

# Delivering the Next Generation of Data

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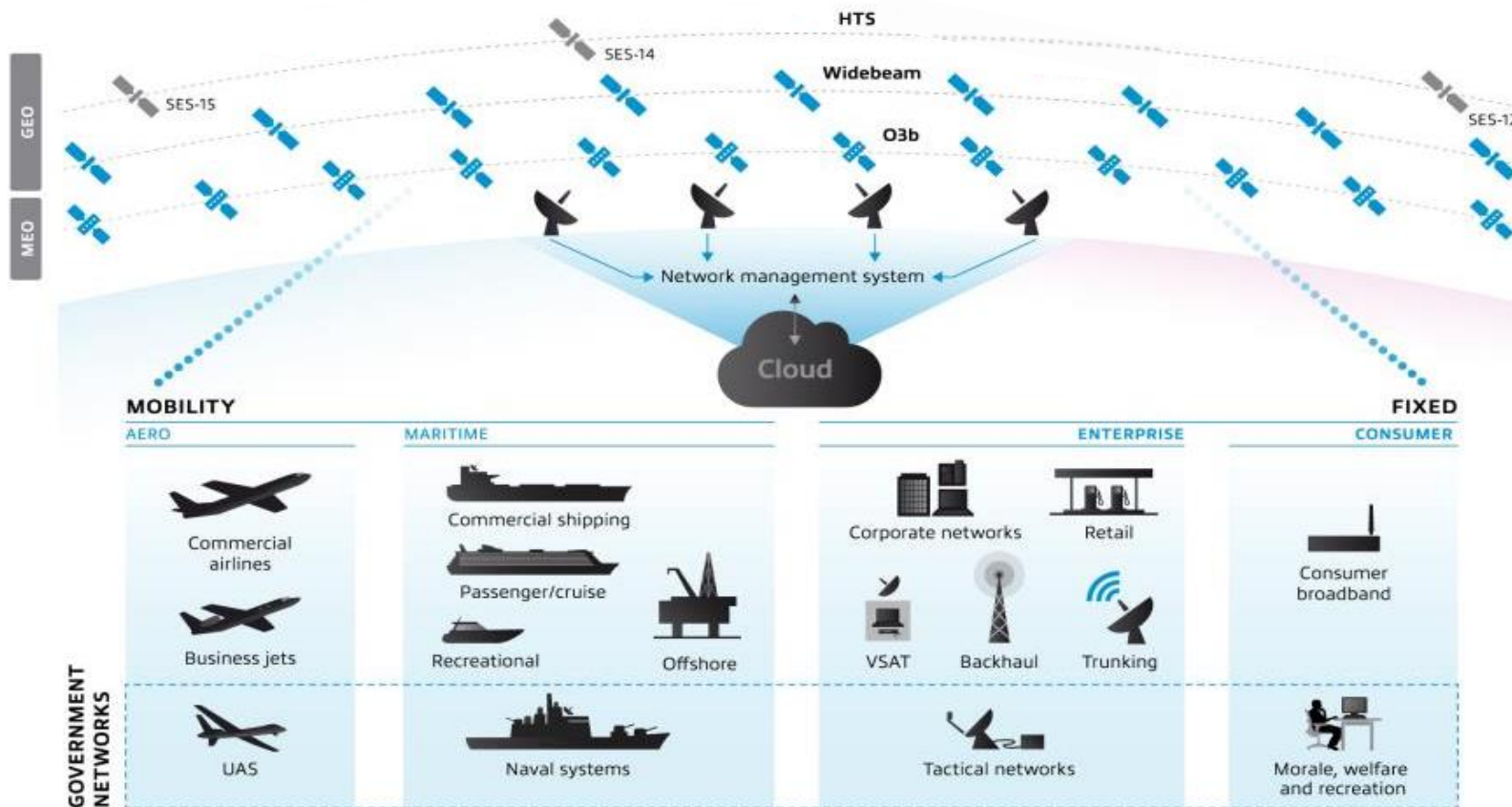
# Summary

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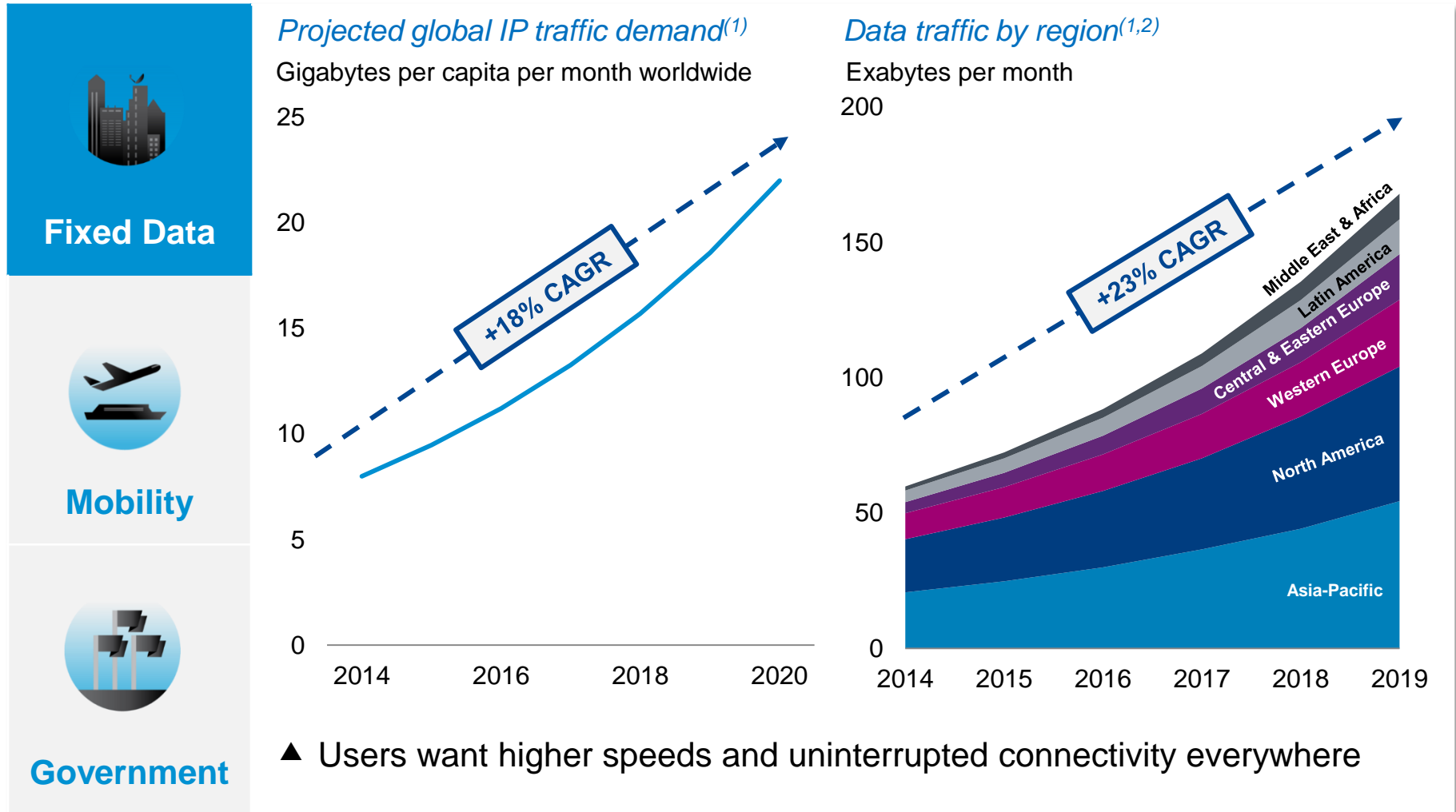
- ▲ Proliferation of global data usage/applications represents a significant growth opportunity
- ▲ Commonalities across data verticals support a global, integrated satellite-enabled solution
- ▲ SES is an important provider of data solutions/services
- ▲ SES building differentiated capabilities to serve major global data requirements

# Proliferation of global data applications

## Next Generation Data (NGD) ecosystem



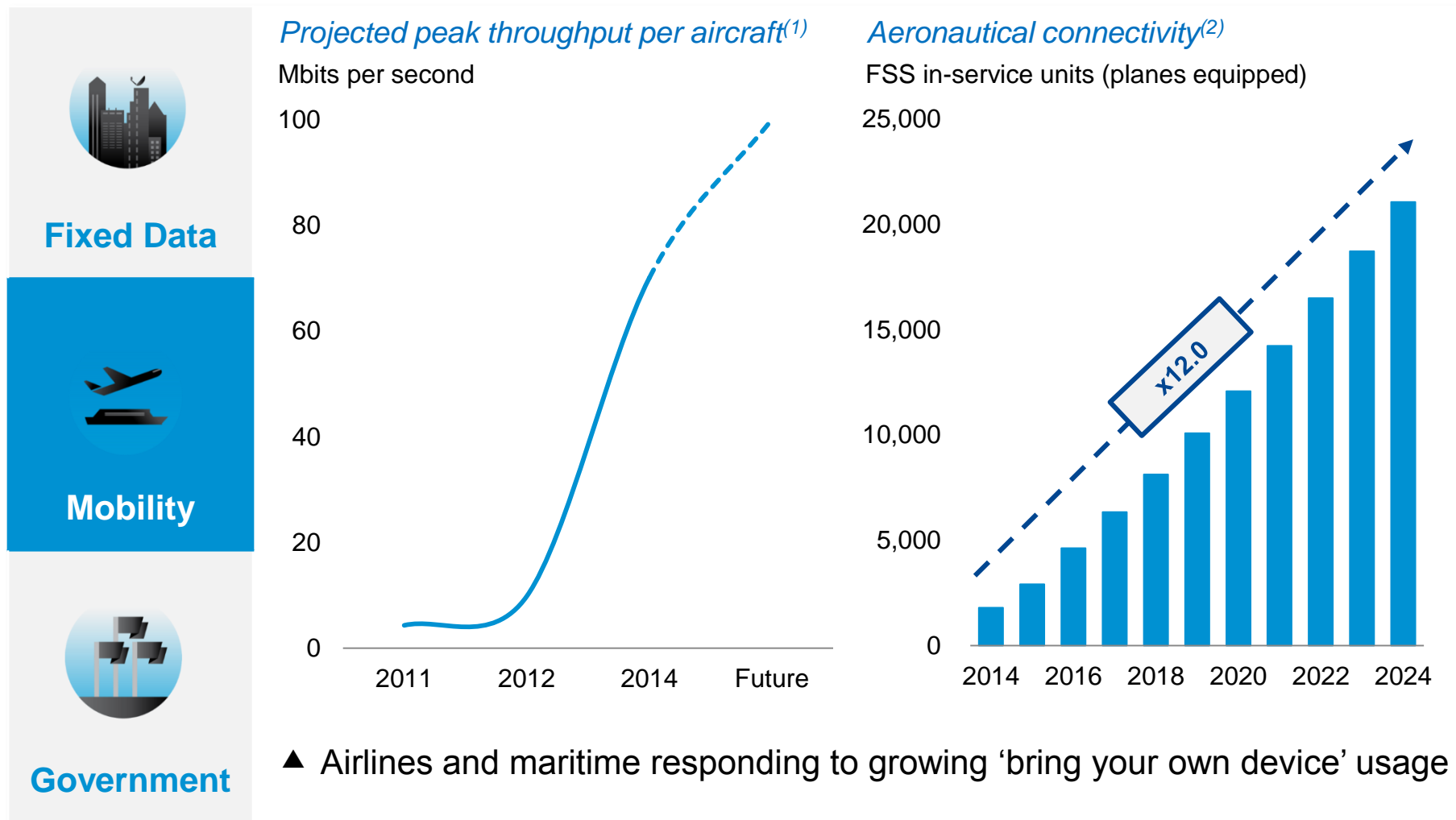
# Broadband becoming a universal requirement



1) Cisco VNI

2) One exabyte equals one billion gigabytes

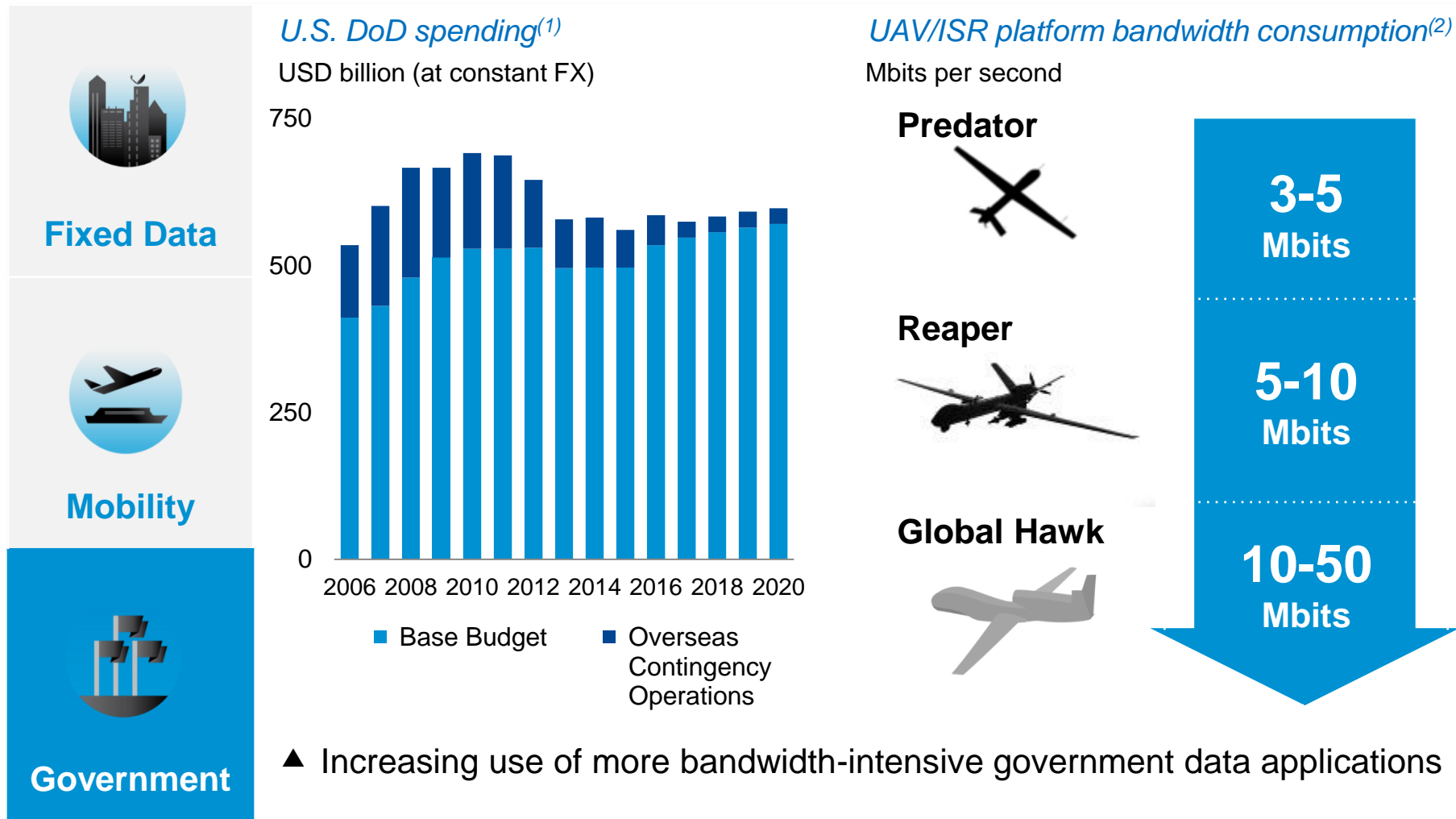
# Growing demand for mobile connectivity



1) Source: Gogo, SES Analysis

2) Source: NSR (Ku-band and HTS in-service units)

# Governments expanding their data requirements



1) Source: US Congressional Budget Office  
2) Source: SES Analysis

# Positive growth outlook across data verticals

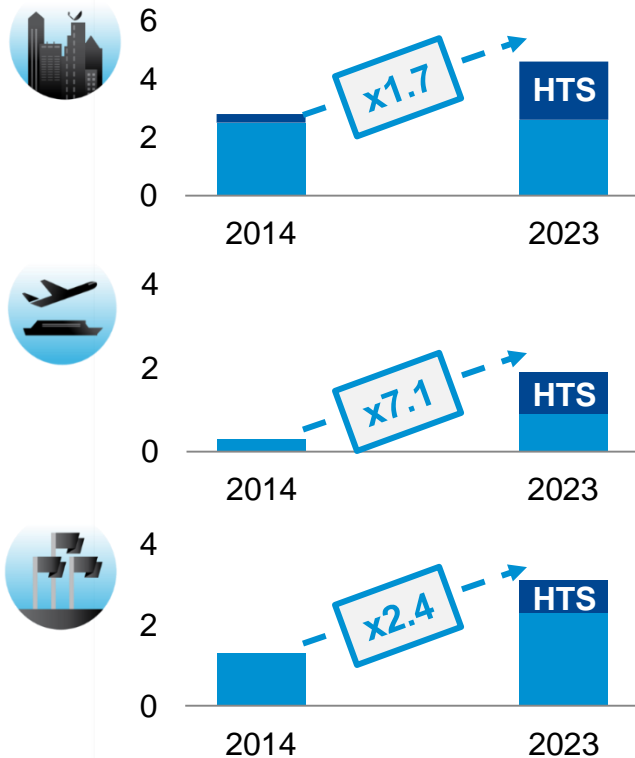
## Infrastructure Provider

## Network Platform

## Data Services Provider

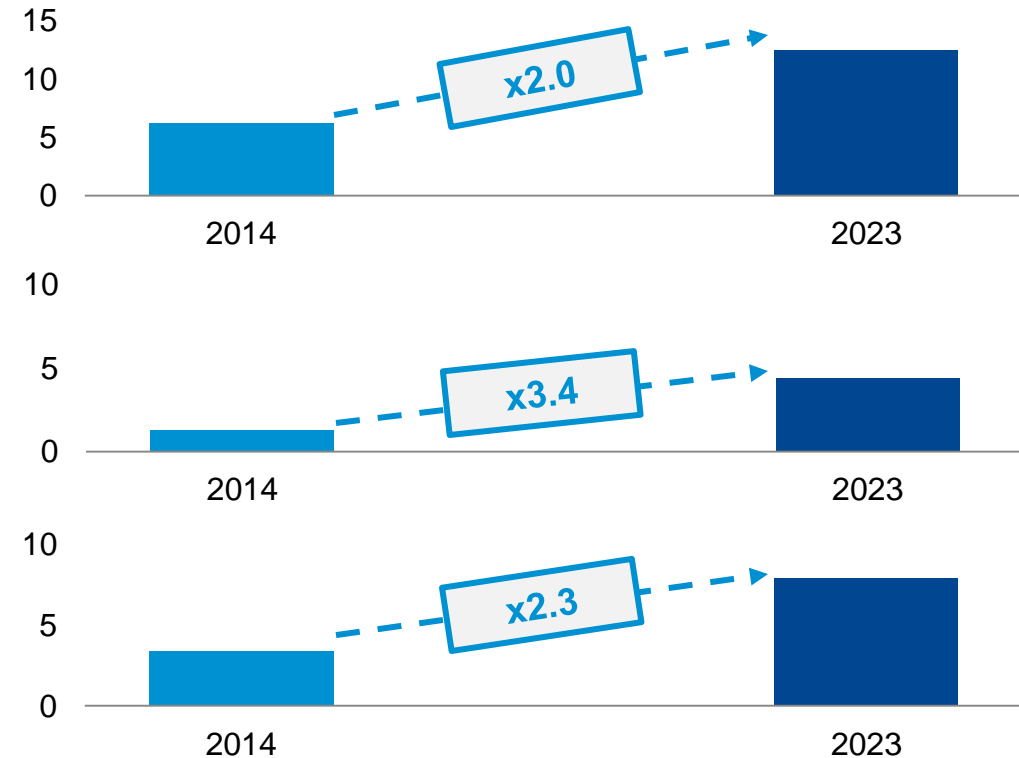
Satellite capacity revenue<sup>(1)</sup>

USD billion



Network Platform and Service provider revenue<sup>(1)</sup>

USD billion



1) Source: NSR

# Commonalities exist between data verticals

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## *Cross-vertical commonalities*

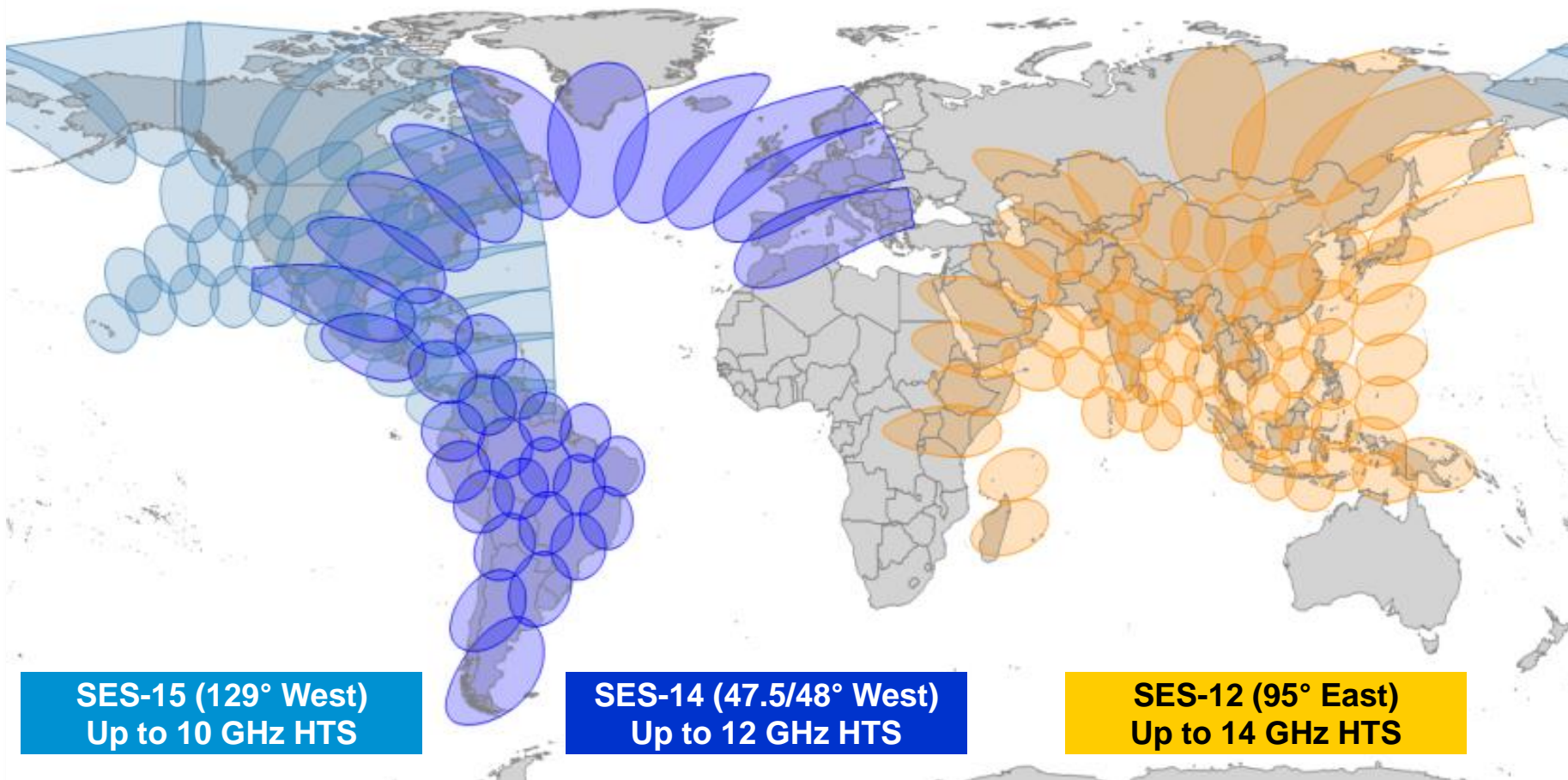


- ▲ Most customers want global/quasi-global coverage and capacity
- ▲ Higher throughput and improved cost efficiency, enabled by HTS, is essential
- ▲ Both GEO HTS and O3b can play a key role in shaping each vertical
- ▲ Network/platform layer critical to possess beyond 'raw' MHz
- ▲ Value chains across each vertical are adapting and evolving
- ▲ Co-development of solutions with customers is essential



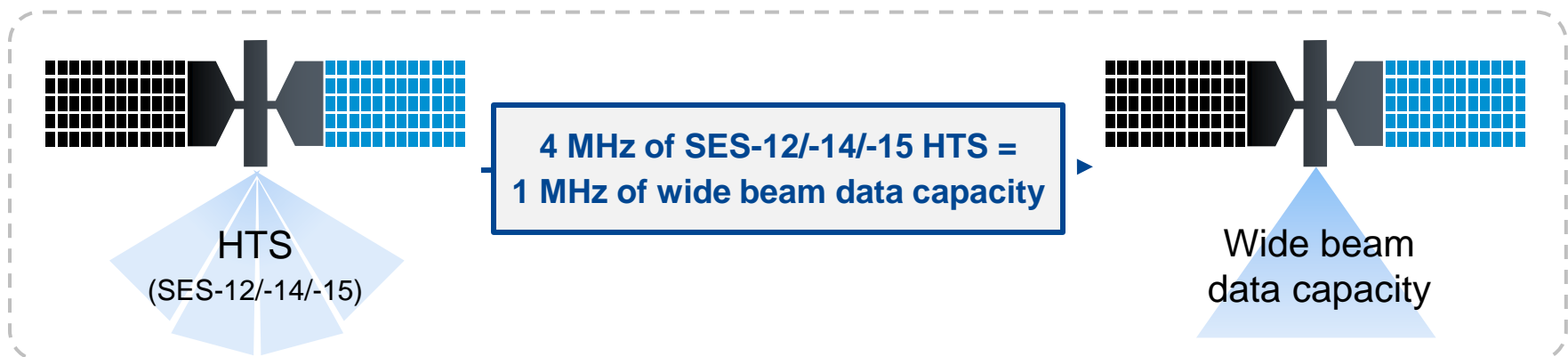
# Providing a global HTS platform

*SES-12, SES-14 and SES-15 HTS spot beam footprints*



# HTS delivers a more competitive data solution

- ▲ Spectrum re-use via spot beam architecture expands available capacity
- ▲ Reduces unit transmission costs
- ▲ Revenue modelling of HTS capacity on SES-12/-14/-15 can be done as follows:
  - Total supply of HTS capacity is measured in MHz (not Mbit/s); e.g. SES-12 = 14,000 MHz (14 GHz)
  - Assume HTS payload has same maximum revenue potential as one quarter of traditional wide beam data capacity (e.g. SES-12's HTS payload equivalent to 3.5 GHz of wide beam capacity, or 97 TPEs)
  - Timing of ramp-up and typical fill rate also equivalent to wide beam capacity

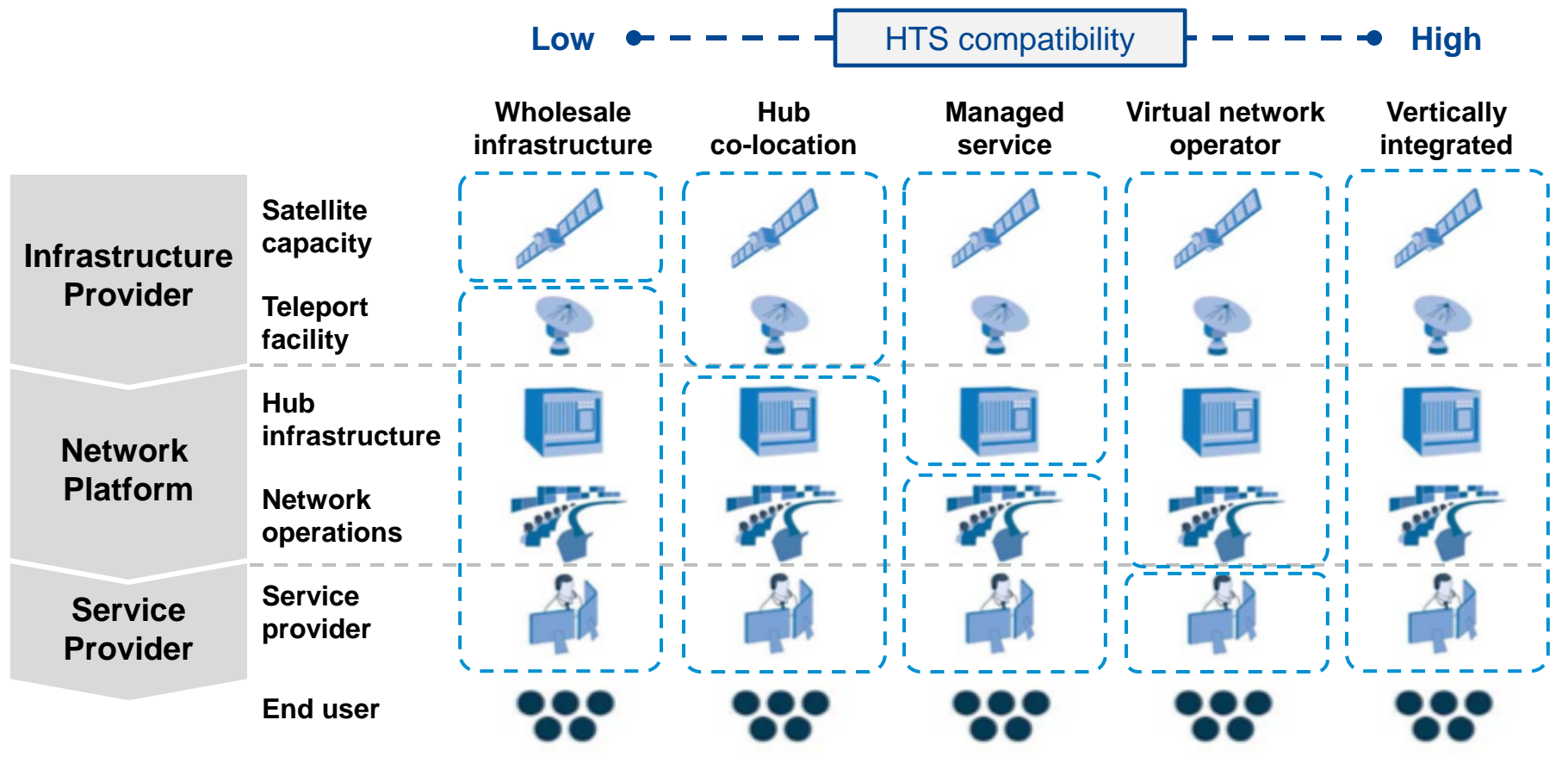


# HTS (GEO & MEO) appeals to a range of customers

		GEO wide beam	+ GEO HTS	+ MEO HTS
	Broadcast	<input checked="" type="checkbox"/>		
	Enterprise VSAT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Mobile backhaul 2G	<input checked="" type="checkbox"/>		
	Mobile backhaul 3G/4G		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Oil & Gas, Mining	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Trunking			<input checked="" type="checkbox"/>
	Consumer broadband		<input checked="" type="checkbox"/>	
	Aeronautical	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Maritime	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	U.S. Government	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	International	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

# HTS requires integration of network/platform layer

Models for addressing the Next Generation Data value chain<sup>(1)</sup>

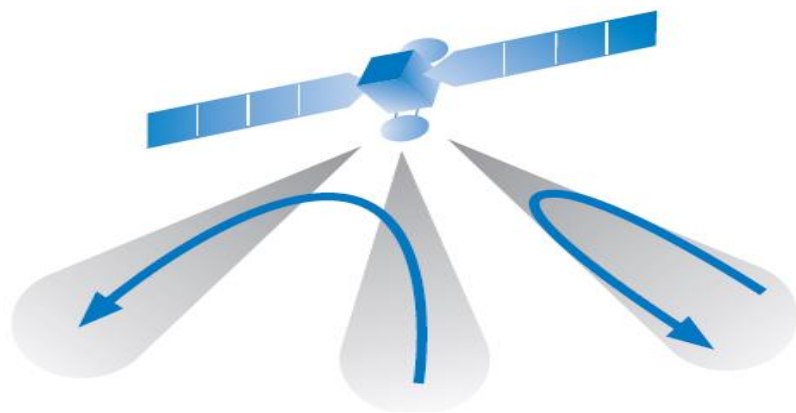


1) Source: IDirect

# Building a Government satellite

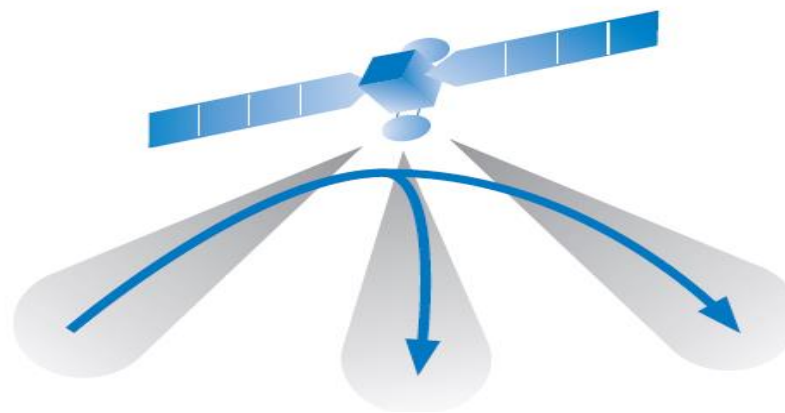
SES-16/LuxGovSat

Beam-to-beam and In-beam connectivity



Anchor Beam      Mission Beam 1      Mission Beam 2

Beam-to-multi-beam connectivity

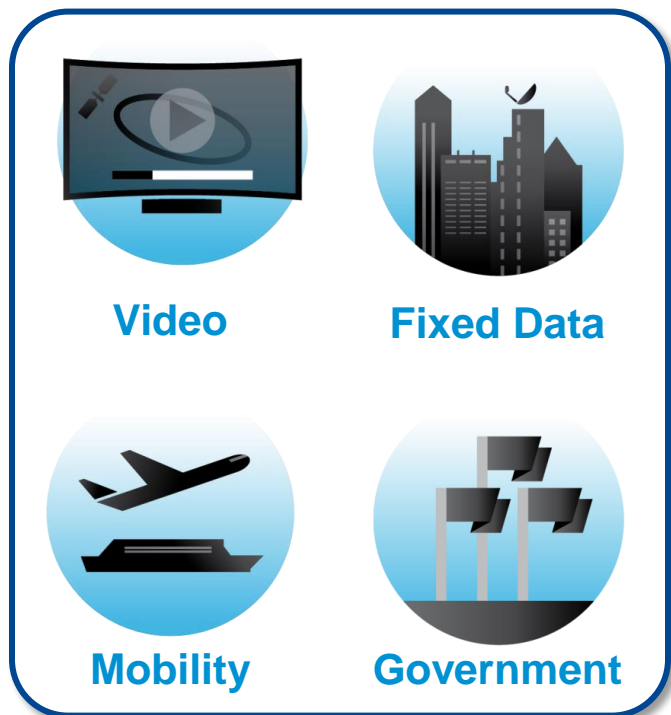


Anchor Beam      Mission Beam 1      Mission Beam 2

- ▲ Government satellite carrying X-band and military Ka-band transponders (68 TPE)
- ▲ Multiple, high powered, fully steerable global spot beams
- ▲ Robust design featuring selective antennas and anti-jamming system
- ▲ Creating opportunities in military bands over strategically important geographic areas
- ▲ Innovative investment structure together with Luxembourg Government

# Conclusion

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- ▲ Evolving NGD environment represents a significant growth opportunity for SES
- ▲ Providing differentiated capabilities across three key data verticals
- ▲ More efficient and affordable HTS capacity an essential part of the NGD offer
- ▲ Strengthening SES's value chain position
- ▲ SES's GEO infrastructure, highly complemented by O3b's MEO HTS services

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