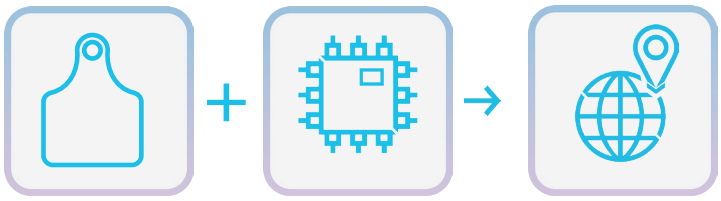
Customer Success Story

701x: Builds the Future of Connected Ranching on Kigen's iSIM

701x AUTONOMOUS RANCHER®

Kigen

The technology



xTpro tag for cattle management

Kigen's iSIM/ iSIM OS

Global connectivity with insights

The solution

Redesigned xTpro tag around Kigen's iSIM

Solar powered battery & power management

Dual cellular & satellite connectivity

Building blocks of success

Actionable insights across herds

24/7 monitoring

Unmatched scale across vast ranch landscapes

Looking ahead

Kigen's technology enables

- Global expansion with iSIM, allowing for no hardware redesign
- Smarter livestock solutions and feed operations worldwide

Design drivers

- Compactness with iSIM
- Ease of procurement with iSIM package
- Power efficiency with solar
- Resilience with dual connectivity

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The opportunity

Cattle ranching is a high-stakes business. Beef cattle can be worth **$3,000 to $10,000 per head,** and some herds number in the tens of thousands. The largest ranches in North America span hundreds of thousands of acres—King Ranch in Texas alone covers 825,000 acres, while Canada's Douglas Lake Ranch runs close to 20,000 head of cattle across deeded and leased land.

Across these vast landscapes, insight into critical moments—a missing calf, a herd moving beyond boundaries, a health issue requiring urgent care—must reach ranchers in near real time. The return on investment is simple and compelling:

1. **No lost animals.** Every head recovered is thousands of dollars saved.
2. **Early intervention.** Catching health problems quickly avoids losses and protects herd value.

The challenge

Ranching is unforgiving, and so is the technology environment that supports it. Early prototypes of the xTpro ear tag ran into two major obstacles: **design constraints** and **supply chain hurdles**.

On the design side, traditional removable SIM cards created multiple problems. They were too bulky for a compact animal-worn device, left the hardware vulnerable to moisture and damage, and were prone to being dislodged by curious cattle. Even more challenging, mobile operators' business models are not conducive to supporting small production volumes. Without scale, procuring SIMs or eSIMs was slow and complex.

Then there was the question of animal comfort. Cattle are highly sensitive to anything that hangs from their ear. Many off-the-shelf asset trackers were simply too heavy to be viable. 701x spent significant time engineering the proper balance, eventually achieving a tag that was small enough that animals barely notice it, but durable enough to survive the harshest ranch conditions.

For producers managing herds of thousands across hundreds of thousands of acres, these constraints weren't minor—they were show-stoppers. Without solving them, reliable, scalable livestock monitoring wouldn't be possible.

Critical location history and activity/health alerts often vanish in connectivity blind spots. Closing those gaps unlocks smarter management because large herds function like a device fleet of thousands.

The solution

701x partnered with Kigen to redesign the xTpro tag around iSIM technology, and the results were transformative.

By embedding secure connectivity directly into the silicon, **iSIM freed up critical space**, enabling a compact, rugged design that weighs just 51.5 grams—about the weight of a large egg. This weight reduction was critical: small enough that animals barely notice it, but durable enough to survive the harshest ranch conditions.

The device integrates a solar-powered battery with advanced power management, ensuring weeks of reliable operation even when cattle roam in poor light. Most importantly, dual connectivity across cellular and satellite networks ensures that data keeps flowing, even in the most remote areas of sprawling ranch lands.

Field trials revealed that relying on LTE alone left as much as:
30% of ranchland without coverage, and another **30% may wander in and out of coverage**. For producers managing thousands of cattle across hundreds of thousands of acres, this blind spot was unacceptable.
The solution would have to include dual connectivity, seamlessly switching between LTE and satellite to ensure continuous visibility wherever cattle roam.

iSIM is the next generation of SIM technology.
Discover Kigen's iSIM here.

Enabled by Kigen's iSIM technology

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The design drivers

Compactness

Removing the physical SIM created space for a smaller, more durable device suited for animal comfort.

Power Efficiency

Solar charging and backoff schemes kept the tag operating for long periods in challenging conditions.

Ease of procurement

Kigen's iSIM secure package unifies chipset, module, and connectivity sourcing eliminating the headaches of traditional SIM procurement.

Resilience

Dual connectivity closed the data gap, ensuring ranchers never miss critical signals.

Building blocks of success

701x's solution combined:

- Kigen iSIM OS and iSIM Secure Package
- Quectel BG770A-SN cellular module
- Sony Altair 1250 Chipset
- FloLIVE 4G LTE terrestrial profile
- Skylo satellite profile
- Proprietary 701x network-switching logic and data dashboards

xTpro Cattle Ear Tag

"See what 701x thinks about working with Kigen"

This architecture delivers 24/7 monitoring and actionable insights across herds and landscapes of unprecedented scale.

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“Working with Kigen as our trusted iSIM partner was a game-changer. Because they brought us a fully integrated architecture connectivity, module, and security 701x was able to move from prototype to final design in record time. Our ranching customers cannot work with 50% of the data missing, especially when you cannot predict where your cattle population will be in the moments that truly matter. This is the key reason that led us to consider how we leverage network availability and resiliency. Just as important, Kigen turned what had been a procurement headache into a seamless process that made innovation faster and easier.”

- Cole Mehring, Head of Electronic Design at 701x

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The company

701x set out to make ranching smarter, safer, and more sustainable. Their flagship xTpro smart ear tag provides producers with real-time animal health, reproductive, and location insights, powered by Edge AI and resilient dual connectivity (cellular and satellite).

By integrating rugged hardware, intelligent software, and breed association tools, 701x delivers faster insights and better herd outcomes.

701X AT A GLANCE

FOUNDED:
2020

HQ:
Fargo, North Dakota, USA

CORE PRODUCT:
xTpro Smart Ear Tag

CUSTOMER BASE:
Commerical ranches, seedstock producers and breed associatons

Seamless visibility with a Kigen iSIM–based device unlocks smarter interventions—and global reach.

What's next for 701x?

Using the iSIM for out-of-the-box connectivity makes international expansion possible with no change of hardware design for 701x. To this aim, 701x is exploring expanding the xTpro offering wider to ranchers in Canada, EU and Latin American markets next. Connected innovations allow 701x to work boldly towards their vision to offer similar insightful solutions for other beef cattle health and feed operations globally.

Looking further

701x is proving that if you can design for cattle ranching—one of the harshest, most demanding environments—you can design for anything. From logistics and lone-worker safety to industrial asset monitoring, the combination of dual connectivity, rugged miniaturization, and power efficiency has applications far beyond the ranch. By protecting every head of cattle today, 701x is shaping the future of connected asset management everywhere.

Stay connected with Kigen and be part of the #**Futureof***SIM* conversation. Follow us on socials and visit kigen.com to stay up to date with the latest insights, innovations, and developments.

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