TECH OFFER

Software and AI To Digitize and Automate Seafood Manufacturing and Supply Chains

KEY INFORMATION

TECHNOLOGY CATEGORY:

Sustainability - Food Security

Foods - Processes

Infocomm - Artificial Intelligence

Infocomm - Video/Image Analysis & Computer Vision

Infocomm - Internet of Things

TECHNOLOGY READINESS LEVEL (TRL): **TRL9**

COUNTRY: **CANADA**

ID NUMBER: **TO175168**

OVERVIEW

A smart manufacturing and supply chain platform has been developed, enabling seafood processors to automate and digitize their production, quality control, costing, traceability, cold chain, and inventory workflows using tablet computers, sensors, and IoT devices in real-time on the factory floor. This software is a "low-code" web app that can be easily configured for both simple and complex workflows, suitable for small or large production facilities, and adaptable to the wide variety of seafood processes, including live shellfish, fresh and frozen fish, smokehouses, and industrial-scale canneries.

The workflow platform includes advanced modules for IoT hardware integration, artificial intelligence, advanced analytics and reporting, a wireless cold-chain sensor, a consumer tracing app, and computer vision for automated inspection. Generative AI is also integrated into the platform, allowing users to "talk to their data" and upload documents to train the large language model.

The platform provides value to customers in three core areas: First, the software and AI reduce labor costs by making data collection, management, and reporting more efficient. Second, the software enables real-time process and inventory control, replacing outdated analog paper record-keeping. Third, the software reduces data errors and strengthens traceability, improving compliance with third-party certifications and food safety regulations. Additionally, it includes AI algorithms for yield prediction, anomaly detection, demand forecasting, and drain weight prediction in the fish canning sector.

TECHNOLOGY FEATURES & SPECIFICATIONS

The software includes a core low-code workflow platform that can be configured for many different types of workflows and processes. The platform can be hosted on the cloud or on premise and includes features such as image and document uploading, inventory and logistics management, cost accounting, email and SMS notifications, data validations and real-time calculations, software integrations, and more.

The core platform also includes several operational modules, such as:

- An advanced analytics module for data visualization and reporting.
- A generative AI module for exploring data and documents uploaded to the platform, enabling users to "talk to their data".
- An interoperability module built on the standards of the Global Dialogue for Seafood Traceability and EPCIS supply chain protocols.
- An IoT connectivity module for label printers, weigh scales, scanners, and other devices
- A cold chain module with a remote, wireless temperature sensor communicating via LoRaWAN.
- A smart camera module programmed with computer vision models for automated visual inspection.
- An AI-enabled digital helper module programmed with machine learning algorithms for yield prediction, anomaly detection, demand forecasting, drain weight prediction (in tuna canneries), and more.
- A consumer tracing app that enables seafood businesses to share supply chain and food provenance information with consumers who can trace a QR code.

The technology ideal collaborators are seafood manufacturers and supply chain operators.

POTENTIAL APPLICATIONS

The software and AI platform and optional modules have the following potential digitization applications:

- Fishing vessel unloading
- Seafood Production and Quality Control
- Inventory and Warehousing
- Sales Orders, Fulfilment and Shipping
- Laboratory sampling and testing
- Compliance, ESG and Traceability Reporting
- Cold chain monitoring
- Cost accounting (manufacturing)
- Asset management

The technology owner is seeking collaboration with seafood industry stakeholders, including manufacturers, suppliers, and distributors in Singapore and Southeast Asia, who are interested in improving efficiency, traceability, and compliance within the supply chain.

MARKET TRENDS & OPPORTUNITIES

Seafood is the most globally traded protein with a trade value of some $194 billion dollars, representing almost half of all seafood production in the world.

Approximately 75% of seafood processors and supply chain operators manage their core operations with paper records and Microsoft Excel, lacking real-time business insights and struggling with process and inventory control.

UNIQUE VALUE PROPOSITION

The technology offers the following:

- The platform offers easy and flexible configuration through low-code schemas, providing a user-friendly alternative to the extensive customization required by legacy software solutions.

- A complete all-in-one solution that includes core workflow digitization and inventory management, advanced analytics, computer vision for automated inspection, process automation, predictive analytics, generative AI, hardware integration, cold-chain monitoring, and consumer marketing and supply chain transparency.
- Expertise in seafood processing and supply chains is leveraged to enhance data collection and optimization, specifically addressing the needs of seafood companies.
- Applies artificial intelligence to seafood processing, utilizing advanced machine learning, computer vision, and generative AI technologies.