MOL Group Digital Transformation Initiatives

²⁰²⁵ Mitsui O.S.K. Lines Group



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1. Positioning of Digital Transformation in Management Plan

Positioning of Digital Transformation in the Management Plan (BLUE ACTION 2035)

As part of the "Initiatives to Sustainability Issues" in the management plan BLUE ACTION 2035, MOL will promote "Digital Transformation (DX)".

Vision for 2035 **Group Vision** Core KPI \mathbf{C} Long-term **Changes in Business Portfolio Profit Projection and Financial Plan and Rebalancing Plan** External **Reform toward 2035** Shareholder Return Policy **Investment Plan** Environment **Initiatives to Sustainability Issues 3** Core Strategies (Materiality) Our Group's Strength \bigcirc Ø சு Digital Transformation Human Capital Portfolio Safety Region Environment Governance (DX)

Overall BLUE ACTION 2035

More detailed action plan "MOL Sustainability Plan" (MSP)

https://www.mol.co.jp/ir/management/plan/pdf/blueaction2035.pdf

2. Organization

Organization

The three divisions of Headquarters of Technology and Digital Transformation will take the lead in promoting "Digital Transformation" within the MOL Group.



Organization Chart

Co-Creation with Other Companies

* MOLIS : MOL Information Systems, Ltd., MOL-IT : MOL Information Technology India Pvt. Ltd.

Objective of HQTDX

Our commitment to "Innovation," one of our group's sustainability challenges (materiality), involves actively adopting advanced technologies. This initiative aims to bring innovation to our business, contributing to the resolution of various societal challenges related to "providing added value through safe transportation and social infrastructure business" and "conserving the marine and global environment."

We have consolidated the organizations responsible for this initiative under the newly formed organization. We will accelerate the pace of transformation by sharing the insights nurtured by each division and working towards the realization of the "DX Vision." https://www.mol.co.jp/pr/2023/img/23139.pdf

3. Strategy Roadmap and Performance Indicators

Strategy Roadmap and Performance Indicators



MOL promotes digitalization by 2025, and promote transformation aimed at enhancing corporate value from 2026

※「環境」「安全」のKPIは、DXの取組み以外も含めて達成するKPI

4. Overall Digital Transformation Initiatives

MOL Group DX Vision

MOL promote transformation by utilizing digital technology and data, considering perspectives such as "people," "safety," "society," and "new frontier" to address sustainability issues.

MOL Group DX Vision

Towards the Blue Ocean, We Transform

Intelligence and technologies unlock the potential of the sea. Inspiring the diverse talents, we co-create new values. Expertise and borderless creativity lead us towards the future.

The blue ocean is new frontier. Towards the blue ocean, we will move ahead together with digital technology.

Thoughts behind the DX Vision

Perspective#1 [People] MOL Group purs people first to

- make the company better
- Enhance MOL Group's expertise with the power of technology to respond to changes in society.

Perspectives#2 [Safety]

Contributes to trusts by improving the safety level

- Aspire the higher safety level as the safety is an universal and our primary value.
- Establish a Group-wide safety

culture.

Perspectives#3 [Social] Eliminate all gaps

 Contribute to the creation of new values by eliminating the gaps and the borders between companies, organizations, and people.

Perspective#4 [New frontier]

Forge a new frontier without being bound by current assumptions

- Pursue the best quality service for existing customers and businesses.
- Pioneer the value chain in new industries and growth areas.

https://www.mol.co.jp/sustainability/innovation/dx/

Direction of MOL Group's DX Initiatives

To realize BLUE ACTION 2035, MOL will promote two types of DX: "Business Transformation with Digital" and "Culture Transformation with Digital."

DX Vision and DX Action 1.1

Positioning of DX in Management Plan (BLUE ACTION 2035)





Initiatives : 1Data [Safety]

 Data Transformation

Business

with Digital

SOSC (Safe Operation Support Center)

MOL established SOSC with the following objectives: to provide weather and various information for each sea area not only to the vessel but also to all parties involved with the vessel in an appropriate and timely manner, to support the vessel and related parties until they can take appropriate actions, and to provide maximum shore-based support when the vessel is in a critical situation.



SOSC (March 2023)

Value

- Monitoring the movements of our operated vessels to prevent maritime accidents caused by weather and sea conditions. \checkmark
- Providing 24/7 support and help desk functions to ensure safe navigation. \checkmark
- Enhancing safe navigation and crisis management by utilizing various monitoring systems. \checkmark

*Typical example of a monitoring system

■ Sustainable Platform with Intellectual Resource and Innovative Technology (SPIRIT)

✓ Monitoring the location and weather conditions of our operated vessels around the world. It is possible to monitor movements while comprehensively assessing risks, including not only weather and sea conditions but also pirates, exercises, high risk areas (HRA), and other information while comprehensively assessing risks

Fleet Intelligence Navigational Risk Monitoring

✓ Fleet Intelligence Navigational Risk Monitoring is a grounding risk monitoring system that combines a number of data sources, such as ship position, water depth, and chart information, to alert SOSC operators when a vessel is judged to be entering an area with a high risk of grounding.

https://www.mol.co.jp/pr/2023/23029.html https://www.mol.co.jp/sustainability/safety/facility/ https://www.mol.co.ip/pr/2022/ima/22008.pdf

🗕 🚺 Data Transformation

DarWIN Project

DarWIN project aims to improve fuel efficiency by 5% in fiscal year 2025 compared to 2019. This will be achieved through the pursuit of optimal navigation, active investment in energy-saving technologies and equipment, and ensuring steady progress through collaboration with other companies.

DarWIN **Degital Approach to Reduce GHG With Integrated Network**

Inspired by Darwin's theory of evolution, our initiative is named to signify our commitment to continuous evolution and adaptation to rapidly changing environments.

FOCUS (Vessel Data Platform)

Establish a platform for collecting and managing maritime transportation data from IoT and other sources, and develop applications that utilize this data.



Verification of fuel-saving effects.



Business

with Digital

Value

Improving fuel efficiency and reducing GHG emissions through efficient operations that lead to optimal navigation.

https://www.mol.co.jp/sustainability/environment/vision/pdf/vision22/mol group environmental vision 2.2.pdf (pp.24-26)

Initiatives : 1 Data [Environment]



🗕 🚺 Data

Business

(Reference) Overview of FOCUS

Business Transformation with Digital

Developing various applications to analyze and utilize the navigation and engine data accumulated in the FOCUS system, aiming to ensure safe navigation and reduce environmental impact.

Vessel Data platform "FOCUS"

To ensure safe navigation and reduce environmental impact, we will establish a data platform to collect and manage detailed navigation and engine data from operating vessels in real-world sea areas for advanced operational monitoring and propulsion performance analysis.



https://www.mol.co.jp/sustainability/innovation/case/safety/index.html?id=ancFOCUS

Application related to FOCUS

Establishing a platform for collecting and managing maritime transportation data from IoT and other sources, and developing applications that utilize this data.



Initiatives : 2 Business process 1/2

Business Transformation with Digital

2 Business process

Lighthouse (Contribution to customer supply chain)

We provide a service that allows stakeholders such as shippers and operators to safely and centrally share and confirm various information related to maritime transportation, including cargo and contract information, vessel schedules, and weather and sea conditions, in real-time and in a customized format for each party.





Voyage information (vessel schedules, cargo information, weather, etc.) can now be viewed on a single platform

Initiatives : 2 Business process 2/2



• 2 Business process

Business

Initiatives : 3Business Management

Business Transformation with Digital With Digital Business Management Onboard routine tasks

🛛 🖵 🕒 Shore-Vessel Communica

By visualizing and utilizing global financial and non-financial information, we achieve real-time management.





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Initiatives : ④Onboard routine tasks

Improvement of crew work efficiency and optimization of onboard system environment.

Identification of issues related to routine shipboard operations and clarification of effective measures and direction for resolving these issues from both operational and systems perspectives



✓ Preventing omissions and variations in work through 'Automation of information acquisition and calculation'

✓ Simplifying data linkage, optimizing system management, and reducing costs through 'Standardization of onboard IT environment'

✓ Shortening the development-to-introduction lead time for new functions and systems through 'Building a common platform'

Value

Business Transformation with Digital

Onboard routine tasks

Business Transformation

with Digital

Data
Business process
Business Management
Onboard routine tasks
Shore-Vessel Communication

Low-orbit satellite expansion

By using Starlink* onboard, systems and data can be shared in real-time between the ship and the shore, enhancing safe navigation and improving the well-being of the crew in their onboard life. Compared to existing communication equipment, an improvement in communication speed of up to 50 times has been confirmed.

Full-scale introduction to our managed ocean-going vessels

A trial was conducted to improve the onboard communication environment, and a significant improvement in crew well-being was confirmed. Therefore, fullscale introduction will begin in October 2023. All vessels managed by our group, except those where introduction is difficult due to ship registration and other reasons, are scheduled to be equipped.



Installation of Starlink (youtube)



Trial vessels: From left, ferry "Sunflower Sapporo" and coastal RORO ship "Musashi Maru".

Future Illustration Project

To improve the well-being of crew members during their time on board, the onboard communication environment has been identified as a challenge. Through collaboration with Marlink AS (a communication service provider) and SpaceX (a satellite communication service), we are addressing issues related to the utilization of LEO (low Earth orbit) network technology and sharing the insights gained with the entire industry. <u>White paper</u> (Summarizing the challenges of the existing onboard communication environment, an overview of LEO, and use cases is available (LinkedIn account required).

* Starlink is a satellite communication service operated by SpaceX that uses low Earth orbit satellites to provide high-speed, low-latency connectivity.

Initiatives : 6 Global Human Capital Management, 7 Crew's QOL

6 Global Human Capital Management ⑦Crew's OOL To enhance global talent management, we will aggregate all global talent By speeding up onboard communication, we will provide a living environment where crew members can always connect with someone, information, visualize skill information, and place the right talent with expertise beyond organizational and regional boundaries. thereby improving crew engagement. **Onboard Cashless Project MOL Group Key Positions Human Capital Database** (MGKP) Optimum ✓ Introduction of cashless payments onboard Groupwide Important positions across the By promoting electronic payments onboard, we aim to reduce the risks and allocation Group are designated as MGKP. labor associated with handling cash manually, as well as reduce fees related of human The job descriptions and to cash arrangements for ships. resources requirements for human capital is achieved are clarified. Introduction of international remittance services for the maritime • Information ofhuman industrv General Managers Headquaters capital is collected from We will introduce MarTrust, an international remittance service for Group companies globally seafarers' salaries, for all crew members. This will allow salaries to be sent Group President and some and centrally managed Companies in via a mobile app and enable online shopping, eliminating the need for cash high-level officers Candidates for Group Japan payments onboard. This will improve the convenience for crew members managers are selected and -Head of Corporate and enhance the efficiency of financial management tasks for captains. The systematically cultivated at Functions & Head of Maior Posts introduction will be promoted so that all eligible crew members can use it Marketing in each an early stage outside Japan region Skill and position by the fiscal year 2024. -Presidents information is defined -New posts associated with business expansion Contributed to increasing crew's engagement

Initiatives : ®Nurturing new values in employees

Culture Transformation with Digital With Digital G Global Human Capital Management Crew's QOL S Nurturing new values in employees



8Nurturing new values in employees

We have defined the skills necessary for driving transformation and prepared a three-level curriculum, starting the training in the fiscal year 2022. Each department, led by change leaders, promotes transformation from the bottom up, driving transformation across the entire group."



https://www.mol.co.jp/sustainability/innovation/dx/img/MOL_Group_DX_Vision.pdf (pp.8-9)

5. ICT Infrastructure Development

ICT Infrastructure Development (1/2)

MOL promotes the development of ICT environment to realize DX



ICT Infrastructure Development (2/2)

Global Digital Platform

By integrating the ICT environment across the entire MOL Group, we aim to enhance collaboration, productivity, governance, and security, thereby advancing the business environment

As One MOL Group



6. Security Measures

Security Measures

Continue to strengthen our security system, including enhancing security measures for vessels.

Organizational and human measures

Information security system

To address the increasingly serious threats to information security, we are establishing a system to ensure information security.



<u>System</u>

https://www.mol.co.jp/sustainability/governance/security/

Cyber Security Incident Response Team (CSIRT)

In the event of an emergency, a "Major Incident Response Headquarters" is established and the CSIRT responds as a cybersecurity response team.

- \checkmark Investigations into malicious email, malware, and cyber threats
- ✓ Awareness-raising activities based on lessons learned from security incidents
- ✓ Collecting up-to-date information on daily cyber risks and the latest security trends in cooperation with external organizations such as the Ministry of Land, Infrastructure, Transport and Tourism

 \Rightarrow Reduce the risk of cyber-attacks at headquarters and at users and domestic and international group companies

Information Security Training

All employees

Annual e-Learning and targeted email training to raise awareness of security threats

Management (President, CDIO, General Manager in charge of response teams, etc.)

Conduct annual incident response training under the scenario of a major ICT incident caused by a cyber attack and the establishment of a task force.

Ransomware Countermeasures

Technical measures

System Protection



Protection against malware infiltration into the company network and enhanced management and monitoring of network and telecommunications equipment with a view to telecommuting

Emergency response In preparation for system failures, emerge

In preparation for system failures, emergency communication methods and systems are in place, and system recovery drills are regularly conducted by the department in charge.

Investigation and Analysis



We obtain the latest information on ransomware damage, conduct periodic surveys and analysis, and review various countermeasures as necessary.

World's first IACS Basic Design Certification

MOL has obtained the world's first basic design approval for compliance with the unified regulations E26 'Cyber resilience of ships' issued by the International Association of Classification Societies (IACS) for the basic design of a ship network with cybersecurity measures developed and demonstrated by our company

https://www.mol.co.jp/pr/2023/23012.html

