

Presentation 2

Open Innovation Initiatives at NOVARE

Masanobu Onishi,
Executive Vice Presidents
Executive Conductor, NOVARE

Smart Innovation Ecosystem NOVARE



Smart Innovation Ecosystem

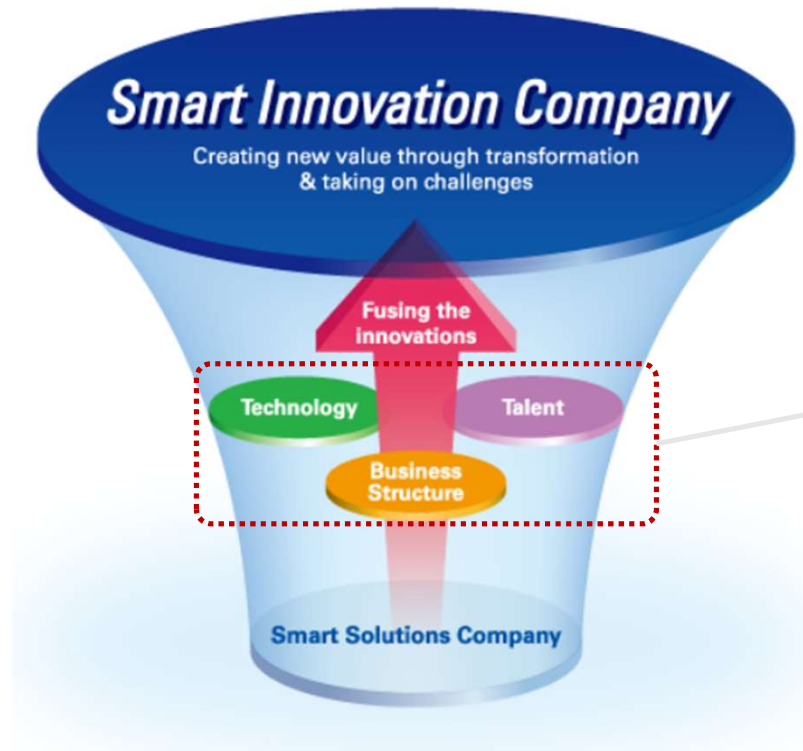
NOVARE

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

©Copyright 2024 Shimizu Corporation

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.

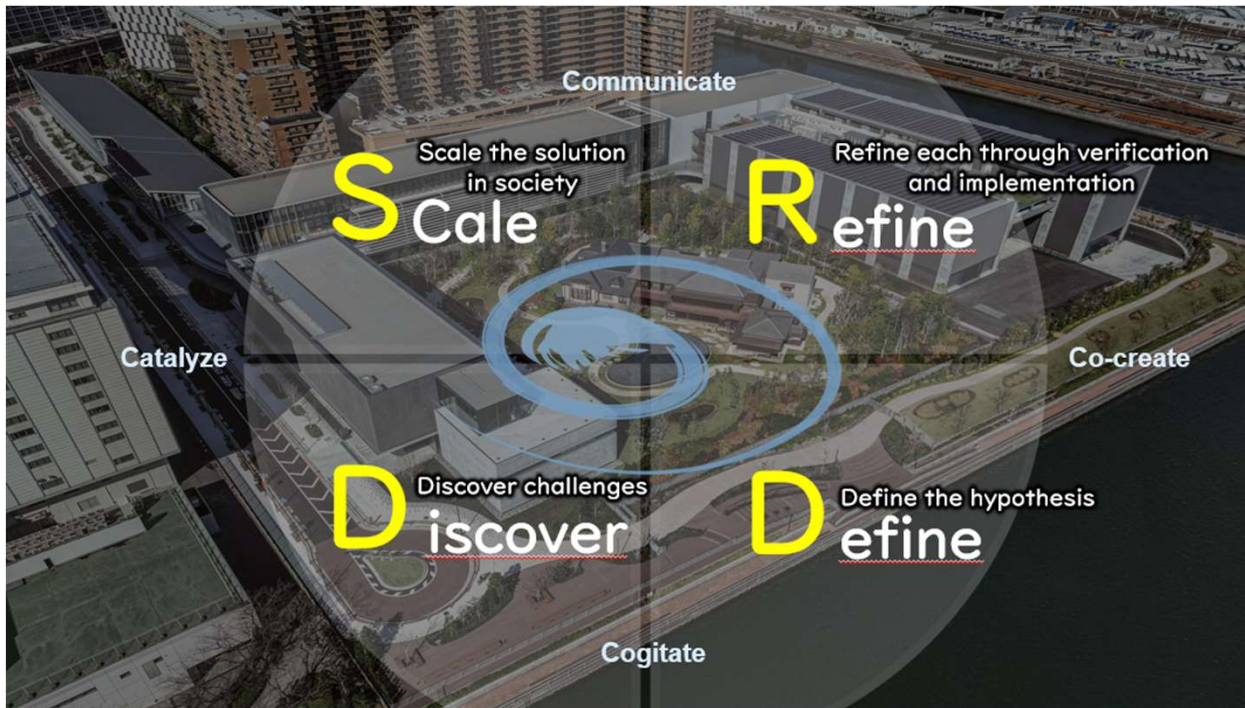


©Copyright 2023 Shimizu Corporation

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

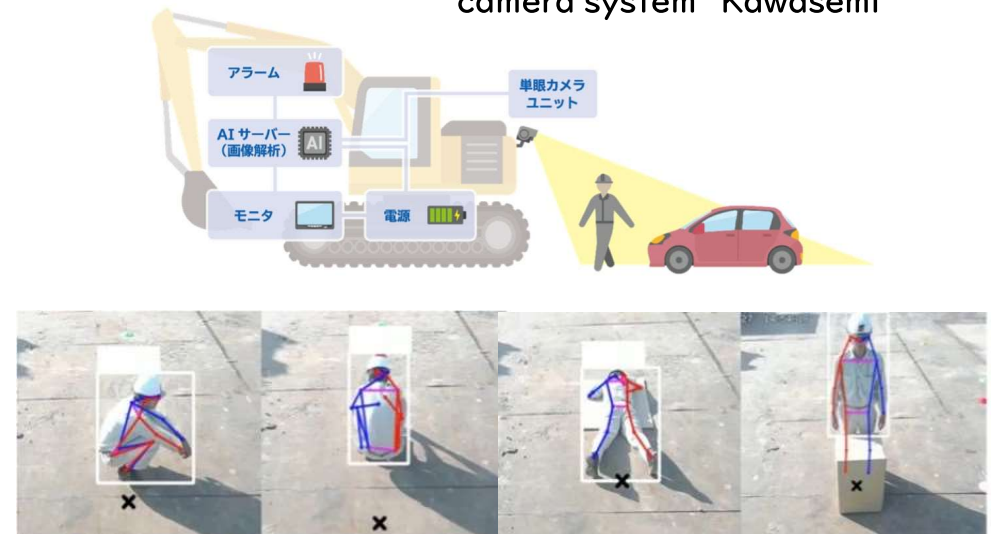
3D point cloud data analysis using LiDAR, collaboration between data modeling venture (mapry) and Civil Engineering and Building Construction



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

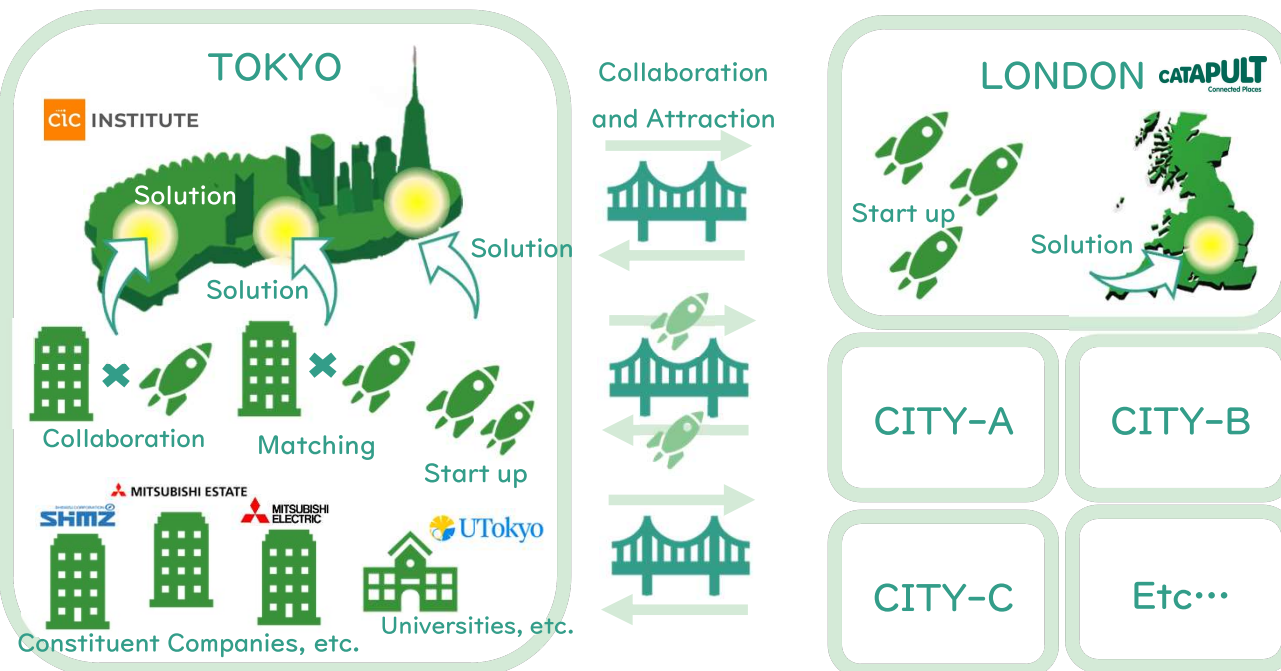
- JV
- Business alliances and consignments
- M&A
- Investment (CVC)
- Distributorship
- Revenue Share
- Patent Revenue

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

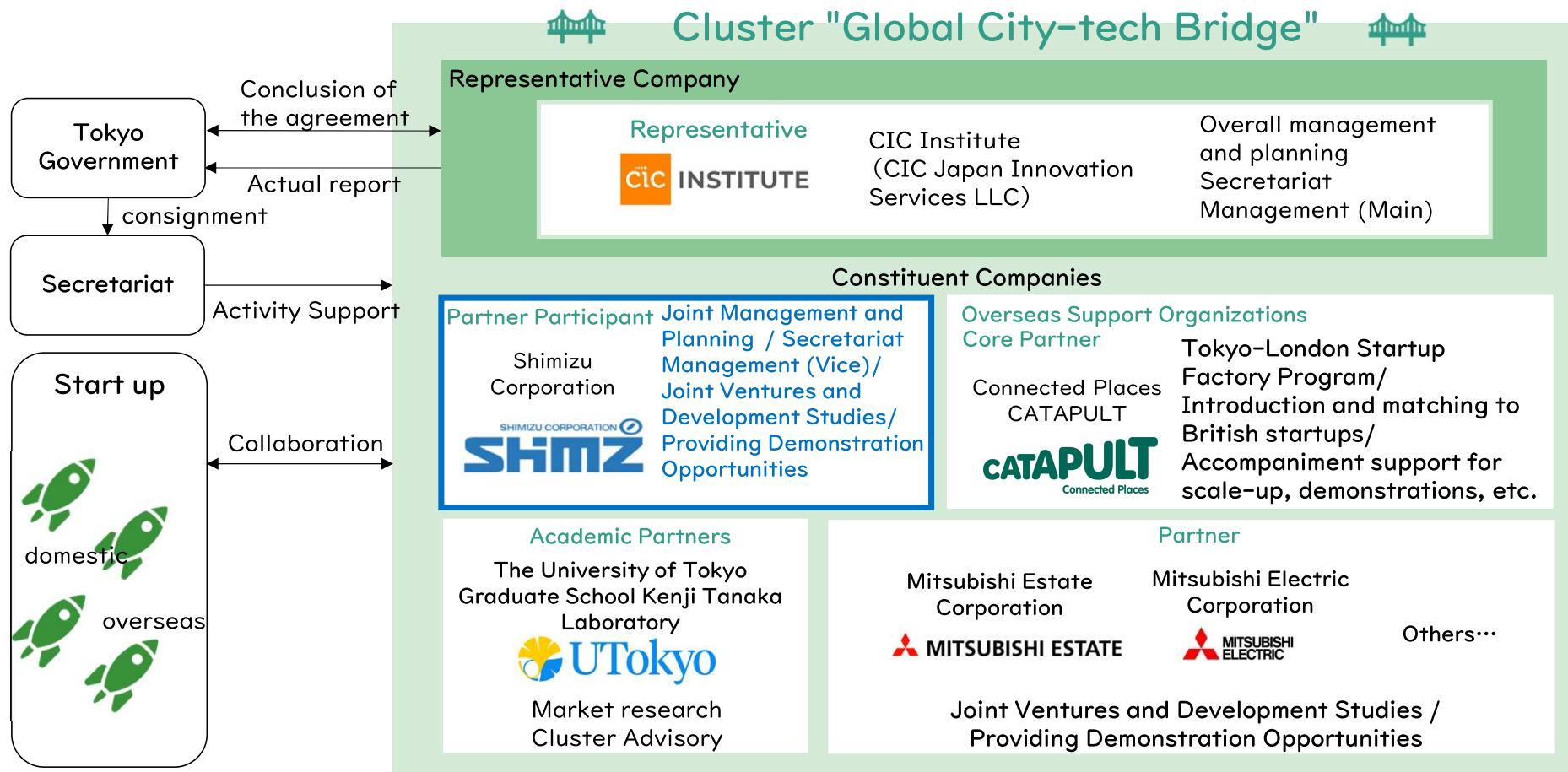


〈Areas of industry / technology to focus on〉
City-tech (Metropolis related technology)
(including climate tech, urban tech, transportation, and resilience)

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

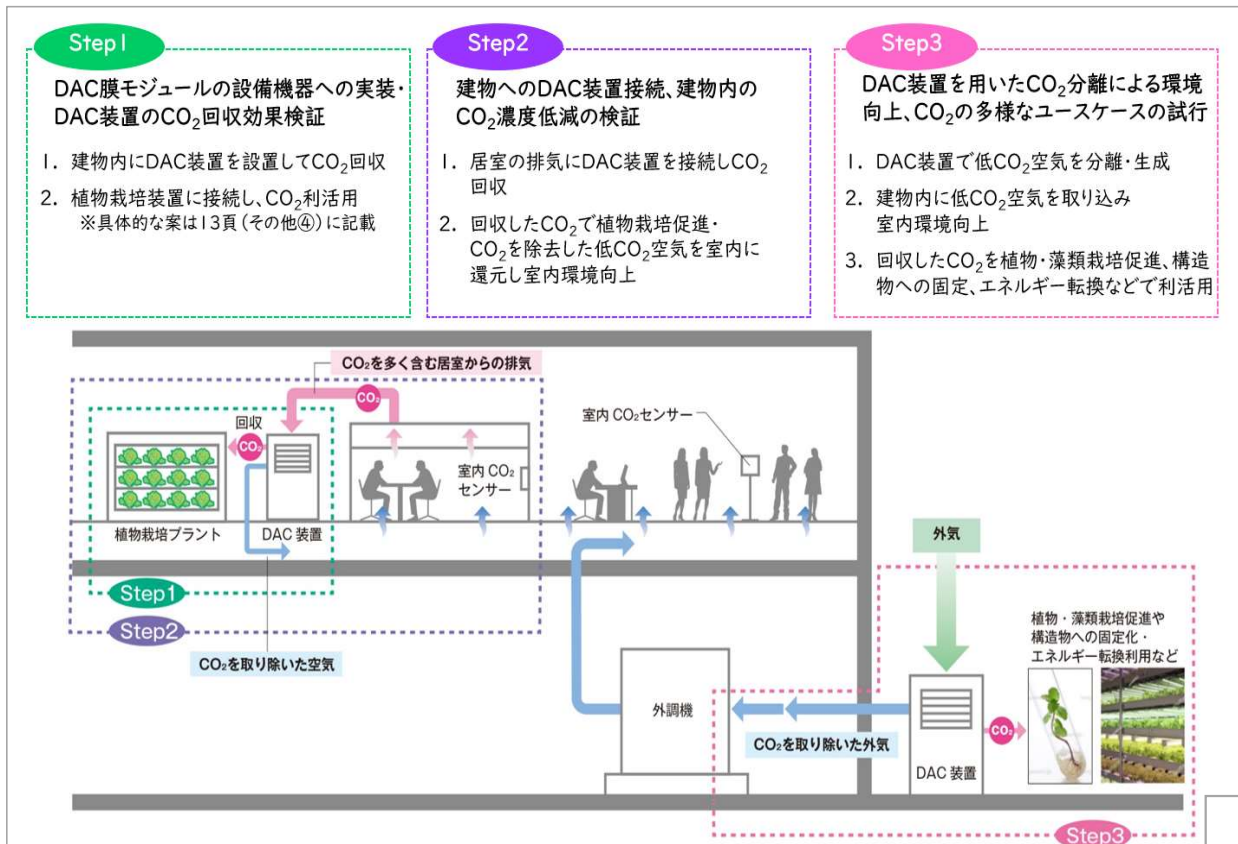
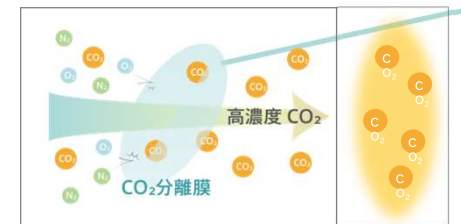


Diagram of how DAC works (only in Japanese)

Small Decentralised



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

CO2 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 CO2 from the atmosphere
- Install and connect DAC equipment to buildings in stages to promote the utilization of CO2 captured from buildings

4. Corporate Venturing Program

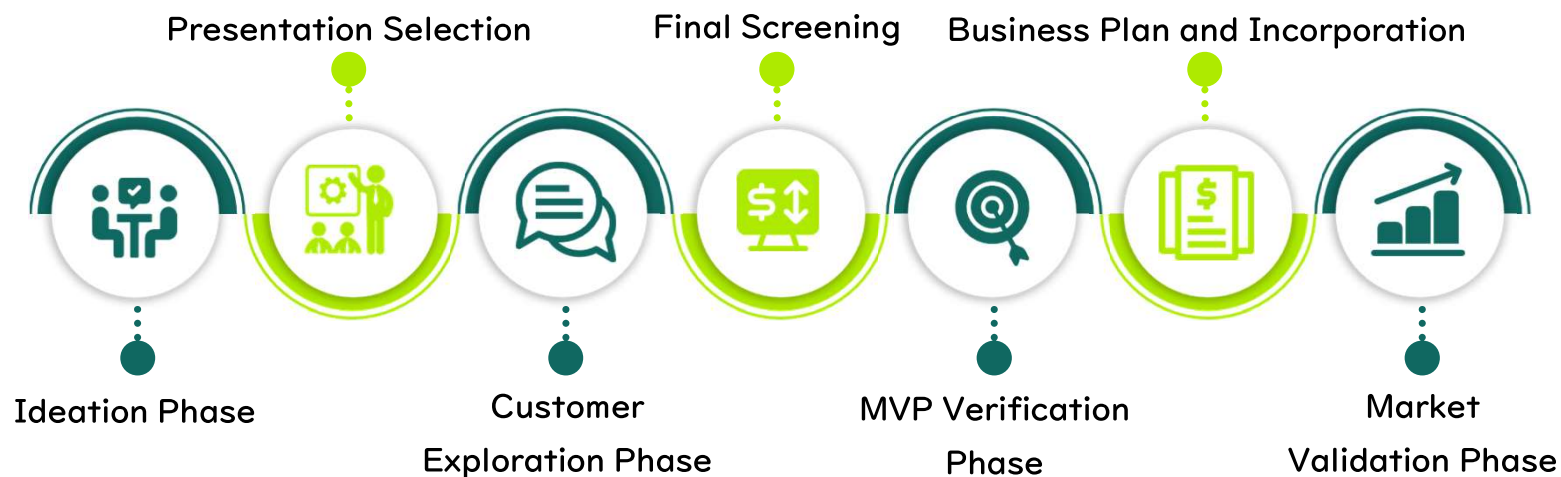


A program to promote and support the entrepreneurship of employees have business ideas and a spirit of challenge (established in 2022)

< 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

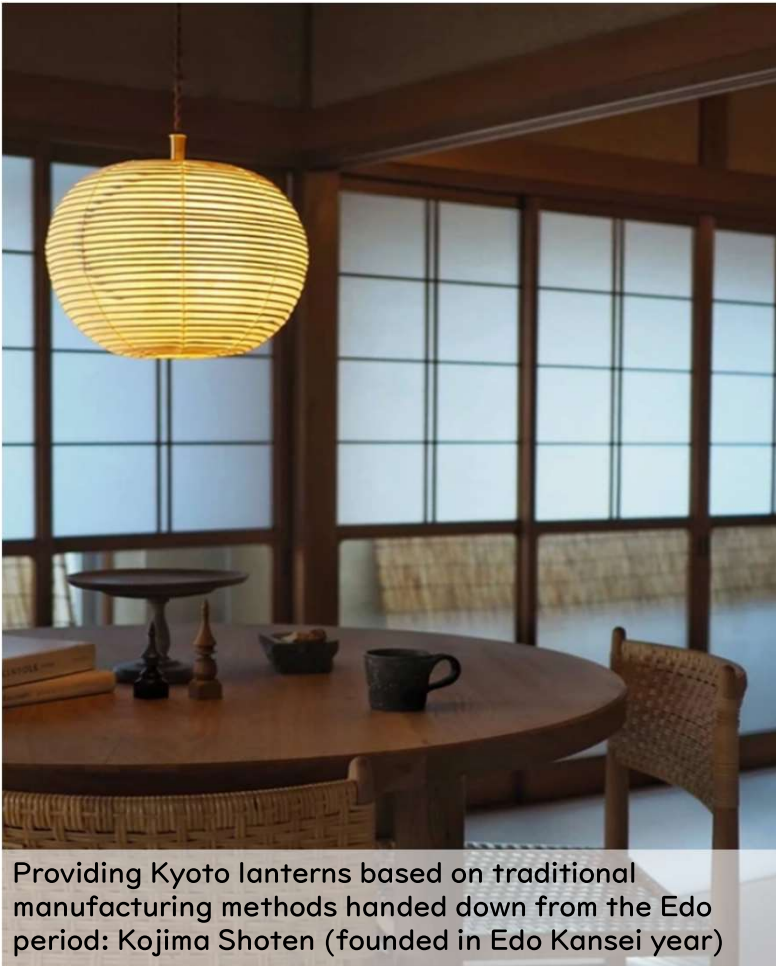
1. Customer participatory production process

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

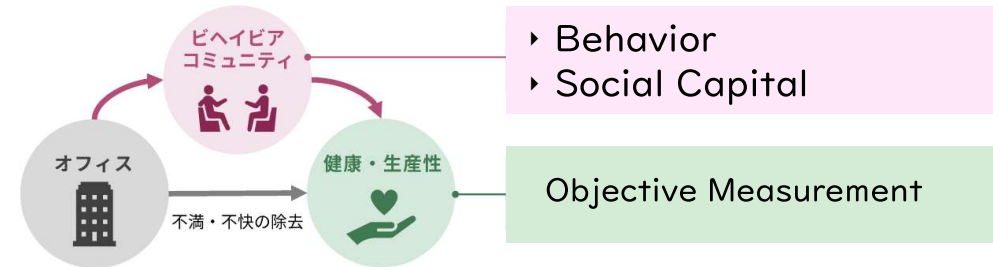
Industry-academia collaborative research and development
of next-generation air conditioning systems at NOVARE
(Laboratory of Architectural Environment)

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)



6. Co-creation with students, support for social implementation

Collaboration with students in the field of architecture and urban studies (General Incorporated Association ASIBA)

Holding events at NOVARE (sponsorship)

インキュベーション第2期
インキュベーション第2期 最終イベント
ASIBA FES 2024 「そのまなざしは『イマ』を超えるか」

来場者数 平均満足度
197名 **4.64/5**
※申し込み段階の人数

コンテンツ
18のピッチ **2**回のパネルトーク
35のブース展示

Students studying
Architecture and
Urban Studies,
people involved in
the Construction
and Real Estate
industries attended
the event



Implementation support for proposed projects

Enoniwa
絵を描くことを障がい者との対話のツールに！

#福祉 #対話
北林 菜

対話型お絵描きツール Enoniwa



COLUB
共に学ぶためのプラットフォーム

#勉強会 #コミュニティ
山路 湧, 二瓶 雄太

勉強会 #共創 オープンプラットフォーム
COLUB
大学生、社会人のための
読書会アプリ

読書会 #共創 オープンプラットフォーム
大学生、社会人のための
読書会アプリ



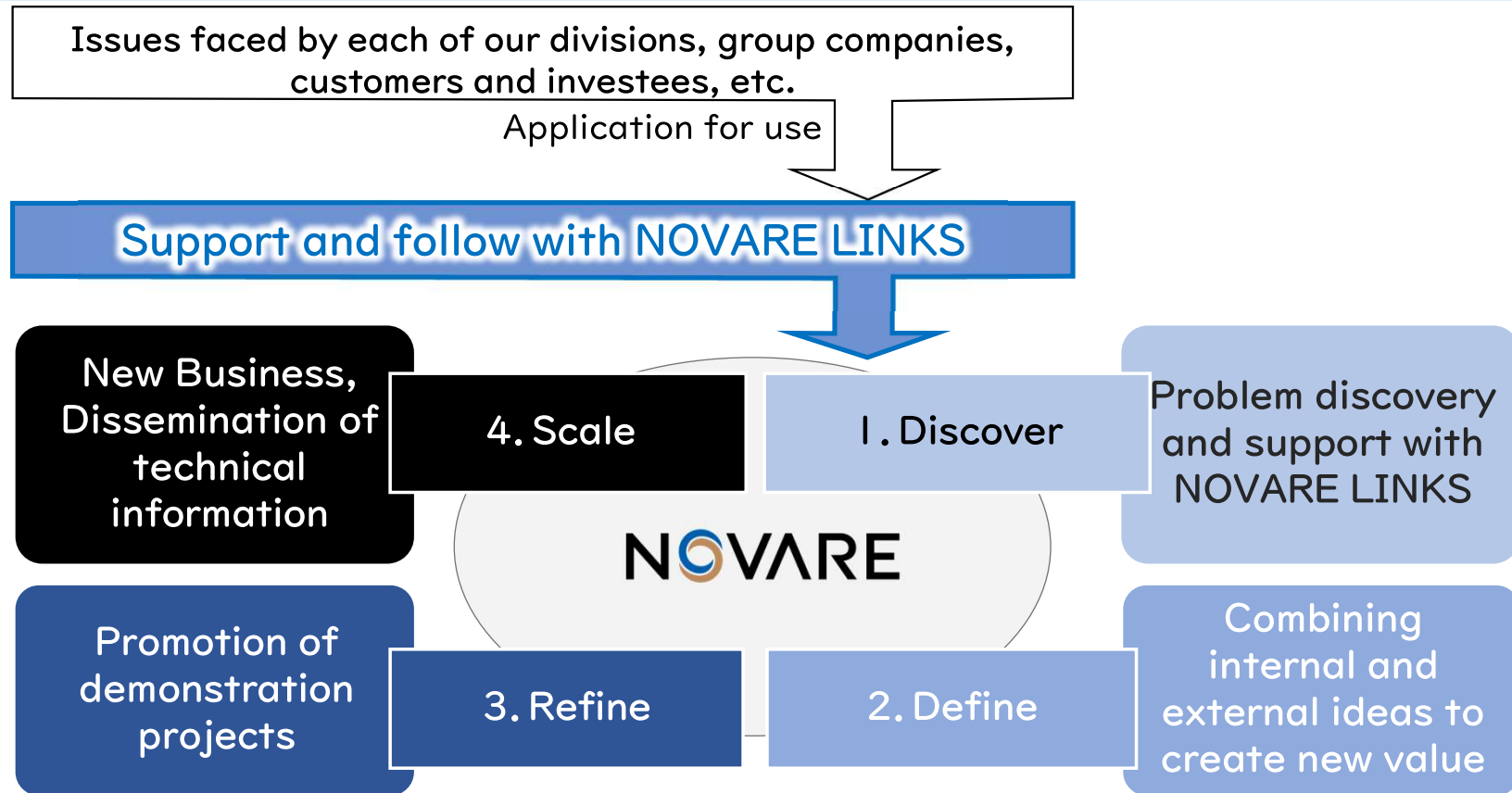
共に学ぶためのプラットフォーム



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

©2024 Shimizu Corporation