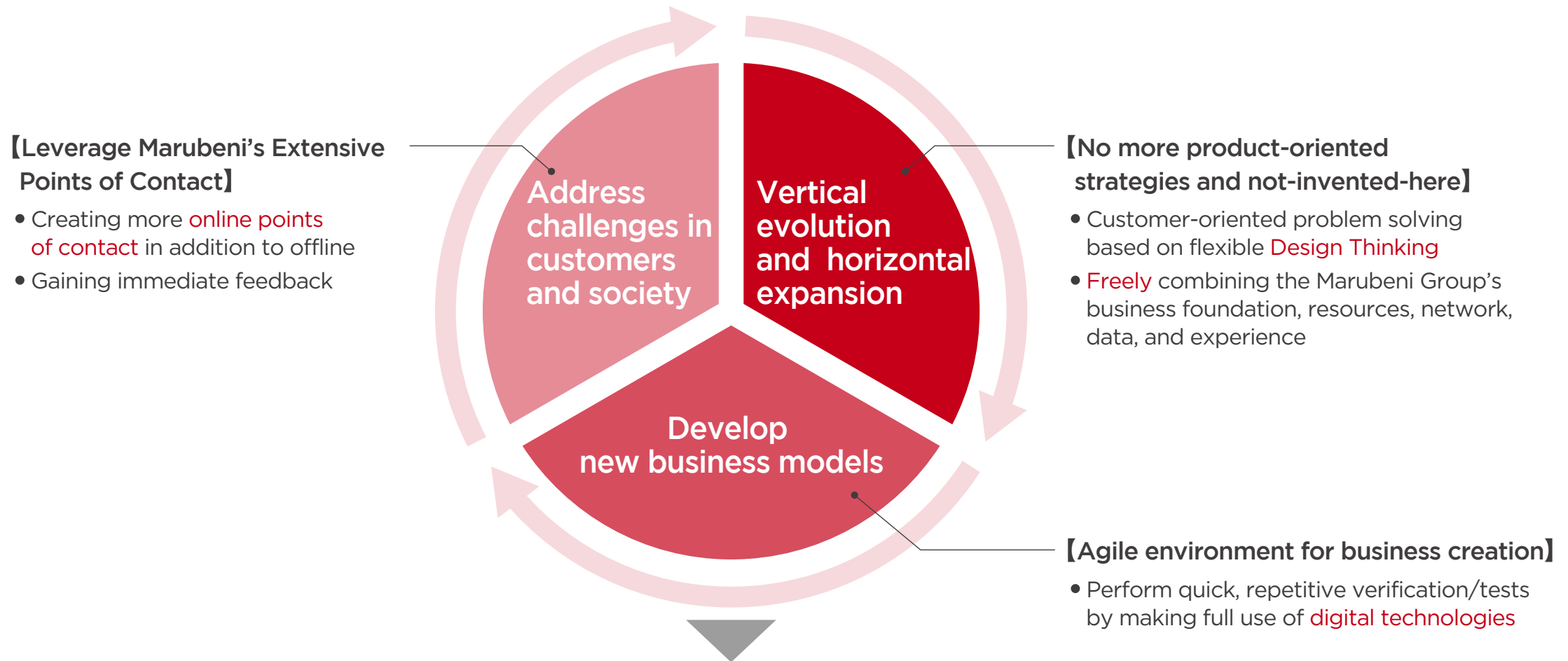# GC2021 DX

Global crossvalue platform

Marubeni

contents

Marubeni

About the Marubeni Group's DX

To enhance and accelerate the value creation cycle of Marubeni's **"Global crossvalue platform*"** by utilizing digital technologies and ensure long-term growth of Marubeni's corporate value toward 2030.

【Leverage Marubeni's Extensive Points of Contact】
- Creating more online points of contact in addition to offline
- Gaining immediate feedback

Address challenges in customers and society

Vertical evolution and horizontal expansion

Develop new business models

【No more product-oriented strategies and not-invented-here】
- Customer-oriented problem solving based on flexible Design Thinking
- Freely combining the Marubeni Group's business foundation, resources, network, data, and experience

【Agile environment for business creation】
- Perform quick, repetitive verification/tests by making full use of digital technologies

Value Creation / Improve Corporate Value

*Marubeni Group's future vision. See our Medium-Term Management Strategy GC2021 for details.   https://www.marubeni.com/en/company/plan/pdf/gc2021_en.pdf

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History of Marubeni's Journey to a DX-Ready Company »

History of Marubeni's Journey to a DX-Ready Company

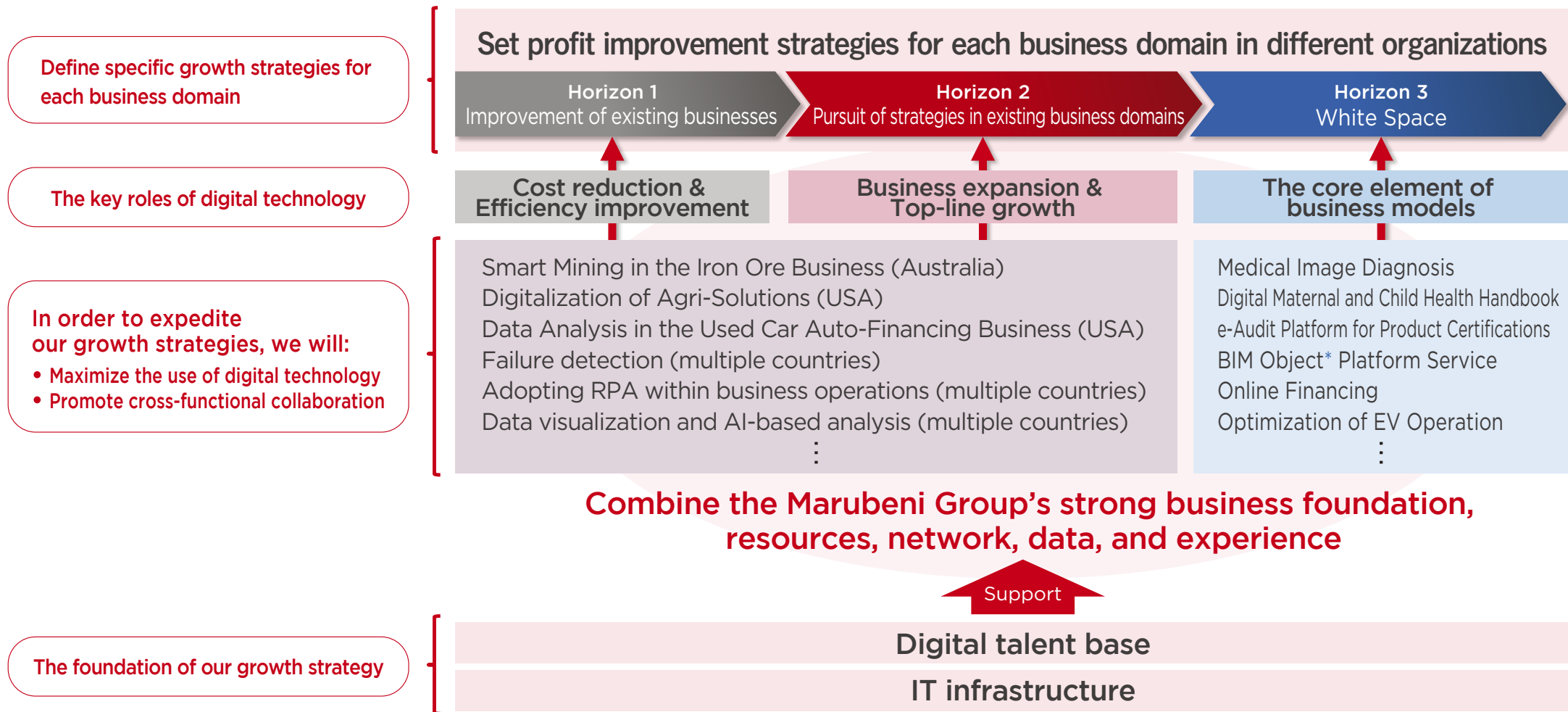|	Major Initiative	Objective
2017	• Established "IoT・Big Data Strategy Dept."	• Acknowledged an emergent need to adapt to change to avoid intense competition and loss of business opportunities • Recognized new opportunities for digital technology-led business creation
2018	• Created the new position of CDIO (Chief Digital Innovation Officer) • Established "Digital Innovation Dept." • Introduced Bizcon / Marubeni Academia / The 15% Rule[1]	• Enhance and accelerate transformation through Digitalization and Innovation • Introduced new initiatives that operate from the standpoints of "Human Capital Development", "Mechanisms", and "Time-related Measures".
2019	• Officially announced the Medium-Term Management Strategy GC2021 • Established "Next Generation Business Development Division"	• Defined the growth horizons[2] and encouraged all business divisions to pursue White Space[3] • Acknowledged the importance of new business creation based from a long-term perspective • Segmented the organization into Business section and Corporate Staff section and clarified their roles
2020	• Introduced the Crossvalue Coin and Crosshelp Program[4]	• Promoted horizontal, cross-functional collaboration • Established a practical reward program for cross-functional initiatives
2021	• Completion of the new office building (scheduled) • Officially introduce our new HR system[5]	• Create an environment for easier cross-functional collaboration • Promote reform based on the five focal points: "performance-oriented", "challenge", "hands-on", "ownership", and "open community"

[1, 4, 5] See P23-26 for details. [2] See our Medium-Term Management Strategy GC2021 for details. [3] Growth domains or new business models that Marubeni has not yet focused on.

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The Marubeni Group's DX Strategy

(1)Develop and enhance digital talent base and streamline IT infrastructure

(2)Maximize the use of digital technologies to drive our growth strategies.

→ Combine Marubeni Group's solid business foundation, resources, network, data, and experience to accelerate "vertical evolution" and "horizontal expansion"

Define specific growth strategies for each business domain	Set profit improvement strategies for each business domain in different organizations		
	Horizon 1 Improvement of existing businesses	**Horizon 2** Pursuit of strategies in existing business domains	**Horizon 3** White Space
The key roles of digital technology	**Cost reduction & Efficiency improvement**	**Business expansion & Top-line growth**	**The core element of business models**
In order to expedite our growth strategies, we will: • Maximize the use of digital technology • Promote cross-functional collaboration	Smart Mining in the Iron Ore Business (Australia) Digitalization of Agri-Solutions (USA) Data Analysis in the Used Car Auto-Financing Business (USA) Failure detection (multiple countries) Adopting RPA within business operations (multiple countries) Data visualization and AI-based analysis (multiple countries) ⋮		Medical Image Diagnosis Digital Maternal and Child Health Handbook e-Audit Platform for Product Certifications BIM Object* Platform Service Online Financing Optimization of EV Operation ⋮

Combine the Marubeni Group's strong business foundation, resources, network, data, and experience

Support

| The foundation of our growth strategy	**Digital talent base**
	IT infrastructure

*Digital information that represents the shape, color, cost, and other characteristics of furniture, interior and exterior work, and other construction related materials that will be incorporated into the BIM system, a 3D-visualization tool for construction simulation.

Our Fundamental Measures to Drive DX Strategies

Digital Talent Base

Most of the Marubeni Group's workforce specialize in "Business Knowledge" skills; they are well-versed in their business industry and have the skill sets to develop and implement their various strategies.
As a further step, Marubeni will focus on developing digital talents who can formulate a digital-oriented growth strategy and lead digital transformation with Data Science and Design Thinking skill sets.

〈Present〉 Business Knowledge / Data Science / Design Thinking

〈Future〉 Business Knowledge / Data Science / Design Thinking
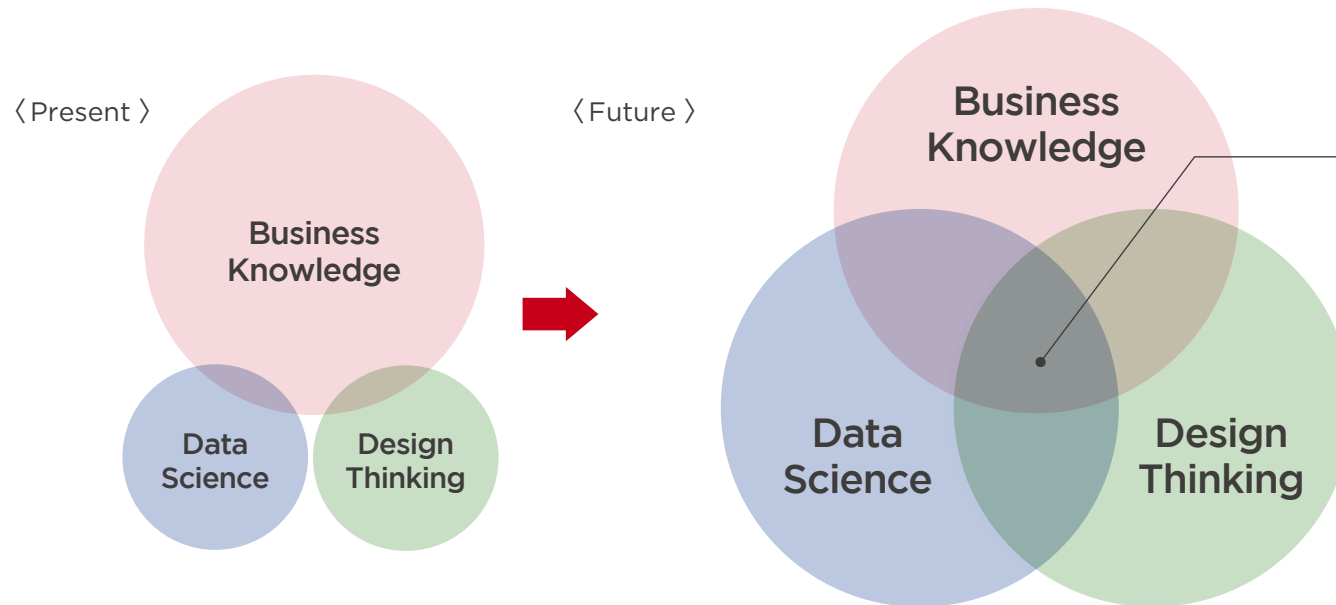
【Our Ideal Digital Talent Profile】

（Develop 200 digitally talented individuals by 2023 in the Marubeni Headquarters）

- Group companies that are already developing digital talents will accelerate their efforts.

【 Business Knowledge 】

- The ability to understand global trends and lead business transformation
- Experience and knowledge acquired in actual business
- Management skills to drive projects forward

➡ **Marubeni Academia***
& Digital skills training programs

【 Data Science 】

- Specialized skills in data analysis and/or development, modification and evaluation of algorithms and models
- In-house prototyping and agile business development with feedback-based real time modifications

➡ **Digi-Challenge* & Digital Community***

【 Design Thinking 】

- Identify issues based on committed, customer-oriented mindset
- Flexible thinking and new value creation that are not constrained by traditional mindsets and existing frameworks
- The ability to perform hypothesis verification based on data analysis and have a mindset for flexible business transitions

➡ **Business Model Canvas* & Bizcon***

*See P23-24 for details of each initiative

Marubeni

GC2021 》 DX
Global crossvalue platform

IT Infrastructure

Provide safe, robust, convenient, and flexible IT infrastructure to support Marubeni Group's DX

Develop advanced IT systems in line with individual business characteristics

Work Style and Communication Reform

Work anywhere, anytime, and collaborate with anyone

- Adopt e-reports and new WorkFlow to go paperless and drive operational reform
- Provide telework system for our Group employees through VDI[2]
- Ensure efficient remote communication through Zoom/Teams

Enhance information security measures and develop new IT infrastructure

Cloud migration of all security features and on-premises servers[1]

- Conduct Information Security Assessment across the Group
- Shift from on-premises file servers to BOX
- Cloud migration of the entire IT infrastructure including security features
- Implementation of EDR/SOC[3] across the Group

Build and deploy next generation ERP system

Renovation of ERP system based on our "IT Strategy Roadmap"

- Implementation of SAP S/4 HANA[4] for a new non-consolidated accounting system
- Build and deploy a Group standard ERP system
- Reconfiguration of sales management system for each business division
- Develop and manage a new data utilization platform

*1 **On-premises server** : Physical on-site servers procured by Marubeni.
*2 **VDI** : Virtual Desktop Infrastructure, or VDI, is an IT infrastructure that allows the employees to securely access corporate information assets without storing sensitive data on endpoints, including personal laptops.
*3 **EDR/SOC** : EDR (Endpoint Detection & Response) can detect and respond to security attacks and cyber threats across endpoints including users' computers, and SOC (Security Operation Center) provides security monitoring service.
*4 **SAP S/4 HANA** : The latest SAP ERP system that enables real-time data processing.

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Examples of Marubeni Group DX

Driving Marubeni's Growth Strategy by Utilizing Digital Technologies

Case① ：Australia ｜ Roy Hill Iron Ore Project

# Iron Ore Business ✕ Remote Operation & Automation ✕ Digital Twin*

Continuous mine site evolution with state-of the-art technologies

▶ Roy Hill iron ore project proactively applies cutting-edge technologies to seamlessly streamline their operation process, from iron ore exploration/mining to shipping from ports, and to improve their competitiveness.

▶ The operation center in Perth provides real-time remote management of the entire operation process, from iron ore mining to ship loading. (located 1,300 km away from the mine site)

▶ An unmanned, fully autonomous haulage system will soon be deployed for heavy dump trucks. This add-on system provides retrofit capabilities to automate dump trucks of different manufacturers. Through collaboration with a U.S. startup company, 78 trucks will be automated in a phased approach by 2022.

▶ Digital Twin technologies are adopted to perform estimation of grades of iron ore deposits and enable optimum-grade iron ore production and shipment. This strategical technology will further be used for smart maintenance with failure prediction capability.

＊A reproduction in the digital world of what actually exists in the real world.

Marubeni

Transforming into a constant value creating business through aggressive goal setting in addition to developing and executing a long-term plan

* OBK: Ore Body Knowledge
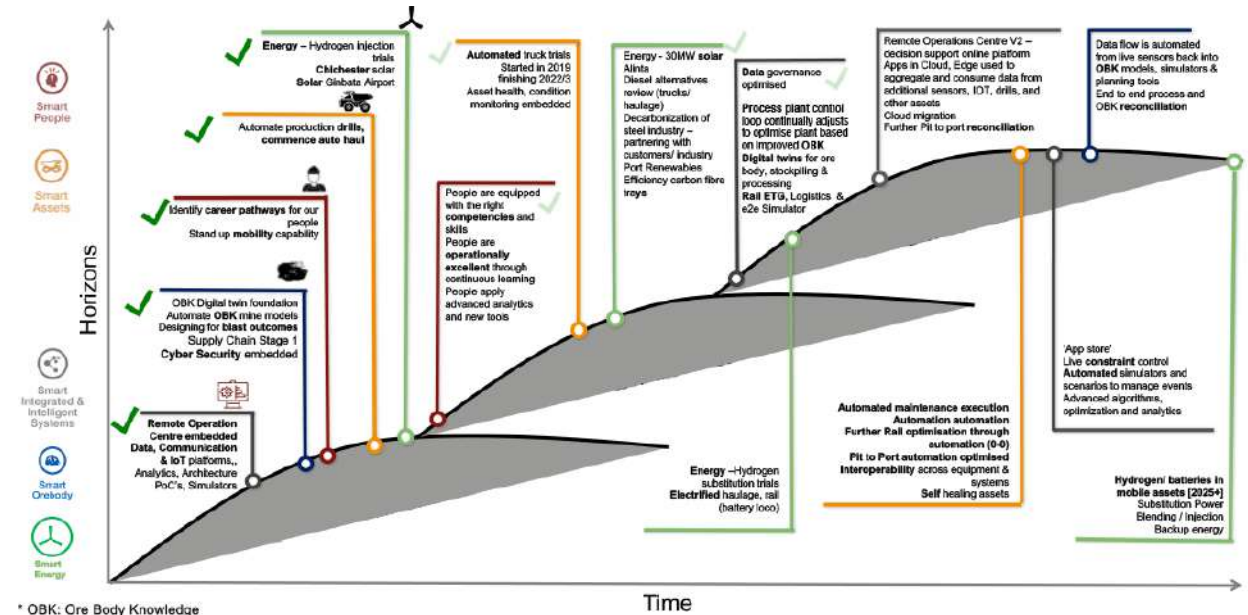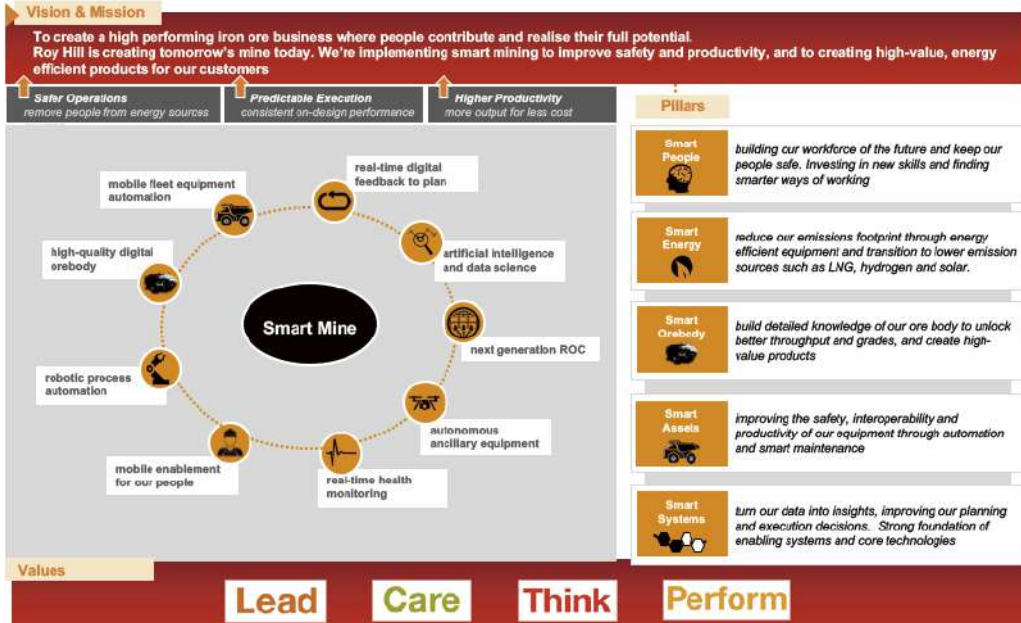
Aggressive goal setting

Smart People — Improve safety, productivity, and innovation skills of the workforce through remotely controlled, self-driving heavy equipment, etc.

Smart Energy — Use advanced IT technologies to improve fuel efficiency and reduce greenhouse gas emissions.

Smart Orebody — Gain insight on iron ore deposits by utilizing AI and/or Digital Twin technology to deliver optimum-grade iron ore and develop a suitable mining plan.

Smart Assets — Improve the safety, efficiency and productivity of equipment through automation and smart maintenance.

Smart Systems — Deploy core technology and an integrated system that enables big data analysis to improve and accelerate plan development and implementation.

Develop a long-term plan

- Created a digital technology implementation plan to successfully transition to Smart Mining (7+ years)
- Scalable fundamental technologies and easier deployments will be prioritized, while others will be deployed successively. The last phase will be a highly advanced procedure.
- Accept agile adjustment to the plan

Expanding value creation

- Scale out applicable, effective initiatives to expand monetization opportunities.

14

Marubeni

Case② : Chile | Copper Mining Business in Chile with Antofagasta

Copper Mining Business ✕ Expertise in the Mining Business ✕ Automation Technology

## Utilize our know-how and state-of-the-art technologies to evolve mining operations
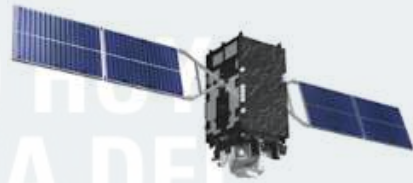
▶For our copper mining business in Chile with Antofagasta Plc., we have been working on the automation of heavy trucks at Centinela copper mine and drilling machines at Los Pelambres copper mine to improve safety of the mine site, enhance productivity by eliminating human error risks, and to strengthen competitiveness.

▶A remote operation center is planned to open in the city of Antafagasta, Chile, a port city approximately 180 km away from the mine site, to remotely monitor and control the business operation process of Centinela copper mine, from the mining pit to the port of loading. Our initiative to digitalize mining operations will enable real-time visualization of operation data, database unification, and accelerate the decision-making process for overall optimization through effective organizational structure reform, ultimately enhancing mining operational efficiency.

▶We are working in close cooperation with other relevant teams, including the Construction & Mining Equipment Dept., to achieve successful DX in the copper mining business, based on the insight gained from the deployment cases at our other mine sites.

CENTINELA

Marubeni

Case③ : USA | Digitalization of Agri-Solutions at Helena

Agriculture ✕ Customer-Oriented ✕ Data Analytics

Fully committed to our customers ― Providing data-empowered Agri-Solutions
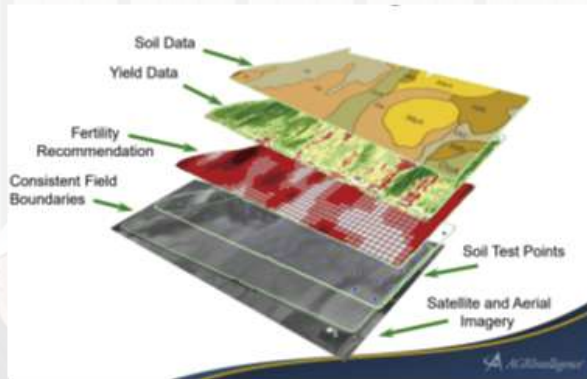
▶Helena Agri-Enterprises, LLC ("Helena") drives sales of agricultural materials, including fertilizers, agrochemicals, and seeds, by meeting farmers' needs and offering solutions to their problems in the U.S.—one of the world's largest agricultural countries.

▶To ensure customer-oriented service, Helena has dedicated over 15 years to develop a unique practical service specifically for farmers called, "AGRIntelligence". This agronomy focused solution is capable of providing visual insights on the quality of soil and crops through digital technologies, based on field-collected data including soil analysis, crop growth progress, and crop yield.

▶Based on these insights, Helena provides consulting services to assist farmers in selecting the best-suited agricultural materials, as well as determining the optimal amount and time period of application. By making full use of its expertise in agronomy, Helena aims to provide farmers with meaningful analysis that directly impacts revenue growth and efficiency, along with reliable recommendations for agricultural materials, to deliver real value to their customers and build long-lasting partner relationships.

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Case④ ：USA ｜ Data Analysis in Used Car Auto-Financing Business at Westlake

Automotive Business ✕ Finance Business ✕ Data Analytics

Providing prompt solutions to clients' problems through an in-house, big data-based prediction system

▶ Westlake Services, LLC, the eighth largest used car auto loan company in the U.S., provides approximately 400 thousand loans per year. The company leverages its network of nearly 40 thousand car dealers in the U.S., as well as major financial institutions, and offers 24/7 customer support without any manual intervention. This allows the users to receive the screening result and loan details within seconds of submitting their request and also enables the company to process about 7 million loan applications per year.

▶ The company's automated loan processing system was built by the company's in-house team of data scientists and analysts, which successfully developed a sophisticated collection model based on the data collected from millions of past applications and external sources. The company is actively working on the automation of its business operation in every step of the loan process, from customer acquisition to screening, loan activation, collection, and car disposal.

▶ Launch of an online vehicle/loan searching platform developed by Westlake-affiliated technology companies and strategic partnerships with major online platforms will be the next step to accelerate DX at Westlake.

Marubeni

Case⑤ : Japan | Autonomous Driving Solution for Airports by AiRO

Aviation Business ╳ Cutting-Edge Company in Autonomous Driving Technology ╳ AI

# Addressing labor shortages and responding to the need for a contact-free service with AI technologies

▶ Marubeni have established AiRO Inc. with ZMP Inc. to develop and deliver autonomous driving solutions for airports by combining Marubeni's expertise in the ground-handling and aviation businesses with ZMP's development capability and its proven technology for autonomous driving solutions.

▶ As Japan prepares for an expected influx of foreign tourists, the ground-handling industry is facing a severe labor shortages due to the shrinking working-age population. It is also assumed that there will be an increased need for contact-free, fully automated operation after the COVID-19 threat has passed.

▶ AiRO has already completed the verification phase of autonomous driving shuttle buses at Chubu Centrair International Airport and baggage towing tractors at Narita International Airport. In order to provide solutions to various issues, the company will continue to explore opportunities to commercialize and deliver autonomous solutions including self-driving vehicles and other related services to the market.

Marubeni

Case⑥：USA | The Failure Detection Technology of Wrench and Acellent Technologies

Aircrafts & Mechanical Equipment Business ✕ Startup Company ✕ AI

Working with a startup to achieve a secure and reliable social environment
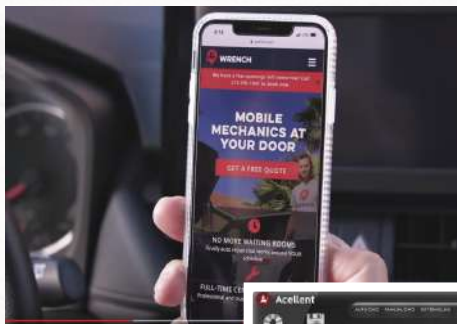
▶A US-based company, Wrench, Inc., has successfully built an AI platform by analyzing a large volume of machine repair data and now provides AI-empowered mobile mechanic* services. In this new platform-based business model, customers no longer need to bring their vehicles to a repair shop since they can check the repair details along with the estimated cost in advance and even make a request for repair.

▶Acellent Technologies, Inc., is a US company engaged in design-ing, developing, and sales of structural health monitoring systems. Although aircrafts and mechanical equipment were considered incompatible with this technology, the company was able to implement failure detection and predictive maintenance in both of these business areas. Marubeni aims to apply this technology to its aircraft and mechanical equipment businesses, both of which are areas in which Marubeni already has significant expertise.

▶Regarding failure detection at facilities owned by Marubeni, we have developed an in-house, AI algorithm-based model and is working on deploying it to various businesses.

＊Provides on-site auto maintenance and repair service at the customers' preferred time and location.

Marubeni

Case⑦：Indonesia | Digital Maternal and Child Health Handbook Service

Local Expertise✕Innovation Base✕Digital Marketing

Support Healthy Growth of Children in Indonesia with an App Service

▶Launched a Digital Maternal and Child Health Handbook Service which allows mothers in Indonesia to keep track of their children's growth and provide useful childcare-related information.

▶A Marubeni employee who was previously stationed in Indonesia came up with a business idea to address child-related social issues in the country: the high mortality rate of infants and the large number of stunting.

▶The originator of this service participated in Bizcon, an internal business plan contest that supports new challenges, and won, allowing him to commercialize the business idea through Marubeni. After its test marketing period, the service was successfully launched in March 2020.

▶The app has reached over 200,000 downloads in the year since its launch and will continue to grow and support mothers to improve the infant mortality rate and decrease the number of stunting in Indonesia.
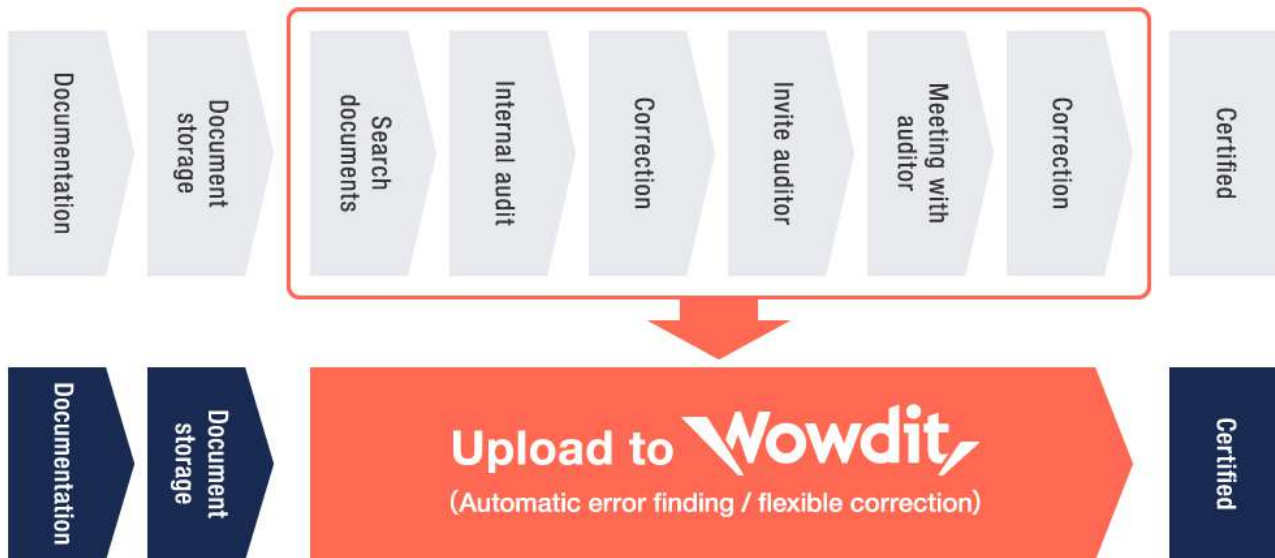
Marubeni

Case⑧ : Japan │ e-Audit Platform for Environmental Certifications

Forest Product Business ✕ Innovation Base ✕ Process Mining*

A platform to spur production and distribution of environmentally and socially responsible products

How to make transaction check efficient with Wowdit

Documentation → Document storage → Search documents → Internal audit → Correction → Invite auditor → Meeting with auditor → Correction → Certified

Documentation → Document storage → Upload to Wowdit (Automatic error finding / flexible correction) → Certified

＊A method of grasping the current situation and utilizing it for business improvement by acquiring, analyzing, and visualizing past data of various business activities.

▶An innovative e-audit platform "Wowdit" was developed to promote adoption of environmentally and socially responsible products. A Marubeni employee in the pulp and paper products team became aware of a need to improve the process of their forest certification auditing, which was extremely time-consuming and inefficient, and invented the idea of a digitally provided audit support service to reduce time, cost, and risk.

▶The originator of this service participated in Bizcon, a business plan contest that supports new challenges, and won, enabling her commercialize the business idea through Marubeni. After its test marketing period, the beta version of "Wowdit" was launched in November 2020.

▶We aim to create a society where all businesses are willing to proactively engage in production and distribution of environmentally and socially responsible products through "Wowdit".

Marubeni

DX-Related Initiatives ≫

Digi-Challenge

- "Digi-Challenge" is short for, "Marubeni Digital Challenge". The participants will leave the course with a thorough understanding of data science, gained through practical hands-on exercises instead of just theoretical lectures.
- This program focuses on using digital technologies, including programming languages, to solve actual problems encountered by our employees in their businesses and daily operations.
- Provides an opportunity to acquire technical skills that are directly linked with Marubeni's business needs in a more productive way than a one-day, lecture-style training program.

A Hands-On Digital Technology Program

Marubeni Academia

- Cultivate "evangelists" who can drive innovation within the Marubeni group.
- Provide an opportunity to discuss innovation with diverse members with different career backgrounds, nationalities and characters.
- A comprehensive program to understand Marubeni's businesses, world-leading business models, innovation models, and management systems.
- Participants will give a presentation to the board on the issues that Marubeni should address and the possible solutions based on what they have learned through the program.

MARUBENI ACADEMIA SINCE 2018

Cultivate "Evangelists" to Drive Innovation

External Personnel Exchange Program

- A program developed to expand and enhance personnel exchanges with companies outside the Group by mutually dispatching employees for extended periods of time (several years) with leading companies in various industries.
- Promote revitalization of the organization by temporarily taking on staff from other companies and adopting new perspectives.
- This exchange program will not only expand Marubeni's business networks but will also enable development of high-potential employees who can discover potential value and/or capabilities for the Marubeni Group with an objective eye, and capture new business opportunities.

Broadening perspectives and expanding networks outside of Marubeni

Marubeni

DX-Related Initiatives

Business Model Canvas

- Organize and visualize all assets and 300+ business models of the Marubeni group.
- Various information on our businesses, including assets, transactions, and business networks, are available to all Marubeni employees.
- Provides visualization of other business units' assets, customer segmentation, and other valuable information to promote synergies between new values and assets, and encourage the creation of new business.

Provides Visibility into 300+ Business Models

Bizcon

- An open business plan proposal/fostering program for Marubeni Group employees. Approximately 350 applications have been submitted in just 3 years of running the contest.
- Aim to evaluate, develop, and commercialize new business ideas widely solicited from Marubeni Group employees to encourage revitalization and creation of an innovative climate throughout the Group.
- The winners of the contest may devote all of their working hours to launching their business idea.

An Open Business Plan Proposal/Fostering Program for Marubeni Group Employees

Digital Community

- A platform for digital talent to exchange information on technologies.
- Provision of technological information and support by the data scientists in Digital Innovation Dept.
- Notes from meetings with digital technology-related companies are uploaded for information-sharing purposes afterwards.
- Provides the latest news on digital technology.

Assemble Digital Talent and Promote Information-Sharing/Collaboration

Marubeni

Completion of the New Office Building (Scheduled)

- The completion of Marubeni's new office building is scheduled for February 2021 and the relocation is scheduled for May 2021. In addition to the office floors, the building will also feature publicly accessible areas that will serve as collaborative transmission hubs for various sectors including business, urban-living, nature, lifestyle, and art.
- Since Marubeni has a wide variety of businesses and work styles, we try our best to offer flexible work styles where every employee can choose their place of work according to their preference and individual needs.

Pursuing New Work Styles to Meet Employees' Individual Needs

A New HR System

- We aim to adapt to changes in our business environment and personal career or work style preferences and strive to achieve our vision, "Global crossvalue platform", and our strategy, "Executing strategy in every business division (vertical evolution) and enhancing cross-functional value creation (horizontal expansion)".
- Our HR system reform is based on these 5 key concepts:
  - ▶"Performance-oriented", "Challenge", "Hands-on", "Ownership", and "Open Community"
- Examples of our specific measures are as follows:
  - ▶Remuneration:Determining employee grade and compensation based on the individual level of goal-setting, adopting a new reward program to promote cross-functional collaboration, etc.
  - ▶Talent Management:Implementation of a new visualization tool to manage capabilities and characteristics of the workforce, enhancement of our recruitment, personnel shifts and allocation process, etc.
  - ▶Working Environment:Launch Alumni Network Service for retired employees, offer flextime to boost work style flexibility, enhance Work Anywhere (telework) initiatives, etc.

HR System Reform to Drive Execution of Strategy and Value Creation

Marubeni

Crossvalue Coin

- The head of a Division or Region who benefited from the internal recruitment program may reward the employee/participant with a "Crossvalue Coin" for their contribution. The reward will be reflected in the employee's bonus payment in the following fiscal year.

- From provision of information to business creation, any contributions to other organizations or regional strategies are rewarded with a Crossvalue Coin. The scope of this reward program will further be expanded to include provision of necessary resources including information, ideas, and network of connections.
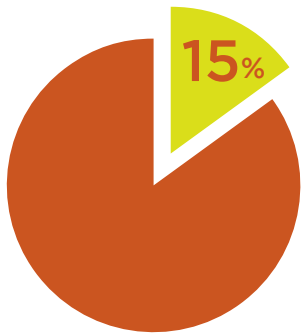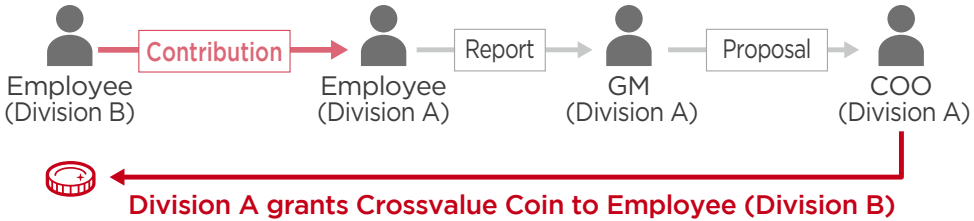
Crosshelp

- Organizations may conduct internal recruiting to find a suitable employee, or employees, who volunteer to use the 15% Rule to engage with and support other business teams.

- The participants of this program will be rewarded with Crossvalue Coins in accordance with their contribution.

■How Crossvalue Coin Works

Employee (Division B) — Contribution → Employee (Division A) — Report → GM (Division A) — Proposal → COO (Division A)

Division A grants Crossvalue Coin to Employee (Division B)

15% Rule

- 15% Rule is an initiative that allows for employees to allocate about 15% of their work hours to activities aimed at developing businesses, whether it is entirely new or an improvement on an existing business, regardless of the business area to which they are currently assigned. This will help to increase the value of the Marubeni Group.

15%

- We have conducted the Business Improvement Project to reengineer our in-house business practices, looking at issues such as reduction of internal paperwork requirements.

- The time saved will be reallocated and used for the 15% Rule.

Marubeni