

# DYNASAT

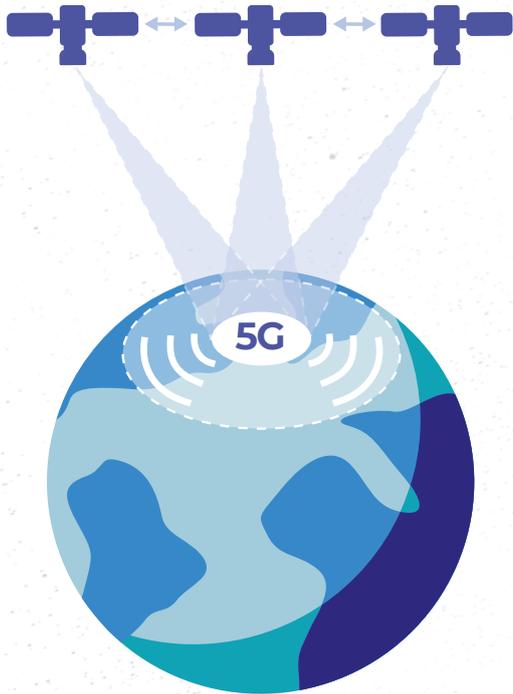
**DYNAMIC SPECTRUM SHARING  
AND BANDWIDTH-EFFICIENT TECHNIQUES  
FOR HIGH-THROUGHPUT MIMO SATELLITE SYSTEMS**

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# CONCEPT

NGSO-based satellite access technology



## KEY DESIGN PRINCIPLES

- ✓ Minimising the impact on the bill of material of mass-market user equipment.
- ✓ Minimising the impact on 5G network infrastructure.
- ✓ Being able to scale the capacity with the traffic demand.

# OBJECTIVES

- #1** Evaluate the performance gain of using bandwidth-efficient transmission techniques in an NGSO-based 5G satellite access system providing eMBB services to mass-market 5G devices.
- #2** Evaluate the performance gain of using the cellular/satellite spectrum sharing techniques enabling the operation of an NGSO-based 5G satellite access system concurrently with a cellular system in the same frequency band.
- #3** Assess the implementation feasibility of bandwidth-efficient transmission techniques and spectrum sharing techniques for efficient spectrum usage in a practical system.
- #4** Demonstrate the isolated operation of spectrum sharing techniques on DSA software system and bandwidth-efficient transmission techniques on portable RAN lab software demonstration platform at the EuCNC 2022.
- #5** Define and plan an in-orbit demonstration of the developed bandwidth-efficient and spectrum sharing techniques.
- #6** Demonstrate the integrated operation of bandwidth-efficient transmission techniques and spectrum sharing techniques for efficient spectrum usage with a portable RAN lab software demonstration platform at the MWC 2023.
- #7** Promote future work on multi-satellite cooperative multi-user MIMO and spectrum sharing techniques within the 3GPP community and get the 3GPP non-terrestrial networks Release 18 work item approved at the TSG-RAN plenary.
- #8** Prepare/submit contributions about multi-satellite cooperative multi-user MIMO and satellite/terrestrial Dynamic Spectrum Sharing techniques to 3GPP RAN working groups for NTN evolution in preparation of Rel-19 and beyond, supported by simulation results.
- #9** Promote the evolution of the telecommunication regulatory framework needed to support spectrum sharing between satellite and mobile services in targeted bands that could be allocated to satellite and/or mobile services.

# INNOVATION

## BUSINESS

Enabling 5G satellite access to offer affordable services to most users will open a new market.

## SERVICE

Increased service performance and reduced latency will enable the offering of higher QoS to targeted 5G end users.

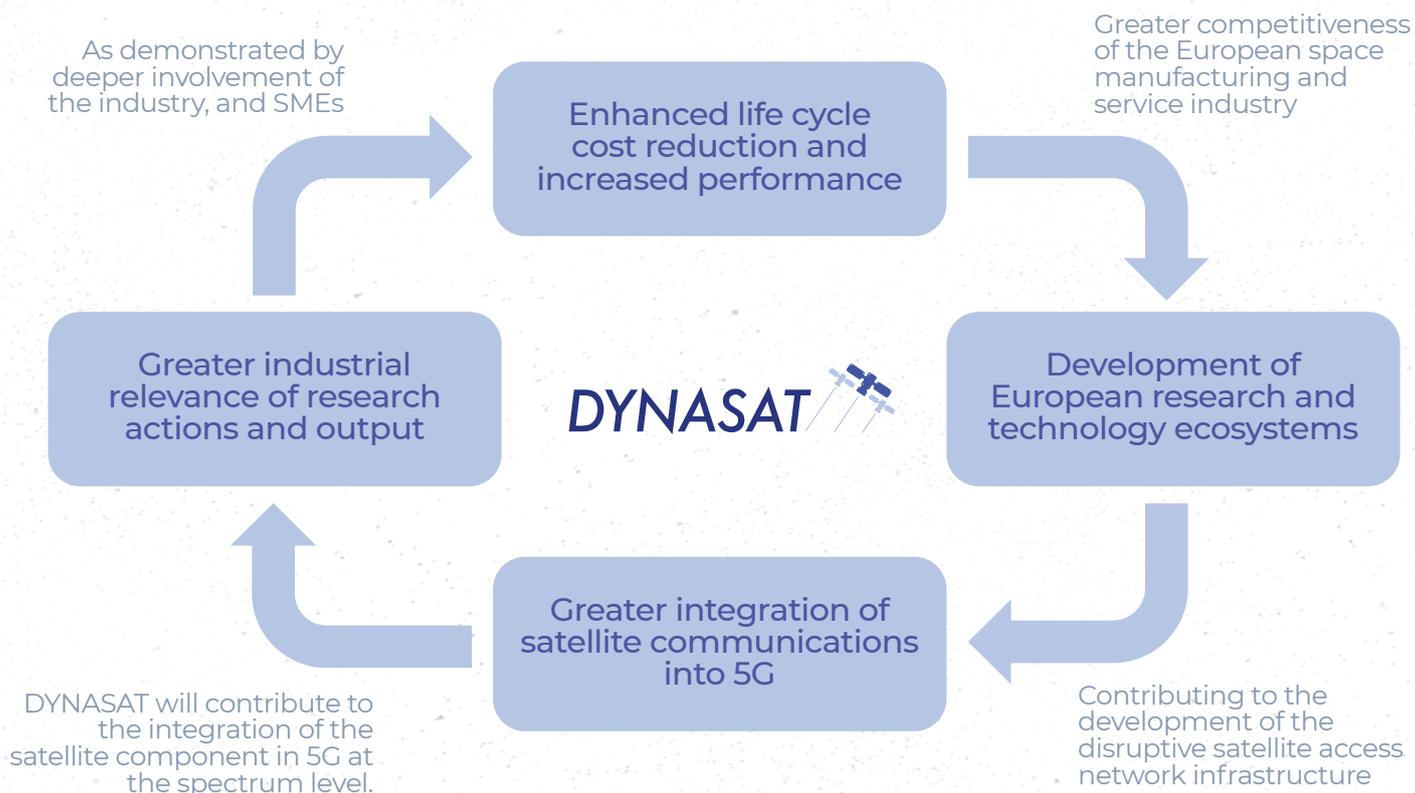
## ECOSYSTEM

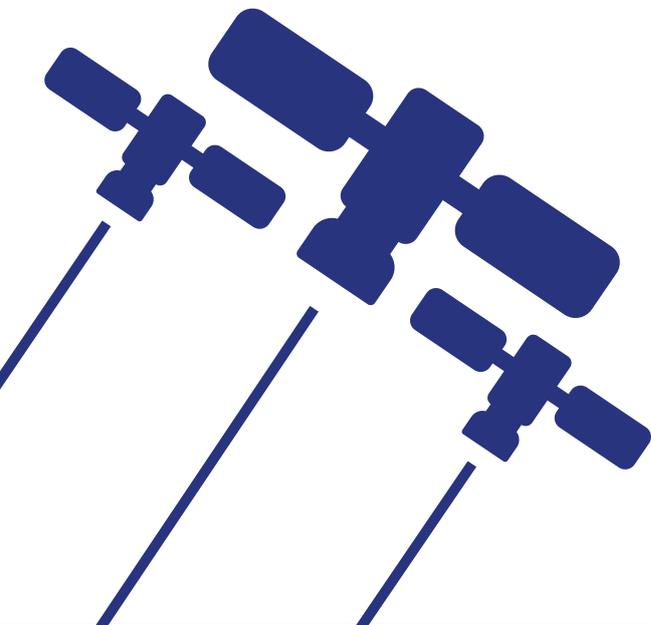
Spinning in cellular technologies in 5G satellite access will encourage investment in customized products and fuel a new cycle of innovation.

## STANDARDIZATION

Supporting standardization of NTN and DYNASAT outcomes in 3GPP will provide a harmonized solution based on 5G and 5G-Advanced New Radio.

# IMPACT





# PROJECT FACTS

**Start:** 1<sup>st</sup> December 2020

**Duration:** 28 Months

**Call:** H2020-SPACE-2018-2020

**Topic:** SPACE-29-TEC-2020, Satellite communication technologies

**Type:** Research & Innovation Action

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