



Satellite Direct-to-Device

Indian Space policy Conference

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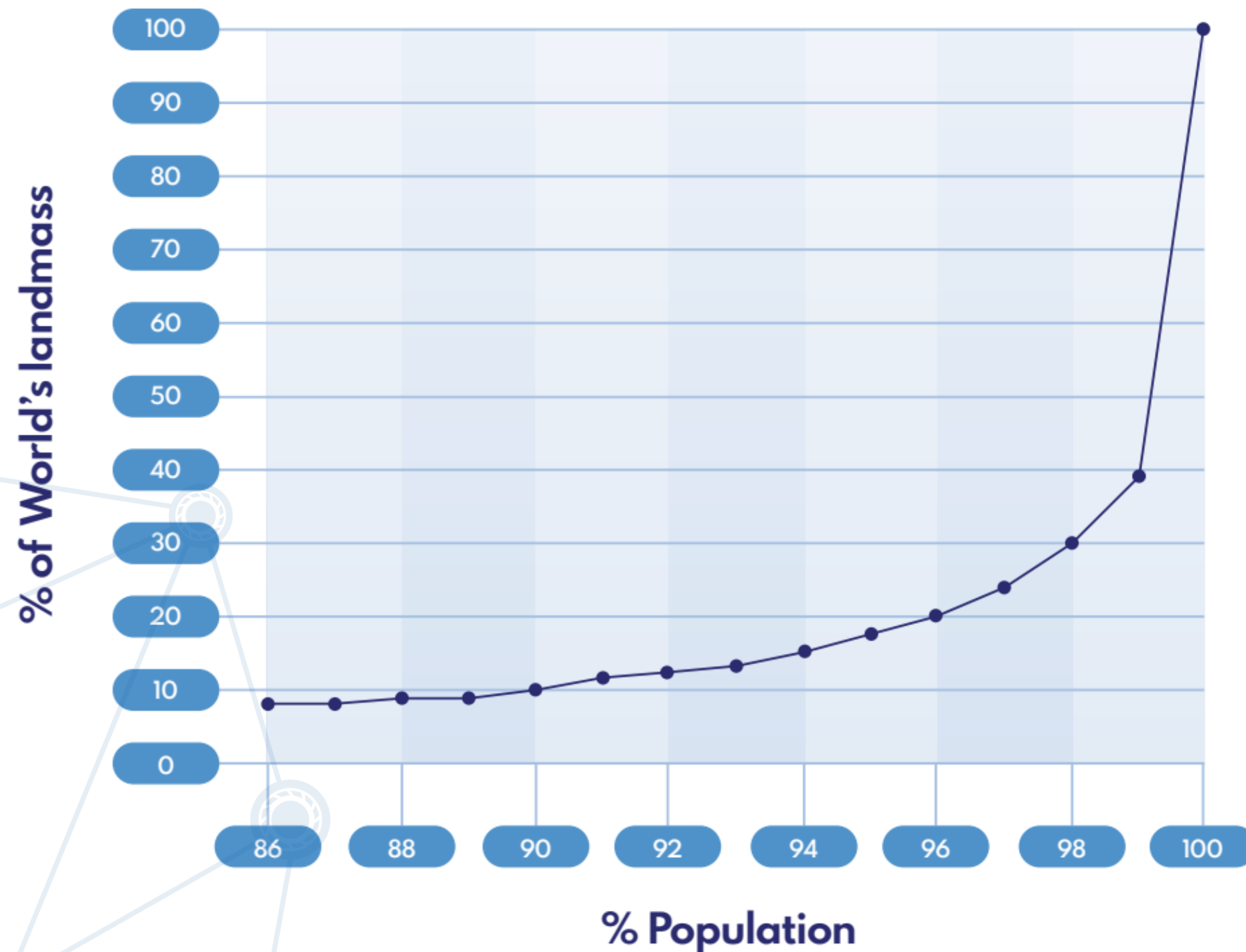
Global Association Representing the Entire Satellite Industry



GSOA provides a platform for collaboration between member companies involved in the satellite ecosystem globally and a unified voice for the sector

Economics of Digital Divide and Diminishing Returns

World's population distribution



Source: UNdata

Terrestrial solutions currently cover 96% of the population using infrastructure deployed across 20% of the landmass.

Extending this coverage to 99% would necessitate doubling the terrestrial infrastructure footprint to 39%.

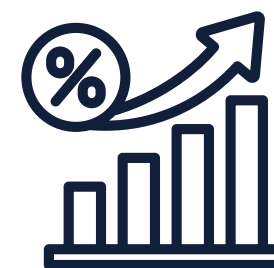
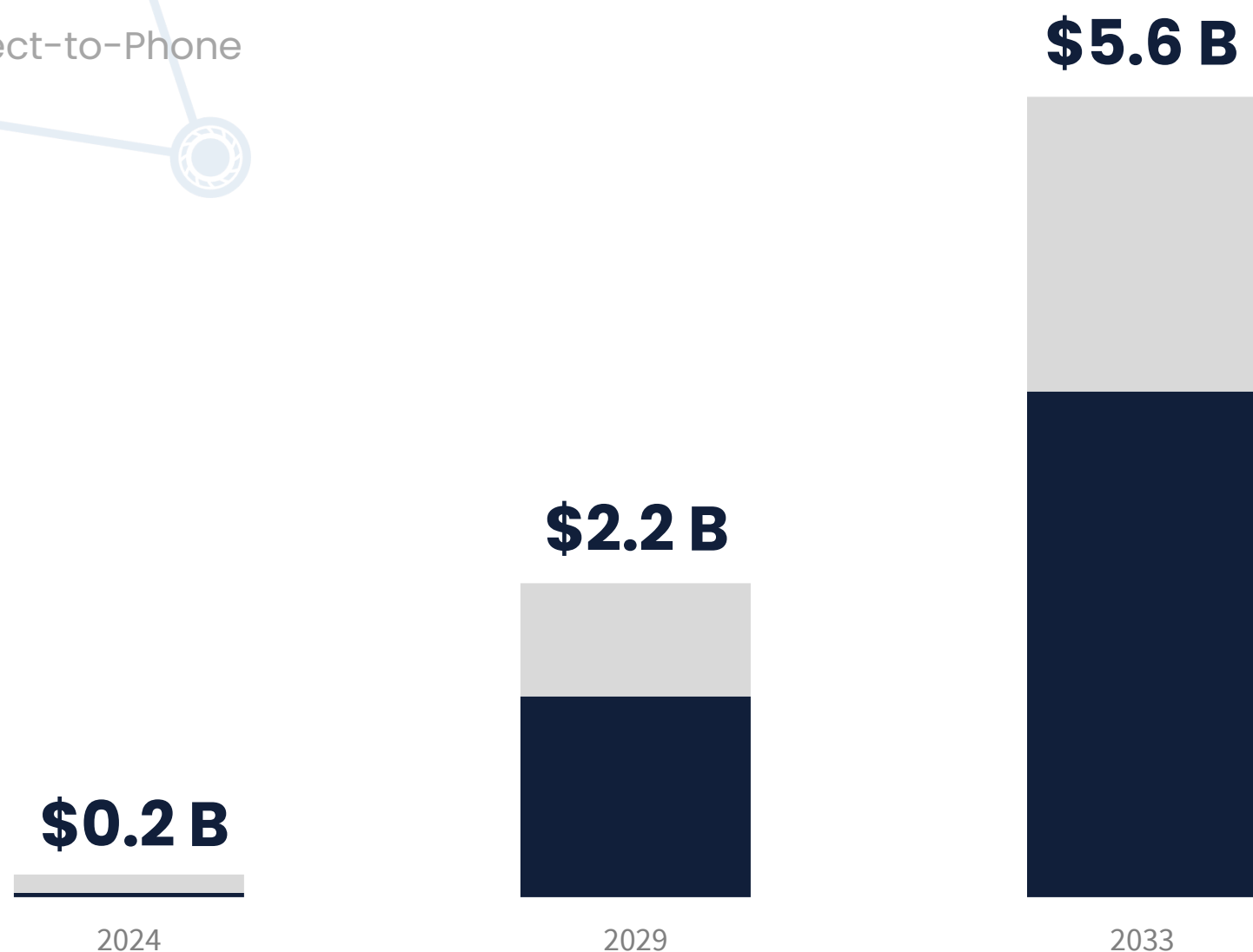
Achieving 100% requires a multiple increase in current investment.

Direct-to-phone and IoT upside opportunities

With the rise of 5G NTN and increasing convergence of satellite and cellular technologies, direct-to-phone connectivity and satellite-cellular IoT applications represent ~\$5.6B revenue opportunity in the coming decade.

Service Revenues in APAC

■ Direct-to-Phone
■ IoT



~50%

CAGR growth (2024-2033) in overall service revenues in the region



>60%

Of 2033 service revenues attributed to Direct-to-phone applications



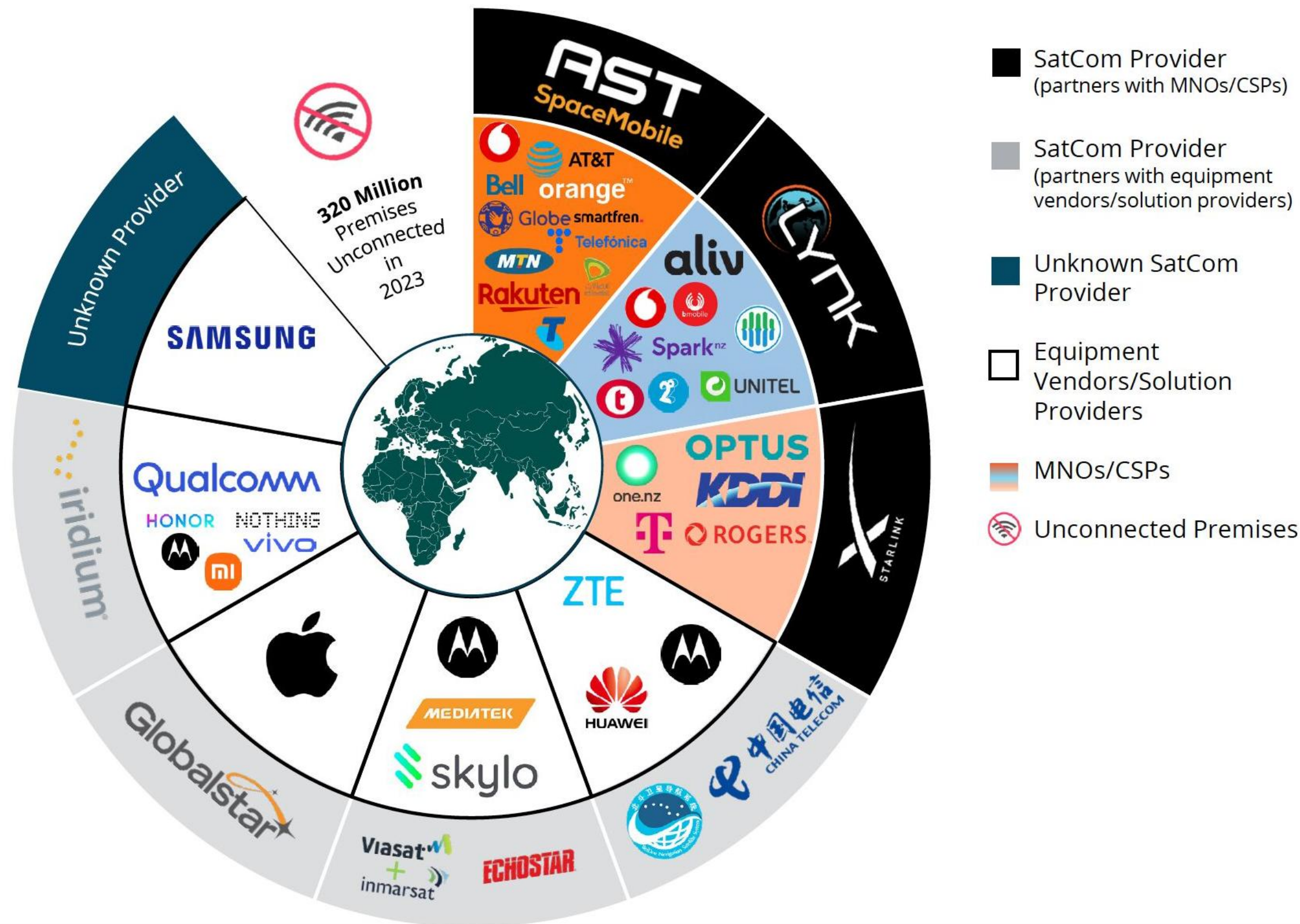
~15x

Increase in IoT revenues over 2024-2033 attributed to satellite and satellite-cellular IoT

Note: Direct-to-phone capture connectivity for users that are 'Unconnected' and are 'Out-of-coverage'. IoT revenues are attributed to satellite IoT and satellite-cellular IoT;

Source: 'Prospects for Direct-to-Handheld and IoT Markets' Report by Novaspac

Existing Satellite-Mobile Partnerships



At the end of 2024, up to 3% of the ~7 billion active smartphones support D2D, most of them using proprietary solution



Two Variants of D2D



D2D in MSS bands

- Uses spectrum allocated to Mobile Satellite Service
- Leverages 3GPP Release 17 and later NTN specifications
- Existing MSS framework widely adopted
- Support L- and S-Band, and Ka- Ku in future release
- Additional MSS spectrum allocations studies in WRC-27 Agenda Items 1.12 and 1.14

Challenges:

- Needs mobile chipset vendors to include those 3GPP bands

D2D in Terrestrial bands

- Uses terrestrial IMT spectrum < 3GHz
- Can use off-the-shelf mobile handsets
- Requires partnerships with MNOs
- Complements existing mobile coverage
- Coexistence being studied under WRC-27 Agenda Item 1.13
- Some national regulation exists (US, Australia,...)

Challenges:

- Interference management between MNOs and satellite operators
- International regulatory hurdles

Thank You!

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