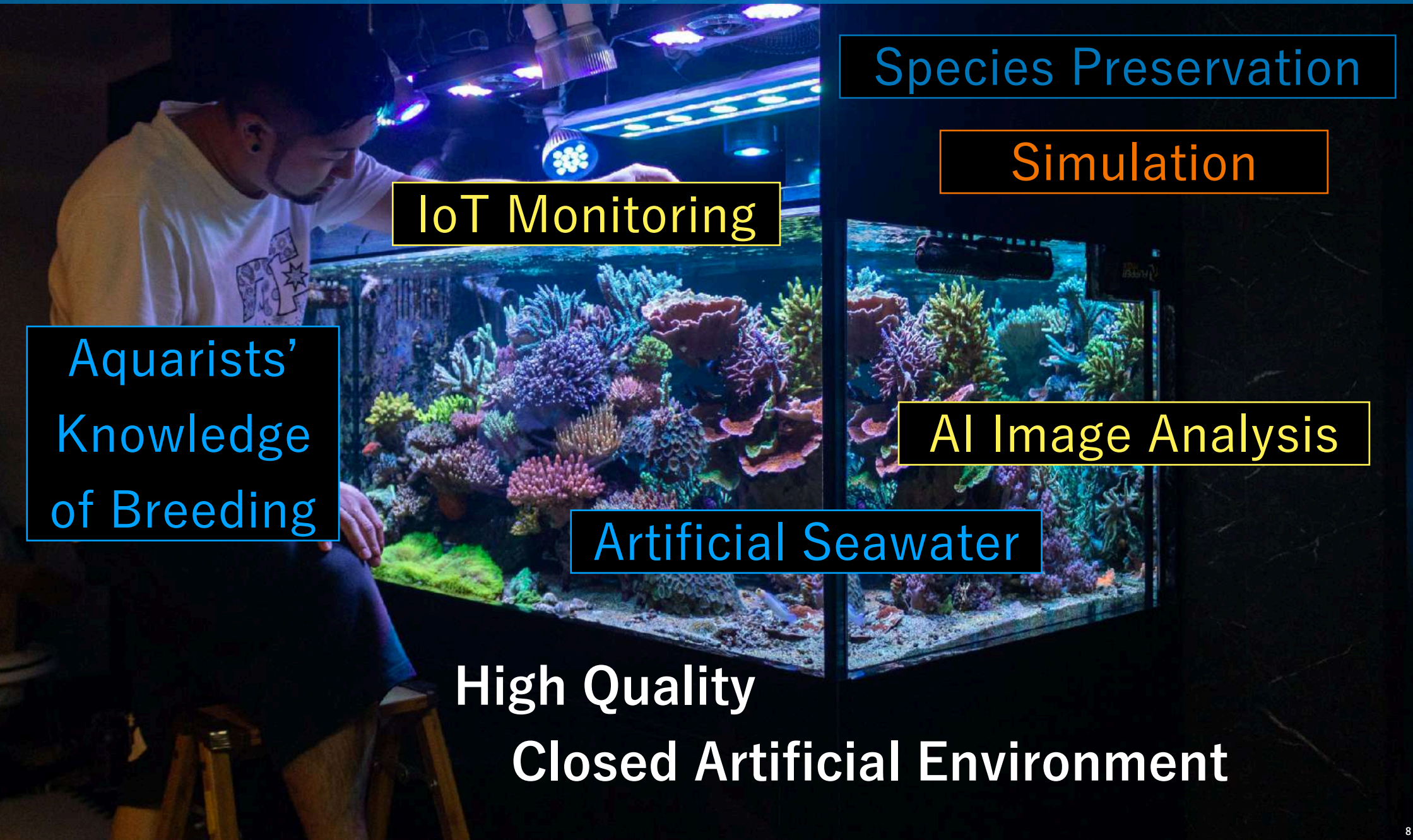




INNOQUA

Innoqua's Biosphere Transfer Technology



IoT Monitoring

Species Preservation

Simulation

Aquarists'
Knowledge
of Breeding

AI Image Analysis

Artificial Seawater

High Quality
Closed Artificial Environment







The environmental problems of the oceans are very serious today

There is a need to make Ocean-friendly products



**90% of coral reefs
could vanish by 2040**

**27% of marine life
already extinct**

The environmental problems of the oceans are very serious today

**Companies selling products related to the marine environment
need to make sure that their products are ocean friendly**



If you find out that your products have a negative impact on the ocean, you need to remake the products with ocean-friendly ingredients.



Research



Development



01 Underwater



02 Seaside



01

Underwater experiments



Advantages

- ◆ Direct observation of organisms and the marine environment

Disadvantage

- ◆ Significant costs to design, manufacture, and maintain submersibles and equipment
- ◆ Difficult to stay and work for long periods of time. This may limit observation and data collection

02

Experiments using natural seawater at the seaside



Advantages

- ◆ Easy to obtain the ecosystem you want to experiment with from the ocean

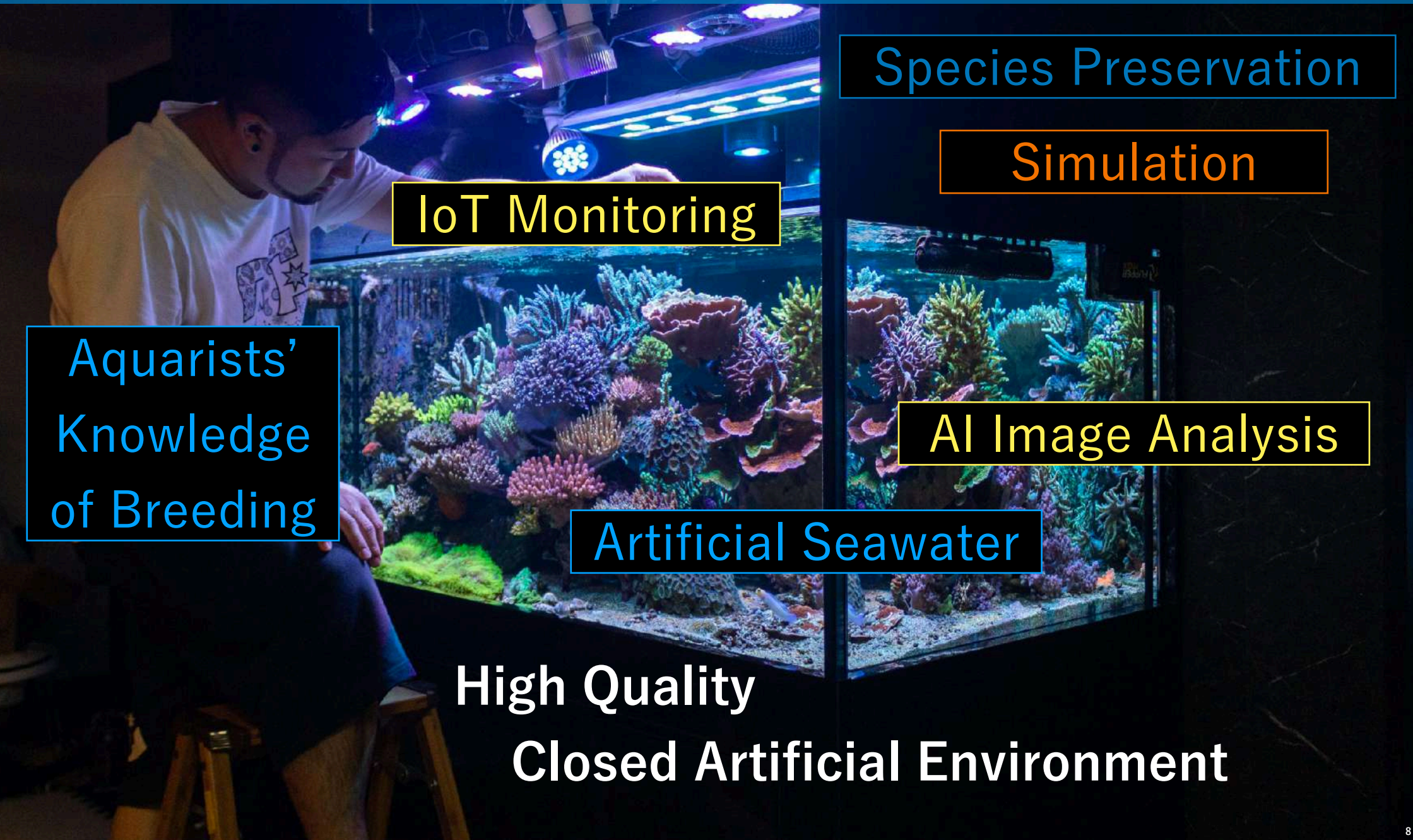
Disadvantage

- ◆ Difficult to conduct targeted experiments due to differences in the composition of seawater from place to place
- ◆ Difficult to perform accurate experiments due to the composition of seawater

perfectly replicate ocean biosphere in the lab



Innoqua's Biosphere Transfer Technology



IoT Monitoring

Species Preservation

Simulation

Aquarists' Knowledge of Breeding

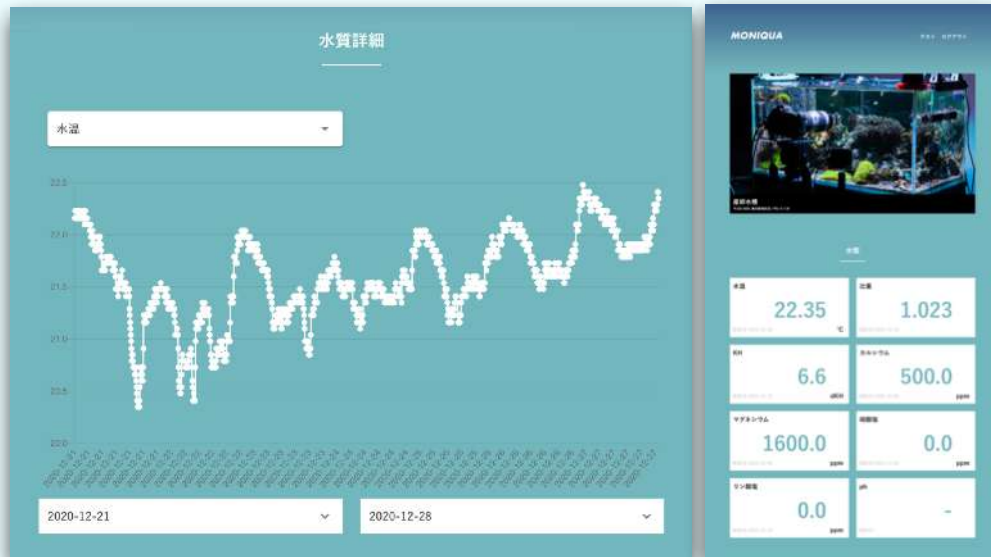
AI Image Analysis

Artificial Seawater

**High Quality
Closed Artificial Environment**

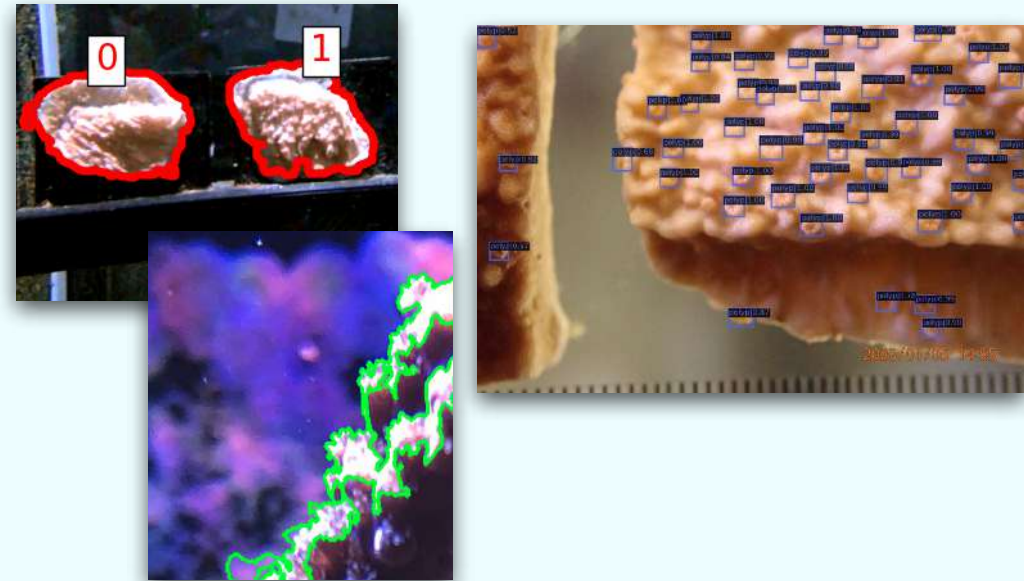
Technology

Advanced Technology



IoT Monitoring

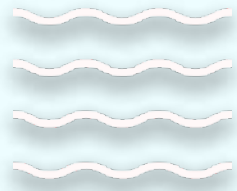
Innoqua has developed its own IoT system to manage environmental parameters. By using this system, we can measure, record, and monitor about 30 parameters in the tank.



AI Image Analysis

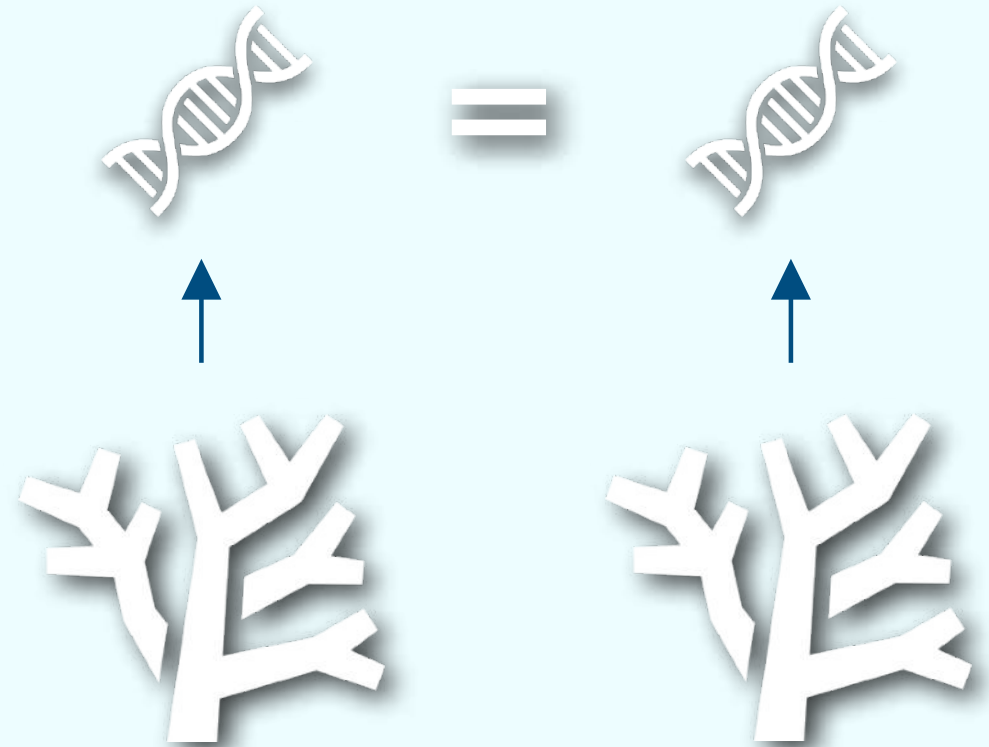
Inoqua has developed a proprietary AI algorithm. It can diagnose coral health through image analysis to survey coral reefs. Quantitative evaluation is possible using an image recognition AI camera.

Accuracy



Artificial Sea Water

All experiments can be performed in the same environment because of the use of artificial sea water so that we are able to perform accurate symmetrical experiments



Genetically symmetric experiments

Since Innoqua can conduct experiments using organisms grown in aquariums, it is possible to conduct symmetrical experiments using organisms with the same genetic material.

Sustainability



Sustainable Research Methods

It is a sustainable research method because it is not dependent on the expertise that people have, but independent of it by using AI and IoT technologies

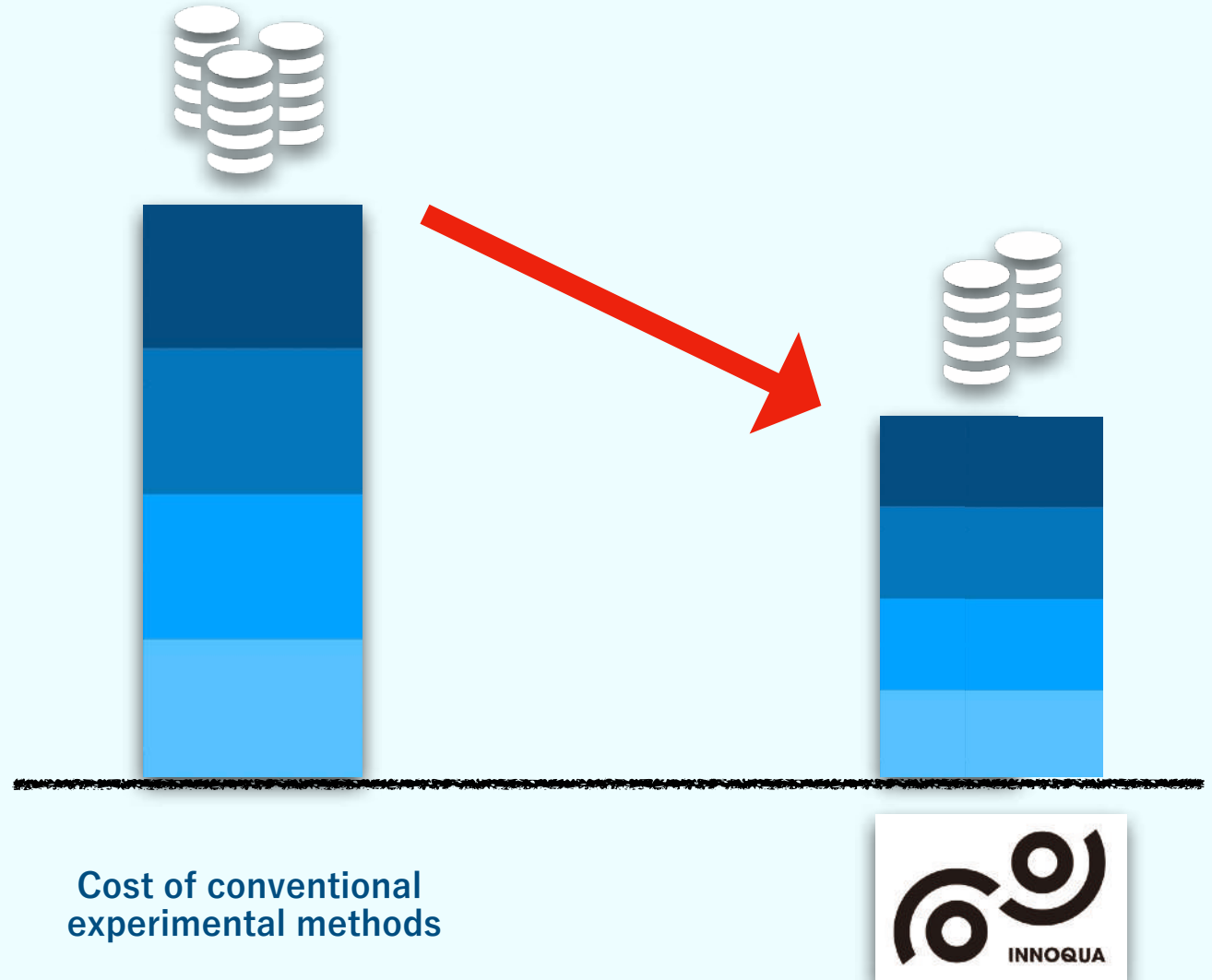


Good for the environment

If the experiment is conducted in the actual ocean, there is a possibility that elements that have a negative impact on the ocean will be brought into the experiment. However, Innoqua's experiments are conducted in a completely enclosed space, so they can be conducted without polluting the ocean.

Cost

Innoqua's experimental method can save costs



Cost

Cost of Conventional Experimental Methods

- **Research Vessel**

Charter costs for oceanographic research vessels, fuel costs, crew salaries, etc.

- **Instruments and Sensors**

Cost of sensors and observation equipment used to collect data on the marine environment, water quality measurement equipment, etc.

- **Sampling and Analysis**

Cost of reagents, test kits, and analytical equipment for sampling marine organisms and water quality, collecting specimens, and analyzing laboratory results, etc.

- **Researcher Salaries and Personnel Costs**

Costs for salaries of researchers and technicians, organization and management of research teams, etc.

Financial Burden

Comparison of Experimental Methods

Element	Conventional Research Methods	Innoqua: Environmental Transfer Technology
1:Expertise	<ul style="list-style-type: none"> ◆ Difficult to manage ecosystems(02) ◆ Difficult to establish experimental systems(01)(02) 	<ul style="list-style-type: none"> ◆ AI and IoT technologies stabilize ecological management ◆ Extensive case studies provide a wealth of knowledge about experiments
2:Accuracy	<ul style="list-style-type: none"> ◆ Large external environment due to outdoor laboratory and natural seawater(02) ◆ Individual differences exist due to genetic differences(01)(02) ◆ Regional and regulatory difficulties in collecting biological samples(02) ◆ Lack of standardized evaluation methods(02) 	<ul style="list-style-type: none"> ◆ Experiments are conducted in a closed environment and use artificial seawater ◆ Experiments can be performed using strictly genetically symmetrical samples ◆ Quantitative evaluation using image recognition AI ◆ Stable and free use of biological samples grown in aquariums ◆ Academic perspective ◆ TNFD Data Catalyst
3:Scalability	<ul style="list-style-type: none"> ◆ Waterfront Experimental Station(02) ◆ Regional and regulatory difficulties in collecting biological samples(02) 	<ul style="list-style-type: none"> ◆ Laboratory testing area ◆ Stable and free use of biological samples grown in aquariums
4:Sustainability	<ul style="list-style-type: none"> ◆ Dependent to craftsmanship(02) ◆ Environmentally destructive(01) 	<ul style="list-style-type: none"> ◆ De-acclimatized through engineering-based systematization ◆ Environmentally friendly
5:Cost	<ul style="list-style-type: none"> ◆ Expensive(01)(02) 	<ul style="list-style-type: none"> ◆ Inexpensive

Previous Collaborative Research : Shiseido



On the strength of our novel methods, Innoqua has conducted a number of collaborative research with various companies, governments, and other organizations.

e.g., Shiseido, a global cosmetic company from Japan, is now working on research of their sunscreen products to enhance their environmental branding.



SHISEIDO

NEVER SAY NEVER
ロート製薬



TokyoTokyo Old meets New



住友商事
Enriching lives and the world

CIC
Color & Comfort

JAMSTEC 国立研究開発法人
海洋研究開発機構
Japan Agency for Marine Earth Science and Technology

Deloitte.



MOL

JFE

ニッスイ

笹川平和財団

MiSUMi

東京大学
THE UNIVERSITY OF TOKYO

三井不動産
MITSUI FUDOSAN

阪急電鉄
Hankyu



2019

2020

2021

2022

2023

Chief Executive Officer



Yota Takakura

- Founder, AI researcher
- Master of Engineering /University of Tokyo

Chief Aquarium Officer



Naoki Masuda

- Co-founder, Aquarist
- Many Media Appearances

Chief Technology Officer



Masato Ueda

- Professor of Kansai University
- Faculty of Chemistry, Materials and Bioengineering

Chief Operation Officer



Shiki Takeuchi

- Business Development, Sales, Public Relations
- Business, BA, University of Tokyo

Chief Researcher



Pete

- Chief Researcher
- Doctor of marine biology
- from Thailand

Innoqua's Company Profile

Company name	Innoqua, Inc.
CEO	Yota Takakura
Office location	Minato-ku, Tokyo
Date of establishment	08/04/2019
Numbers of employees	30 people
Principal business	Coral research Educational events Sales and maintenance of biosphere tanks

Main customers

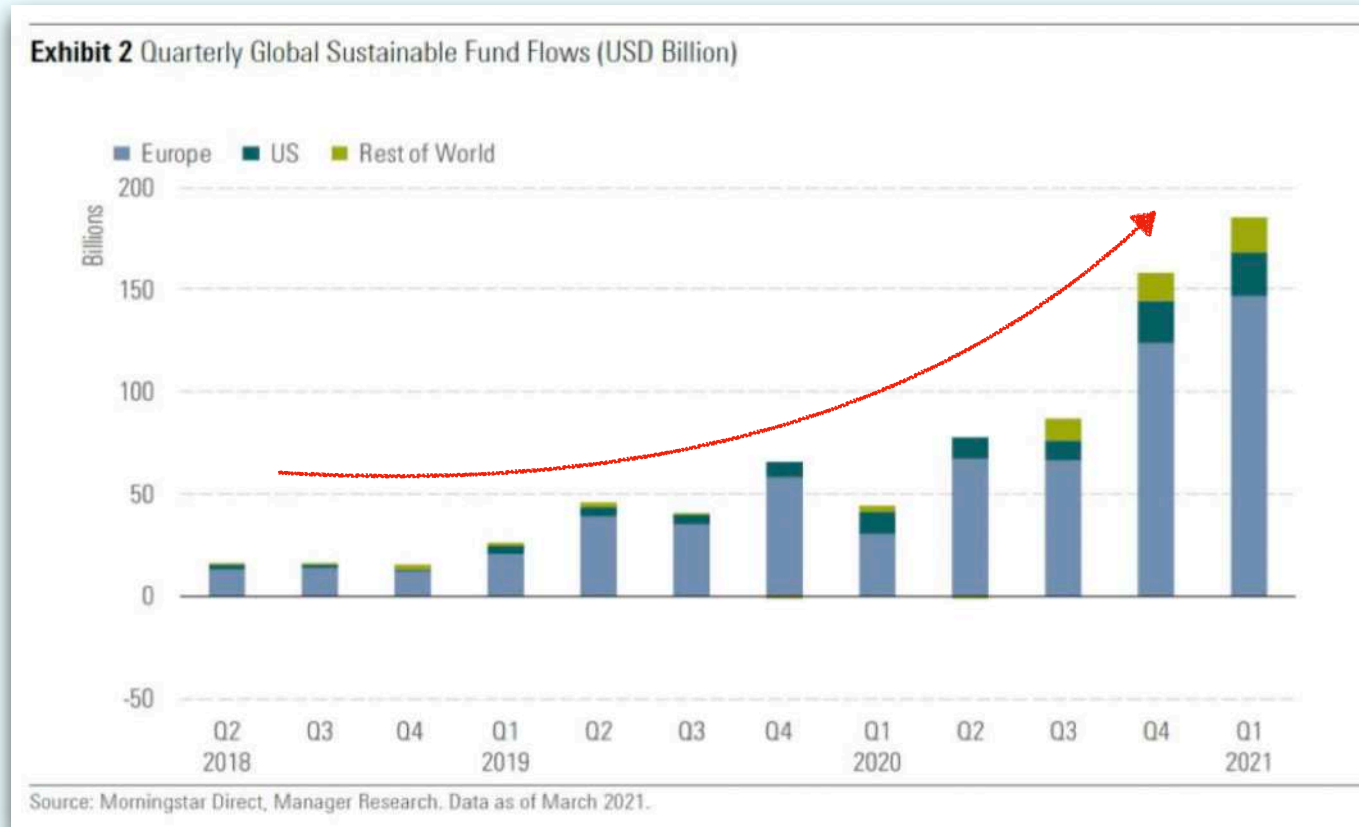


Data Catalyst

Innoqua is participating in the TNFD, which is now attracting a lot of attention, as a data catalyst. Data Catalyst is an organization that shares information and data on biodiversity with the TNFD.

Appendix Regarding Importance of Environmental Management

ESG investment

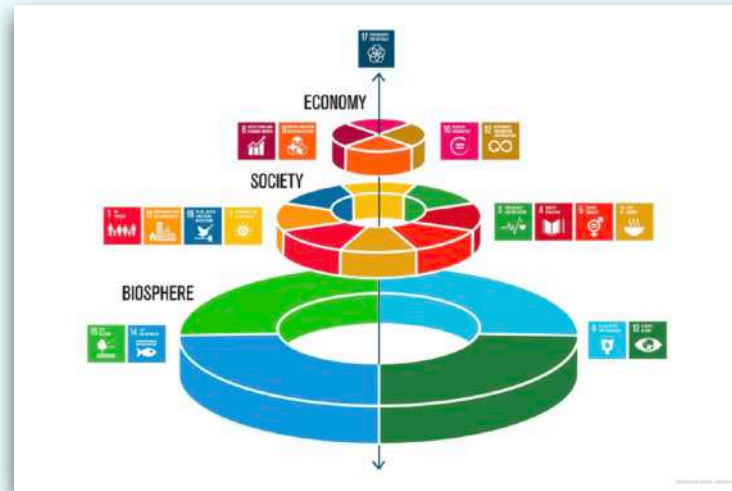


Every year, the amount of funds under management for **ESG investments is growing.**

Therefore, **companies need to engage in environmental management.**

Neglecting ESG is directly linked to the risk of being excluded from investment targets.

Natural resources are the foundation for social activities



2015



2021



With the establishment of the TCFD and TNFD, many companies have begun environmental management. The TNFD, in particular, will begin this year and is attracting attention as to **how companies will address biodiversity in the future.**

The Rise of Ethical Consumerism

Ethical Consumer Markets Report 2022

Our latest Ethical Consumer Markets Report shows that ethical markets grew by almost 35% in 2021, expanding to £141.6 billion. This is the largest jump in the value of the market we've seen since we started tracking it in 1999.

Our research records the state of the ethical market by reviewing spending in key sectors in ethical food and drink, home, travel, personal products, and community, as well as the value of boycotts and ethical savings.

The record-breaking growth seen this year was driven by three markets in particular: electric cars, renewable energy tariffs, and ethical investments.

The research, sponsored by Co-op Food, was conducted during 2022. A full report will be available shortly.

Ethical categories in our market report

We track sales data across a wide range of consumer sectors, including:

- Ethical food and drink
- Green home
- Eco-travel and transport
- Ethical personal products
- Community
- Boycotts
- Ethical money



Co-op's

Living Goods Stores in the U.K.

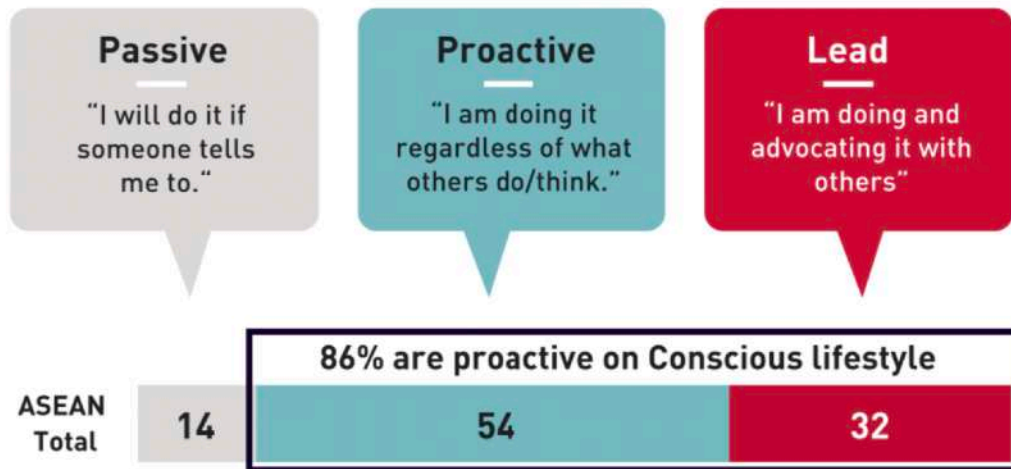
The largest co-op in the world, accounting for 90% of the co-op business in the country.

Ethical cosmetics sales rose to about 1 billion pounds, up 11% from the previous year

Market research in the United Kingdom shows that the percentage of the **ethical market is growing every year**. A supermarket sales survey also showed that **sales of ethical products are increasing**. As the ethical market is expected to expand in the future, companies need to create environmentally friendly products for their growth.

The Rise of Conscious ASEANs

How do you describes your attitude in terms of Conscious lifestyle?



What is a Conscious Consumer ?

People who want to positively contribute to environmental and social causes when making purchase decisions and brand selection.



*Base: Conscious ASEANs

https://hillasean.com/assets/pdf/Forum_2020_en.pdf

Conscious consumers are increasing in ASEAN. The era of one-way sales promotion and branding, in which companies and brands advertise and sell their products, is ending. People living in ASEAN countries will now **choose products and services from the perspective of how they address environmental issues**, rather than from the perspective of companies and brands.

Strengthening the Rules in The World

United Nations



The INC was established at the UN Conference in March 2022. The INC's meetings are held from November 2022 until the end of 2024 to develop an international convention. The INC will promote the sustainable production and consumption of plastics, promote coordinated national and international efforts to reduce plastic pollution in the marine environment and the development, implementation, and updating of national action plans.

EU



The EU will place restrictions on the introduction of products with intentionally added micro plastics to the EU market starting this summer, eliminating micro plastics used solely for convenience and profit. The targeted products include cosmetics, detergents, paints, gloss enhancers and coatings, as well as products in the construction, agriculture, and fossil fuel sectors.

In the marine sector, **tighter regulations have already begun to crack down on marine pollution** and this kind of rules are expected to increase and become stricter in the future. Companies are now required to **adopt environmental considerations as soon as possible**.

Marine resource conservation is an essential part of building a sustainable future.

Attention to marine resource conservation has been greatly enhanced by the three concepts below.

POINT

①

Blue economy

The Blue Economy is a concept that focuses on the oceans, which cover 70% of the Earth's surface area, and **creates economic and social value** by unlocking their potential. According to Monitor Deloitte's estimates, **the Blue Economy-related market is expected to reach approximately 500 trillion yen by 2030**, and is attracting attention because of its connection to **biodiversity conservation**.

POINT

②

Blue carbon

This is **the term for carbon captured by the world's ocean and coastal ecosystems**. The ocean is a huge carbon reservoir, and marine organisms such as phytoplankton and sea grasses absorb CO₂ and bury it in the seafloor, thereby regulating the Earth's climate. **Blue carbon conservation is important not only to maintain marine ecosystems, but also as part of the effort to combat climate change.**

POINT

③

UN Decade of Ocean Science

This is for Sustainable Development (2021-2030) ('the Ocean Decade') seeks to **stimulate ocean science and knowledge to each generation in order to reverse the decline of the state of the ocean system and catalase new opportunities for sustainable development of this massive marine ecosystem.**



Companies Taking Action For The Ocean

Companies with high awareness of marine conservation have already begun to act

Unilever



In 2014, they completely eliminated plastic scrubbing beads, which could become micro plastics. They also have pledged to halve their use of virgin plastic by 2025 – partly by eliminating over 100,000 tonnes of plastic from our packaging – and design all their packaging to be fully reusable, recyclable or compostable.



<https://www.unilever.com/news/news-search/2022/plastic-pollution-is-fixable-but-the-world-needs-a-plan>

P&G



Previously, micro beads were used in some exfoliating and cleansing products and toothpaste. However, in response to environmental concerns, P&G has eliminated micro beads from all facial and body cleansing products and toothpaste. Currently, P&G manufactures micro bead-free products.



https://assets.ctfassets.net/ugm1tr5hrd4w/1012vnxCPRA4MyM0B2Lg04/c236b2053181e1c7ea3028946d6589ac/Ingredient_Stewardship_Principles_1_page.pdf

Shiseido



Shiseido has stopped manufacturing products that could potentially carry microplastics into the ocean since 2018.

Consumer concerns and what we know

There is concern regarding the potential damaging effect of microbeads on aquatic life due to composition and shape, as well as the potential transfer to humans through the food chain. These microbeads remain in the environment as they are almost impossible to remove with existing technology.

In December 2015, a regulation to reduce the amount of microbeads reaching waterways was established in the US, and microbeads in cosmetic rinse-off products have been banned in most countries.

Microbeads from cosmetics account for less than 2% of plastic pollution in the marine environment, and their long-term environmental effect is still being studied.

Our stance

We have not used microbeads in rinse-off products since 2018, and we carefully follow advancements in microplastic research and regulations in order to prepare for agile action.



<https://our-products-policy.shiseido.com/en/ingredients/microbeads>