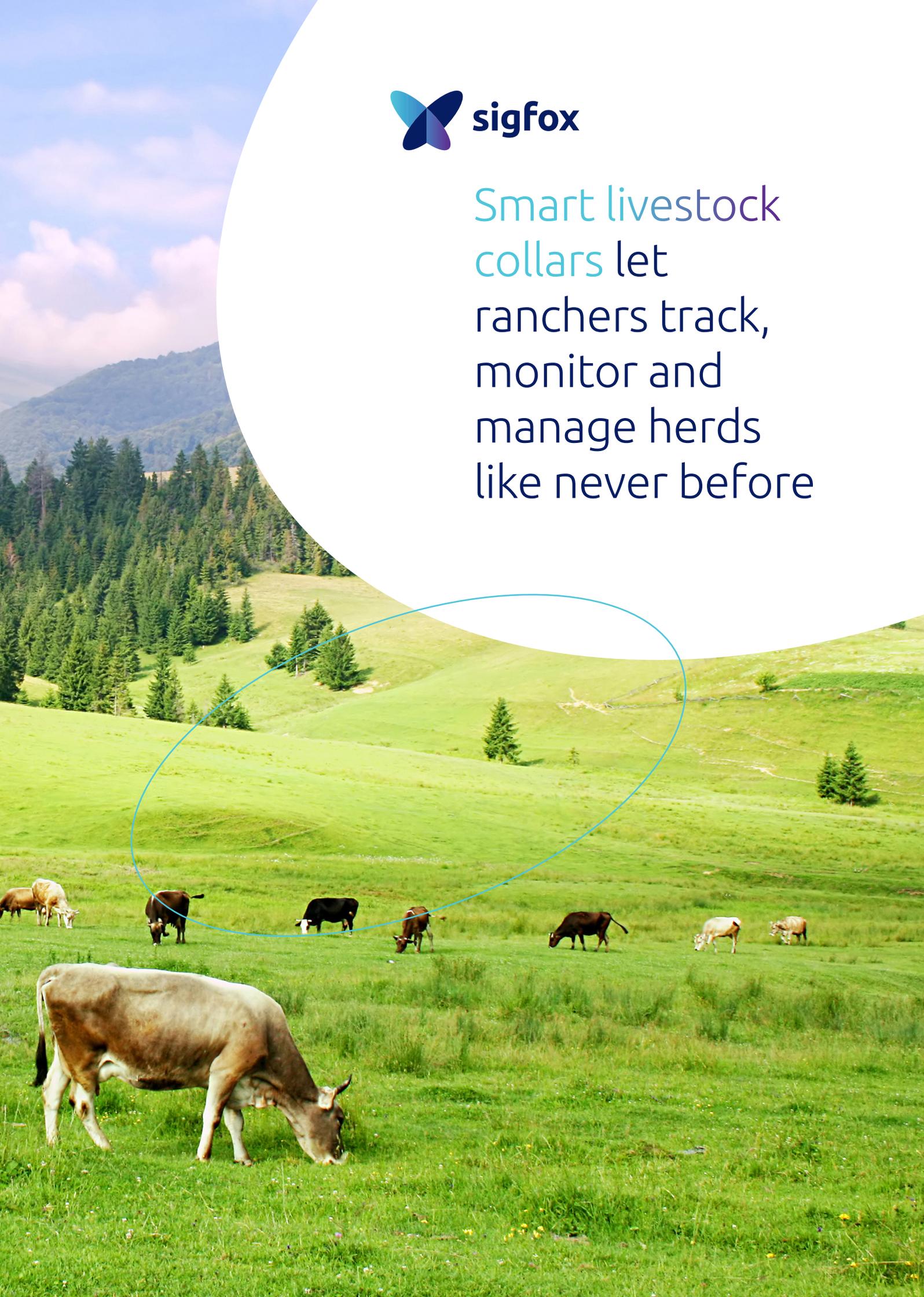


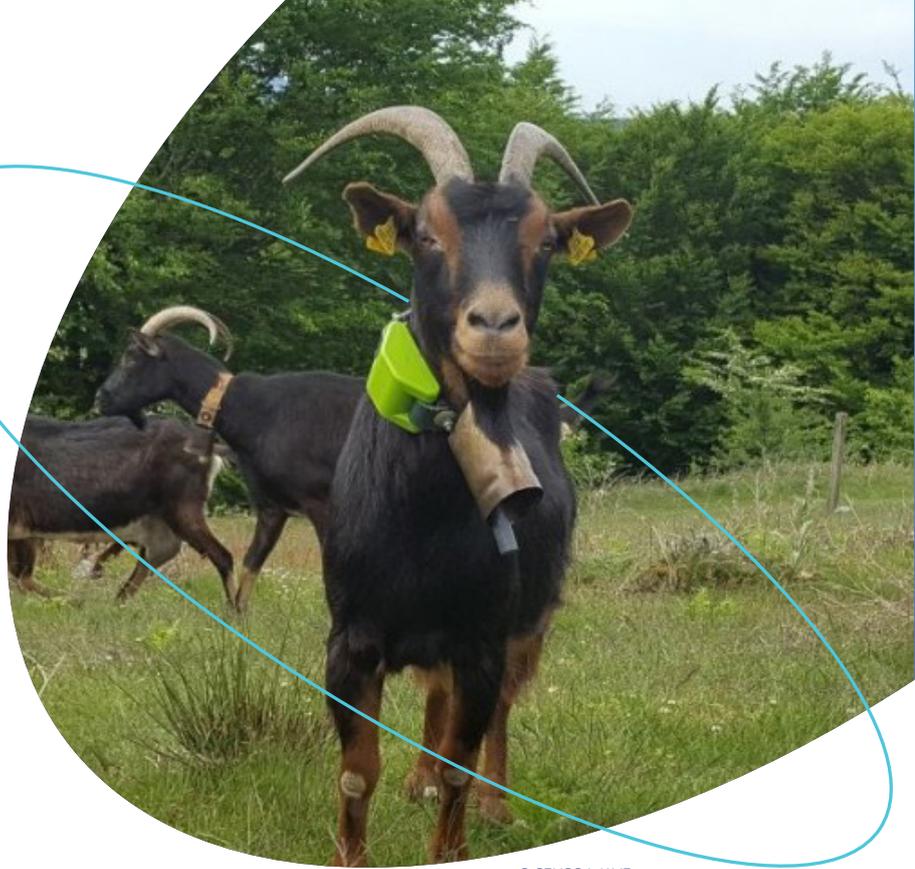


Smart livestock  
collars let  
ranchers track,  
monitor and  
manage herds  
like never before



## Sigfox's global IoT network powers a new era of livestock management

- ✦ Smart livestock collars allow ranchers to track animals via GPS and set virtual boundaries with an easy-to-use smartphone app.
  - ✦ Cloud-based management system gives ranchers a complete view of their herds in real time.
  - ✦ Advanced technology monitors the wellbeing of animals by collecting and analyzing health and behavioral data and sending alerts when anomalies occur.
  - ✦ Information is tracked and aggregated over time, helping ranchers make informed, long-term decisions about the wellbeing of their herds.
  - ✦ This innovative Internet of Things (IoT) solution helps ranchers minimize operating costs, reduce animal losses, improve birthing success rates, and increase animal health and safety.
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## IoT technology gives ranchers a powerful new tool

The sun might set each evening on the open range, but as any rancher knows, the work doesn't end there. Predators threaten herds in the far reaches of a property, animals wander off or fall ill, birthing happens at all hours of the day and night. Livestock management is a complex, around-the-clock job, but no rancher can be everywhere at once-until now.

For the first time, ranchers have a complete view of their herds-anytime, anywhere. Representing the latest in IoT innovation, smart livestock collars give ranchers the ability to virtually fence and track animals via GPS, as well as gather crucial information to better manage the health and safety of their herds.

Developed by veterinarians, ranchers and engineers who understand the unique challenges of modern ranching, these durable, lightweight collars gather real-time information about location, speed, body temperature and stress levels of livestock, and deliver it all in a user-friendly app, through Sigfox's global IoT network. For ranchers around the world, smart livestock collars reduce inefficiencies, decrease operating costs and improve the health and safety of cattle, horses, sheep and goats.

# The livestock industry seeks a better way to manage herds around the clock

Whether its rounding up stray animals, warding off predators, identifying sick or injured livestock, or removing carcasses before they attract predators-out on the range, the hours are long and the workload is grueling. But even still, it seems the work is never done. No range rider or ranch hand can be everywhere at once, and even the best operations still struggle to minimize livestock losses and maximize efficiency.

When it comes to containing livestock and warding off predators, fencing helps ease the burden of manpower and reduce animal loss, but this is not always an ideal-or feasible-solution. Fencing large areas is expensive, and in the case of steep summer pastures or the open range, simply impossible. Even when fencing is

an option, animals still run the risk of escaping through damaged sections, or worse, falling prey to rustlers and thieves.

Monitoring the health and safety of livestock scattered across vast landscapes is equally challenging. When an animal falls ill or experiences trouble during labor, time is of the essence. The same is true when a predator threatens the safety of the herd. It is crucial that a rancher learns about threats in a timely manner, so he can act quickly. But a human presence on the range can only do so much to scout out trouble. If an event happens at night, or at the far reaches of rangeland, it may not be discovered until it's too late.



## Containment

Track and recover lost or stolen animals with maximum efficiency



## Health and Safety

Manage the health and safety of herds around-the-clock and reduce animal losses



## Predator Threats

Proactively address predator threats above and beyond range riders and fencing



## Long-term Management

Gather information on grazing route and behavior patterns to make informed long-term decisions

Smart livestock collars give ranchers a powerful tool for solving some of these most pressing livestock management problems. Each cost-effective collar is connected to Sigfox's unique network dedicated entirely to the Internet of Things (IoT).

This secure, global network was built specifically to power smart devices. Unlike most first-generation smart applications, devices that connect to the Sigfox network don't rely on WiFi or 4G networks, making them an ideal solution for even the furthest reaches of a ranch.

Livestock collars are plug-and-play, so they don't require pairing or complex configuration and can be connected to the network in a matter of minutes. Once connected, each device gathers real-time information on the location of an animal, as well as the animal's speed, body temperature and stress level. This information is transmitted to the Internet and made available in a use friendly way to ranchers on smartphone, tablet or desktop computer. Alert notifications are sent if an animal strays beyond set boundaries, or if a health or behavioral anomaly occurs. Now for the first time, a rancher has a bird's-eye-view of his entire herd, right at his fingertips.

# Smart livestock collars minimize operating costs, reduce animal loss and improve safety of herds



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Thanks to the highly accurate GPS tracking included in smart livestock collars, a cattle rancher who can't fence his large herd in their summer pasture can now simply set boundaries on an app-based satellite map. He can do this remotely and change boundaries at any time. If one of his horses strays outside the boundaries, an alert is triggered in the app and GPS tracking is activated on the animal's collar. This innovative IoT technology essentially fences pastures and ranges with the push of a button.

In the past, that same cattle rancher might not learn of a lost horse until roundup, by which time the missing animal may have strayed miles away in any direction. Now, with a smart collar, he will learn about the loss in real time and get up-to-the-minute information about the animal's whereabouts that allow him to efficiently track it until it is found. His animals are kept safe and strains on manpower are kept to a minimum.

## Benefits



### Reduce cost

Streamline operations and minimize costs



### Decrease animal loss

Set virtual boundaries and receive alerts when an animal strays. Recover lost animals with GPS tracking losses



### Improve birthing success

Receive real-time alerts if an animal feels stress due to labor difficulties



### Increase herd health and safety

Learn instantly if animal's behavior or body processes fall out of normal range



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Not only do smart livestock collars gather valuable information about animals in a herd, they also enable powerful analysis of this information. Information from the collars is transmitted to a mobile app, using Sigfox's global IoT network. Once there, the app uses behavioral algorithms—customized for cattle, horses, sheep or goats—to analyze data from each animal's collar in real time. Alerts are triggered if unusual behavior occurs, such as a drop in temperature, a change in movement patterns or a sudden increase in heart rate.

If a ewe's labor takes a dangerous turn, a sheep rancher quickly learns about it, even if that ewe is lambing out in the middle of the night. This early information has the power to significantly reduce calf mortality.

Likewise, if that same rancher's sheep feel threatened by a band of coyotes lurking on the edges of the flock, he is alerted about their sudden rise in stress and can intervene early, minimizing losses. Animals that fall ill are also identified early when their smart collars detect warning signs like increased body temperature and decreased movement. When a member of the flock does die while out on the range, this is quickly detected, allowing ranch hands to dispose of the carcass in a timely manner.

In addition to helping ranchers identify issues in real time, smart livestock collars aggregate all of the information they gather, storing it in a user-friendly database. This comprehensive set of information gives ranchers a powerful tool to help make long-term herd management decision. Data can be accessed about individual animals or the herd as a whole. Graphs and reports chart movement patterns, grazing routes, activity, distance traveled and time spent resting. Maps show routes traveled by animals during a given time period.

This all-in-one platform allows ranchers to keep comprehensive files on each animal and share those files with veterinarians, suppliers and public authorities. Armed with a powerful set of data, ranchers can easily partner with key stakeholders to make informed long-term decisions about the wellbeing of their herds.

Thanks to advanced capabilities, an affordable price and minimal maintenance needs, smart livestock collars are quickly becoming a must-have tool on the ranch.

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