

IoT and asset tracking without limits

Low-code platform offers real IoT edge computing that sets a new standard for smart data, from edge to endpoint

Globalstar 



How Industrial IoT projects can escape from “proof-of-concept purgatory”

It was not so long ago that the much-hyped Industrial Internet of Things (IIoT) consisted mainly of proof-of-concept projects that struggled to achieve scale.

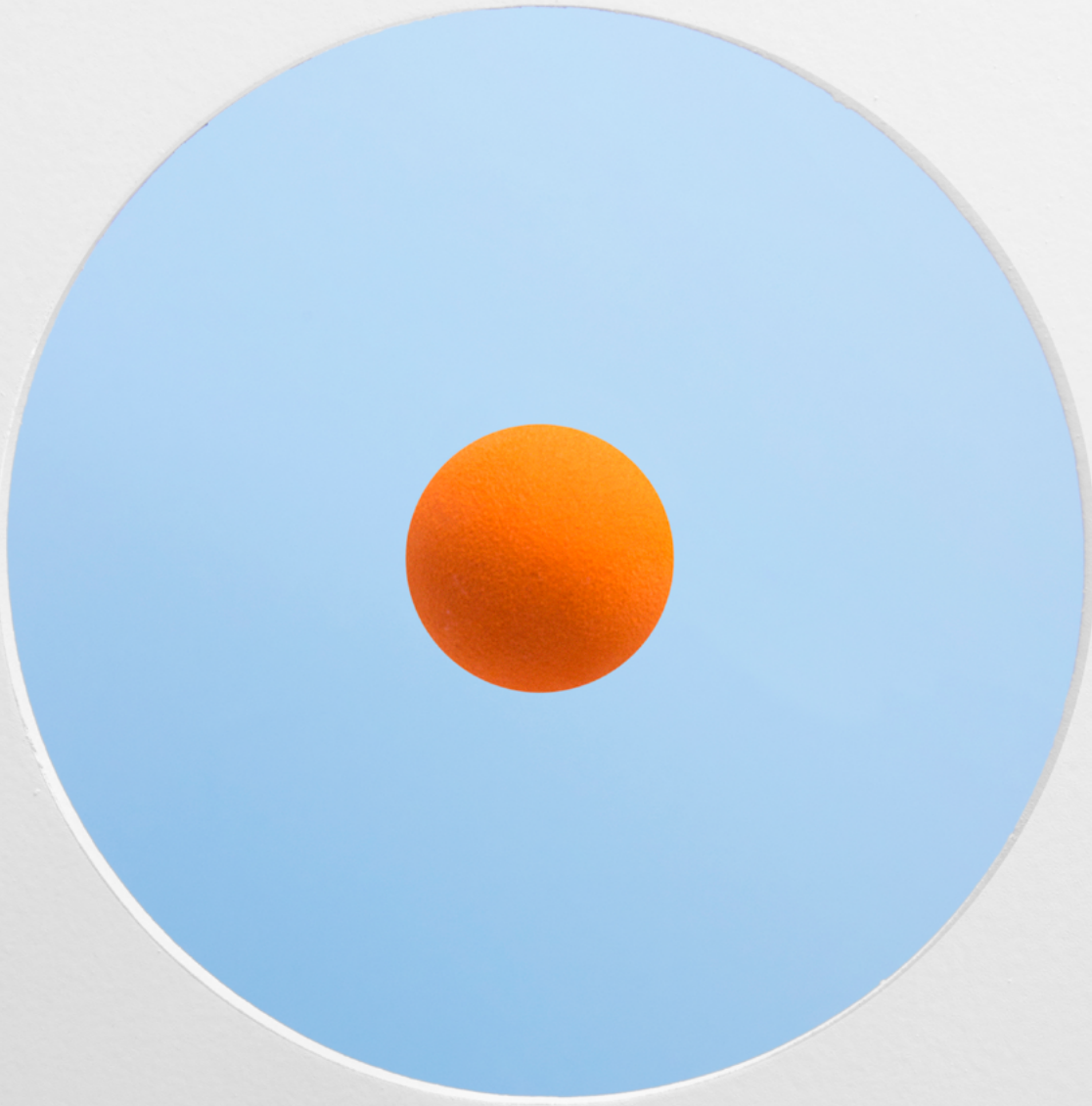
The last few years have seen substantial progress. IoT technology has matured – but more importantly, organizations have begun to understand that IoT is much more than a technology roll-out. Successful deployments become part of the fabric of operations. They are about creating tools that make work easier, so people can deliver more value. They are also about bringing reliable data together in one place, across internal boundaries, to improve all aspects of your operations with better intelligence.



/ The challenge of simplicity

Good data collection depends on reliable connectivity. And reliable connectivity depends, surprisingly, on keeping things simple. Complexity in data devices and transmission makes it hard to achieve reliability and scale. The faster devices are configured, connected, and delivering data, the faster they can create value.

Keeping it simple is hardest when the assets you need to track and monitor are on the move or spend time far from electric power and cellular connection. Why? Cellular networks don't cover everywhere and SIM cards that work in one place may not work in another. Devices are power-hungry and run through batteries fast. Most are either good asset trackers or good data transmitters, but not both. Engineered for one kind of data protocol used in one industry, most can't speak other M2M "languages."



Rule your data with the Realm Enablement Suite

These are big challenges – and Globalstar has brought its decades-long heritage of innovation to deliver a complete edge-to-endpoint solution. We call it the **Realm Enablement Suite**. For asset tracking and IoT applications that are too important to depend solely on cellular, it transforms the value chain from the ground up to slash development time, get innovations to market faster and create capabilities you never imagined were possible.

Realm is a satellite-based, low-code tracking and IoT platform where customers and value-added resellers can create unlimited applications and host them on the edge device while slashing hundreds of hours of development time.

*Operational intelligence starts with **smart data***

Realm delivers smart data — and that's where better operational intelligence gets its start.

What does *smart data* mean?

- Just the GPS and sensor data you need at an affordable cost over most of the world
- An open architecture that ensures interoperability as you add features and products
- The ability to interconnect multiple sensors running multiple protocols using Bluetooth and downloadable drivers
- The power to host applications and process data on your edge devices for faster action and enhanced performance

Whether you are creating new products, upgrading existing ones or are just in the market for a powerful, low-cost device to track assets and efficiently collect sensor data, Globalstar has removed the technology barriers between you and success.



/ Applications without limit

Remote Trailer Monitoring

More than 16 million trucks drive American roads each day, including nearly 4 million Class 8 big rigs. There is an average of 2 to 3 trailers for every tractor, and those trailers are a source of profit, but also cost and risk for logistics companies. Companies waste hours manually checking their yards for available trailers. Many are stuck at customer locations, where customers are supposed to pay a detention fee – but often do not. Others have been stolen and recovering them is a long-odds proposition. Because locating and keeping their trailers can be so hard, companies buy or rent more than they need.

An asset tracking and IoT solution for trailers based on Realm can make a major difference to profit, cost and risk. With trailers pinging their location, manual yard checks become obsolete and customers can be charged accurately for the trailers they detain. Trailer thieves find themselves leaving a digital trail as geofencing technology triggers alerts to a trailer going where it is not expected. Sensors can report utilization to predict when maintenance is needed and monitor conditions from temperature and open doors to the presence of cargo. In addition to greater productivity, lower risk, and higher revenues, avoiding purchase or rental of additional trailers can add save literally millions each year.



Managing Construction Assets

Many construction companies and equipment vendors still rely on phone calls and written logs to track equipment transported to and from job sites as well as its actual use. Satellite asset tracking with Realm lets companies check the location and status of equipment in near real-time, export data into their applications and accurately track data for billing the time each piece of equipment is used on a project. Onboard power and movement sensors can gather and report engine runtime accumulation and validate equipment operation to enable more cost-effective maintenance and greater uptime. Gains in productivity, additional revenue, maintenance costs, and uptime can be transformative.





Drill Rig Tank Monitoring

Fluid-filled tanks are basic equipment at every oil or gas drill site, holding everything from fuel and water to drilling fluids. Monitoring and maintaining the level in those tanks has long been a manual task that requires a worker to check exterior gauges and log the results. But remote monitoring is becoming increasingly common. Realm enables fast product development of new monitoring systems for fluid levels. Data on tank levels including GPS coordinates allows drilling companies and their vendors to see all tanks, establish automatic alerts to low level and even automate dispatch of supply trucks to refill the tanks. Data processing on edge devices allows them to limit data transmission when tanks require no action and condense measurement data into short messages, saving on transmission costs. Drilling companies save thousands of unnecessary hours and ensure that fluids are always available to support uninterrupted operation.



Coordinating Support Vessels

Offshore energy platforms are served by fleets of support vessels delivering supplies, materials and people, supporting construction, towing platforms and operating remote-controlled underwater vehicles. While many fleet operators still rely on pen-and-paper for tracking their assets, Realm can generate accurate tracking data on vessel location and provide flexible geofencing around platforms, docks, and maintenance facilities to send alerts to key vessel movements. Displayed on our advanced mapping application, the data reduces idle time for vessels and quickly lets fleet managers identify the most efficient way to route vessels to platforms, which can make the difference between profit and loss.



Inside the Realm Enablement Suite

Transmit smart data from edge to endpoint

The Globalstar network and technologies deliver value across your operations.

Realm Enablement Suite

- Edge-to-endpoint, AI-enabling solution for IoT
- Develop IoT applications using a low-code platform that slashes hundreds of hours of development time
- Connect to a huge range of standard sensors via BLE5
- Run applications in powerful edge devices to speed processing and reduce transmission
- Manage devices, configurations, subscriptions, and data translation in the Cloud

Asset Tracking Solutions

- Protection against loss based on location data and geofencing
- Fast identification of unexpected activity, such as equipment leaving areas
- Improved coordination of operations
- Better business performance from more efficient use of assets
- Improved supervision of remote workers
- Digital mapping that turns GPS location and data from the field into actionable visual intelligence with advanced reporting capabilities.



Realm Enablement Suite

Transmit smart data from edge to endpoint

The Realm Enablement Suite is Globalstar's edge-to-endpoint, AI-enabling solution for IoT, built on edge hardware, an ultra-reliable network and the Realm Cloud. Realm transforms the IoT and asset tracking value chain from the ground up to slash development time, support your most advanced applications and create capabilities you never imagined were possible.

Realm technology stack

REALM EDGE SOLUTIONS

- **Devices and Modules:** Low-cost, high-performance devices and modules equipped to interface with industry-standard sensors and providing the processing power to host AI applications and process Smart Data for cost-effective transmission.
- **Edge Application Platform:** Powering development of custom applications to run at the edge. Managing device configuration and uploads.

ULTRA-RELIABLE NETWORK

- Delivering data from the edge securely, reliably and affordably over the Globalstar Satellite Network

REALM CLOUD

- Providing everything you need to manage devices, configurations, subscriptions and data translation, with a rich array of features to help you create IoT applications and integrations.
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/ Realm edge solutions

Devices and modules

*Transmit smart
data **from the edge***



Integrity 150 is a next-generation, solar-powered data transmitter and asset tracker that interfaces with industry-standard sensors over Bluetooth and delivers Smart Data from the edge. Users can quickly program AI-enabled applications and computing solutions using the Edge Application Platform to process location and sensor data at the edge for low-cost Smart Data transmission. In addition, it delivers zero-maintenance ownership with the longest-lasting battery (10+ years) and shelf life available. With its low-power design built for the world's most challenging environments, the Integrity 150 reliably delivers secure data and location reporting with unprecedented payload options.

*Slash **hundreds of hours**
of development time*



The **ST150M** satellite modem module can be quickly and effectively integrated into technology to develop unlimited applications for a range of markets. Like the Integrity 150, the modem leverages industry leading BLE5, Nordic C, and comprehensive unified APIs, empowering rapid development and customization of firmware for more advanced smart data applications and enabling AI at the edge. An **ST150 Dev Kit** provides an ST150M module on a dev board with satellite and GPS patch antennas, all mounted on an Arduino Shield, to develop and test technology designs before committing them to hardware.

Edge application platform

Quickly program AI applications for processing smart data. The low-code Edge Application Platform is the key to unlocking the unlimited capabilities of these rugged, reliable devices in the field and slashing hundreds of hours of development time for new products. The standards-based architecture means that new features and platform upgrades can reliably access the same hardware interfaces, APIs, and applications as previous versions with no specialized coding.

The Platform provides access to the firmware and base applications that run the devices and an extensive and growing library of applications to interface with sensors measuring temperature, humidity, magnetic fields, angular position, motion, proximity, and other metrics. No more writing custom code to control every aspect of hardware operation. Also included are hardware interfaces allowing full driver/hardware abstraction and APIs that give your custom applications access to device capabilities. The GitHub application library invites developers to share new and updated apps with the Realm customer base.

Edge application platform layers

Application Layer / The base applications that run the Integrity 150 and ST150M, as well as Bluetooth services, are open to developers for integration with their software, including theft alert, messaging, tracking, SOS and BLE.

Unified API Layer / Application program interfaces (APIs) enable your custom applications to immediately access the full capabilities of devices, including sensor support, without additional coding.

Library Layer / An extensive and growing library of applications can be uploaded to devices in their current form or modified to interface with sensors measuring temperature, humidity, magnetic fields, angular position, motion, proximity, and other metrics. We invite all integrators to share their successful modifications or new applications with other Realm integrators in the GitHub project library.

Hardware Application Layer / Hardware interfaces allow full driver/hardware abstraction within Realm devices to simplify and speed development.



/ Ultra-Reliable Network







Your data is transmitted reliably and securely over the **Globalstar Satellite Network** for delivery to your designated endpoint. It may be Realm Cloud, servers on your premises or one of many third-party IoT platforms on the market.



/ Realm Cloud

Realm Cloud provides everything you need to manage devices, configurations and subscriptions, as well as translate and manage data, analytics and dashboard visualizations. Featuring a microservice and API-based architecture, with DevOps automation, Realm Cloud is a multi-tenant environment with an elastic infrastructure that grows with you. It delivers a rich array of features: analytics, a rules engine, advanced GIS, data management, edge-device management, complex event processing, security, and compliance. Your team can focus on creating IoT applications and integrations, while leveraging our platform features for all the rest.

Realm Cloud features

Enhanced device and data management, security and analytics	
Performance management	
Device configurator and data decoding	
Device and data management via web + Mapping capabilities	
Alerts & notifications management with rules-based engine	
Device level details including location and associated sensor data	
Account and company management	



/ What can **you** do with the Realm Enablement Suite?

Create new products and features in a fraction of normal development time and cost. Instead of custom-coding for specific device hardware and painstakingly integrating it into your product, use Realm's low-code platform, hardware abstraction, and unified APIs to seamlessly interface between your application and all the capabilities of our edge devices.



Turn your installed base into your best source of new revenues. With Realm as your device and enablement platform, adding sensors that deliver valuable new capabilities to customers has never been faster or easier, using Bluetooth connectivity and our library of sensor applications.



Push the processing envelope. Can machine learning and executable files improve the performance of systems in the field? Realm devices provide plenty of storage and processing power to run applications at the edge, and the Enablement Platform and Data Center simplify configuration and management of software installation.



Best quality out of the box. The Realm-enabled Integrity 150 solar-powered device is immensely capable right out of the box, and provides the reliability, low-maintenance and low-cost operation that opens up a range of new uses.



Transforming your business from edge to endpoint

The end-to-end design of the new Globalstar ecosystem removes the technology barriers to profitable innovation in the tracking and industrial IoT space. What does that mean for your operation?

It means connecting reliable devices faster and with less development time. Gaining the flexibility to innovate, knowing that Realm devices and our network can support new features and products with minimum hassle. Thinking differently about what you can accomplish and how easily it can be enabled. And forging a true partnership with your satellite connectivity provider based on the unique challenges and opportunities of your operation.



Why Globalstar?

Globalstar helps people connect, communicate, and transmit data in smarter ways.

As a telecom infrastructure provider, we offer reliable satellite and terrestrial connectivity that's simple, fast, secure, and affordable. With our low-earth orbit (LEO) satellite network, we connect and protect assets, transmit key operational data, and save lives — from any location — for consumers, businesses, and government agencies in over 120 countries.

Globalstar's terrestrial spectrum, Band 53, offers carriers, cable companies, and system integrators a “borderless” fully-licensed channel with a growing ecosystem to help our partners improve wireless connectivity. We also leverage our excess satellite capacity to develop IoT and other deployments for wholesale customers.

In addition to our SPOT GPS messengers that connect people in remote environments, Globalstar offers next-generation IoT hardware and software products that efficiently track and monitor assets, process smart data at the edge with AI-enabled applications, and manage analytics with cloud-based telematics solutions — all of which drive safety, productivity, and profitability.

We transform smart ideas into smarter solutions.

*To learn more about how
Globalstar can benefit
your business, contact us at
salesinfo@globalstar.com.*



Connect smarter