

Affordable IoT beyond the network's edge

Industrial IoT connectivity and applications for transportation, energy, construction, agriculture, forestry, maritime and government

Globalstar 

Turning IoT expectations into measurable value. The global market for industrial IoT (IIoT) was sized at over \$263 billion in 2021 and is expected to swell to \$1.1 trillion by 2028. That is a clear sign that companies expect high value from this digital transformation of their operations. The big question is how to turn expectation into reality.

Big digital transformation projects have a poor record. A 2020 study by Boston Consulting Group found that a staggering 70% of them fall short of goals. Effective turnkey solutions are in short supply. Integrating them into existing management platforms can be hard. And the information technology skills needed to do it are in short supply. And when you deploy IIoT for fixed and mobile operations beyond the network's edge, the risk rises even higher.



/ Keeping it simple

The key to success is avoiding oversized projects that stress the entire organization. The odds improve when companies deploy simple IoT applications that meet real needs affordably, reliably, and now. If they align with industry standards, companies have the option of integrating them into comprehensive solutions in the future. And they will be doing it with applications that have already proven their value in the real world.

Asset Tracking

- 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

Sensor Data

- Increase equipment up-time with near real-time data on critical performance factors for greater productivity:
 - Engine performance
 - Fluid levels
 - Drought stress
 - Snowpack change
 - Wildfire danger
- Analytics and data visualization to reduce maintenance costs

Messaging & Mapping

- Check-in for remote crews and lone workers, with pre-set messages and GPS coordinates
- SOS button to signal an emergency needing fast response
- Digital mapping that provides high visibility of all in-field resources, with geofencing to trigger alerts to atypical changes



Realm Enablement Suite

Transmit smart data from edge to endpoint

The **Realm Enablement Suite** is Globalstar's edge-to-endpoint, AI-capable solution for IoT. 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.

*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-standards architecture that ensures interoperability as you add features and products
- The ability to interconnect multiple sensors running multiple protocols using Bluetooth
- The power to host AI-enabled applications and process data on your edge devices for faster action, reduced transmission traffic and enhanced performance including machine learning

To deliver smart data, Globalstar has developed a technology stack with three elements:

ROCK-SOLID HARDWARE

- A set of low-cost, high-performance **edge devices** that can host AI applications and process data for lower cost and faster action

AI-ENABLED SOFTWARE

- An edge-based **Application Enablement Platform** that lets you take advantage of their unique capabilities while sharply reducing development time and cost
- A powerful **Data Center** that makes it simple to manage devices, data, configurations and subscriptions

ULTRA-RELIABLE NETWORK

- **Integration with your choice of analytics and dashboarding platforms**, from servers on your premises to our SPOT My Globalstar mapping application, commercial IoT service providers and cloud services



Realm hardware

Transmit smart data from the edge



The **Integrity 150** is a solar-powered asset tracker and data transmitter that delivers no-maintenance ownership with the longest battery (10+ years) and shelf life available. With its low-power design built for rugged environments, the ST150 delivers reliable and secure location reporting with unprecedented payload options. Users can configure AI-enabled applications and edge computing solutions that reliably transmit smart data over the Globalstar Satellite Network.

Next generation developer solution



The **ST150M** satellite modem module can be quickly and effectively integrated into technology to develop unlimited applications for a range of markets. 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.



Realm software

Edge application platform

The low-code Applications Enablement 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 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 GitHub application library invites developers to share new and updated apps with the Realm customer base.

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. No more writing custom code to control every aspect of hardware operation. 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.



Asset tracking and data management devices

*Low power, long life and equipped to **perform***



TRANSMIT SMART DATA FROM THE EDGE

Integrity 150 is a solar-powered asset tracker and data transmitter that delivers no-maintenance ownership with the longest battery (10+ years) and shelf life available. With its low-power design built for rugged environments, the ST150 delivers reliable and secure location reporting with unprecedented payload options. Users can configure AI-enabled applications and edge computing solutions that reliably transmit smart data over the Globalstar Satellite Network.



INTRINSICALLY SAFE AND MAINTENANCE FREE

SmartOne Solar is a solar-powered device that is virtually maintenance free with up to 10 years of usable service for tracking and monitoring. Its robust design makes it the only solar asset tracker certified as Intrinsically Safe with both ATEX Zone 0 and HERO certifications for combustible environments. Easy to install - requires no harnesses, external power, or external antennas - the SmartOne Solar features a wide range of reporting capabilities with inputs available to manage engine run time, tank level, or various alarm inputs.



FLEXIBLE, SMALL, FEATURE-RICH

Track and monitor fixed and mobile assets and transmit sensor data - on or off the grid - the **SmartOne C** is the most affordable and feature-rich tracker on the market. Line or battery-powered, it is a small, easy-to-mount unit that is ideal for transmitting GPS coordinates at long intervals and configurable for a wide variety of frequency rates.



LOWEST-COST, TURNKEY LOCATION TRACKER

SPOT Trace is a small, discrete tracker that excels at tracking assets in regular motion by providing location pings as often as every 2.5 minutes and monitoring through a customizable user dashboard. This easy-to-use device offers simplified tracking at the lowest cost.



Satellite connectivity developer solutions



THE ST150M MODEM MODULE AND DEVELOPER KIT

The ST150M satellite modem module can be quickly and effectively integrated into technology to develop unlimited applications for a range of markets. 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.



STX3 SATELLITE MODEM

The low-cost way to add simplex satellite communications to any OEM product. STX3 satellite modem with integrated GPS is the smallest mountable mode, ideal for remote sensing, tracking and monitoring applications. An STX3 Development Kit with Bluetooth makes it simple to set up and send custom, user-defined data over the Globalstar network.

Mapping and geofencing

*Greater visibility with **advanced** reporting*

The stream of data from these devices becomes actionable knowledge through **SPOT My Globalstar**, a sophisticated, real-time mapping application accessible by computer or smartphone, that can also be integrated into the customer's own management systems. It provides high visibility of all in-field resources, with geofencing that can trigger alerts whenever atypical changes occur, and advanced reporting capabilities that help your business make informed decisions.

Globalstar Data Center (Mobile Device Management)

How to rule your data. The Data Center lets you easily manage devices, configurations and subscriptions. It also provides data aggregation and translation to prepare data for secure delivery to the endpoint. Where that endpoint lies is up to you. It may be our powerful mapping application, SPOT My Globalstar. It may be servers on your premises or one of many third-party IoT platforms on the market. If your company operates in the cloud, the Data Center can also deliver to your compute capacity on AWS.



Ultra-reliable network

Your data is transmitted reliably and securely over the Globalstar Satellite Network for delivery to your designated endpoint. It may be servers on your premises or one of many third-party IoT platforms on the market. If your company operates in the cloud, the MDM Platform can also deliver to computer capacity on your choice of cloud service.





The satellite advantage

The Globalstar satellite network provides a single reliable platform, with predictable costs, available across most of the world. Small devices connect to the satellite without a big antenna and deliver short data bursts at affordable cost. Our devices have small, internal antennas just like a mobile phone. Instead of gulping power, their low energy design sips it slowly, and our solar models generate their own. Satellite can provide primary coverage, as well as redundant coverage, to cellular and private networks, guaranteeing reliable service no matter the location.



The Globalstar VAR network

Globalstar brings IIoT solutions to a wide range of industries in partnership with value-added resellers (VAR), system integrators, and value-added manufacturers. They bring deep industry knowledge and innovative technology to the partnership while leveraging Globalstar's affordable, reliable asset tracking and sensor transmission devices, network, and Realm Enablement Suite.



Smart Data for IIoT in the World's Most Challenging Places

For more than 15 years, Globalstar has offered customers and partners easy to use, low-cost, high-performance tracking and connectivity solutions that work beyond the reach of electric power and terrestrial telecom. We carry that commitment into products and services for the Industrial Internet of Things: providing just the smart data you need to solve today's problem and protecting your ability to seize tomorrow's opportunities.



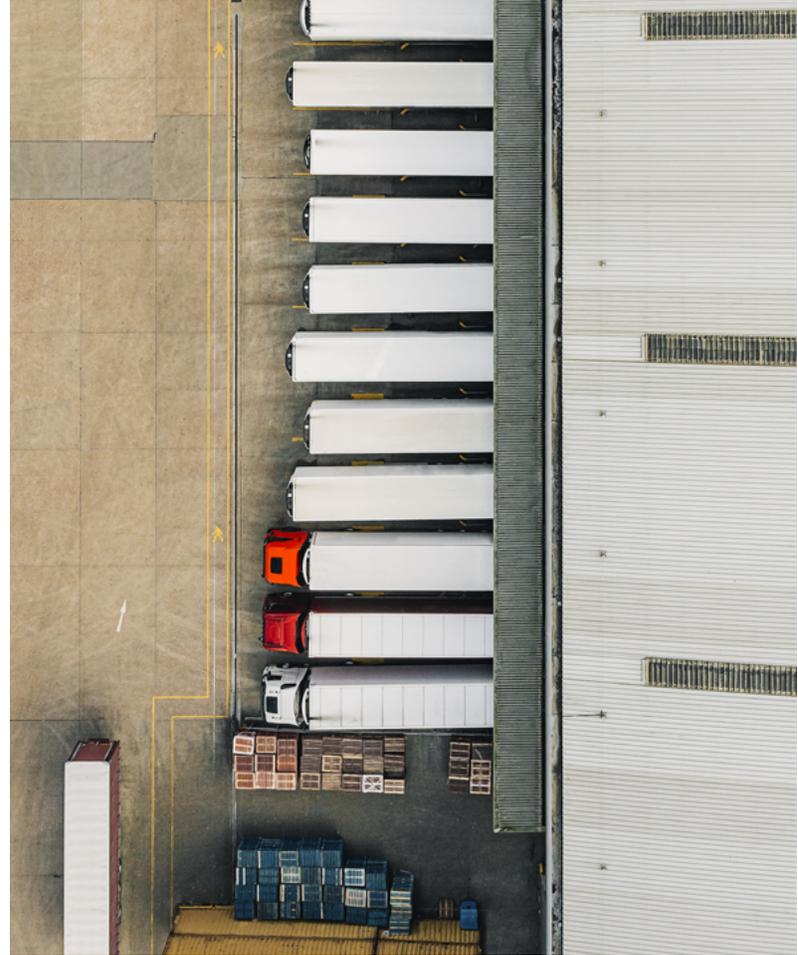
IIoT applications that deliver value

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 organization companies. Companies waste hours manually checking their yards for available trailers, tracking down trailers detained by customers and managing theft risks. An asset tracking and IoT solution for trailers based on the Realm Enablement Suite 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

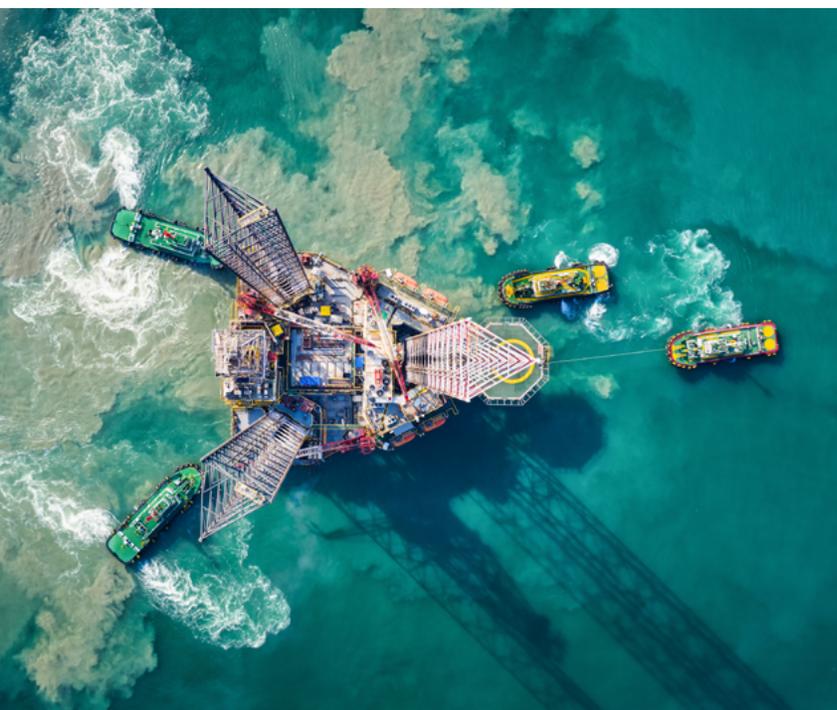
Many construction companies and equipment vendors still rely on phone calls and written logs to track equipment transported to and from job sites as well as its actual use. Satellite asset tracking with the Realm Enablement Suite lets companies check the location and status of equipment in near real-time, 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. The Realm Enablement Suite 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, set up 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, the Realm Enablement Suite 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 the SPOT My Globalstar 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.



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.

Our terrestrial spectrum, Band 53, offers carriers, cable companies, and system integrators a versatile, fully-licensed channel to improve their customers' wireless connectivity.

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
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/ Commercial IoT

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