



# Expanding the Internet of Things Everywhere

Sateliot is taking advantage of a new 3GPP standard to deliver low-cost IoT connectivity from satellites

## Highlights

- To date, the Internet of Things (IoT) has mostly been limited to areas with terrestrial wireless coverage
- New standards allow for satellite connectivity to be integrated with terrestrial IoT connectivity
- Sateliot is establishing a low orbit satellite constellation specifically to support narrowband IoT connections
- Its 'store and forward' technology promises to bring down the cost of satellite connectivity to terrestrial levels
- Sateliot, which has roaming agreements with multiple mobile operators, is preparing for a commercial launch in 2025

Only about 20% of the earth's surface is covered by terrestrial mobile networks. That leaves large swathes of rural land, wilderness and seas without access to a conventional cellular network. While satellites can provide coverage across these areas, this form of connectivity has been too expensive and too power-hungry to be deployed on the large scale required for massive IoT applications, such as infrastructure, asset and livestock monitoring, and environmental sensors.

But the latest releases of the 3GPP standards, Release 17 and 18, pave the way for more affordable satellite connectivity by enabling non-terrestrial networks (NTNs) to support Narrowband IoT (NB-IoT) technology, which is specifically designed to provide low cost and low power coverage over wide areas.

Barcelona-based Sateliot is looking to make this technology even more affordable by taking an

innovative “store and forward” approach. Designed for use cases that don’t need to transfer data in real-time, such as smart metering, monitoring infrastructure, environmental conditions, agri, oil and gas, container logistics, a store and forward service can be supported by a small constellation of low earth orbit (LEO) satellites. The smaller the constellation, the lower the capital and operating costs, enabling the service to be made more affordable for end-users.

Marco Guadalupi, CTO of Sateliot, believes his company, which was formed in 2018, will be able to provide NB-IoT connectivity across the globe at a comparable cost to terrestrial networks. By contrast, using a proprietary satellite terminal could cost hundreds of euros per device and tens of euros per month for the connectivity.

Sateliot’s four LEO satellites can provide coverage anywhere with a clear view of the sky, but not continuously. As each satellite is orbiting at a higher speed than the earth is revolving, they “revisit” each geographic location multiple times a day. “Because we fly at low orbit around the Earth and the Earth is moving, we end up covering the globe, but not in real time,” explains Marco Guadalupi.

Sateliot’s patent-pending store and forward technology works on the principle that the satellite receives data when it next passes over a NB-IoT connected device and then stores it until it is next connected to a ground station, at which point the data is forwarded on to the end destination. As well as being able to cover maritime use cases, this kind of network doesn’t require a large number of ground stations, further reducing costs. As the end devices aren’t continuously connected to the satellite, this architecture is also designed to preserve their battery life. In a store-and-forward (S&F) architecture, the end-to-end latency is influenced by factors such as revisiting time and the transfer time to a ground station (GS). These factors

vary depending on the satellite distribution within orbital planes and the latitude of the target region, resulting in a dynamic data delivery timeline.

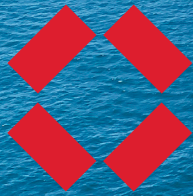
## Plans for commercial launch and expansion

In August 2024, Sateliot took a significant step forward in its mission to transform satellite IoT connectivity with the successful deployment of its first four satellites. These launches pave the way for the company’s commercial store-and-forward services, set to go live in the first quarter of 2025, enabling the generation of recurring annual revenues. Currently, Sateliot is conducting field tests of its technology in Latin America, preparing for a global rollout.

Sateliot has already secured over €250 million in contracts, spanning more than 400 clients across 50 countries. These agreements cover the connection of nine million objects, compared to the estimated four million satellite-connected devices worldwide today. Each contract guarantees a minimum of two messages per day per connected object, a frequency well-suited to applications, such as asset and infrastructure monitoring.

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While these initial contracts have been signed directly with enterprises, Sateliot's preferred market entry strategy involves partnerships with mobile network operators (MNOs) and mobile virtual network operators (MVNOs).

"Sending and receiving just a few messages a day is sufficient for many asset or infrastructure monitoring applications," explains Gianluca Redolfi, Chief Commercial Officer at Sateliot. "We have engaged with over 10,000 companies globally, and the demand we're witnessing is extraordinary."

Sateliot envisions its technology will enable cost-effective IoT solutions for agriculture. For instance, farmers could use IoT-enabled health monitors for their livestock, with monthly service costs amounting to just a few U.S. dollars per device. NB-IoT modules for such applications are priced between US\$5 and US\$10, making these solutions affordable and scalable.

## Strategic investments and financial backing

In September 2024, Global Portfolio Investments, a Spanish investment group, injected €10 million into Sateliot as part of a €30 million Series B funding round, joining prominent shareholders like Indra, Cellnex, and Sepides. Additionally, Sateliot secured a €30 million financing agreement with the European Investment Bank (EIB) to further bolster the development of its satellite network.

These new funds build on the €25 million previously raised since Sateliot's establishment in 2019, enabling the company to advance its proprietary technology and deploy additional satellites. Sateliot aims to have a constellation of over 100 5G-IoT satellites by 2028, providing widespread coverage and unlocking new use cases.

As Sateliot's satellite network grows, the company plans to enhance its service offering. By increasing message frequency from two messages per day to hourly updates, it will eventually move toward near

real-time connectivity with messages delivered every five minutes. These advancements are expected to support a range of applications, including automotive services such as emergency notifications during vehicle breakdowns.

Sateliot projects rapid financial growth, forecasting €500 million in revenue by 2027 and €1 billion by 2030.

## Standardised roaming agreements with mobile operators

As an operator member of the GSMA, Sateliot has struck roaming agreements with operators covering 56 countries. "We interconnect through them on an IPX in a very standardised way," says Marco Guadalupi. "As we go to market through MNO, and MVNOs, this means that it's their customer, it's their SIM card. They own the customer relationship. They own the contract, they manage all of this. We do not sell to the end customer directly...we act as a roaming cellular coverage extension service, whenever there is no terrestrial cellular coverage."

When a NB-IoT device connects to one of Sateliot's satellites, the satellite asks the device's operator whether to give it access. "For the end-user, it is transparent; for the operator, it is a better service, a new source of sales," notes Marco Guadalupi. For the mobile operator, teaming up with Sateliot could be a way to extend coverage to areas that wouldn't see sufficient traffic to justify the installation of a base station.

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Marco Guadalupi - CTO of Sateliot

Sateliot anticipates particularly strong demand for satellite-based NB-IoT in large countries, such as Brazil, Argentina, Australia and the US, with extensive agriculture and nature reserves, which lack cellular coverage today. But even in the smaller countries of Europe, Sateliot believes mobile operators will use its technology to plug coverage gaps.

In parallel to developing the store and forward technology, Sateliot is addressing the regulatory dimension. Having secured a global filing for its constellation with the ITU, Sateliot is now contacting administrations across the globe to secure authorisation to offer its services in their jurisdictions.

The 5G NB-IoT NTN standard defines the usage of S-Band frequencies - 1980-2010 MHz for uplink and 2170-2200 MHz for downlink - that are allocated by the ITU to the Mobile Satellite Service (MSS) across all three ITU regions. The standard defines channels of 200kHz. Sateliot expects to require five channels - a total of 1MHz. Whereas NB-IoT could use this spectrum on a secondary basis, some administrations, such as Saudi Arabia and Australia, have reserved 5 MHz blocks within the specified frequencies to prioritise the deployment of NB-IoT NTN technologies. With access to 1MHz of spectrum, Sateliot believes it could simultaneously connect around tens of thousands devices during a satellite pass over a country.

## Billions of satellite IoT messages every day

Sateliot describes the addressable market as massive, with GSMA Intelligence forecasting that about 1.6 billion IoT connections will be addressable for satellites by 2030. While a small proportion of these connections may be used to capture high resolution images or video, most are likely to be transmitting the small amounts of data that NB-IoT is specifically designed to support.

Sateliot expects the IoT messages transmitted via its satellites to generally range in size between 50 and 100 bytes, though its system can support messages up to 200 bytes.

GSMA Intelligence modelling suggests mobile operators could be earning US\$10 billion globally from B2B clients using satellite connectivity by 2035, with manufacturing, automotive and agriculture accounting for 65% of the addressable revenue opportunity.

In an interview in July with Elmon.cat, Jaume Sanpera, the CEO and co-founder of Sateliot, claimed his business is three years ahead of the competition, but he predicted there will “eventually be two or three IoT constellations in the world. There cannot be more, nor does it make sense to have fewer. In each country, there are three or four major mobile operators.”

However, the speed at which Sateliot can expand will partly depend on the evolution and availability of NB-IoT chipsets aligned with 3GPP Release 17 standards from leading suppliers such as MediaTek, Sony Altair, Qualcomm, and others. These manufacturers already have baseline Release 17-compatible chipsets that are ready and only require firmware upgrades to support NB-IoT over LEO networks.

Qualcomm, an indirect investor in Sateliot, has developed two such chipsets — one for static devices and another for mobile devices—showcasing this potential. Additionally, new chipsets with native LEO support are likely to be released soon, enabling broader adoption. Some handsets are also likely to integrate NB-IoT Release 17 capabilities, allowing users to send text messages from virtually anywhere on the planet.

Marco Guadalupi anticipates that the momentum in this market will build steadily during 2025. “Every month in 2025, we will see more and more devices with these chipsets,” he predicts. “We identify some of them that are ready to work with our constellation...We have many customers pending for proof of concept.”

## About the GSMA

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work, and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

For more information, please visit the GSMA corporate website at [gsma.com](https://gsma.com)

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## About the GSMA Foundry

The GSMA Foundry is the go-to place for cross-industry collaboration and making positive change happen, supported by leading technology organisations and companies. By bringing together members and key industry players, engaging, and unifying the end-to-end connectivity ecosystem, the GSMA is solving real-world industry challenges.

Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. This enables the mobile industry's mission: to connect everyone and everything to a better future.

Find out more, or submit a new project idea, at [gsma.com/Foundry](https://gsma.com/Foundry)

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## About Sateliot

Space · Connecting · 5G IoT

Sateliot is launching the first LEO satellite constellation based on the 5G standard, enabling unmodified commercial NB-IoT devices to connect from space. For the first time, satellite and terrestrial telecom are merging seamlessly, with Sateliot at the forefront of this transformation. Sateliot's cost-effective technology unlocks immense potential for massive IoT adoption in remote and underserved regions. This revolutionary approach ensures that IoT connectivity becomes accessible and affordable for everyone, everywhere, and supports industries across the globe in achieving digitalization, helping bridge the digital divide and drive innovation in various sectors.

[www.sateliot.space](https://www.sateliot.space)

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