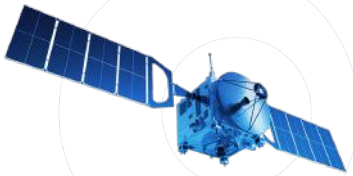
Ground Control

Satellite IoT in Transition:

Key Shifts to Watch in 2026

Executive Summary



In September 2025, Ground Control surveyed **211 satellite IoT users** across a diverse range of industries and geographies to understand which emerging trends they believe will **most influence their operations over the next 2–3 years.**

Respondents were well qualified to provide informed perspectives, representing industries including **Renewables & Utilities, Environmental Monitoring, Telecommunications, Maritime, Defense, Technology & Engineering, and Logistics,** among others. Nearly half were **based in Europe (47%),** with strong representation from **North America (32%)** and **Asia (9%).**

The results reveal an ecosystem in transition, where organizations are balancing today's proven technologies with tomorrow's transformative possibilities. Two forces stand out as the most widely anticipated:

- Security and resilience, as geopolitical risk and hybrid warfare heighten the need for secure, reliable, and diverse connectivity strategies.
- Next generation proprietary services, **which unlock higher bandwidth capabilities for advanced telemetry and real time operations.**

Other forces - **standards-based direct-to-device (D2D) technologies, new mega constellations, and AI-driven IoT insights** - are also beginning to shape planning and investment decisions, though their impact varies by industry and region.

Key Global Findings:

- Security and resilience was the top factor, with **45% of respondents emphasizing its importance,** particularly in defense, telecommunications, and other critical infrastructure sectors.
- Next-generation proprietary services followed closely at **just under 45%**, driven by strong interest in richer, more cost efficient messaging platforms like **Iridium Messaging Transport (IMT) and Viasat IoT Nano (OGx).**
- New mega constellations were highlighted by **40% of respondents,** though their near-term relevance is largely **focused on consumer broadband, rather than IoT.**
- Standards-based D2D technologies were **cited by 35%,** with interest strongest in sectors where **low cost, low data, large scale deployments are most applicable.**
- AI adoption remains in its early stages, **with 24% identifying it as a near-term influence,** though its importance is expected to grow as organizations mature their data architectures.

This report explores these five forces in detail, examining what they mean for IoT decision makers, how they are perceived across industries and regions, and providing expert commentary from Ground Control's leadership team to help organizations navigate the rapidly evolving satellite connectivity landscape.

Methodology

We surveyed **211 individuals across a diverse range of industries,** all of whom are current users of satellite IoT. This ensured that respondents were well-qualified to provide insights into how changes in satellite IoT connectivity might influence their respective industries.

The key question posed to participants in September 2025 was:

As someone using satellite connectivity in your work, your perspective matters. **Which of these emerging trends do you think will shape your industry the most over the next 2-3 years?**
(Please select all that apply).

Nearly half were based in **Europe (47%)**

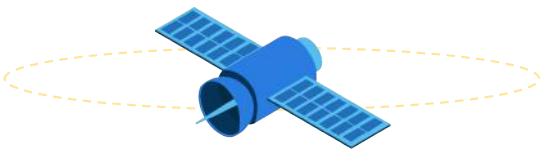
Strong representation from **North America (32%)**

and **Asia (9%)**

Geographically, **47% of respondents were from Europe, 32% from North America, and 9% from Asia,** with the remaining distributed across other regions. The primary industries represented in the survey included:

Renewables & Utilities, Environmental Monitoring, Telecommunications, Maritime, Defense, Engineering / Technology, Aviation, Oil & Gas, Education & Research, and **Transport & Logistics.**

Global Findings Overview



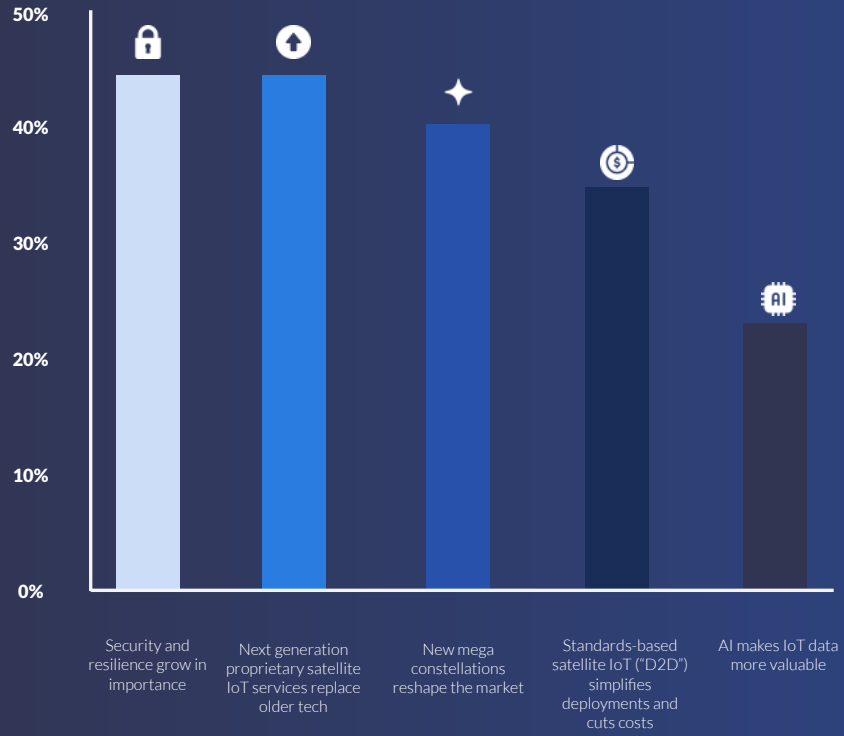
Two forces stand out as the most widely anticipated influences:

1. The transition to next generation proprietary services, **as organizations begin planning for the eventual retirement of older technologies.**

2. A heightened focus on security and resilience, reflecting concerns about geopolitical risk and the **increasing reliance on satellites for mission critical services.**

Other forces, such as new **mega constellations, standards-based Direct to Device (D2D) technology, and the growing use of AI for IoT data,** are also beginning to influence decision making, though their impact is still emerging in many industries.

Global Findings Overview



45%

Security and resilience emerged as the top global priority, with nearly half of respondents (45%) highlighting the need for secure and reliable connectivity. This reflects both rising geopolitical instability and the fact that satellite IoT now underpins essential services such as drone operations, autonomous shipping, and national infrastructure monitoring.

45%

Next generation proprietary services (45%) are almost equally significant, highlighting a collective expectation that legacy technologies will give way to higher-bandwidth solutions like Iridium Messaging Transport (IMT) and Viasat IoT Nano (OGx).

40%

New mega constellations, including players like Starlink, Amazon Kuiper, and AST SpaceMobile, are seen by 40% of respondents as potential disruptors, offering new connectivity options while challenging long established satellite service models.

35%

Standards-based D2D technologies (33%) are emerging as a cost efficient, simplified way to deploy low data applications, though adoption is likely to be uneven and tied to specific industries.

24%

AI remains the least expected driver of change in the near term, with only 24% of respondents anticipating it will play a major role in their operations, although this may grow as IoT datasets mature and analytics capabilities advance.

Deep Dive:
The Five Key Forces

1

Security and resilience grow in importance

Geopolitical uncertainty and hybrid warfare increase demand for **secure, reliable, and resilient connectivity for navigation, drones, and other critical operations.**

What It Means

Security and resilience are becoming critical priorities as satellite connectivity supports navigation, drones, infrastructure, and other essential services.

Rising geopolitical tensions and hybrid warfare tactics, from jamming and spoofing to cyberattacks, are forcing organizations to rethink how they protect and maintain these systems. This challenge goes beyond GNSS vulnerabilities, encompassing the networks, architectures, and supply chains that keep operations running.

Building resilience will require redundancy, diversity, and innovation, from advanced solutions like Assured Positioning, Navigation, and Timing (APNT) to flexible connectivity strategies and stronger domestic manufacturing.

Expert Commentary

Oliver Potter, Chief Operating Officer, Ground Control

Drone and robotic warfare are accelerating rapidly as new technologies emerge and evolve. In this fast moving environment, stockpiling systems is no longer viable, as even recent designs risk becoming obsolete within a short timeframe.

Recent incidents of GNSS jamming and spoofing are forcing complete system redesigns, with solutions such as Assured Positioning, Navigation, and Timing (APNT) and quantum inertial navigation becoming increasingly important.

To meet these challenges, nations will prioritize resilient, domestic supply chains that can both innovate quickly and scale production to meet unpredictable future demand. In this context, there will be no single "winning" design: diversity and innovation will be critical at every level of the ecosystem - including satellite connectivity - to ensure flexibility and long-term resilience.

Security and resilience grow in importance

Regional and Industry Perspectives

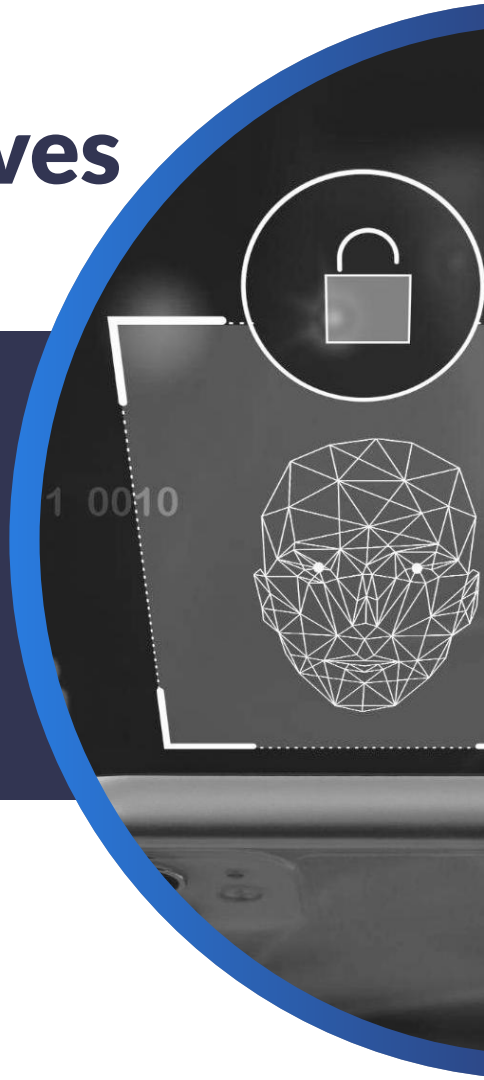
While there are no significant regional differences, the picture varies considerably by industry, **reflecting how different sectors perceive their exposure to emerging threats.**

Unsurprisingly, **Defense respondents showed the strongest concern, with 83% expecting security and resilience to be a major influence on their operations over the next 2-3 years. Telecommunications also scored high at 63%, consistent** with its role as a cornerstone of critical national infrastructure and its heightened awareness of cyber and physical threats.

Utilities and Renewables came in at 53%, which is perhaps lower than expected given their importance to national resilience. This may point to a potential blind spot, as these networks are both attractive and vulnerable targets for disruption.

The Maritime sector reported 47% agreement, highlighting a steady but not overwhelming recognition of the risks. As shipping becomes increasingly automated and reliant on precise navigation, resilient positioning systems will grow in importance, making this an area to watch as threats to GNSS continue to evolve.

At the other end of the spectrum, only 38% of Engineering and Technology respondents saw security and resilience as a major factor, which could signal either a perception that threats are more distant or an awareness gap that leaves these organizations unprepared.



2

Next generation proprietary satellite IoT services replace older tech

Newer, higher bandwidth services like **Iridium Messaging Transport (IMT) and Viasat IoT Nano (OGx)** gradually take over from legacy low data systems (like Iridium SBD / Viasat IDP), enabling more advanced tracking and monitoring.

What It Means

The introduction of next generation satellite IoT services represents a major leap forward in capability, but it doesn't mean that current systems will disappear. Established services such as Iridium SBD and Inmarsat IDP will continue to play a vital role, particularly for low data applications where reliability, simplicity, and proven performance are key.

What's changing is the range of possibilities. New offerings like Iridium Messaging Transport (IMT) and Viasat IoT Nano (OGx) provide much larger, more cost-efficient messaging, opening the door to richer telemetry and more advanced tracking and monitoring.

Over the next few years, we expect to see a **three-tier landscape emerge:**

- **Current generation services –** continuing to support small, lightweight data exchanges for applications like basic tracking and status reporting.
- **Standards-based NTN services –** Direct to Device connectivity using cellular technologies like NB-IoT. These services will simplify deployments and reduce hardware complexity for some low data, latency tolerant, and cost sensitive applications.
- **Next generation proprietary services –** platforms such as Iridium Messaging Transport (IMT) and Viasat IoT Nano (OGx), delivering larger, more cost efficient messages that enable advanced telemetry, real time monitoring, and richer insights.

For most organizations, this won't be about choosing one tier over another, but about deploying the right mix of services to match the needs of different devices and use cases. Over time, these tiers will evolve, creating a more flexible and diverse connectivity ecosystem.

Expert Commentary

Oliver Potter, Chief Operating Officer, Ground Control

By 2026, data constrained use cases will finally be unlocked, enabling far richer telemetry, deeper insights, and faster, more informed decision making.

Services like SBD and IDP have long been limited by small message sizes and higher costs. Next generation technologies such as Iridium Messaging Transport (IMT) and Viasat OGx remove these barriers, offering much larger and more cost efficient messaging.

Over the past year, we've seen hundreds of pilots and limited rollouts testing these new services. By 2026, many of these will have proven their business case and begun to scale into mainstream deployment, fundamentally changing how organizations track, monitor, and respond to events in real time.

Regional and Industry Perspectives

Adoption of next generation proprietary services is expected to vary widely by both region and sector, reflecting differences in infrastructure, operational priorities, and awareness of what these new capabilities can offer.

From a regional perspective, **interest is strongest in Asia, where 61% of respondents expect these services to influence their operations over the next 2-3 years.** In contrast, only **40% of North American respondents indicated the same,** suggesting that deployment may move more quickly in Asian markets, while adoption in North America may progress more gradually.

By industry, the picture is even more diverse:

- **Environmental Monitoring showed the highest level of interest, with 67% of respondents anticipating a strong role for higher-bandwidth services,** reflecting the value of rich telemetry for tracking environmental change, wildlife, and natural resources.
- **Technology and Engineering also scored high, at 54%,** highlighting the sector's appetite for innovation and ability to integrate new capabilities into complex systems.
- **In contrast, Utilities and Renewables scored only 25%,** despite being critical national infrastructure. This may indicate either a perception gap or that these organizations are focused on stability and regulation-driven priorities before exploring higher bandwidth opportunities.
- **Telecommunications also showed lower levels of agreement (21%),** which may reflect the sector's current emphasis on standards-based, Direct to Device services rather than proprietary platforms.

These differences suggest that while next generation services will be transformative, adoption will not be uniform. Some industries will move rapidly to integrate richer data streams and advanced tracking, while others will take a more cautious, incremental approach, often balancing new deployments alongside existing systems.

3

New mega constellations reshape the market

Competition from players like **Amazon Kuiper, AST SpaceMobile and Starlink increases, driving down costs and challenging traditional GEO satellite models.**

What It Means

The rise of mega constellations such as Amazon Kuiper, Starlink, and OneWeb is one of the most talked about developments in the satellite sector. These networks are designed to deliver high speed broadband at scale, with their *initial* focus squarely on consumer-driven services - connected vehicles, smartphones, and home internet - rather than IoT.

While some respondents see these systems as potential disruptors, their direct relevance to IoT remains limited in the near term. **Mega constellations still face significant hurdles:**

- Securing spectrum and landing rights to operate globally.
- Building out the ground infrastructure and mobile network operator partnerships needed to reach customers.
- Achieving sustainable business models in a market already under pricing pressure from rapid competition and oversupply.

For IoT decision makers, the key message is to stay informed but focused. These constellations may influence the broader connectivity landscape in the years ahead, but they are not currently optimized for IoT applications that demand predictable performance, long term stability, and global coverage.

Until the dust settles, **organizations should prioritize proven, specialized satellite services for critical IoT deployments,** ensuring their operations are built on reliable foundations while keeping a watchful eye on how this fast-moving segment evolves.

Expert Commentary

Oliver Potter, Chief Operating Officer, Ground Control

The rise of new mega constellations is creating over-capacity in satellite broadband, which is increasing financial pressure across the sector.

With Amazon Kuiper's regional launch in 2026, competition will intensify further, driving down prices and challenging existing players such as Starlink, OneWeb, and traditional GEO operators.

At the same time, the emergence of NTN NB-IoT services, GEO-based smartphone messaging, and Starlink's anticipated Direct to Device (D2D) service using EchoStar's spectrum will squeeze the available space for smaller players like AST SpaceMobile and Lynk.

By the end of 2026, it's likely that at least one of these businesses will face significant distress, as competition and market saturation reshape the satellite communications landscape.

New mega constellations reshape the market

Regional and Industry Perspectives

Expectations around the impact of mega constellations vary significantly by both region and industry, reflecting different levels of exposure to consumer connectivity trends and large scale infrastructure projects.

From a regional perspective, **interest is highest in North America, where 45% of respondents expect these services to influence their operations within the next 2-3 years.** In Europe and Asia, levels of agreement are lower, at **34% and 33% respectively.** This may reflect the concentration of constellation operators and early deployments in North America, as well as differing regulatory and spectrum landscapes in other regions.

By industry, the picture is mixed:

- **Maritime respondents were the most likely to see potential benefits, with 59% anticipating some impact,** perhaps reflecting how satellite broadband could support passenger services or vessel connectivity.
- **Telecommunications followed closely at 53%,** consistent with the sector's involvement in spectrum, infrastructure, and partnerships needed for future constellation rollouts.
- **Utilities and Renewables showed lower levels of agreement (34%),** indicating that these organizations may view mega constellations as less directly relevant to their current operations.
- **Environmental Monitoring respondents were the least concerned, with only 29%** expecting these systems to affect their work, highlighting the limited role of consumer-focused constellations in specialized IoT applications today.

These results suggest that while awareness of mega constellations is growing, **many industries remain cautious.** The variation reflects both geographic realities and sector-specific priorities, reinforcing the need for IoT decision makers to focus on stability and proven solutions while monitoring how this fast-evolving segment develops.

4

Standards-based satellite IoT ("D2D") simplifies deployments and cuts costs

Technologies like NTN NB-IoT allow devices to connect directly to satellites using a single SIM and existing cellular standards. **This reduces hardware complexity and engineering work, and for very low data applications, lowers airtime costs.**

What It Means

Standards-based satellite IoT - often referred to as Direct to Device (D2D) - promises to make satellite connectivity simpler and more accessible. Using technologies such as NTN NB-IoT, devices can connect directly to satellites through existing cellular standards and a single SIM, reducing hardware complexity and engineering effort. For ultra-low data applications, this approach can also lower airtime costs, creating new opportunities for large scale, cost sensitive, latency-tolerant deployments.

A key enabler of this is Non-IP Data Delivery (NIDD). Traditional IoT messages are sent using IP-based protocols, which add headers that increase the message size and consume valuable bandwidth. **NIDD strips out this overhead, sending only the essential data.** This makes it more efficient and cost-effective for transmitting very small packets - a critical factor when working with satellite links where every byte counts.

In 2026, we expect to see a wave of regional pilots and trials, as operators and device makers explore how these services perform in real world conditions. While the potential is significant, many questions remain around performance, scalability, and economics, **and the coming year will be crucial in shaping how quickly, and in what areas, standards-based satellite IoT gains traction.**

Expert Commentary

Oliver Potter, Chief Operating Officer, Ground Control

In 2026, we'll see regional trials and pilots of NTN NB-IoT proliferate, as organizations work to better understand both the potential and the practical challenges of this standards-based technology.

As these trials progress, the initial hype will give way to deeper engineering work, with teams grappling with issues around cost, protocol design, and network capacity.

The overhead cost of payloads will limit near-term demand at scale, pushing engineers to explore approaches like Non-IP Data Delivery (NIDD) as a way to improve the economics and make business cases viable.

Standards-based satellite IoT ("D2D") simplifies deployments and cuts costs

Regional and Industry Perspectives

Interest in standards-based satellite IoT is shaped more by industry than geography, with little variation between regions.

Europe (35%), Asia (36%), and North America (31%) all reported similar levels of agreement, suggesting a broadly consistent global view on the technology's potential.

By industry, however, the differences are striking:

- **Technology and Engineering respondents were the most positive, with 58% expecting NTN NB-IoT to influence their operations over the next 2–3 years,** reflecting the sector's natural alignment with innovation and early adoption.
- **Telecommunications also scored relatively high at 47%,** consistent with the role operators will play in integrating these new services into terrestrial networks and partnerships.
- **Environmental Monitoring came in at 38%.** This represents a meaningful level of interest, though it highlights that adoption is likely to be selective. Many environmental monitoring applications, such as basic sensing or periodic reporting, are well-suited to NTN NB-IoT's low data, latency tolerant model. However, projects involving critical infrastructure monitoring (e.g. flood defenses, wildfire detection) often require faster, more frequent, and richer data, which lies outside the scope of what NTN NB-IoT can deliver.
- **Defense respondents were understandably cautious, with only 33% expressing interest,** reflecting their need for highly reliable, prioritized network traffic.

These findings suggest that early adoption will concentrate in large scale, cost sensitive deployments where data can be transmitted infrequently and with some tolerance for latency. **Over time, NTN NB-IoT may become an important tool in the broader connectivity mix, but industries handling critical or immediate data needs will continue to rely on other solutions better suited to those demands.**

5

AI makes IoT data more valuable

Artificial intelligence creates smarter insights from connected devices, driving better decision making and business value.

What It Means

AI is rapidly becoming a central differentiator in how organizations extract value from IoT data. As connected systems proliferate, simply collecting telemetry is no longer enough; **companies will need smarter analytics, predictive capabilities, and autonomous decision-making to stay competitive.**

In practice, here's what we expect:

- **Data quality and richness will matter more than ever. Basic status reports won't suffice; to fuel AI models, organizations will need more frequent, accurate, and contextual data.**
- **The architecture behind IoT systems becomes strategic. Investment in edge compute, data pipelines, telemetry frameworks, and orchestration layers will be critical.**
- **AI will drive differentiation, but only for those who have the data foundation to back it up. Many businesses will see early gains from straightforward "quick wins" (e.g. anomaly detection, predictive maintenance), but competition will intensify as those low-hanging fruits are exhausted.**
- **IoT data becomes a battlefield. As more firms adopt AI, owning better datasets and more complete connectivity becomes a competitive moat.**
- **Selective deployment of AI in IoT: Not all use cases will benefit equally. Latency sensitive or safety critical systems will require more mature or hybrid approaches; AI-driven IoT will flourish most in domains where latency tolerances, data volumes, and analytics sophistication align.**

Expert Commentary

Oliver Potter, Chief Operating Officer, Ground Control

Agentic AI will continue to rapidly evolve business processes, prompting entire sectors to reimagine their operations. In 2026, we'll see much broader adoption of AI, not just as a tool, but as a differentiator, which will push demand for more accurate, higher-fidelity telemetry to feed those systems.

Once the initial "low-hanging" gains from AI are captured, the battleground will shift to the underlying data architecture, including robust IoT integration. Organizations that invest early in end-to-end pipelines, from sensor to inference, will be better positioned to outpace competitors beyond 2026.

AI makes IoT data more valuable

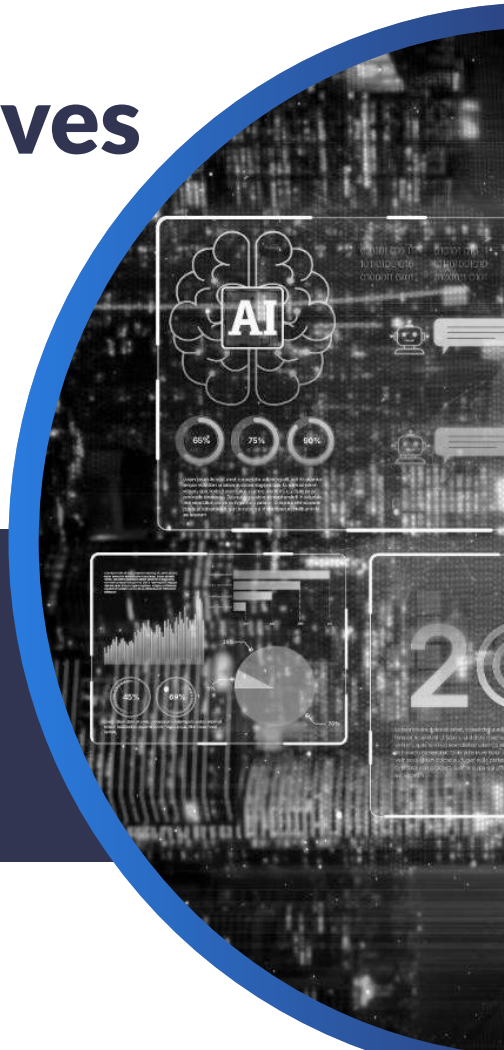
Regional and Industry Perspectives

Compared to the other forces in this report, **AI is still at an earlier stage of adoption for most satellite IoT users,** and this is reflected in relatively modest levels of agreement across industries and regions.

On a regional level, one standout emerged: **Asia, where 56% of respondents expect AI to significantly influence their operations over the next 2-3 years.** This is a striking contrast to **Europe (20%) and North America (21%), suggesting that Asia may be moving faster to integrate AI-driven insights into connected systems,** potentially due to broader digital transformation strategies and ambitious government or private sector initiatives in the region.

By industry, differences are less pronounced:

- **Technology & Engineering leads, with 38% of respondents** seeing AI as a near-term influence, reflecting the sector's natural role as an innovator and early adopter.
- **Environmental Monitoring follows at 29%,** where AI has clear potential to enhance modeling, prediction, and resource management.
- **Telecommunications (26%) and Defense (25%) are showing more measured interest,** likely balancing AI's promise with the challenges of integrating it into mission-critical or heavily regulated environments.
- **Utilities & Renewables scored lowest at 22%,** perhaps reflecting a focus on operational stability and cost management over experimental deployments.



These results suggest that while AI is widely acknowledged as a long term driver of value, most industries are still at the early stages of exploration. For now, AI is being applied selectively to high impact use cases, with broader adoption expected as data architectures and connectivity foundations mature.

Conclusion

The satellite IoT ecosystem is entering a period of rapid evolution, with technology, security, and business models all shifting in response to new demands and opportunities.

Two clear themes emerge from this research:

1. **Resilience and reliability are non-negotiable.** Organizations are increasingly aware that their operations depend on secure, robust connectivity.

2. **Choice and diversity of connectivity will expand.** A three-tier ecosystem is emerging, combining current-generation services, standards-based NTN connectivity, and next-generation proprietary platforms, giving organizations more flexibility, but also increasing the complexity of decision-making.

For most industries, the near-term priority will be to strengthen the foundations:

- Securing navigation and communication systems against disruption.
- Investing in data architecture and telemetry to prepare for future AI-driven insights.
- Identifying where new technologies can complement, rather than replace, existing systems.

While mega constellations and AI dominate headlines, they are not yet the primary drivers for IoT. Instead, stability and proven performance remain paramount, particularly for critical industries such as defense, utilities, and transportation.

Ground Control's role, and the role of trusted connectivity providers more broadly, is to guide organizations through this transition: helping them deploy the right mix of technologies, at the right pace, to ensure resilience today and unlock innovation tomorrow.

As the next 2-3 years unfold, the organizations best positioned to thrive will be those that:

- **Plan for resilience**, not just growth.
- **Embrace diversity** in connectivity strategies.
- **Build strong data foundations,** ensuring their IoT systems can scale and evolve alongside new innovations.

In a time of change, measured progress and informed decision-making will deliver the greatest long-term value. This report aims to provide the insights needed to make those decisions with confidence.

Ground Control

- 20 years' experience
- Unbiased network recommendations
- Great airtime rates
- Future-ready IoT insights
- Satellite IoT platform
- Design and build own hardware

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