Agriculture and Food Processing

LoRa® APPLICATION BRIEF

DESCRIPTION

Today's consumers put significant value on fresh, high quality food, which means farmers and food processors need to get agriculture products (crops, livestock, etc.) from farm to table very quickly and in a way that ensures food safety. Internet of things (IoT) systems for agriculture and food processing are aiding in this process. Farmers can use sensors to determine peak harvest times, while food processors can track the environmental and freshness of these agriculture products through the transportation, storage and processing phases. Once in the processing facility, additional sensors track the efficiency of the production and packing equipment and also any maintenance or repair needs.

By implementing an agriculture and food processing IoT solution comprised of sensors and gateways embedded with LoRa® Technology and an intelligent low power, wide area network based on the LoRaWAN™ protocol, farmers and processors can build a network that helps delivering fresh food in a timely and efficient manner.

HOW A LoRaWAN-BASED AGRICULTURE AND FOOD PROCESSING SYSTEM WORKS

Semtech LoRa Technology enables connectivity, real-time analytics, reporting, and additional functions such as geolocation.
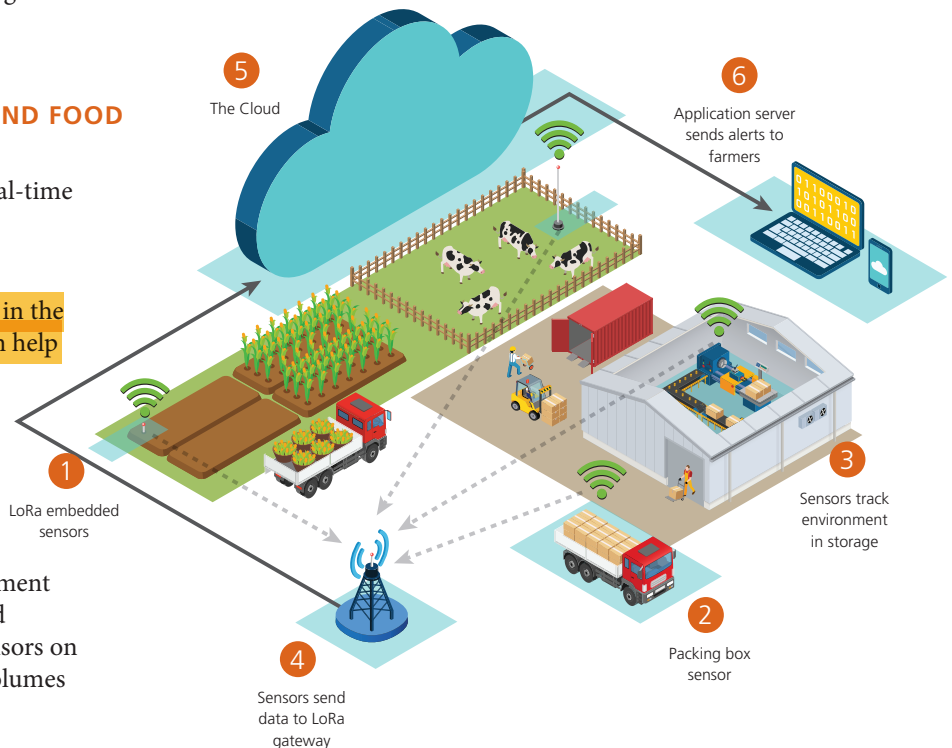
1. LoRa-equipped sensors located in the dirt and in the air on farms can track crop maturation and can help determine harvest times

2. Once crops are harvested, LoRa-equipped packing box sensors track transportation timing and environment ensuring that food is kept at the optimal temperature

3. These same packing box sensors track environment in storage as the crops wait to be processed and then as they are processed. LoRa-equipped sensors on the production equipment track production volumes and maintenance needs

4. Data from all sensors are periodically sent to a LoRa-based gateway

5. Gateway sends information to network server where the data is analyzed by an application server

6. Application server sends alerts on the crop readiness to farmers and sends environmental and production equipment information to producers via mobile device

BENEFITS

- Lets processors know about crops and livestocks maturity to improve transportation and production planning
- Improves efficiency of production machinery
- Provides farm-to-table data on environmental elements and freshness for improved food safety
- Speeds time-to-market for farmers and agricultural producers

APPLICATIONS

IoT systems for agricultural processing help track agriculture products (crops, livestock, etc.) through the production process to ensure a high quality, fresh and safe product.

5 The Cloud

6 Application server sends alerts to farmers

1 LoRa embedded sensors

4 Sensors send data to LoRa gateway

2 Packing box sensor

3 Sensors track environment in storage

Semtech Products used in this application:

Sensors	Gateway
• SX1272/3	• SX1301
• SX1276/7/8/9	

All application elements (sensing modules, gateways, servers, software) are available through LoRa Alliance™ partners.

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FIND YOUR IoT SOLUTION FROM SEMTECH'S LoRa ECOSYSTEM

MODULES & MODEMS	SENSORS	BASE STATIONS	NETWORK SERVERS	SYSTEM INTEGRATORS

For a full list of LoRa Ecosystem partners and services, visit our LoRa Community https://semtech.force.com/lora

KEY FEATURES OF SEMTECH'S LoRa WIRELESS RF TECHNOLOGY

LONG RANGE — Penetrates in dense urban and deep indoor environments, connecting to sensors 15-30 miles away in rural areas

LOW POWER — Enables multi-year battery lifetime of up to 20 years or more

HIGH CAPACITY — Supports millions of messages per base station

GEOLOCATION — Enables tracking applications without GPS or additional power consumption

STANDARDIZED — LoRaWAN specification ensures interoperability among applications, IoT solution providers and telecom operators

SECURE — Embedded end-to-end AES-128 encryption of data ensuring optimal privacy and protection

LOW COST — Reduces upfront infrastructure investments, as well as operating and end-node costs

JUMP-START YOUR IoT DEVELOPMENT TODAY

Semtech offers several training options to help you get started:

- Learn about Semtech's LoRa Technology platform: visit www.semtech.com/IoT

- Join the LoRa Community: https://semtech.force.com/lora

- Become a member of the LoRa Alliance™: visit www.lora-alliance.org

- Attend a LoRa Boot Camp for a full-day of training featuring LoRa Technology and real world applications: www.semtech.com/IoT

- Follow Semtech on LinkedIn and our LoRa Showcase page

- To contact one of our global offices in North America, Europe and Asia, visit www.semtech.com/contact

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