Project overview

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6G-NTN

Facts and figures

Addressing call: "SNS-2022-STREAM-B-01-03: Communication Infrastructure Technologies and Devices"

Overall goal: Develop an NTN component fully integrated with the 6G infrastructure able to provide enhanced Mobile BroadBand (eMBB) and Ultra Reliable Low latency (URLL) services to vertical industries and consumers terminals in outdoor and light indoor conditions.

Targeted TRL: 2 - 4

Duration: 36 months

Project kick-off: 1 January 2023

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6G-NTN ambition

The goal of 6G-NTN is to become the flagship R&I project for **developing the 6G NTN component** and **driving its standardization** phase in 3GPP as part of Rel-20+

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MARTEL
innovate

DIGITAL
FOR
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Greener
wave.

ThalesAlenia
Space
a Thales / Leonardo company
(2 companies)

THALES
Building a future we can all trust
(2 companies)

Qualcomm

ttc
Centre Tecnològic de
Telecomunicacions de Catalunya

orange™

ERICSSON
(2 companies)

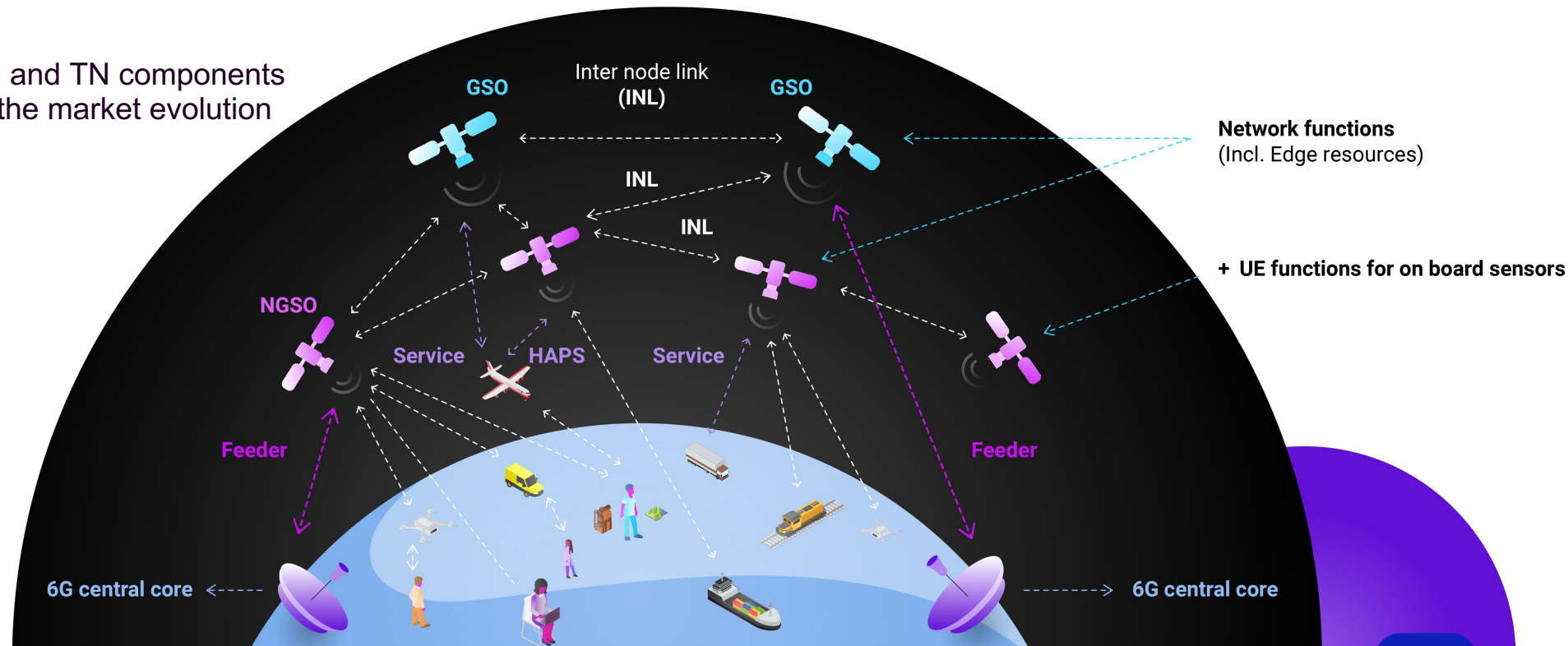Deutsches Zentrum
DLR für Luft- und Raumfahrt
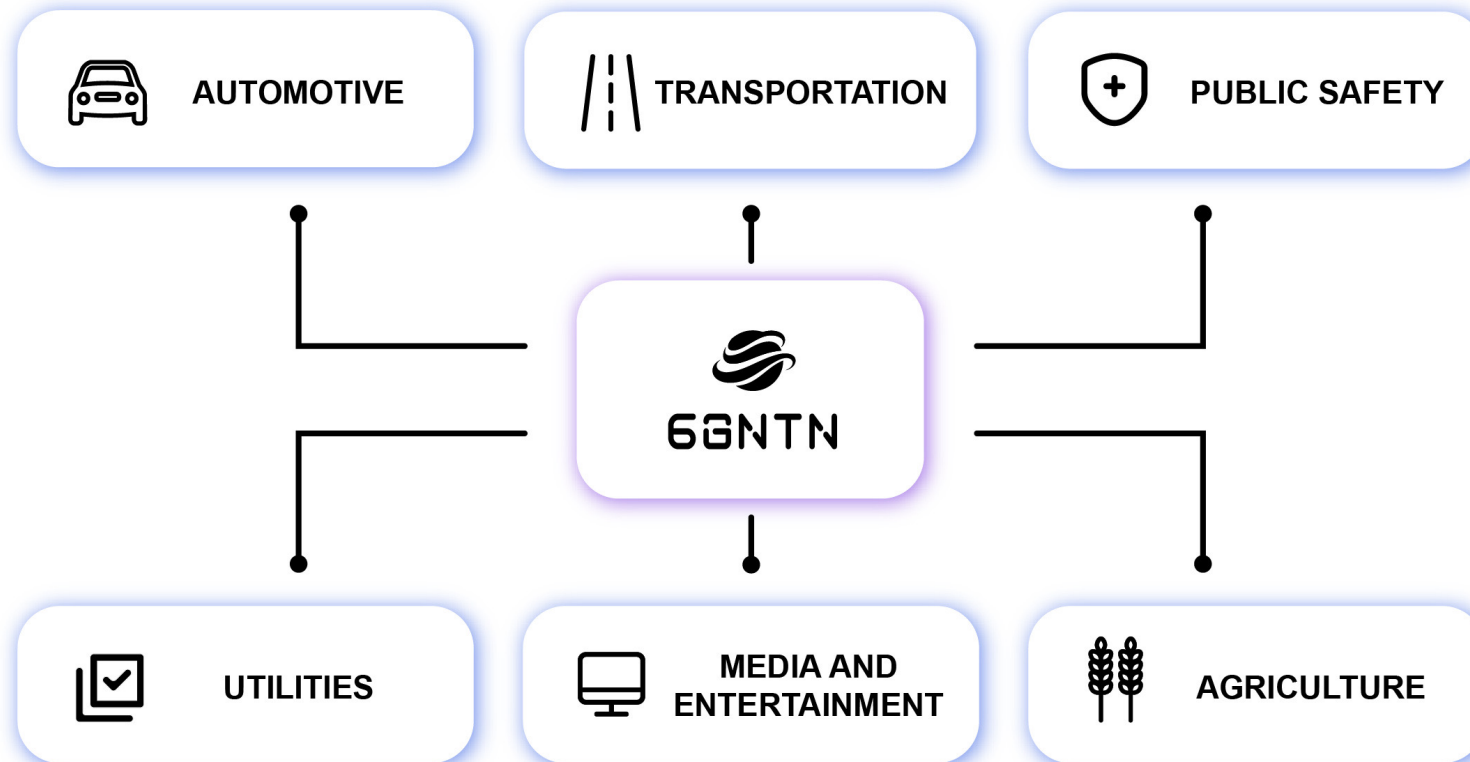
SES TECHCOM

6G NTN vision

An NTN component fully integrated into the future 6G infrastructure and better meet the needs of vertical markets and end-users

- Disruptive performance with respect to the 5G-NTN
- Global coverage
- Increased resiliency
- Improved sustainability
- Interoperability between NTN and TN components
- Flexibility and agility to meet the market evolution

6G-NTN addressed markets

Vertical stakeholders

AUTOMOTIVE

TRANSPORTATION

PUBLIC SAFETY

6GNTN

UTILITIES

MEDIA AND ENTERTAINMENT

AGRICULTURE

6G-NTN objectives

OBJ 1
- Identify the **target service and operational requirements** for 6G NTN component

OBJ 2
- Design/sizing of a **3D NTN** to meet the target user requirements

OBJ 3
- Design trade-off and assessment of **compact terminals targeted by the 3D NTN component**

OBJ 4
- Design flexible **software defined payload** across flying platforms and frequency bands

OBJ 5
- Design **key characteristics/features of a flexible waveform** for 6G's integrated radio access network

OBJ 6
- Design and evaluation of **AI data-enhanced multi-orbit multi-connectivity radio intelligent controller**

OBJ 7
- Design and development of **dynamic orchestration of Virtual Network Functions** in a 3D network for 6G

OBJ 8
- Design a **reliable and accurate positioning function** for the 6G system with a precision below 10 cm

OBJ 9
- Design **enabling features for spectrum usage optimisation** between the different network nodes

OBJ 10
- Maximise the **impact of 6G-NTN** and strengthening Europe's industrial leadership in the sector
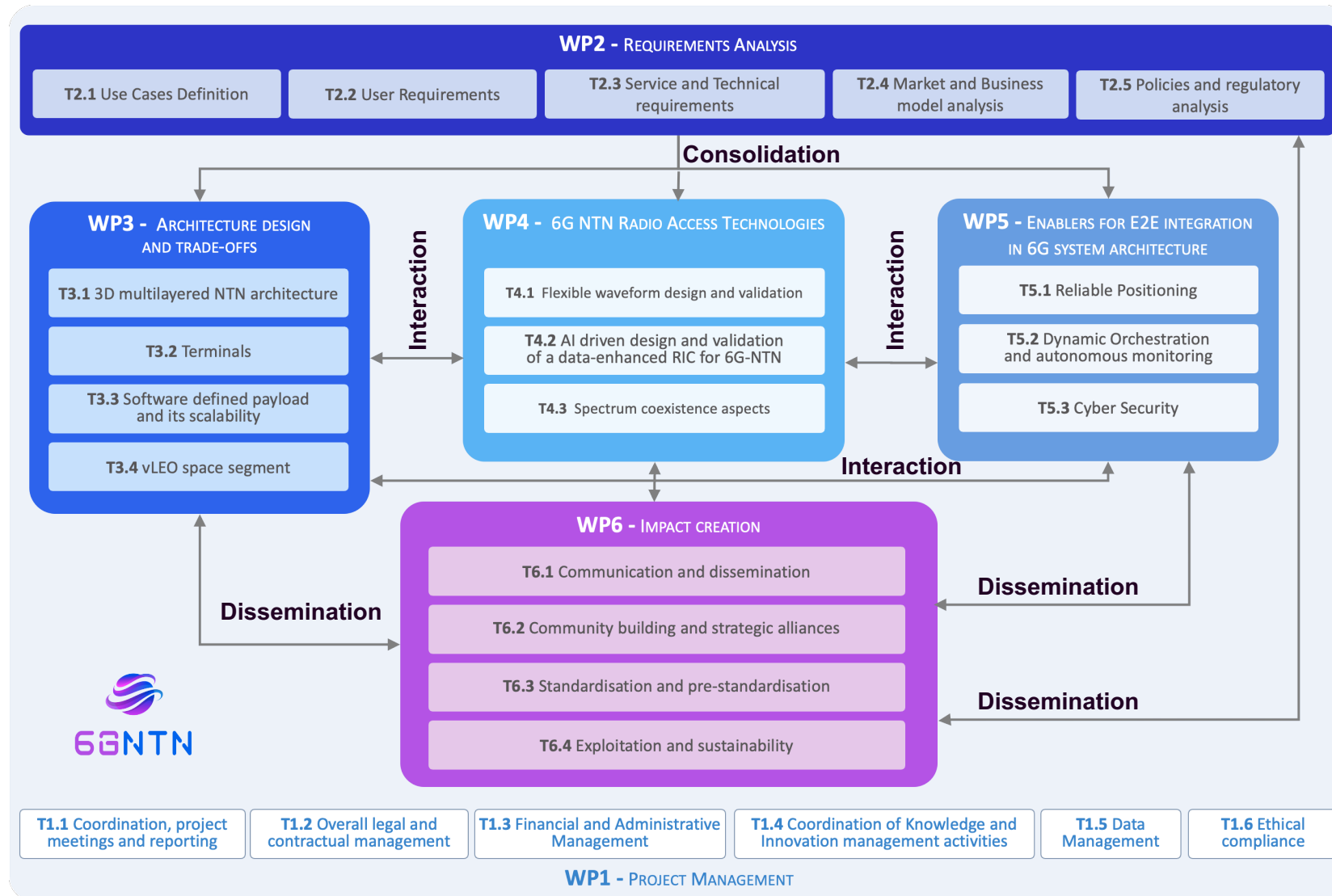
6G-NTN Timeline with 3GPP schedule
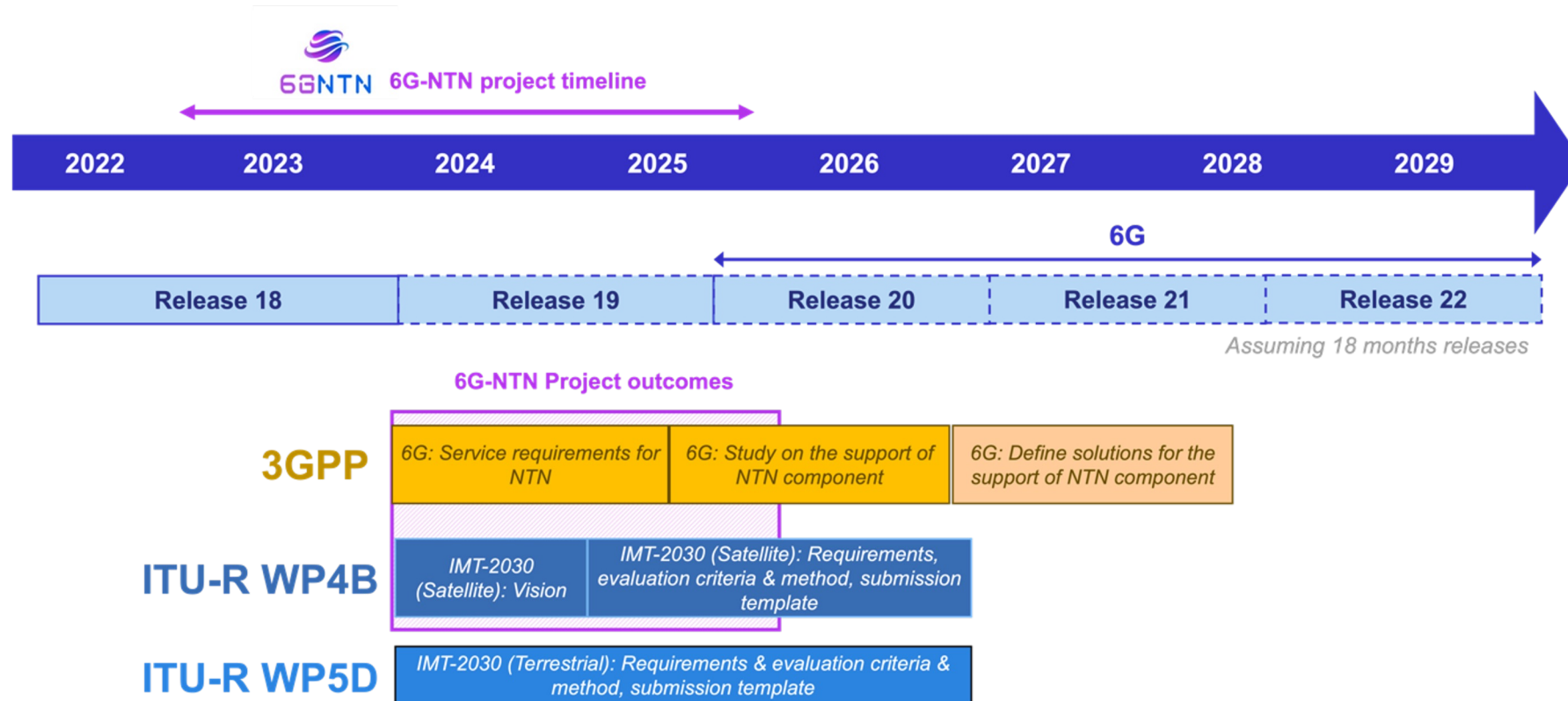
The 6G-NTN project will define a roadmap for the development of the building blocks needed for enabling integrated NTN service provisioning and disruptive market offer in the 2030-35 timeframe.

6G-NTN Methodology

WP2 - REQUIREMENTS ANALYSIS

| **T2.1** Use Cases Definition | **T2.2** User Requirements | **T2.3** Service and Technical requirements | **T2.4** Market and Business model analysis | **T2.5** Policies and regulatory analysis |

Consolidation

WP3 - ARCHITECTURE DESIGN AND TRADE-OFFS
- **T3.1** 3D multilayered NTN architecture
- **T3.2** Terminals
- **T3.3** Software defined payload and its scalability
- **T3.4** vLEO space segment

Interaction

WP4 - 6G NTN RADIO ACCESS TECHNOLOGIES
- **T4.1** Flexible waveform design and validation
- **T4.2** AI driven design and validation of a data-enhanced RIC for 6G-NTN
- **T4.3** Spectrum coexistence aspects

Interaction

WP5 - ENABLERS FOR E2E INTEGRATION IN 6G SYSTEM ARCHITECTURE
- **T5.1** Reliable Positioning
- **T5.2** Dynamic Orchestration and autonomous monitoring
- **T5.3** Cyber Security

Interaction

WP6 - IMPACT CREATION
- **T6.1** Communication and dissemination
- **T6.2** Community building and strategic alliances
- **T6.3** Standardisation and pre-standardisation
- **T6.4** Exploitation and sustainability

Dissemination
Dissemination
Dissemination

| **T1.1** Coordination, project meetings and reporting | **T1.2** Overall legal and contractual management | **T1.3** Financial and Administrative Management | **T1.4** Coordination of Knowledge and Innovation management activities | **T1.5** Data Management | **T1.6** Ethical compliance |

WP1 - PROJECT MANAGEMENT

- Initial use cases defined with the External Advisory Board representing the following sectors

  - Automotive

  - Aeronautic & Drones

  - Railway

  - Maritime

  - Utilities

  - Public safety

  - Defense

  - Media & Entertainment

  - Telecom

THANKS

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