



Role of Innovation for Affordable Satellite Broadband

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Intelsat's Global Reach

Well positioned as the world's most trusted satellite telecom network



We're the largest satellite capacity provider to the U.S. government



We provide inflight internet to 21 commercial Airline Partners and nearly 3,000 Aircraft



We are the leading provider of satellite bandwidth to the maritime industry



We deliver TV and radio content to more than two billion people worldwide



We serve 7 of the world's top 10 Mobile Network Operators

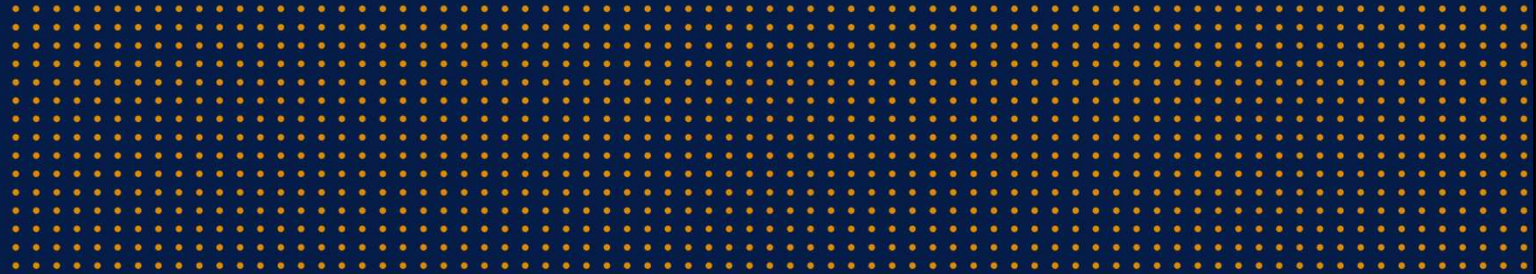


Agenda

1. Emerging Trends
2. Multi-orbit: GEO, LEO, HAPS
3. 5G and satellite in a unified network
4. Direct-to-device satellite solutions
5. Sustainability



Emerging Trends

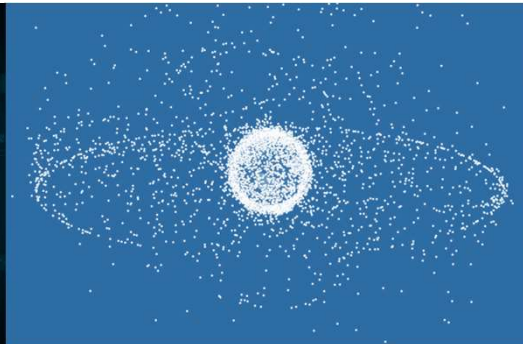


A Transformation of Satcom is ongoing

Key trends changing the face of the industry and creating new opportunities for all



**Hardware
to Software**



**Diversification
of Orbits**



**Universal Standards
Adaptation for
Satellites**



**Entry of Public
Cloud
“Hyperscalers”**

Key ingredients of this Transformation

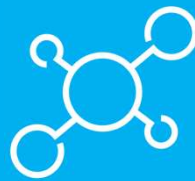
Multiple components blended to offer an unparalleled connectivity experience



**Software-
Defined
Satellites**



**Multi-Orbit
Network**



**Software-
Defined
Network**



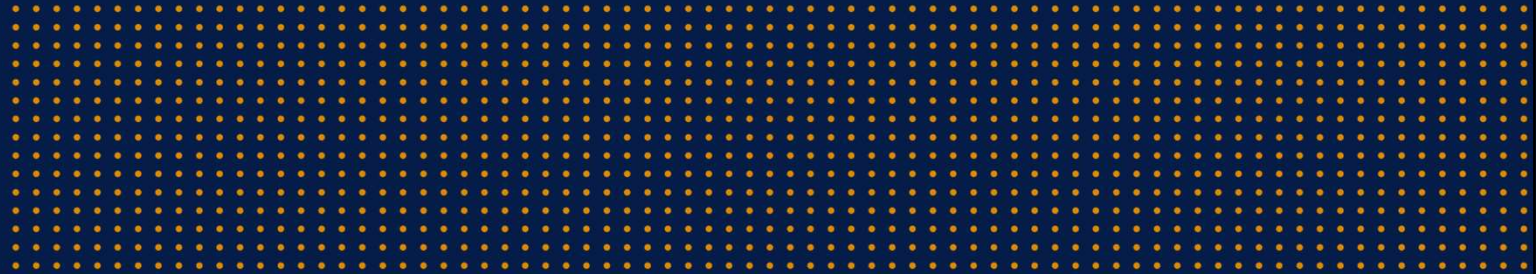
**5G –
Standards
Based**



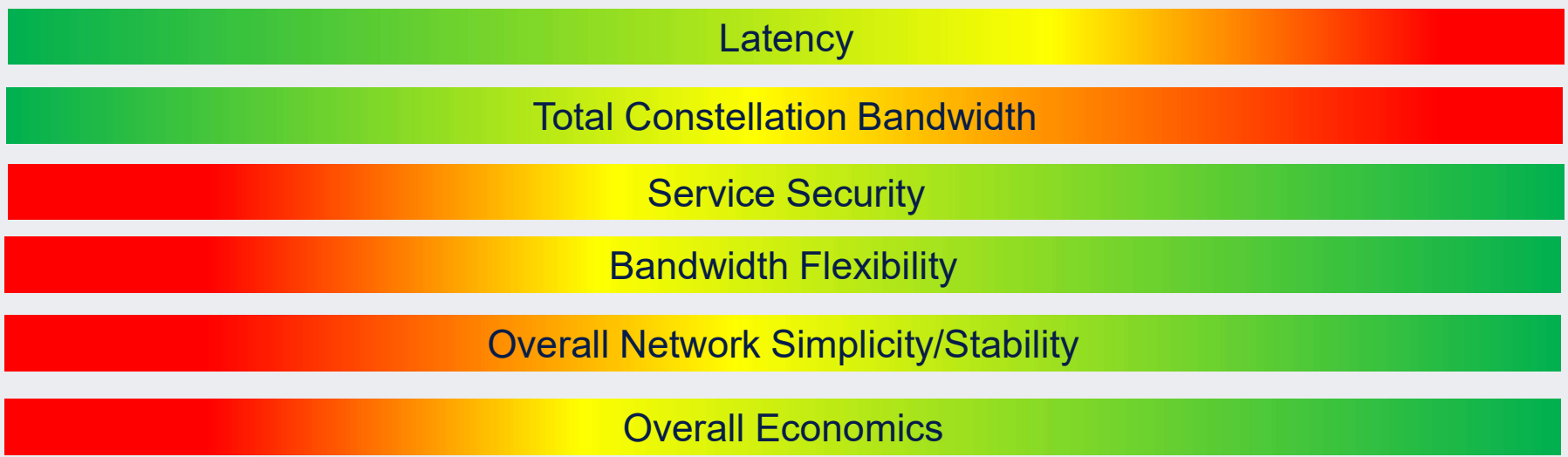
**Smart Edge
Terminals**



Multi-orbit Solutions

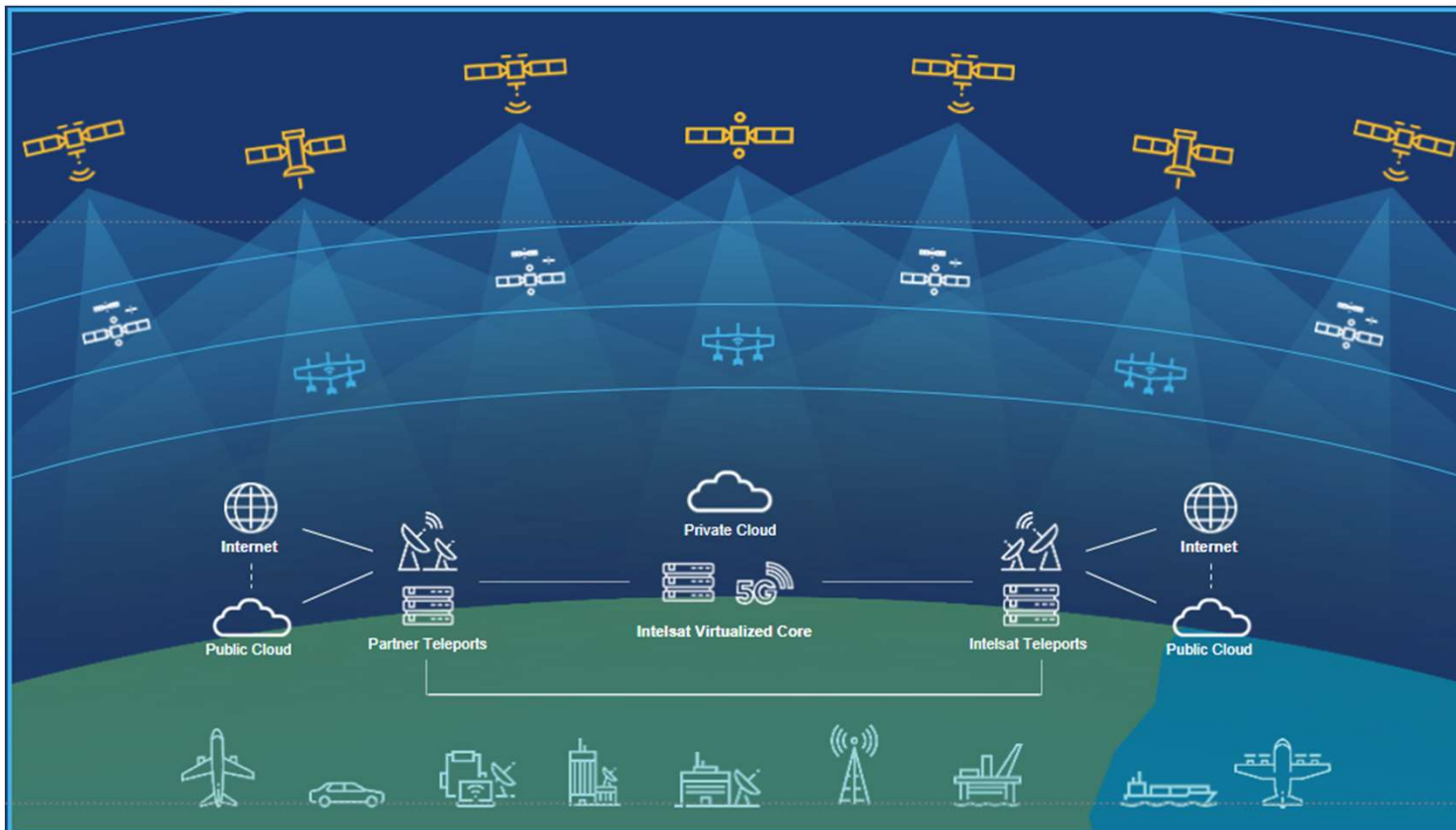


No Orbit is Perfect = Multi-Orbit Strategy



The Unified Network Vision

Software-defined, multi-layer, multi-orbit 5G Network of Networks



Software-defined Network

GEO

- Software-defined Satellites
- Wide Beam Satellites
- High-throughput Satellites
- Multi-band: L-band, C-band, Ku- band, Ka-band, Q-band, V-band

NGSO

- Ongoing roll outs in Ku and Ka Band

Stratosphere

- HAPS Exploration

Software-defined Ground Network

- Teleports
- Terrestrial Faiber
- Virtualized Platforms
- 5G Core/3GPP
- OSS/BSS
- Private and Public Cloud
- Network and Service Orchestration (NSO)

Customers

- Smart Edge Terminals

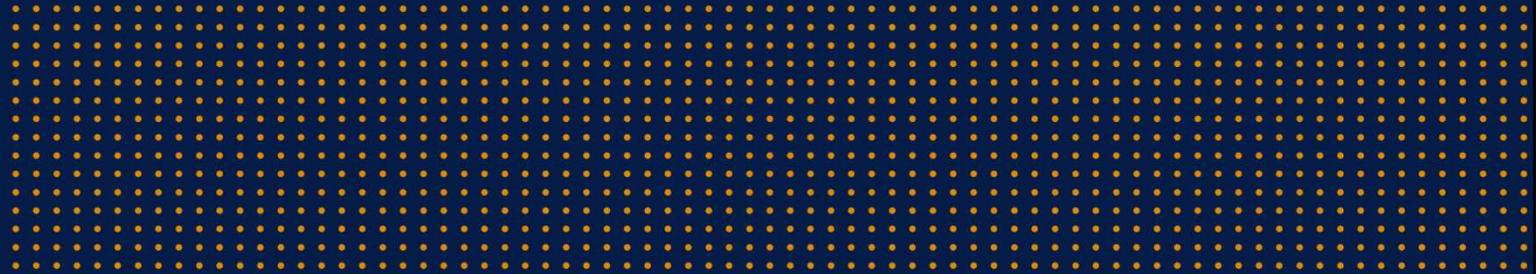
Smart Edge Terminals

Enabling multi-layered networking, local networking and cloud applications





5G and Satellite in a Unified Network



5G: A Global Network Solution

Powers a seamless connection and customer experience across all networks and end-user devices

Networks



Plug and Play



Truly Global



Secure and Reliable



Mass-scalable

← Peer/Roaming Agreements →



← Authentication and Service Delivery →



Industry-standard Equipment

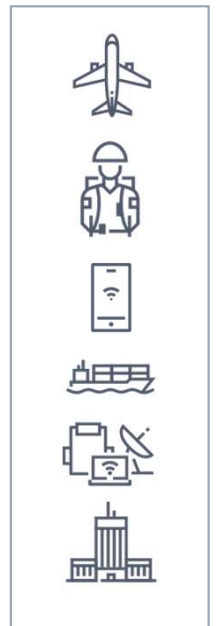


Superior Economics



Flexible and Modular

End-users



Convergence of Satellite and Terrestrial Networks

Full integration of satellite in the telecom ecosystem

Work on non terrestrial networks (NTN) began in 2017 with a study item in 3GPP's Release 15.

Three main categories of use cases for satellite-based NTN exist.



Business continuity



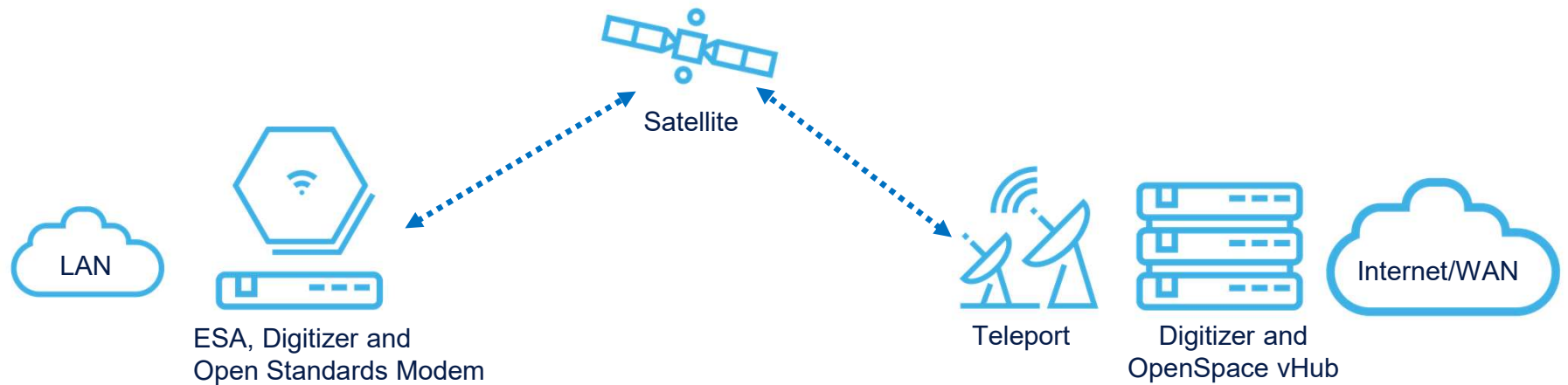
Service ubiquity



Service scalability



Virtualized Platform Development



Next generation open standards platform

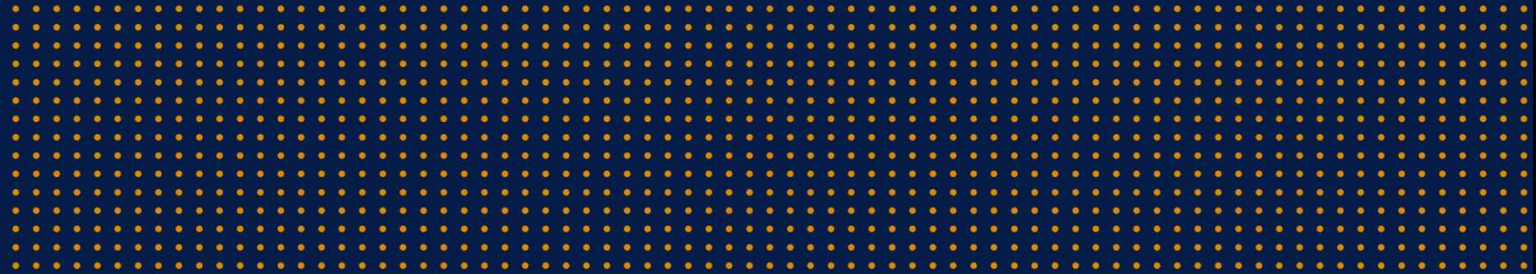
- Fully virtualized and designed to operate on generic compute resources
- Compliant with key industry standards for software-defined networking and orchestration
- Roadmap to native 5G NTN support

Early production system already operational

- Current version is based on DVB-S2X, future version to be based on 5G NTN waveform
- Integration discussions and testing with third-party antenna/terminal partners ongoing



Direct-to-device Satellite Solutions



Direct-to-device Satellite Solutions



New Startups

LEO/MEO Constellations on L-Band or S-Band

Cellphone OEMs too keen to provide this feature

5G

5G ecosystems will be key to the seamless integration of satellite and terrestrial networks.

Regulatory Topics

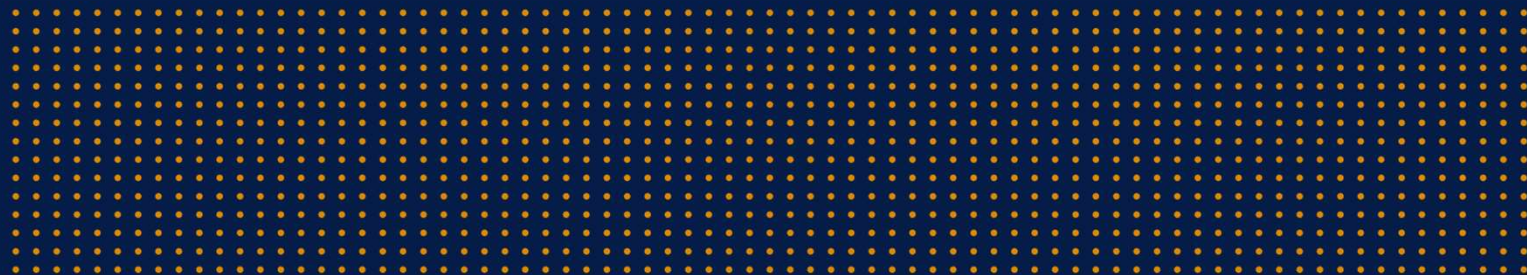
Spectrum

Not able to match traditional VSAT links

Good coverage but low throughput density



Sustainable
yet
Affordable

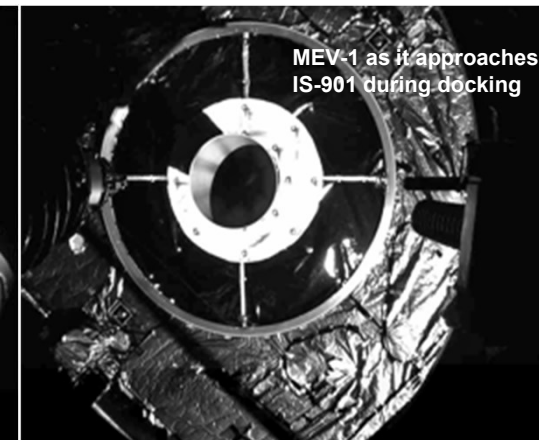


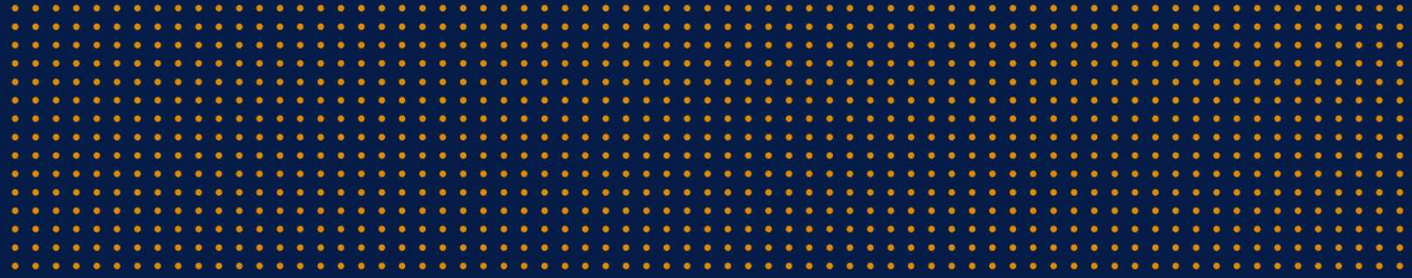
Lets keep Future Generations in mind

Greener Innovations – it is Rocket-Science after all!

- Reusable Launch Vehicles – not just help reduce costs of launches but also help the environment
- Debris-cleaning Solutions from start-ups
- HAPS based on solar power

- Extending the life of satellites – Mission Extension Vehicles
This was the first time ever that two commercial spacecraft docked near geostationary orbit.





Thank you