

Worldwide Satellite Magazine

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Photo of an Electron rocket launch.  
Image is courtesy of [Rocket Lab](#).



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# Satellite: An Essential Asset For IoT

Author: Michael Minchin,  
Product Manager, IoT, ST Engineering iDirect

In an era of digitalization, organizations around the world are turning to IoT technology as a key enabler. IoT refers to the network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, and connectivity that enable these objects to connect and exchange data.

The core value of IoT is best understood as operational efficiency, not merely connectivity. Global industry is looking to IoT to transform business and improve the bottom line through real-time monitoring of thousands of assets, increases in efficiency, reduced waste, increases in output, and improvements in safety.

## Availability + Ease of Access: Where Satellite Fits

The [GSMA](#) forecast that by 2025 there will be more than 30 billion IoT devices connected to the information grid. They report the market will be double the size of the PC, smartphone, connected car and wearable markets. In addition, data from NSR indicates that although most M2M and IoT services require only low bandwidth, over the next decade some verticals will demand additional bandwidth to support applications such as big data analysis, engine telematics and live data streaming. According to the analyst's predictions, the global commercial satellite IoT market is expected to grow with a CAGR of about 25% to a total of up to 38 million in-service units. By the end of 2031, the market is expected to grow to about \$17.8 billion in IoT satcom retail revenues.

A fully realized IoT ecosystem will require more than one type of connectivity. This is because the growing number of different IoT applications use a diversity of data types, capacity bandwidth, latency and speed requirements, and more. Within this spectrum of possibilities and unique needs, satellite plays a critical role: Filling gaps that no other technology is properly equipped to handle. Most notably, satellite is exceptional in eliminating deficits in availability, reliability and accessibility. With satellite technology, users can extend the availability and reliability of IoT to devices operating in remote regions. Terrestrial connectivity is often unavailable for many businesses that operate in such remote locations over wide geographical stretches of land or sea. Satellite technology, on the other hand, enables consistent, reliable connectivity in these areas, making it an invaluable resource for remote IoT.

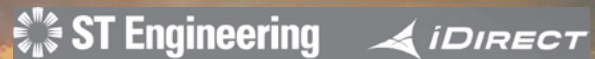
For example, in the energy industry, satellite IoT technology is used to aggregate sensor data on remote oil and gas platforms to send back over satellite to central control centers, allowing for real-time monitoring and control of these facilities. Satellite IoT is also essential for the transportation industry, where it is used to provide connectivity for fleet management and real-time tracking of vehicles when out of range of terrestrial services.

## The Challenges

Three factors have traditionally limited the viability of satellite enabled IoT solutions: *Cost*, *low data optimization* and *interoperability*. Today technological advances within the satellite industry and falling costs have combined to bring down the *total cost of ownership (TCO)*. In terms of data, the advent of more powerful *high-throughput satellite (HTS)* capacities, advances in the bandwidth allocation, and flat panel antenna design, GEO satellite solutions bring new capabilities that are making *medium data rate (MDR)* and *low data rate (LDR)* applications more viable — this includes applications such as events-based or demand-based throughput of up to 100 kbps or, roughly, 25 MB per month.

Finally, the hurdle of interoperability or ease of integration is being addressed through support for industry standard interfaces, common IoT protocols, such as **UDP** and **MQTT**. If satellite is to be seen widely as not only a viable, but a valuable part of the ecosystem, then it needs to be freed of its perception as another layer of added complexity to an already complex IoT system.

[ST Engineering iDirect](#) has been debunking the myths associated with these challenges with an integrated, optimized end to end IoT solution that is integrated into the existing operator's hub infrastructure, reducing the complexities associated with launching an IoT service. The company is well positioned to meet the massive demand for IoT across myriad markets including transportation, agriculture, energy, healthcare, and government.



## ARSAT Adopts ST Engineering iDirect's IoT Solution

[ARSAT](#), an Argentinian satellite operator based in Buenos Aires, has become an early adopter of ST Engineering iDirect's IoT solution to service its customers in South America. ARSAT is leveraging the solution to provide reliable and secure IoT connectivity to a wide range of industries, including transportation, energy, and agriculture. The company has identified the requirement for satellite based IoT services that will enable businesses and organizations in remote areas of Argentina to take advantage of sensor technology and Big Data management developments.

iDirect's IoT solution incorporates an IoT-optimized waveform into ST Engineering iDirect's hub technology and supports a family of compact lightweight terminals for fixed and mobile use cases, and a cloud-based *network management system (NMS)* powered by technology from ST Engineering iDirect's strategic partner, [HiSky](#). The full solution integrates seamlessly into ARSAT's existing ST Engineering iDirect hub infrastructure, reducing the complexities associated with launching an IoT service, allowing ARSAT to quickly launch their service and capitalize on the IoT market opportunity.

It enables ARSAT to tackle a range of in-country challenges across vertical markets. Applications include the implementation of hydrometeorological monitoring solutions and more efficient farming practices. For example, the solution will permit the collection of critical data from sensors located on farms for the monitoring of everything, from soil moisture to the health of livestock and the condition of farm vehicles, thus enabling informed decision-making for farmers. The solution will offer ARSAT the flexibility it needs to move quickly into other markets such as oil and gas, energy, mining, fleet management and construction, as and when they see demand.



IoT services will also provide an invaluable tool for disaster recovery and mitigation, enabling analysis of important data on areas of concern such as rainfall and river levels or wildfire threats, deforestation, water scarcity, earthquakes, and volcanoes. Sensor data can be collected and transmitted using satellite IoT connectivity solutions for analysis and disaster mitigation.

## The Key Is Satellite IoT

Satellite plays a crucial role in the IoT market through its ability to offer scale and reach the full range of data rate requirements, all at an affordable price. In the past, service providers had limited options if they wanted to offer a satellite IoT service offering. However, today, the same service providers are at the nexus of enormous advances in satellite and ground segment technology and the parallel demand for always-on data flow of their customers. Satellite IoT is the key to reaping all of the potential rewards of this insatiable demand for data, but only if it is easy to plan, install, and operate, while providing affordable connectivity. Service providers can enable such an offering if they can quickly deploy highly efficient, small, and very inexpensive satellite terminals. The result is immediate revenue generation and OPEX reduction.

With its flexible, affordable and easy-to-integrate IoT solution, ST Engineering iDirect is well positioned to meet this demand in the IoT market.

[www.idirect.net](http://www.idirect.net)

Michael Minchin is a Senior Telecommunications Professional with +25 years of industry experience. Michael started his career in his early teens working in a wide variety of studio/on-location/live TV production and post-production environments. He later migrated into IT/IP Networks/Datacoms consultancy and has a degree in Computing In Business. He found his career passion leveraging his previous broadcast, datacoms and business experience by pivoting into the SATCOM industry from 2003 onwards. Michael worked at NSSGlobal using Inmarsat products delivering remote connectivity solutions for Oil, Gas & Banking customers such as SCADA & IP Routing Backup.