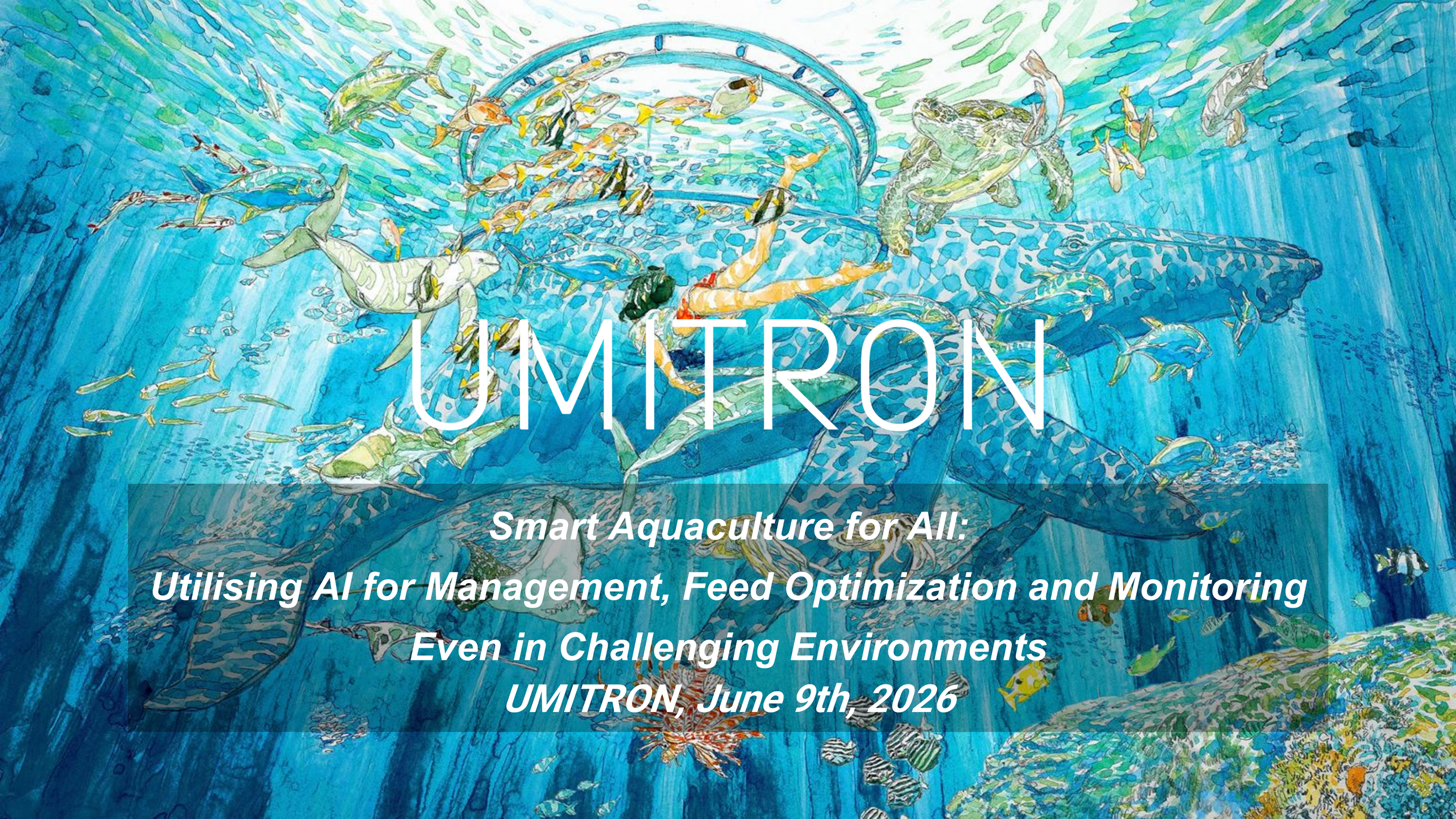


Smart Aquaculture for All:

Utilising AI for Management, Feed Optimization and Monitoring Even in Challenging Environments

UMITRON, June 9th, 2026

UMITRON's Provides technologies for offline-offgrid environment

VISION

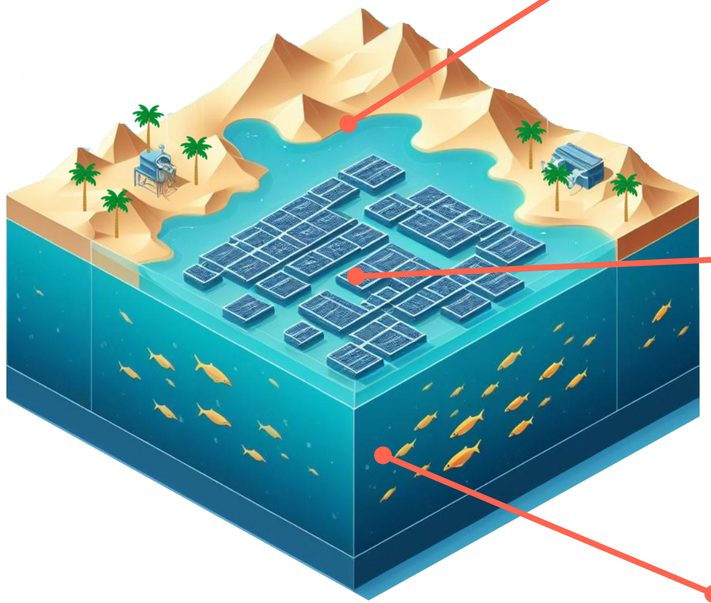
"Install sustainable aquaculture on Earth"

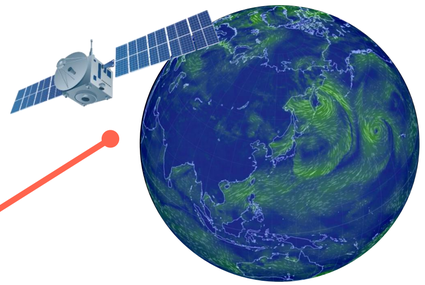
EXPERIENCE

10 years of development & deploy globally, from Japan/Singapore

APPROACH

Crossover of AI, IoT and Satellite Data for both private & public sector





Remote sensing

Identify suitable sites, monitor risk

IoT / Software

Tools to digitize/ automate

AI for Fish behavior

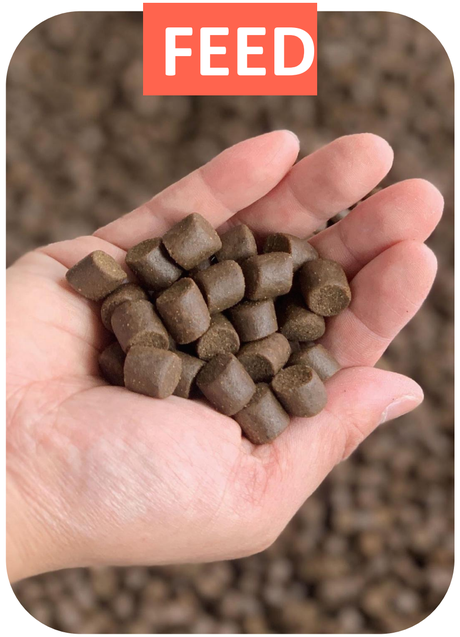
for appetite analysis and optimize growth

Agenda

1. Introduction of technology: Why Decentralized Approach?
2. Implication for sustainable aquaculture developmenjt

Key Challenges: Feed, Environmental Impact and Technology/Data Gap

FEED



- Use of Fish meal/oil
- 50–70% of operation cost
- Alternative ingredients need R&D and proof

ENVIRONMENTAL IMPACT

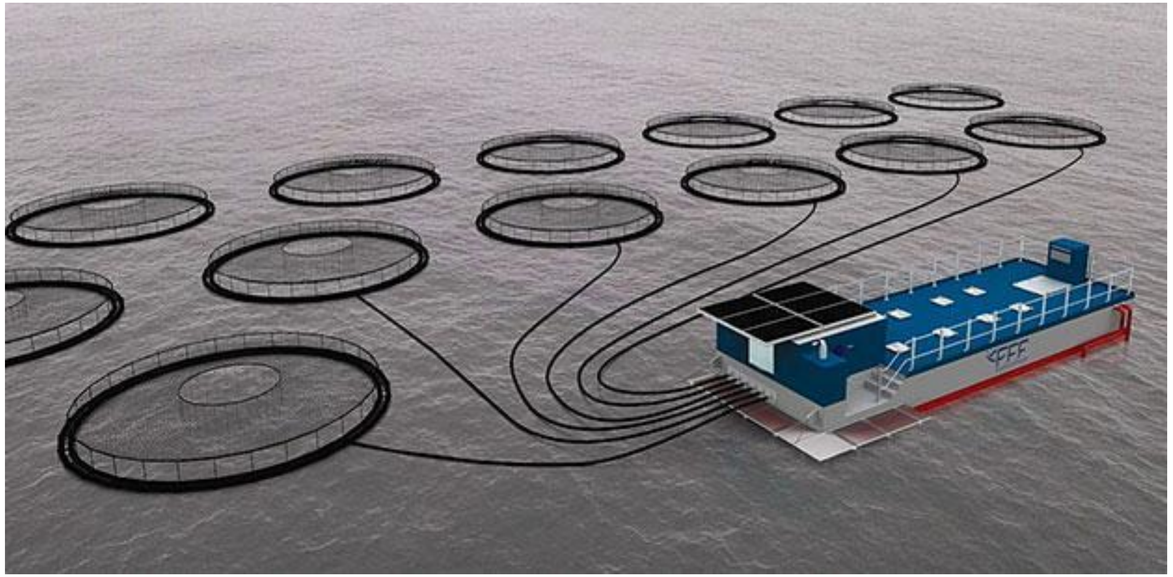
- Pollution from feed waste
- Algal blooms
- Climate change

TECHNOLOGY/ DATA GAP

- Technology requirement is different from each site
- What is the current situation at farms?
- Where is the right place to open new farms?

Technology & Data Gap: Not all locations are suited for mass-scale solutions

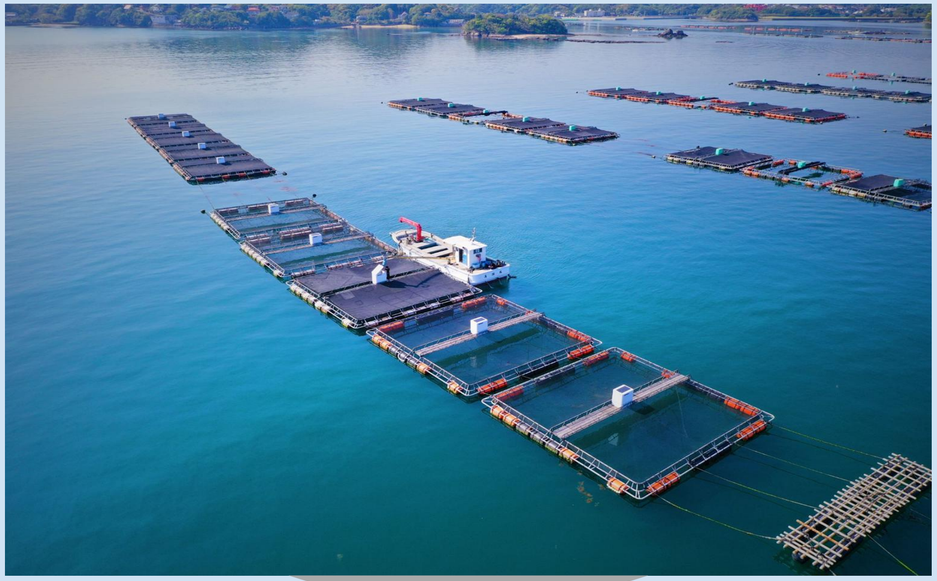
Mass-Scale Farm (e.g. Salmon) | Online-Ongrid



✓ Abundant capital for investment

✓ Large available space for farming
✓ On-board power generation
✓ Private Wi-Fi connectivity

Farmers in Asia | Offline-Offgrid



✗ Limited capital & Cash flow constraints

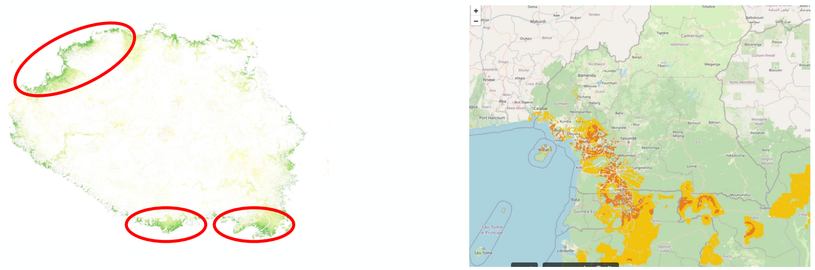
✗ Small space at inner bay/inland
✗ No power supply
✗ Limited Network access

Combining AI, IoT and satellite data capability for the growth of sustainable aquaculture, from planning phase to operational phase.

Our offerings

Environmental Data for Planning and Adoption

Aquaculture Potential Map



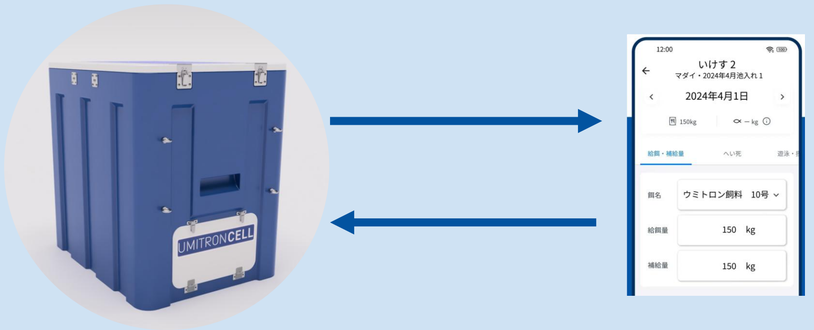
- **Aquaculture Potential Map / site selection:**
  Identify and visualize suitable locations for aquaculture farms

- **Monitoring system:**
  Environment monitoring / risk alert
  (to be discussed)

Operation Data for Automation

UMITRON CELL

UMITRON FARM

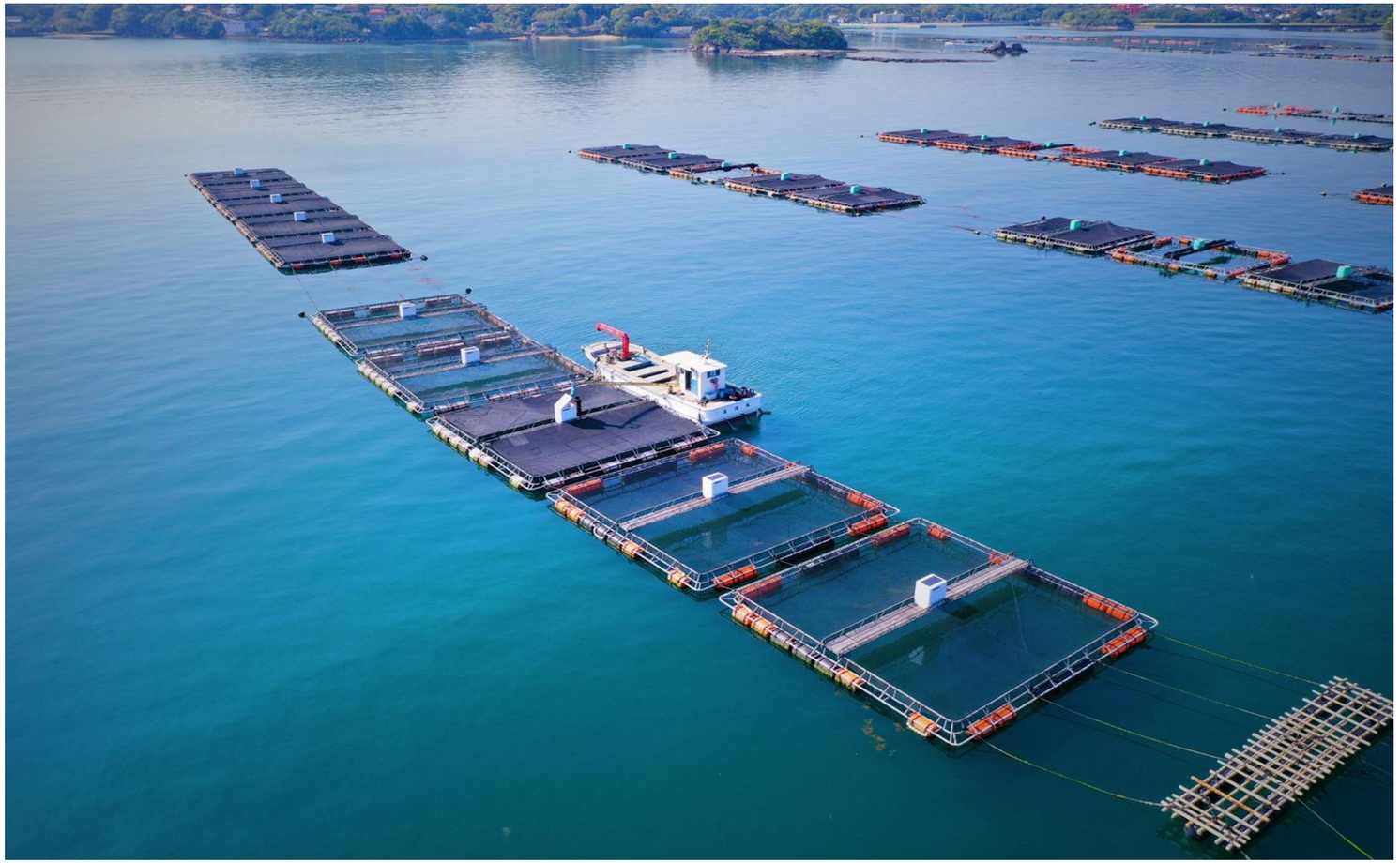


- **UMITRON CELL :**
  AI-powered auto-feeder for sustainable farming

- **UMITRON FARM :**
  Record and share operation data for farmers' capacity development

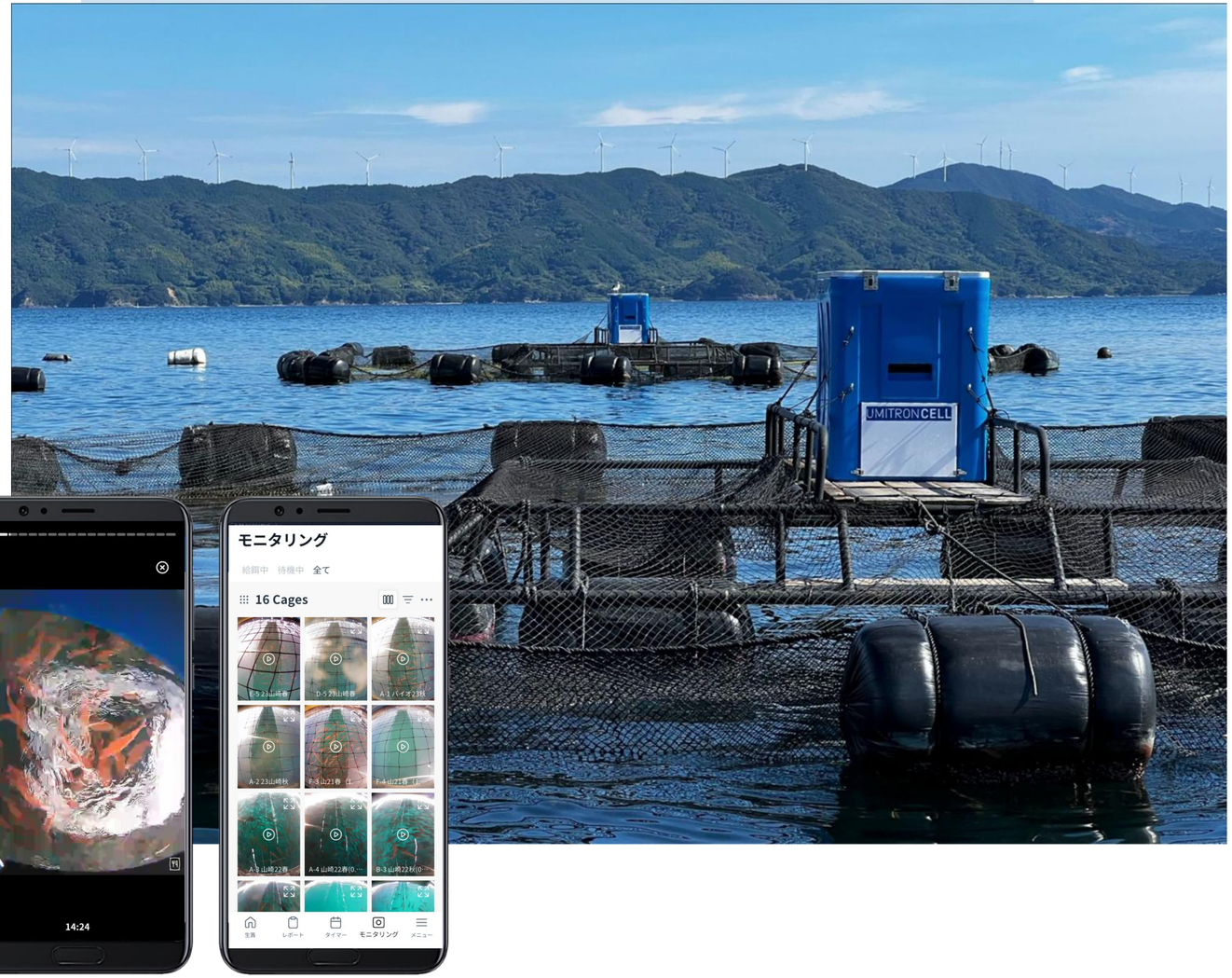
UMITRONCELL

FEED OPTIMISATION FOR SMALLER FISH PENS USING FAI



UMITRONCELL

FEED OPTIMISATION FOR DISTRIBUTED FISH PENS USING EDGE AI



How it works

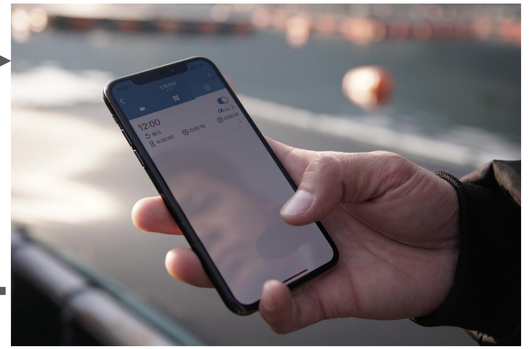
- CELL is a solar powered smart feeder that learns fish feeding behaviour and feeds them only when hungry.
- The feeder has our Fish Appetite Index (FAI) technology built in which monitors appetite.
- Feeding can be controlled remotely via an app from the shore miles away.
- CELL can hold up to 300 kg of feed
- The feeder reduces feed waste and cost for te farmer, improves efficiency and improves the farmers workload.

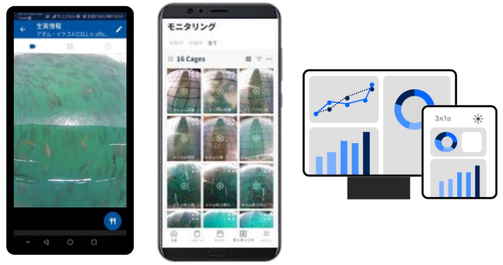
UMITRONCELL

FEED OPTIMISATION FOR DISTRIBUTED FISH PENS USING EDGE AI

- Decentralized and autonomous AI-powered auto feeder for finfish farmers
- Remote feeding, monitoring and data recording, without external power supply

Feeding Data
(Fish appetite/consumed & remaining feed amt.)





Remote monitor/control

1. Identifies the best feeding practice, based on the realtime fish appetite analysis by AI
2. Control the feeder without external power
3. Measures the consumed/remaining feed amt.

4. Controllable remotely from anywhere
5. Receive and save the fish video data
6. Records the operation data for a review (fish appetite, feeding amount, speed)

UMITRONCELL

FEED OPTIMISATION FOR DISTRIBUTED FISH PENS USING EDGE AI

UMITRON CELL video link (on youtube):

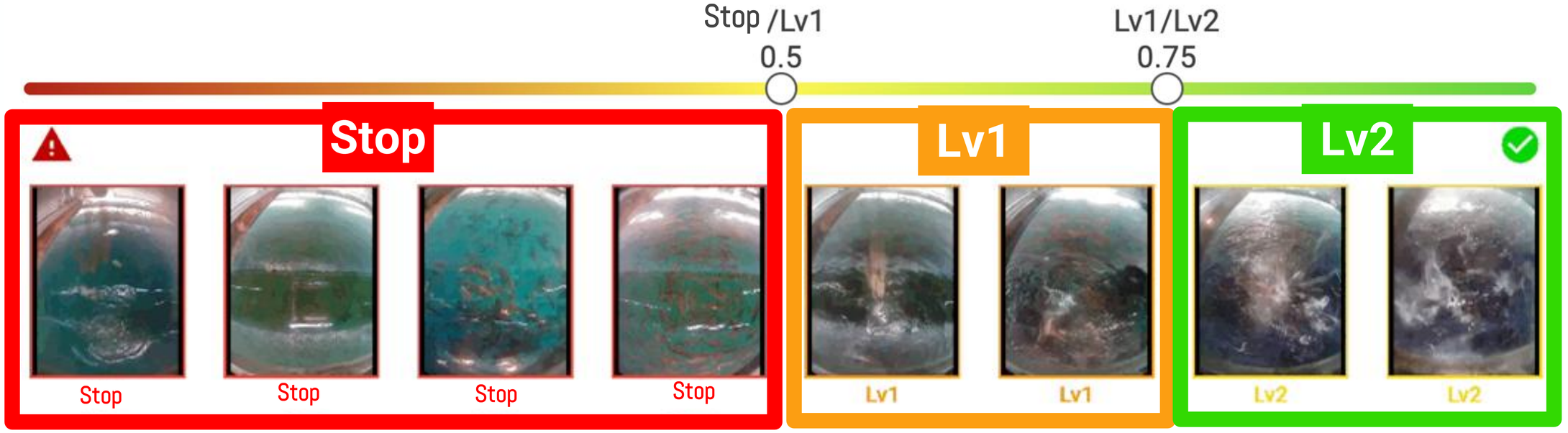
https://youtu.be/dAXPzmH3_Ic?si=7FphU02j5kqrmbQ-

UMITRONCELL Importance of the decentralized solution architecture

	Advantages of Mass-Scale Farms	Requirements at offshore/small farms
Electricity / Power	**Stable**	**Unstable** (No external power source available)
Connectivity	**Stable and affordable** (high-speed internet (wifi) are available)	**Unstable/slow**
Computing Resource	**Cloud / High-spec computer** (with high-speed internet & stable electricity)	**Limited resources** (due to the constraints of power & network)
Human Resource	**Available at farm sites** (On-site monitoring at control room/ship)	**Minimum / Limited time at farms** (Remote control required)

UMITRONCELL

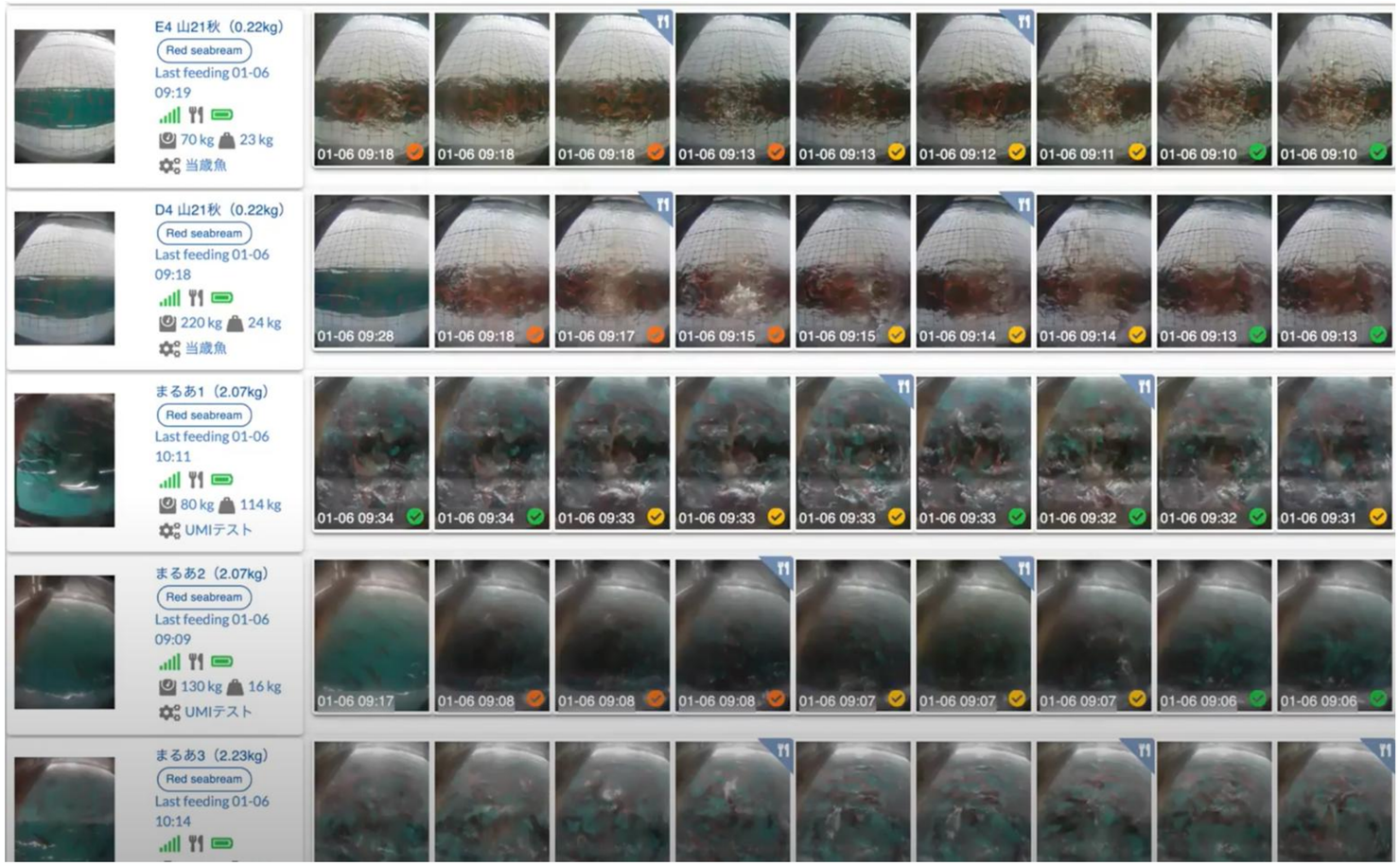
FEED OPTIMISATION FOR DISTRIBUTED FISH PENS USING EDGE AI

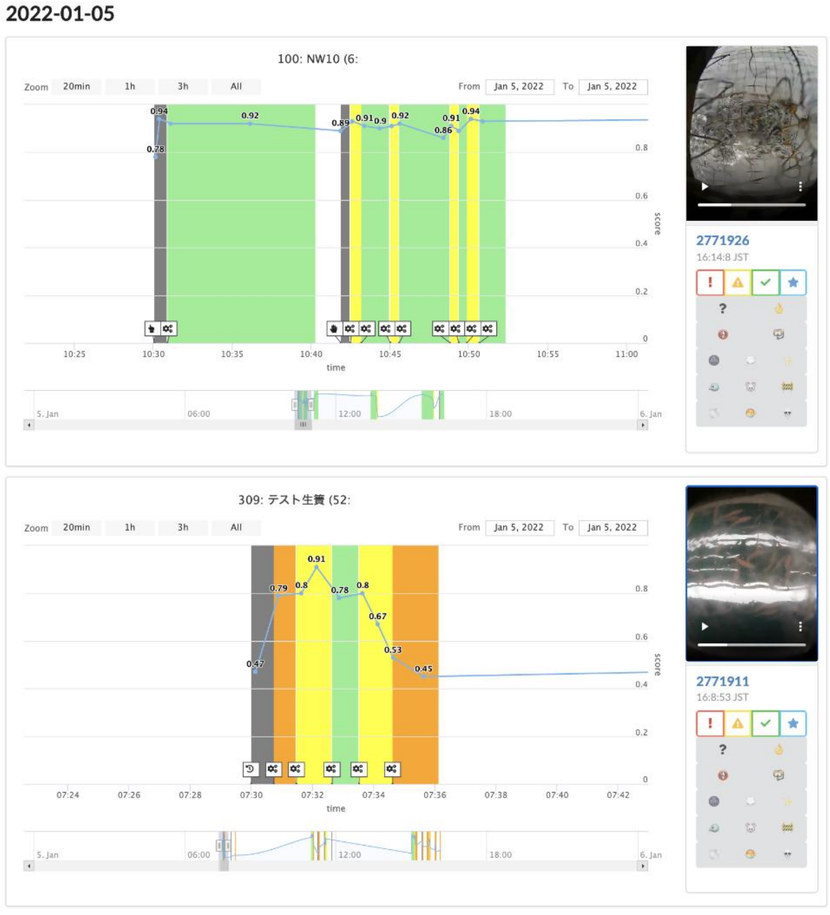


Name	Feeding speed	Running time	Pausing time	
Lv1	5	5	10	Edit
Lv2	10	5	10	Edit

UMITRONCELL Automatic Feeding Control with Fish Appetite Analysis

Our decentralized AI works locally with limited computing resources and power supply.

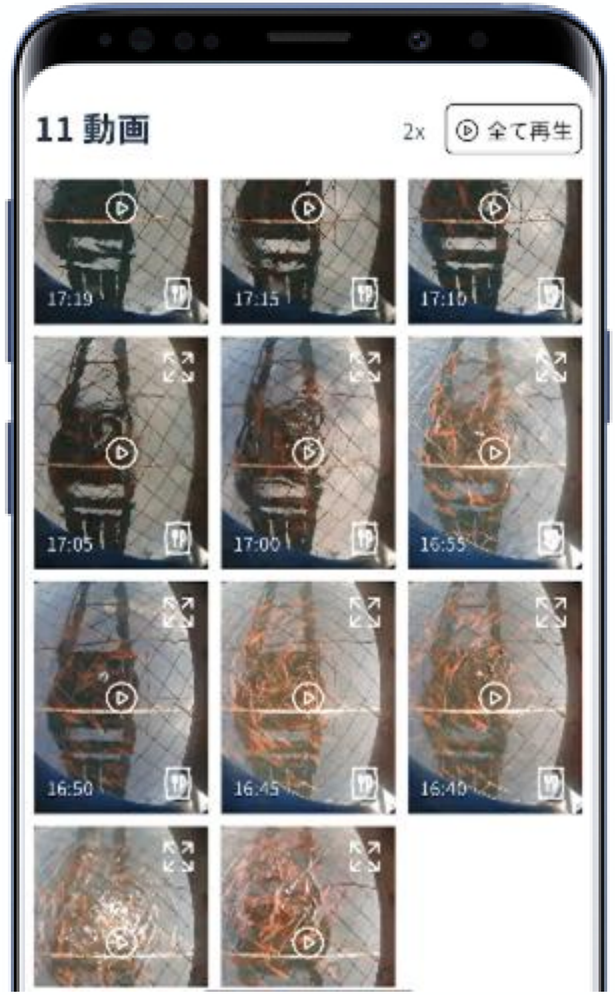


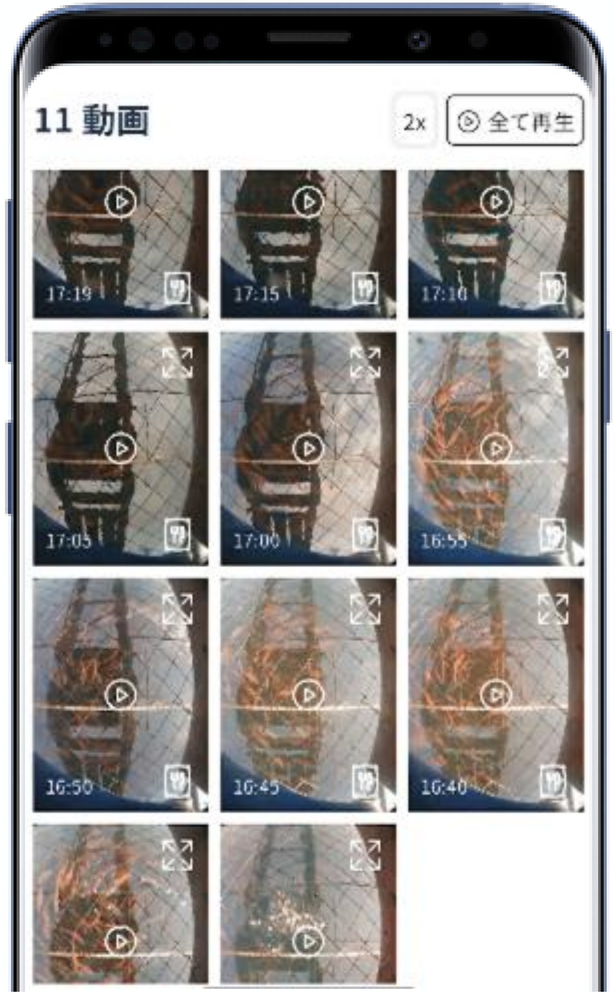


UMITRONCELL

FEED OPTIMISATION FOR DISTRIBUTED FISH PENS USING EDGE AI

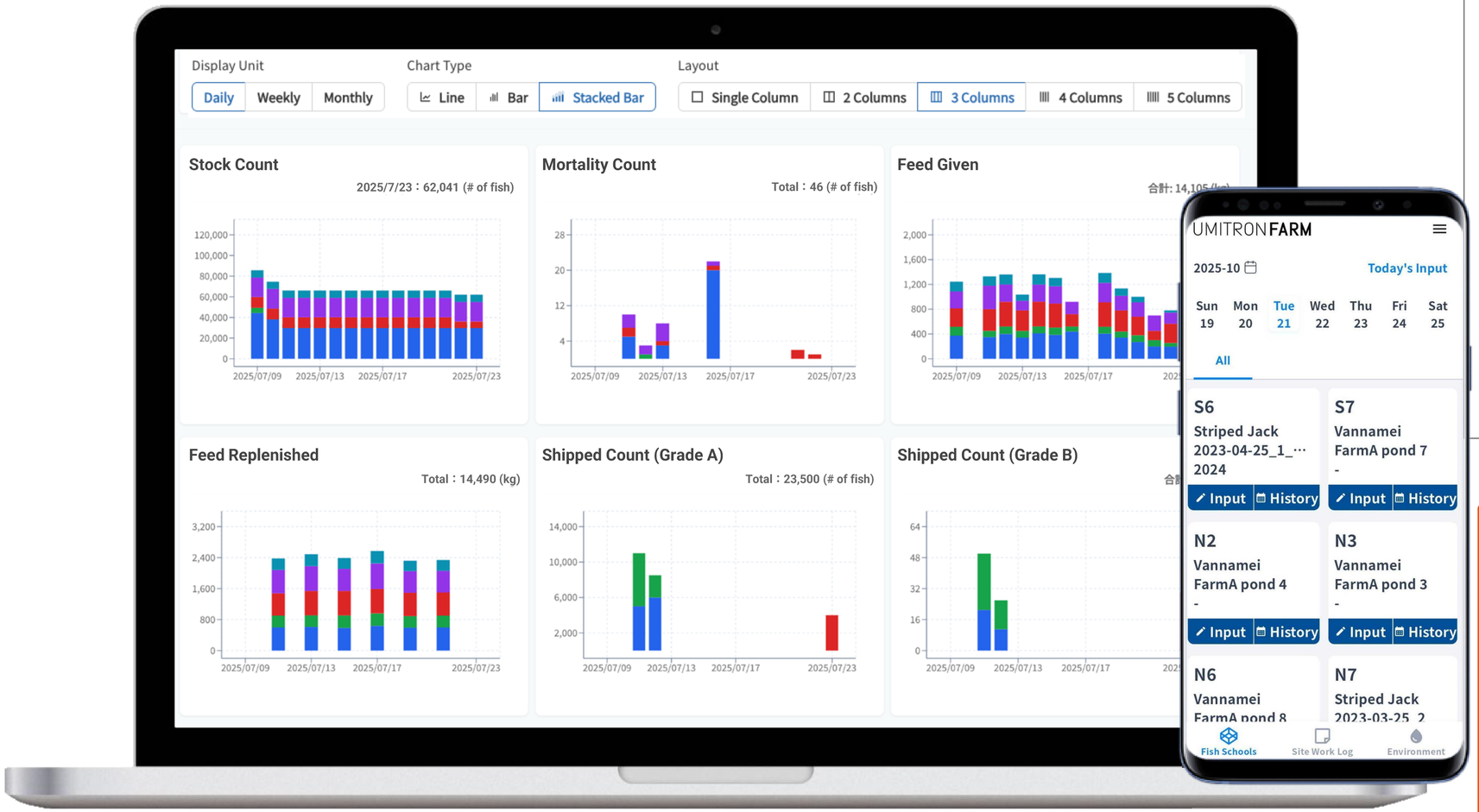
Farmers can review recorded video anytime later





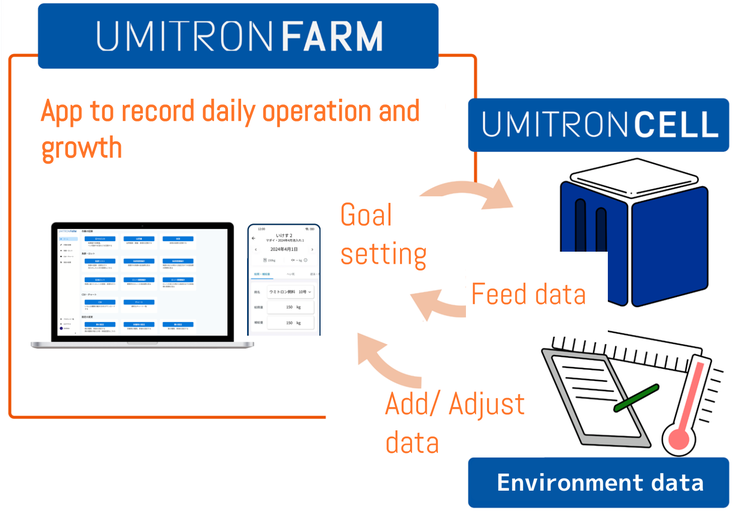
UMITRON FARM + UMITRON CELL

A PLATFORM THAT INTEGRATES AND DIGITISES ALL AQUACULTURE DATA TO MANAGE DAILY OPERATIONS



How it works

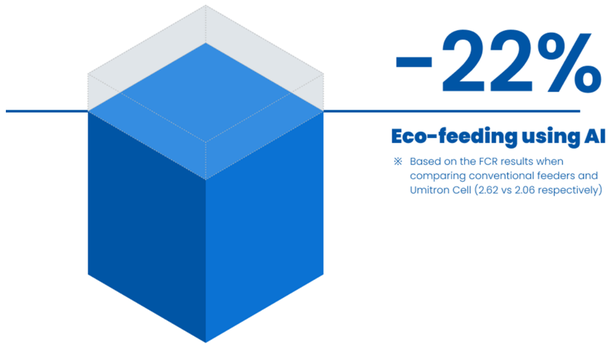
- Supporting farmers to manage fish growth and profitability, by precise and timely data input on the integrated farm management app.
- UMITRON FARM allows users to **evaluate performance for each input** such as **fingerling** and **feed** as well as **farming efficiency**.
- It allows users to choose appropriate raw material based on the results.
- In addition, this electronic system can be used for feeding and shipping planning.
- **Automatically link data to products such as UMITRON CELL.**



UMITRON CELL

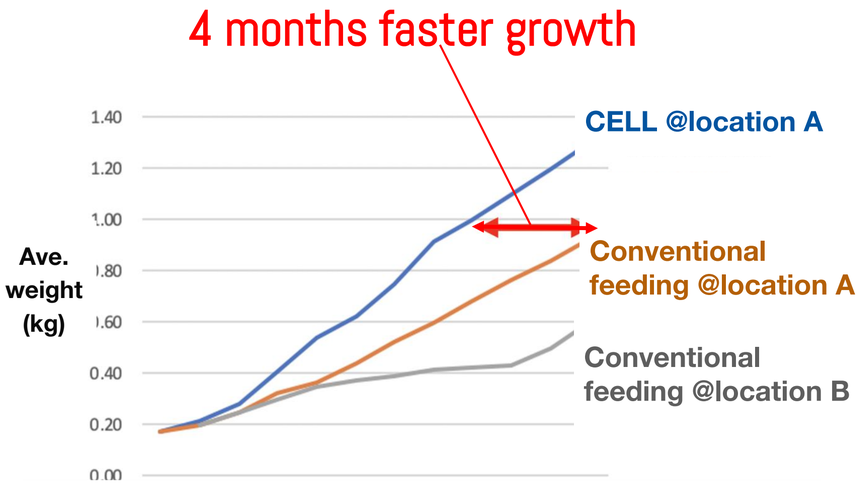
IMPACT of UMITRON CELL, for PROFITABLE FISH FARMING

Minimize the feed waste



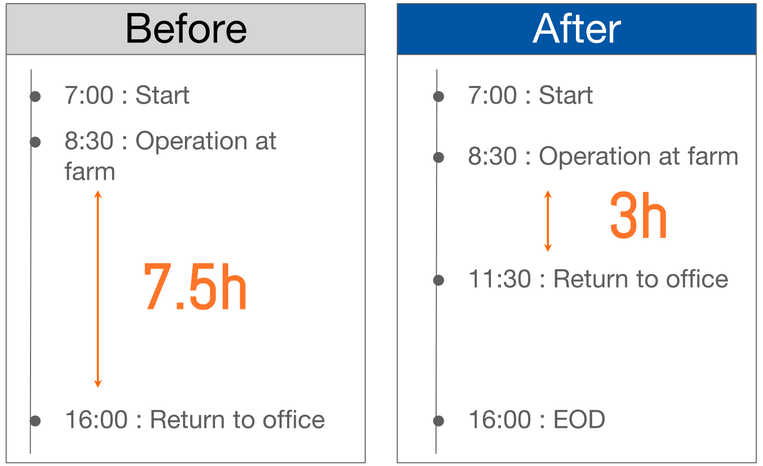
- Reduction of feed cost **(20 ~ 25%)** and GHG
- Minimize water/ocean pollution

Uplift the feeding practice



- Faster growth with same feed amount
- Improving farming practice with the insights from data

More flexibility in time

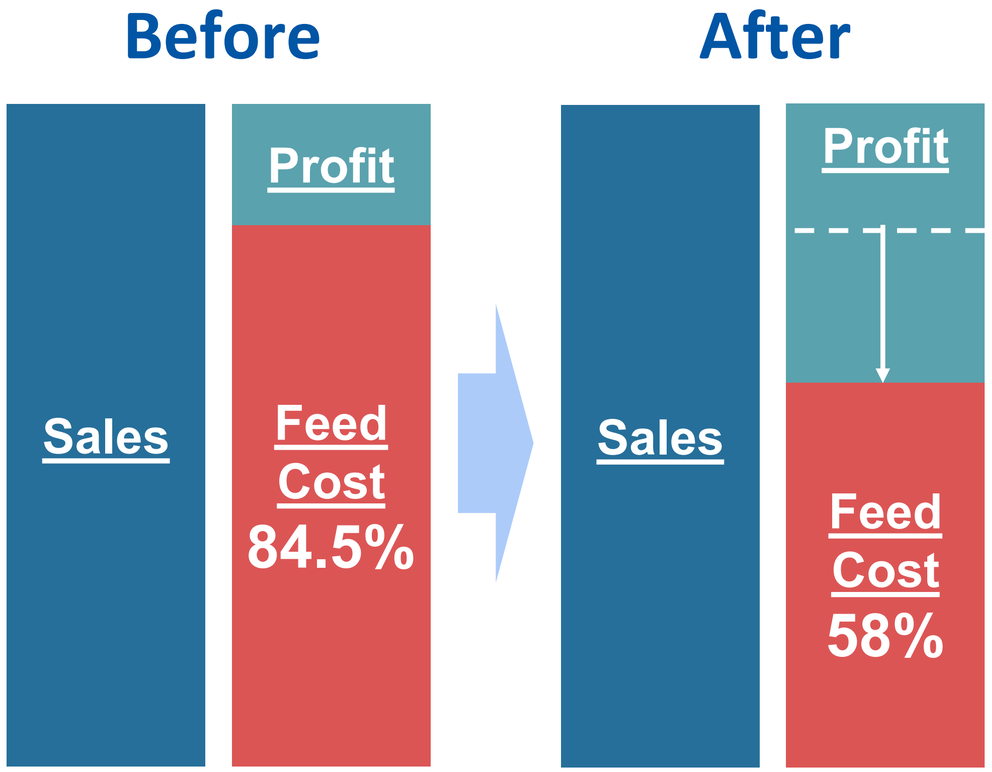


- Reduce **more than 50%** of operation hours at farm sites
- Farmers can focus on **more strategic work** (e.g. testing better feed, new practice)

UMITRONCELL | Feed Optimization for Economic and Environmental Sustainability

Successful Farmer's Case Study

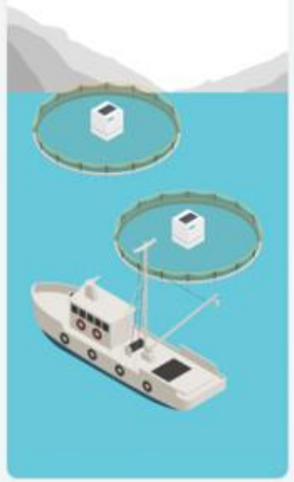
- **Feed consumption reduction by 30%**, profitability increased **more than double**
- Achieved high performance with **zero fish-meal feed**
  - Offset the negative impact/concerns on growth
  - Promote **alternative feed and sustainable practice** with evidence data
- **No additional petrol consumption** for power source of feeding systems, thanks to solar-based architecture



Greenhouse Gas Emissions※

Produced during the life cycle of Umi to Sachi's red sea bream

Raw Materials	Production	Processing	Distribution	Product Sales	Disposal
882g CO_2 eq	**19**g CO_2 eq	**32**g CO_2 eq	**38**g CO_2 eq	**61**g CO_2 eq	**15**g CO_2 eq
84.24%	1.81%	3.06%	3.63%	5.82%	1.44%
Production & transportation of raw materials needed for growing fish e.g. feed	Growing farmed fish from juvenile to harvest size	Processing of fish that have been harvested	Transportation of fish products to retail stores	Sale of products in retail stores	Transporting and disposing of packaging and other waste materials e.g. inedible parts



海を愛する、AIシーフード

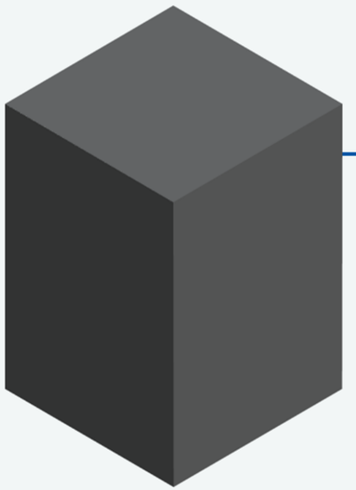
うみとろん

1,048g

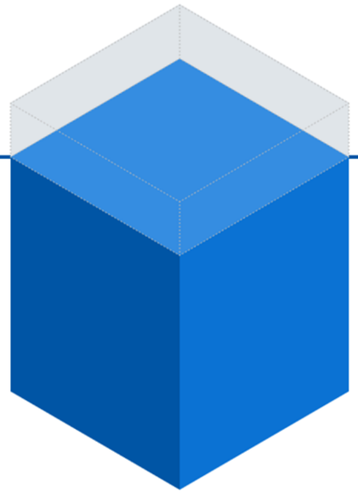
CO_2 eq / 100g

※ Per 100g of product

GHG Reduction Impact of UMITRON CELL at Each Cage



Conventional Automatic Feeders
1,122g CO_2 eq



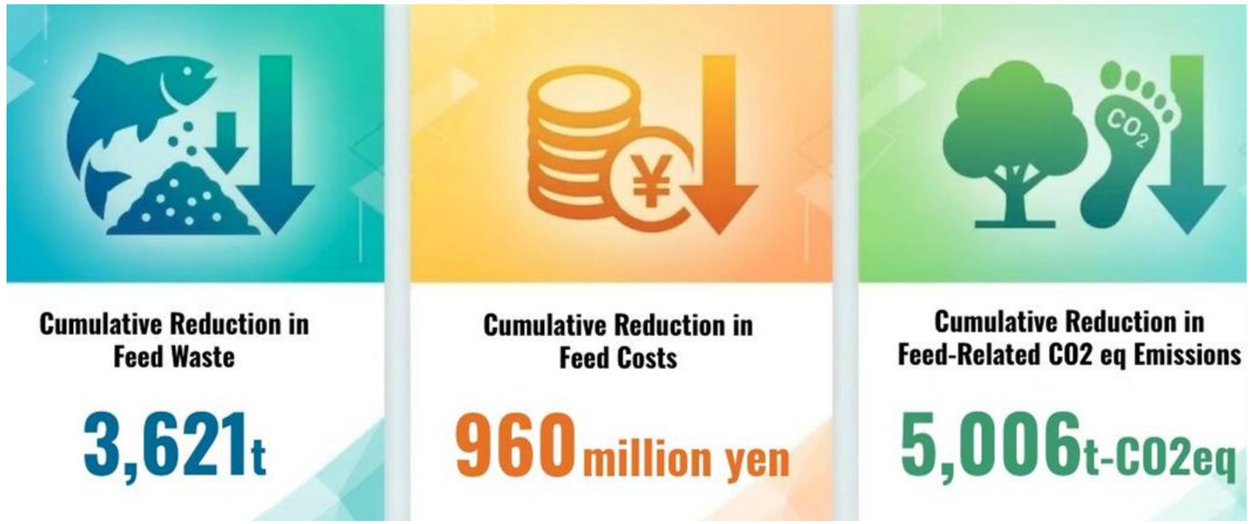
UMITRONCELL
880g CO_2 eq

−22%

Eco-feeding using AI

※ Based on the FCR results when comparing conventional feeders and Umitron Cell (2.62 vs 2.06 respectively)

Aggregated Impact Data

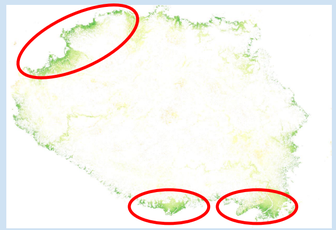


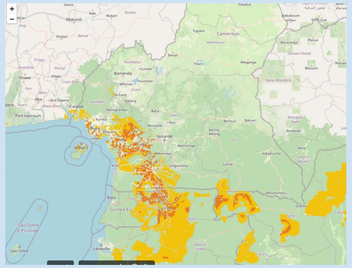
Combining AI, IoT and satellite data capability for the growth of sustainable aquaculture, from planning phase to operational phase.

Our offerings

Environmental Data for Planning and Adoption

Aquaculture Potential Map





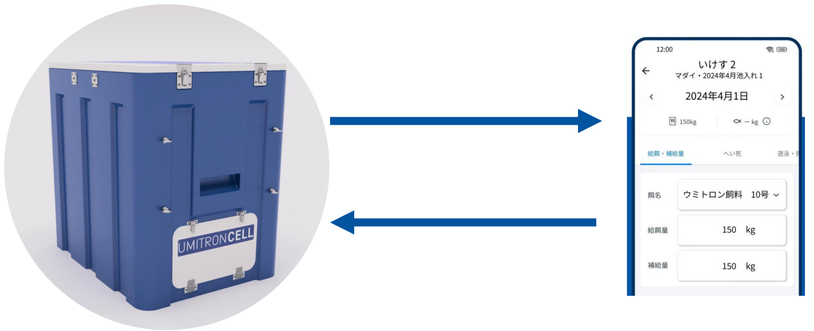
- **Aquaculture Potential Map / site selection:**
  Identify and visualize suitable locations for aquaculture farms

- **Monitoring system:**
  Environment monitoring / risk alert
  (to be discussed)

Operation Data for Automation

UMITRON CELL

UMITRON FARM

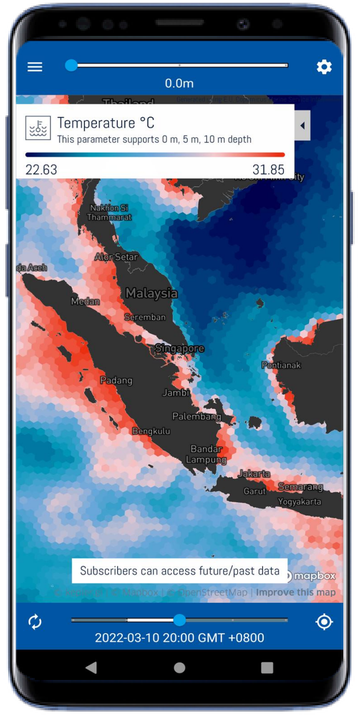


- **UMITRON CELL :**
  AI-powered auto-feeder for sustainable farming

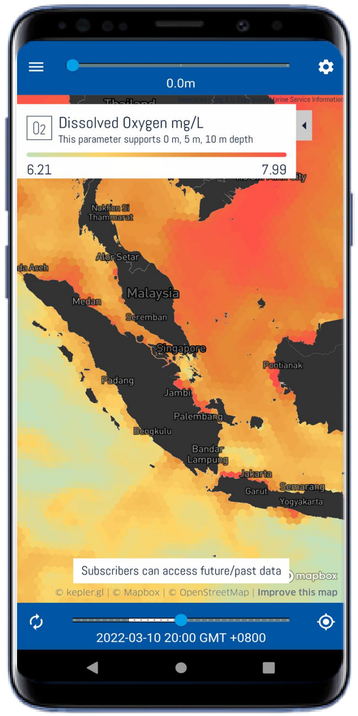
- **UMITRON FARM :**
  Record and share operation data for farmers' capacity development

UMITRON PULSE

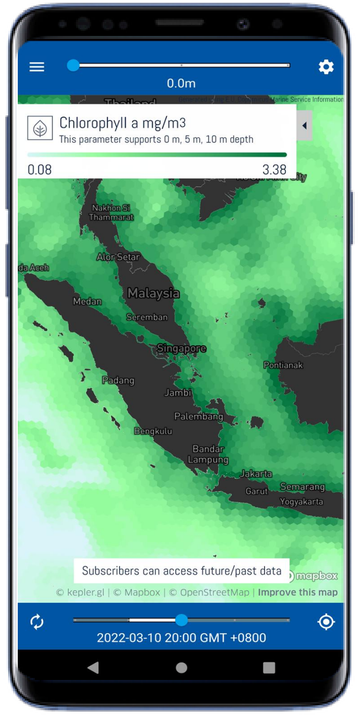
HIGH-RESOLUTION SATELLITE DATA FOR THE AQUACULTURE INDUSTRY



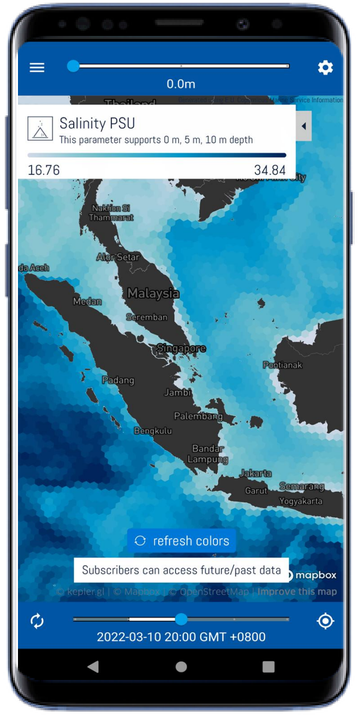
Temperature



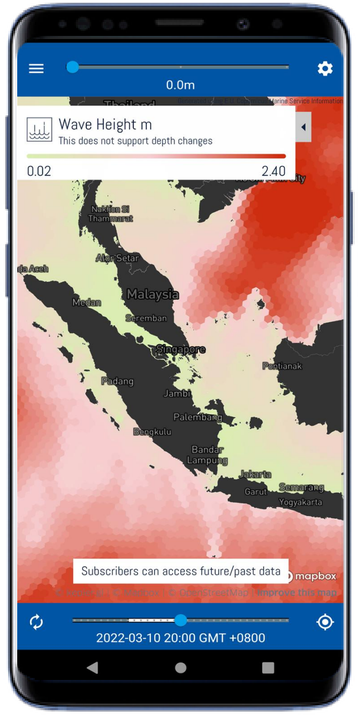
Dissolved Oxygen



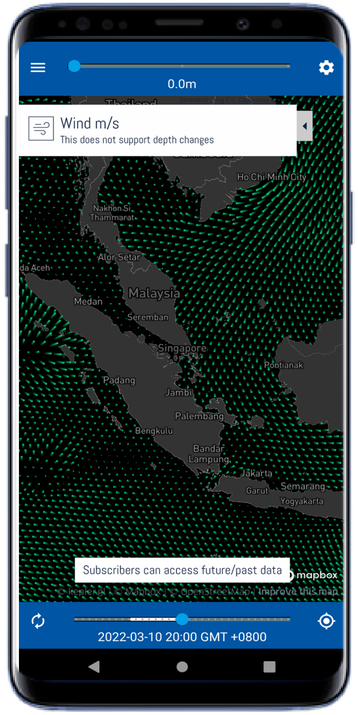
Chlorophyll a



Salinity



Wave Height

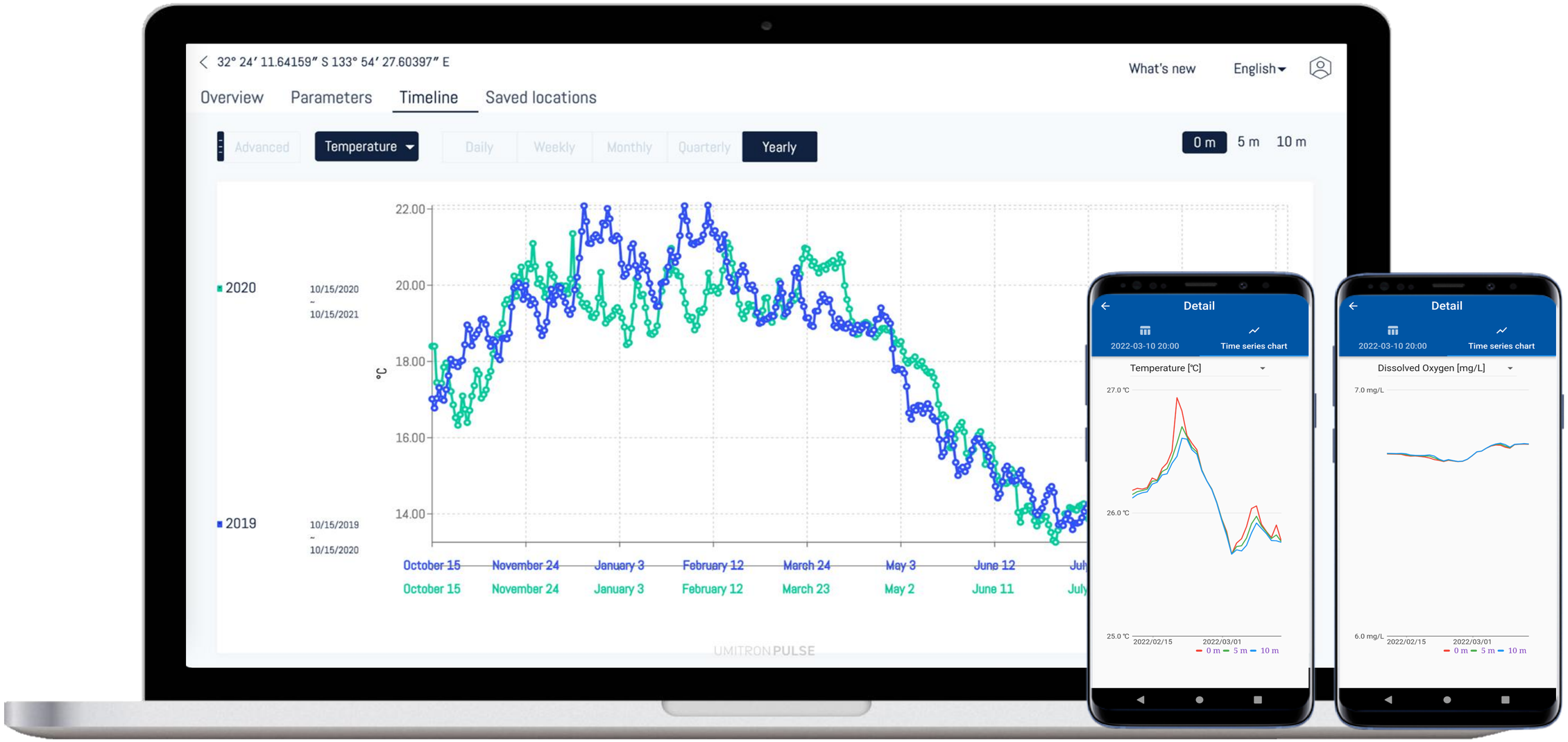


Wind

Ocean Current

UMITRON **PULSE**

HIGH-RESOLUTION SATELLITE DATA FOR THE AQUACULTURE INDUSTRY

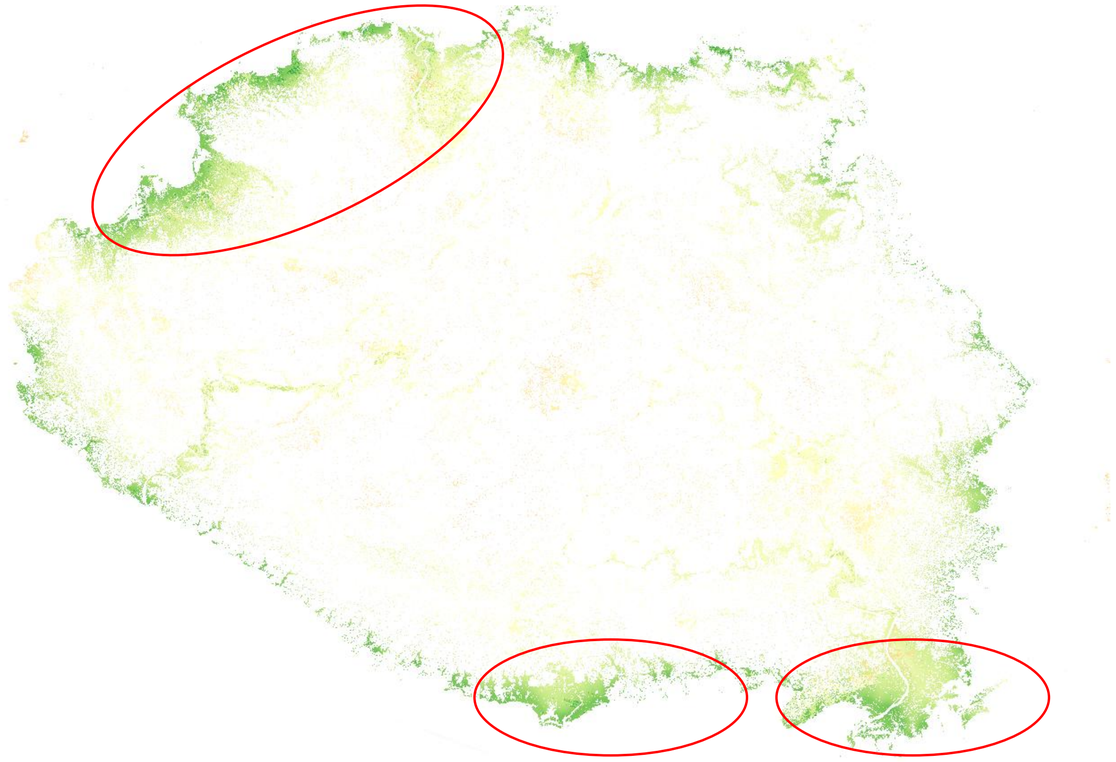


UMITRON PULSE

ENVIRONMENTAL SUITABILITY ANALYSIS PROJECTS

Ocean Suitability Analysis for Yellowtail (in Japan)

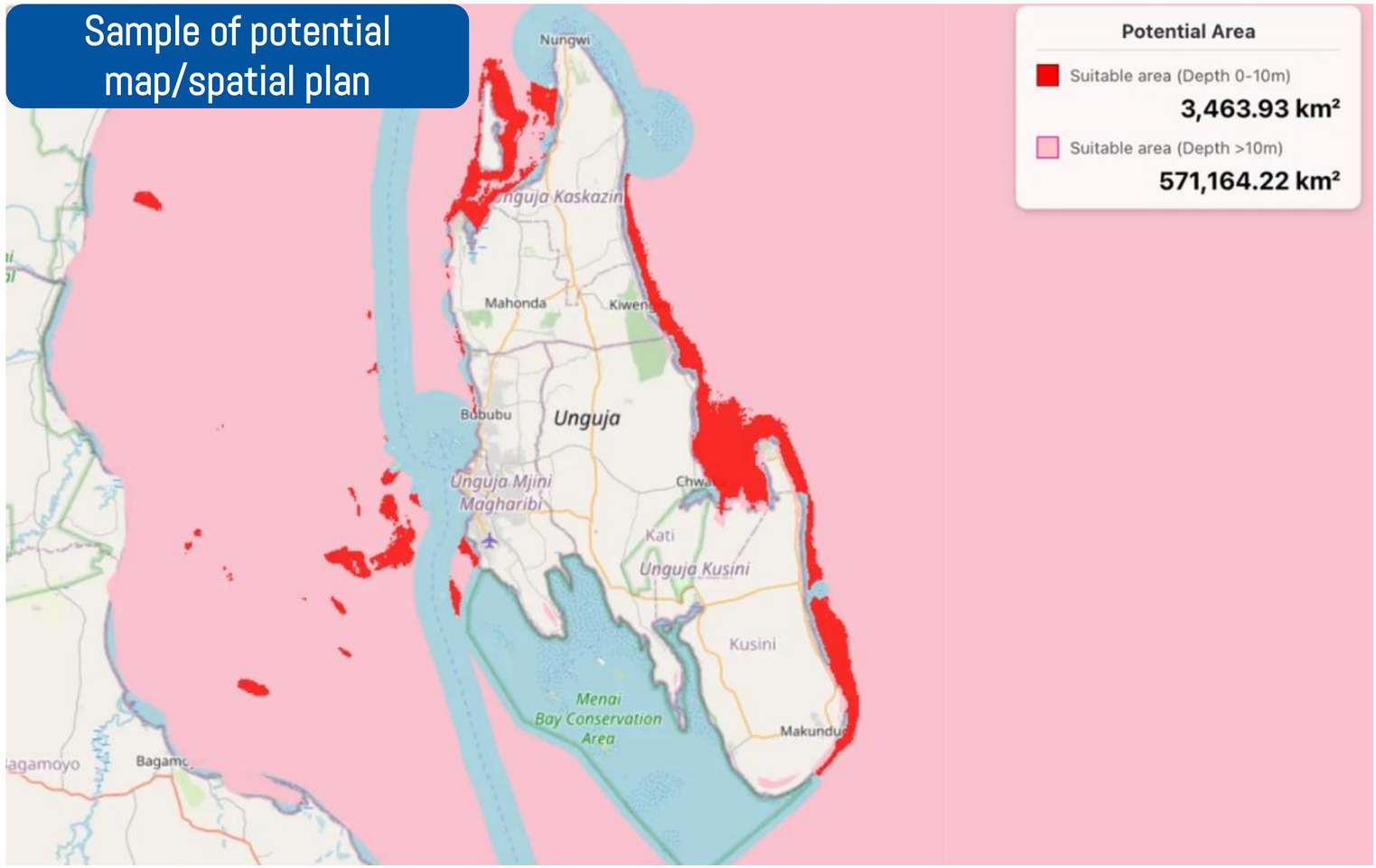
Inland Suitability Analysis for Shrimp (in Fiji)



UMITRON PULSE

LONG TERM HISTORICAL DATA FOR SITE SELECTION AND SPATIAL PLANNING

Sample of potential map/spatial plan



- Identify the potential area/key zones for aquaculture industry
  - biological constraints
  - environmental constraints
  - socio-economic information (e.g. marine conservation area) etc.

- The Aquaculture Potential Map visualizes the critical information, **to attract private sector investment into aquaculture and value chain ecosystem players**

UMITRON **PULSE**

Aquaculture Potential Map: Approach

1. Define criteria of each species

BIOLOGICAL SUITABILITY

- Water temperature
- Salinity, etc.

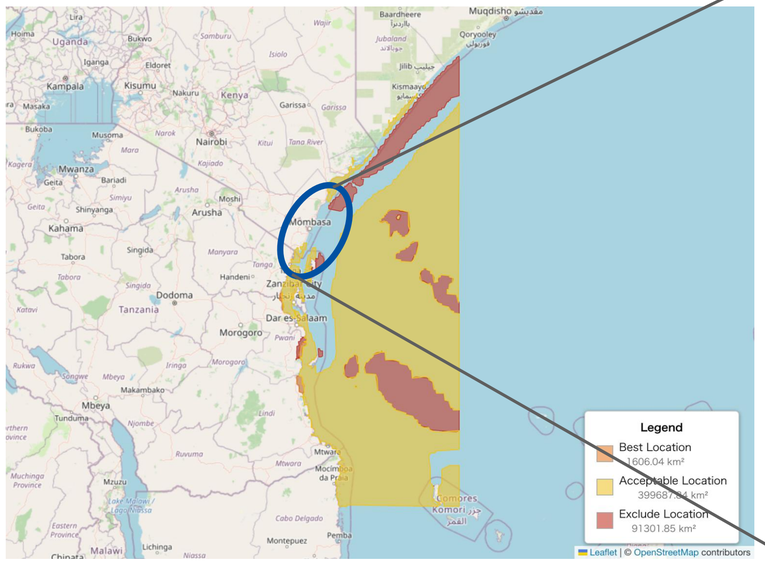
STRUCTURAL SUITABILITY

- Wave height
- Ocean current
- Water depth
- Wind, etc.

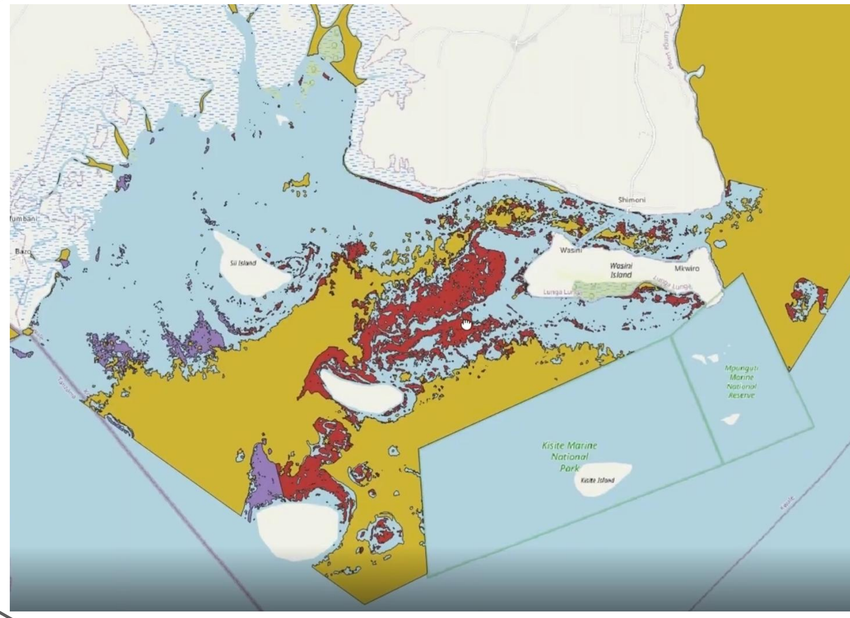
SOCIO-ECONOMIC CONSTRAINTS

- Can we avoid conservation area?
- Is there a proper road close by?
- Is the electricity available nearby?
- Is there important facility/infrastructure nearby?, etc.

2. Nationwide Analysis



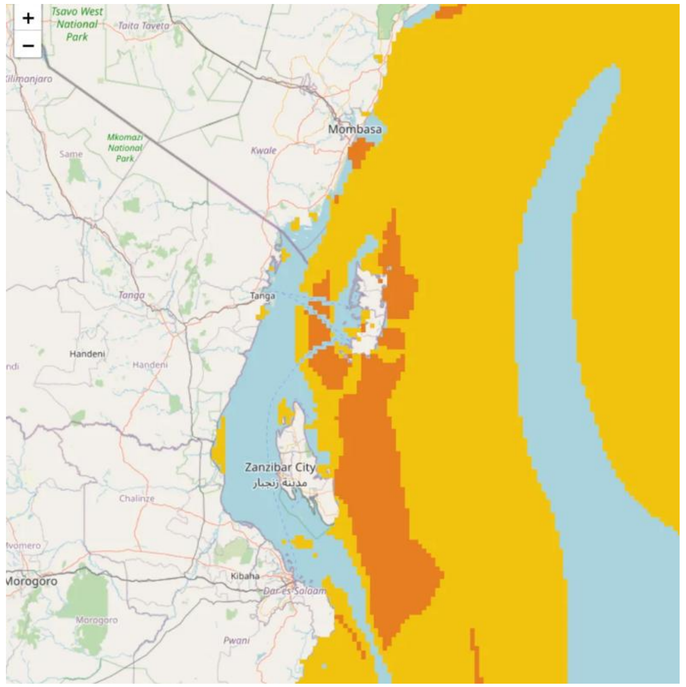
3. High-Resolution Analysis and Site Visit/Evaluation



UMITRON PULSE

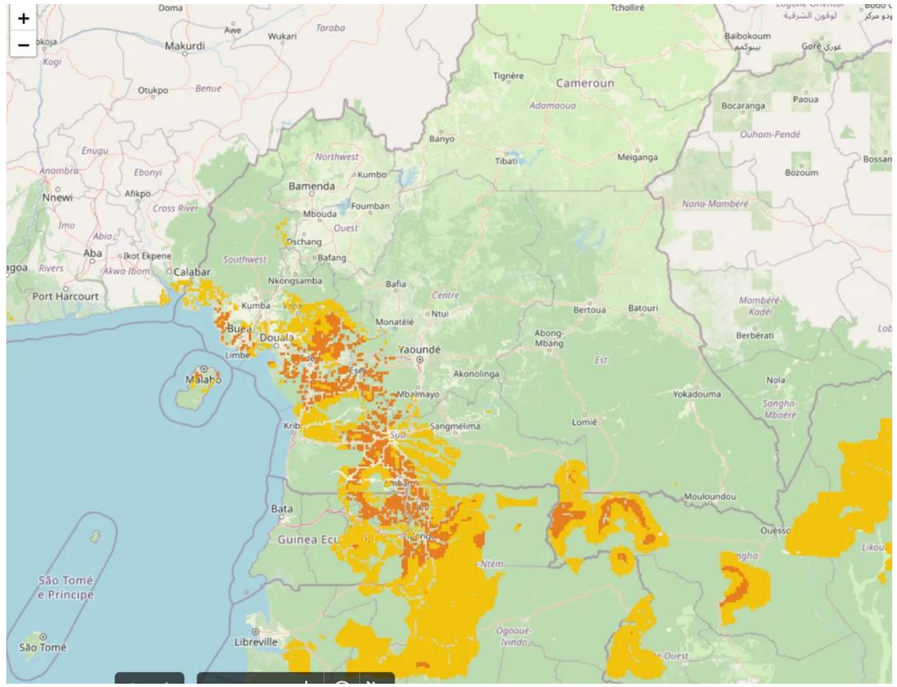
UMITRON's Site Selection / Potential Map Creation Service

Site Selection/Spatial Planning for Ocean



- Identify the space where environment is suited for fish/seaweed/shell farms
- Clarifying the boundaries for aquaculture, respecting the other marine-related industry

Potential Zone Identification for Inland



- Identify the potential zones suited to invest in developing inland-water aquaculture
- Taking into account the proximity to the existing infrastructure

We accelerate development and transformation of aquaculture value chain, by collaborating with multiple stakeholders in each country and leveraging our technology.

Farmers

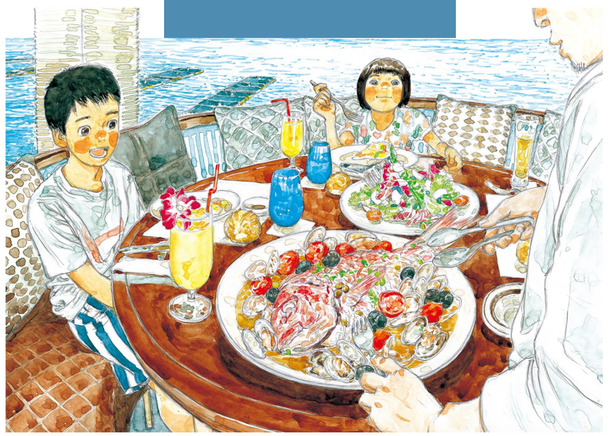
Provide Technologies

UMITRON

Transformation with AI/digital technology

Sustainable Seafood/Seaweed

Retail/ Consumers



Value chain Stakeholders (Feed suppliers/government, etc)

KYUSHU UNIVERSITY

TOKIO MARINE

IDB LAB

ENEOS

Feed	Seed	FInancial Service	Public Sector	Blue Carbon

Agenda

1. Introduction of technology: Why Decentralized Approach?
2. Implication for sustainable aquaculture development

Misconception on Smart Aquaculture: Is there only one pathway for industrialization?

Development ≠ Mass-Scaling?

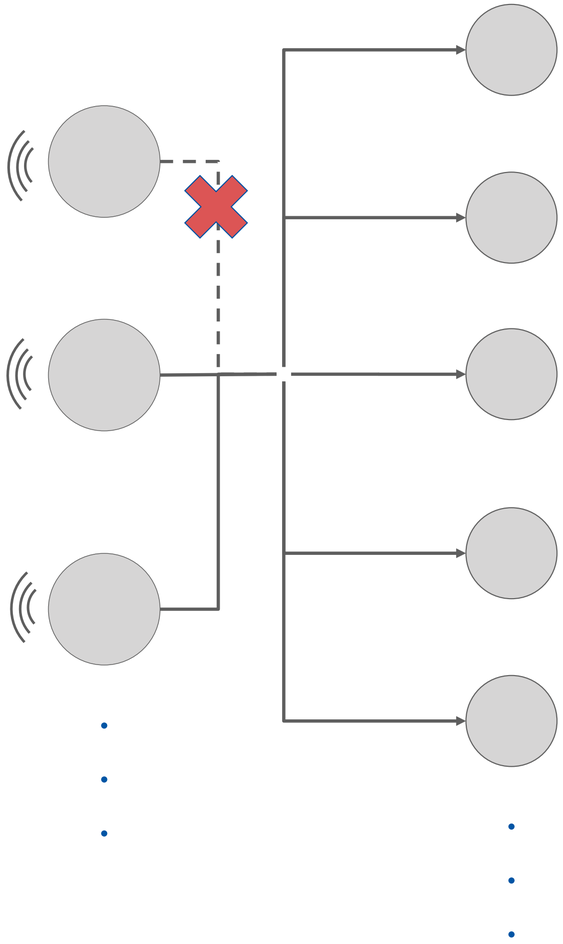
Modernization ≠ Centralization?

Digitalization ≠ One solution for all?

Decentralized technology has potential to cover diverse farming environment. And even large scale farms can harness its benefit.

	Smaller scale farms	Asian farms & small-size phase cages in EU	Mediterranean Farms	Salomon Farms
Coverage	10tn or less / cage or pond	10-30tn / cage or pond	50 - 100tn / cage	500 - 1,000tn / cage
Challenges to implement technology	• Management cost for each cage/pond • Infrastructure constraints • Profitability	Decentralized AI automation enables us to overcome the challenges.	• High investment cost • Environment /structural constraints (not suited to small-size phase cages) • Additional energy needed…	

Keeping multiple production areas/regions would strengthen resilience of the food security and bring opportunities of growth in the regional society and economy.



Benefit of Decentralization for the Society

- Stability of food supply chain, even when the unexpected risk event happens
  (natural disaster, logistical disruption, energy price fluctuation, etc.)
- Revenue for local economy
- Job opportunities for local talents

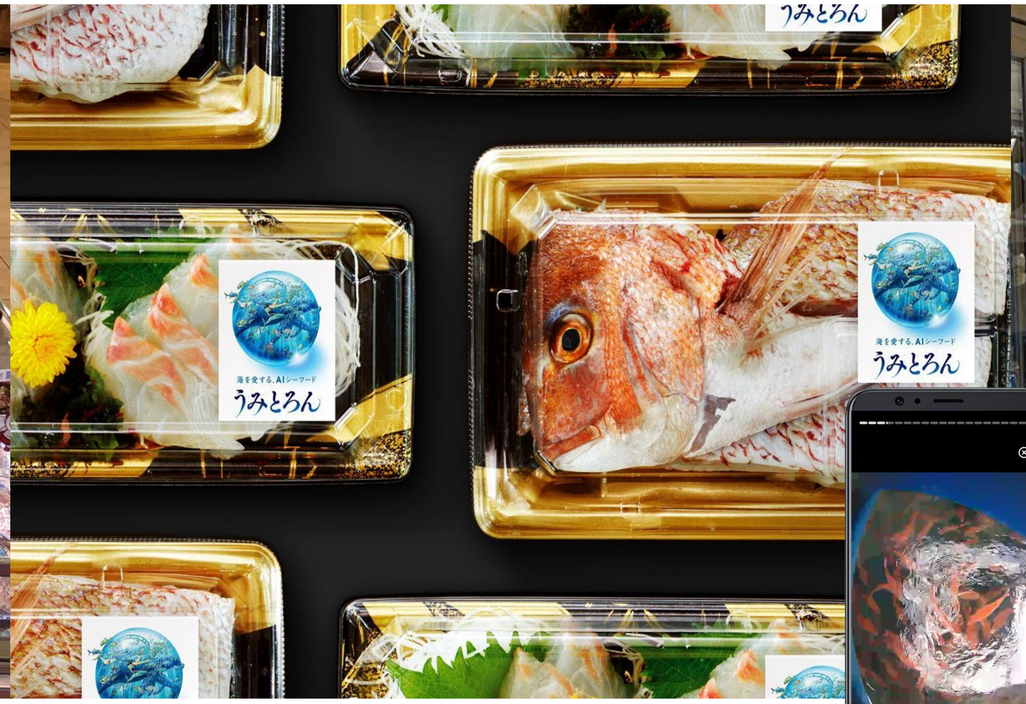
Convivial aquaculture sector growth is possible, together with continuous innovation.

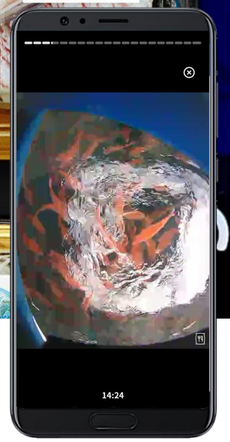
Seafood Farmed S.M.A.R.T. UMITRON うみとろん

BRINGING FARM TO TABLE

SUSTAINABLE SEAFOOD BRANDS POWERED BY TECHNOLOGY

Value of sustainable farming and local spirit can turn into tangible products.





Feel free to reach out to us and discuss collaboration ideas, such as :

- Smart aquaculture with AI-auto feeder / digital farm management
- Aquaculture potential map / spatial planning
- Aquaculture value chain development project
  (R&D of feed, blue finance, etc.), etc.

Junichi Taniguchi (junichi.taniguchi@umitron.com)
Global Business Lead

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Thank You