



EXPAND 56 SPACE

A WORLD WHERE SPACE ENABLES GLOBAL SEAMLESS
CONNECTIVITY FOR INDUSTRY AND SOCIETY

THE 5G ECONOMY AND SATELLITE OPPORTUNITY





\$ 13.2 trillion

Annual Global Economic 5G output by 2035 (HIS Markit)

\$ 530 billion Satellite shares



\$ 12.6 trillion

Industry shares

MOBILE CONNECTIVITY

2019

2025

5G mobile subscriptions

\$ 1.1 trillion

Global Mobile revenues

7.9 billions

Mobile subscriptions

2.8 billion \$ 50 billion

Satellite Mobile revenues

UNIVERSAL IMPACT

5G ENABLES AN INCLUSIVE, SUSTAINABLE AND COMPETITIVE GLOBAL ECONOMY



ESA FUNDING KEY TECHNOLOGY DEVELOPMENTS FOR 5G UBIQUITOUS COMMUNICATIONS



5G ESSENTIAL BUILDING BLOCKS

Testbed infrastructure

Core network developments

System infrastructure study

Satellite proof-of-concept missions



Standardisation & regulatory support

New Radio
Non-Terrestrial
Network protocol
developments

Hub over-the-air demonstrations

Universal satellite-terrestrial User Equipment



ESA R&D scheme (ARTES) supports industry in innovative technology developments that are key for the integration of satellite with terrestrial networks and future services and applications.

esa **5G EMPOWERS YOUR DOWNSTREAM APPLICATIONS**

Space for Big Data and Connected Autonomous Vehicles





Connected Autonomous Vehicle
Use Case Cluster

Vehicle Monitoring

HD Maps

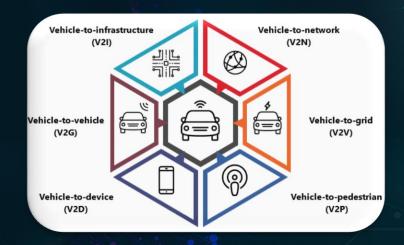
Software-over-the-Air

Situational Awareness

Teleoperation

Infotainment/Entertainment

Significant value in connected cars and Big Data, where Space can contribute to provide the required seamless connectivity on-board and on the road side





Space for smart and uncrewed shipping enabled by 5G and advanced PNT



Development of space based services and solutions relying on advanced technologies such as 5G and PNT (Positioning, Navigation and Timing) in the smart and uncrewed shipping domain.





Themes

Towards Shipping 4.0
Monitoring of coastal areas
Maritime surveillance
Environmental sustainability

Announcement of Opportunity Launch planned February 2021



5G for L'ART: L'Aquila and Abruzzo Region, Roma, Torino



ESA has signed three Memorandum of Intent with Roma, Torino,
 L'Aquila and the Abruzzo Region.

Scope of the Mol is to pursue space based activities making use

of the 5G networks and space assets















Themes

- Law enforcement and emergency response
- Cultural heritage fruition and preservation
- Structural monitoring
- Intelligent transport

Announcement of Opportunity Open until April 2021

ESA Live Testbeds for satellite-terrestrial 5G integration

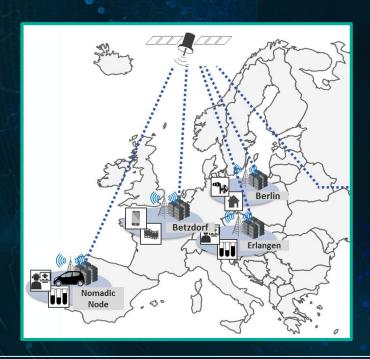


SATis5

- SATis5 provides a comprehensive testbed demonstrating the benefits of satellite for the main 5G use cases.
- The testbed includes live, over the air GEO and MEO satellite connectivity in addition to laboratory emulations and simulations

ESA 5G/6G Hub

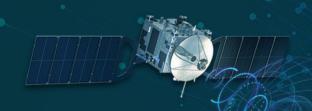
- The ESA 5G Hub is an innovation centre to test and demonstrate use cases and applications enabled by seamless 5G communications
- ➤ The Hub covers IoT, smart cities, digital twin, autonomous vehicles and other use cases





WHAT IS IN IT FOR YOU?







ESA SPACE FOR 5G Strategic Programme supports industry with technical and financial resources.





The Space for 5G Programme has **150+M Euros** available to support your development of technology, products, services and applications to capitalise on the global **5G Opportunity**

Contact us at **5G@esa.int**



