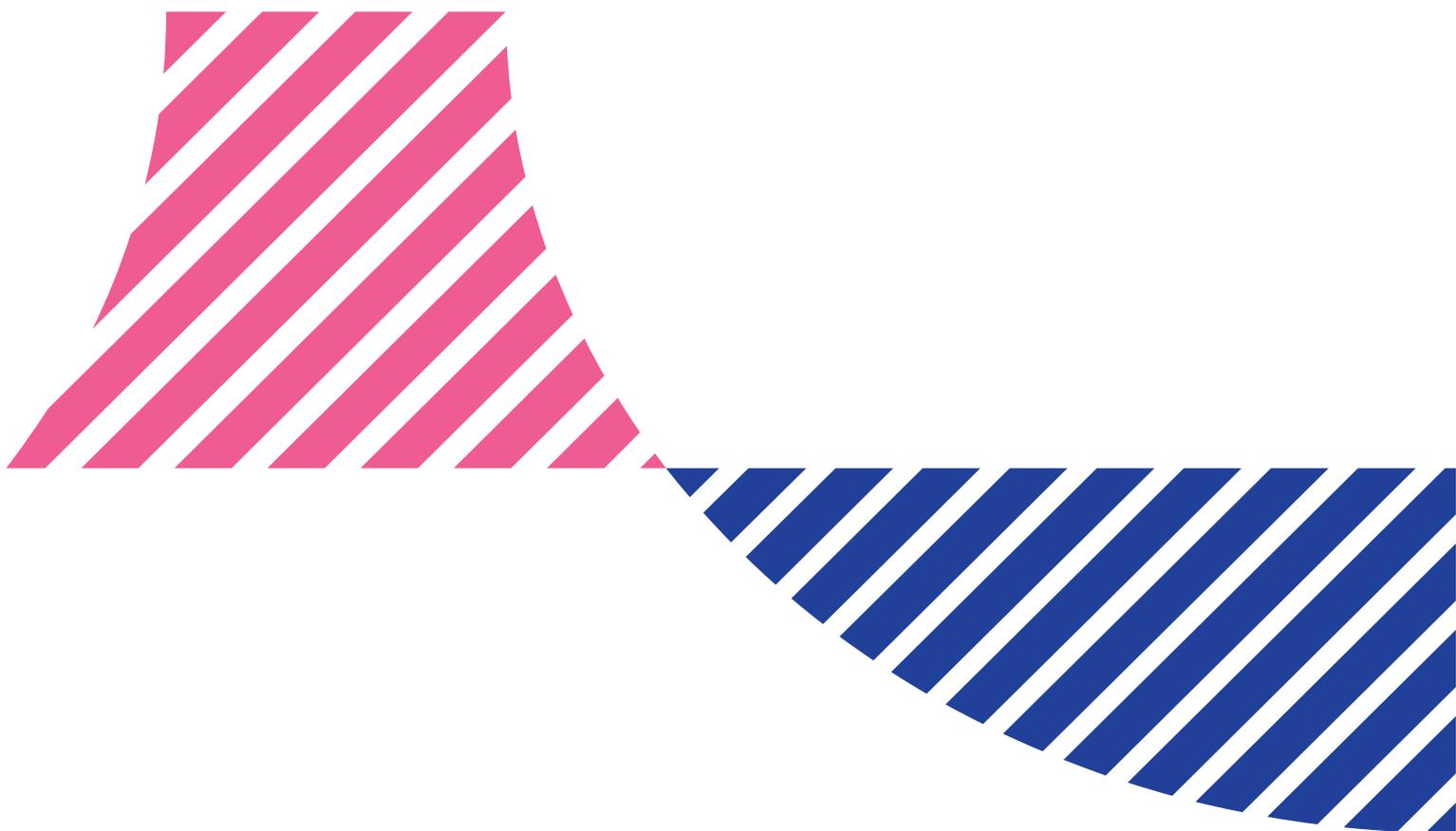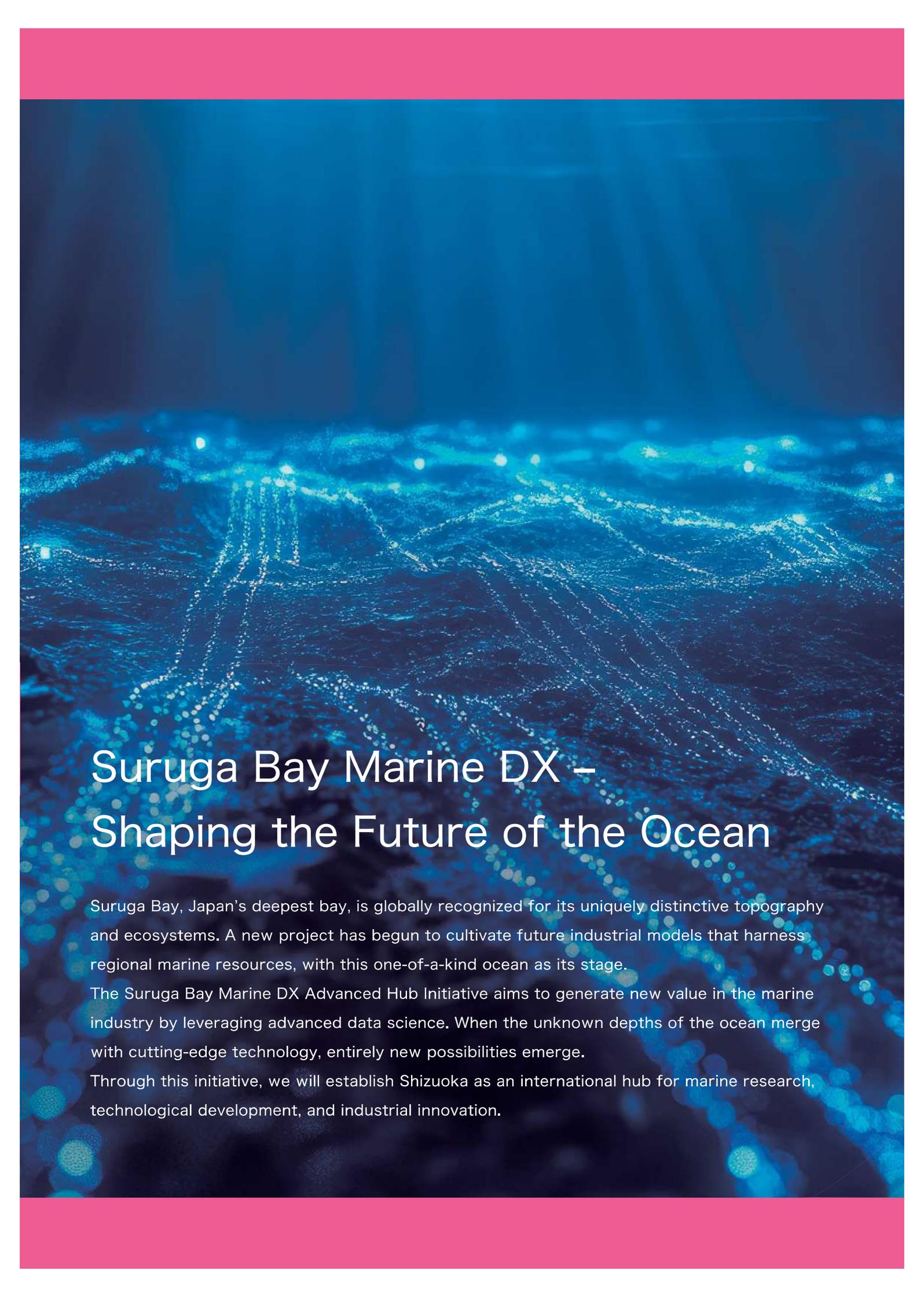Cabinet Office Grants for Revitalization of Regional universities and industries

Suruga Bay Marine DX Advanced Hub initiative

駿河湾海洋DX プロジェクト

Suruga Bay Marine DX Advanced Hub Initiative

Suruga Bay Marine DX – Shaping the Future of the Ocean

Suruga Bay, Japan's deepest bay, is globally recognized for its uniquely distinctive topography and ecosystems. A new project has begun to cultivate future industrial models that harness regional marine resources, with this one-of-a-kind ocean as its stage.

The Suruga Bay Marine DX Advanced Hub Initiative aims to generate new value in the marine industry by leveraging advanced data science. When the unknown depths of the ocean merge with cutting-edge technology, entirely new possibilities emerge.

Through this initiative, we will establish Shizuoka as an international hub for marine research, technological development, and industrial innovation.

NANBA Takashi, Mayor of Shizuoka City

The Suruga Bay Marine DX Advanced Hub Initiative is a bold and unprecedented endeavor that brings together academia, industry, and government to advance cutting-edge research and development in the marine field-one of Shizuoka's key strengths-and to cultivate practical, skilled talent. In fiscal year 2024, this project was launched after being selected for the Cabinet Office's "Regional University and Industry Creation Grant Program," in collaboration with Shizuoka Prefecture. I would like to express my sincere gratitude to all those involved. Suruga Bay, located right in front of Shizuoka City, reaches depths of 2,500 meters just a few dozen kilometers from the coast , offering a marine environment that is both geographically and biologically rare. The area around Shimizu Port has long been home to a concentration of research and educational institutions, as well as marine-related companies. By leveraging the power of this "place," we can attract global knowledge and talent, and I am confident that Shizuoka can become a world-class hub for marine research and development, industry, education, and human resource development. This project will serve as the core of that vision. For the bright future of Shizuoka, and to address global-scale marine challenges, we will work together in co-creation with all stakeholders

HIRAKI Sho, Vice Governor of Shizuoka Prefecture

In fiscal year 2019, Shizuoka Prefecture launched the MaOI Project, aiming to create new industries and preserve the marine environment by utilizing cutting-edge marine biotechnology in t he ocean and fisheries sectors. We established the MaOI Institu te as the driving body of the project, supporting the creation of technological seeds, research and development, and commercialization by leveraging the advanced expertise and state-of-the-art facilities of universities and research institutions to address urgent challenges faced by the fisheries and other industries. Currently, through the Suruga Bay Marine DX Advanced Hub Initiative, we are collaborating with a diverse range of stakeholders-including Shizuoka City, Shizuoka Institute of Science and Technology, Shizuoka University, Tokai University, and local companies-to apply advanced technologies in research and development, industrial applications, and human resource development, with Suruga Bay serving as the primary demonstration field. We will actively build upon the systems and achievements developed through the MaOI Project, while also expanding the outcomes of new initiatives such as Marine Informatics throughout the prefecture. Through these efforts, we aim to establish Shizuoka as a global hub for the promotion of the marine industry and the preservation of the marine environment.

HASHIMOTO Masahiro, Executive Director of the Suruga Bay Marine DX Advanced Hub Initiative

The ocean has long provided humanity and the planet with a wealth of benefits, including biological resources. At the same time, concerns about the marine environment-such as plastic pollution-have grown in recent years, and international interest in the sustainable use of the ocean is increasing. In Shizuoka Prefecture, marine-related industries account for 7 .5% of the total industrial sector (according to estimates by Hosei University), more than three times the national average. This makes the region ideally suited for the development of new industries within the Blue Economy. Against this backdrop, the Shizuoka Marine Open Innovation (MaOI) Project was launched in 2019, promoting the commercialization of marine-related technologies such as fisheries, aquaculture, ocean observation, and equipment development through collaboration among regional and external stakeholders from academia, industry, and government. Now, the Suruga Bay Marine DX Advanced Hub Initiative has officially begun. This is a groundbreaking project that responds to global developments surrounding the ocean, regional aspirations for new industry creation, and the growing need for university-based research and human resource development in marine DX. Through the advancement of this initiative, we are committed to fostering new industries in this region and driving innovative regional development.

Project information

・Project Title: Suruga Bay Marine DX Advanced Hub Initiative, under the Cabinet Office's Regional University and Industry Creation Grant Program
・Project Duration: 10 fiscal years, from FY2024 to FY2033・ Note: The first 5 years (FY2024-FY2028) will receive national funding support
・Project Budget: Approximately 2 billion yen (for the 5-year national funding support period)

Background Leading to Project Launch

・June 2023: Project discussions begin within the BX Subcommittee of the Shizuoka City Governance Transformation Study Group
・October 2023: Application submitted for the Cabinet Office's Regional University and Industry Creation Grant Program - Planning Support Project
・January 2024: Selected for the Planning Support Project; planning proceeds with ongoing support from the Cabinet Office
・May 2024: Formal application submitted for the Regional University and Industry Creation Grant Program
・July 2024: Selected for the Grant Program
・September 2024: Official recognition of the Suruga Bay Marine DX Advanced Hub Initiative by the Prime Minister of Japan
・October 2024: Project officially begins

■ Project Overview

project 1 — Implementation Plan Promotion

Overall progress management of the initiative, operation of the Steering Committee and related meetings, research and planning activities, industry-academia matching, public relations, etc.

project 2 — University Reform

① Recruitment of top-level talent
② Establishment of the Marine Informatics Research Institute (Jointly established by Shizuoka Institute of Science and Technology and Shizuoka University, in collaboration with Tokai University)
③ Launch of a Marine DX Master's Program (Graduate School)-scheduled for FY2027
④ Opening of Marine DX Seminars-starting in FY2025

Utilization in education

project 3 — Advanced Research and Development in Marine Informatics

① Promotion of advanced research and development
② Development of the Suruga Bay Marine Informatics System
③ Maximizing utilization of the high-performance computing system MarineInformatics-SURUGA1GO

Research outcomes

Business results/·issues

project 4 — Promotion of Marine DX Research, Development, and Commercialization

① Establishment of the Suruga Bay Marine DX Research and Development/Commercialization Consortium, consisting of academia, industry, and government (Operated with Shizuoka City and Shizuoka Prefecture as the main bodies, and the MaOI Institute serving as the secretariat)
② Formation of subcommittees for each research and development theme to promote R&D and commercialization

Marine DX talent is developed and supplied to regional industries_Industrial sector cooperates in practical education through instructor dispatch and other means

New employment

Participation

Related Companies

Engage in joint research and development, support commercialization, and cooperate to promote Marine DX.

■ Organizational Structure

Suruga Bay Marine DX Steering Committee
Chair: Mayor of Shizuoka City

Suruga Bay Marine DX Business Strategic Committee
Chair: Executive Director (of the Suruga Bay Marine DX Advanced Hub Initiative)

Suruga Bay Marine DX Advanced Hub Initiative Evaluation Committee
Secretariat: Shizuoka City

Suruga Bay Marine DX Research and Education Committee
Chair: President of Shizuoka Institute of Science and Technology
Secretariat: Shizuoka Institute of Science and Technology

- Marine Informatics Research Promotion Task Force
- Marine DX Educational Curriculum Development Task Force
- Inter-University Collaboration Task Force

Suruga Bay Marine DX Research and Development/Commercialization Consortium
Chair: Vice President of Suzuyo Corporation /
Vice Chair of Shizuoka Chamber of Commerce and Industry
Secretariat: Shizuoka City, Shizuoka Prefecture, MaOI Institute

Consortium Management Committee

Smart Fisheries Subcommittee	Blue Carbon Subcommittee	Marine Equipment Subcommittee

Collaboration

Marine DX-related Research and Development Projects under the Shizuoka Prefecture MaOI Project

■ Participating institutions

静岡市 ｜ 静岡県 ｜ MaOI Institute ｜ SIST 静岡理工科大学

国立大学法人 静岡大学 ｜ 東海大学 ｜ Suzuyo ｜ NTTグループ

project 2
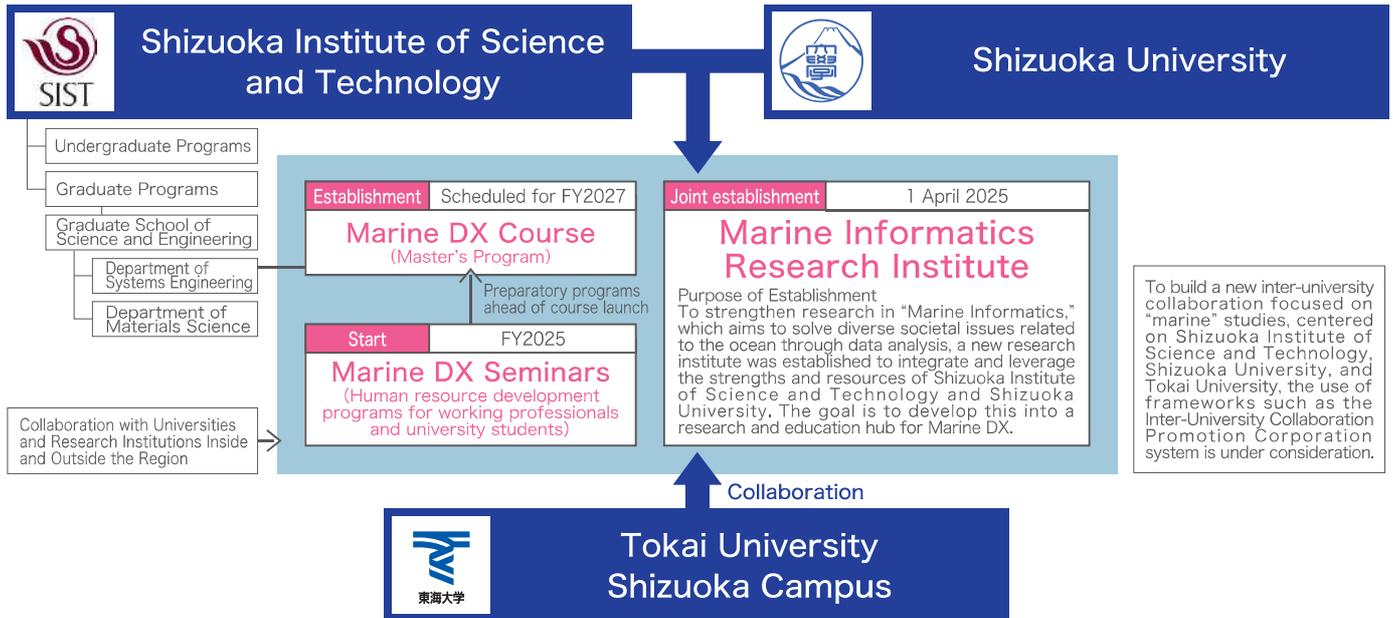
University Reform

Shizuoka Institute of Science and Technology, Shizuoka University, and Tokai University will collaborate by leveraging each university's strengths and resources related to Marine DX, fulfilling their roles as centers for education and research. To foster talent that will drive Marine DX, they will provide practical education focused on learning the theories and skills that form the foundation for data utilization. In particular, with the goal of producing talent for marine-related industries, they will enhance programs for working professionals and develop the universities into distinctive educational hubs. Furthermore, the Marine Informatics Research Institute will promote cutting-edge research and development themes, aiming to establish academic standing as a Marine DX research center and to maximize research outcomes through social implementation in marine-related industries.

■ Promotion of New Marine DX Research and Education through Coll aboration with Regional and External Universities and Research Institutions

| SIST | Shizuoka Institute of Science and Technology | | Shizuoka University |

- Undergraduate Programs
- Graduate Programs
- Graduate School of Science and Engineering
  - Department of Systems Engineering
  - Department of Materials Science
- Collaboration with Universities and Research Institutions Inside and Outside the Region

Establishment — Scheduled for FY2027

Marine DX Course
(Master's Program)

Preparatory programs ahead of course launch

Start — FY2025

Marine DX Seminars
(Human resource development programs for working professionals and university students)

Joint establishment — 1 April 2025

Marine Informatics Research Institute

Purpose of Establishment
To strengthen research in "Marine Informatics," which aims to solve diverse societal issues related to the ocean through data analysis, a new research institute was established to integrate and leverage the strengths and resources of Shizuoka Institute of Science and Technology and Shizuoka University. The goal is to develop this into a research and education hub for Marine DX.

To build a new inter-university collaboration focused on "marine" studies, centered on Shizuoka Institute of Science and Technology, Shizuoka University, and Tokai University, the use of frameworks such as the Inter-University Collaboration Promotion Corporation system is under consideration.

Collaboration

東海大学 | Tokai University Shizuoka Campus

KIMURA Masakazu,

President of Shizuoka Institute of Science and Technology

As a core university in the Suruga Bay Marine DX Advanced Hub Initiative, Shizuoka Institute of Science and Technology is collaborating with Shizuoka University and Tokai University to carry out both the University Reform Project and the Marine Informatics Project. In the University Reform Project, we will establish a new Marine DX Course in our graduate school master's program in FY2027, and we will also implement initiatives to spark interest in Marine DX among working professionals and junior high and high school students. In the Marine Informatics Project, we will promote cutting-edge research in Marine Informatics and advance the sophistication of research through the operation of a state-of-the-art high-performance computing system. Moving forward, our university will continue to leverage its strengths in science, engineering, and information fields, and strengthen collaboration across academia, industry, government, finance, labor, and media to contribute to industrial development and human resource cultivation in the region.

HIZUME Kazuyuki,

President of Shizuoka University

At Shizuoka University, one of the goals outlined in our Shizuoka University Future Creation Vision is the promotion of marine research. By fully utilizing the marine environment of nearby Suruga Bay, we aim to further strengthen our marine research through this project. In April 2025, we jointly established the Marine Informatics Research Institute with Shizuoka Institute of Science and Technology to enhance research focused on solving diverse societal issues related to the ocean through data analysis. Tokai University is also collaborating with the institute, and through this initiative, the three universities are working together to build attractive institutions by pooling the full capabilities of regional universities and strengthening research capacity. Many researchers at our university are highly motivated to participate in this project, and through active engagement, we will promote the advancement of marine research in this region.

KAWASAKI Ippei,

Vice President of Tokai University (in charge of Shizuoka Campus)

Since the establishment of the School of Marine Science and Technology in 1962, Tokai University's Shizuoka Campus has developed as Japan's only faculty dedicated to comprehensive research and education in marine science. In 2022, we added the School of Humanities, forming a two-school structure. This has further advanced the integration of natural sciences and humanities, enabling interdisciplinary and cutting-edge education and research. Our university is participating as a collaborating institution in the Marine Informatics Research Institute, jointly established by Shizuoka Institute of Science and Technology and Shizuoka University. Through this partnership, we will further promote the use of information technology in the marine field and advance leading-edge research and development. Additionally, through the launch of the Marine DX Course in the master's program, we intend to expand the range of educational opportunities in marine studies available in the region.

Advanced Research and Development in Marine Informatics

Shizuoka Institute of Science and Technology, Shizuoka University, and Tokai University are combining their research strengths to take on the challenge of advanced research and development in Marine Informatics, thereby establishing a foundation for advancing Suruga Bay Marine DX, fostering human resource development, and contributing to the creation of new marine industries in Suruga Bay.

Marine Informatics is a new scientific and technological field that integrates marine science and informatics.

Promotion of Advanced Research and Development

Advanced research in Marine Informatics is driven by four foundational fields: marine information science and engineering, marine observation and communication system network science and engineering, marine biological and ecological science and engineering, and marine industrial science and engineering. Each field generates a wide variety of data tailored to its characteristics, contributing to the construction of a unique Suruga Bay marine dataset. Advanced analytical methods and data processing technologies are developed to extract new insights from these datasets. Based on this new information, the research aims to identify solutions and pathways to address challenges, leading to social implementation and the creation of new industries in Suruga Bay. Currently, 20 advanced research themes are underway across the four foundational fields.

## Development of the Suruga Bay Marine Informatics System

To support the advancement of Marine Informatics research and development, a comprehensive Suruga Bay marine dataset will be enriched and integrated into the Suruga Bay Marine Informatics System, which will provide an environment for effective data utilization. In particular, the ultra-high-resolution simulation-based oceanographic data of Suruga Bay developed through this project-spanning past to future-will be highly original and academically valuable. These datasets are planned to be used in solving the following types of challenges.

Examples of Targeted Challenges
- Aquaculture, understanding of marine biological resources, and catch forecasting for sustainable resource management
- Automated fish species identification for improved operational efficiency and profitability
- Efficient control of renewable energy production
- Optimization of distribution and processing workflows
- Safe and automated navigation in port areas
- Unmanned inspection and management of coastal structures
- Safe and enjoyable marine leisure and sports
- Enhanced disaster avoidance
- Reconstructions of past and present conditions and future projections

Created by processing aerial photographs from the Geospatial InformationAuthority of Japan (https://www.gsi.go.jp/tizu-kutyu.html).

Coastal topography data / Port structure data / Vessel navigation data / Shizuoka / Ship and satelite observation data / Aquaculture and fisheries data / High-resolution meteorological / River and thermal discharge data / Suruga Bay / Ecosystem data / Chemical substance data / Biodynamic data / eDNA data / Biological genetic data / Detailed data on currents, waves, seawater temperature, and salinity / Seafloor topography data

Depth (m)

(%) Salinity: 34.70, 34.65, 34.60, 34.55, 34.50, 34.45, 34.40, 34.35, 34.30

By compiling time-series sets of various types of three-dimensional spatial data, we aim to comprehensively understand Suruga Bay from past to future. Through analysis of these datasets, new information will be generated and applied to solving challenges.

Maximizing Utilization of the High-Performance Computing System "MarineInformatics-SURUGA1GO"

MarineInformatics-SURUGA1GO, a high-performance computing system capable of executing large-scale processing such as mathematical analysis, statistical processing, visualization, and machine learning at high speed, is operated and utilized as a core research and development infrastructure for handling the vast and unique data that characterizes Suruga Bay. Looking ahead, with future use by industry in mind, plans are in place to integrate the system with HPCI (High Performance Computing Infrastructure) and connect it to a variety of devices.

MarineInformatics-SURUGA1GO / SINET / HPCI / High-speed storage
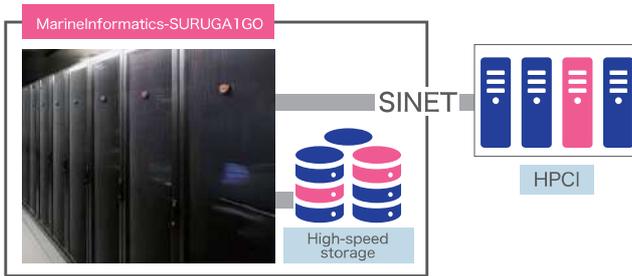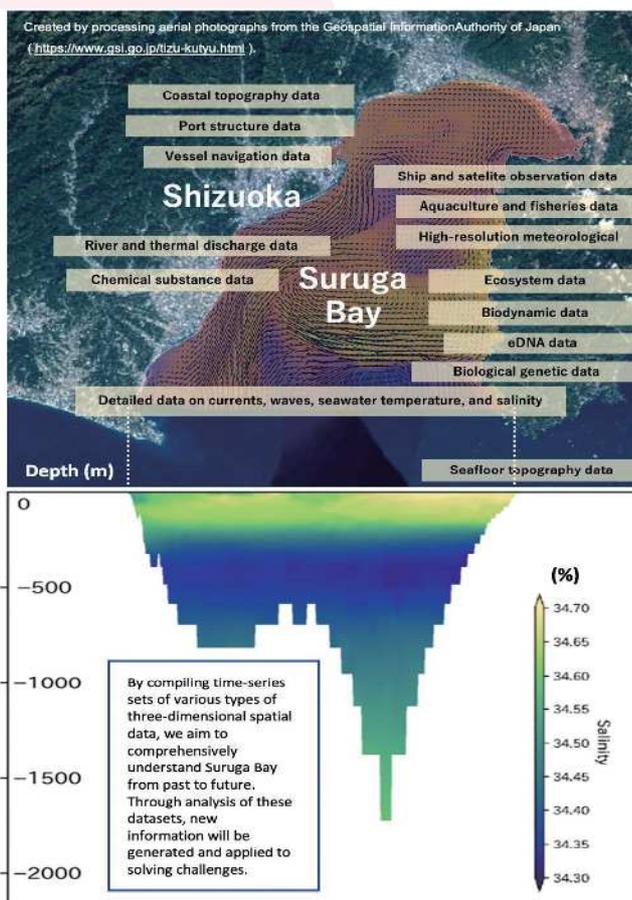
Core Resercher,of the Suruga Bay Marine DX Advanced Hub Initiative

TAKAHASHI Keiko,
Professor, Graduate School, Shizuoka Institute of Science and Technology

I am deeply grateful for the opportunity to be part of this regional revitalization initiative focused on the remarkable Suruga Bay, especially in promoting academic research, developing human resources, and collaborating with industry. In the academic field of marine science, effectively applying the rapidly evolving field of information technology-including AI-requires bold new approaches. One of the most urgent challenges is identifying, collecting, and generating all types of usable data. At the same time, there is a growing need to demonstrate how this data can be used to solve real-world problems. This need is not limited to academia-it is equally pressing in the industrial sector. In response to this challenge, Shizuoka City and Shizuoka Prefecture are taking the lead, with support from the Cabinet Office, and universities, researchers, students, and industry partners are coming together. This initiative welcomes people of all ages and backgrounds. What lies ahead in this collective effort? I hope to share the excitement of that journey with everyone involved as we move this project forward.

project 4

Promotion of Marine DX Research, Development, and Commercialization

To advance the sophistication and added value of regional marine-related industries, the Suruga Bay Marine DX Research and Development/Commercialization Consortium, formed through collaboration among academia, industry, and government, has established three subcommittees: Smart Fisheries, Blue Carbon, and Marine Equipment. These subcommittees conduct joint research and development that leverages the marine environment of Suruga Bay, aiming to promote commercialization and social implementation. In parallel, efforts are underway to expand Marine DX initiatives across sectors and regions through research and development projects within Shizuoka Prefecture's Marine Open Innovation (MaOI) Project.

Smart Fisheries Subcommittee

Sakura shrimp, a symbolic marine product of Suruga Bay, has seen declining catch volumes in recent years, making the realization of sustainable fisheries based on resource conservation an urgent issue. The Smart Fisheries Subcommittee is working to develop technologies for collecting and analyzing high-precision, wide-area data on the resource volume and ecology of sakura shrimp, promoting the "smartification" of fisheries based on scientific insights.
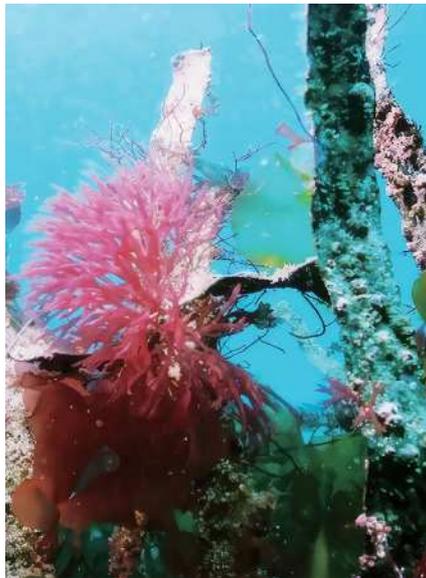
Blue Carbon Subcommittee

Blue carbon, which contributes to global warming mitigation and marine ecosystem conservation, is gaining global attention, and national-level initiatives are actively underway. The Blue Carbon Subcommittee is conducting research into growth conditions for algae suited to the environmental characteristics of Suruga Bay and is working to establish efficient and stable algae aquaculture technologies using DX.

Marine Equipment Subcommittee

To efficiently obtain precise data from vast ocean areas, it is essential to advance and enhance observation technologies and make them more intelligent. The Marine Equipment Subcommittee is engaged in the demonstration and development of new communication technologies and operational equipment that enable observation of biological activity, topography, and ocean currents across diverse marine environments.

Marine DX-related Research and Development Projects under the Shizuoka Prefecture MaOI Project

In collaboration with the Suruga Bay Marine DX Research and Development/Commercialization Consortium, the following initiatives are being pursued:

- Research for generating technological seeds
- Feasibility studies for commercialization
- Promotion of marine technology development
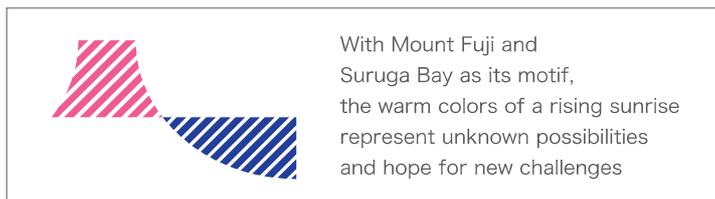- Acceleration of commercialization

Chair of the Suruga Bay Marine DX Research and Development/Commercialization Consortium

TAKAHASHI Akihiko,
Vice President of Suzuyo Corporation /Vice Chair of the Shizuoka Chamber of Commerce and Industry

The Suruga Bay Marine DX Research and Development/Commercialization Consortium promotes research and development aimed at achieving social implementation and commercialization. Shizuoka is home to a wide range of marine and port-related industries and services-including fisheries and aquaculture, logistics and shipping, manufacturing, and construction-making it a region with strong potential and high expectations for industrial advancement through the introduction of Marine DX technologies. Shimizu Port and Suruga Bay also serve as excellent demonstration fields, and their use is expected to contribute to the development of a Blue Economy hub and the Creation of the regional economy. By continuing research and development in this region, we anticipate further concentration of advanced research institutions and companies, leading to new collaborations and the creation of new value. We will encourage participation from a diverse range of companies both within and outside the region, clarify industry needs, and steadily advance the generation of promising themes and the demonstration and research necessary for commercialization. At the same time, we will deepen collaboration with universities and local governments, strengthen regional systems, and actively support the development of the next generation of talent. Through these efforts, we aim to establish Shizuoka as a model region in Japan for the creation of a sustainable marine indust ry.

With Mount Fuji and
Suruga Bay as its motif,
the warm colors of a rising sunrise
represent unknown possibilities
and hope for new challenges

駿河湾海洋DXプロジェクト

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