

# TecFutures Research Perspective

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## How to Maximise the Opportunity from Satellite IoT



Satellite IoT offers connectivity solutions for devices and sensors located in remote or difficult-to-reach areas where traditional terrestrial networks may not be available or practical.

There is growing demand for satellite IoT and, although currently niche in nature, analysts are forecasting over 20% CAGR each year until 2030 with estimates of a \$5bn satellite IoT market by this time. The TecFutures survey of 75 IoT CSPs demonstrated that satellite will have a greater importance for enterprise connectivity than 4G networks over the next 12 months.

Powering this growth are a clear set of market drivers, but equally there are a number of challenges that are yet to be overcome if satellite is to reach its full potential.

- Six market strategy questions
- Six market drivers and
- Six business growth challenges

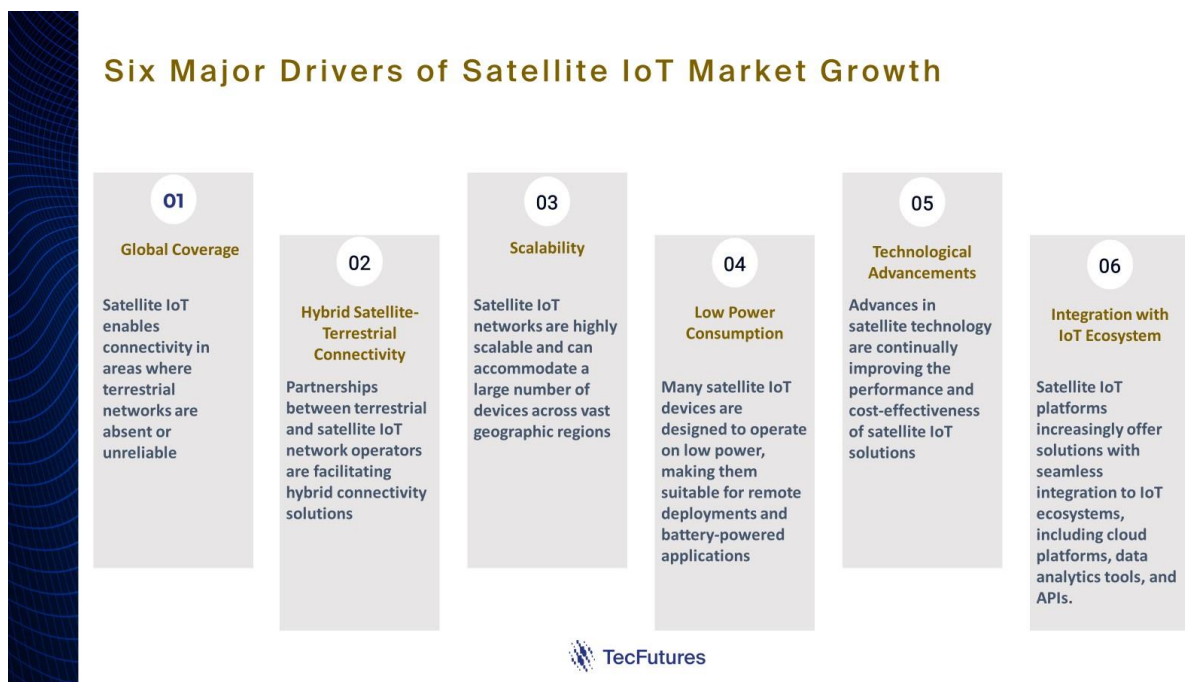
### Six Core Market Strategy Questions for Suppliers to Address

While satellite IoT holds immense promise, suppliers face questions around their positioning if they are to take full advantage of market growth:

1. **Partnerships:**  
How do satellite operators partnerships and collaborations with technology providers, CSPs and other stakeholders contribute to market growth in the satellite IoT ecosystem?
2. **Technology Advancements:**  
What innovations in satellite technology are driving the evolution of satellite IoT solutions, and how do they address emerging needs?
3. **Use Cases and Adjacent Markets:**  
How should satellite operators best leverage their latest light-house use cases, and how can they use these to find untapped potential applications of satellite IoT beyond traditional industries?
4. **Integration Challenges:**  
How can satellite operators seamlessly integrate with existing IoT ecosystems and infrastructure to maximize interoperability, efficiency, and market growth?
5. **Regulatory Considerations:**  
How should satellite operators navigate global regulatory frameworks in the deployment and operation of satellite IoT networks?
6. **Data Privacy:**  
How should satellite operators handle concerns about data privacy and security, and manage the impact on business growth and the adoption of satellite IoT solutions?

## Six Major Drivers of Satellite IoT Market Growth

A diverse range of drivers are contributing to the continuing growth of satellite IoT.



1. **Global Coverage:** Satellite IoT enables connectivity in areas where terrestrial networks are absent or unreliable. It ensures uninterrupted connectivity, eliminating the need for costly infrastructure deployment. It offers coverage in or inaccessible areas where terrestrial networks falter.
2. **Hybrid Satellite-Terrestrial Connectivity:** Partnerships between terrestrial and satellite IoT network operators are facilitating hybrid connectivity solutions, allowing devices to seamlessly switch between terrestrial and satellite networks.
3. **Scalability:** Satellite IoT networks are highly scalable and can accommodate a large number of devices across vast geographic regions. This scalability makes satellite IoT suitable for applications ranging from tracking individual assets to managing large-scale industrial operations.
4. **Low Power Consumption:** Many satellite IoT devices are designed to operate on low power, making them suitable for remote deployments and battery-powered applications. Low-power satellite IoT devices can operate for extended periods without requiring frequent maintenance or battery replacement.
5. **Technological Advancements:** Advances in satellite technology, such as the development of smaller, more affordable satellites (e.g., CubeSats) and high-throughput satellite (HTS) systems, are continually improving the performance and cost-effectiveness of satellite IoT solutions.
6. **Integration with IoT Ecosystem:** Satellite IoT platforms increasingly offer solutions with seamless integration to IoT ecosystems, including cloud platforms, data analytics tools, and application programming interfaces (APIs). This integration enables organizations to leverage satellite connectivity as part of their broader IoT strategies and extract actionable insights from remote sensor data.

## Critical Challenges to Satellite IoT Market Growth

Satellite IoT providers face several key challenges in delivering reliable and effective services. Addressing these challenges requires continuous innovation, investment in technology, and collaboration with industry stakeholders to advance satellite IoT capabilities and deliver value.

## Six Critical Challenges to Satellite IoT Market Growth

01

**Latency:** Satellite communication inherently introduces latency, and minimizing latency while maintaining reliable communication is crucial, especially for time-sensitive applications.

02

**Cost:** Satellite infrastructure, including satellite launches, ground stations, and maintenance, involves substantial costs.

03

**Interference and Signal Strength:** Environmental factors, such as weather conditions and electromagnetic interference, can affect signal strength and reliability.

04

**Power Consumption:** While IoT devices deployed in remote locations often are designed for low power consumption, it is also true that remote locations may have limited power sources available.

05

**Security and Privacy:** Transmitting sensitive data over satellite networks raises concerns about security and privacy.

06

**Regulatory Compliance:** Satellite communication services are subject to various regulations and licensing requirements imposed by national and international regulatory bodies.

1. **Latency:** Satellite communication inherently introduces latency, and minimizing latency while maintaining reliable communication is crucial, especially for time-sensitive applications. There is therefore an added requirement to carefully match IoT applications to communications technology.
2. **Cost:** Satellite infrastructure, including satellite launches, ground stations, and maintenance, involves substantial costs. Balancing these costs while offering competitive pricing for IoT services poses a challenge for providers, especially considering the need to continue to invest in advanced technology for efficient operations.
3. **Interference and Signal Strength:** Environmental factors, such as weather conditions and electromagnetic interference, can affect signal strength and reliability. Satellite IoT providers need to implement robust technologies to mitigate these challenges and ensure consistent communication.
4. **Power Consumption:** While IoT devices deployed in remote locations often are designed for low power consumption, it is also true that remote locations may have limited power sources available anyway. Satellite communication systems must be optimized to minimize power consumption while maintaining reliable connectivity, ensuring the longevity of IoT devices in the field.
5. **Security and Privacy:** Transmitting sensitive data over satellite networks raises concerns about security and privacy. Implementing encryption protocols and adhering to stringent security standards are essential to satellite just as any other network, safeguarding data transmitted between IoT devices and satellite networks.

6. **Regulatory Compliance:** Satellite communication services are subject to various regulations and licensing requirements imposed by national and international regulatory bodies. Satellite IoT providers must navigate these regulations to ensure compliance while expanding their service offerings globally.

## Embracing Satellite IoT for a Connected Future

Satellite IoT represents a paradigm shift in global connectivity, offering unprecedented reach and reliability across diverse environments. As we navigate the complexities of satellite IoT, addressing unanswered questions and fostering collaboration across industries will be pivotal in realizing its full potential.

With exceptional experience in IoT connectivity, market analysis and market strategy, TecFutures is well placed to support you in optimizing your approach to the opportunities from satellite IoT.

## About TecFutures

At TecFutures, we're committed to helping our clients in developing their marketing strategies and tactics for the next wave of technology adoption.

### *Contact*

Contact Rysio Pakula at [rysio@tecfutures.com](mailto:rysio@tecfutures.com) to learn more about how we can support your journey towards ongoing success.

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