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Satellite and Non-Terrestrial Networks Summit

NTN Broadband: coming to a place near you

Hosted by GSMA Intelligence

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GSMA Intelligence

Who are we? What do we know?

GSMA Intelligence is the definitive source of mobile industry insights, forecasts, and research, used around the world. Our insights cover every mobile operator, network, and MVNO in every country worldwide.

COMPREHENSIVE
DATA PLATFORM

INSIGHTFUL
RESEARCH

EXPERT
ANALYSIS

BESPOKE
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BY THE NUMBERS

7/10

of Forbes' Top digital
companies worldwide, rely on
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50m+

individual datapoints covering
everything from operational to
economic

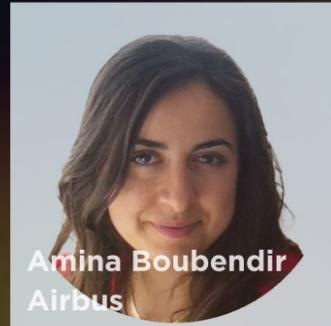
4,600+

networks tracked, spanning
every country

9/10

of the top Telecoms in the world
work with GSMA Intelligence

Speaker Line up



Why satellite matters in 2024

IT WORKS, AND IT'S HERE

Pragmatism

- **Filling the gap.** The economics are prohibitive for extending land networks to reach the 7% of people still in a coverage gap. Satellite is the only feasible option.
- **P&L.** Satellite's economics have made backhaul more competitive than previously. Revenue upside exists in the consumer and B2B segments.
- **Proof points.** Despite momentum, proof points remain key for product and pricing strategy.

Tapping new revenues

- **Consumers.** Revenues will come from extended roaming tariffs and new subscribers. GSMA Intelligence estimates this to reach \$20–25 billion per year by 2035 (two thirds of the total satellite-enabled connectivity revenue available to telecoms operators).
- **B2B.** This is the newest and fastest growing dimension in the operator revenue opportunity. This targets IoT service to a range of industries, with a forecast of around \$10 billion per year by 2035 (just under a third of the total).

Laying the groundwork for the long-term

- **NTN standards.** 3GPP standards now incorporate NTNs, vastly increasing the addressable universe of devices.
- **Fragmentation.** Risks remain if prominent hold-outs such as Starlink and Kuiper continue to pursue proprietary models.
- **Devices.** D2D service continues to be a model major companies are pursuing. However, this depends on if and when device OEMs incorporate functionality, presenting a competitive choice.

Space is (still) getting more crowded

Context and why now

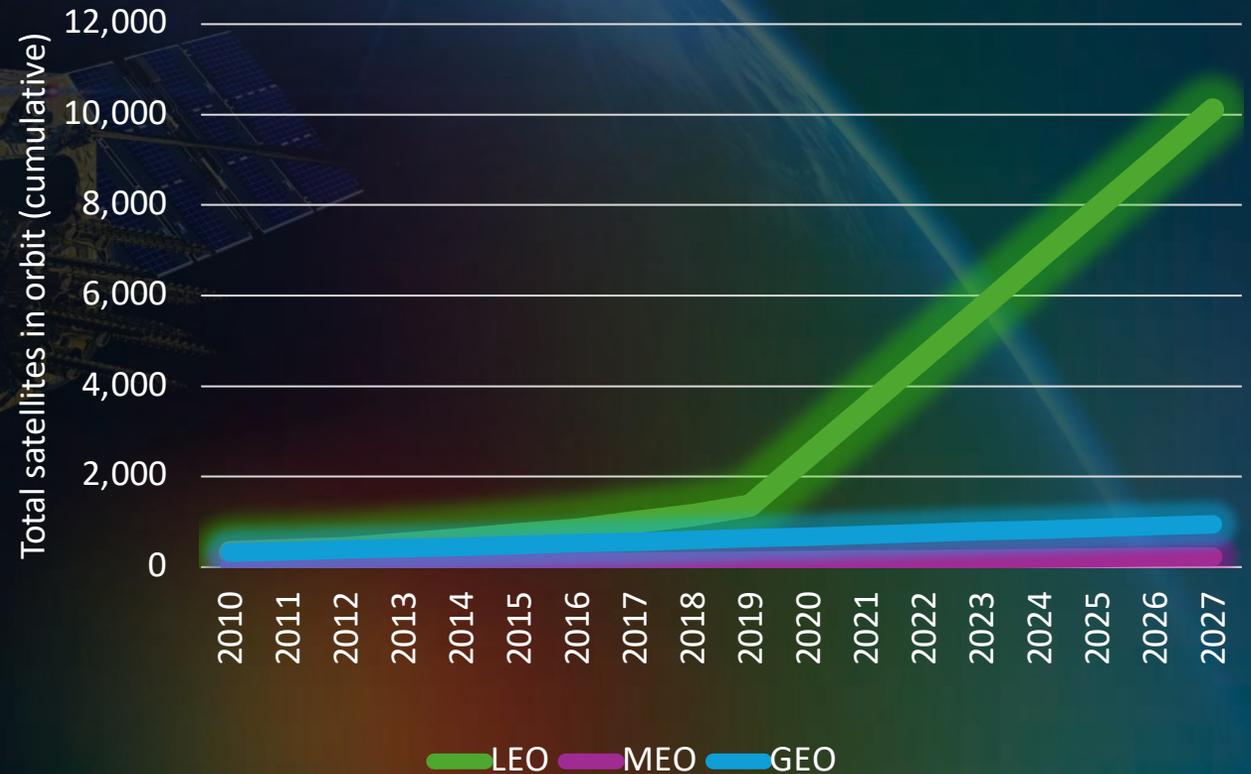
- LEO constellation explosion. Total satellites in orbit will be 10x pre 2020 levels by end of decade
- Driven by improved satellite economics and performance
- Telco demand growing

Manifold use cases

- Consumer = unconnected, roaming, emergency service
- IoT/Industrial sell in coming into frame across several industries

Satellite is exploding, driven by LEO volumes

Source: Union of Concerned Scientists (UCS), GSMA Intelligence



Commercial launches gather momentum

Trials and deals

2022 and 2023 was spent on trials and pilots

Shifts and launch activity

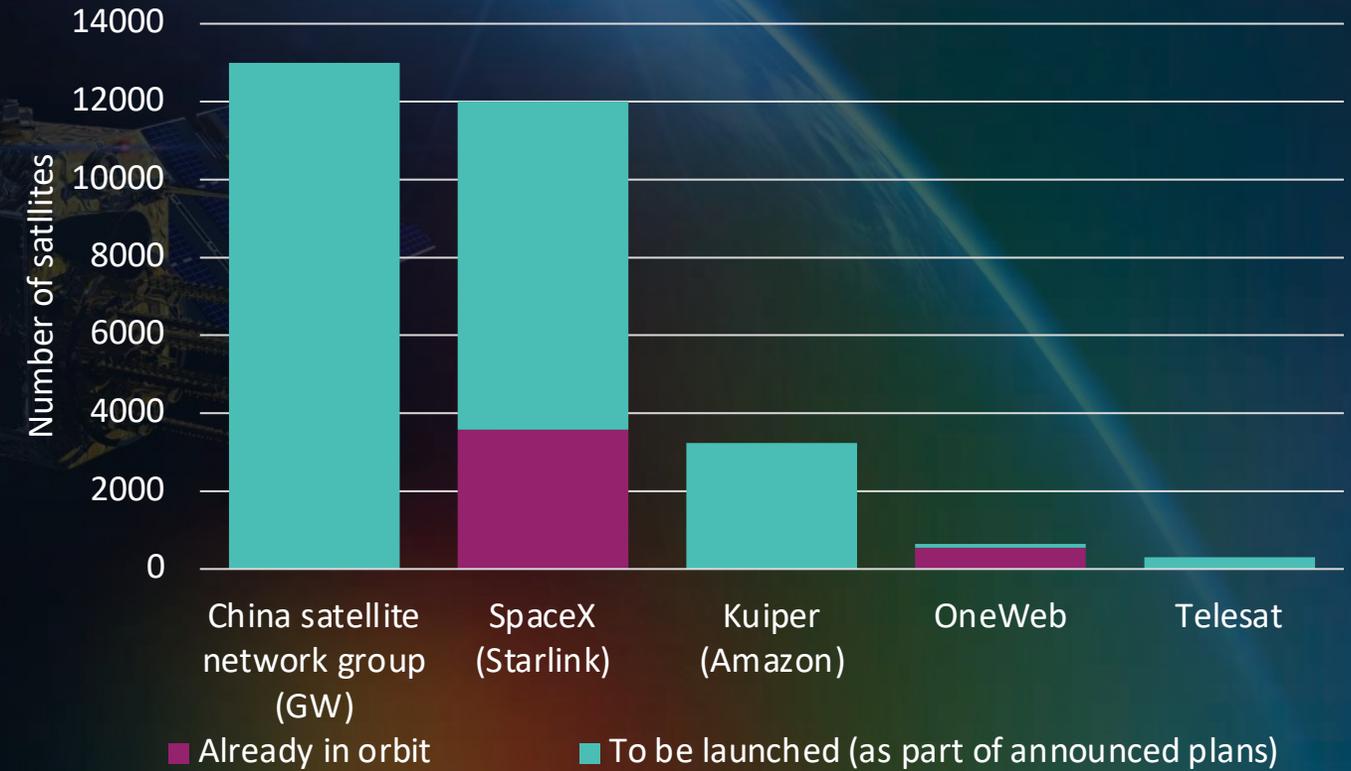
Many of these trials are still active but 2024 will see a transition to commercial launches

Burgeoning competitive landscape

- Starlink maintains a first-mover advantage. Huge forward capacity (application pending)
- However, this is a crowded field, with Amazon, OneWeb (now owned by Eutelsat) and others in pursuit

Starlink and OneWeb are the global leaders in LEO

Source: GSMA Intelligence



Consumers: extending coverage

Coverage

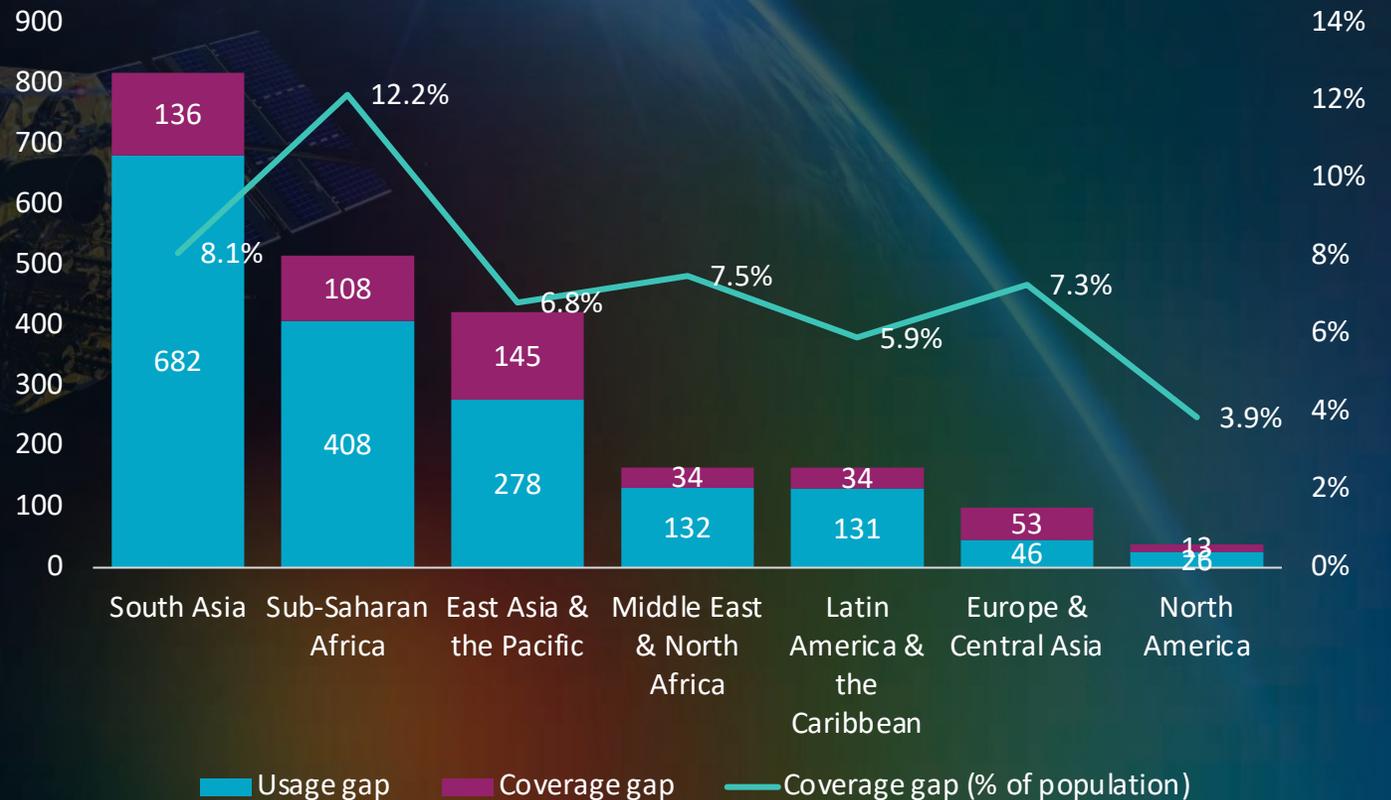
- It can be easily overlooked that around 7% of the world's population still lives outside the range of a mobile network fast enough to deliver mobile broadband speeds (3G/4G)
- Africa highest (as % of pop) but still a persistent issue in parts of higher income regions (US Midwest, Europe)
- D2D impact?

Roaming

- Ubiquitous roaming tariffs are also in play
- Apple/Globalstar may presage others
- Pricing questions/options

Satellite is the only realistic means of reaching the 7% of the world outside of mobile network coverage (Million)

Source: GSMA Intelligence



Consumers: D2D accelerates the extension

How does it work?

- D2D is not new, but recharged by better tech and, crucially, NTN standards
- Typically operates at LEO altitude, but differs in several ways from traditional constellations
- Signal direct to device (handset or IoT). No requirement for dish or other receiving equipment

Why does this matter?



B2B: IoT across a range of sectors

The B2B opportunity

- Newer, faster growth
- Mostly lower power (e.g. weather sensors, telematics for logistics, and monitoring agricultural operations) but slowly changing

Addressable base

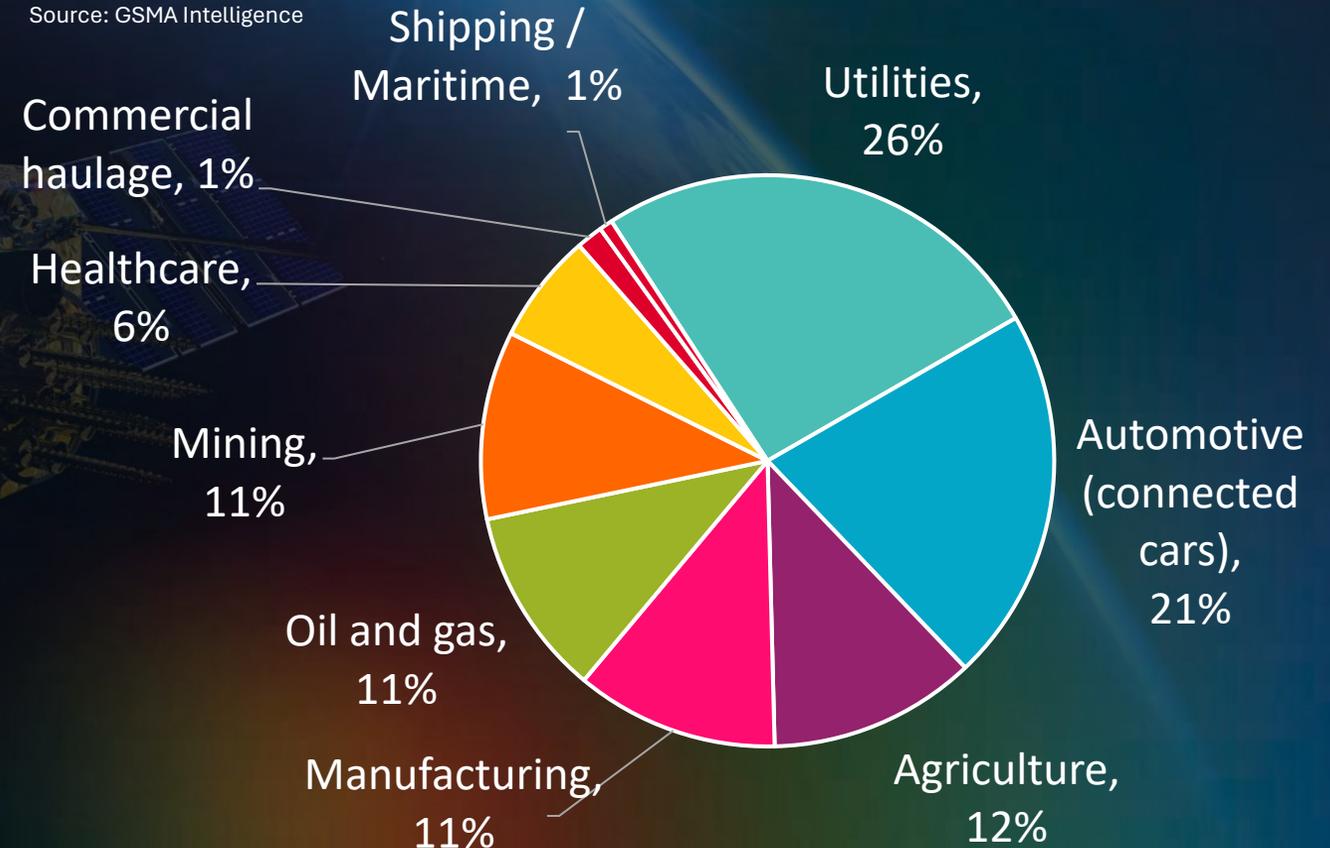
Nearly 2 billion IoT devices are addressable from satellite-enabled connectivity (10% of the IoT base by 2035), though this is probably conservative

Revenue uplift

- The potential revenue uplift for IoT is \$10 billion per year over the same horizon
- = 25% of the connectivity revenues associated with IoT (i.e. the revenues mobile operators make from IoT)

Sector split of the IoT base addressable via satellite, 2035

Source: GSMA Intelligence



Chipsets / devices: making satellite provision seamless

Standards integration matters

- Why? Gives underpinning for global device and chipmakers to incorporate satellite compatibility into their own portfolios
- Some device makers have longstanding support for GEO satellite services, but these have been on limited spectrum bands and at low scale, which has translated into high costs for customers

Things won't change overnight

- Qualcomm, Mediatek, Kigen, Thales and others are updating their chipsets, and bootstrapping to make provision for satellite seamless on new devices. BUT...
- The handset replacement cycle needs to play through for people to own devices compatible with 3GPP Release 17 or later – i.e. those capable of receiving satellite service

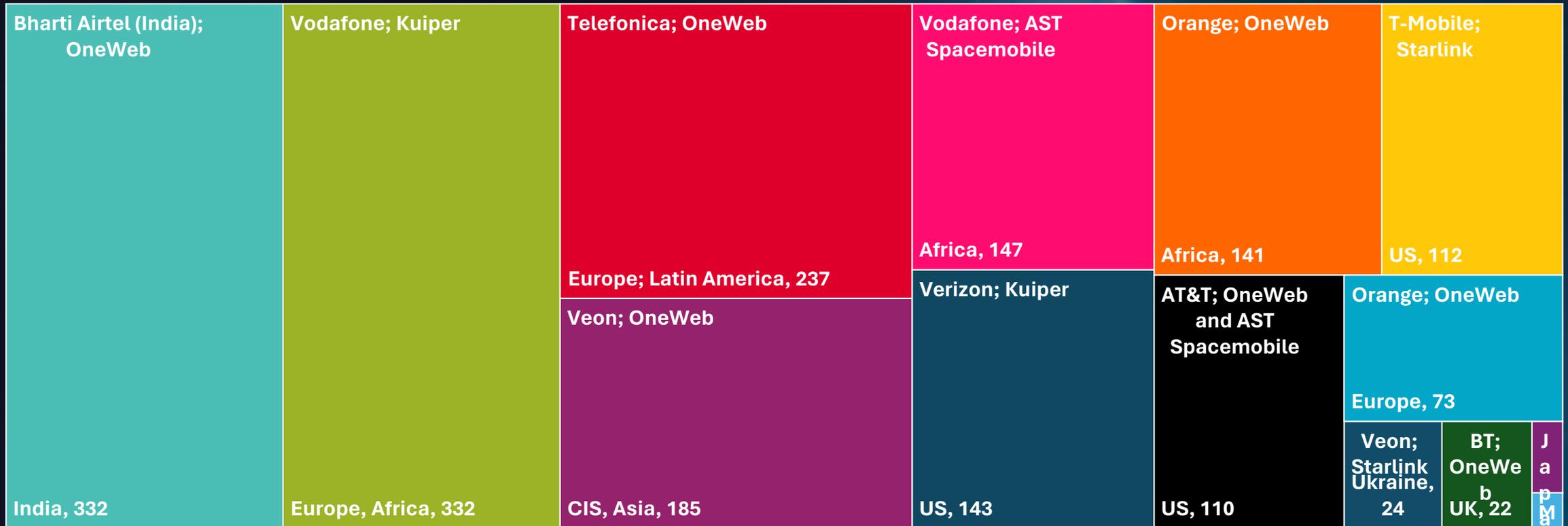
A differentiator

- Numbers should progressively grow from now until the end of the decade
- This also implies satellite support will become a competitive differentiator. We expect to see more of this made in operator marketing for key handset launches – a category starved of innovation for years

Regional Considerations

Partnerships between telecoms operators and satellite companies now have a coverage footprint of more than 2 billion subscribers to reach

Source: GSMA Intelligence



Note: figures are number of mobile subscribers for each operator, and therefore the addressable footprint for a given partnership assuming national scale satellite coverage.

Bottom line, \$30bn+ addressable revenues are there

Total addressable

\$30bn untapped, or 3% of existing telco revenue base overall

Splits

Consumer is majority but there is realistic sell-in to B2B and gov't/military

- Consumer = 60%
- B2B verticals = 30-35%
- Gov't = 5-10%

Business model

Primarily a wholesale play, telcos own customer relationship

Addressable telco revenues via wholesale sat partnerships (\$ billions)

Source: GSMA Intelligence



Where do we go from here?

Making the science non-fiction

Technology

- **Network performance:** does it get beyond '3G-like?'
- **Satellite longevity:** does this lengthen? How long?
- **D2D:** real deal?
- **Chipsets and handsets:** how quickly is NTN integrated? How fast can people tap in?

Partnership/ Biz model

- **Wholesale > retail:** Does wholesale remain GTM? Is Starlink alone with retail?
- **Integration costs + set up:** how can telcos minimize opex/capex vis-à-vis NTN integration?
- **Proving the revenue story:** to what extent do these show up? Do operators disclose the NTN impact?

Regulatory

- **Spectrum:** interference mitigations? Borrowing terrestrial? MSS?
- **Landing rights:** getting global alignment...possible?
- **NTN standards integration...and 6G:** NTN impact with 5G-advanced and 6G?

Where do we go from here?

The cover of the report features the GSMA Intelligence logo at the top left. The background is a dark teal space with a satellite in orbit and a starry field. The main title 'Global Mobile Trends 2024' is in large white font, with the subtitle 'Enter AI and the 'open of everything'' below it. At the bottom left, it says 'February 2024' and 'Copyright © 2024 GSMA Intelligence'. A QR code is positioned at the bottom right of the cover.

GSMA Intelligence

Global Mobile Trends 2024

Enter AI and the 'open of everything'

February 2024

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The cover features the GSMA Intelligence logo at the top left. The background is a landscape with mountains and a person on a peak, overlaid with a circular radar graphic. The title 'Satellites and telcos: coming to a place above you' is in white. At the bottom, logos for 'skylo' and 'COMTECH' are visible. A QR code is at the bottom right.

GSMA Intelligence

RADAR

Satellites and telcos: coming to a place above you

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