

# Satellite Capabilities to Maximize 6G Benefits

ETSI/ESA 6GNTN Workshop

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# EchoStar

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- **EchoStar** (Nasdaq: SATS) is a multibillion-dollar public company and a premier global provider of satellite communication solutions
- A geosynchronous (GEO) fleet of ten Ku, Ka, and S-band satellites (seven owned and three leased)
- Holds ITU rights for a global S band MSS NGSO system and licenses for S band MSS services across the globe
- Recently launched EchoStar XXIV/JUPITER 3, a Ka and V band satellite network for broadband services – the largest communications satellite ever built and deployed



**Active 3GPP member and major contributor to development of NTN-NR and NTN-IoT Standards**

# Overall 3GPP NTN

- Satellite integration in the 3GPP ecosystem is the outcome of collaboration among mobile and satellite industries, bolstered by support from various verticals such as public safety, transport, automotive, and more...
- Technical Specifications for Non-Terrestrial-Networks (NTN) now established and defined – important breakthrough in 3GPP (EchoStar key contributor)

*Satellites operating 3GPP NTN standards in FR1 can deliver services directly to user handheld devices like smartphones, as well as IoT devices integrated into terrestrial or cellular systems (RP-232732)*

GSOA GLOBAL SATELLITE OPERATORS ASSOCIATION		3GPP NTN Based Satellite Network Deployment Plans			
Matrix of industry initiatives/areas of interest led by satellite network operators for the different deployment scenarios:					
Space Segment	Narrowband connectivity to IoT devices (NTN-IoT in FR1)		Narrowband/Broadband connectivity to handheld devices (NTN-NR in FR1)	Broadband connectivity to non-handheld devices (VSAT) (NTN-NR in above 10 GHz Band)	
	Re-use of existing GSO	NGSO	NGSO	GSO	NGSO
Operators	EchoStar Viasat-Inmarsat TerreStar Solutions	Sateliot EchoStar OmniSpace Viasat-Inmarsat	EchoStar OmniSpace Viasat-Inmarsat SES	Intelsat Eutelsat- <u>Oneweb</u> Viasat-Inmarsat SES	Intelsat Eutelsat- <u>Oneweb</u> Viasat-Inmarsat SES
Timeline Indication	2023-2025	2024-2029	2026-2029		

# NTN/Satellite a Critical Asset

- NTN/satellite already integrated into the 5G ecosystem, critical asset for the development of 6G
- A combination of TN and NTN is the optimal approach to ensure 5G and 6G are universally accessible, to users worldwide
- Inherent resilience features of satellite enable networks provide reliable and continuous connectivity, even in challenging environments or unexpected events



*The only viable way to ensure universal access to 5G and 6G is through a combination of terrestrial and Non-Terrestrial Network (NTN) infrastructure*

# Key to Realizing Promise of 6G

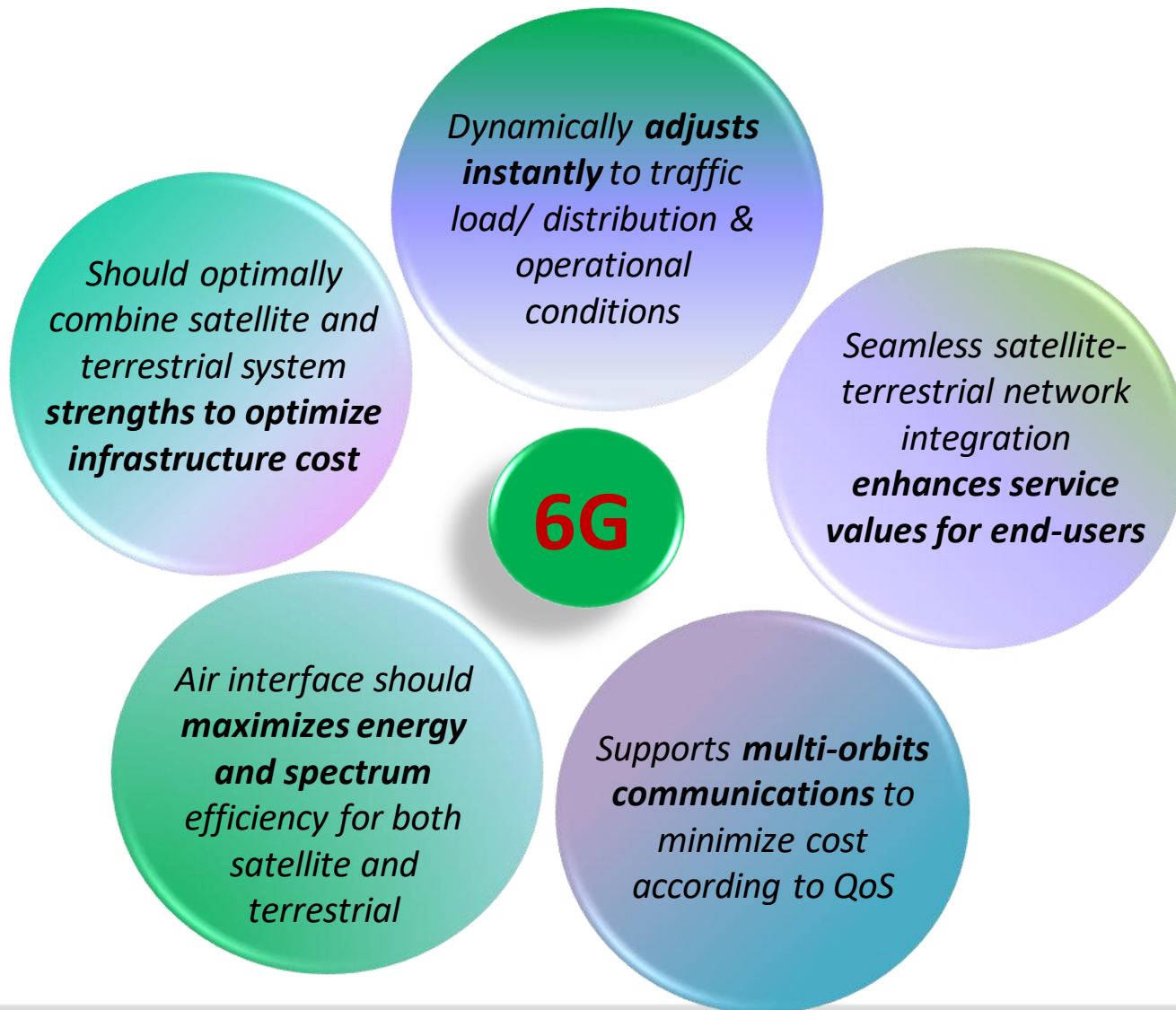
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- **Global Coverage:** Satellites facilitate connectivity across all regions of the world
- **Meeting Connectivity Requirements:** Satellites serve as complementary solution to terrestrial networks, in areas where it is otherwise unavailable
- **Resilience:** The inherent resilience of space-based networks, 6G networks can become the most robust ever, unified through NTN and TN technologies
- **Accelerating Deployment of Networks:** Satellite usage can bridge technology adoption gaps between urban and rural areas, connecting populations, boosting economies, and accelerating development goals, thus averting a potential 6G divide
- **NTN in the 6G era** can expand beyond satellite direct-to-handheld/smartphone or IoT devices to include broadband services via VSAT, access to AI/ML, and various other applications

*Societal impact of 6G will be maximized by fully leveraging multiple communication technologies*

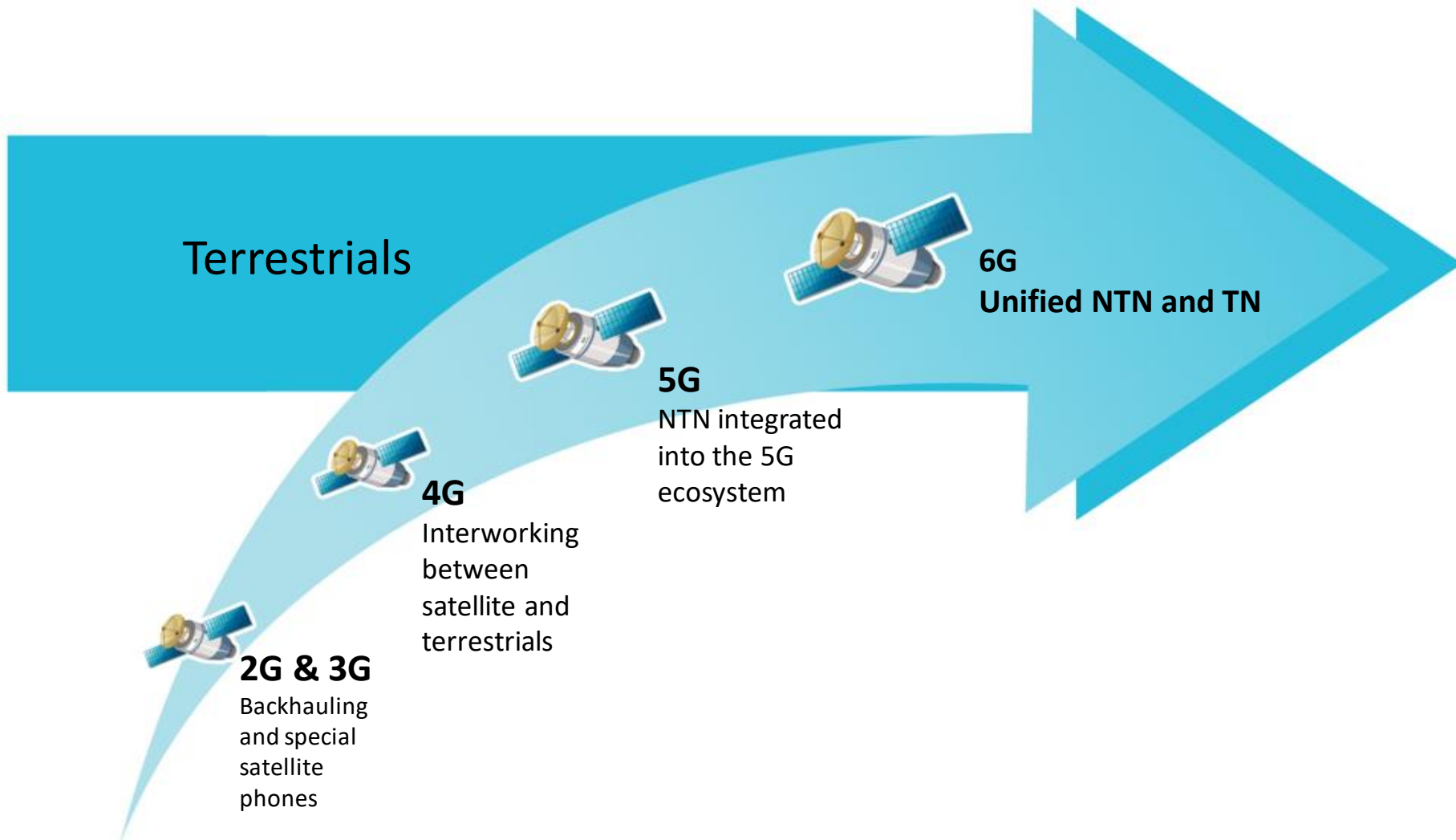
# Satellite/NTN - Maximize 6G Benefits

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# For 6G to Be Successful - Satellite Must Be a Key Component of IMT-2030

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# Thank You

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