Technological Innovations: Implementing Satellite Connectivity for Connected Devices

The IoT Connection – 10 April 2025
Hyperconverged Networks:
Space + Terrestrial

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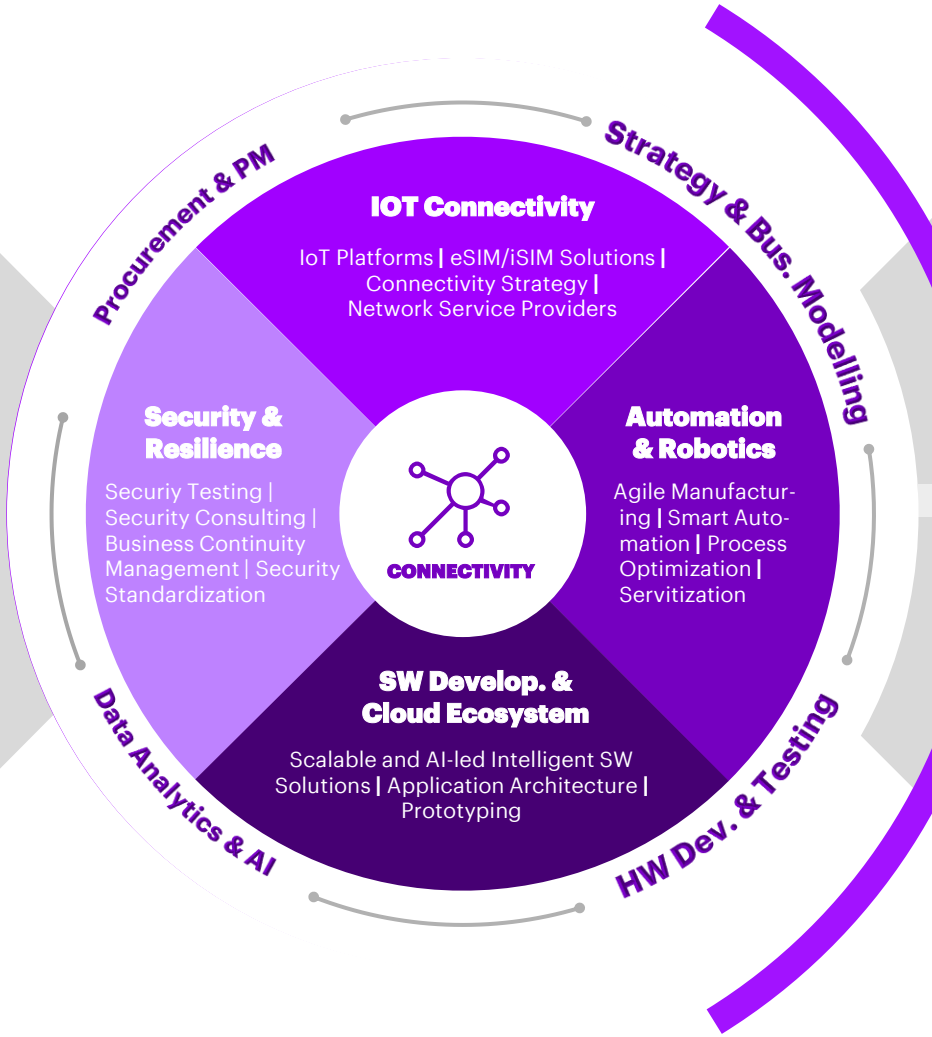
Content

Industry X Technology Strategy & Advisory

Our connectivity capability is built around our strategic and technologic advisory expertise

Client Challenges (Industry Specific)

- **Manufacturing**
- **Comm/Media/ High Tech**
- **Automotive**
- **Rail**
- **Public**
- **Health & Life Science**



Typical addressed demands

- Operational Excellence
- Smart Manufacturing
- Servitization & Monetarization
- Connected products
- Data-led business transformation

Generated value

- Industry specific know-how
- Efficient / innovative solutions
- Tailored development of E2E concepts and solutions
- Concepts are accompanied by verifiable implementations.
- Deployment of agile methods
- Best-practice based project executions.

Thoroughly Enablement Of Satellite Connectivity Can Be Realized Addressing The Complete Service Lifecycle

Accenture has comprehensive capabilities from research and strategy to operation

Testing & Optimization: We have extensive experience building and deploying dedicated testing software and hardware to analyze coverage of various satellite providers under different scenarios in global locations for a number of use-cases.

Market Expertise: We are well-informed on and maintain ties to most reputable satellite connectivity providers. We are part of or in the process of joining multiple early-adopter programs.

Strategy & Commercialization: We have conducted numerous market studies on diverse aspects of satellite connectivity, ranging from regulatory topics to market-entry considerations and further aspects of commercialization.

Engineering: Accenture has access to considerable engineering talent with dedicated expertise in aerospace and defense engineering as well as hosting its own internal satellite design and development program.
Capabilities: *Electrical & Mechanical Engineering, Industrial Design, Firmware, Security, QA & Testing*

Operations: With investments in satellite companies, Accenture added experience in designing, building and operating satellite missions, from design to manufacturing and operations.
Investments: *Pixxel (2022), Open Cosmos (2023), SpiderOak (2023)*

Satellite Services Provide Connectivity To Applications Like TV Broadcast, Mobile Communications, Internet And IoT Data

Highlighting The Transition Of Satellite Connectivity From Traditional Services To Innovative Solutions

Established Service For TV And Mobile Communications

The first satellites were launched in the 1960s for live television broadcast.

Further satellite providers for mobile communications like satellite phones and internet followed. Datarate and latency is limited due to the geo-stationary orbit.

Today, the satellites networks are still commonly used and provide data service for redundancy or to remote locations.

Global IoT Connectivity For Low Bandwidth Applications

Messaging, sensor data and tracking applications do not require lots of data. Main benefits are low cost, low power consumption and global coverage.

In recent years, the convergence of terrestrial and non-terrestrial networks (over satellites) is enabling seamless connectivity.

Long-standing service providers upgrade their network and new disrupt the market.

Broadband Internet Service With Low Earth Orbit Satellites

In the 2010s, first satellites have been launched into Low Earth Orbit.

With the closer distance to Earth and advanced antenna technology, the service can achieve much higher datarates and lower latency than before.

This enables broadband internet service globally and cost-efficient, comparable to terrestrial mobile networks.

Direct-To-Cell Services Enable Usage Of Satellite Connectivity With Standard Cellular Modems

Three Approaches For Direct-To-Cell Services Hold Great Potentials For Connected Devices

Proprietary satellite network + satellite modem chipset	iridium, Globalstar, Qualcomm, Apple
Unmodified mobile phone + terrestrial MNO spectrum	AST SpaceMobile, STARLINK, LYNK, AT&T, verizon, Bell, vodafone, T-Mobile, e), OPTUS, Salt., ROGERS, Claro, Telefónica, Telstra
Device based on „NTN" 3GPP standard (Rel. 17)	yahsat, skylo, omnispace, iridium

Convergence of satellite and cellular networks for truly global coverage

Integrating terrestrial and non-terrestrial networks (NTN) will lead to significant benefits for connectivity:

- Improved reach
- Higher resilience and efficiency
- Reduced complexity for roaming

Depending on the use case and the requirements involved, it is crucial to choose the best technology and most suitable service provider.

Direct-to-cell timeline in smartphones at a glance

2022

- Emergency SOS Messages since iPhone 14

2024

- iMessage Support (iOS 18)
- Google Pixel 9 (Android 15) With Emergency SOS Messages

2025

- T-Mobile Messaging Service for all cell phones (Beta testing and California wildfire)

2026+

Who will be first for Voice and Data ?

Overcoming Challenges Of Connected Products By Navigating The Technical Hurdles Of Satellite Connectivity

Network performance, seamless integration and data security are key factors for satisfied customers

Regulatory & Spectrum	**Legal and regulatory frameworks** in target regions have major impact on selecting the best technology solutions and suppliers
Network	**Network handover conditions are key to be validated** between terrestrial and NTN carriers and **validation is preferred on provider network**.
Testing	**Device testing** in areas outside of network coverage **is costly,** and **test environments have been limited** while the timeline from launch to service rollout is short.
Security	**Data security** is fundamental for a communication medium without physical barriers
Commercial	Evaluation of relevant **steps for a successful go-live** of a satellite-to-device service is crucial leveraging available networks

Choosing The Right Strategy For Successfully Implementing Satellite Technology Into Products And Service Portfolios

Key Activities And Considerations To Achieve Smooth Go-Live Experiences

Identify The Best Provider

Exemplary criteria to consider:

- Availability (regions, performance)
- Integration into existing products (antenna design, space, power consumption, software adaptation)
- Service Development And Outlook

Ensure Device Compatibility

Well-proven provisions:

- Field Integration Testing (FIT)
- Device Certification
- Incorporating Future 3GPP Releases Into Development Cycles (Change & Release Mgmt)

Rollout at Large Scale

- Timeline from launch of production satellites to service is short
- Customer needs confidence that service remains robust during transition
- Proof of Concepts are a good start, but without scaling ideas will vanish quickly

Adhere Security Standards

- As with any digital technology, security is a significant concern
- Ensuring robust security measures and protocols is essential to build trust among users and overcome security-related barriers

Manage Regulatory Compliance

- Harmonizing regulations and ensuring interoperability across different regions
- New satellite networks bring risks of interference with existing networks in Space and on Earth, e.g. out of band emissions, satellite-to-satellite, and terrestrial interference

Oversee Network Stability

- Network handover conditions are key to be validated between terrestrial and NTN carriers
- Monitoring health, availability, performance, and quality of the network is crucial for building trust

Accenture Insights From Real-World Project Examples: Satellite Constellation Test Platform

The Challenge

- Device testing in areas outside of network coverage is costly and difficult to execute
- Test environments with satellites are limited

The Accenture approach

- Test hardware can modularly integrate antennas and satellite modems or modules
- Robust Industrial Design To Ensure Durability In Challenging Conditions Like Remote Locations
- Monitoring, Configuration Management And Test Execution Remotely

The Solution: IX Connect

- Pre-engineered hardware enables simplified extensions connecting to satellite providers
- Software solution, both integrated and cloud-based, for collecting and sending test data

Let’s talk, innovate and develop together!

- Let us hear your **concerns**, **problems** and **ideas**.
- Let us **experiment together**.
- Let's **partner** to **enhance** and **deploy** satellite connectivity solutions supporting the latest or new **standards**, and ensuring **seamless integration**, **robust network & backend infrastructure** for **secure**, **auditable** and **scalable** connectivity.

Unlock with us the Power of IoT And Satellite Connectivity

Accenture

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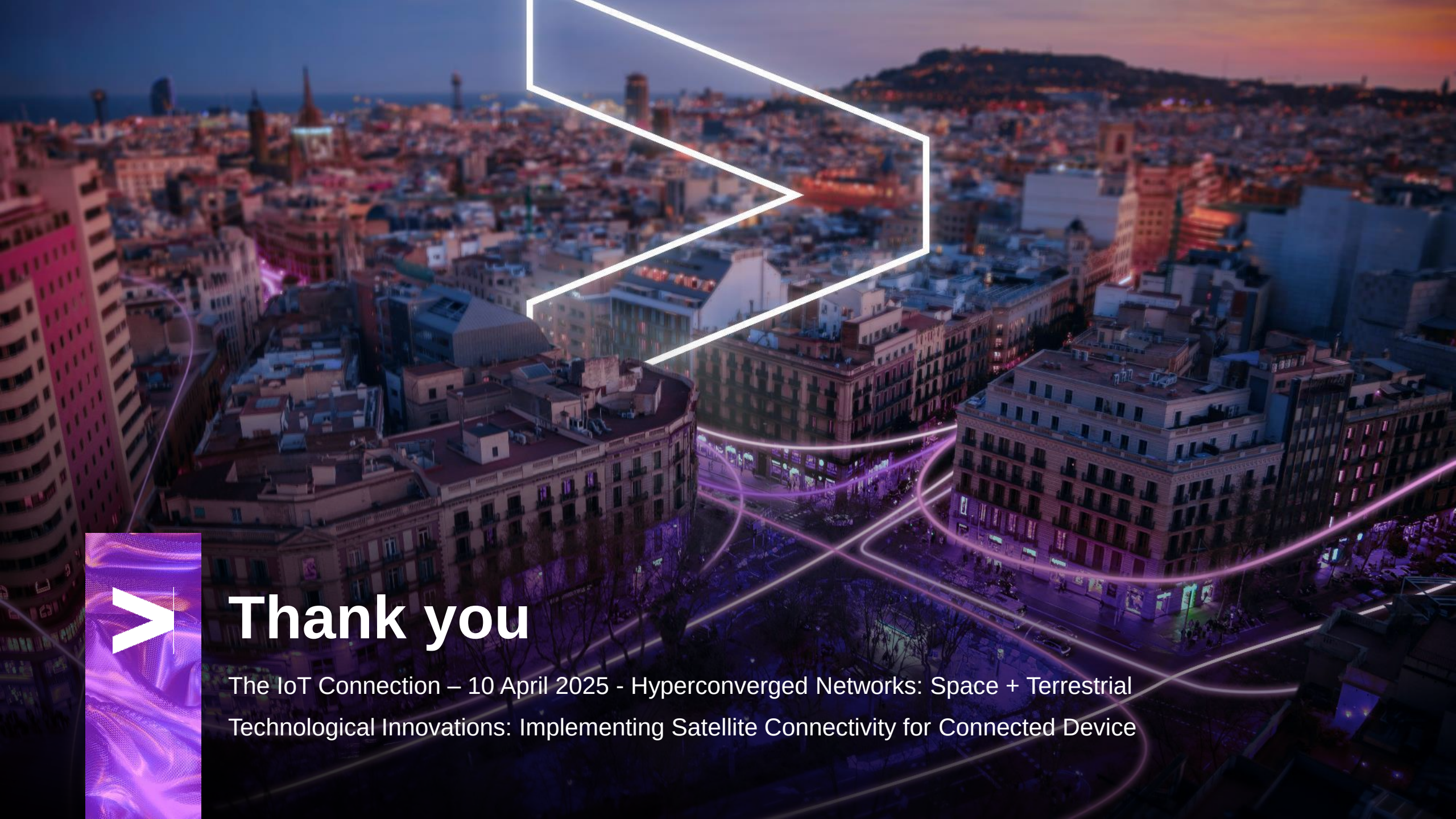

Thank you

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