

# Animal Tracking

LoRa® APPLICATION BRIEF

## DESCRIPTION

Until now, farmers could only identify a sick animal through visual observation. But because animals do not typically openly display symptoms, a sick animal is often not identified until they are very ill. Animal tracking solutions consist of a connected health tracker that attaches to the animal and provides constant monitoring of livestock temperature, movement and other vital signs.

By implementing an animal tracking solution comprised of sensors and gateways embedded with LoRa® Technology and an intelligent low power wide area network based on the LoRaWAN™ protocol, farmers can better protect the health of their farm animals.

## HOW A LoRaWAN-BASED ANIMAL TRACKING SYSTEM WORKS

Semtech LoRa Technology enables connectivity, real-time analytics, reporting, and additional functions such as geolocation.

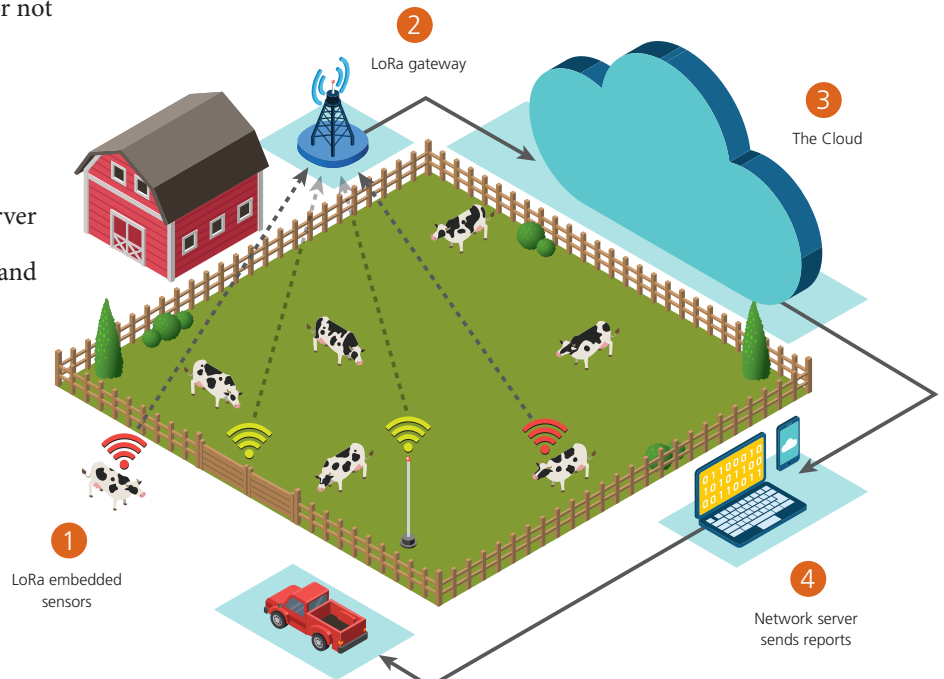
- 1 Biometric and environmental sensors embedded with LoRa Technology track animal vital signs, air temperature and humidity, as well as whether or not animals have strayed from a designated area
- 2 Data from all sensors is periodically sent to a LoRa-based gateway
- 3 Gateway sends information to network server where the data is analyzed by an application server
- 4 Application server sends alerts on the location and health of animals to farmers via mobile device

## BENEFITS

- Improves the welfare and productivity of livestock, and allows farmers to quickly identify sick animals using sensors embedded with LoRa Technology
- Easy to set up as part of the normal animal tagging process, each animal is tagged with a sensor (ear, collar, etc.) that provides feedback on animal movement and vital signs
- Keeps maintenance costs low as low power operation ensures sensor batteries can last up to 20 years
- Reliable RF communication link between sensing infrastructure and LoRaWAN-based network provides excellent coverage even in remote areas

## APPLICATIONS

Monitor animals and identify sick ones in real time



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.



## 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/loT](http://www.semtech.com/loT)
-  Join the LoRa Community: <https://semtech.force.com/lora>
-  Become a member of the LoRa Alliance™: visit [www.lora-alliance.org](http://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/loT](http://www.semtech.com/loT)
-  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](http://www.semtech.com/contact)

