ABOUT FiiZK

FiiZK is a Norwegian-based technology company with broad experience in the maritime, offshore and aquaculture industries. It offers solutions and services for maritime technology, aquaculture, computer science and automation, and cyber-physical systems. FiiZK’s vision is to contribute to the future growth of the aquaculture industry and its ecosystem by helping companies increase profitability and maximize operational efficiency in a sustainable way.

CHALLENGE

Aquaculture - the breeding, growing and harvesting of aquatic animals and plants - produces half of all seafood consumed today. By the year 2030, fish farming is expected to account for two-thirds of all seafood consumption. In addition to providing nutrition to hundreds of millions of people, aquaculture plays a critical role in rebuilding at-risk species and habitats, and boosting coastal economies throughout the world.

Fish farms require data to run their operations in compliance with regulatory and market demands. The government requires information for consumer protection and environmental safety, companies need data to make intelligent business decisions, and consumers want to know where their food is sourced. Moreover, data is necessary to understand what is happening on the fish farms, which operate in harsh environments. Lack of access to timely data can lead to big problems. Poorly-managed fish farms can harm the environment through wasted feed, improperly discharged wastewater and chemical management. Undetected parasites and diseases can wipe out stock and spread into the wild. Non-native species can threaten natural fish populations if allowed to escape from their pens.

Today, most aquaculture technology is not integrated. Large fish farms use dozens of standalone SCADA or PLC systems. These can include video cameras to monitor the farm environment, sensors to measure water temperature and data from factory operating equipment. Live video is often streamed to one control room, where the data is manually reviewed and typed into another system for analysis. It is an expensive, slow and error-prone process.

“\textit{The Connext databus is the backbone for the FiiZK decision support system. Instead of duplicating information, we integrate it all through Connext DDS, from remote sensors to legacy SCADA to AI-driven data. In addition to its interoperability, Connext DDS provides the necessary scalability, having worked with one million components during system testing. We have peace of mind in working with RTI given its large customer base and software that is proven year after year in naval environments.}”

Rune Volden
CTO Integrator, FiiZK

HIGHLIGHTS

- Remote operations command and control center enables more efficient and sustainable aquaculture environments
- RTI Connext databus enables data management in harsh environments from cloud to edge, with OPC UA and MQTT interoperability
- AI-driven feeding system delivers lower costs, less waste, cleaner water and healthier fish
THE SOLUTION: A CENTRALIZED DECISION SUPPORT SYSTEM

FiiZK, the industry’s first decision support system for aquaculture, is revolutionizing the industry. This central command and control center integrates video, machine and sensor data from multiple sources into one central location, enabling fish farmers to optimize operations through data-driven decisions.

RTI Connext DDS provides the scalable connectivity framework for the data-centric FiiZK platform, which retrofits or replaces proprietary SCADA/PLC systems with a single architecture that works across vendor systems. The Connext databus works across systems, enabling FiiZK to add new hardware or software according to need, not vendor. Connext DDS collects and integrates data models and tags from sensors, as well as OPC UA and MQTT data, and consolidates it into one dashboard for analysis. FiiZK uses an AI algorithm to analyze the data and alert operators to situations that could lead to costly losses, such as water temperature, fish count, fish welfare or density of debris.

OPTIMIZING OPERATIONS THROUGH AI AT THE EDGE

The most expensive part of aquaculture operations is feeding, which is controlled by feeding operators. In 2018, FiiZK created an automated remote feeding system that frees up local staff for higher value tasks and makes the feeding operators more efficient. It works via interactive control of surveillance cameras and sensors mounted in each aqua pen. Legacy SCADA systems are retrofitted with integrated information tracking software, and the data is streamed via the Connext databus to a FiiZK dashboard. Using an AI algorithm, data is analyzed and the feed is adjusted based on the projected trendline. The system results in the right amount of feed released, resulting in lower costs, less waste, cleaner water and healthier fish.

Through its Connext DDS-based decision support platform and AI-based applications, FiiZK is helping fish farmers optimize their operations for profitability, environmental sustainability and growth.

ABOUT RTI

Real-Time Innovations (RTI) is the largest software framework provider for smart machines and real-world systems. The company’s RTI Connext® product enables intelligent architecture by sharing information in real time, making large applications work together as one.

With over 1,500 deployments, RTI software runs the largest power plants in North America, connects perception to control in vehicles, coordinates combat management on US Navy ships, drives a new generation of medical robotics, controls hyperloop and flying cars, and provides 24/7 medical intelligence for hospital patients and emergency victims.

RTI is the best in the world at connecting intelligent, distributed systems. These systems improve medical care, make our roads safer, improve energy use, and protect our freedom.

RTI is the leading vendor of products compliant with the Object Management Group® (OMG) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California with regional headquarters in Spain and Singapore.