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"Food Technology"
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UMITRON

Where Smart Aquaculture Meets Foodtech: A New Frontier for Sustainable Aquaculture by AI, IoT & Satellite Data

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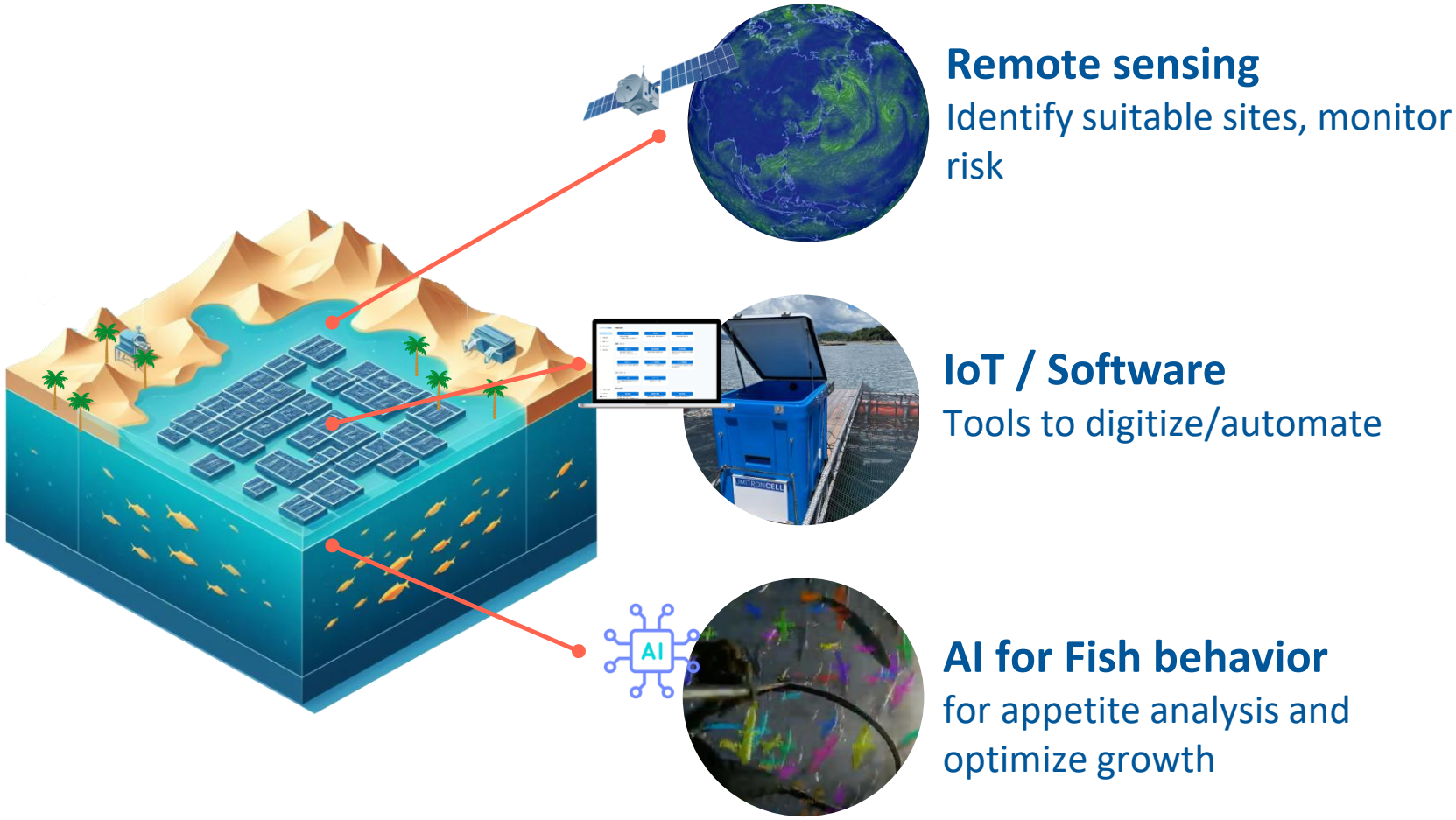
Who is UMITRON?/ Our Core Technologies

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

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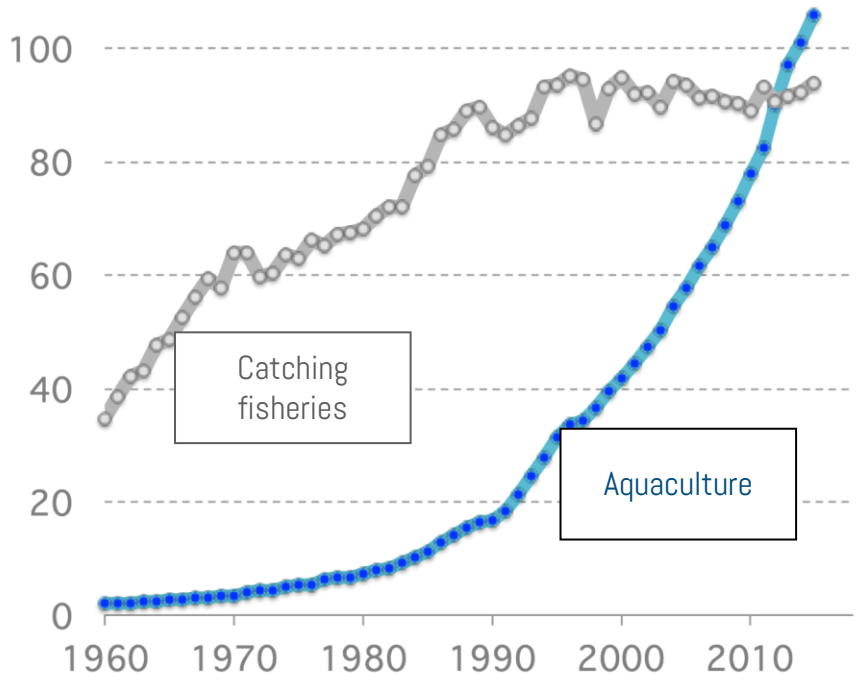
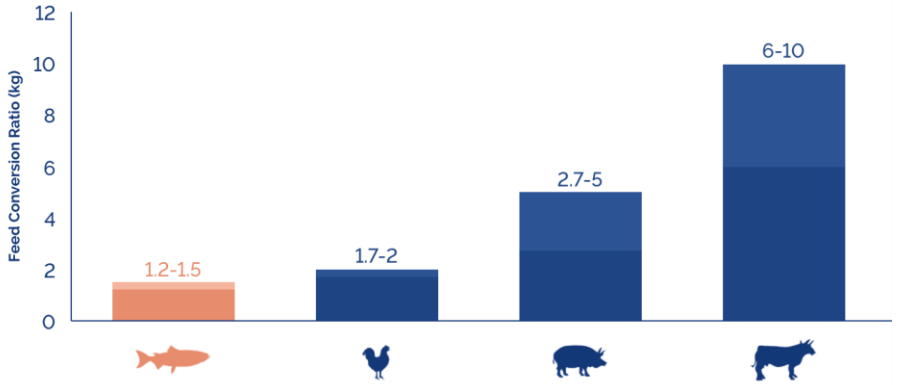
Why Aquaculture? / As a Sustainable Protein Source

Exponentially Growing Demand/Production



Low Environmental Impact

Low FCR (Feed Conversion Ratio)



Low Carbon Footprint

0.60	0.88	1.30	5.92
Farmed Salmon	Chicken	Pork	Beef

References: Global salmon initiative

CO2e is calculated by multiplying the emissions of each of the six greenhouse gases (CO2, CH4, N2O, HFCs, PFCs and SF6) by its 100-year global warming potential (GWP).

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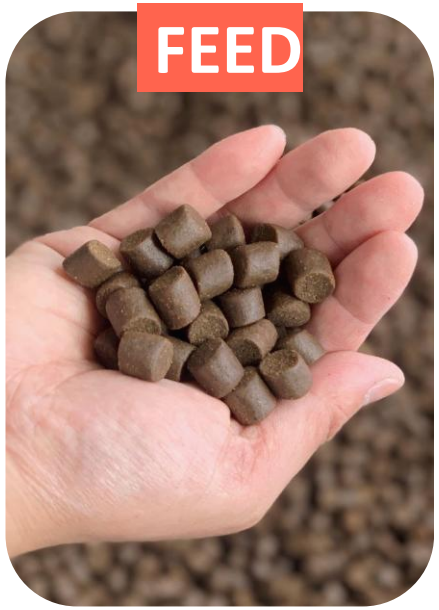
Industry Challenges

FEED

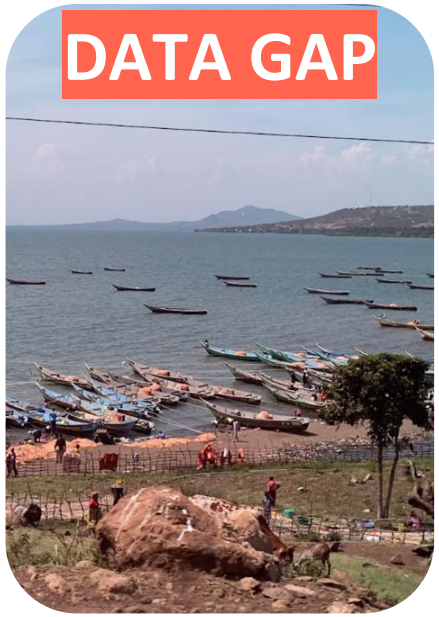


- Use of Fish meal/oil
- 50–70% of operation cost
- Alternative ingredients need R&D and proof

ENVIRONMENTAL IMPACT

- Pollution from feed waste
- Algal blooms
- Climate change

DATA GAP



- Where is the right place to open new farms??
- What is the current situation at farms??

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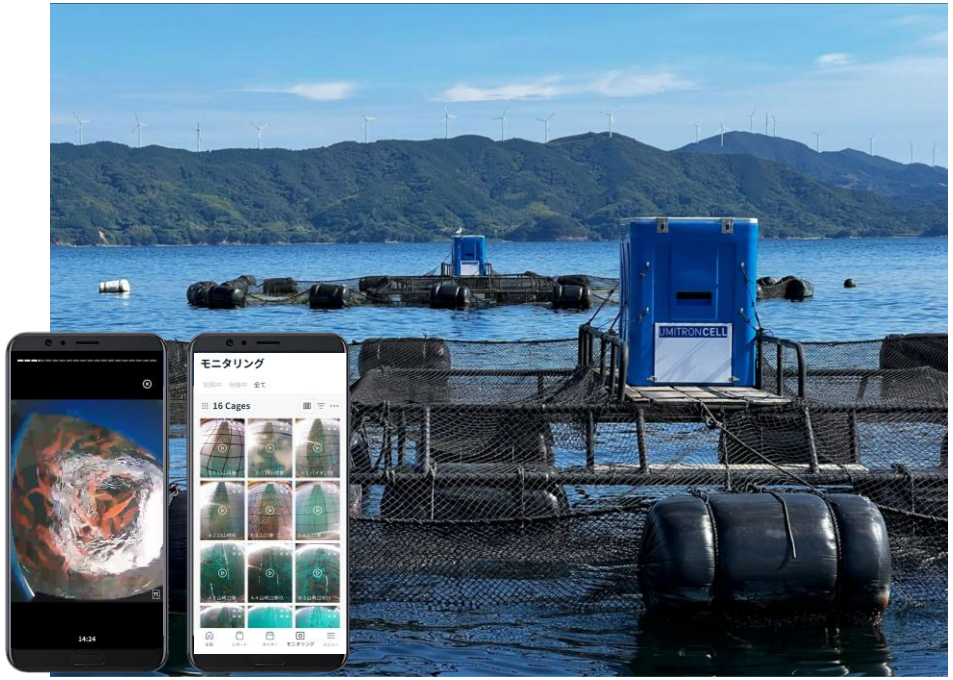
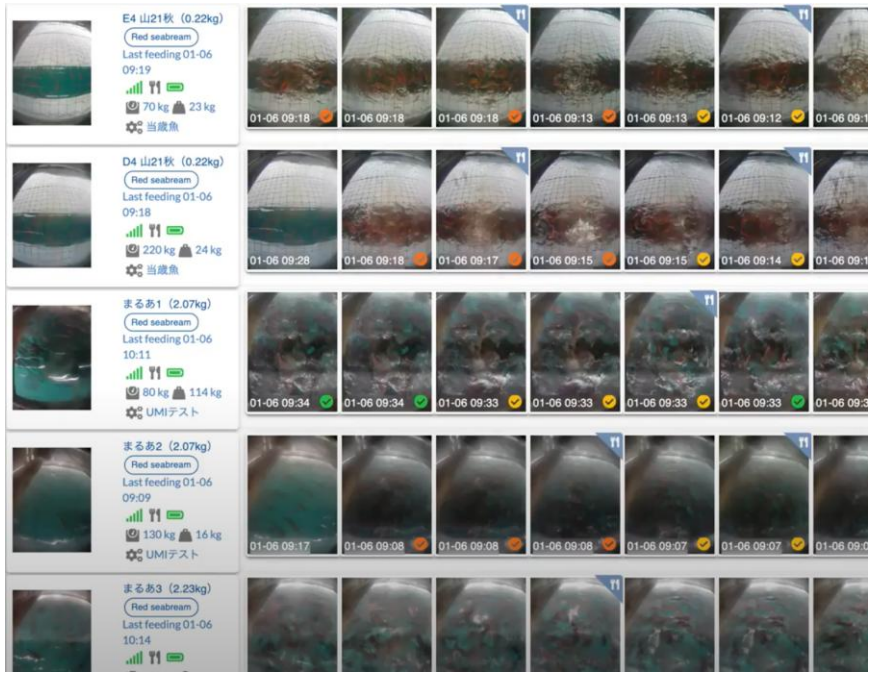
UMITRON CELL / Decentralized AI Auto-Feeder for Fish Farming

Automate and Optimize Feeding Operation by Edge AI system, even at off-line/off-grid location.

UMITRON CELL (Auto-Feeder, powered by Edge AI & IoT)



Real-Time Fish Appetite Analysis and feeding pattern control by AI



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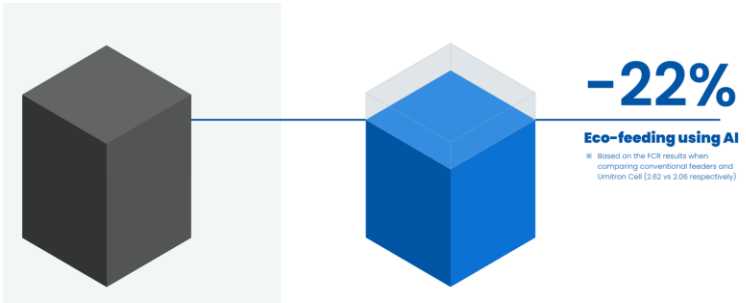
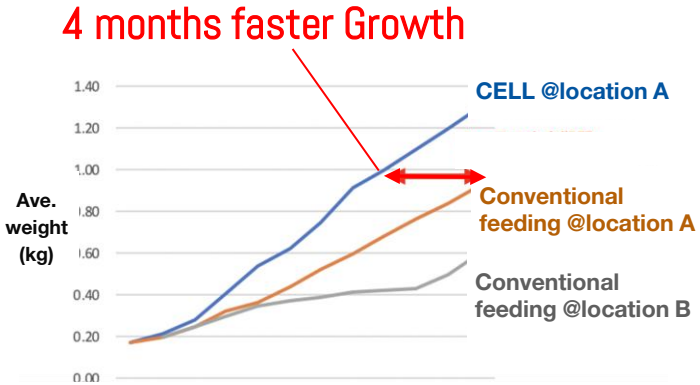
Impact of UMITRON CELL for Sustainable Aquaculture

UMITRON CELL supports realizing environmentally, economically and socially sustainable aquaculture.

Minimize the feed waste
(Environment)

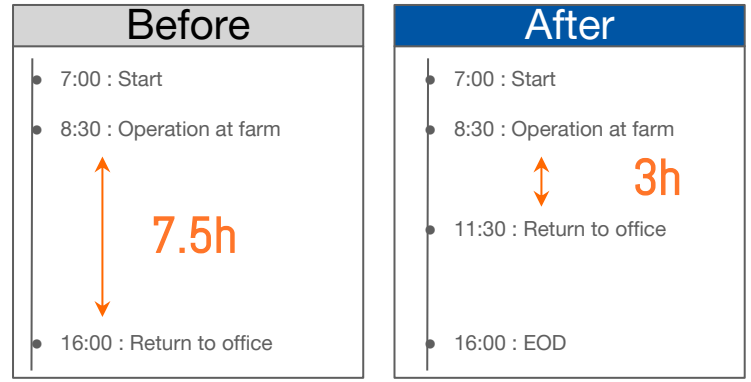


Faster Growth
(Economy)



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

Resource Shift
(Social)



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

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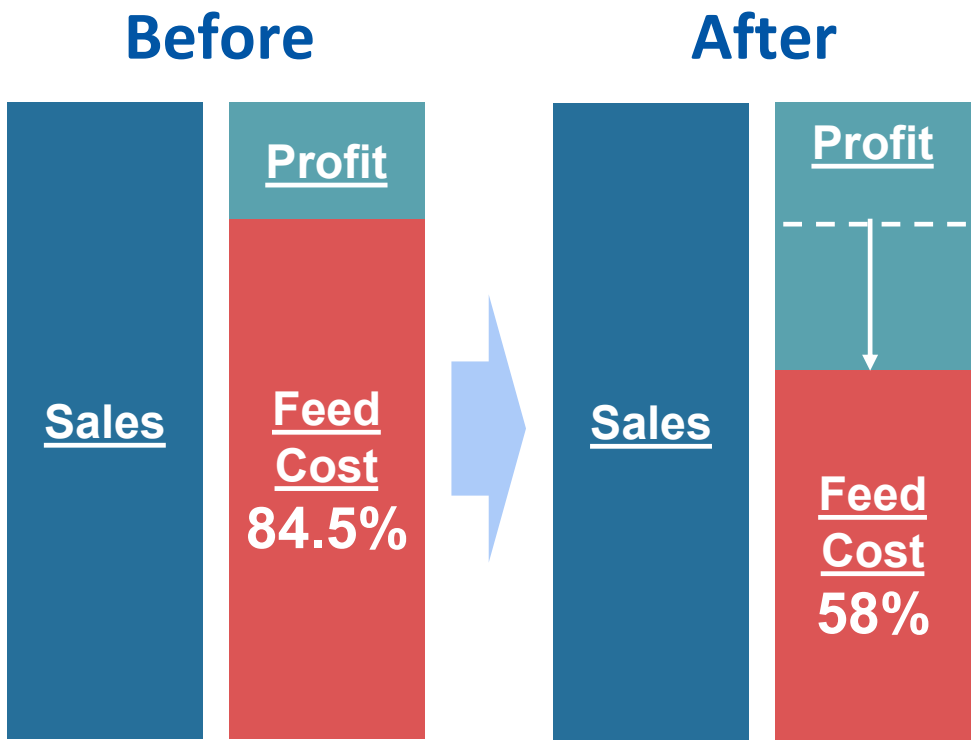
Maximizing potential impact of Foodtech by AI
(smart aquaculture × alternative feed ingredient)

AI-powered feeding optimization and growth acceleration can assist the success of alternative feed.

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 by** creating **success cases & evidence data**



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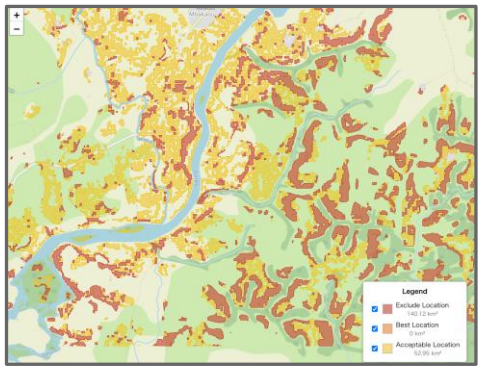
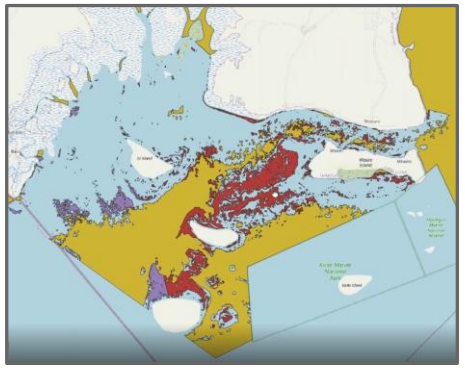
Maximizing potential impact of Foodtech by AI
(smart aquaculture × alternative feed ingredient)

Challenges on expansion

- Emerging countries lack objective analysis of optimal farm sites
  - Unclarity **on existing sites & suitable area** for investment
- Limiting scalability of feed on sourcing ingredients & production (e.g. seaweed-based ingredients)

Solution: Satellite-based mapping





- **Aquaculture Potential Map:**
  - Multi-layer data pinpoints suitable zones
  - Accelerating public/private sector investment
- Monitoring ocean environment to detect risk on seaweed production

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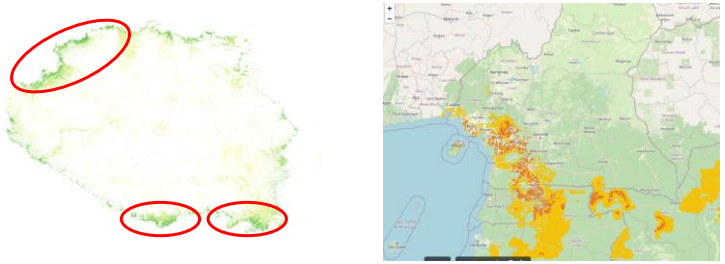
Area of collaboration 1:
Smart Aquaculture × Foodtech (for alternative feed)

1. Identify the potential area of sourcing aquatic ingredients (e.g. seaweed)

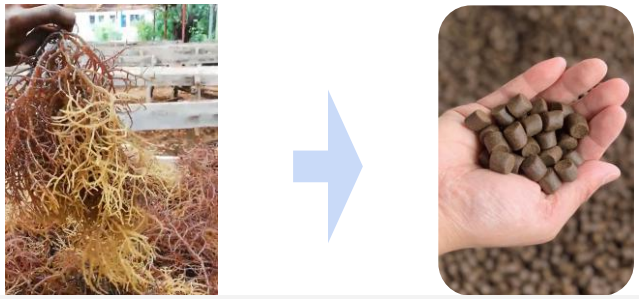
Aquaculture Potential Map



- **Aquaculture Potential Map:**
  Identify and visualize suitable locations for aquaculture farms
- **Monitoring system:**
  Environment monitoring / risk alert for stable production

2. Alternative Feed Development for Aquaculture

Alternative Ingredients **Feed**



- **R&D for use in aquaculture feed:**
  - Alternative protein for feed, functional ingredient, etc.
- **Increase Seaweed Sourcing :**
  - EU promote investment in seaweed, expecting to scale for alternative feed

3. Test and Promote Alternative Feed Products with AI Feeder

UMITRON CELL **Performance Data as a Proof of Impact**

- **UMITRON CELL :**
  AI-powered auto-feeder for sustainable farming
- **UMITRON FARM :**
  Record operation data and analyze for accelerating the R&D

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Area of collaboration 2: Promoting Sustainable Value Chain, Smart Aquaculture × Demand Side (corporate/retail)

Promote Smart & Sustainable Farming

Spanish/ European Small Scale Fish Farmers

Marine Aquaculture (e.g. seabream, seabass)

Inland Farm (e.g. Trout)

Deploy Technology

UMITRON CELL

Performance Data as a Proof of Impact

Promote Sustainable Fish from Demand Side

Support Technology Installation

Supply Sustainable Fish

Corporate Catering Company

Retail Chain

Provide Data of Environmental Footprint Reduction

Data for Reporting

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Thank you, and let's discuss collaboration ideas!

- Pilot/R&D of alternative ingredients for feed,
- Low-environmental fish sourcing (promote transformation of production site),
- Strategic partnership with aquaculture equipment supplier, … etc

Contact information:

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