Chipsafer

SEMTECH®

LoRa®

chipsafer

Monitoring Cattle in Real Time

Chipsafer implemented a LoRa®-based solution to transform livestock management across large, remote ranches. By combining low-power sensors, long-range connectivity and cloud analytics, the company enabled real-time cattle tracking, early disease detection and theft prevention—demonstrating how smart agriculture technology delivers measurable impact in the field.

QUICKFACTS

Company
Chipsafer
chipsafer.com

Customer Profile
Chipsafer is an agri-tech company that provides end-to-end livestock monitoring solutions. Its platform enables real-time tracking of cattle health and location, helping ranchers in remote and large-scale operations prevent disease, reduce theft and optimize herd management using data-driven insights.

Objectives

- Remotely monitor cattle health and location in large ranches.
- Provide accurate data for ranchers to predict and prevent disease.

Results

- Real-time tracking of cattle across large ranches.
- Early detection of health issues for faster response.
- Alerts to prevent theft and loss.
- Reduced labor and operational costs.
- Scalable solution for livestock operations.

Products and Services

- Chipsafer based its sensors on the LoRa® SX1272/3 and SX1301 chipsets and uses gateways based on SX1276/7/8/9.
- The LoRaWAN® protocol offers long range network coverage to connect sensors miles from the nearest gateway.

INTRODUCTION

LoRa® devices and the LoRaWAN® open protocol make it easy and economical for ranchers to more effectively track cattle. From in-ear temperature sensors to GPS-free tracking, LoRa-based devices efficiently track and transmit data back to the Cloud, even over long distances. LoRa devices enable 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.

CHALLENGE

A large cattle ranch needs to track its herd as it ranges for months or years at a time and reduce cattle theft. Ranchers face the challenge of managing livestock across vast, remote areas with limited connectivity and minimal access to real-time data. Traditional tracking methods are labor-intensive and offer little visibility into individual animal health or movement. The objective is to remotely monitor cattle health and location in large ranches while providing accurate data to predict and prevent disease. Without early detection systems, illness can spread rapidly through a herd and stolen or lost cattle may go unnoticed for extended periods. Effective solutions must overcome distance, infrastructure limitations and power constraints—while remaining affordable for large-scale use.

SOLUTION

Semtech's LoRa Devices for Smart Livestock Monitoring – How it Works

Semtech's LoRa devices and the LoRaWAN protocol enable long range motion tracking of animals over extended periods of time.
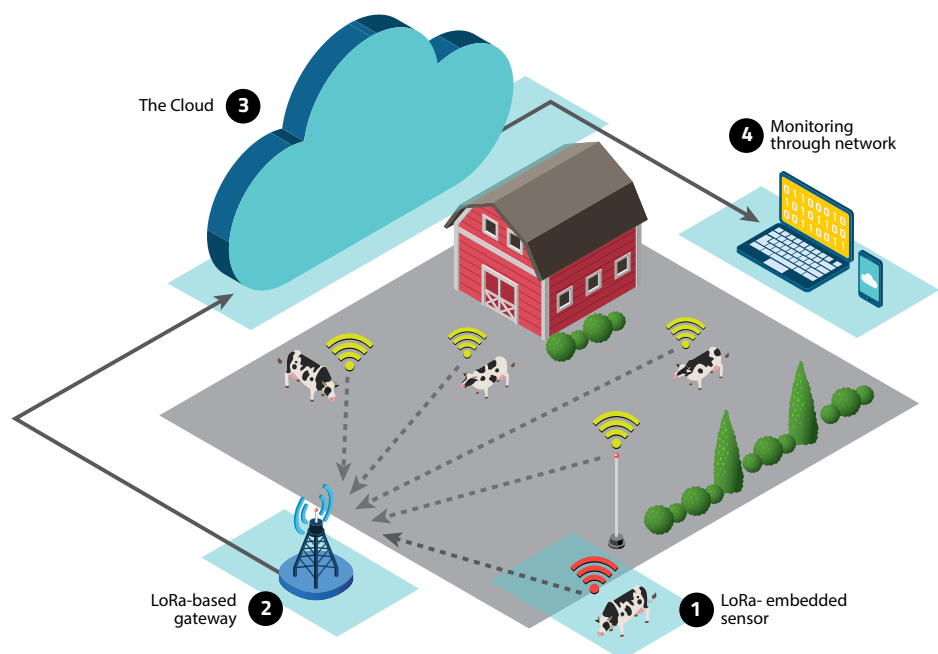
> " With LoRa-based devices, ranchers can track and detect anomalies in cattle behavior at any time. Data tracked remotely on wide open cattle ranches can be collected and shared with a veterinarian anywhere in the world. With the early detection of disease, cattle can be removed to prevent the spread of infection. "

Victoria Alonsoperez, *Founder & CEO, Chipsafer*

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 five and 20 mile intervals, depending on the terrain.

2. LoRa-based sensors report back to gateways with data tracking location, herd 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 a herd over hundreds of miles. Automated disease tracking software detects infected cattle early. Stolen cattle alert the system when sensors are removed, or when they venture outside a specific area.

4. Over time, data is analyzed to track anomalies and alert ranchers by mobile devices or a personal computer.

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 USD per herd of cattle for long term data tracking, which includes automated alerts for theft and disease.

Standards-based
LoRaWAN, a low power wide area network (LPWAN) specification, is an open standard supported by the LoRa Alliance®. Chipsafer sells products that have assured global interoperability and benefit from the economies of scale that reduce unit costs and further accelerate its adoption. The Chipsafer Internet of Things (IoT) infrastructure is provided by LORIOT services and software enabling large scale IoT networks based on the LoRaWAN protocol.

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.

SEMTECH CASE STUDY
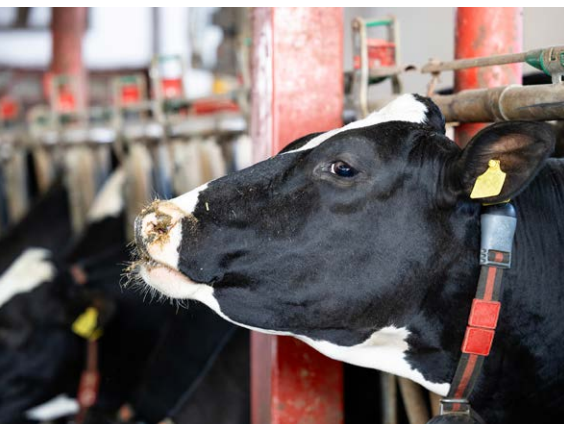
Low Power
Long term battery life on LoRa-based devices can extend over 10 years. Such scenarios include one transmission of data every hour, ensuring that wireless usage will not drain battery life.

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

BENEFITS

With LoRa-based devices, ranchers track and detect anomalies in cattle behavior at any time. Data tracked remotely on open cattle ranches can be collected and shared with a veterinarian anywhere in the world. With the early detection of disease, cattle can be removed to prevent the spread of infection. Also, with LoRa-based sensors, ranchers are able to locate cattle in real time 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.

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

About Semtech

Semtech Corporation (Nasdaq: SMTC) is a high-performance semiconductor, IoT systems and cloud connectivity service provider dedicated to delivering high-quality technology solutions that enable a smarter, more connected and sustainable planet. Our global teams are committed to empowering solution architects and application developers to develop breakthrough products for the infrastructure, industrial and consumer markets.

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