

Satellite direct-to-device connectivity: what is at stake for Europeans?

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Future Programmes

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ESA - an intergovernmental organization

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Created in 1975, ESA Convention.

Developing Europe's space capabilities

Ensuring that investment in space delivers benefits to the citizens of Europe and the world.

23 Member States





Beyond commercial: space as a strategic asset

Europe faces a defining moment. Space infrastructures are the invisible backbone of our economy, security, and diplomacy — and they are increasingly **at risk**.



Autonomy

Secure and sovereign space systems safeguard Europe's ability to **act independently** in crises.



Continuity

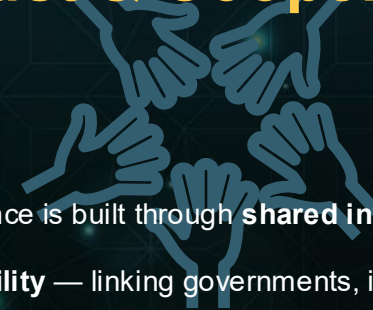
Space ensures **uninterrupted** communications, navigation, and coordination **when terrestrial networks fail**.

Collective Security



Integrated space capabilities enable **coherent civilian–defence responses** to hybrid, cyber, and kinetic threats.

Trust & Cooperation



Resilience is built through **shared investment and interoperability** — linking governments, industry, and allies.

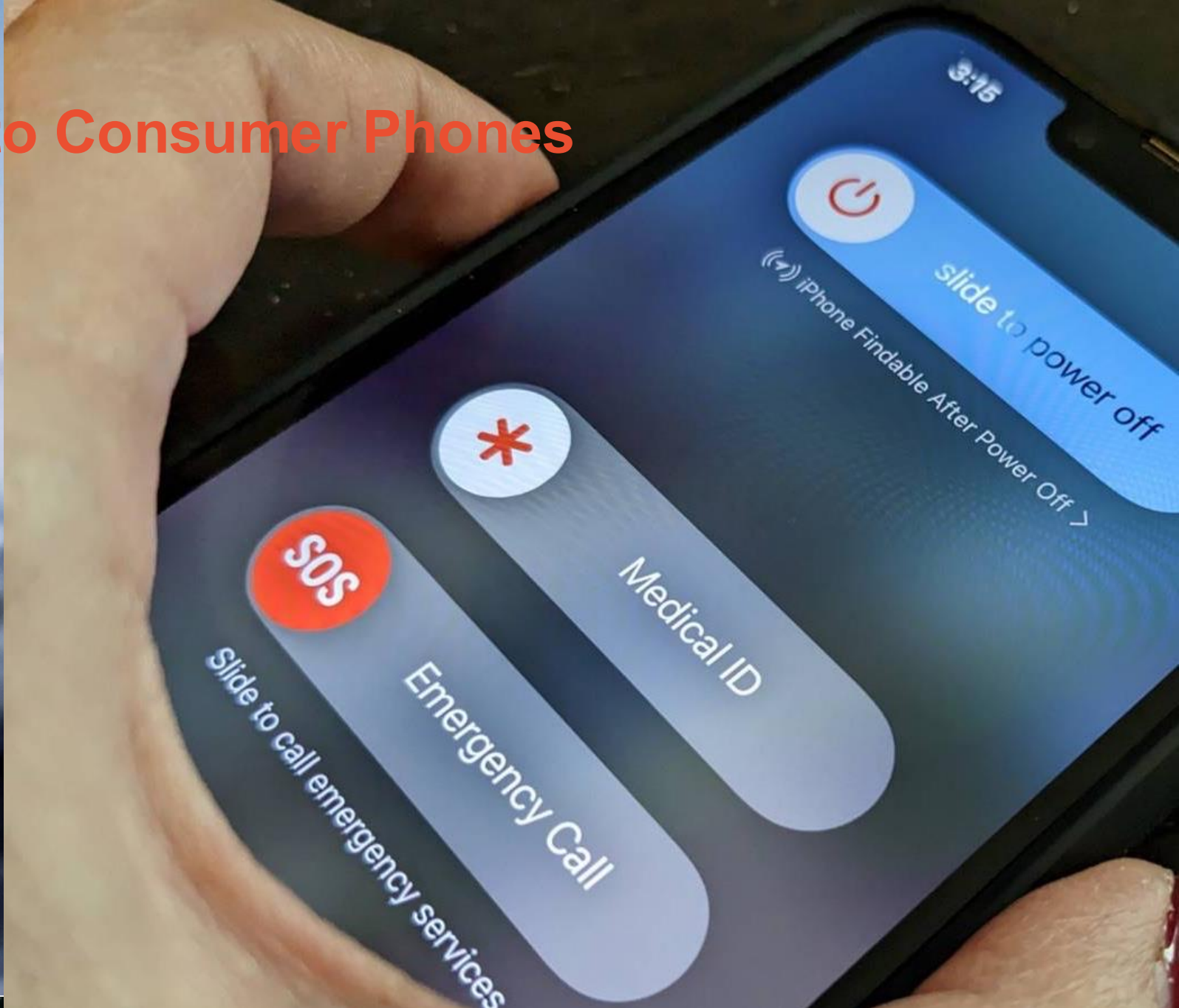
The Era of Global Connectivity Convergence

Ubiquitous
Uninterrupted
Secure



~8.7% world population out of terrestrial internet and mobile coverage (GSMA)

Satellite Connectivity to Consumer Phones



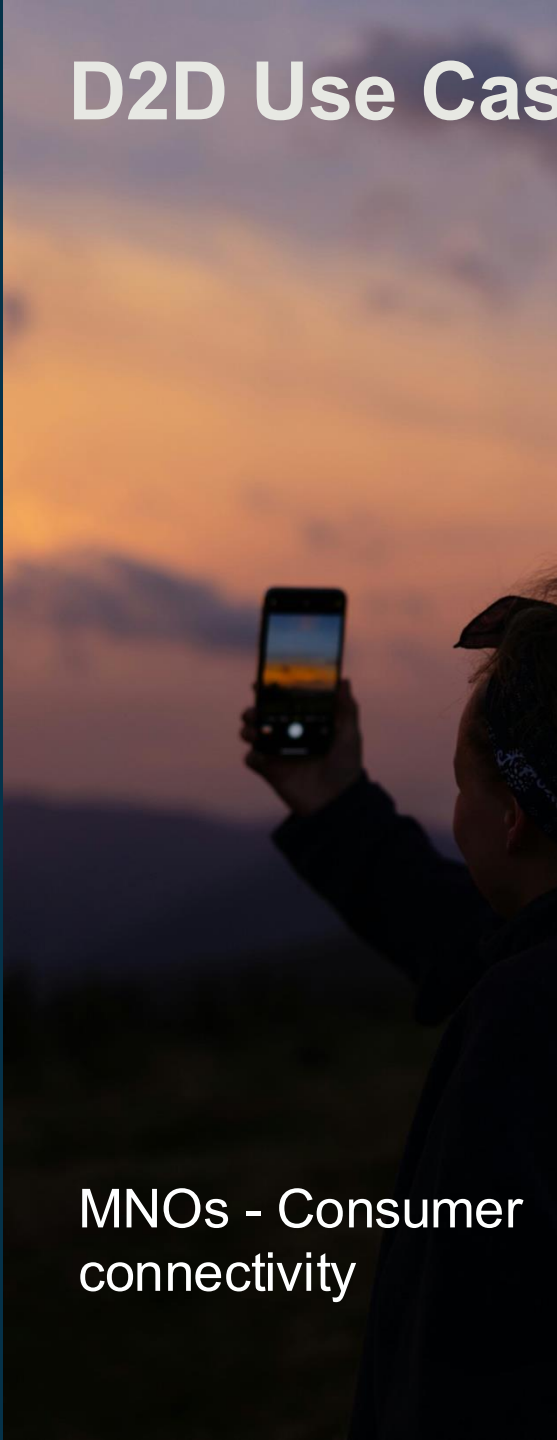
Satcom Going Mainstream



- ◆ Leveraging on universal mobile communication standards now integrating satellite
- ◆ From a few millions of users to billions of users (est. 50bn by 2035)



D2D Use Cases in Europe



MNOs - Consumer connectivity



Automotive / mobility



Disaster response



Critical infrastructure
enterprise IoT

Race to D2D Service Provision





EUROPE

- 650+ Gen 1 D2D satellites
- Gen-2 to launch in 2027
- 8+ million customers monthly
- voice/data as next service package (starting in Japan)
- Partnerships announced in Europe



- 31 D2D satellites in partnership with Globalstar
- 48 additional satellites for USD 1.7 BN
- millions of potential users of Apple Emergency SOS service



- BlueBird Block 2: a ~220 m² phased array, the largest commercial array deployed in LEO
- early services 2026
- depend on partnerships with MNOs



- 3 GEO satellites for D2D emergency communications
- fully operational emergency communication services e.g. Beijing flooding in August 2025
- Chinese gov to expand voice and text to broadband D2D
- launched several D2D demonstration satellites in LEO



Supplemental Coverage from Space MS/ MSS

FCC Supplemental Coverage from Space has shaped policy in the US and triggered other abroad

Mobile Satellite Spectrum regime remains a key benefit for service deployments

Europe's harmonised spectrum: 2 GHz Mobile Satellite Services bands: a valuable spectrum for D2D in Europe



Telefonía

European Landscape. Aspects to Consider

- Very high terrestrial coverage, but also...
- Fragmented European value-chain (from MNOs to space and ground supply chain)
- Fragmented markets, operators, MS spectrum,...
- Pan-European MSS spectrum in S-band is critical for D2D in Europe
- Insufficient awareness of the strategic value of RF spectrum

No single European player can match investment capacity of competitors

D2D is key to deliver **critical communication services** (PPDR, connected cars, border security, Blue Force Tracking, Swarm UAV, PPDR, governmental,...) and **will need sovereign/European controlled networks.**

This is an opportunity to build a sovereign alternative and avoid vendor lock-in.

Such an alternative could also operate commercially.

Critical Enablers for European Alternatives

- **Spectrum policy**
- **Regulation/ prescribing the market (NTN e-call, MSS-enabled user terminals...)**
- **Federate governmental and commercial demand to enable the business case**
- **Consider European security and sovereignty – e.g. how to leverage IRIS²?**
- **Federate and consolidate the position of European industry in the value chain (manufacturers, vendors, chip makers, satellite operators, MNOs)**
- **Innovation and technology, including interoperability of assets – including national – from the space segment to the user equipment**

D2D Innovation and Technology at ESA



ESA contribution to IRIS²

ESA Programme Related to EU Secure Connectivity



ESA de-risking of commercial D2D initiatives

Partnership Projects



ESA Pathfinders

In Orbit Demonstration of Future concepts

Concrete actions, e.g

- Advocating European interests
- Expression of MNO requirements for exploiting a space segment
- Involvement in demos, with user communities



Thank you!

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