3GPP Market Representation Partners 5G Vertical User Workshop

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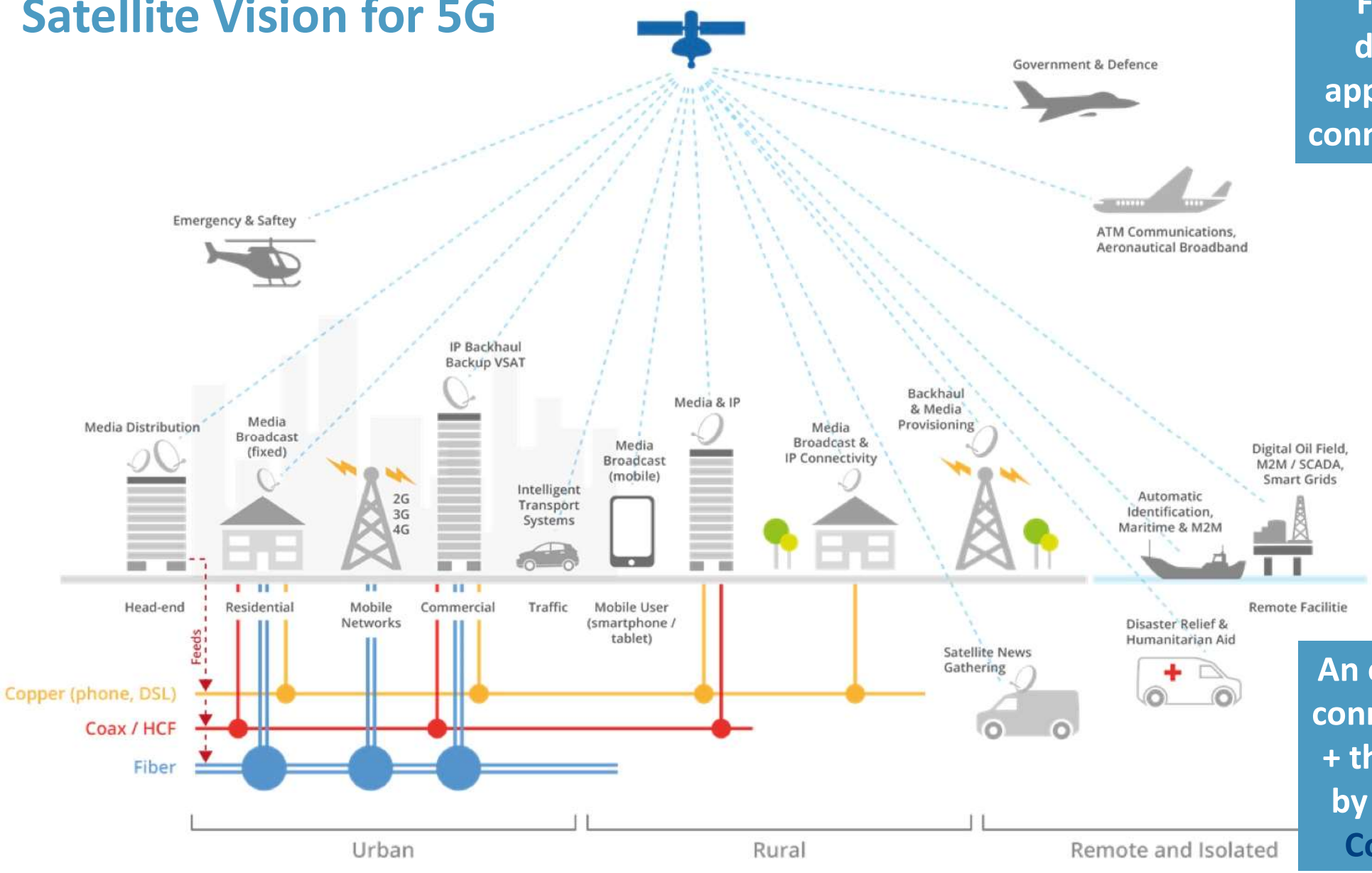
ESOA Members

Satellite Vision for 5G



From a one-dimensional approach of just connecting people

An eco-system of connected people + things enabled by Cross-Sector Collaboration

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Satellites in 5G
Overcoming Important Challenges

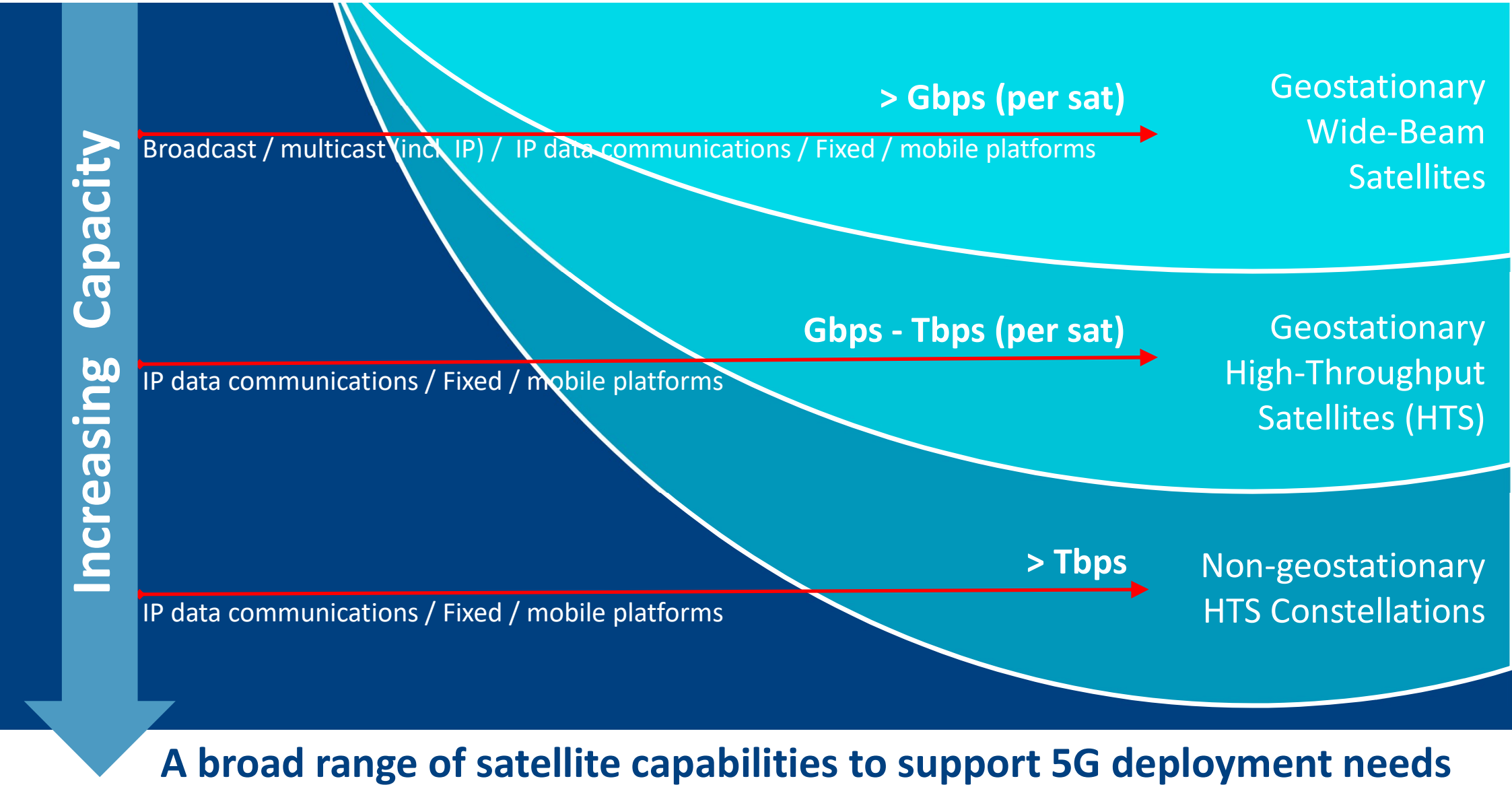
The Satellite Contribution to Address Key Challenges

- **MNOS require huge investment to ensure sufficient roll-out of:**
  - **Terrestrial backhaul links** to deliver ubiquitous / uninterrupted 5G services
  - **State-of-the-art broadband connections** required by homes and SOHO premises located in under-served areas
- **A network of networks will provide sufficient network capacity to ensure a high quality user experience** e.g. for live events, major OS updates, new games, etc.
- **Ubiquitous mobile service is not available to meet the needs of "comms on the move"** e.g. trains, cars, planes, ships including cross border situations

Important obstacles can be overcome by pooling strengths of different technologies

- Investment economics
- Reliability
- Coverage
- Capacity
- Continuity of Service
- Quality of Service
- Network Stability

Evolution in Satellite Systems



A broad range of satellite capabilities to support 5G deployment needs

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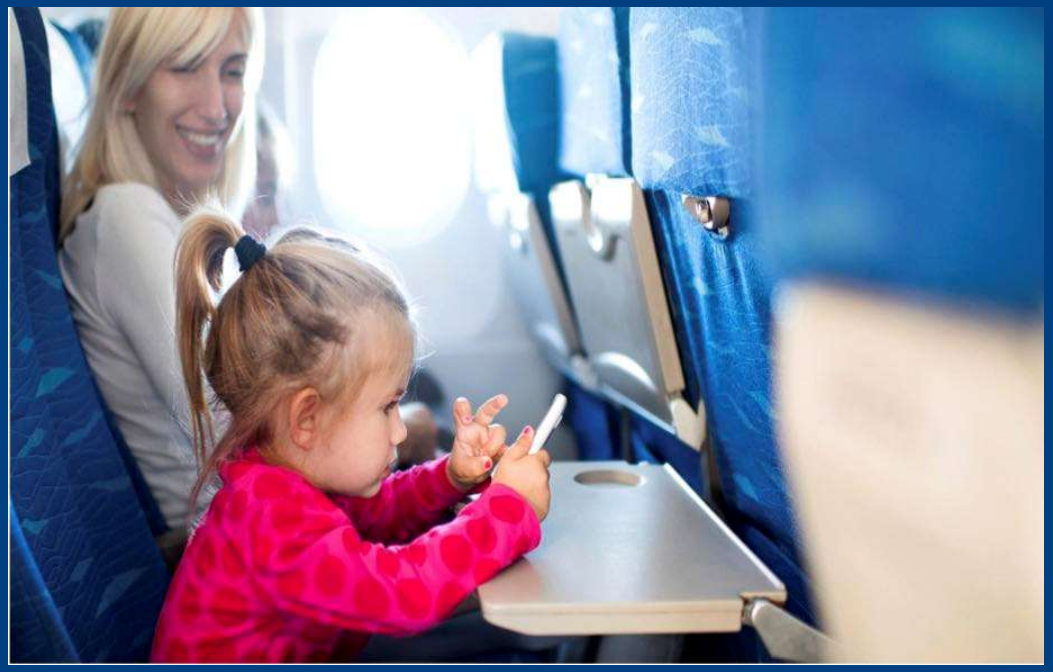
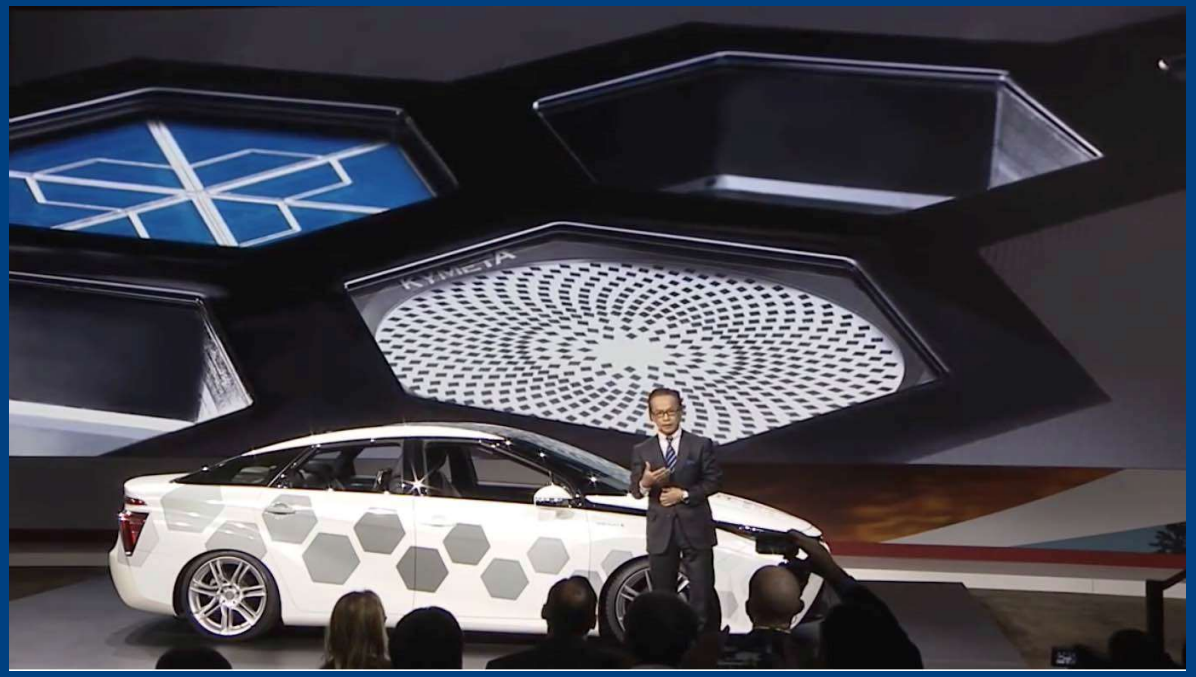
Examples from Satellite: Comms on the Move

Aero Connectivity



Connected Cars



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Expectations from 3GPP 5G Standardisation 1

Inclusion of satellite network solutions into the 5G ecosystem, allowing service commonality with that of terrestrials to support the diversity of 5G vertical requirements such as aeronautical, automotive, healthcare, public safety, energy, disaster relief and more.

Integration:

Of satellite communications systems into the 5G core network to provide secure end-to-end 5G services

Enabling satellite solutions to contribute

To the 5G system so that it meets the proposed IMT-2020 5G Applications and Services requirements

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Expectations from 3GPP 5G Standardisation 2

Satellites have a role to play in enabling 5G networks to be ubiquitous, reliable & scalable:

- For satellite access and transport

ESOA endorses:

- The primary role of 3GPP in delivering a timely & consistent set of technical specifications allowing the development of a global market
- The requirements for the integration of satellite as already established in 5G in TS 22.261

ESOA strongly supports the on-going-work of 3GPP for smooth integration of satellite in both:

- 5G System Architecture (TSG-SA) for short to medium term service deployment
- NG-RAN (TSG-RAN)

ESOA has identified other aspects that will have to be addressed:

- Network management
- Security

ESOA is committed:

To pro-actively contributing to develop these technical specifications & their implementation on associated products & markets working closely with the MNOs/3GPP members for successful standardization & integration