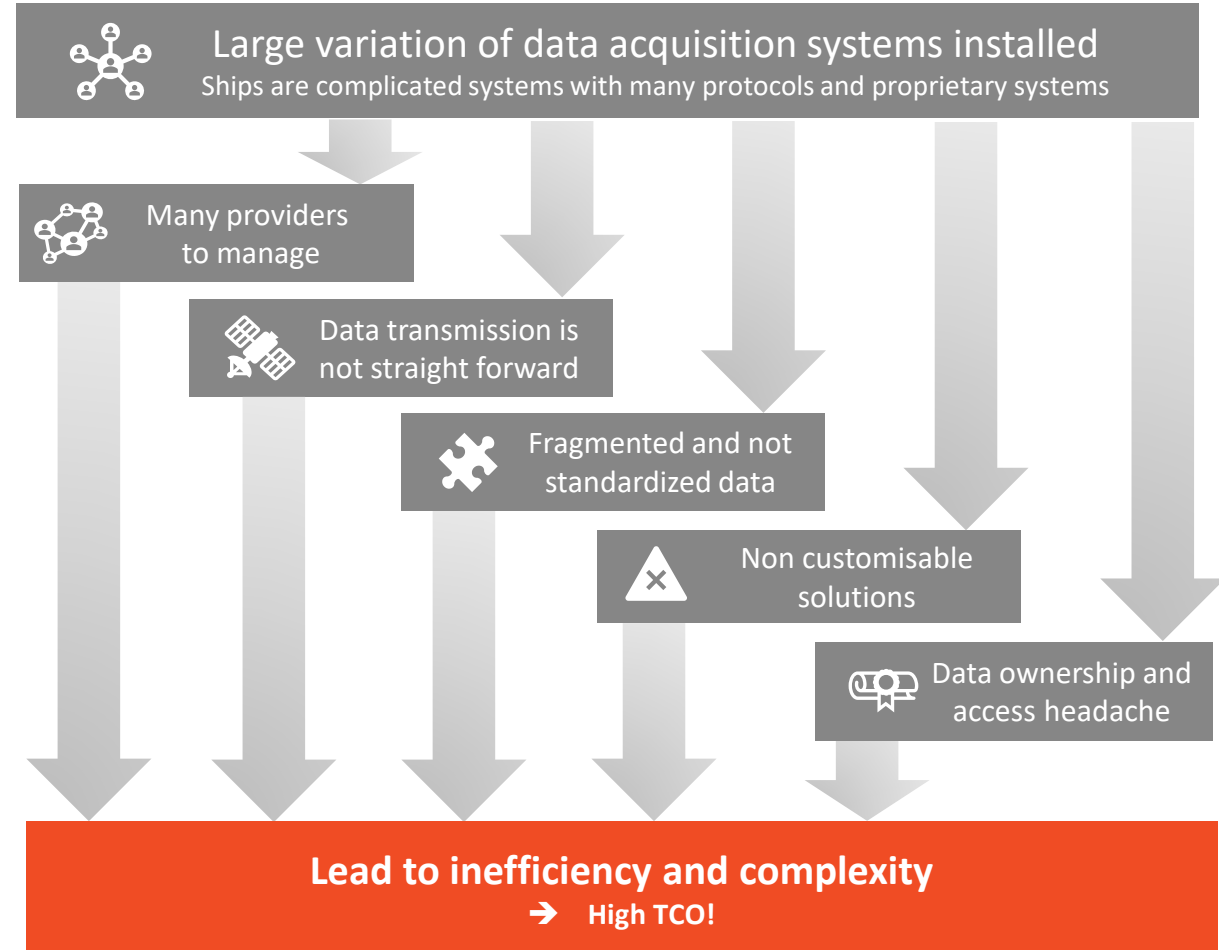


Vessel operation is one of the biggest maritime digital transformation challenges...
...with the largest financial impact!

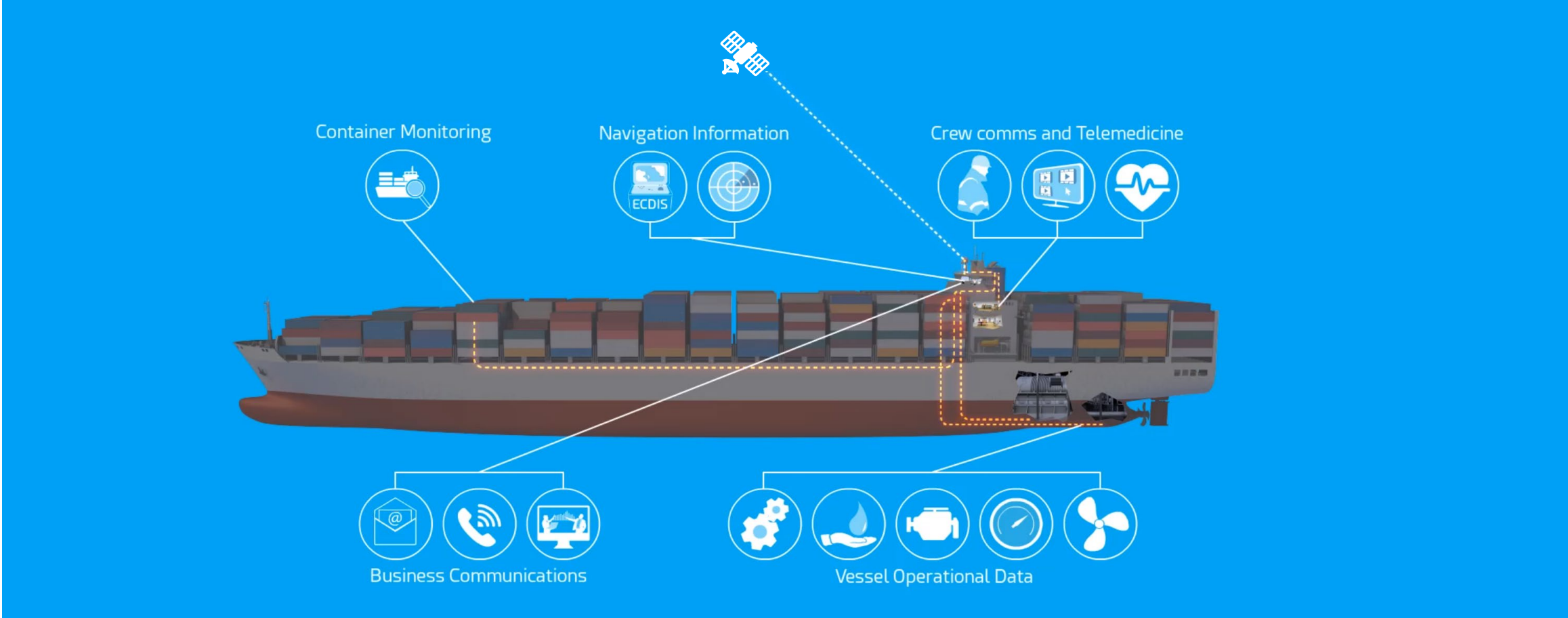
Vessel operation digitalization relies on OT connectivity & security and OT digital services
(real-time remote tracking, automated reporting, performance analytics, condition-based monitoring, emission management, etc.)

Real Obstacles of Smart Shipping Transformation

Data is coming from ships but...



Digitalisation everywhere – one value chain





Because a connected world is a better world. Marlink.com

Unleashing the power of data to optimize vessel & fleet performance

Juan J. Gil

IT Manager - OSM Maritime Singapore

Sept 8th 2020



Why data?



Not all data is valuable, but expensive.



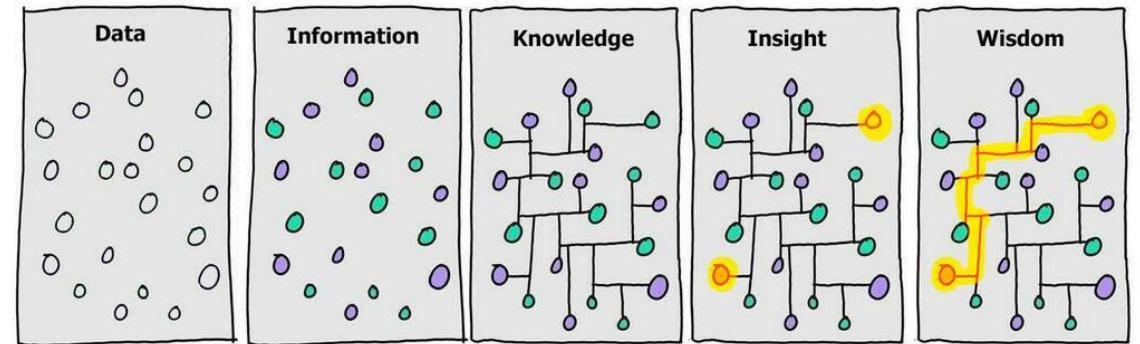
Data without reflection/action is meaningless.



Is Data getting me closer to the corporate strategy?



Source: *Data to insight*

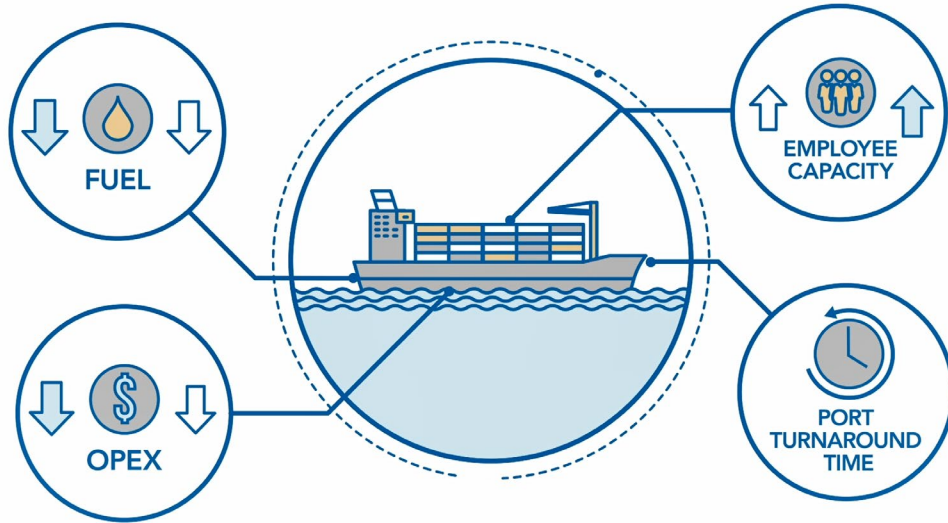


Source: *The [i] Factory*

	Optimize	Diffuse	Disrupt
DEFINITION	to introduce incremental improvements to sustain an existing product or service	to introduce emerging ideas and technologies into an existing category	to introduce new business models to reach new customer segments
CATALYZED BY	existing customer needs, unmet and emerging	new technological or cultural trends	complacent incumbents & unserved segments
REQUIRES	customer obsession and an iterative design approach	constant outside awareness of technology and culture	courage and resources to challenge the status quo
WATCH OUT	know when to stop supporting an existing product	challenge yourself to keep innovating	give yourself time to change behavior and capture market
EXAMPLE	adding a better moisturizing strip to a men's razor	adding an electric trimmer onto a traditional razor	creating a razor subscription service

What are the benefits of data?

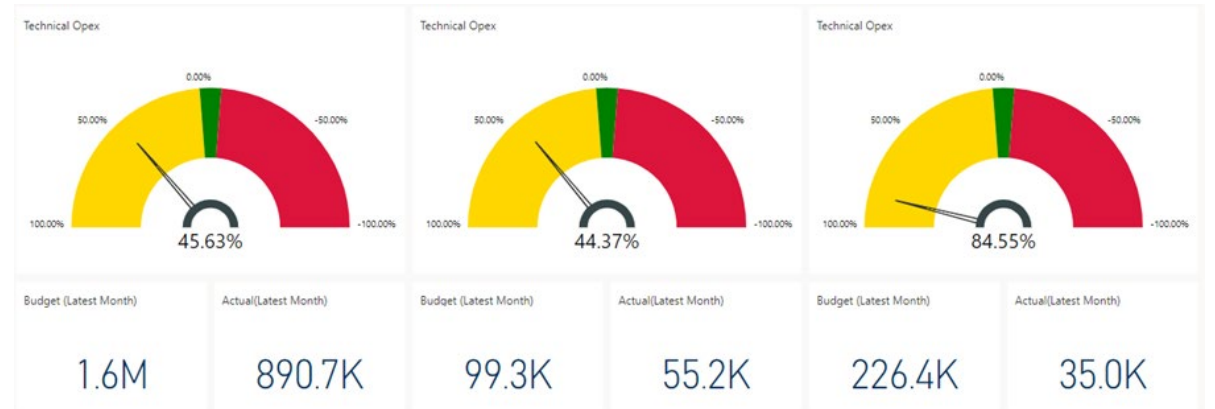
Vessel Performance



reducing OPEX, improving port turn-around time and increasing the capacity of all employees.

Source: Veracity

Fleet Performance



Source: OSM



**Unleashing The Power Of Data
To Optimise Vessel Performance**

by Dr. Ranjan Varghese,
Chief Executive Officer,
Steel Ships Limited
Hong Kong

CONCEPT: PERSPECTIVE AS A SHIP OWNER

INTRO

01

IMO Vision
Forward

+ *Roadmap for developing a comprehensive IMO strategy on reduction of GHG emissions from ships*

02

Fleet
Efficiency

+ *Establishment of company culture, Goals*

03

Voyage
Efficiency

+ *The enriched data and analytics*

04

Vessel
Efficiency

+ *Individual vessel data Optimization*

IMO VISION FORWARD

ROADMAP FOR DEVELOPING A COMPREHENSIVE IMO STRATEGY ON GHG REDUCTION FROM SHIPS

Phase-1 Data
Collection
Year 2012-2018.



Achieve Emission
targets

**Phase –II Data
Analysis Year
2018-2020**

**Phase- III Decision
Step Year 2022-23**

Objectives

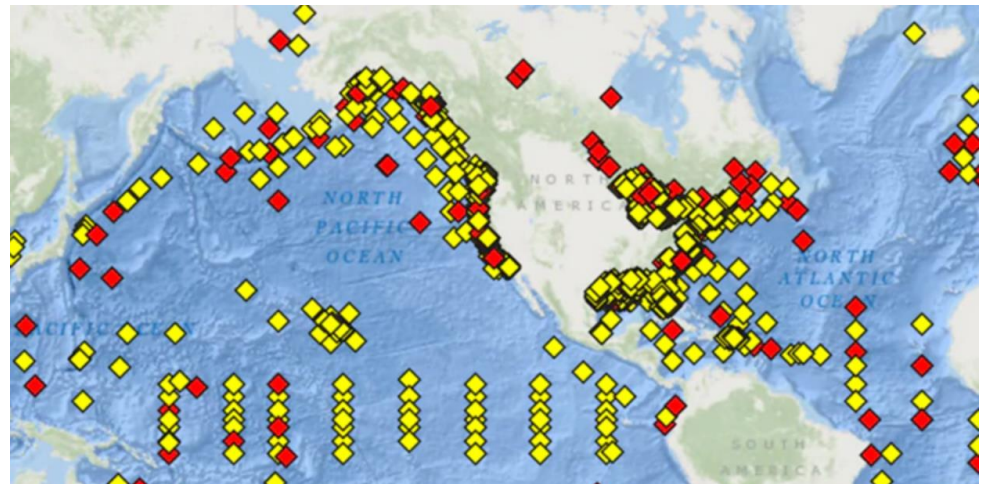
1. Avoid Pollution at Sea
2. Advanced Safety Management
3. Improve Vessel Performance at Sea



FLEET EFFICIENCY

Company culture development to promote green company

- Better situational awareness **enables a top-down, fleet-wide approach**
- In **easy-to-digest dashboards** you get an overview of fleet's activities, including vessel location and KPIs
- Increase **transparent awareness** **fleet-wide situational awareness**
- Transparency onshore and onboard personnel, through a single online interface
- **Prudent companies exceed the IMO requirements**



VESSEL EFFICIENCY



- Aligning with accurate **fleet goals**
- To maintain vessels' **technical performance reliability and availability**
- Minimizing **total cost of ownership across the lifecycle.**
- Moving from time-based to truly **predictive maintenance**
- **Improve energy efficiency and reduce costs,**
 - **including hull and propeller condition, speed fuel curves, and engine performance**

POWER OF DATA TO OPTIMISE VESSEL PERFORMANCE

HEALTH - SAFETY - ENVIRONMENT

01

IMO Vision
Forward
(GLOBAL)

Ship Owner Centric

02

Fleet
Efficiency

03

Voyage
Efficiency

04

Vessel
Efficiency

THANK YOU

STEEL SHIPS LIMITED
HONG KONG
INFO@STEEL-SHIPS.COM

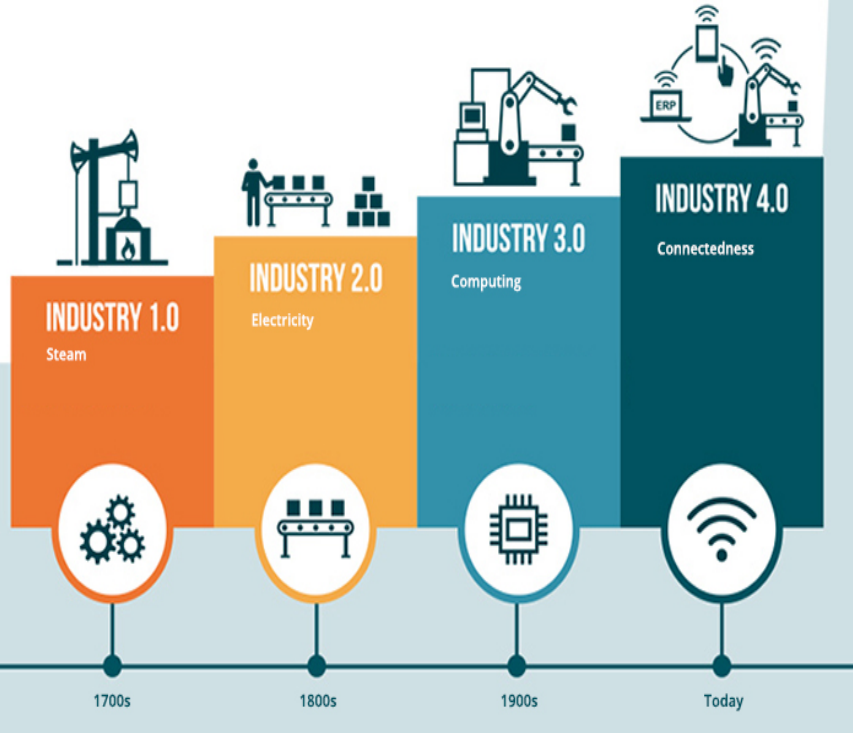


**Vessel Optimisation Webinar Week:
Unleashing the Power of Data to Optimise Vessel Performance**

Dimitrios Dalaklis



Understanding “Change”:



4.0

4th revolution

Cyber physical systems



3.0

3rd revolution

Electronic and IT systems, automation



2.0

2nd revolution

Mass production and electricity



1.0

1st revolution

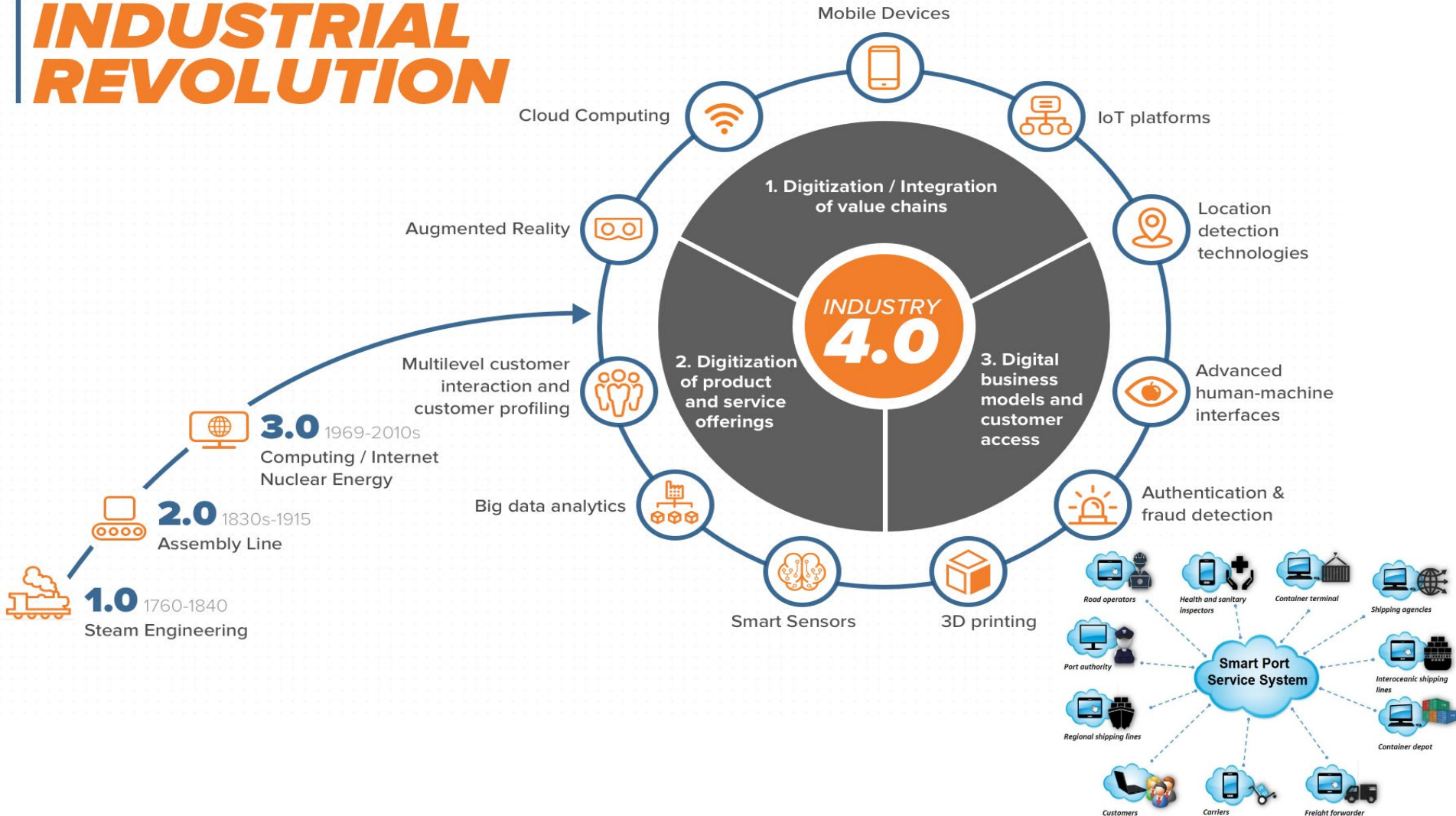
Mechanization, steam and water power



Understanding “Change”:

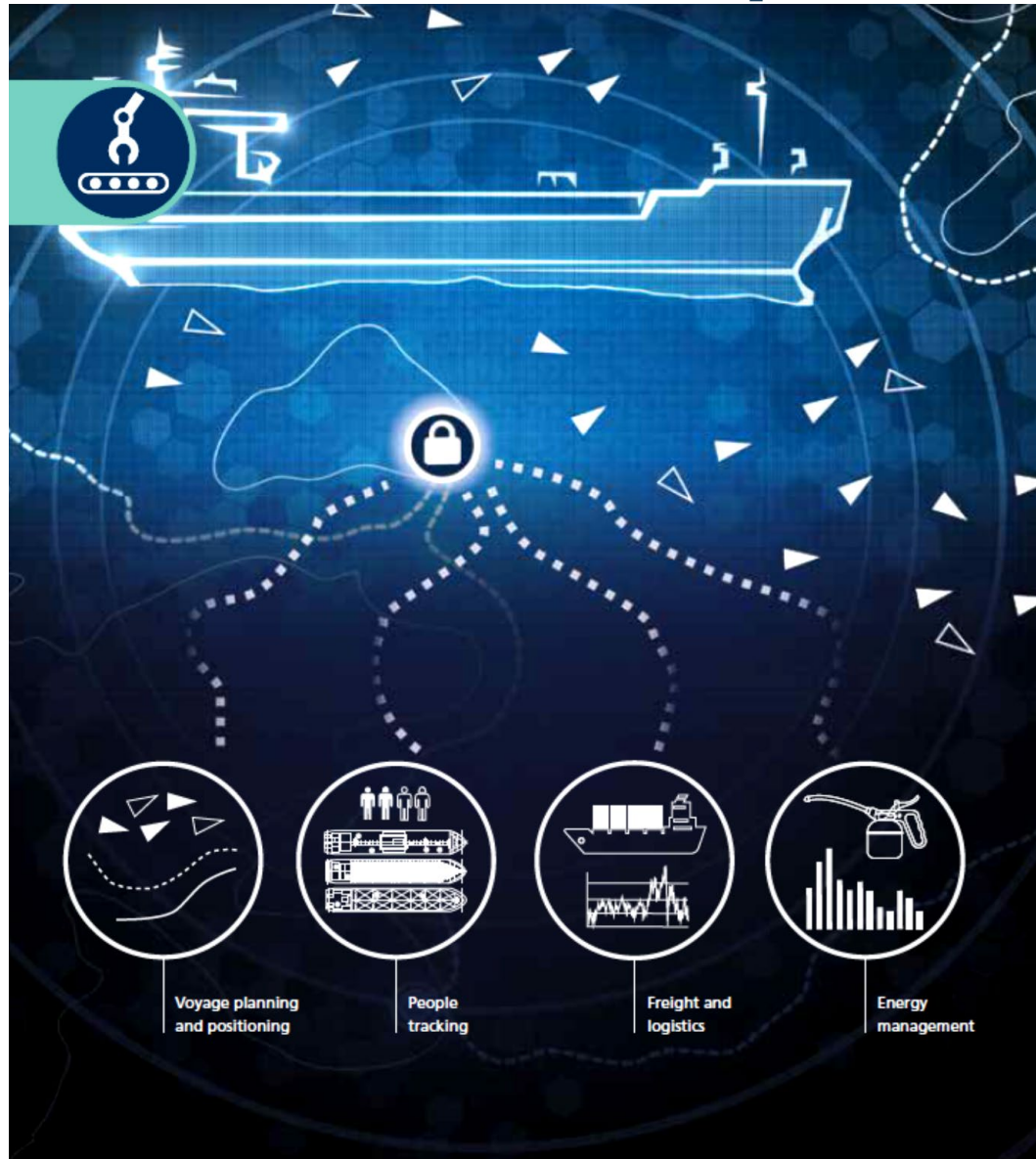
THE DAWN OF THE

FOURTH INDUSTRIAL REVOLUTION



A smart port is an automated port that uses nascent technologies such as big data, Internet of Things (IoT), blockchain solutions and other smart technology based methods to improve performance and economic competitiveness.

Potential Areas of “Improvement”:



An Indicative Example: The “Digital Twin”

- **Decision Making** is a very important activity for any organization; decision makers most often use the so-called “explanatory” or “causal” models.
- **A digital twin** (a dynamic digital representation of an object or a system) includes both the hardware to acquire and process data and the software to represent and manipulate these data.
- **What-if Analysis/“Optimised” Decision Making...**



Future Developments:



- **Increased Level of Safety** (keeping people away from harm's way and minimizing human error)
- **Lower Operating Costs** (“reduction” in operational costs and improved operational efficiency)
- **Optimised Commercial Flexibility** (based on real time data mining/analytics across various domains)

Topic for Further Discussion:

- Effective manipulation of already available data?
- Qualifications/Experience of the end-user???





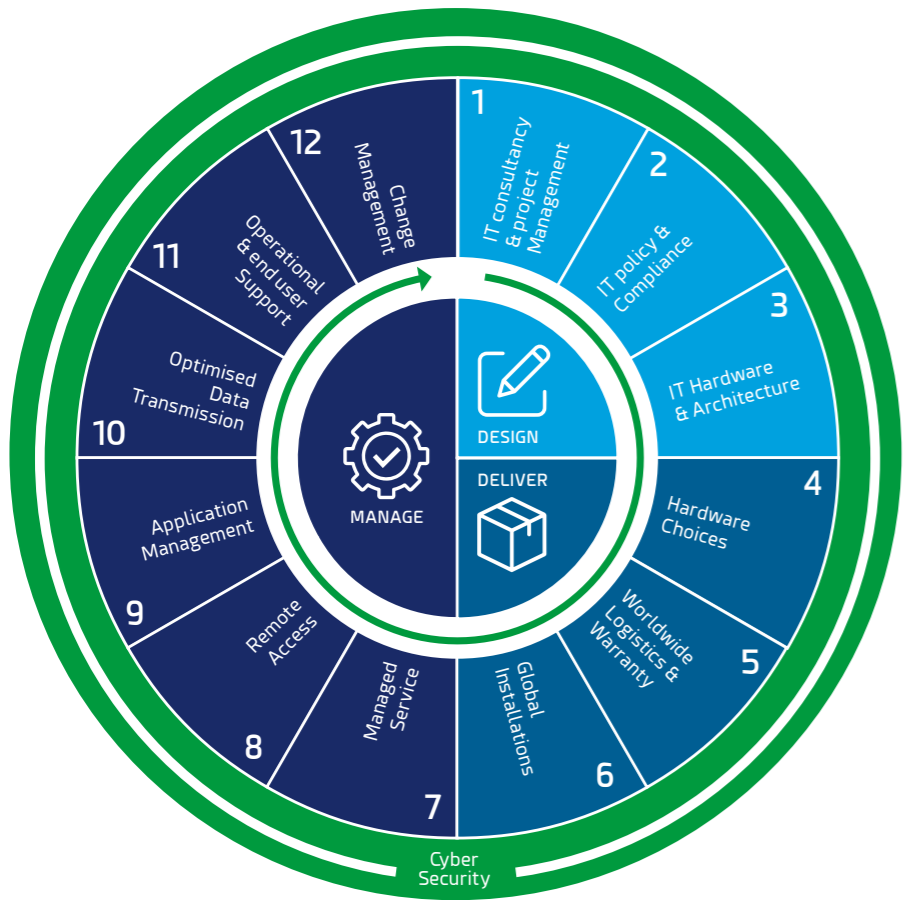
ITLINK:

Standardise,
simplify and automate
IT operations at sea

Full suite of solutions to help you achieve compliance and manage your fleet IT environment with ease

The maritime industry is embracing digitalisation at an ever-increasing rate, as operations are optimised to enable growth and improve efficiency. Marlink has unrivalled expertise in supporting global IT environments in maritime and can work in partnership with you to design, deliver and manage an enhanced IT operation, according to needs and in compliance with the latest regulatory requirements (e.g. IMO 2021).

Whether you want to embark on a digital transformation across your fleet or simply better manage your vessel IT infrastructure, we can help you adopt the latest technology and innovate for the future. Our approach enables you to take control, standardise, simplify and automate your IT management to maximise efficiency and reduce costs.



The ITLINK suite

Our mission is simple – to transform and connect fleet IT environments to enable more automation, saving you time and money.

We structure the ITLINK suite of solutions around three distinct phases: **DESIGN - DELIVER - MANAGE**

Marlink provides IT services on 1,000+ vessels

Did you know...?

- Outdated applications are unsustainable and vulnerable
- Competitors investing in IT are well placed to increase market share
- Regulation is happening and can require fast implementation of updates
- Disconnected and slow processes could lead to operational risk
- Manual IT updates onboard are slow and expensive

ITLINK can help you:

- Comply with IMO 2021 (resolution MSC.428,98) Safety Management System regulations
- Update applications across the fleet in a matter of hours
- Reduce the total cost of ownership
- Improve system and cyber security
- Increase uptime
- Implement automation, saving time and money
- Standardise and simplify your IT environment

Are you IMO2021 Compliant?

Applicable to commercial ships with over 500 gross tonnage, the IMO resolution (MSC 428, 98) confirmed all shipping companies need to have cyber security in their safety management system. Flag states are encouraged to check this in the first annual audit after January 2021.

Marlink's solutions support all the functional elements of the IMO2021 regulation and help address the recommended NIST cyber security framework of Identify, Protect, Detect, Respond and Recover.

Contact us to learn more.

Take control of your fleet IT

Working in collaboration with you, our team will empower you to adopt best practice IT and future proof your fleet. Marlink has the expertise as the only provider in maritime with a complete satellite communications, IT and cyber security portfolio and 20 years' experience of onboard IT.



Image to be placed

DESIGN

ITLINK begins with an assessment of your IT needs and the design of the right IT solutions for your fleet and business. Our team will immerse themselves in your IT operations and work with you to scope and plan a scalable, flexible and automated vessel IT environment.

IT Consultancy & Project Management

Working with you and your budget, the ITLINK team will use best practice experience to tailor our suite of IT solutions to your needs. Your own dedicated project manager will steer the planning phase, providing advice, system design, hardware recommendations and a knowledge of industry standard solutions to recommend the right solutions for you.

IT Policy & Compliance

In consultation with you, we'll review and define your IT governance policy and recommend solutions to create and enforce rules that address your specific risks. We'll turn your policy framework into a set of rules and processes for your IT environment,

ensuring that you have compliance visibility, and nothing slips through your net.

IT Hardware & Architecture

A key element of the ITLINK suite is an examination of your fleet's IT hardware, how it's connected and the provisions in place to maintain operations should a single piece of hardware fail.

We can guide you to optimise your hardware architecture, ensuring your systems are recovered in the event of a power or hardware failure. We'll assess your service level agreement (SLA) and equipment for satellite communications to make sure they are adequate for your needs and include a standby (redundant) server in your infrastructure to mitigate the risk of server failure.



DELIVER

ITLINK helps you utilise technology to maximise your business productivity and create the platform for success.

Hardware Choices

We can advise you to make best value selections when you are purchasing hardware for your fleet, such as servers, PCs and antennas. If you need extra support, we can arrange the order, delivery and installation of selected hardware, too.

Worldwide Logistics & Warranty

Our extensive, reliable logistics operation means that we can meet deadlines and deliver equipment when and where required. With warehouses located around the globe, we can get hardware to you fast, whether you are in Europe, America, the Middle East or Asia.

Support continues after installation as we can provide you with warranty support and even manage any claims for you.

Global Installations

Whatever the scope of the project, our skilled and experienced team can deliver a reliable, flexible installation solution to meet your needs, wherever you are. From the physical installation of hardware and network equipment to testing and configuration, our professional engineers will ensure a smooth installation and train your onboard crew as needed.

Problem	ITLINK Solution
New device or hardware is not synced with agreed fleet standard	Automatic installation of agreed standard (blueprint) when device is first connected

Problem	ITLINK Solution
Deal with various providers for satellite communications cyber security and IT solutions	Deal with Marlink for satellite communications, cyber security and IT, and have compatible, integrated systems
Addressing the logistical challenges of remote sites, or vessels on a busy sailing schedule.	Marlink has a service network of 1250 service points worldwide and employees in 22 countries. Our global supply chain gives us unique efficiency and speed in serving the maritime industry.



Managed Service

We can provide a high quality, managed IT service that fits with your business needs. Whether you need to fully outsource or work collaboratively with your existing IT resources, our service enhances fleet and business performance.



MANAGE

We provide a comprehensive range of hardware and server maintenance services, as well as user and network management, purposely designed to protect your IT environment.

Remote Access

We understand that your fleet management team and crew may need remote access to your network and can help set up a secure, virtual private network (VPN) to provide them safe access. Centrally managed configuration and reconfiguration on one, some or all vessels can be performed simultaneously, meaning changes to Windows settings, such as user profiles and credentials, amending or adding applications and updates to network settings couldn't be simpler.

Application Management

We can take the hassle out of the management of your business-critical applications, from initial installation to administering updates.

Marlink provides a fully transparent solution allowing you to conveniently track extra important updates, all via the web-based interface onshore. As software updates are automated, the human factor during implementation of updates onboard is removed from the equation, significantly reducing the transition time from first vessel being updated to the last across the fleet.

Our popular SkyFile Mail provides reliable, cost effective and compatible email, fax and SMS messaging, while its SkyFile eNOAD extension enables users to comply with US coastguard

regulations easily. The ITLINK suite also offers eLearning, navigation and file replication applications. The ITLINK team can also carry out remote configuration on one or all vessels at the same time.

Optimised Data Transmission

Our optimised data transmission services enable automated file and data transfer from ship to shore, and vice versa, with minimal impact on bandwidth and power. Cloud storage and file synchronisation are configurable to your fleets needs, and differential synchronisation means only that the changes made to a file are uploaded, further minimising bandwidth consumption.

Operational and End User Support

We provide customers with 24/7 technical support to troubleshoot issues and provide installation and upgrade assistance. Our technicians can also provide training programs and act as an extension to your own IT team, freeing them up to focus on key tasks and minimising end user and business disruptions.

Change Management

Implementing change in any company can pose challenges and transforming your IT operations needs careful

planning, despite the advantages it brings. We can make your digital transformation easy by managing the planning, distribution and implementation for you, using our many years' experience of managing IT projects in maritime applications.

Cyber security

At the heart of ITLINK, and cutting across every phase and solution, is our knowledge and expertise in cyber security. Not only will we consider cyber protection, detection and resolution as an integral element of your IT services, but we can provide a whole suite of cyber security solutions with our CyberGuard portfolio.

So, you can rest assured that, whatever your business, we can provide the most appropriate cyber security solutions for your needs, and support your compliance with IMO2021 regulations.



Problem

ITLINK Solution

Unknown status of software updates, antivirus protection and backups onboard each vessel

The KeepUp@Sea Monitor is a web-based onshore dashboard, monitoring the status of critical applications across your fleet

A software or hardware problem causes an unexpected outage

Monitor software and hardware across the fleet with our simple centralised, shore-based tool

Outdated software contains security vulnerabilities which allow attackers to enter your network

KeepUp@Sea monitors software on all PCs in your fleet and updates to mitigate known vulnerabilities are swiftly distributed to all vessels

A long distribution and implementation phase for Windows security patches across entire fleet

KeepUp@Sea OS Update Manager will ensure the entire fleet receives patches speedily

A field engineer is sent to execute complex updates manually on board

We manage the roll-out remotely, to eliminate HR, overtime and travel costs

A new regulatory requirement means that new software for reporting must be implemented manually per vessel

KeepUp@Sea facilitates centrally managed, automated deployment from shore across your whole fleet

Marlink is a true partner, who goes Above and Beyond to help you run your remote operations in ever smarter, more profitable and sustainable ways and give you the competitive edge.



Marlink Service Desk

EMEA: +33 (0)1 70 48 98 98

Americas: +1 (310) 616 5594 | +1 855 769 39 59 (toll free)

Asia Pacific: +65 64 29 83 11

Email: servicedesk@marlink.com

Web: www.marlink.com





CYBERGUARD:

Safeguarding
your business in
the Digital Age

Sophisticated cyber security solutions to support your vessel digitalisation

Broadband connectivity at sea and the increasing use of digital systems for everything from navigation to container inspection has led to reduced operational cost and improved efficiency in the shipping industry, but it has also created a new type of threat – cyber risk. While increasing communication provisions have enabled seafarers to use an average of

three devices onboard, insecure private devices may provide a vulnerability in the vessel's IT system. Whether in regard to the protection of data, potential damage and loss, liability, compliance, or the impact on insurance, companies need to be aware and well covered as they seek to balance digital opportunity with new cyber threats.

A holistic approach to security is needed that enables response to new and ever-evolving risks. To support your IMO2021 compliance and help protect you from potential business disruption caused by a cyber attack, Marlink's CyberGuard security portfolio supports your business' digitalisation and enables you to focus on your core business.

CyberGuard Solutions Portfolio - Our Framework

Marlink's vision is an automated and standardised architecture converging IT and Operational Technology (OT). Our communication experts are eager to understand your requirements and consult on the ideal blend of services.

Protecting a Maritime IT & OT network against cyber threats requires a combination of proven tools and processes. This avoids you being in a position of having to pay hackers a ransom, pay a fine to national bodies or suffering from a severe loss of reputation. To secure the entire network, an assessment has to be conducted at each layer and a continuous cyber security process followed.

Our solutions support the functional requirements indicated the IMO2021 regulation regarding cybersecurity. The IMO has indicated that maritime companies must be able to demonstrate that they follow the NIST cyber security framework of Identify, Protect, Detect, Respond and Recover.



Cyber risk management should: IDENTIFY key stakeholders' responsibilities, identify the systems, assets, data and capabilities, which if disrupted, could pose risks to the ship's operations and safety. Establish technology such as a firewall and anti-virus and procedures to PROTECT against a cyber incident and ensure operational continuity. Combine more advanced network-based hardware and software solutions and expertise to DETECT vulnerabilities. All while implementing procedures to RESPOND to and RECOVER from cyber security incidents, using a contingency plan that is assessed and re-evaluated regularly, as well as by giving regular training.

- Vessels not compliant with the IMO 2021 Safety Management System (SMS) regulation risk detention by port control
- The most common motivation of cyber attacks is financial gain (29%), using ransomware, card theft and illicit transfers
- The second most frequent objective is data theft (espionage, intellectual property)
- Vessel operators have reported a 400% increase in cyber attacks since the coronavirus pandemic began
- On average, advanced attackers are on a network for almost three months before being detected
- Business disruption costs of a network outage caused by a cyber attack are likely to exceed \$50k per vessel per day
- Most hull insurances exclude consequences of cyber attacks

Sources: Allianz Safety Shipping Review 2020, FireEye M-Trends 2020

Our comprehensive portfolio of cyber security solutions means whatever your business, we can provide the best-fit, most suited option for your requirements

CyberGuard Highlights

- 24/7 Network protection and support
- IT Infrastructure and software management
- Uncover advanced cyber-attacks explicitly targeting your company
- Advanced, satellite-optimised end-point Protection
- Cyber Competence Expertise
- Smart, integrated, remote communications management

Maintain full control and ensure IT and OT security

Marlink's CyberGuard security solutions portfolio effectively protects your vessel from cyber risk

Your first layer of defence: Sealink Network Security

Marlink's **VPN Interconnect** solution securely connects vessels to shore to keep data transmissions over the public internet private, protected and uncompromised through standard encryption technologies, including IPSec VPN and OpenVPN.

Data Manager helps you to protect your VSAT and MSS connectivity and Digital Solutions through a Global Secure Network Gateway, managed via an intuitive online portal. The solution empowers you to customise your firewall to allow only desired IP traffic and web page categories, while compressing and blocking selected media content.

XChange acts as your integrated communications management platform providing integrated communications and user access management. XChange separates Crew and Corporate networks physically, which secures

your corporate system from threats by crew devices. The multi-stage firewall shields your onboard networks, while its settings may be managed remotely. Via XChange Universal Remote Access (URA), all devices on board can be securely accessed from any PC onshore. Meanwhile, **XChange Cloud** provides the ideal solution for Secure Content Delivery between ships and shore.

All the while, your onboard computers are protected from harmful viruses thanks to **SkyFile® Anti Virus**. The program automatically distributes signature updates to all onboard PCs while compressing them by up to 50%. Through behavioral monitoring, SkyFile Anti Virus will block even new ransomware not yet recognised by the signatures.

Cyber Detection scans your communication traffic for threats

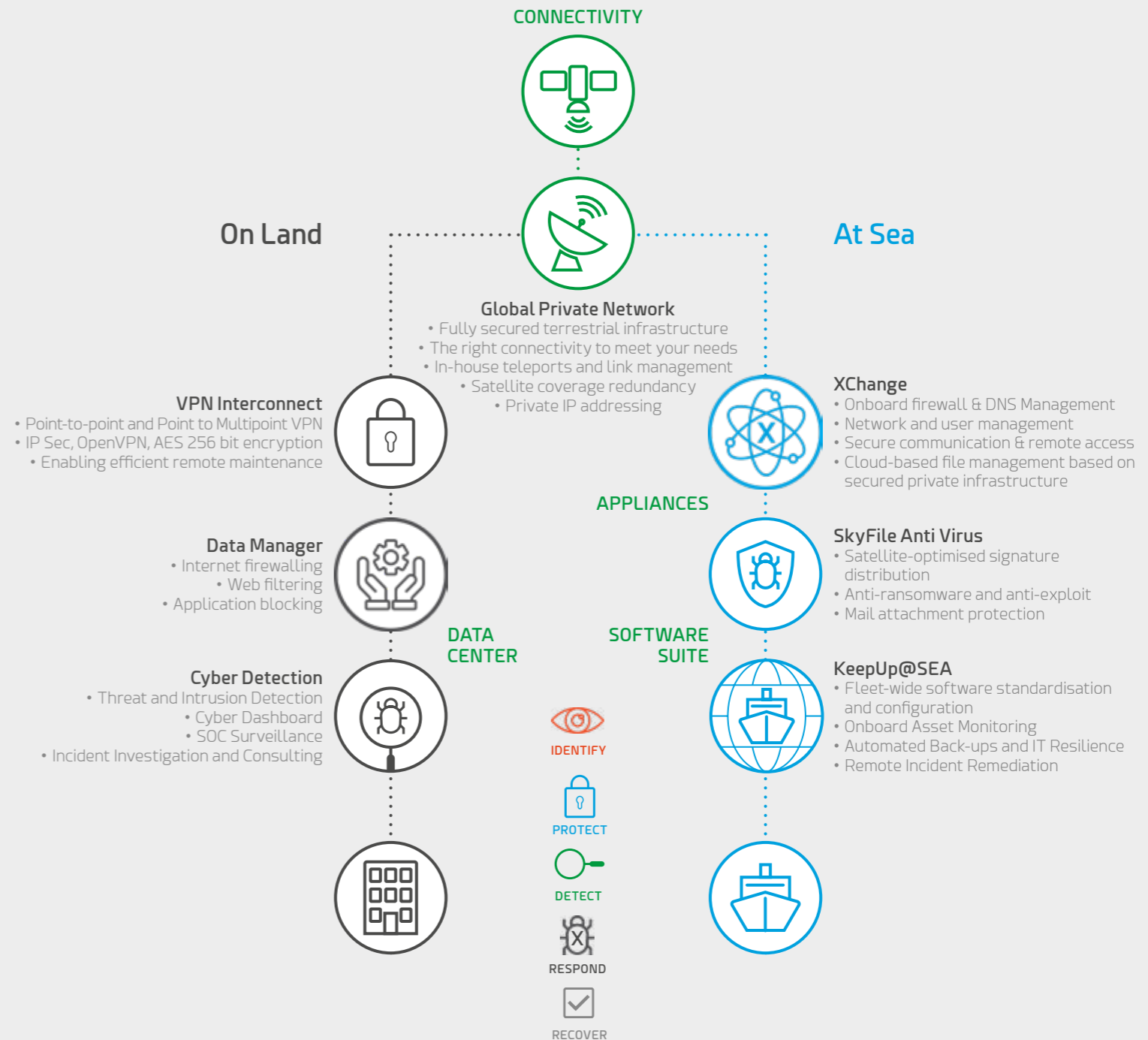
that may be putting your business operations at risk. Threats are viewed via an intuitive online dashboard, while notifications on incidents may be received by email or SMS. In parallel, Marlink's Security Operations Centre (SOC) is hunting for sophisticated attacks designed to stay "under the radar".

As a comprehensive IT Infrastructure and Software Management solution, **KeepUp@SEA** enables you to standardise and automate your entire onboard IT environment across the fleet. The sophisticated IT operational platform has a proven track record of increasing IT network resiliency by improving operational stability, reducing operational costs and efforts to a minimum; all while maintaining the necessary flexibility to handle future growth and changes.

Addressing Cyber Risk - Marlink's CyberGuard Solutions Portfolio

SCOPE	CYBERGUARD SOLUTION	IDENTIFY	PROTECT	DETECT	RESPOND	RECOVER
Data Encryption	VPN Interconnect Secure end-to-end transmission		●			
Fleet-wide	Data Manager Shore based gateway		●		●	
Onboard Network	XChange Centralised communication platform	●	●		●	
Onboard Computers	SkyFile Anti Virus Essential antivirus layer onboard		●	●	●	
Fleet-wide	Cyber Detection Network threat monitoring service		●	●	●	
Onboard IT	KeepUp@SEA Comprehensive IT management	●	●	●	●	●

Your Cyber Security partner for end-to-end protection





Scope: Data Encryption

Scope: Fleet-wide

Scope: Onboard Network

VPN Interconnect



Marlink Virtual Private Network (VPN) solutions offer encrypted communication, protecting from sniffing attacks during data transmission over public internet. Marlink provides a variety of interconnect and secured on demand access solutions such as:

- On Demand VPN to establish a secure remote connection to equipment or computers on-board, typically used for debugging, maintenance and configuration
- Permanent VPN to secure regular transport data traffic to a corporate network

Key Benefits:

- **Flexible security protocols:** flexible integration with multiple options (IPsec, OpenVPN)
- **Remote maintenance:** essential and inexpensive tool for managing onboard networks (XChange Universal Remote Access)
- **Universal Connectivity:** supports Sealink VSAT, Fleet Xpress, FleetBroadband, Iridium OpenPort and Certus and other broadband connections like Marlink's 4G services
- **Saves time and costs:** no need for additional hardware or intervention on board

Data Manager



Data Manager provides a variety of versatile features to make managing data traffic more efficient, including web filtering, enhanced firewall and more.

Managed via a secure and simple online portal, the solution combines complex and powerful IP management capabilities with administrative simplicity for ease of use and secure communications.

Key Benefits:

- **Security:** full security package to protect your terminals from internet attacks
- **Flexibility:** customisable features like firewall, web filtering
- **Universal Connectivity:** supports Sealink VSAT, Fleet Xpress, FleetBroadband, Iridium OpenPort and Certus
- **Simplicity:** no installation required, all standard web browsers supported
- **Concealed Network:** hides your vessel from public Internet and potential cyber attackers

XChange



Marlink's integrated communication management platform, XChange has been expertly designed to empower your connectivity and manage all satellite networks (VSAT and MSS). Among its many features, within the context of IT, OT and Network Security, XChange supports the following:

Segregated LAN Management - The network is split into multiple local networks (LANs) typically separating business from crew communication and avoiding infection caused by private equipment.

User Access Management - XChange acts as a gateway permitting or declining access to applications depending on preset policies and access rules - managing who is able to communicate, through which terminal, at what time and for how long.

Multi-Stage Firewall - XChange includes 2 firewall stages, which filter IP-based data communication based on ports, IP protocols and addresses:

- **Level 1: Terminal level Firewall** - block certain traffic types per terminal (VSAT, MSS)
- **Level 2: User-group Firewall** - determines traffic type per specific users or groups of users
- **Level 3: Combined with Data Manager** - provides a third layer of firewall protection at shore

XChange Cloud - Avoiding exposure to risks by the public internet, XChange Cloud is a Secure Content Delivery infrastructure from Shore to Vessel. This service streamlines and enhances business, logistical and vessel operations by providing a reliable, easy to manage platform to share and automatically synchronise important files of any size or type throughout a fleet.

Key Benefits:

- **Secure:** multi-stage firewalls guard what traffic is routed to and from the vessel
- **Access Control:** set group policies on access rules, time frames and time limits
- **Split networks:** separate and prioritise business critical communication over crew data traffic, thereby reducing cyber threats to operations
- **Full Remote Management:** administer XChange remotely or locally
- **DMZ Content Delivery:** transfer and synchronise files using XChange Cloud

Example Scenarios	
Threat	Solution
A third-party intercepts confidential data sent over the public internet	Marlink provides several satellite optimised end-to-end as well as terrestrial VPN Solutions routing traffic over secure private network lines
A crew member visits undesired / dangerous websites	Data Manager offers a large number of categories simplifying access management to Websites

Example Scenarios	
Threat	Solution
A malware infection spreads from the crew welfare to the operational business network	XChange splits the physical network into multiple LANs ensuring business remains unaffected
A crew member connects an unauthorised device onboard, which may potentially be infected by viruses	XChange can limit access to known pre-entered MAC addresses of approved devices only
An onboard device is accessed remotely via a public, static IP exposing the device to cyber attackers	Instead of using a public IP, URA uses secure authentication and an encrypted connection to remotely access devices



Scope: Onboard Computers

SkyFile Anti Virus



SkyFile® Anti Virus is Marlink's complete anti-virus software package, providing remote onboard PCs with protection against viruses and other external threats. Fully automatic anti-virus updates, notification and version verification ensure you keep your computers and LAN safe even while at sea.

Augmented specifically for satcom connectivity, SkyFile® Anti Virus combats a wide range of threats such as viruses, Trojan horses and other malicious software (malware).

As part of SkyFile® Anti-Virus Premium, ransomware and exploit mitigation enables even more advanced endpoint protection. Eliminate malware, prevent exploit vulnerabilities and get a deep clean on any potentially hidden malware using our premium options.

SkyFile® Anti Virus works seamlessly with one of Marlink's most popular solutions - SkyFile® Mail to deliver daily malware signature updates. With more than 40,000 mariners utilising the service daily, SkyFile® Mail provides reliable and cost-effective email, fax and SMS messaging. Viruses and spam are eliminated based on typical properties (blocked HELO, grey listing, etc.) reducing email threats - the most growing method of cyber intrusion.

Key Benefits:

- **Security:** Reliable detection using Sophos-based engine
- **Ransomware protection:** detects and blocks even brand new ransomware threats
- **Cost efficient:** several compressed low data volume anti-virus updates per day
- **Universal Connectivity:** Supports Sealink VSAT, Fleet Xpress, FleetBroadband, Iridium Open Port

Example Scenarios

Threat	Solution
A crew member connects a malware-infected USB stick to the bridge PC	SkyFile Anti Virus detects and blocks viruses and other malware such as Trojan horses or spyware using a Sophos-based virus detection engine
New ransomware which is not yet detected by the anti-virus signatures is executed on a computer	SkyFile Anti Virus Premium uses behavioural monitoring to detect and block even new, previously unknown ransomware
Fraudulent spam and phishing emails are received onboard which direct crew members to websites stealing confidential information	SkyFile Mail scans mail attachments for infections and moves spam to quarantine before delivery to the vessel

Scope: Fleet-wide

Cyber Detection



Marlink's Cyber Detection service monitors your communications for any threats that may be putting the confidentiality and continuity of your business operations at risk.

Threat Monitoring: the service monitors all network traffic around the clock and provides an overview of threats affecting your vessels through an intuitive, web-based dashboard. Each threat description gives practical counter-measure suggestions to remedy the incident, while notifications on critical threats may be received by email.

The Marlink Security Operations Centre (SOC)

is operated by highly-skilled cyber security experts. Being focused exclusively on maritime satellite communications enables our agents to understand and track how attackers operate and impact shipping companies.

Full visibility: Cyber Detection can uncover a multitude of threats and is continually evolved to keep up with the latest threat landscape, including:

- Malicious applications
- Abusive usage
- Intrusion attempts
- Confirmed intrusions
- Social engineering, etc.

Versatile Package Options: Choose your ideal service package in accordance with your preferences and in-house resources:

- **Entry Package** - full Cyber Dashboard access, with with suggested standard counter-measures following the detection of threats.
- **Business Package** - full Cyber Dashboard access with our Maritime SOC performing managed threat validation, contextual countermeasure suggestions as well as being your point of contact for any questions and investigations.

Key Benefits:

- **Threat detection:** uncovers advanced cyber-attacks targeting your company
- **Maritime SOC Monitoring:** dedicated maritime cyber surveillance expertise
- **Actionable reporting:** clear alert description and suggested counter-measures
- **IT and OT conformity:** detects abusive usage onboard circumventing safeguards
- **Scalable:** subscription model, no investment required

Example Scenarios

Threat	Solution
A targeted attack exploits a unique weakness and stays undetected for a long time	Marlink's Security Operations Center (SOC) is specialised in hunting sophisticated 0-day attacks
A crew member finds a method to access a blocked application or website bypassing all protection solutions	In tune with your IT and OT Policies, the Cyber Dashboard reports any breach even if the onboard protection is inactive
A device has been infected by malware and is wasting bandwidth, slowing down communication onboard	Marlink's Cyber Detection Service reports on infected devices in the Cyber Dashboard

Scope: Onboard IT

KeepUp@SEA



KeepUp@Sea is a unique IT operational platform and solution to standardise, simplify and automate your vessel IT environment, permitting central remote management, IT resilience, fast migration, and effective operation of IT services across the fleet.

The solution combines expert advice and proactive support, with practical tools for system design, installation, logistics, and operational services. The solution can either be adopted to be supported by your internal IT team, or as a fully outsourced service, and comprises the following key modules:

KeepUp@SEA Dashboard: presents fleet-wide health status for critical components on board – verifying that e.g. backup is performed successfully and antivirus protection and application versions are up to date.

KeepUp@SEA Appstore: helps crew locate business applications and trigger automated install, update, repair of single application(s) or full reinstallation of a computer if/when required.

KeepUp@SEA Backup: enables proactive, vessel-optimised protection of business-critical data through automated synchronisation, and complete data recovery in case of an incident.

KeepUp@SEA Disaster Recovery: enables full restoration of entire vessel server to either the same hardware, a dedicated spare server or a designated low computer without requiring a costly and complex dual server design.

Additionally, KeepUp@Sea embeds incident prevention barriers, such as blocking USB storage devices, revoking local admin rights, access control management, and so on; reducing the probability of unwanted or critical situations, and reducing the consequences and damage caused by a cyber incident.

New! KeepUp@Sea Monitor is an entry level package available to meet the needs of customers seeking only basic hardware and software monitoring. Features include a dashboard overview, KPI reporting and software installation status.

Key Benefits:

- **Full configuration control:** centrally managed; track changes, upgrades and the operational status of vessels' IT
- **IT resilience & recovery:** proactive safeguarding of all vulnerable data and automated recovery if needed
- **IT Standardisation:** support in achieving harmonised computer and server configuration across the fleet
- **Reduce onboard workload:** routine tasks are automated and no specialised onboard IT competence is required
- **Proactive support:** from vessel IT experts with the capabilities to promptly resolve challenges

Example Scenarios

Threat	Solution
Outdated software contains security vulnerabilities which allow attackers to enter the network	KeepUp@Sea monitors software on all PCs onboard. Updates to mitigate known vulnerabilities can swiftly be distributed to the fleet
A crew member has modified a PC's configuration for a leisure application without approval of the IT department	KeepUp@Sea will present installation activity via the monitoring tool and support automatic removal of unapproved applications
A malware has modified the IT system and/or deleted important business documents	KeepUp@Sea supports automated Windows OS & applications repair, restoring full endpoint functionality via simple, user-friendly procedures. KeepUp@Sea Backup saves all business-critical data to external device(s) according to agreed data retention policy

Creating a secure culture

Today's shift towards increasing interconnectedness at sea is continuing to enable significant efficiency gains and new capabilities for maritime operations. Running in parallel to this trend is an increase in vulnerability to cyber-attacks within the maritime industry.

Although historically not considered part of the critical infrastructure sector, considering that now more than 90% of global trade is carried by sea, maritime has increasingly become a cyber target, as proven by recent high-profile, damaging cases.

To remain safe and competitive, ship operators should aim to employ not just a short-term incident resolution, but a blend of tools and complementary solutions to cover all aspects of the Protect, Detect and Resolve process.

Marlink's more than 70 years' experience in the maritime sector has been harnessed into designing sophisticated, but straightforward and easy to roll-out solutions to precisely fit this purpose.

The Human Element

In addition to technical cyber security solutions, it is essential to create awareness among staff through regular training and a clearly defined IT system usage policy. Whilst the technology and solutions onboard are essential elements to addressing cyber security, only by combining training, technology, regular reviews of business processes and implementation of the correct policies can a shipping company hope to reduce its cyber risk level.

Protecting Your Business in the Digital Age

- Comprehensive solutions portfolio
- Focus on ongoing protection, detection and threat resolution
- Efficient, quick deployment technology
- Remote management from shore
- Optimisation for satellite environments
- Customer consultants located in regional offices worldwide
- Support available 24/7/365
- Regional, cultural and technical understanding

Are you IMO2021 Compliant?

Applicable to commercial ships with over 500 gross tonnage, the IMO resolution (MSC 428, 98) confirmed all shipping companies need to have cyber security in their safety management system. Flag states are encouraged to check this in the first annual audit after January 2021.

Our solutions support all the functional elements of the IMO2021 regulation regarding cyber security. Contact us for a free consultation.

Marlink is a true partner, who goes Above and Beyond to help you run your remote operations in ever smarter, more profitable and sustainable ways and give you the competitive edge.

1000+ employees
in 23 countries



Unique solutions portfolio
IT & OT and Cyber services



Global customer support
365/24 service

Strong partnerships
with all satellite network
operators and hardware partners



Managed services
fully operated for
our customers

**Future-ready
network of networks**
for secure and
resilient connectivity



24/7/365



7000+ VSAT
leading edge multi-band
connectivity

Global service network
1250+ in-country service points

Marlink Service Desk

EMEA: +33 (0)1 70 48 98 98

Americas: +1 (310) 616 5594 | +1 855 769 39 59 (toll free)

Asia Pacific: +65 64 29 83 11

Email: servicedesk@marlink.com

Web: www.marlink.com

