Leading Change
Inspiring Progress

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Satellite connectivity

Critical infrastructures, emergencies and the global IoT

Leading Change
Inspiring Progress

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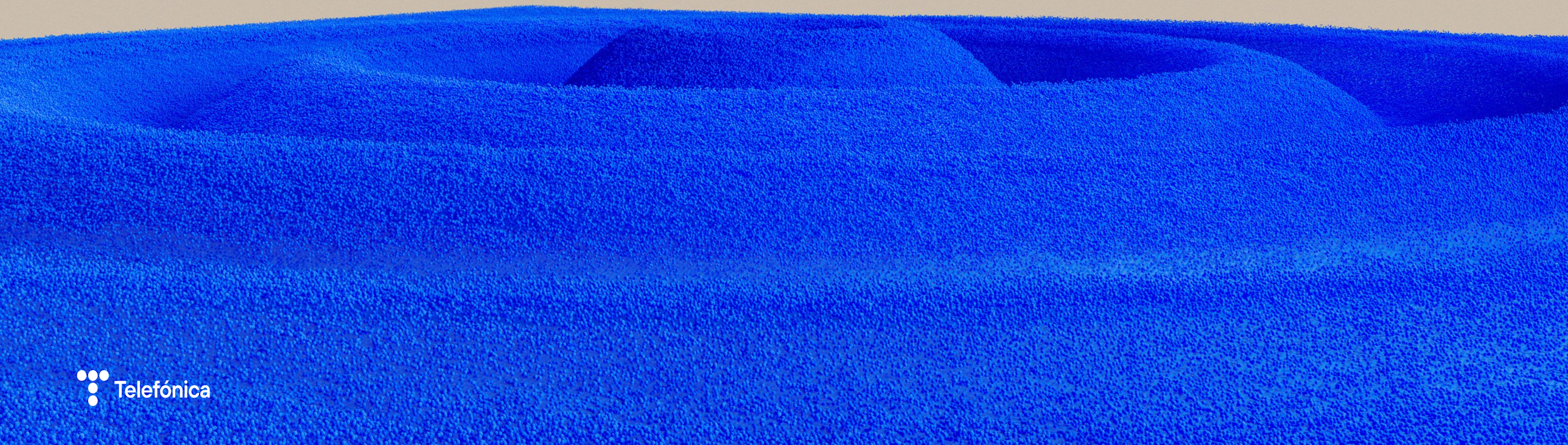
Satellite connectivity: Critical infrastructures, emergencies and the global IoT

Satellite services

Global connectivity anytime, anywhere



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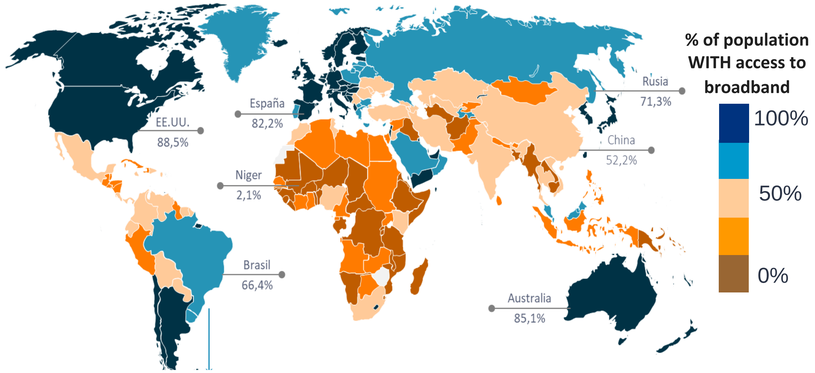
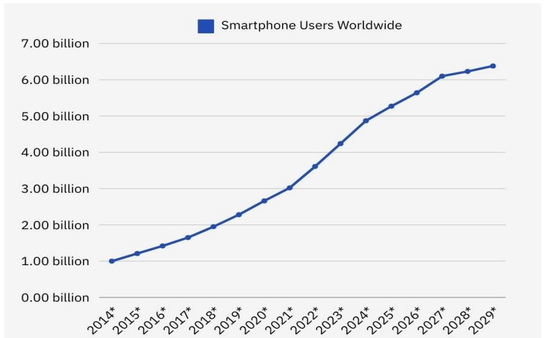
Satellite connectivity is a driving force of global digitalization contributing to connect to the unconnected

≈30% Population has no access to broadband



5,1 BN Smartphone users worldwide



Mobile-user Growth (2025-2029)

20%

Data Comsuption per user (2025-2029)

x3

Millions of IoT devices spread across rural areas need to be connected

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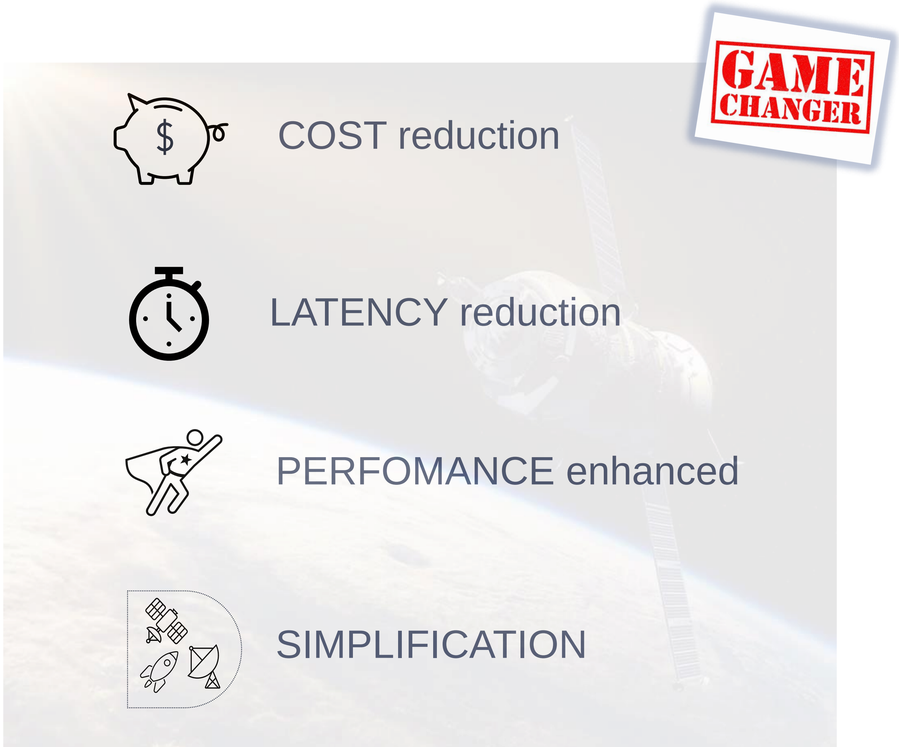
Several disruptions in the Satellite industry have allowed old paradigms to be overthrown, boosting to “democratize” the satellite communications

Living a “SATELLITE REVOLUTION”….



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Telefonica has played from the beginning an essential role in the satellite industry. Today is a referenced global satellite services integrator thanks to our assets, capabilities and strategic partnerships

1967 - 70s

1967: 1st commercial satellite services provide to NASA

1969: ***From Buitrago to the Moon***

1970s: Support during Apollo programme

80s

1980: Relevant member of the International Telecom. Satellite Organization.

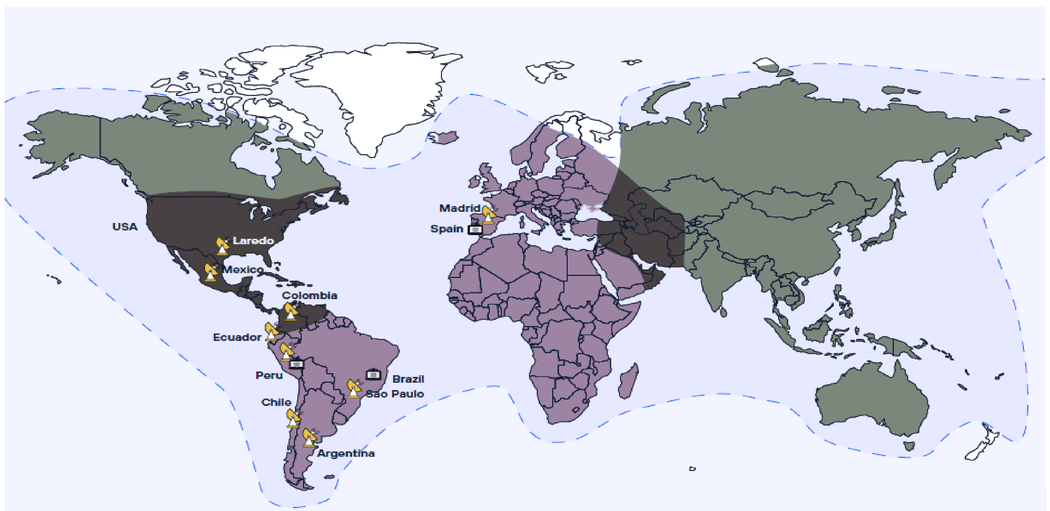
1987: Inaguration of CCS Armuña

90s-00s

1992: Participation in the launch of the H1B satellite

1995-00s: Opening LATAM market Reaching 70 ground stations

2025



>25.000	Satellite access	**3**	Satellite NOC 24 x7
>45	Countries	**11**	Teleports
>300	B2B & WH customers	**>30**	Partnerships

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Telefonica Global Solutions transforms satellite connectivity into solutions that connect people and enhance business, enriching with a unique value proposition

OUR CATALOGUE

- SATELLITE ACCESS
- SATELLITE MOBILITY
- CELLULAR BACKHAULING
- TELEPORT SERVICES

→ B2B, B2C

→ MNOs

→ Satellite Operators

OUR VALUE PROPOSITION

- SDWAN Layer 2 Bonding
- Multi-TECH
- Multi-ORBIT

Satellite conectivity “pure”

- IoT Global 5G NTN
- Full-Managed Services
- ERPs

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Satellite services as Network Extension in areas with lack of other infrastructure

SOLUTIONS:

- Multiorbit LEO & GEO

BENEFITS:

- Reliable connectivity
- Global coverage
- Crew welfare
- Secure & Resilence performance

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Satellite services as 4G Cellular Backhauling for agile deployments of critical infrastructures in rural areas

SRN (Shared Rural Network) Project

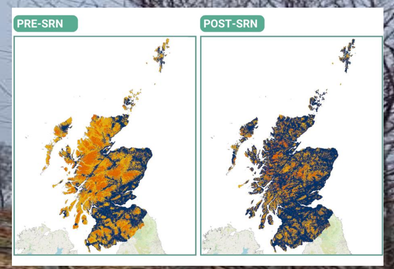
A joint initiative between UK MNOs & Government to create a SRN network that allows providing or enhancing 4G coverage in rural areas for 95% of the UK territory.

SOLUTION

Satellite LEO services achieving download speeds of up to 300 Mbps

BENEFITS

- **9.000 Km²** 4G Expanded coverage
- **169** Terrestrial sites
- **77** Satellite sites



NO 4G coverage
4G coverage, AT LEAST 1 MNO
4G coverage, WITH ALL 4 MNOs

The Daily Telegraph

VMO2 strikes Starlink deal to boost rural mobile cover

By James Warrington

RURAL communities are in line for a coverage boost after Virgin Media O2 (VMO2) struck a deal to use Elon Musk's Starlink satellites.

The telecoms group has begun using Starlink's low earth orbit (LEO) satellite technology to deliver mobile connections to remote locations, such as the Scottish Highlands.

Mr Musk's company operates a network of about 5,000 satellites, which orbit 350 miles above Earth and beam down signals. The technology will be used to carry calls, texts and data to mobile masts in areas where fibre cables, which usually underpin networks, are too difficult or costly to install.

VMO2 said the deal, reached through its parent company Telefónica, will help

Satellite Connectivity for Emergency Cell Coverage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UNIDAD MÓVIL DE COMUNICACIONES
movistar
THE HAGUE
GENOVA

movistar
8561 BYS


SAIL GP

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But …

How do I connect these Mobile Cellular Vehicles?

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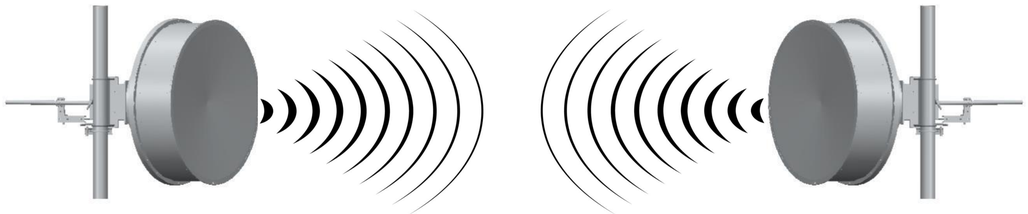
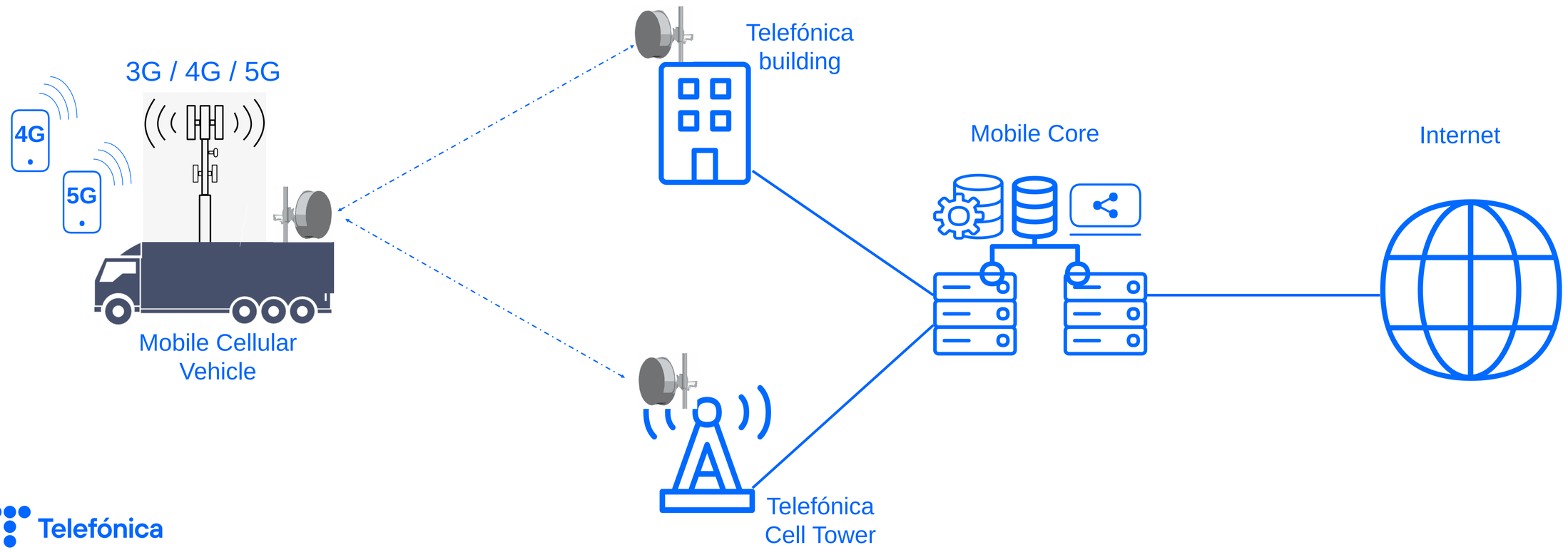
Connecting Mobile Cellular Vehicles: Radiolinks





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But let’s not forget …

The origin of these Mobile Coverage Vehicles is to provide comms in emergencies

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ZONA
MONITORIZADA
24 HORES


movistar
RACHADELL
Tel. 96 375 08 36
Av. Madrid, 9 (SEDE)


Cruz Roja


EMERGENCIAS
PUESTO DE MANDO AVANZADO
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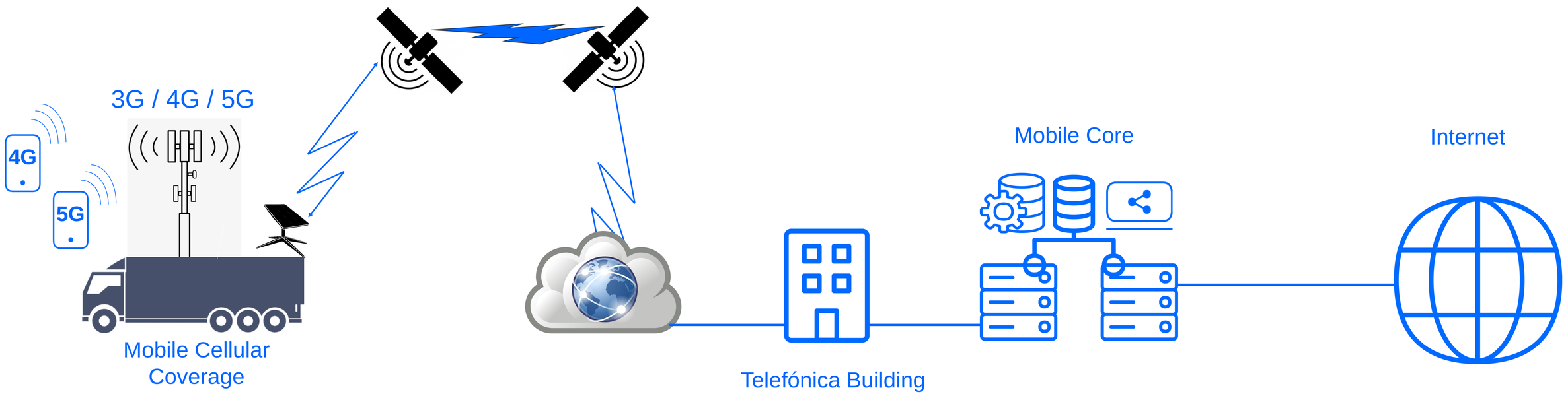
Connecting Mobile Cellular Vehicles : LEO constellations



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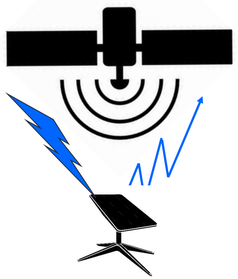
Connecting Mobile Cellular Vehicles : LEO constellations

CHALLENGES AND HOW TO MAKE IT WORK

No QoS is guaranteed in current LEO constellations. What we can do in specific situations, is to combine GEO for critical data, and LEO for extra bandwidth.



Uplink: It is difficult for satellite networks to get a good signal from small devices. WE are testing bonding of different devices/links/networks to get more uplink. WE have as well plans for local breakout, so that local traffic stays local.

Traffic in current LEO constellations is delivered through the internet. Encrypting further constraints bandwidth. To sort both problems, more efficient and quantum-safe cypher mechanisms Will be used.

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Satellite Connectivity

IoT Global

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Terrestrial networks were originally created to connect people

96%

Of the world's population lives within mobil coverage, According to GSMA

Ilustrative

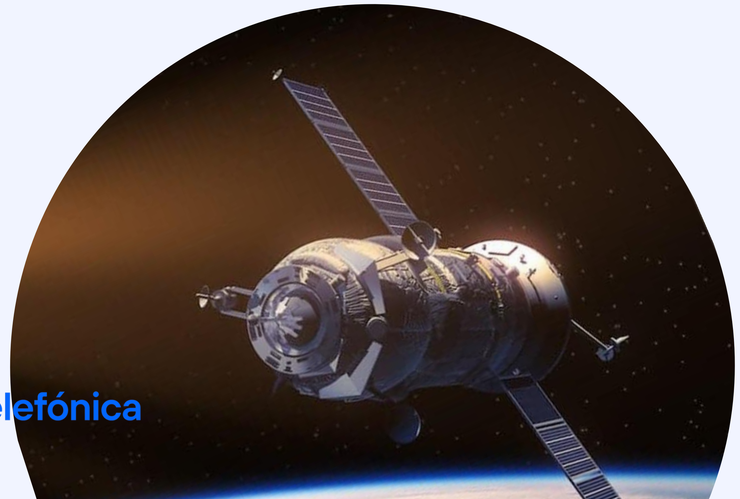
The machines could be far from populated areas, in remote places, where there is no terrestrial coverage..

And our vision is to connect all machines, everywhere and at all times

Satellite connectivity

A great opportunity to expand our networks,

but also, a great challenges for customers..



Hardware

Connecting to terrestrial and satellite networks with the same devices

Software

Integration with existing platforms to manage new connectivity

Network

Compatibility with existing Network Infrastructures

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Telefónica Tech's satellite solution makes life easier for our customers and is highly scalable

Hardware
Same SIM and NB-IoT / LTE-M devices for terrestrial & satellite networks

Software
KITE as unique interface to manage all SIM base

Network
Seamless coverage working simultaneously with terrestrial and satellite coverage

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Standardized solution based on licensed technology

3GPP™

A GLOBAL INITIATIVE

Leveraging different solutions for different regions and use cases

Expanding our networks by working with different partners

SATELIOT

OQ TECHNOLOGY

skylo

Possibility of incorporating new suppliers if necessary

Integrated with satellite providers in the same way as if they were roaming partners, allowing us to guarantee an excellent customer experience

A long way to the point where we are today

2018s

Initial Phase

- First satellite operators with focus on IoT

2021s

Standardization

- NB-NTN technology standardisation (3GPP Rel-17)

2023s

Launch of first satellites

- Basic sensors and use cases

2025s

Commercial Launch

Satellite IoT is a reality

Total connectivity has arrived to connect devices

without limits, everywhere and all the time








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