WINGS ICT Solutions

ARTIFICIAL INTELLIGENCE (AI)

Description of Solution : The solution assists aquafarm managers to: (i) Monitor, whenever they want their production, in a 24/7 fashion; (ii) average weight estimation, given video streams, production data, while tuning to the conditions in the farm; (iii) feeding optimization; (iv) bevaviour monitoring; (v) health aspects, disease prevention.

The solution leverages on: (i) IoT (Internet of Things) technologies, underwater cameras, quality sensors; (ii) networking, cloud (including on premise installations); (iii) advanced algorithms, leveraging on AI (Artificial Intelligence) techniques; (iv) systems for visualization and early warning.

The system enables :

- 24/7 monitoring
- Weight estimation at 5-10% accuracy following a 1-3 month training
- 10-15% reduction in the feeding consumption / waste
- Accurate mobility estimation

Function and Application : The system is oriented to aquafarms, for diverse species (seabream, sea bass, other fin fish, shrimps, mussels), as well as to industries targeting pharmaceutical and feeding optimization. The system is also applied to environmet monitoring and protection cases.

Availability :

Market Readiness: our system is oriented to aquafarms, for diverse species (seabream, sea bass, other fin fish, shrimps, mussels) and enables: 24/7 monitoring, weight estimation at 5-10% accuracy , 10-15% reduction in the feeding consumption / waste, accurate mobility estimation.

Existing Market Coverage: We started from the Mediterranean region (Greece,Cyprus). Almost 15 site installations in 1 year, following strategic partnerships all over Europe and with validated results from our customers.

Commercialization Strategy: Direct approach,strategic partnerships with companies with access to Aquaculture farms , strategic partnerships with telco (and IT) companies.

SPECIFICATION

Technical aspects of the solution : The solution comprises the following parts:

- **Multi-parameter Sensors:** (temperature, pH, dissolved oxygen, salinity, turbidity, chlorophyll, P redox etc.) attached to the aquaculture unit, that will automatically collect and transmit parameter measurements, replacing the manual data collection taking place at a restrained time and place.
- **Cameras (underwater):** that record and store image and video data that can be used for added value functionalities offered by WINGS Aquaculture Platform.
- **WINGS Smart Gateway:** a smart data transmission unit that retrieves and sends data from sensors, cameras over any available network (NB-IoT, 3G/4G/5G, WiFi, GPRS, LoRa) and provides remote configuration, management and adjustment of measurement and transmission profiles.
- **WINGS Aquaculture Platform:** for added value services based on Artificial Intelligence and Customizable dashboards that will use all mentioned technologies and embed the desired functionalities that will help improve the operational management of the aquaculture unit.

Services :

- **Average Weight Estimation:** through WINGS AI at 5-10% accuracy following a 1-3 month training.
- **Feeding Optimization:** is achieved by three important aspects - behaviour monitoring (mobility), accurate weight estimation , monitor of environmental parameters.
- **Bevaviour Monitoring:** analysis of video recording provides important aspects of fish condition.

Economic and Environmental Benefits

Economic Benefits :

- **Feeding Optimization:** can lead to a 10-15% reduction in feeding consumption, directly translates into cost savings for aquafarm managers.
- **Labor Costs:** The estimation of average weight through WINGS AI can lead to a 20% reduction in labor costs (manhours-fuels-equipment). Traditional method of fish weight estimation in sea cages requires manual sampling and weighing, which is labor-intensive and time-consuming process.

Environmental Benefits :

- **Healthier Aquatic Ecosystems:** Monitoring health aspects and behavior can help prevent disease outbreaks and improve the overall well-being of the aquatic organisms. This contributes to the maintenance of a healthier and more sustainable aquafarm ecosystem.
- **Reduced Environmental Pollution:** Less waste and controlled feeding protect the natural environment and nearby aquatic ecosystems.
- **Sustainability:** Our solution promotes sustainable aquafarming practices by helping to maintain a balance between aquafarm production and environmental considerations.

Implemented by
UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
UN environment programme
Mediterranean Action Plan Barcelona Convention
MedWaves the UNEP/MAP Regional Activity Centre for SCP
Co-funded by
Generalitat de Catalunya Departament d'Acció Climàtica, Alimentació i Agenda Rural
Agència de Residus de Catalunya
Italian Development Cooperation Ministry of Foreign Affairs and International Cooperation

Requirements : to adapt the solution to the local market and potential applications/market size

Requirements for Local Market

- **Compliance:** Research and comply with any local regulations and standards relevant to aquaculture in Tunisia (environmental regulations and data privacy laws).
- **Local Infrastructure:** Consider the availability and quality of internet connectivity and infrastructure in Tunisia.

On-site After Sales Service Support :

- WINGS resources
- **Local Presence:** establishing a local presence in Tunisia to provide on-site after-sales service, partnering with a local service provider.
- **Technical Assistance Requirements:** Customer Training.

Potential Applications and Market Size :

- Marine Aquaculture
- Freshwater Aquaculture
- Environmental Monitoring
- Government and NGO Partnerships
- Market size in Tunisia : Total aquaculture production was around 22,000 tonnes in 2018, of which over 20,000 tonnes consisted of marine species.

Smart Technology Provider – B2B Event

- 24/7 Support
- Remote Assistance
- Knowledge Base and Documentation
- Collaboration with Local Partners

Targeted and Type of Local Business Partners : companies with access to Aquaculture farms (consultants, fish feed companies, medical companies) and partnerships with telco (and IT) companies from Tunisia

Some types of local business partnerships they can consider:

- **Distributor Partnerships:** Collaborate with local distributors who have established networks and relationships with aquafarm operators in Tunisia.
- **Consulting Firms and Service Providers:** Partner with local consulting firms or service providers specializing in aquaculture and agriculture.
- **Government and NGO Partnerships:** Establish partnerships with local government agencies and non-governmental organizations (NGOs) involved in aquaculture development and sustainability initiatives.
- **Local Aquafarm Cooperatives:** Cooperate with local aquafarm cooperatives that represent the interests of multiple aquafarm operators.

Company Overview : WINGS ICT Solutions provides complete integrated, intelligent digital (software, hardware) solutions and transformation for vertical business sectors; Environment (air quality, natural disasters), Utilities and Infrastructures (energy/ water/gas, transportation, construction), Production & Manufacturing (food, factories/logistics), Service Sectors (health, education/culture, government, security/ defense), as well as Smart Cities.

Contact :

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