Cattle Tracking

LoRa® APPLICATION BRIEF

Semtech's LoRa Technology Enables Smart Agriculture

DESCRIPTION

LoRa® devices and wireless RF technology (LoRa Technology) is making it easy and economical for ranchers to better track their cattle. From in-ear temperature sensors to GPS-free tracking, LoRa-based devices can effectively track and transmit data back to the Cloud, even over long distances.

LoRa Technology enables long-range, low-power wireless transmission of data, allowing the use of low cost sensor units. For cattle tracking applications, LoRa-based sensors must be affordable, support long-range wireless in non-GPRS supported ranges, and include at least a year-length battery life.

BENEFITS

With LoRa Technology, ranchers can track and detect anomalies in cattle behavior at any time. Data tracked remotely on wide-open cattle ranches can be collected and shared with a veterinarian anywhere in the world. The disease can be caught early and if necessary, cattle can be removed to prevent a spread of infection.

Also with LoRa-based sensors, ranchers are able in real-time to locate their cattle to better manage the herd and reduce cattle theft. Sensors typically cost the rancher between $10 and $50 USD, enabling a return on investment (ROI) against disease loss or theft of animals.

APPLICATION

A large cattle ranch needs to track its herd as they range for months or years at a time to reduce cattle theft.

SEMTECH'S LoRa TECHNOLOGY FOR SMART LIVESTOCK TRACKING

HOW IT WORKS

Semtech's LoRa Technology enables long range motion tracking of animals over long periods of time.

1. The rancher purchases LoRa-based sensors and gateways. Collars or tags are placed on a steer and gateways are mounted high on poles at between 5 and 20 mile intervals, depending on the terrain.
2. LoRa-based sensors report back to gateways with data tracking location, head motion and other information, such as external temperature, air pressure and humidity. Gateways can be satellite uplinked to reach the internet.
3. Cloud-based software tracks data collected by LoRa-based gateways and provides ranchers with analysis tools for tracking their herd across hundreds of miles. Automated disease tracking software can spot sick cattle early. Stolen cattle are noticed when sensors are removed, or when they venture outside a specific area.
4. Over time, data can be analyzed to track anomalies and alert ranchers by mobile devices or a laptop.

REAL USE CASE SOLUTION

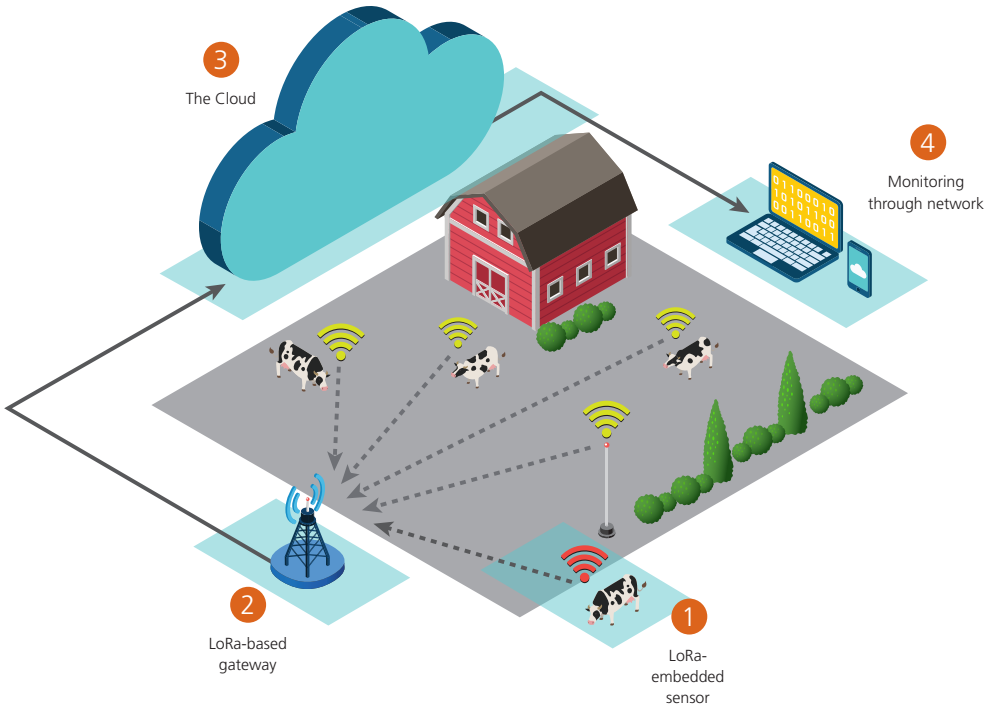
Chipsafer offers end-to-end cattle tracking solutions, including sensors, third-party LoRa-based gateways, and its own web-based management software. The company offers full-time data analysis and tracking data aggregation to cattle ranchers, particularly in remote areas where satellite uplinks are required. Chipsafer charges $1 per heard of cattle for long term data tracking, which includes automated alerting for theft and disease.

LOW COST

Each sensor device is available for below $50 USD, with prices dropping over time as order volume increases.

STANDARDS-BASED

LoRaWAN™, a Low-Power Wide-Area Network (LPWAN) specification, is an open standard and supported by the LoRa Alliance™. Chipsafer can sell products that have assured global interoperability and benefit from the economies of scale that reduce unit costs and further accelerate its adoption. The Chipsafer IoT infrastructure is provided by LORIOT services and software enabling large scale Internet of Things (IoT) networks based on LoRaWAN technology.



Semtech Products used in this application:

Sensors
- *SX1272/3*
- *SX1276/7/8/9*

Gateway
- *SX1301*

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

REAL USE CASE SOLUTION CONTINUED

SECURE
Multiple layers of security ensure devices are tracked safely and central management of all devices ensures every piece of hardware on a network is up to date.

LOW POWER
Long term battery life on LoRa-based devices can extend to over 10 years. Such scenarios include one transmission of data every hour ensuring that wireless usage will not drain battery life.

HIGH CAPACITY
A single LoRa base station can handle millions of messages per day, ensuring Chipsafer's asset tracking solution is able to support large, active customer bases.

JUMP-START YOUR IOT DEVELOPMENT TODAY

TRAINING OPTIONS TO GET STARTED

Learn about Semtech's LoRa Technology platform
www.semtech.com/iot

Join the LoRa Community
www.semtech.com/LoRaCommunity

Become a member of the LoRa Alliance™
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

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