The Role of Satellites in 5G Networks

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DigitALL Cyprus: Digital Transformation Everywhere!

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Bridging worlds

OUR COMPANY

3
Satellites

Rights in 2 orbital slots at 10º W and 39ºE
Services over Europe, M. East, Southern Africa

2
Teleports

Premium ground infrastructure in Greece and Cyprus offering full range of services

Managed Services Solutions

Leverage our infrastructure to deliver tailored made solutions to our customers

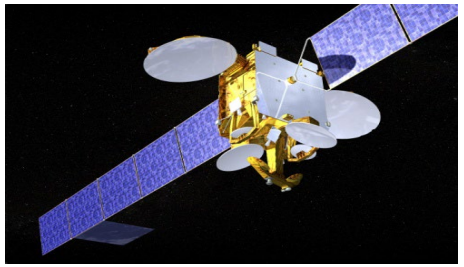
57
Employees

High skilled employees who are experts in their fields

OUR ASSETS

HELLAS SAT 2

The first satellite of Hellas Sat continues providing maritime services in inclined orbit from 10ºW, over Europe, for a blue-chip customer.



30
Ku band transponders

4
beams over EU, Atlantic ocean

HELLAS SAT 3

Replacing the existing Hellas Sat 2 by providing service continuity and incremental capacity for expansion in Europe, Middle East and Southern Africa.

50
Ku band transponders

3
beams over EU, ME & SA

1
Ka band crosstraping SA

HELLAS SAT 4

Launched in 2019 to provide in-orbit backup, redundancy services for Hellas Sat 3 and further expansion Ku capacity over Europe and Southern Africa.

34
Ku band transponders

4
beams over EU, ME & SA

GR TELEPORT

Full range of managed, end-to-end hosting and business continuity services, providing access to satellites from 95º East to 47º West.

>5
Tx/Rx Ku, Ka antennas

55
racks hosting space

Primary SCC & NOC

CY TELEPORT

TIER 4 certified facility by WTA, offering a full range of teleport services providing access to satellites from 105º East to 37º West and fiber to the rest of the world.

>30
Tx/Rx C, Ku, Ka antennas

100
racks hosting space

2
IP platforms iDirect & Newtec

Backup SCC

OUR SERVICES

VIDEO

Strong DTH position in SE Europe with 4 DTH & 2 DTT platforms. 5 video customers acquired from competition in the last 3 years.
Expanding in Africa with the acquisition of 1 DTH platform from competition in Zambia and supporting the launch of 1 DTH platform in Botswana.

4
Direct-to-Home in Europe

2
Digital Terrestrial TV in Europe

2
Direct-to-Home in Africa

DATA

Service providers and Government & Defense customers take advantage of our high-powered beams across Europe, Middle East and Southern Africa to deliver resilient services for enterprise VSAT and COTM applications.

>12
Gov & Def agencies

>8
anchor service providers

MANAGED SERVICES

Management and operation of 2 IP platforms, iDirect & Newtec, providing managed data for maritime, enterprise and cellular backhauling satellite services across our entire fleet's coverage. Approx. 900 terminals rely on HS managed services.

~25
Maritime service providers

~600
Connected vessels

2
Internet platforms

TELEPORT

End-to-end services and tailor-made solutions from video aggregation and distribution to satellite equipment hosting, operations, monitoring, business continuity and disaster recovery services.

5
Direct-to-Home services

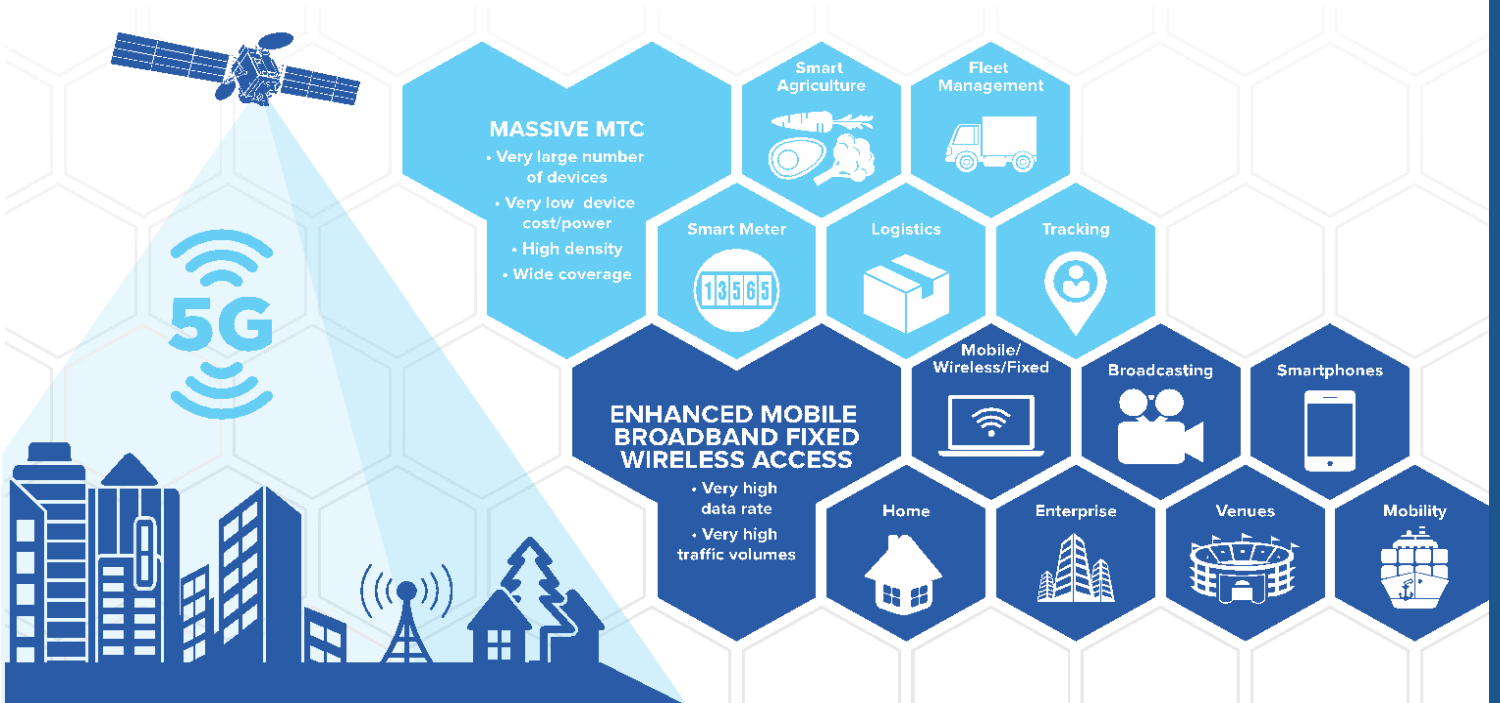
25
Gbps connectivity

22
antennas hosting

The Role of Satellites in the 5G Network of Networks

Space-based networks are vital to today's global communications infrastructure, providing services including mobile backhaul, broadband, linear and non-linear TV and IoT.

In the 5G era, the advantage of satellites are even more profound – namely, ubiquity, resiliency and mobility as well as broadcasting.



Advantages of satellites

Ubiquitous coverage

Continuous coverage worldwide and consistent coverage to targeted regions

Mobility

Ideal for providing connectivity to users aboard moving vehicles such as planes, trains and ships

Redundancy

Guaranteed uptime and network reliability

Multicast

Broadcasting of data or media
Edge caching and local distribution

Space-based 5G Use Cases

Edge Server Connectivity
Providing backhaul connectivity and multicasting to large numbers of edge servers over wide areas, complementing terrestrial network.

5G on Moving Platforms
Satellite-based networks are the only means for delivering 5G broadband to users on vessels, cars, ships, airplanes and high-speed trains.

Fixed Backhaul
Facilitating 5G broadband connectivity to underserved areas where it is not feasible to deploy terrestrial infrastructure.

IoT Service Continuity
In critical communications, space-based systems provide resilient backup to terrestrial networks anywhere in the world.

Hellas Sat is bringing affordable and adaptable solutions for greater connected possibilities anywhere

01

Cellular Backhaul Solution

Enabling the extension of mobile network beyond the reach of terrestrial infrastructure to reach new subscribers and new revenue streams

02

Hybrid Connectivity Solution

Securing seamless connectivity through integration of satellite with existing terrestrial infrastructure. If one of the networks encounters an issue, the hybrid network seamlessly routes all traffic over the active connection.

03

WiFi Connectivity Solution

Integrating satellite backhaul with WiFi access points to connect unconnected populations, enterprises, and institutions utilizing infrastructure and technology specifically designed and optimized for rural and remote deployments

Business challenges addressed

Extend coverage to rural and hard-to- reach areas to connect more users

Overcome limitations of conventional connectivity technologies

Dynamic bandwidth allocation and volume based billing

Innovative business models allow provision of cost-effective profitable solutions

Network continuity even when outages occur

Flexible end to end managed service solutions

Ensure seamless connectivity with Hybrid Solution

What problem do we solve

Network continuity

When network outages occur from damage to terrestrial or any network backhaul while reliability and uptime are of utmost importance, Hybrid Solution enables true integrated connectivity without glitch or switching between the networks

Network scalability

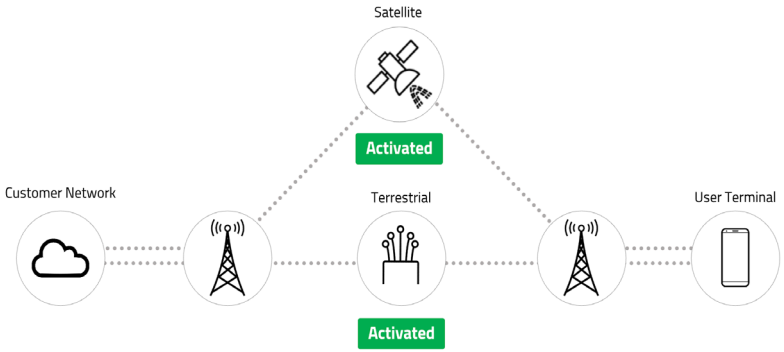
Unlike simple standby, users can enjoy higher data rate through completely combined bandwidth of multiple networks

Optimized operation

Hybrid Solution supports flexible bandwidth usage, providing short-term and long-term flexibility, and a cost-effective solution that avoids paying for unused bandwidth

How it works

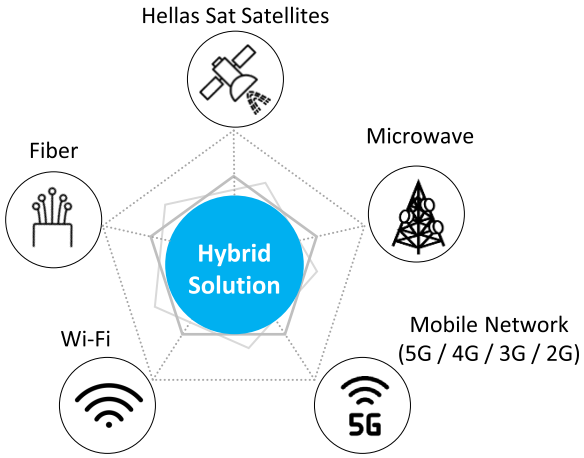
It is not simple switchover; it is complete integration of multiple networks.



- Traffic is always flowing, causing no glitch
- Combined bandwidth allows more data

Applicable networks

The solution can be applied to any type of network making it handy to apply to customer's existent infrastructure.



Key benefits

1. Guarantees seamless connectivity through integration with existing terrestrial infrastructure
2. Combines the strengths of any network (fiber, 3G, 4g, 5G) and satellite
3. Satellite can supply a redundant link to any network
4. With our flexible business models you only pay for what you need

Reaching the unconnected with our Managed cellular backhaul solution

Expand mobile network coverage in rural areas with Cellular Backhaul

What problem do we solve

Connecting the unconnected

Most rural areas in developing regions face challenges related to geography, infrastructure reliability and low population density making physically impossible or economically infeasible to provide communications services

Overcome limitations of conventional connectivity technologies

Mobile base stations are connected with fibre or microwave for backhaul transmission. In low density areas or for roadside coverage both fibre and microwave are economically infeasible

Cost-efficient backhaul turnkey solution

A low cost, power efficient cellular technology solution with low operating expenses that enables MNOs to profitable expand their mobile coverage

How we do it

Design

We support MNOs identifying the right site location as well as with the design of the in-country gateway solution

Build

With our in-country partners we build and install the remote sites

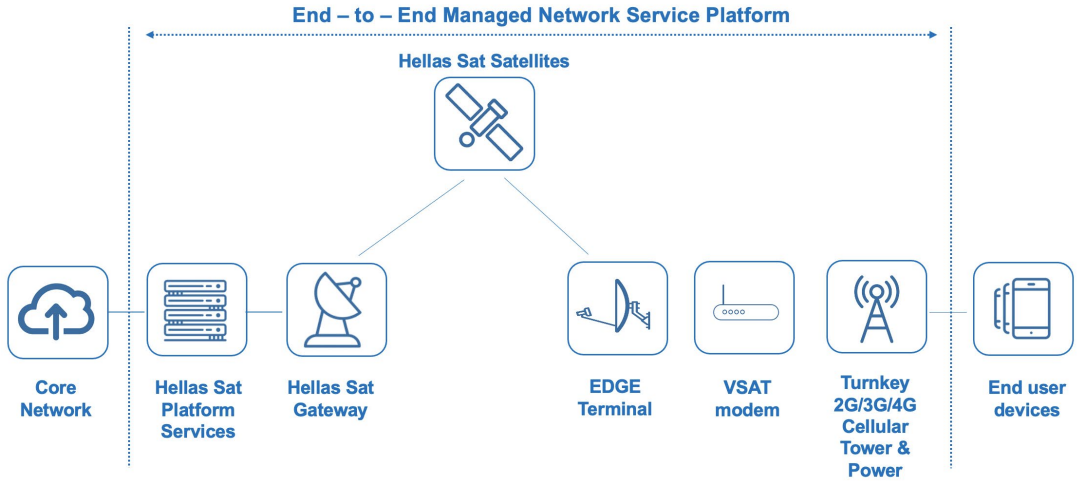
Integrate & Test

We fully supporting the testing and certifying remote terminal installation and validation

Operate

We could provide an end-to-end Managed Services Platform enabling MNOs to remain focused on their core business

How it works



Together with our partners we own all key technologies to build and operate a complete rural GSM network

- Bring connectivity to more end users, to low ARPU markets and rural areas
- Very low Total Cost of Ownership
- Lowest power consumption
- Minimizes satellite bandwidth requirement
- Managed completely remotely by its GSM BSS Manager
- Provides extensive usage statistics and KPIs to assess profitability per site

Hellas Sat has been successfully providing a Managed Backhaul solution to Orange Romania…

The challenge

Orange is a global leader of telecom services in many countries around the world.

Orange Romania needed quickly and cost-effectively to provide cellular services to unconnected people across Romania as well as meet its regulatory license obligations in a profitable manner.

Providing the service to numerous rural villages with low population density on mountainous terrain with lack of infrastructure such as paved roads would result to cost intensive deployment.

The Solution

A via satellite solution being the obvious choice for fast cost-effective deployment Orange selected Hellas Sat to overcome this challenge.

Hellas Sat delivered an end-to-end solution from installing the terminals at the sites to utilizing its high-power satellite, teleport facilities and iDirect platform as well as provided VNO privileges to Orange for monitoring and managing its network.

The Outcome

Orange successfully managed to connect all sites and expand its cellular services while at the same time the increased voice and data traffic generated additional revenue.

…while meeting strict requirements to ensure network KPIs …

Core Requirement	❑ End to end satellite mobile backhaul solution including delivery and installation of terminals ❑ Satellite connectivity for B2B services, mainly telemetry, dedicated internet access and VPN services

1 **Mobile backhaul requirement: 40 Mbps VNO service**

- Dynamically allocated amongst 12 rural sites in Romania
- Virtual Network Operator (VNO) privilege

2 **Adjustable data rate/throughput per VSAT**

- The proposed solution shall allow the setup of CIR and MIR values by Orange Romania.
- Each VSAT should support an upgrade up to 50/20 Mbps

3 **Service Activation and Monitoring**

- Provision of necessary tools for Orange to activate and monitor the VSAT services via a web-based OSS solution.

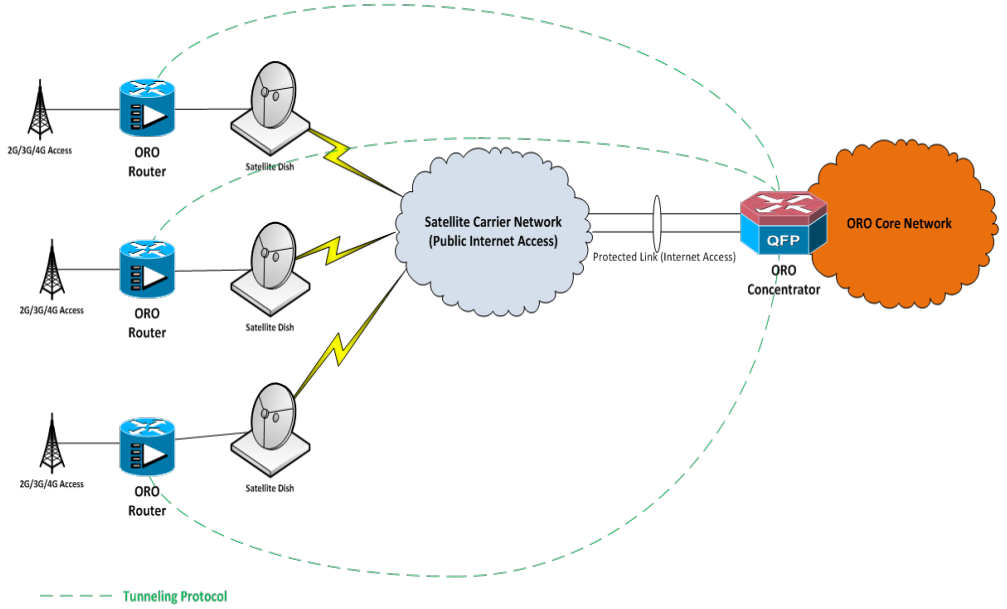
4 **Latency and Jitter**

- The provider shall present the typical values expected based on similar implementations.

5 **Support services**

- Provision of Level 2 and Level 3 support

High level topology of the interconnection



Due to the initial low volumes of data and in order to simplify the rollout in the first phase interconnection will be done over the public internet access.

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