Germany, Greece

QUHOMAtrace

Unique combination of IoT and traceability data provides unparalleled upstream visibility for agri-food stakeholders

Challenge

Farms, cooperatives and other agri-food businesses wanted to create a competitive advantage by meeting consumer needs for easy accessibility to valuable information about their crops and food.

Solution

Future Intelligence developed an Internet of Things (IoT) traceability solution, QUHOMAtrace. GS1 EPC-enabled standards provide the needed identification for the farm plots, each crop's batch/lots and the sensors associated with the farm plots and crops.

Benefits

- Provides farm calendar details before the crop is transformed into a final product

- Aggregated sensor data uncovers the field's capacity to produce quality crops and food via aggregated sensor data

- Justifies farmers' environmental focus since IoT data proves the necessity of certain farm practices

- Promotes advantages on locally produced food

- Offers potential for innovative digital marketing campaigns through direct communication between consumer and farmer, and cooperative

While there are many traceability solutions to document and share, an agri-food product's route-to-market spans across organisational boundaries and provides a complete custody of events that start with the crop's planting date.

Current IoT value propositions focus on reducing production costs, increasing yield or quality. Undoubtedly, climate change is influencing farm businesses to look for tools to lower risks, but as inequalities in the value chain are amplified, consumer-oriented propositions are becoming more important in the agri-food value chain.

There is no single solution that traces the exact location and climatic conditions that indigenous varieties are cultivated under and links them to the final products.

Country: Germany, Greece | **Industry:** Fresh Foods | **GS1 Standards:** EPCIS

Identification standards

QUHOMAtrace from Future Intelligence, an IoT provider and an early adopter of FIWARE open-source tools that enable cross-European Union (EU) data interoperability, managed to solve the need for full traceability with the use of GS1 data sharing standards.

The QUHOMAtrace platform is designed as an innovative integrator of entity-based registries, such as IoT data (e.g., sensor data, user registries) and event-based information, like data produced from traceability applications (e.g., item moved from location X to Y).

To lay the foundation for traceability, an EPC (Electronic Product Code)-based set of identifiers was assigned, applied and used to track and trace crops as they travel from farm to fork. The GS1 Global Location Number (SGLN) was assigned to uniquely identify each farmer's parcel/plot. The GS1 Global Trade Item Number® plus batch/lot number (LGTIN) were applied to uniquely identify each crop and its individual batch produced, and the Global Individual Asset Identifier (GIAI) identifies the unique sensors that are monitoring the crops.

Based on these identifiers, Future Intelligence used the QR code generator to create data carriers that captured the identification data to test the beta QUHOMAtrace app for consumers. By scanning the QR code on a food product's package, consumers can retrieve the GS1 EPC-based traceability data registered manually through QUHOMA, the smart farming web app.

Main Farm (GLN)
unn:epc:id:sgln:**5214001880**.00.0

Plot 1 (GLN)
unn:epc:id:sgln:**5214001880**.00.1

Crop 1, Olives
Permanent Crop

Farm-to-fork traceability

Today, farming visibility events are captured and stored as interoperable, GS1-standardised EPC Information Services (EPCIS) event data. For the harvested product, information on events prior to its harvest is now available, such as when it was planted, how it was treated and sensorial information. By using EPCIS, the level of traceability significantly increases, including stakeholders' trust and confidence regarding the safety and quality of products.

Equally important is the value offered by an IoT solution for farmers who want to communicate with their procurers, buyers and/or consumers every detail that happens in the field, for various reasons. Farmers could receive customised advice on the use of a product, how to lower the cost of an external quality inspection or even how to increase consumer trust and loyalty. Using GS1 standards substantially simplifies this data sharing and, most importantly, makes the solution easy to replicate in other countries and sectors.

As he enters the newly founded offices of the Archaia Oleneia cooperative, George Mimmis of Mimmis Farm is very keen on using digital technologies and is fascinated by the use of GS1 standards.

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"I can now provide upstream traceability as a competitive advantage to my business partners and work with additional use cases and GS1 identifiers, like easily tracking each tree's produce over the years through the GIAI."

George Mimmis,
Mimmis Farm

EPCIS is a GS1 standard that enables trading partners to share information about the physical movement and status of products as they travel throughout the supply chain—from business to business and, ultimately, to consumers. It helps answer the "what, where, when and why" questions to meet consumer and regulatory demands for accurate and detailed product information.
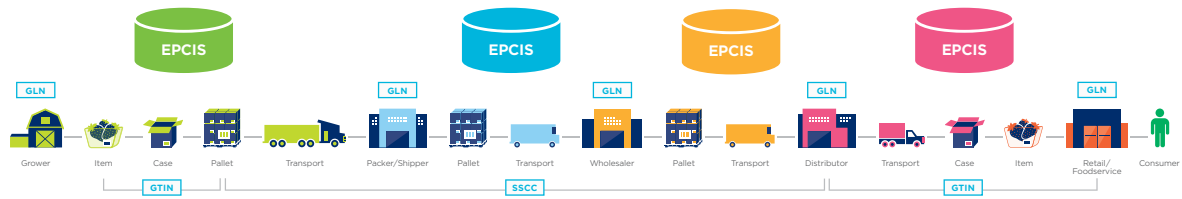
The benefits of data

The IoT traceability solution provides farmers with aggregated data that helps them determine which farm practices can increase a field's capacity to produce quality crops and food. It can provide the needed justification of a farmer's environmental decision since IoT data proves the necessity of certain farm practices (e.g., irrigation performed when soil is dry, spraying performed with low wind-speed, insecticides applied well before a crop's harvest and more).

This data also opens the door for creative digital marketing campaigns via direct communication between consumer, farmer and cooperative. Overall, it helps point out the advantages of eating locally produced food for consumers.

About the organisations

Future Intelligence is a telecom engineering company based in Athens, Greece and an IoT provider with built-in hardware and software products. The company started its operations in 2009 focusing on wireless sensor networks for smart street lighting for which it later developed FINoT platform. After pivoting the technology to the agriculture domain in 2016, Future Intelligence offers a QUality HOrticulture MArketplace (QUHOMA) of data and services to digitally transform farming business in EU. **www.f-in.gr**

Mimmis Farm (now a member of Archaia Oleneia cooperative) was established on private lands on the hill of Aghios Ilias, Western Greece. The area is protected by international conditions, RAMSAR and NATURA 2000, due to its great ecological value. Over the years with its experience and passion, the farm produced crops of superior quality and shared these with the second generation of the family that went one step further—applying traditional and organic-certified practices. **https://stamnaolives.gr/**

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