

# FY2024 Shimizu Corporation SDGs・ESG Briefing

October 11, 2024

Today's Work, Tomorrow's Heritage



SHIMIZU CORPORATION supports the Sustainable Development Goals

# FY2024 SDGs・ESG Briefing

Agenda	Speaker	
Opening Remarks	President and Representative Director	Kazuyuki Inoue
Presentation 1 Creation of workplace full of job satisfaction and attractiveness	General Manager, Human Resources Dept.	Yoshiaki Suzuki
Presentation 2 Open Innovation Initiatives at NOVARE	Executive Vice President Executive Conductor, NOVARE	Masanobu Onishi
Presentation 3 Mid-Term DX Strategy <2024-2026>	Executive Vice President and Director Director, DX Strategy Office	Takeshi Sekiguchi
Presentation 4 Nature-Related Financial Disclosures based on the Task force on Nature-Related Financial Disclosures (TNFD) Recommendation	Managing Officer Director, Environmental Strategy Office	Mika Kaneko
Presentation 5 Hydrogen energy utilization system "Hydro Q-BiC" Promotion and development of business	Group Conductor, NOVARE Innovation Center Hydrogen Group	Yasuo Homma
Q&A		
Closing Remarks	Senior Managing Officer and Representative Director, In charge of SDGs & ESG Promotion	Yoshiki Higashi

## Presentation I

# Creation of workplace full of satisfaction and attractiveness

Yoshiaki Suzuki,  
General Manager, Human Resources Dept.

# Mid-Term Business Plan <2024-2026>

In order to developing talent and organizational capabilities, we will secure, develop, and support “diverse talent willing to take on challenges and co-create.”

A Stronger Business Foundation



## 1-1 Talent Development and Organizational Capabilities Improvement

Supporting employee growth to nurture diverse talent willing to take on challenges and co-create



### KPI Targets for FY2026

Employee engagement score<sup>\*14</sup>  
≥ 4.0

Percentage of  
industry-qualified engineers<sup>\*15</sup>  
Maintain 80% or more

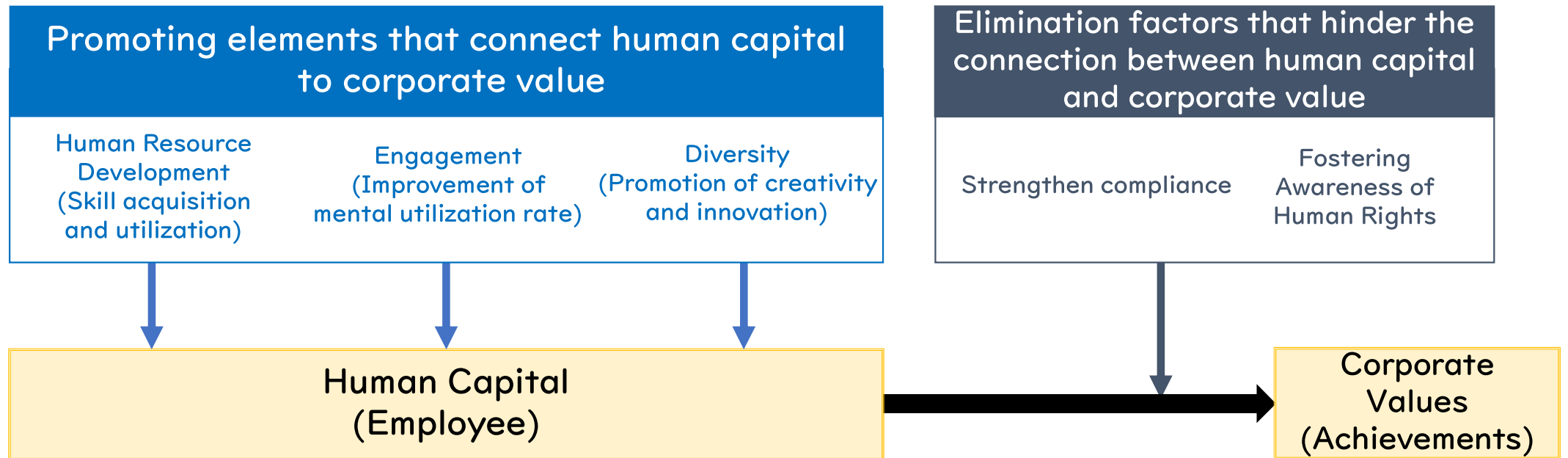
Percentage of  
women in managerial positions  
≥ 6% (≥10% by 2030)

Percentage of  
employees with disabilities  
≥ 2.7%

Nurturing DX Specialists<sup>\*16</sup>  
120 specialists trained  
and assigned to all divisions



# Framework of Human Capital and Corporate Value



# Our Approach to Engagement

Defined as "a willingness to find value and pride in one's own job, workplace or company, and to proactively contribute to the company."

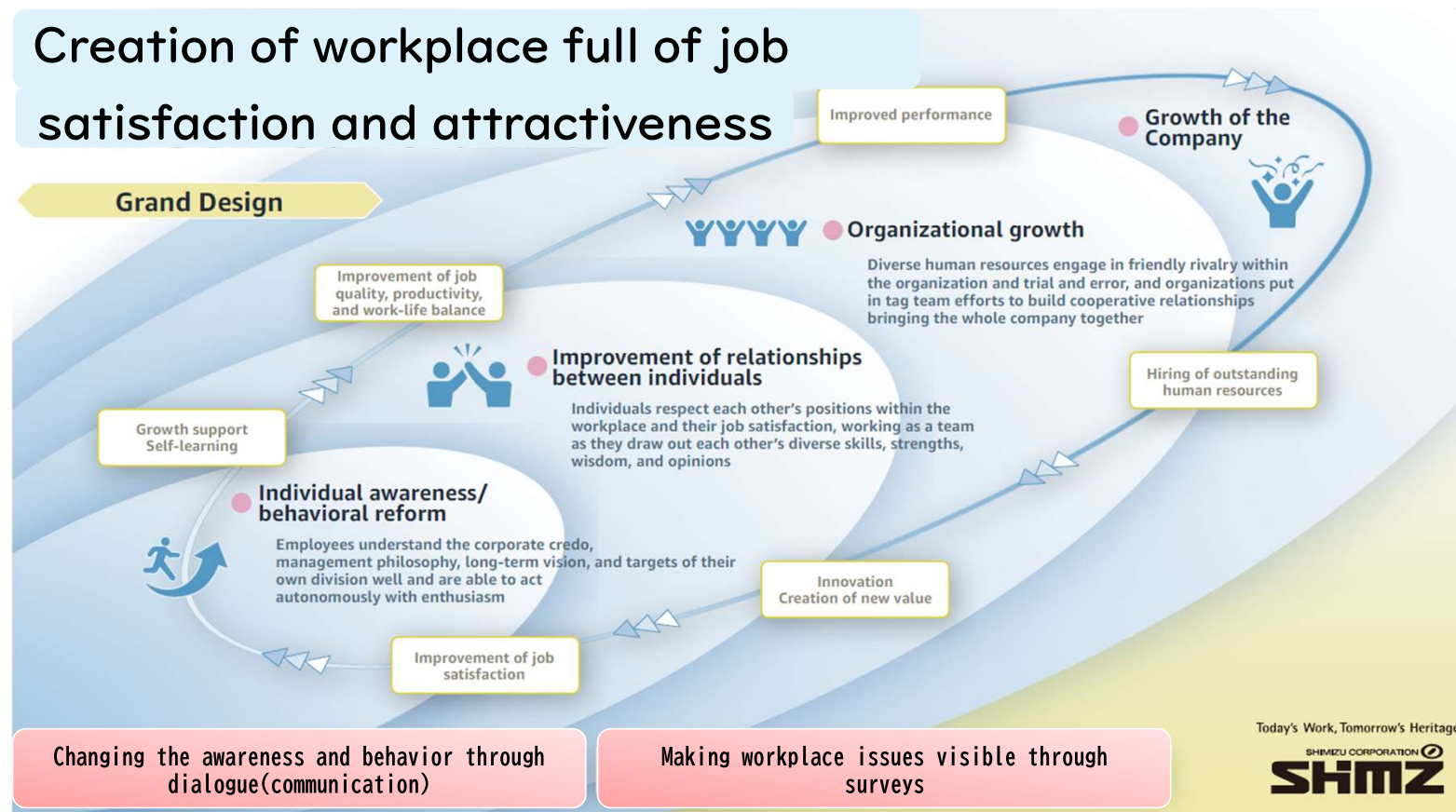
Purpose to  
increase  
engagement

By promoting changes in individual behavior, strengthening cooperation within the workplace, and strengthening functional coordination between organizations, we aim to improve productivity and create corporate value (business performance)



# Creation of workplace full of job satisfaction and attractiveness

Formulate and disseminate a grand design aimed at "creating a workplace where all people are mentally and physically healthy, where mutual recognition flourishes, and where everyone can maximize their unique characteristics and strengths."



# Background to the start of the initiative

## Trigger (2018)

With the enactment of the “Act on the Arrangement of Related Acts to Promote Work Style Reform,” the upper limit on overtime work were applied from April 2019.

For the construction industry, there was a five-year grace period for the summary due to industry characteristics and trade practice issues.(Effective from April 2024)

## Our issues based on the above

Toward April 2024, there is a need to **promote work style reforms** that go beyond simply reducing working hours.

In addition to changing the mindset of employees in how they perceive company policies and how they approach their work, it is even more necessary to encourage them to take proactive action.



Focusing not only on "work style" but also on "job satisfaction",  
we define the ideal workplace we aim for as a **“Workplace full of job satisfaction and attractiveness”**

# Main Initiatives

First of all, we started with work style reform (ease of working), including improving the working environment, gradually develop initiatives that lead to individual awareness and behavior reform (job satisfaction) such as diversity and dialogue.

Efforts	2019	2020	2021	2022	2023
Awareness Survey	Job Satisfaction Awareness Survey (Employee Awareness Survey)				
			Pulse Survey		
Improvement of the working environment	Systems to support ease of working (telecommuting, sliding shift, flextime etc.)				
	Promotion of two days off per week				
	Work Style Reform Award				
Diversity	Improvement of the working environment (prayer rooms, all-gender restrooms, multilingualization of site signs)				
		Support for male employees taking childcare leave			
				Shin Diversity	
Dialogue				1-on-1 meetings	

# Employee Satisfaction Scores

We have set a “Employee Satisfaction Scores” consisting of “Work Fulfillment,” “mental and physical health,” and “relationship of trust in the workplace” and as a Non-financial KPI in the Medium-Term Business Plan<2019-2023>, we have set a target of achieving an average of 4.0 or higher.

Trends in Decent Work Indicators

Employee Satisfaction Scores	FY2019	FY2020	FY2021	FY2022	FY2023
Work Fulfillment	3.80 →	3.76 →	3.73 →	3.63 →	3.62
Mental and physical health	3.80 →	3.80 →	3.74 →	3.72 →	3.78
Relationships of trust in the Workplace	3.67 →	3.69 →	3.69 →	3.66 →	3.74
3 indicators averaged	3.76 →	3.75 →	3.72 →	3.67 →	3.71

## Indications for score interpretation

Average 4 points or more	[Good] A state in which many employees are positively aware and acting	Average 3.5 points or more	[Passing score] A target value for improving the evaluation
Average 3 points or more	[Caution] The need to carefully examine the content and determine whether it will be an issue	Average Less than 3 points	[Problem] Very bad condition and needs improvement

## Results and Issues of Initiatives (I) (Based on Trends in the Job Satisfaction Awareness Survey)

Since there are certain effects in the categories of workload and work styles, it is important to focus on initiatives that will give employees **a sense of their own growth, attachment to the company, and sympathy for the company's policies.**

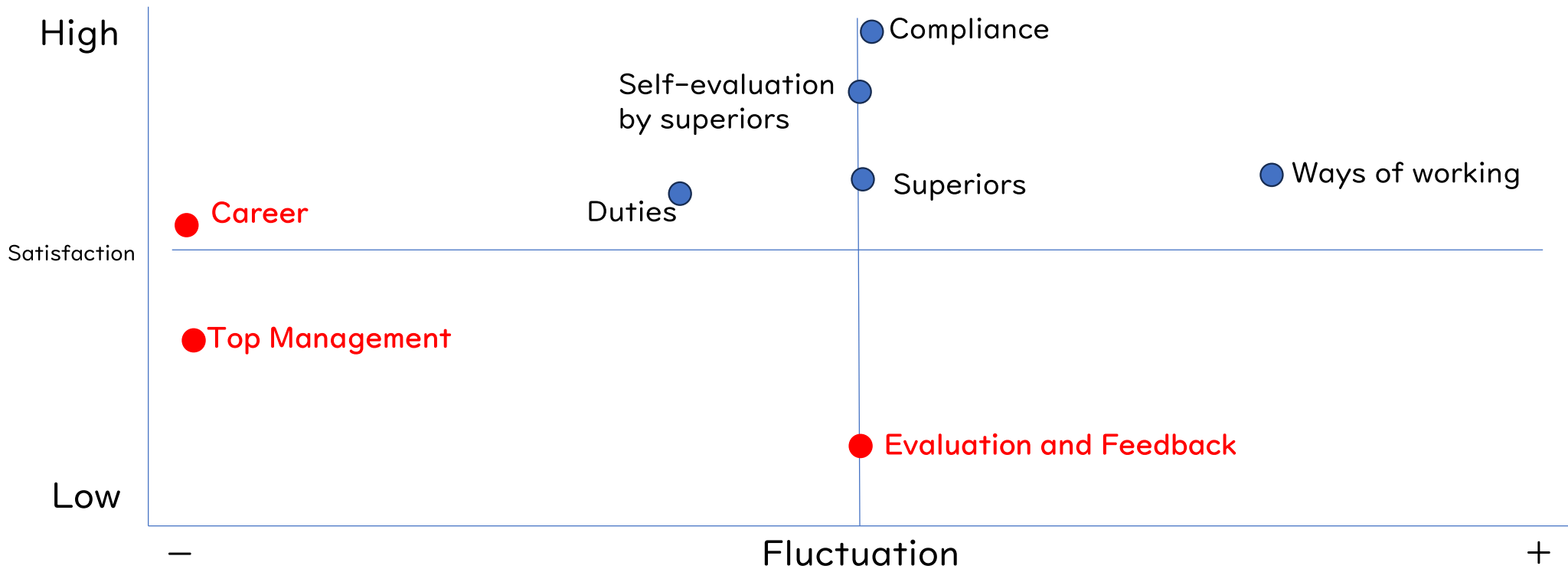
From FY2019 to FY2023, questions with large fluctuations in answer results

	Category	Question	2019	2023	Difference
Greatly improved	Work Style Reform	Requests for more work reports than necessary	3.61	3.72	+0.11
		Flexible work styles for men	3.39	3.74	+0.35
	Compliance	Reduction of harassment in the workplace	3.88	3.99	+0.11
Greatly worse	Career	Feeling of personal growth	3.94	3.73	-0.21
		Own career prospects	3.74	3.53	-0.21
		Intention to continue working at the Company	4.12	3.87	-0.25
	Top Management	Realization of improvement actions by management	3.90	3.64	-0.26
		Feeling the transformation of our company	3.65	3.42	-0.23
		Penetration of Management Policies	3.77	3.56	-0.21

## Results and Issues of Initiatives (2) (Based on Trends in the Job Satisfaction Awareness Survey)

"Evaluation and feedback" also needs to be improved as satisfaction level is low over time.

Trends in the results of the "Job Satisfaction Awareness Survey" from FY2019 to FY2023





# Improving the quality of 1-on-1 meetings

1-on-1 meetings are effective in improving the "Employee Satisfaction Scores", but if done incorrectly, it will be counterproductive.

In the future, we will strive to "improve quality" so that both supervisors and subordinates can practice correct operation.

## FY2023 Former Engagement Survey (Job Satisfaction Awareness Survey)

"Employee satisfaction Scores" by answer result of "satisfaction of 1-on-1 meetings with superiors"

Satisfaction level	Number of Answers	Work fulfillment	Mental and physical health	Relationships of trust in the Workplace
Very satisfied	1,217	4.43	4.49	4.54
Satisfied	3,637	3.84	3.94	3.97
Neither satisfied nor dissatisfied	2,009	3.31	3.50	3.46
Dissatisfied	366	3.01	3.23	3.03
Very dissatisfied	132	2.54	2.85	2.21
Not Implemented	2,873	3.36	3.59	3.45
Overall average	10,234	3.62	3.78	3.74

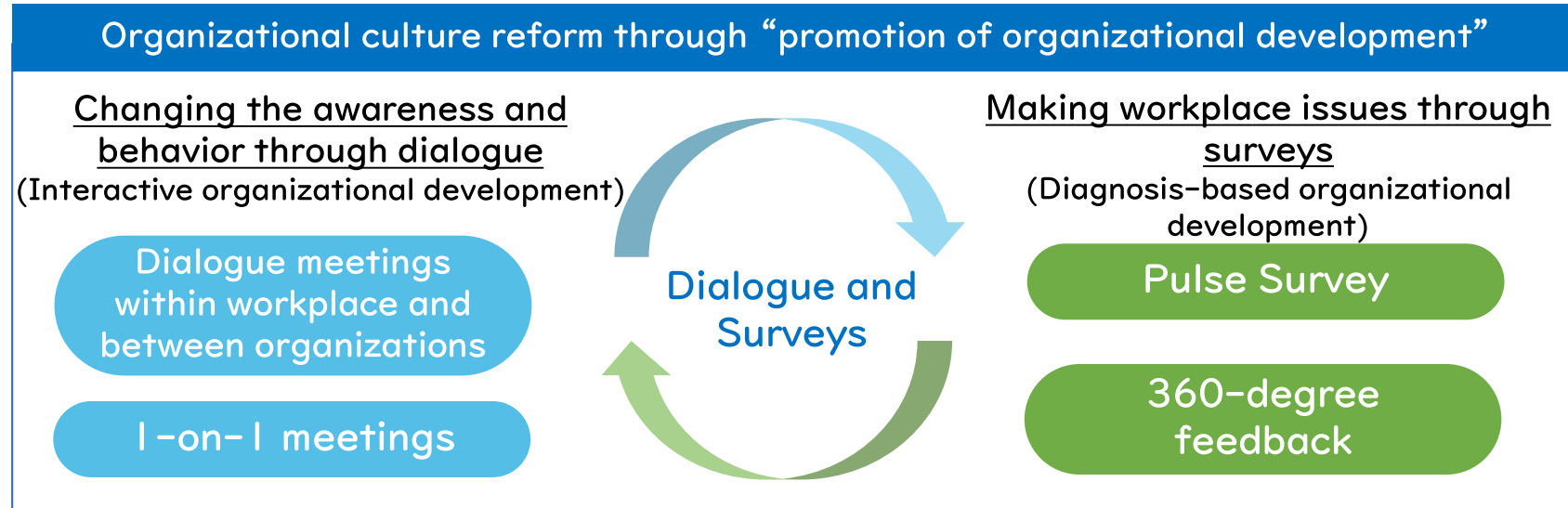
Those who answered "very satisfied" have a high job satisfaction index

Those who answered "dissatisfied" or "very dissatisfied" have a lower job satisfaction index than those who "have not implemented"

# Dialogue and Surveys

Initiatives aimed at reforming the culture of our organization by changes in individual awareness and behavior through dialogue and visualizing organizational challenges through surveys.

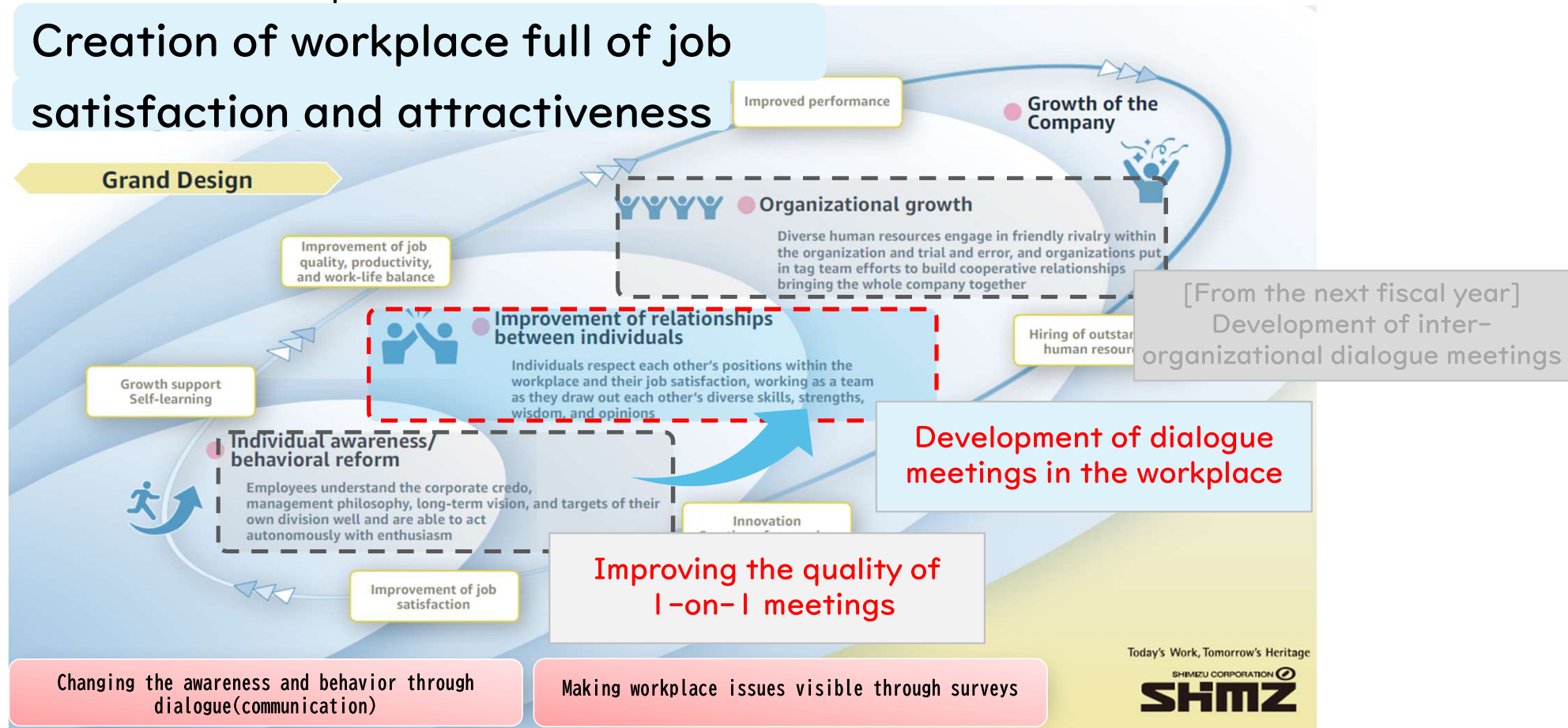
Workplace full of job satisfaction and attractiveness (Engagement improvement)



# Initiative policy for this fiscal year

While continuing our efforts to changing in individual awareness and behavior, we develop initiatives to enhance relationships between individuals and accelerate the creation of workplaces where teams can achieve results.

## Creation of workplace full of job satisfaction and attractiveness



# Overview of Dialogue Measures

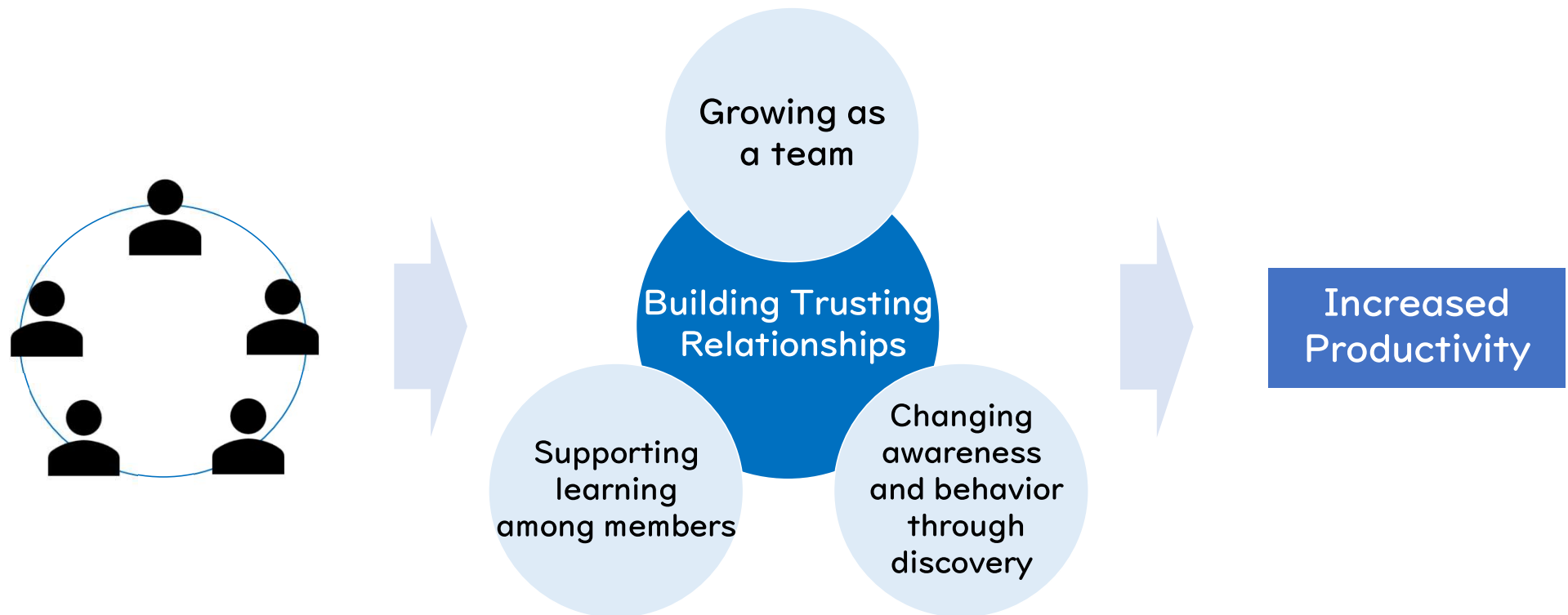
Growth through personal learning

Organizational Learning and Growth

Objective	<p><b>Personal growth</b> by helping to learn from superiors</p>	<p><b>Personal growth</b> by helping to learn from seniors and colleagues</p>	<p><b>Growth as an organization</b> through mutual learning among workplace members</p>	<p><b>Growth as a company</b> through mutual learning across organizations</p>
Policy	<p>I-on-I Meetings Dialogue between supervisors and subordinates</p>	<p><b>Building a foundational relationship of trust</b></p> <p>Workplace Dialogue Meetings Dialogue within workplaces and groups</p>		<p>Inter-organizational dialogue meetings Dialogue across departments</p>

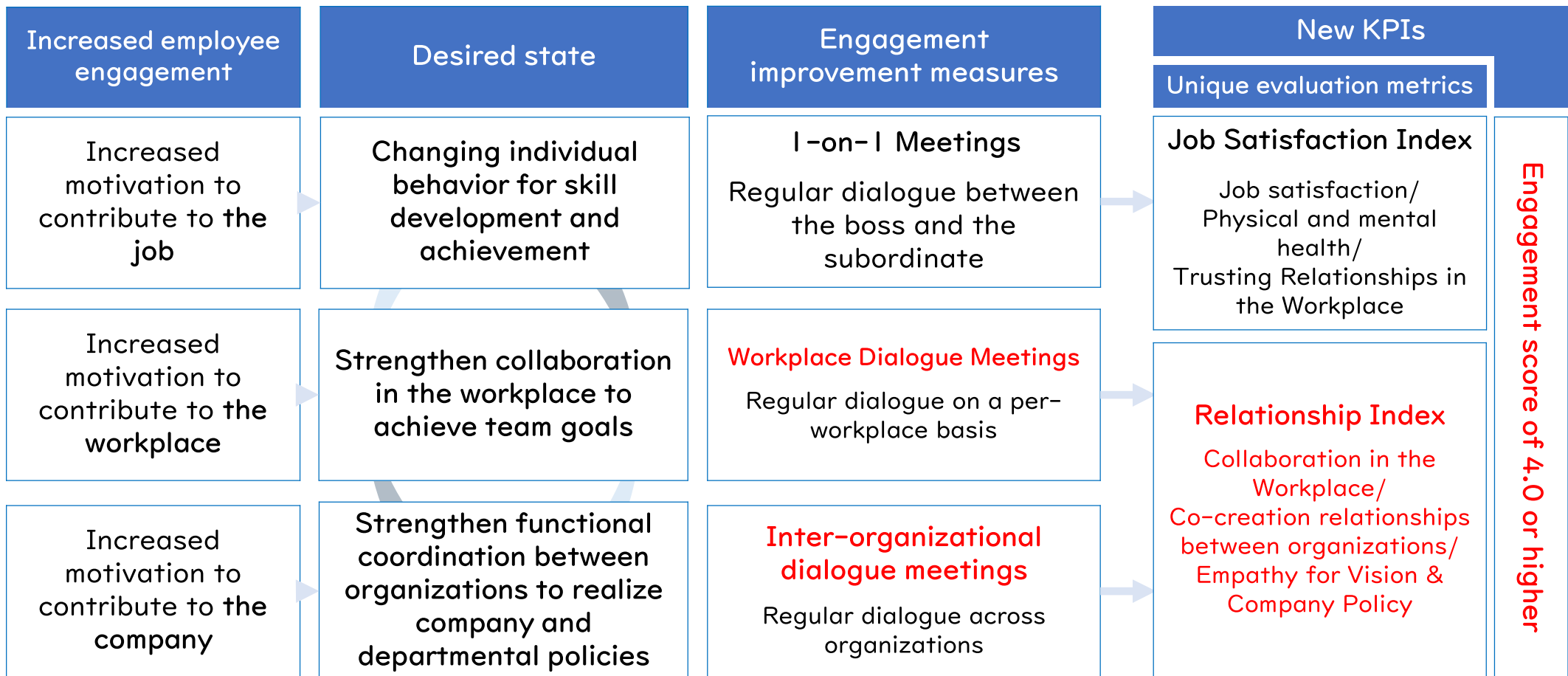
# Development of dialogue meetings in the workplace

This is an initiative to enhance relationships of trust by regularly engaging in dialogue within the workplace and learning about each other's positions, values, and strengths, as well as to promote the growth of individuals and teams and improve productivity while drawing out wisdom and opinions



# Non-Financial KPI "Engagement Scores"

It has been set as **a KPI to measure the effects** of new measures that promote strengthening collaboration within the workplace and between organizations, in addition to changing individual behavior



## Presentation 2

# Open Innovation Initiatives at NOVARE

Masanobu Onishi,  
Executive Vice Presidents  
Executive Conductor, NOVARE

# Smart Innovation Ecosystem NOVARE



Smart Innovation Ecosystem

# NOVARE

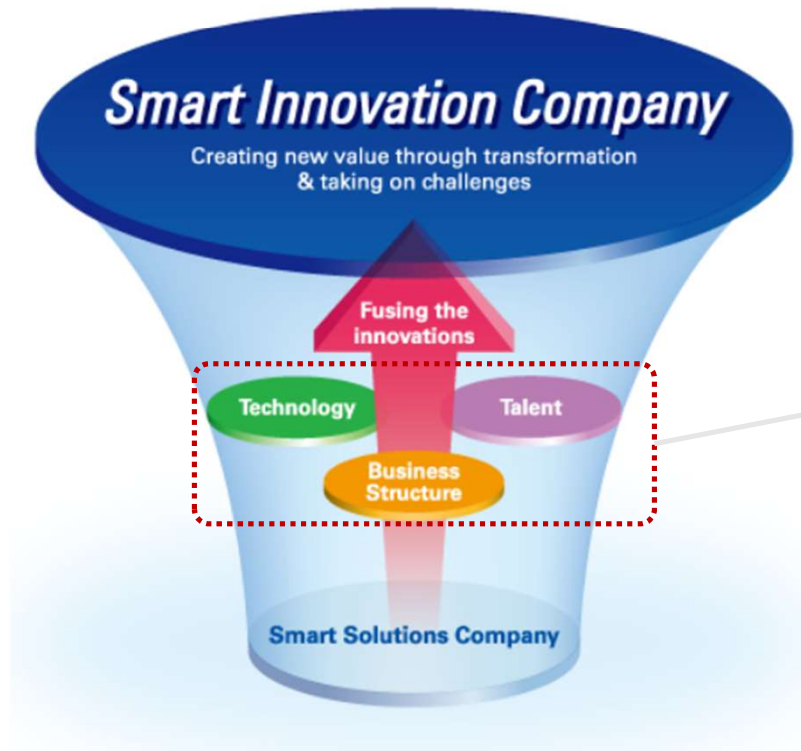
A New Platform That Creates the  
Next Generation of Innovation



# Background and Purpose

## SHIMZ VISION 2030

The Shimizu Group will **create new value** and contribute to a safe, healthy and sustainable future for everyone by transforming and challenging ourselves beyond construction and co-creating with diverse partners.



温故創新の森  
Smart Innovation Ecosystem

NOVARE

Business Structure innovation  
Technology innovation  
Talent innovation

# Mindset

## “Choukensetsu”

We will grow by delving into the essential needs of society and our clients, and through various actions, including construction, we will provide a variety of values to them.

Toward the realization of a resilient, inclusive and sustainable society

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# Concept

## Smart Innovation Ecosystem

The concept of Smart Innovation Ecosystem is a forest that returns to the origins of manufacturing and fosters an “Spirit of Innovation”.

At Novare, all five facilities are independent and work together to form an ecosystem that is autonomous and collaborative.



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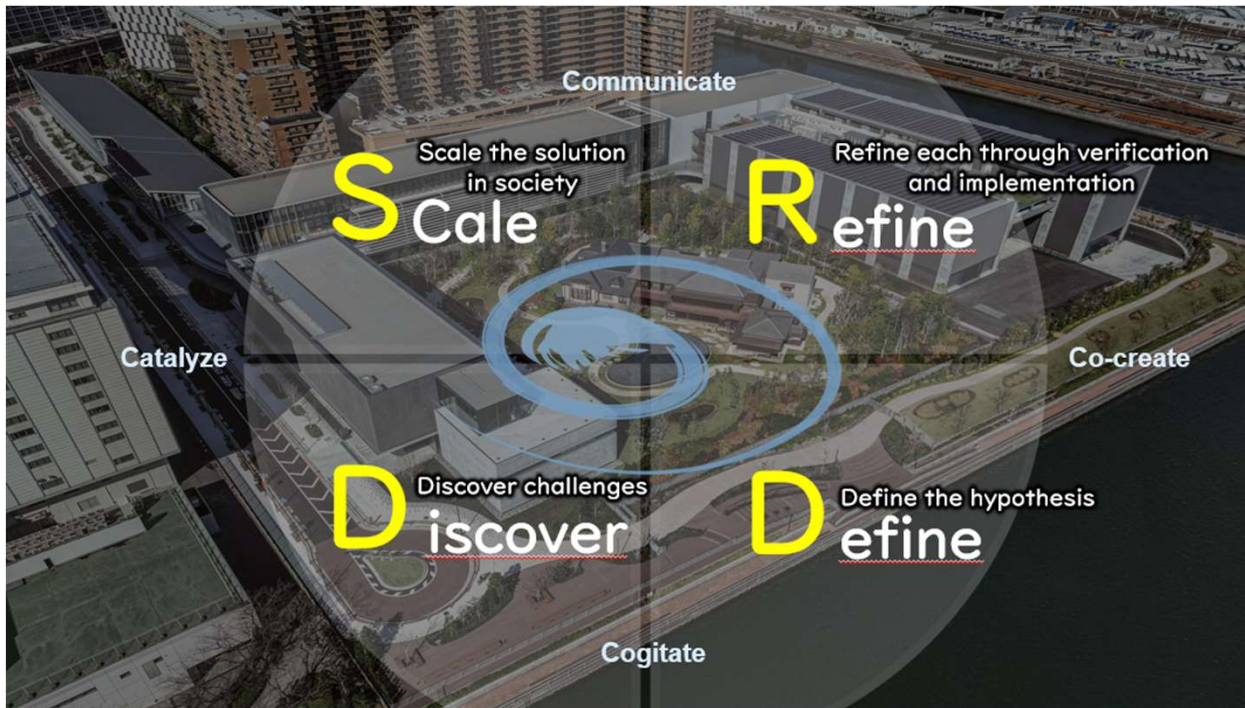


# Composition of the facility





# Open Innovation at NOVARE



NOVARE is a facility that returns to the genuine needs of society and our clients under the mindset of “choukensetsu” and considers all business structures, including construction, from the starting point.

It will be a hub for open innovation that transcends the boundaries of conventional organizations, internal and external, domestic and international, and creates business structures, technologies, and human resources through new discoveries.

# Specific Initiatives for Open Innovation

1. SHIMZ CVC (Corporate Venture Capital)
2. Business Co-creation Program "SHIMZ NEXT"
3. Realization of a Carbon-Recycling City in Tokyo
4. Corporate Venturing Program
5. Industry-Academia Collaboration  
: Comprehensive Collaboration with Waseda University
6. Co-creation with students, support for social implementation
7. Promoting innovation with NOVARE LINKS,  
Internal and external NOVARE planned users



# I. SHIMZ CVC (Corporate Venture Capital)

From April 2020

Set investment limit on Balance Sheet

Scale **10** Bn yen

Corporate Venture Capital  
(Shimz Venture Capital)

Direct Investment

Construction  
Technology  
Venture

New  
Business  
Venture

Venture  
Fund

## Startups



FY2020/2022  
Series B and C  
Wireless Communication  
Systems



FY2020  
Series A  
Seat Availability  
Information System



FY2021  
Series B  
Kitchen Car Platform



FY2021  
Series C  
Remote monitoring with  
all direction cameras



FY2021  
Series A  
Image Analysis AI



FY2022  
Series A  
Non-FIT Renewable  
Energy Power Generation  
for Corporate Clients



FY2022  
Series A  
LiDAR, point cloud data  
analysis



FY2024  
Series A  
Construction DX, CO2  
Emissions Calculation

## VC Funds



FY2020  
Fund specialized  
in Drone Aeromobility



FY2022  
Fund Specialized in  
materials and chemical



FY2023  
Invest fund focused on  
Japanese ventures

- : Category A  
Construction
- : Distinguish B  
non-construction
- : Distinguish C  
VC



# I. SHIMZ CVC (Corporate Venture Capital)

## Co-creation Initiatives with Investee Venture Companies

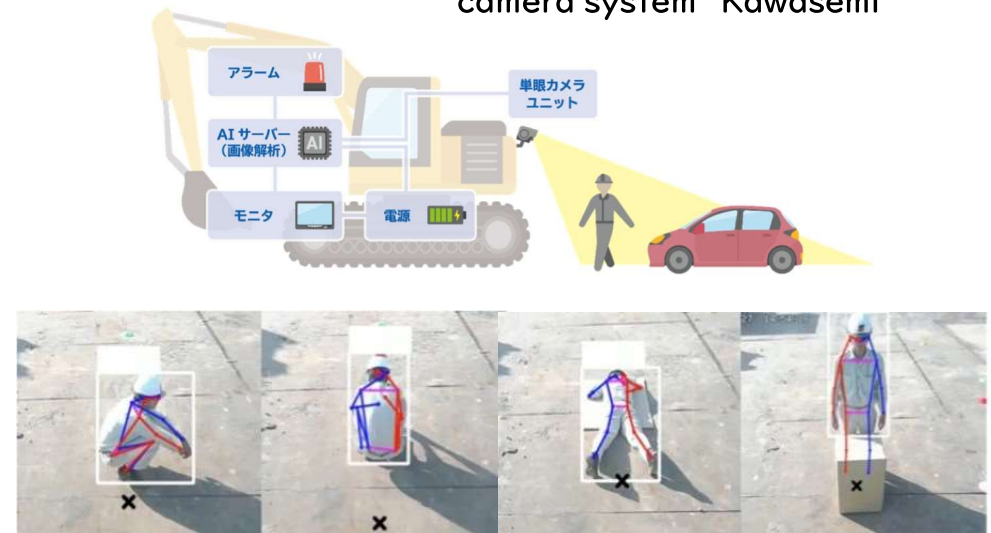
3D point cloud data analysis using LiDAR, collaboration between data modeling venture (mapry) and Civil Engineering and Building Construction



Collaboration between a venture company (Lightblue) that utilizes cutting-edge digital technology centered on AI to support the resolution of social issues and construction sites



Vehicle-mounted safety surveillance camera system "Kawasemi"





## 2. Business Co-Creation Program "SHIMZ NEXT"

### Exploration Phase

### Development Phases

Clients and Social Needs  
Technology & Industry  
Trends

Information Gathering/  
Searching for Partners



Co-Creation Partners  
matching



Start of Co-creation  
activities

Idea Materialization/  
Internal team up



Development  
Phases

Demonstration / PoC  
Prototyping / Verification



Social Implementation /  
Commercialization



Completion Status of  
"Idea realization"



Project Team

Gate  
Pitch

Clear!

Stage I

Clear!

Gate  
Pitch

Stage2

Clear!

Gate  
Pitch

Stage3

Start of Consideration  
for SHIMZ NEXT

Social  
Implementation and  
Commercialization

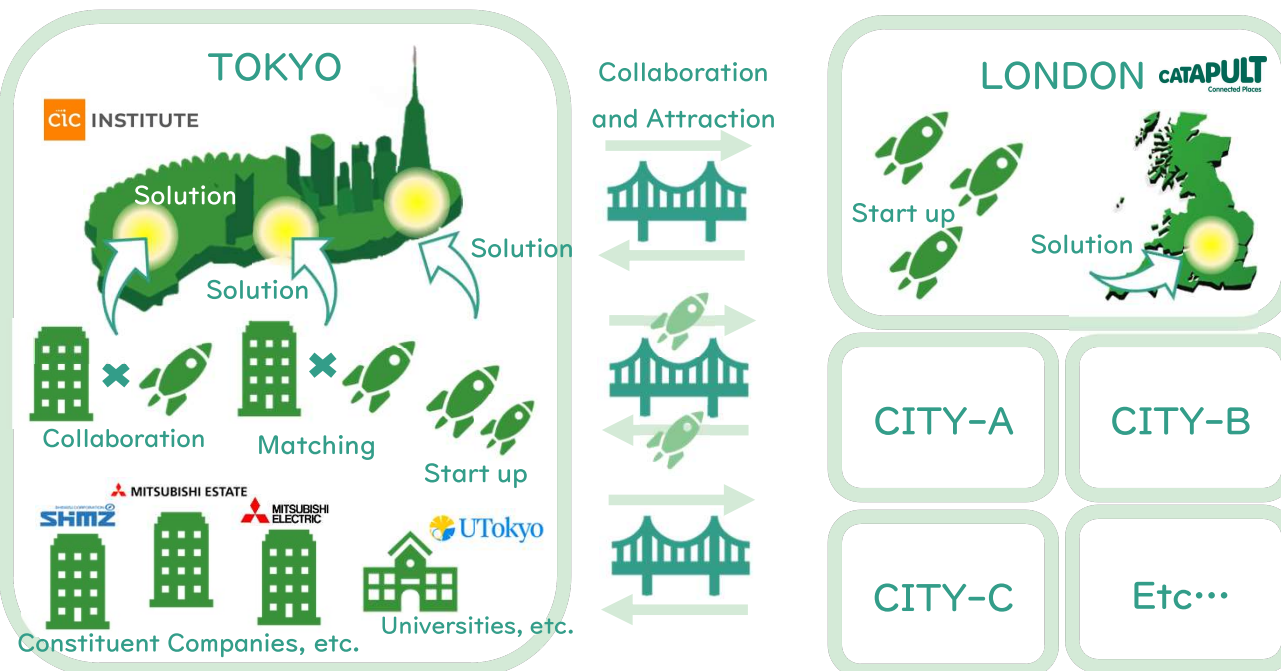
- JV
- Business alliances and consignments
- M&A
- Investment (CVC)
- Distributorship
- Revenue Share
- Patent Revenue

The number of stages varies depending on the project

## 2. Business Co-Creation Program "SHIMZ NEXT"

Global Innovation Cluster Creation Project "Global City-tech Bridge"

"Cluster" creation project to promote collaboration with startups for the creation of global innovation

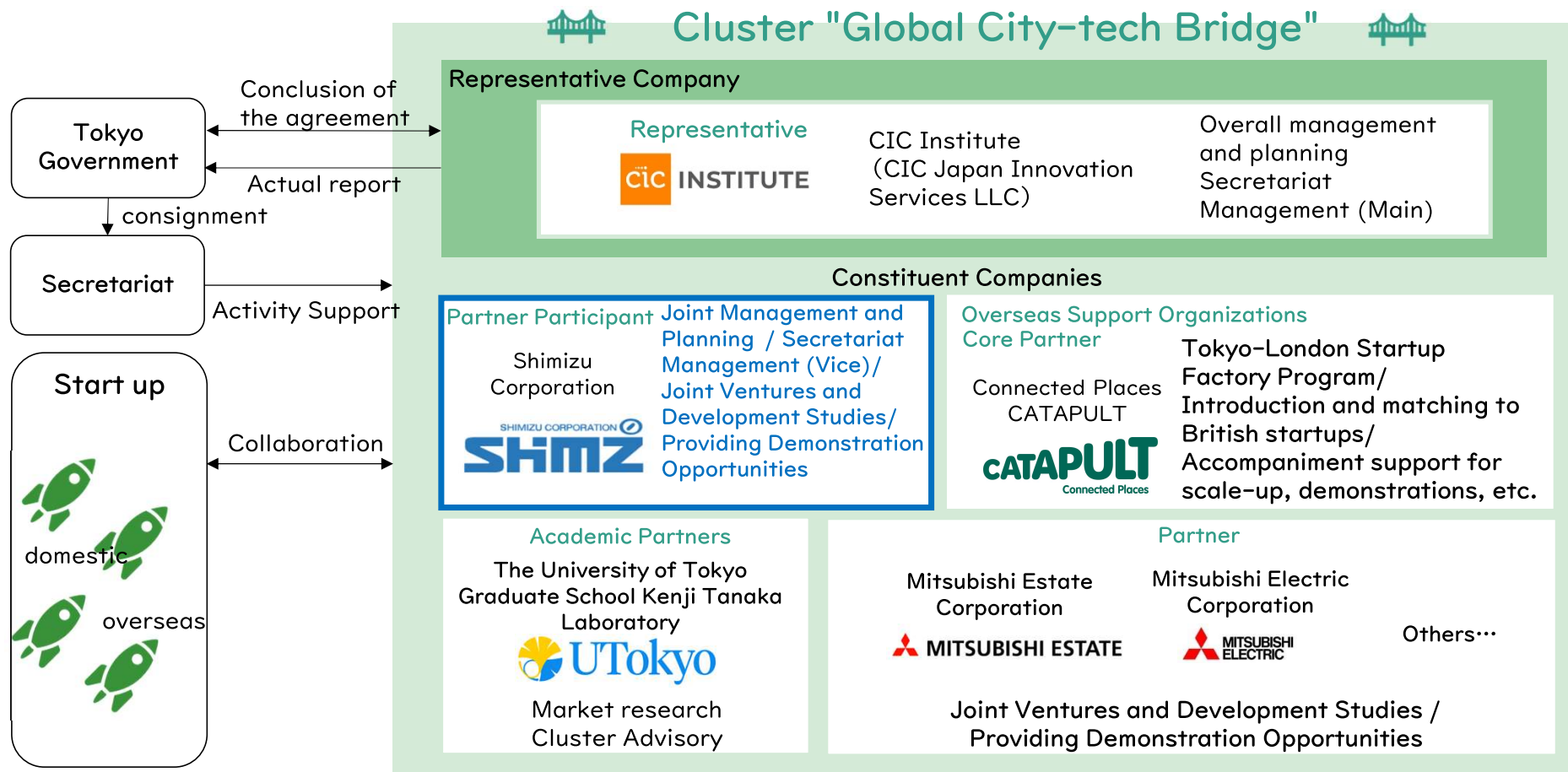


〈Areas of industry / technology to focus on〉  
City-tech (Metropolis related technology)  
(including climate tech, urban tech,  
transportation, and resilience)

We participate as one of the constituent companies.  
We have signed an agreement with the Tokyo  
Government and are working on this project with the  
aim of creating more than 20 collaborative cases in  
three years.

## 2. Business Co-Creation Program "SHIMZ NEXT"

Global Innovation Cluster Creation Project "Global City-tech Bridge"



# 3. Realization of Carbon-Recycling City in Tokyo

## Implementation of buildings and cities using DAC (Direct Air Capture) technology

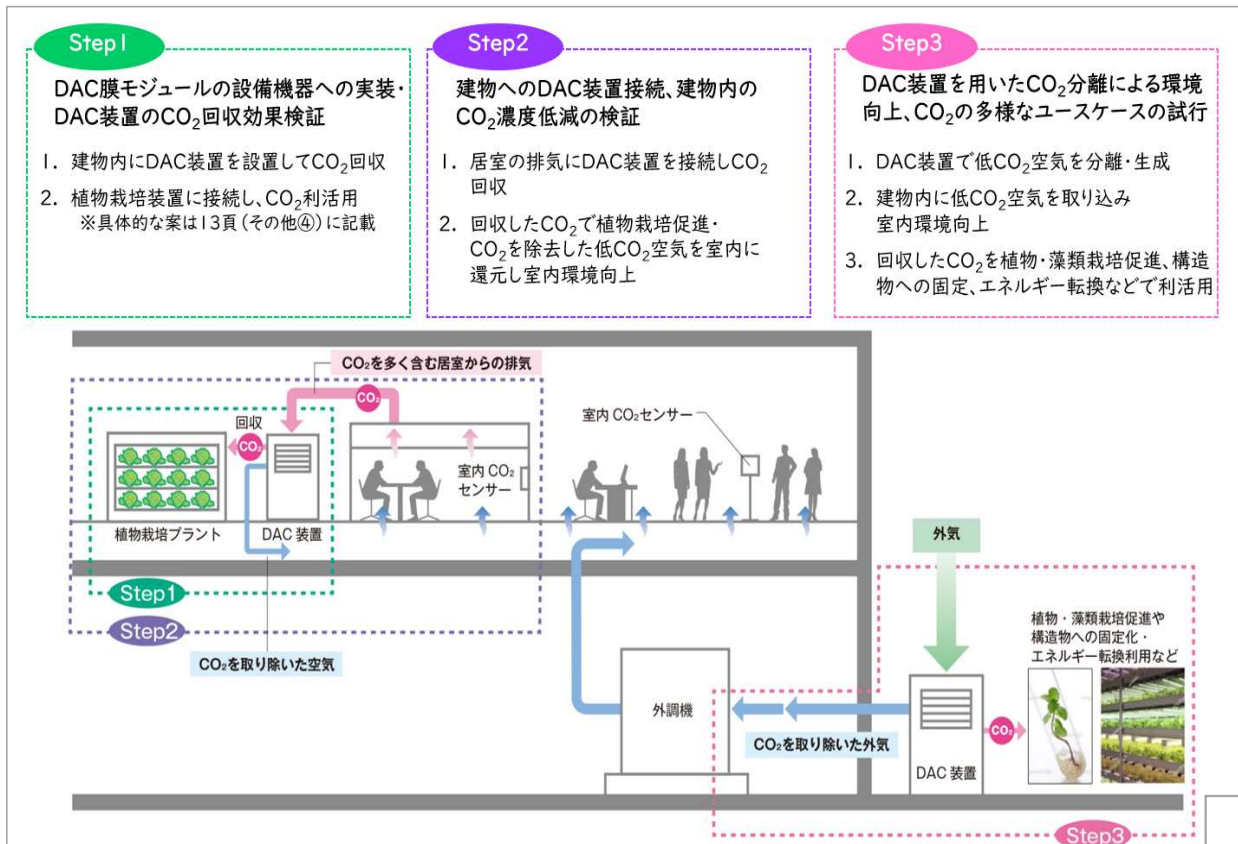
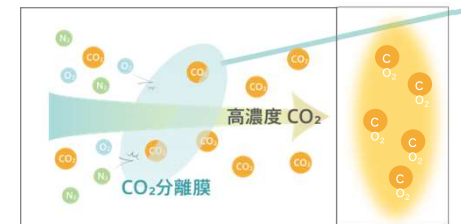


Diagram of how DAC works (only in Japanese)

### Small Decentralised



The thinnest  
in the world (34nm)  
\* 1/300 of Food wrap

CO<sub>2</sub> is filtered out by installing a membrane in the air flow

Sojitz Corporation  
(Representative Operator)



Shimizu Corporation  
(Partner Operator 1)



Carbon Xtract Co., Ltd.

(Partner Operator2)



- Using the world's highest-performance gas separation membrane from Kyushu University to efficiently capture CO<sub>2</sub> from the atmosphere
- Install and connect DAC equipment to buildings in stages to promote the utilization of CO<sub>2</sub> captured from buildings



## 4. Corporate Venturing Program

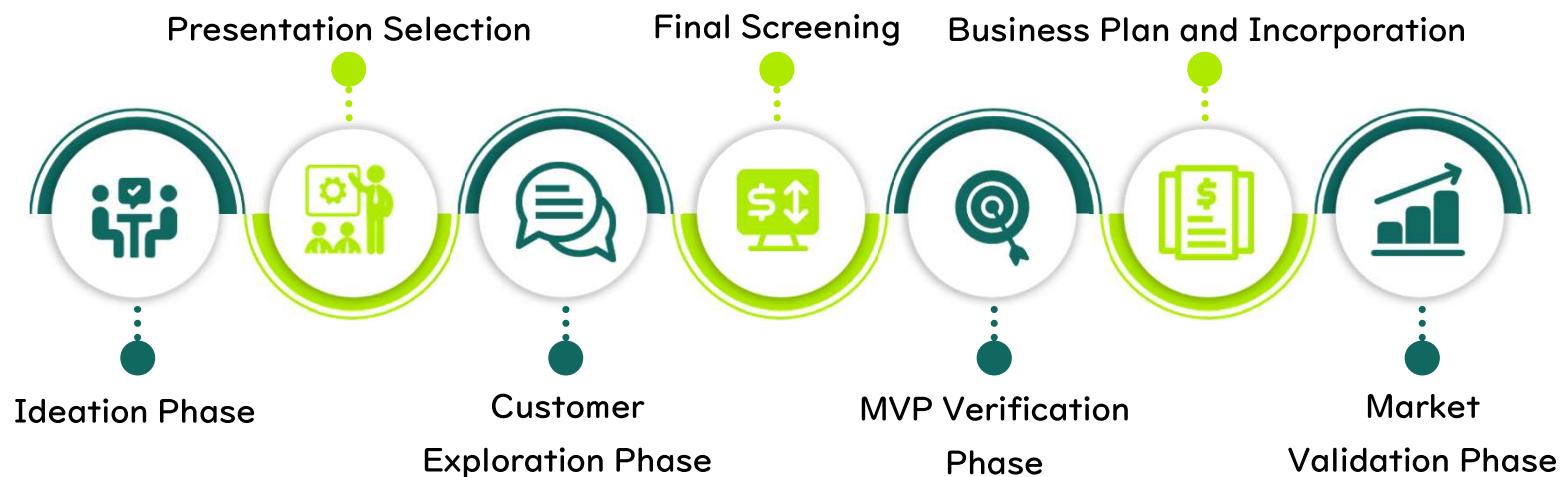


A program to promote and support the entrepreneurship of employees have business ideas and a spirit of challenge (established in 2022)

< target >

Business ideas

- that contribute to the expansion of business domains
- based on construction-related technologies



## 4. Corporate Venturing Program

Roca Japan Inc. (established in March 2024) Sales of traditional crafts

By building a tailor-made service specializing in traditional crafts, it aims to meet the new needs of the market and at the same time lay a sustainable economic foundation for artisans

### Key features

#### 1. Customer participatory production process

Customers can design their own traditional crafts and participate directly in the production process.



#### 2. Direct connection between artisans and clients

Directly connect self-employed artisans with limited marketing resources with clients seeking unique products from around the world.



Providing Kyoto lanterns based on traditional manufacturing methods handed down from the Edo period: Kojima Shoten (founded in Edo Kansei year)

## 4. Corporate Venturing Program

DO·CHANGE Inc. (Established in March 2024) Metal recycling business for disused covered wires



Agbogbloshie, near the capital of Ghana  
Representative Kishimoto demonstrating the  
project locally (2023.12)

Attempting to implement patented technology in covered wires processing in society, aiming to eliminate pollution caused by open burning of covered wires and turning waste into a resource.



### Key features

#### 1. Original technology (Cooperate with Kagawa Technical school)

Patented technology is used to extract copper

#### 2. Measures to address environmental issues

Contribute to environmental protection by reducing health hazards caused by "open burning" and air pollution, which are a problem in developing countries.



## 5. Industry-Academia Collaboration : Comprehensive Collaboration with Waseda Univ.

### Conclusion of a Basic Agreement on Comprehensive Collaboration for the Realization of a Carbon-Neutral Society (March 2024)



#### 1 Human Interaction

- (1) Dispatch of researchers
- (2) Acceptance of working doctors
- (3) Job-based internship

#### 2 Interdisciplinary Academic Exchange

- (1) Holding exchange seminars
- (2) Presentation of research results

#### 3 Joint research and development of advanced technology

- (1) Decarbonization
- (2) Resource circulation
- (3) Natural symbiosis

#### 4 Entrepreneurship Support

(Entrepreneurial support using intellectual and development seeds)

- (1) Use of NOVARE by university officials
- (2) Joint program development



## 5. Industry-Academia Collaboration : Comprehensive Collaboration with Waseda Univ. Joint research and development with Waseda University laboratories

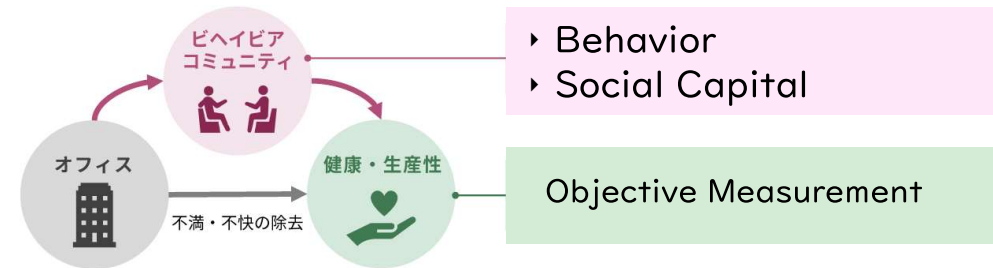
Industry-academia collaborative research and development  
of next-generation air conditioning systems at NOVARE  
(Laboratory of Architectural Environment)

Next-generation personal air conditioning system using AI  
"Formation of an optimal personal environment" and  
"reduction of waste" according to the condition of the  
person (metabolic rate, amount of clothing) and uneven  
distribution

AI camera senses metabolic rate, amount of clothing, and sitting  
position



Joint Research on Architectural Environments  
Contributing to Health and Productivity  
(Faculty of Sport Science)

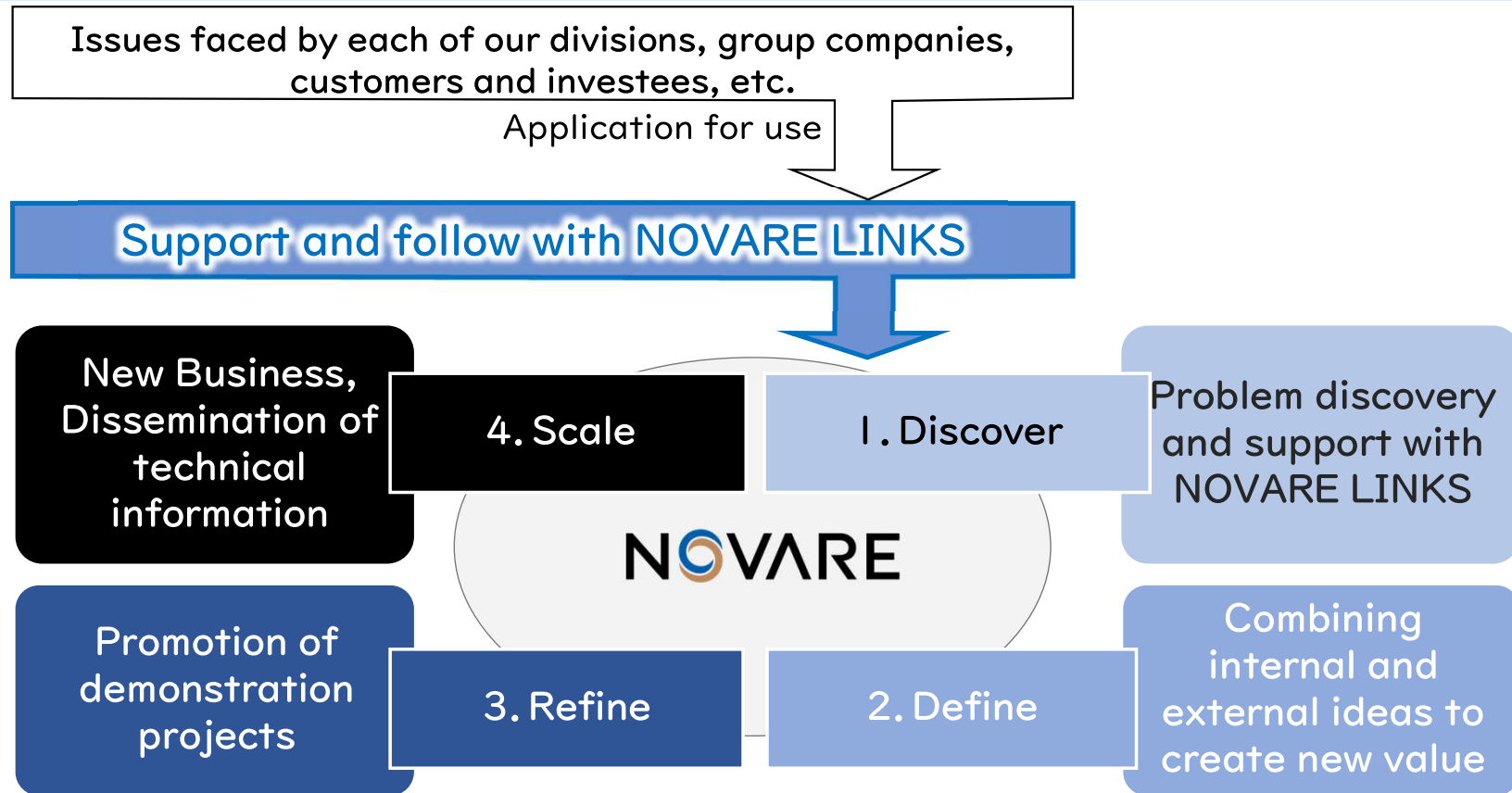




## 7. Promoting innovation with NOVARE LINKS

### Role of NOVARE LINKS :

Interviews with NOVARE users, support for the development of collected issues and ideas, follow-up on the progress of each project, and proposals for cross-departmental responses



## 7. Prospective NOVARE users inside and outside the company

Inside	Project Name	Description of Business	Owning Deployment		
	Roca Japan	Sale of traditional crafts	NOVARE Innovation Center (CV program)		
	DO・CHANGE	Recycling of waste copper wires	NOVARE Innovation Center (CV program)		
	MCP Solutions	Development of a disaster medical continuation plan support system	Design Div., Proposal & Solution Div.		
	Compressed transfer of point cloud data	Development of instant transfer technology for point cloud data at construction sites	Tokyo Civil Engineering Branch / NOVARE Venture Business Unit		
	Lead Tech	Development of automated guided forklifts	Construction Technology Div. / Lead Tech Co.		
	3K Improvement Solutions	Development of clean on-site temporary toilets	Engineering Headquarters / NOVARE Innovation Center		
Outside	Organizations		Description of Business	Location	Stage
	Professor Emeritus, Department of Architecture, Kanazawa Institute of Technology		Buildings that utilize natural energy	Kawasaki	—
	Accelerator Companies		Startup Studio	Hyogo	Early
	Laboratory of Architectural Environmental Studies, Waseda University		Next-generation air conditioning system	Tokyo	—
	Foreign-affiliated Software Development Company		Utilization of CAD/BIM tools	USA/CA	—
	Hard Mobility Venture Company		Electric Motorcycle	Wakayama	Middle



# Open Innovation Initiatives at NOVARE

- SHIMZ CVC (Corporate Venturing Capital)
- Networking and expansion with entrepreneurs, experts, and practitioners in Japan and overseas
- Entrepreneur Public Recruitment Projects and Startup Support Projects
- Development of communication with universities, research institutes, and students in Japan and overseas
- Technology and production process innovation in Japan and overseas sites
- Developing innovation in the human resource development process
- Collaboration with Local Communities and Soft Community Development Promotion Project

温故創新の森  
Smart Innovation Ecosystem

NOVARE

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## Presentation 3

# Mid-Term DX Strategy <2024-2026>

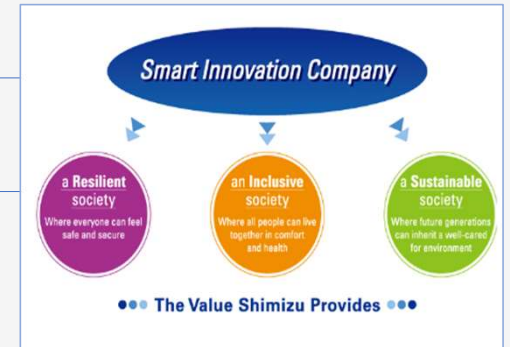
Takeshi Sekiguchi,  
Executive Vice President and Director,  
Director, DX Strategy Office



1. Transition of our digitalization
2. Mid-Term DX Strategy <2024-2026>
  - Advancement of Digital General Contractor through Choukensetsu-
3. Main DX Measures

# I. Transition of our Digitalization

2014	December	Formulation of <b>Medium-Term ICT Strategy 2014</b>
2017		Selected as a “ <b>Competitive IT Management Stock</b> ” sponsored by the Ministry of Economy, Trade and Industry and the Tokyo Stock Exchange
2019	May	Announcement of long-term vision 「SHIMZ VISION 2030」
	June	Formulation of <b>Mid-Term Strategy 2019</b>
2020		<b>State of emergency declared due to the COVID-19</b> (Revising Mid-Term Strategy 2019)
	September	Formulation of <b>Mid-Term Strategy 2020</b>
2021	July	Announcement of strategic concept “ <b>Shimz Digital General Contractor</b> ”
		Selected as a “ <b>DX Stock</b> ” sponsored by the Ministry of Economy, Trade and Industry and the Tokyo Stock Exchange (3 consecutive years since then)
2024	May	Announcement of Mid-Term Business Plan〈2024-2026〉
	July	Announcement of <b>Mid-Term DX Strategy〈2024-2026〉</b>



# 1. Transition of our Digitalization :

## Results of the Mid-Term Digital Strategy 2020 and Environmental Awareness

SHIMZ Digital General Contractor\*

A Digital Contractor with the Mindset of Monozukuri  
(Superb Craftsmanship)

Digital Technology for Construction

Digital Spaces and Services Provision

Digital Support for All Operations

### Results of the Mid-Term Digital Strategy 2020

- Following the 3 vectors conceptualized in the Strategy, we created a more flexible work environment, improved on-site productivity, and successfully commercialized post-completion building management services.

#### Digital Technology for Construction

**More Efficient Construction Operations**

Utilized remote inspection and monitoring systems, 360-degree cameras, AI for structural engineering, 3D printers and BIM

The digitalization of Monozukuri has progressed, including the introduction of digital technologies such as BIM to construction sites

#### Digital Spaces and Services

**Commercializing Building Management Services**

Commercialized DX-Core: introducing it to more Smart Cities and hospitals, Digi-Tori360

Developed DX solutions for Smart Cities and hospitals

#### Digital Support for Monozukuri

**Creating a More Modern Work Environment**

Created a work environment to support teleworking, preparing digital forms etc. (in the Workflow system), utilizing RPA

Created a more flexible work environment workable during the COVID-19 pandemic  
Enforced more stringent information security measures

### Assessing the Current Environment

#### Group Environment

- Increasing needs for cross-business-line and cross-divisional data utilization
- Heightened expectations for digital utilization that contributes to business
- Speedy introduction of digital services
- Widening digital skill gap

#### Market Environment

- More competitive business environment due to the advent of innovative digital technologies such as generative AI
- Diversifying clients' needs
- Hiring DX talent getting more difficult
- Growing cybersecurity risk

## Strengthen management and business systems through the advancement of Digital General Contractor program, data-driven decision-making and DX

# Mid-Term DX Strategy <2024-2026>

-Advancement of Digital General Contractor  
through Choukensetsu-





## 2. Mid-Term DX Strategy <2024-2026>:Positioning

to be a Smart Innovation Company

Choukensetsu



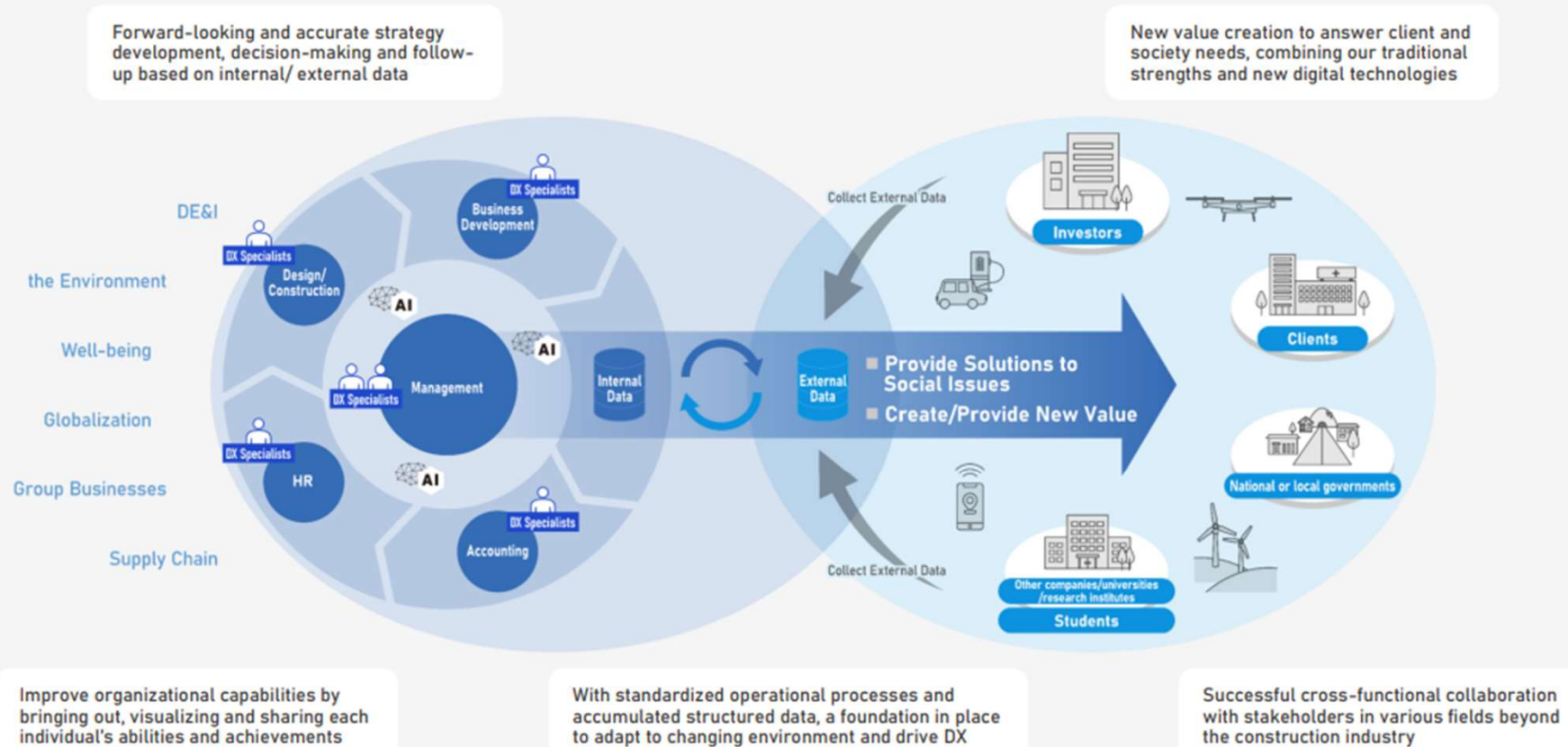
DX

Embracing a mindset of “Choukensetsu” and utilizing digital technologies, we will proactively explore the essential needs of our clients and society, and go beyond the constraint of the existing business or organization to develop new business structures (business processes/models and services), advanced technologies and innovative talent/organizations, and create successful synergies among them.



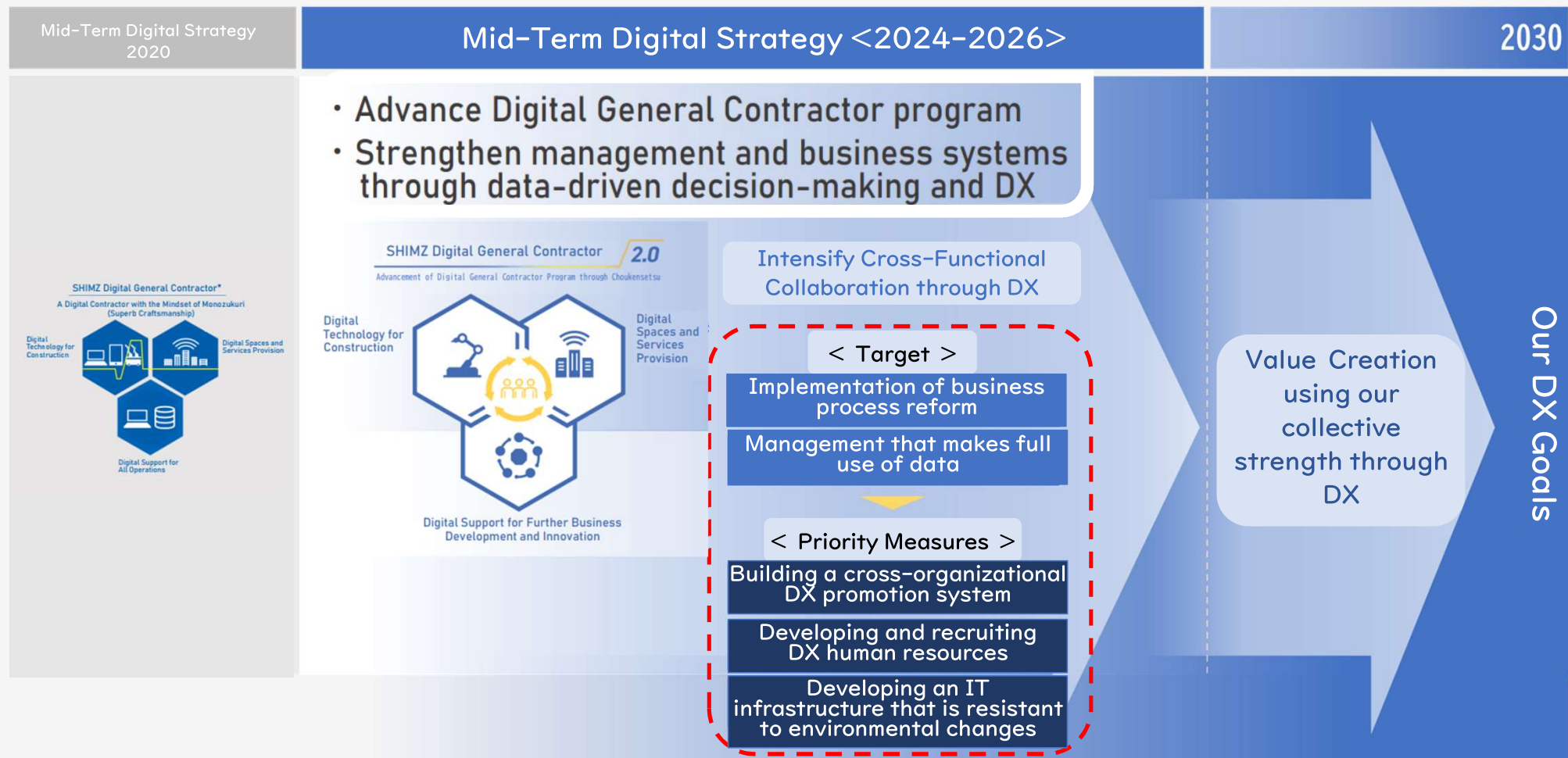
## 2. Mid-Term DX Strategy <2024-2026> : Shimizu's DX Goals <2030>

**We aim to transform our corporate culture to make the most of our talent and digital technologies, and to establish Shimizu as the leading company driving DX in the construction industry.**



## 2. Mid-Term DX Strategy <2024-2026>

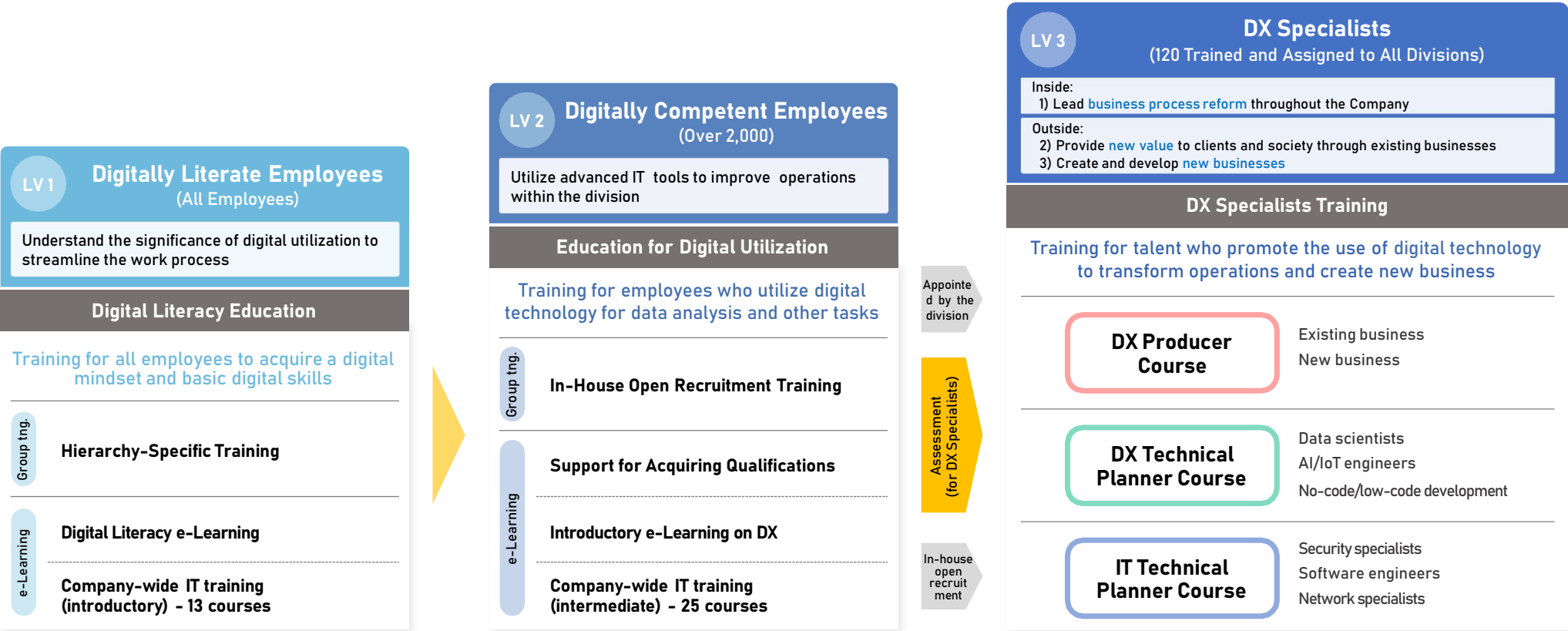
Intensify cross-functional collaboration through DX to achieve our future vision



3. Specific Examples of Measures :Developing DX human resources ” Shimizu Digital Academy”

- Aim
- (1) Increase the digital literacy of executives and employees

(2) Nurture DX Specialists to lead business innovation and new business creation





### 3. Specific Examples of Measures: Implementation status “Shimizu Digital Academy”

#### New employee DX Training –Leading initiative to nurture DX specialists–

Conducted a **one-year** "DX training" for new employees in FY2023

- **27 participants were selected** from all fields, both technical and administrative.
- Interact with participants in the DX Specialists Education Course even after completing the training

**All new employees** in FY2024 will receive DX training (short-term course).

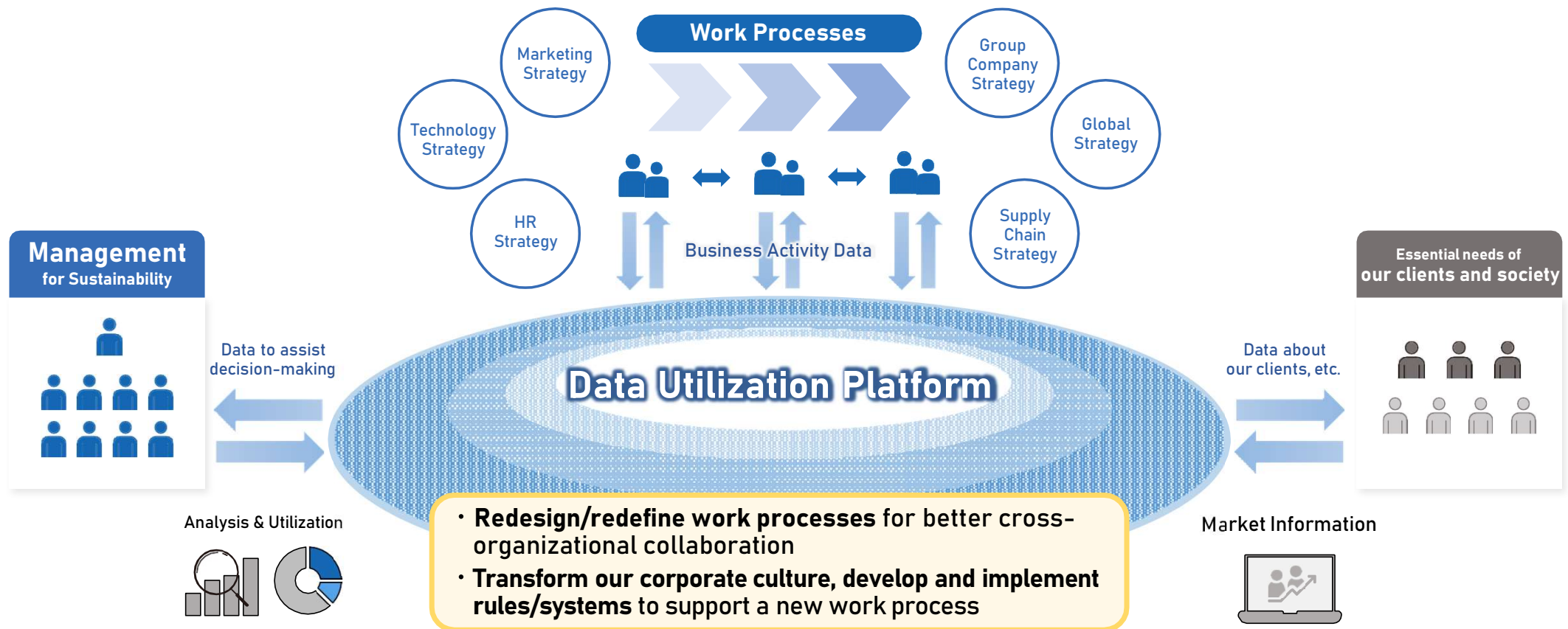




### 3. Specific Examples of Measures : Building a Data Utilization Platform

#### Build a centralized data management platform

- gather the data from each function/business unit and create further new value



### 3. Specific Examples of Measures: Promoting the use of the latest AI technology

#### Developing a company-wide generative AI usage environment

##### Text Generative AI

- Build an environment which employees can safely use AI
- Formulation of utilization guidelines and preparation of manuals



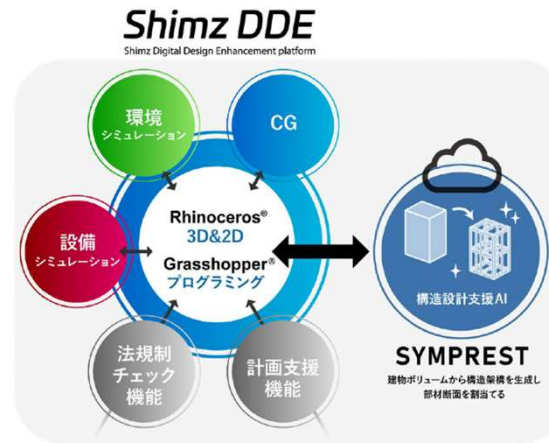
<https://www.shimz.co.jp/information/others/20240326.html>

#### Application of AI technology to business operations

Development and in-house production of systems utilizing the latest AI-related technologies

##### Structural design support AI SYMPREST

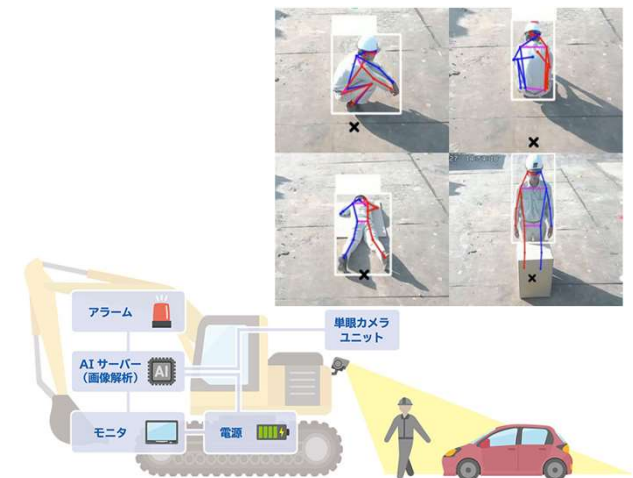
- Support for structural examination work in the early stages of design
- WEB application on the cloud and in-house operation
- Improving the sophistication and efficiency of designers' work at the same time



<https://www.shimz.co.jp/company/about/news-release/2023/2023035.html>

##### On-site safety management support AI Vehicle-mounted safety surveillance camera system

Utilizing image analysis AI, it instantly detects people and vehicles in the rear dangerous area, which is a blind spot for heavy construction equipment operators, and issues alerts with warning sounds, lights, etc.



<https://www.shimz.co.jp/solution/tech388/>

## Presentation 4

# Nature-related Financial Disclosures based on the Task force on Nature-related Financial Disclosures (TNFD) Recommendation

Mika Kaneko,  
Managing Officer,  
Director, Environmental Strategy Office

# Shimizu's Promise and Progress toward the Realization of a Sustainable Society

## SHIMZ Beyond Zero2050



## Initiatives for Information Disclosure Based on TNFD Recommendation

April 1, 2021	Establishment of the Environmental Strategy Office
June 1, 2021	Formulate Shimizu Group Environmental Vision SHIMZ Beyond Zero 2050
February 6, 2023	Participation in the TNFD Forum
January 12, 2024	TNFD Early Adopter Registration
September 16, 2024	TNFD Final Recommendation Released
June 24, 2024	Disclosure of nature-related financial information based on the TNFD Final Recommendation on the corporate site

# Structure of TNFD Nature-Related Information Disclosure

## [Governance]

- (1) Shimizu Group's governance of nature-related issues
- (2) Human rights policy and other activities related to nature-related issues
- (3) Engagement process with local communities

## [Strategy]

- (1) Identification of dependence on nature and its impact
- (2) Identification of material issues in business
- (3) Identification of risks and opportunities based on scenario analysis
- (4) Shimizu Corporation's strategy for nature positive
- (5) Identification of priority areas

## [Risk and Impact Management]

- (1) Evaluation process
- (2) Management process
- (3) Integration into the risk management process

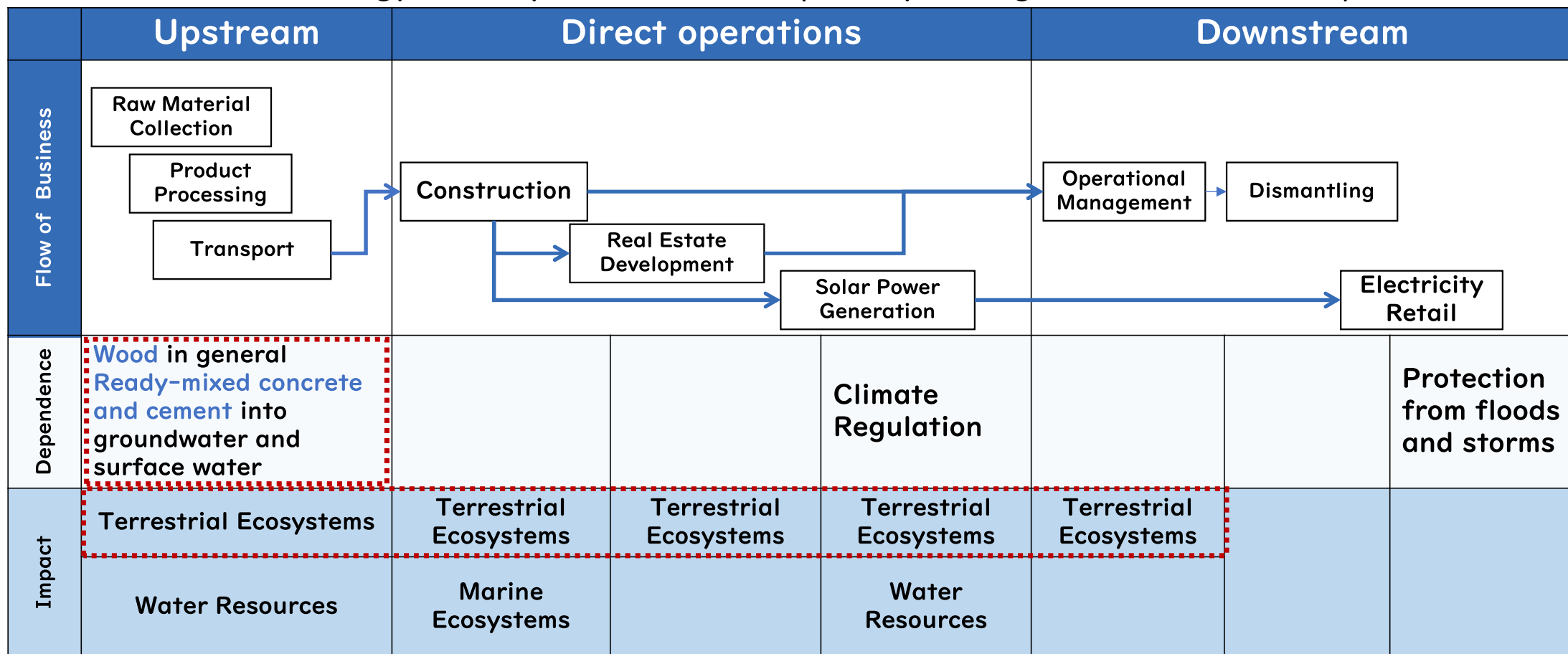
## [Indicators and Targets]

- (1) Indicators and targets related to dependence and impact
  - (I-A) Land use
  - (I-B) Construction by-products
  - (I-C) Use of Resources
- (2) Indicators and targets for risks and opportunities



# Identification of dependence and impact on nature

■ Target: Construction business, Real estate business and Green energy development business (Solar power generation business)



## Identification of Risks and Opportunities Based on Scenario Analysis (Excerpts)

		Risks(R) and Opportunities(O)	impact	Timing	Our Response
Upstream	Demand for traceability and environmental certification	R Competition resulting from market consolidation, price increases, and quantity limitations	↓ ↓	Short to medium term	•Relationship building with suppliers • <b>Plywood formwork</b> initiative
		O Securing an advantage through new technology	↑ ↑ ↑	Short to medium term	•Development of new technologies for recycled and new construction materials
Direct operations	Tight restrictions on land modification and a fundamental review of land use	R Decrease in new construction demand	↓ ↓ ↓	Long term	•Investment in new construction domains •Improvement of technical skills to address advanced land use
		O Increase in renovation and renewal work and implementation of nature-friendly and reclamation projects	↑ ↑	Long term	•Technologies to address next-generation demand •Relaxation of regulations for nature-related technologies
	Tighter nature-related regulations and monitoring at construction sites	R Reputational risk and brand damage	↓ ↓	Short to long term	•Implementing measures based on a unique nature-related assessment ( <b>the Nature KY</b> )
Downstream	Strong demand for recycling, including regulation of total emission	R Tight restrictions from design stage	↓ ↓ ↓	Long term	•By-product management using Shin-Kan-Tasu •Thorough implementation of 4R activities from the design and construction stage anticipating future building demolition and removal
		O Demolition technology directly ties into construction skills	↑ ↑ ↑	Long term	•By-product management using Shin-Kan-Tasu •Cultivation and active adoption of recycling routes

# Strategies for Nature Positive (Sustainable Formwork Plywood Use)

## ■ Conducted a survey of partner companies in FY2023

Breakdown of formwork types used at our construction site (FY2023)

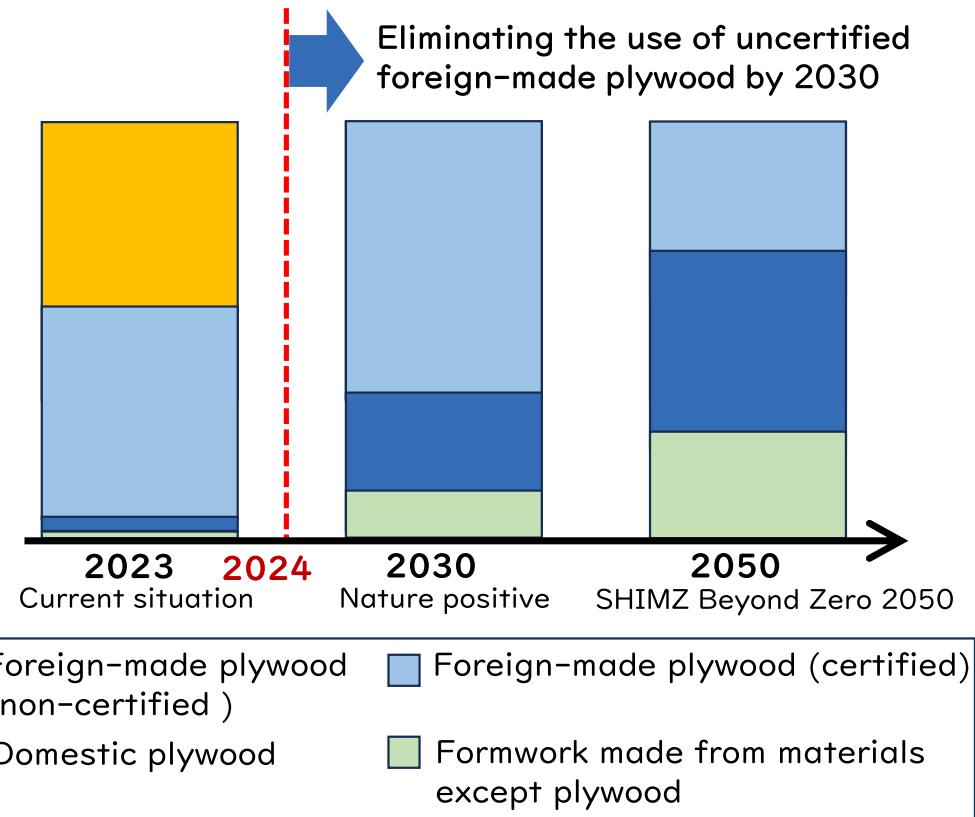
Types of formwork	Results
Foreign-made plywood (certified)	52%
Foreign-made plywood (non-certified )	45%
Domestic plywood	3%
Hybrid plywood	0%
Formwork made from materials except plywood	1%

## ■ Interviews with Formwork contractors, Plywood manufacturers, Academia, Researchers, NPOs were also conducted.



<Initiatives from FY2024 onward>

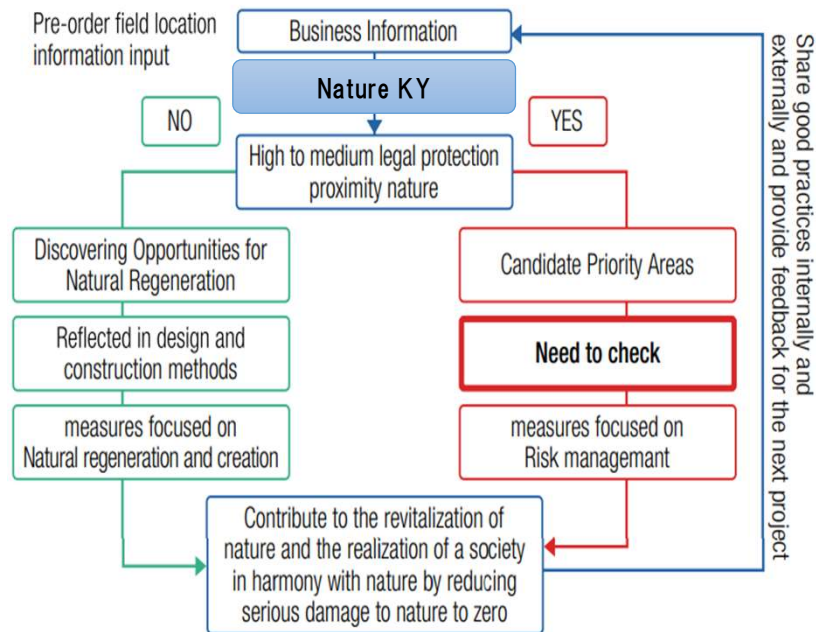
- Building a network by exchanging opinions and workshops
- Promotion of formwork other than foreign-made plywood (Provision of trial products, etc.)
- Collaboration for new development



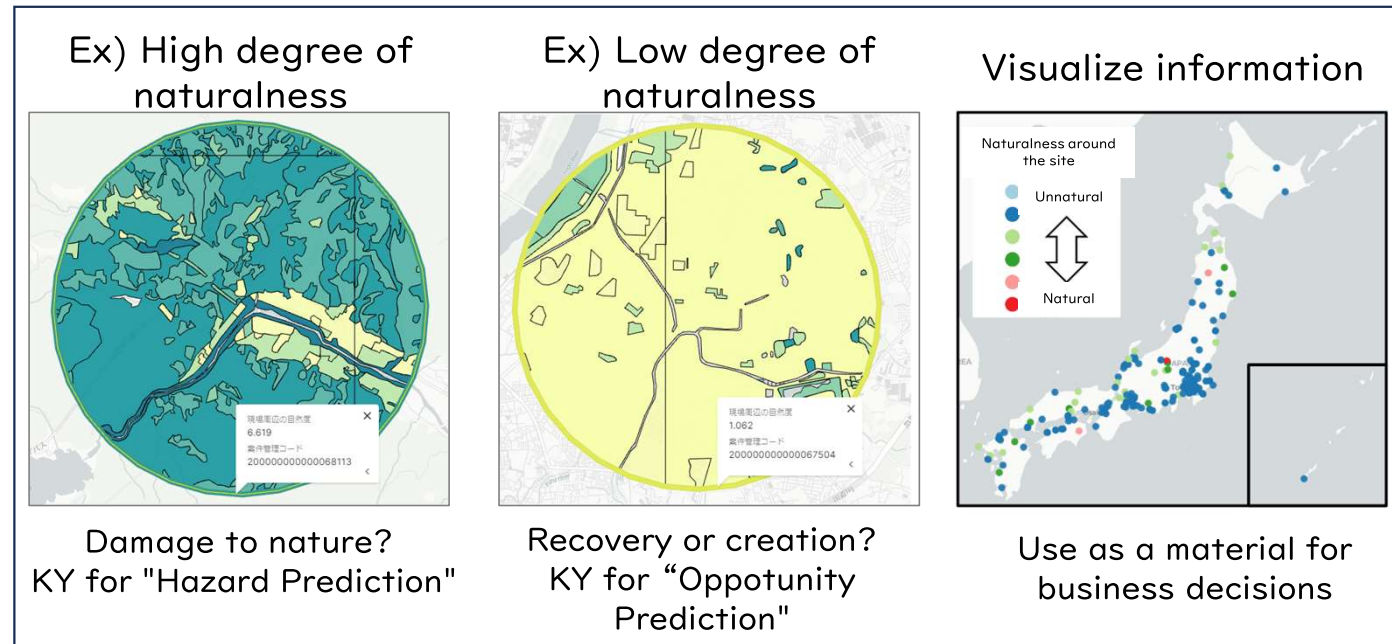
\* The ratio in the bar graphs are for reference only

# Strategies for Nature Positive (The Nature KY)

- Independent natural environment assessment as a strategy for “impact on terrestrial ecosystems” to figure out the nature-related risks in advance and avoid or reduce them and to revitalize nature by anticipating opportunities for natural regeneration.



Managing Risk and Predicting Opportunities for Natural Regeneration with “Nature KY”



Currently, based on the Ministry of the Environment's vegetation naturalness, a value from 1-10 is taken, and scored by the load average according to the area. We plan to expand the requirements in the future.

## Presentation 5

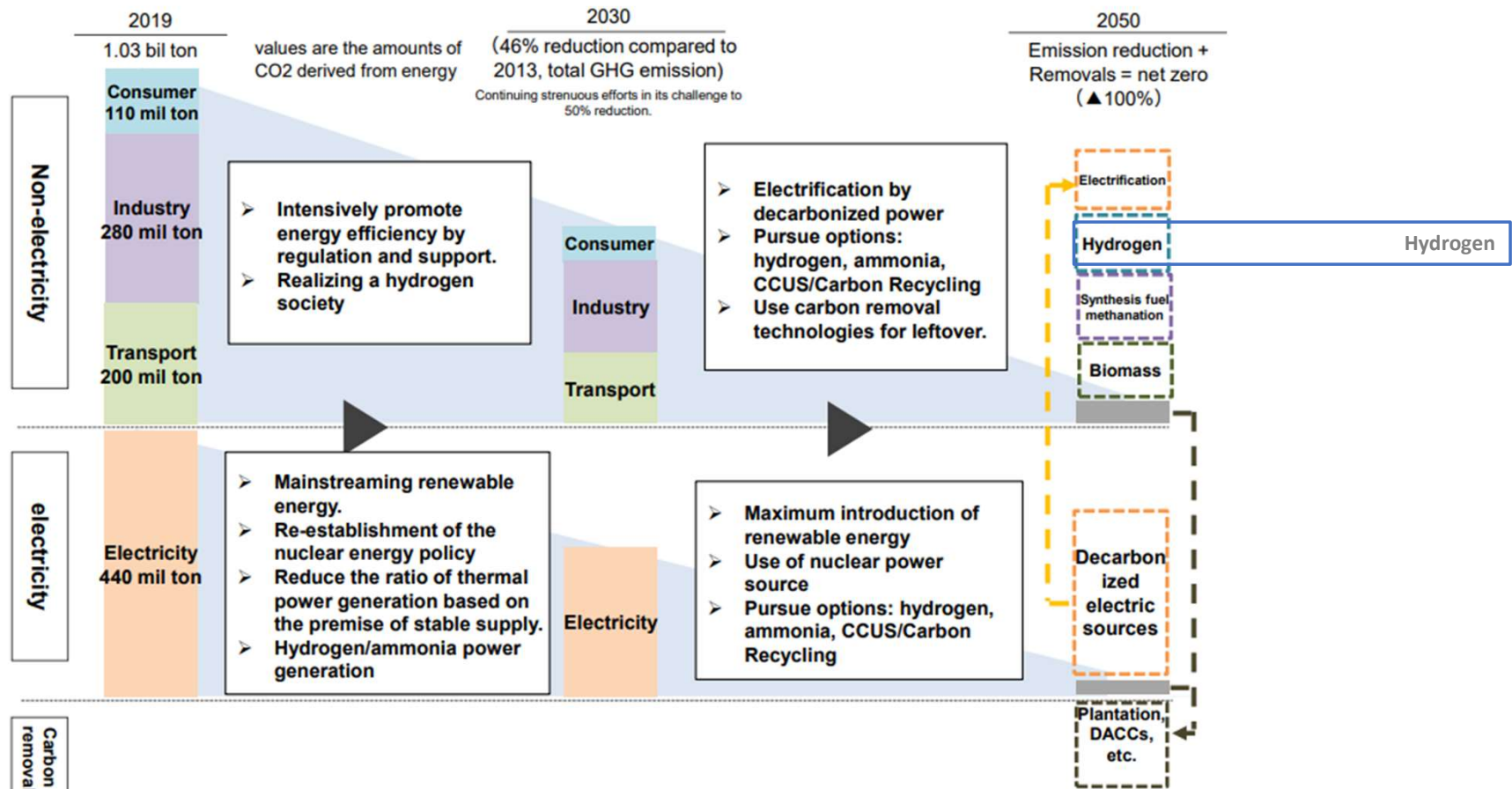
# Hydrogen utilization system "Hydro Q-BiC" Promotion and development of business

Yasuo Homma,  
Group Conductor of NOVARE Innovation Center, Hydrogen Group



# Aiming for carbon neutrality

## Green Growth Strategy for Carbon Neutrality by 2050



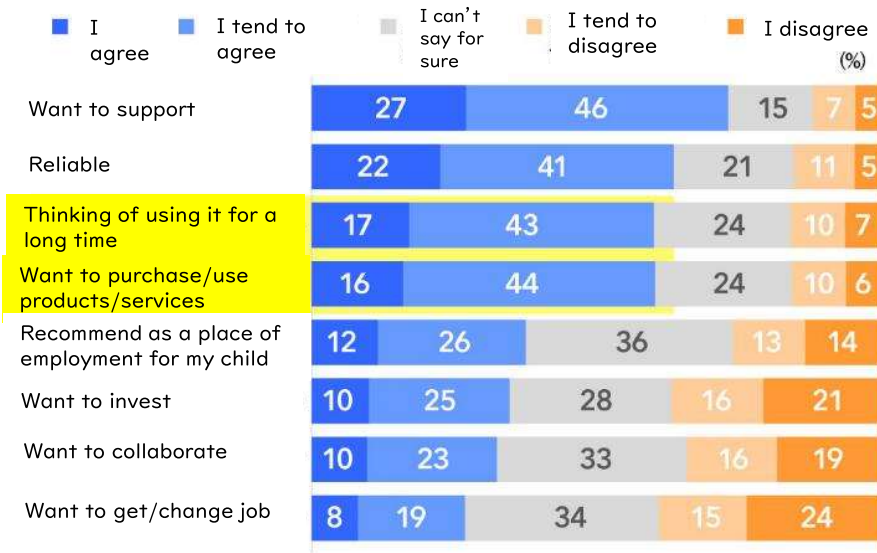
Source: Ministry of Economy, Trade and Industry  
Green Growth Strategy for Carbon Neutrality by 2050

# Corporate Initiatives for Decarbonized Management

Companies around the world are announcing their efforts, and the importance is increasing

## Awareness of companies working on decarbonization management

Q. What do you think about companies that are working towards realizing a carbon-neutral and decarbonized society?



Sustainable d Actions Webinar report

## Expansion of initiatives for decarbonization management



- Formulate management strategies that incorporate business risks and opportunities associated with climate change, and reduce disclosure of their financial impacts
- Supporting Japanese organizations: 1454 organizations (2023.9)



- Certified companies with scientific reduction targets consistent with achieving the Paris Agreement
- Number of certified Japanese companies: 601 (2023.9)



- A framework that aims to cover 100% of the electricity required by companies for their business activities with renewable energy
- Number of certified Japanese companies: 84 (2024.1)



# Toward the Realization of a Hydrogen Town

**AIST※**  
Green Hydrogen Production,  
Storage and Utilization  
Technology

**Collaborating Laboratories**  
CO<sub>2</sub> reduction in buildings and city  
blocks /Energy supply during disasters

**Shimizu Corporation**  
Energy-management technology  
/Mobility Collaboration  
Technology

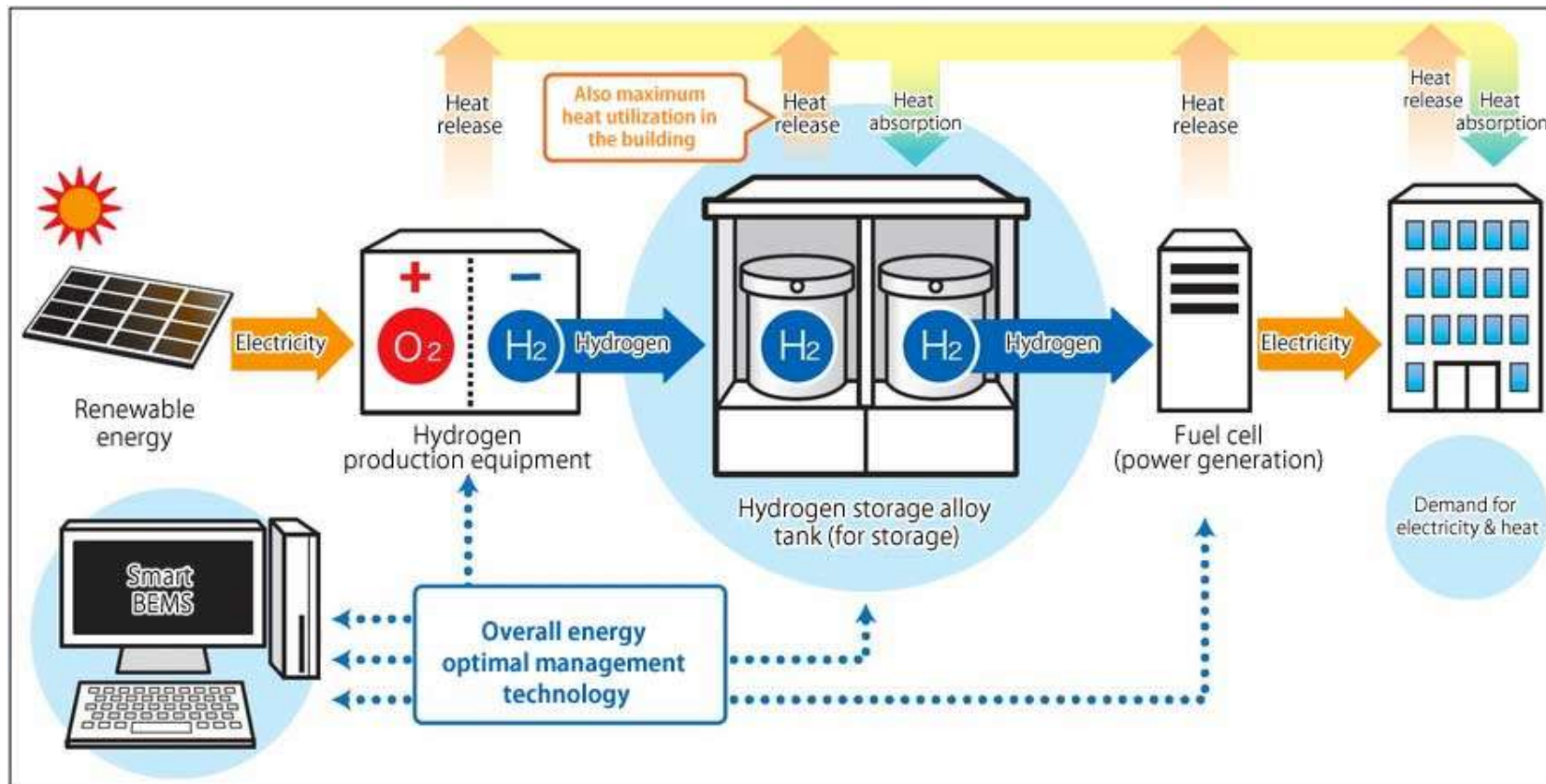


※:National Institute of Advanced Industrial Science and Technology

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# Hydrogen Energy Utilization System "Hydro Q-BiC"

© To use renewable hydrogen in buildings and city blocks





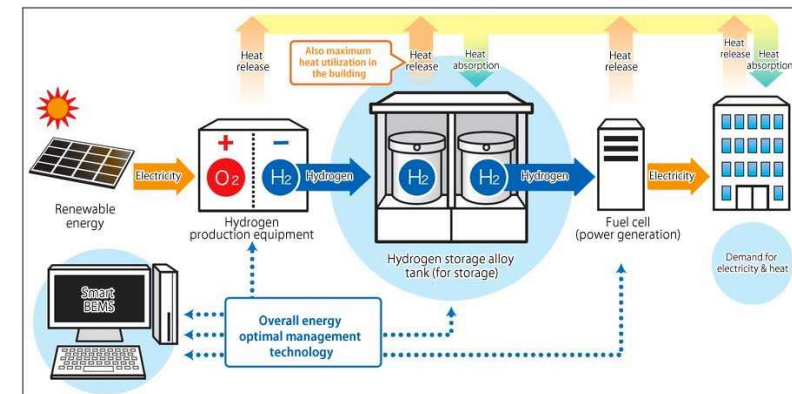
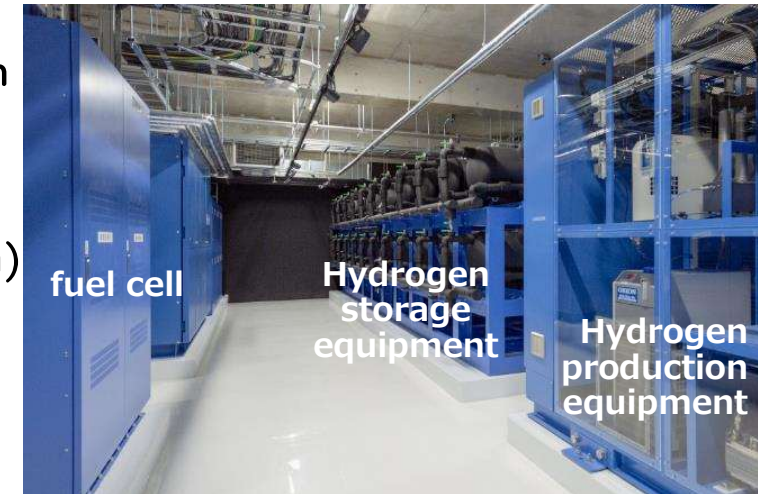
# Overview and Features of "Hydro Q-BiC"

## ■ System Overview

- ◆ Hydrogen is produced using green electricity and stored in a hydrogen storage alloy (Metal Hydride). Hydrogen energy utilization system that utilizes hydrogen as needed.
- ◆ Optimal control of the energy of the entire building, including hydrogen, by smart BEMS(Building and Energy Management System)

## ■ Features & Strengths

- ◆ Our proprietary Metal Hydride does not fall under the category of hazardous materials.
- ◆ Expensive rare earths are not used as raw materials for alloys.
- ◆ Off-site hydrogen can be quickly filled into the storage equipment.
- ◆ Not subject to the High Pressure Gas Safety Act and does not require a qualified person to handle it.
- ◆ There are no special regulations on installation in the building.





# Safe and compact energy storage with hydrogen

- A large amount of energy can be stored in the vicinity of the building without qualified personnel.

## Newly developed MH(Metal Hydride)

✓Nonflammable

☞ Not classified as dangerous

✓Not using rare earth

☞ Expectation of cost reduction



## Commonly used MH



Classified as dangerous goods under the Fire Service Act Because it ignites

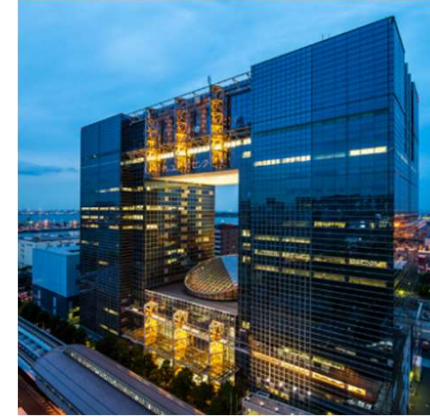
# Implementation results of Hydro Q-BiC



2021.05 Hokuriku Branch



2022. 03  
U Group  
(Nagano  
Toyota)  
Prism Building



2025.03  
Demonstration  
scheduled to start  
  
Tokyo Waterfront City  
District heat supply  
(under construction)



2023.09 NOVARE



2024.03 Susumu Kogyo  
Obama Plant



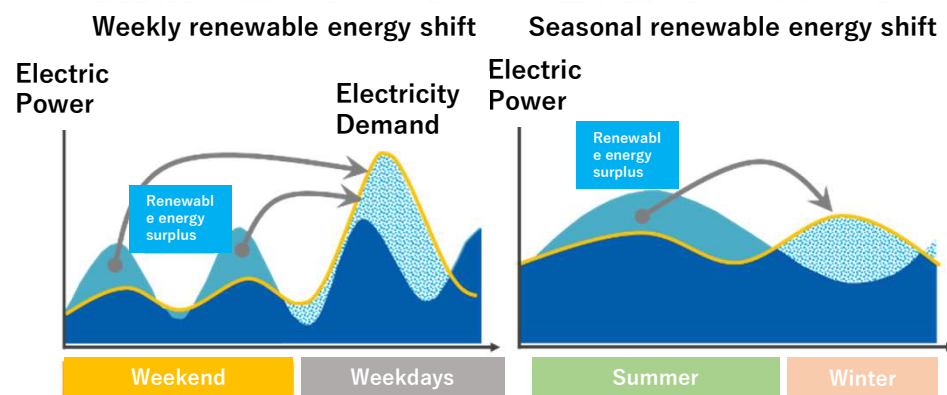
2025.04 Planned  
Osaka Expo NTT Pavilion (under construction)

# Deployment Models of Hydro Q-BiC

1. Local production for local consumption of renewable energy,  
BCP (Disaster Utilization) model
2. Construction of carbon-free city block model using hydrogen infrastructure
3. Carbon-neutral model of factory supply chain
4. District heat supply model (use of off-site hydrogen heat supply)
5. Hydro Q-BiC Lite (packaged model)

# I. Local production for local consumption of renewable energy, BCP (Disaster Utilization) model

## Shimizu Hokuriku Branch (completed in May 2021)



In consideration of BCP, we save enough to supply the minimum amount of electricity required for three days at the time of disasters

### ■ Facility Overview

Use: Office      Total floor area: 4,224m<sup>2</sup>  
Power Required: 109 kW max

### ■ Overview of Hydrogen Facilities

Solar Panels : 140kW  
Hydrogen Production Equipment : 10Nm<sup>3</sup>/h  
Hydrogen Storage Equipment : 1350Nm<sup>3</sup> (2000kWh fairly)  
Fuel Cell : 100kW      Lithium-Ion Battery : 100kWh



# Shimizu Hokuriku Branch New Building and System Overview

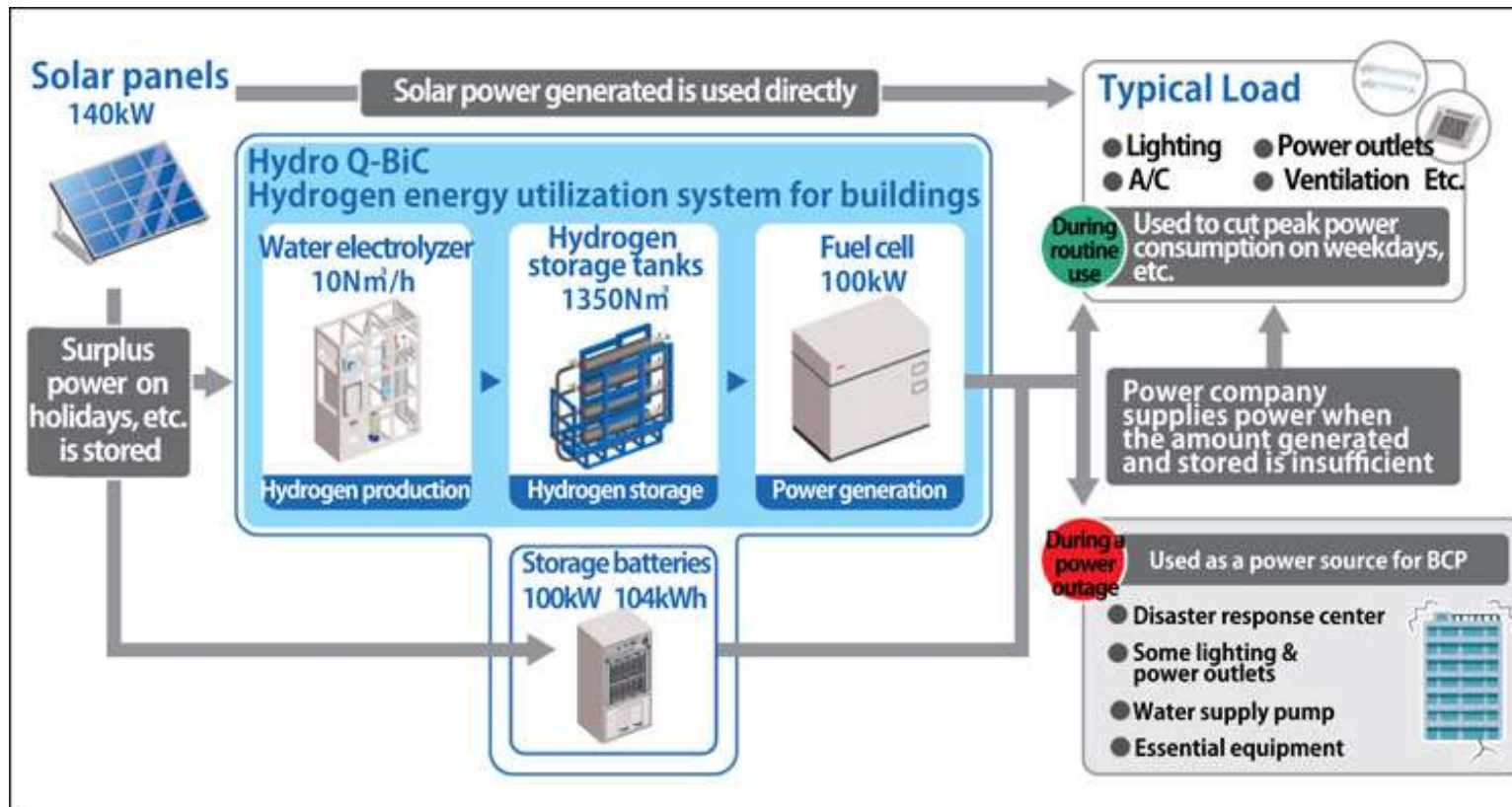


Image diagram of renewable energy utilization at Hokuriku Branch



# I. Local production for local consumption of renewable energy, BCP (Disaster Utilization) model

## U-Group Prism Building (completed in January 2022)

- The office building was renovated as ZEB Ready, and solar panels and Hydro Q-BiC equipment were installed on the roof of the third floor.
- At the time of disasters, the 1st ~ 3rd floors of the building will be used as an evacuation site and a private-sector disaster prevention center that accepts surrounding residents.



Hydro Q-BiC Facility installation situation



Hydrogen storage equipment

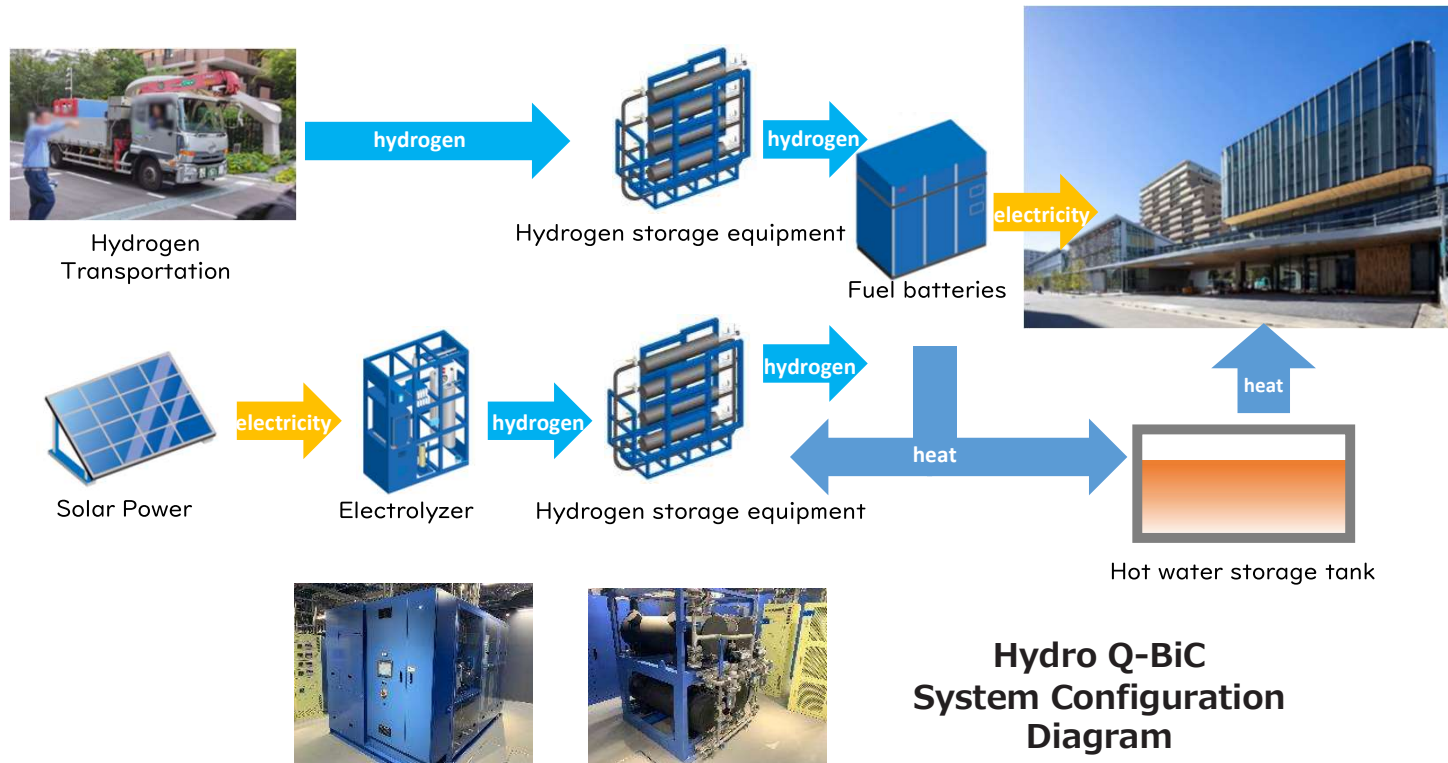
## 2. Carbon-free block model with hydrogen infrastructure

### Smart Innovation Ecosystem NOVARE

- In addition to the renewable energy grid, green hydrogen produced off-site (outside the premises) is supplied
- Establish a foundation for the diversification of CO<sub>2</sub>-free energy that does not depend only on the power grid

#### ■ 3 (Tri) CE

- ① Charge Energy Recharge the energy
- ② Chain Edge Continuity with the supply chain
- ③ Connect Element Flexibility and coordination





### 3. Carbon-neutral model of supply chain in factories

Susumu Kogyo Co., Ltd. Obama Factory (Completed in March 2024)

- Contribute to the carbon neutrality of the supply chain at factories and use them as disaster bases
- Introduced Hydro Q-BiC to its production facilities and used hydrogen as an energy source.

Can also be used in production processes in the future (additional piping work required)



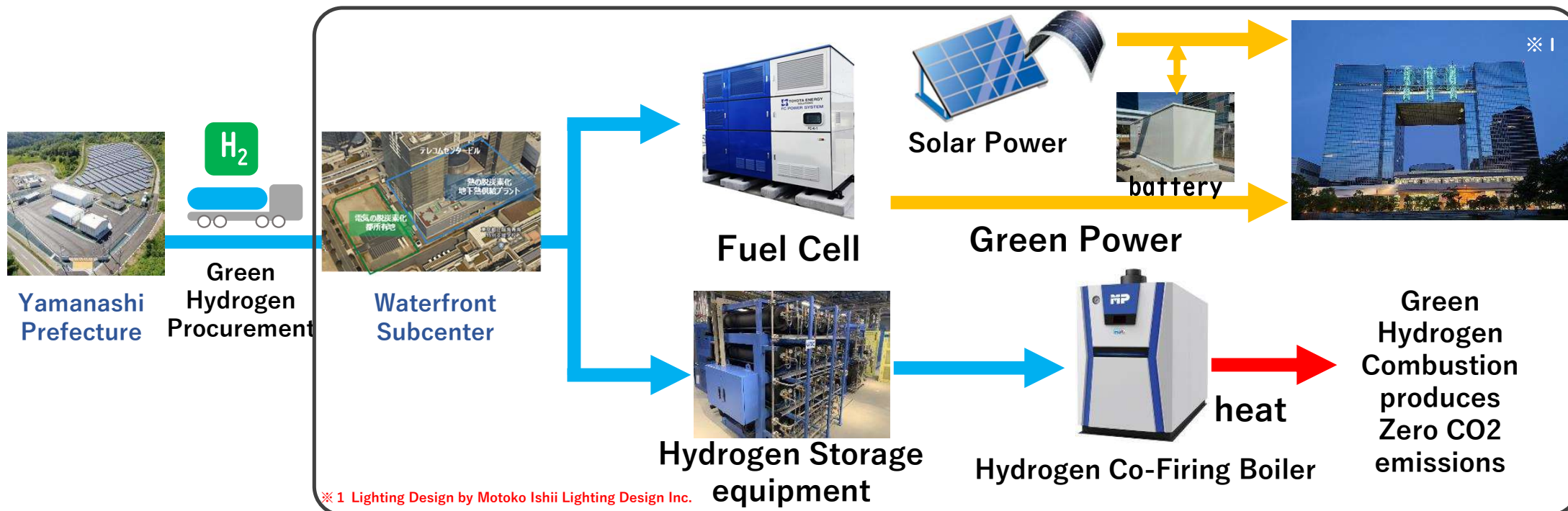
# 4. District heat supply model (use of off-site hydrogen heat supply)

Joint research that contributes to the decarbonization of the waterfront subcenter

Joint research with Bureau of Port and Harbor, Tokyo Metropolitan Government, National Institute of Advanced Industrial Science and Technology(AIST), Tokyo Teleport Center Inc., Tokyo Rinkai Heat Supply Inc., Hirakawa Corporation.

【Decarbonization of electricity】 Utilization of green electricity using green hydrogen and sunlight for building lighting, etc.

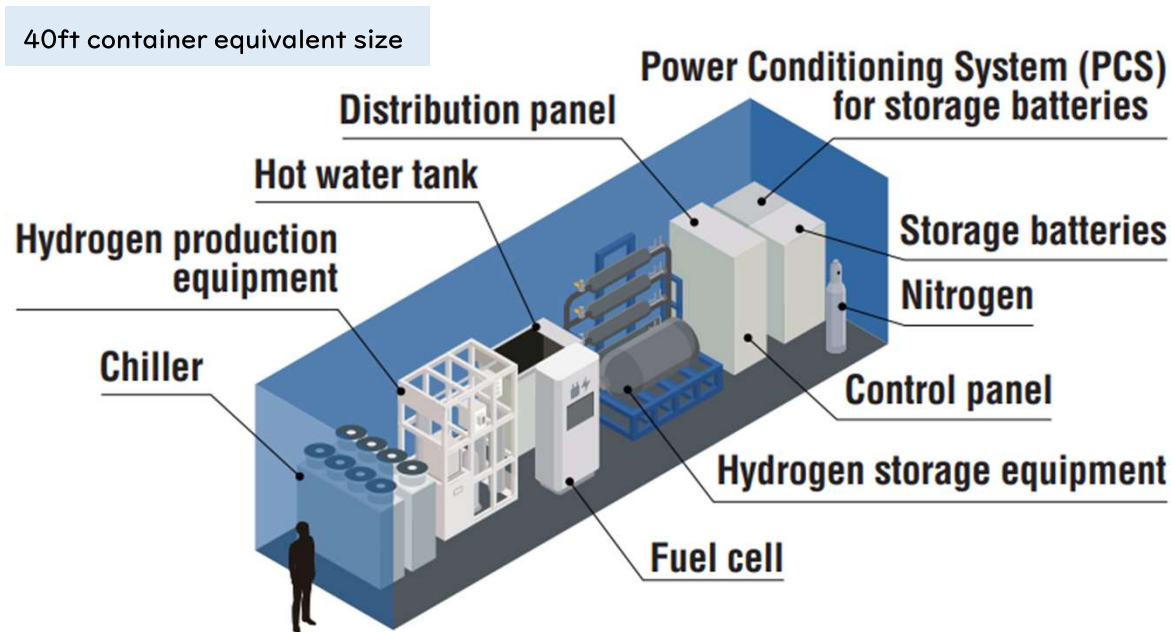
【Decarbonization of heat】 First in Japan to implement hydrogen co-firing boiler for district heat supply using Metal Hydride



## 5. Package Model (Hydro Q-BiC Lite)

- Developed package-type Hydro Q-BiC Lite
- Packaging of hydrogen from “producing → storing → using”
- Can be used from a small start

Hydro Q-BiC Lite (Package Type)



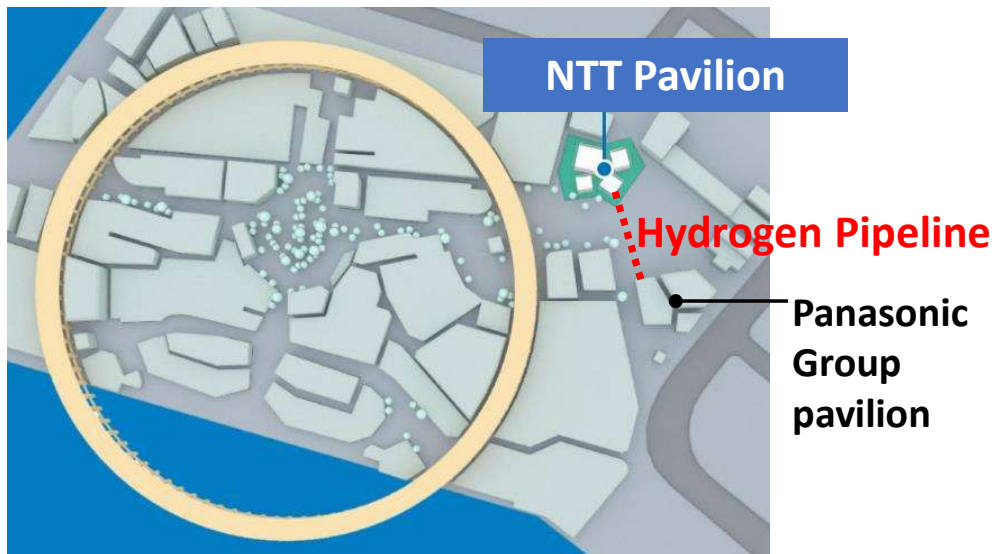
Tokyo Metropolitan Government  
Subsidies can be used



## 5. Package Model (Hydro Q-BiC Lite)

### Osaka Expo NTT Pavilion

- Electricity generated by fuel cells will be supplied to the NTT Pavilion for the purpose of exhibiting next-generation power generation methods
- In addition to the fuel cells installed in the NTT Pavilion



# Toward the development of "Hydro Q-BiC"

0. Small start by a packaging

1. On-site local production for local consumption in buildings, use for BCP

2. Utilization of hydrogen infrastructure in city blocks

3. Decarbonization utilization in areas such as district heat supply

