1. Project Overview

- **Project Name:** 6G-NTN (www.6g-ntn.eu)
- **Stream:**
  - SNS-2022-STREAM-B-01-03: Comm. Infrastructure Technologies and Devices.
- **Members:**
  - Univ. of Bologna, Thales Alenia Space (F, UK), DLR, Orange, CTTC, Thales-SIX, Martel, Digital for Planet, Ericsson (F, SW), Greenerwave, Qualcomm, SES, Thales DIS.
- **Coordinator:**
  - Alessandro Vanelli-Coralli, University of Bologna
- **Technical Manager:**
  - Nicolas Chuberre, Thales Alenia Space France
- **Objective:**
  - 6G-NTN ambition is to define and validate key enablers of the 6G NTN component and its interactions with the terrestrial network component of 6G and to drive its standardization in 3GPP and ITU-R.

2. Technical Information

- **Project Key Objectives:**
  - Define and validate Non-Terrestrial Network 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 indoor and outdoor conditions.

- **Key technologies used/investigated:**
  - Design of a 3D multilayered NTN component (space and ground segments),
  - Flexible waveform design for 6G's unified radio access network,
  - Spectrum coexistence analysis,
  - Design of a reliable and accurate positioning function for the 6GS,
  - Dynamic Orchestration and autonomous monitoring,
  - Security aspects.

3. Planned Standardization Activities (1/3)

- **Standardization plans / objectives:**
  - ETSI:
    - Decision of ETSI standardization body to initiate one work item on the development of harmonized standard for earth stations operating in Q/V bands.
  - 3GPP:
    - Promote a study/work item at 3GPP on NTN for 6G as part of Rel-20
      - At TSG SA: To define the service requirements enabled by the NTN component of 6G
    - Promote a study item(s) at 3GPP TSG RAN as part of Release-20 package in RAN
    - Prepare for the normative phase in release 21 starting in 2026
  - ITU-R WP4B:
    - Development of vision and requirements of the IMT2030 satellite component in ITU-R WP4B.

3. Planned Standardization Activities (2/3)

- Project activities / technologies that may lead to standardization:
  - Features enabling flexible waveform for the different deployment scenarios including the 3D NTN architecture.
  - Multi connectivity between different network nodes at different altitudes.
  - Mobility procedures for zero interruption.
  - Enablers for AI driven integrated Radio resource management.
  - Enhanced RAN sharing concept resulting in Integrated RAN combining seamlessly mobile and satellite access technologies.
  - Research on C and Q/V bands as new NTN bands including spectrum coexistence studies, RF performance and RRM specifications.
  - High accuracy and reliable positioning method.

3. Planned Standardization Activities (3/3)

- **Potential targeted standardization bodies / groups:**
  - ETSI, 3GPP, ITU-R WP4B and WP5D

- **Standardization planning and estimated time plan:**
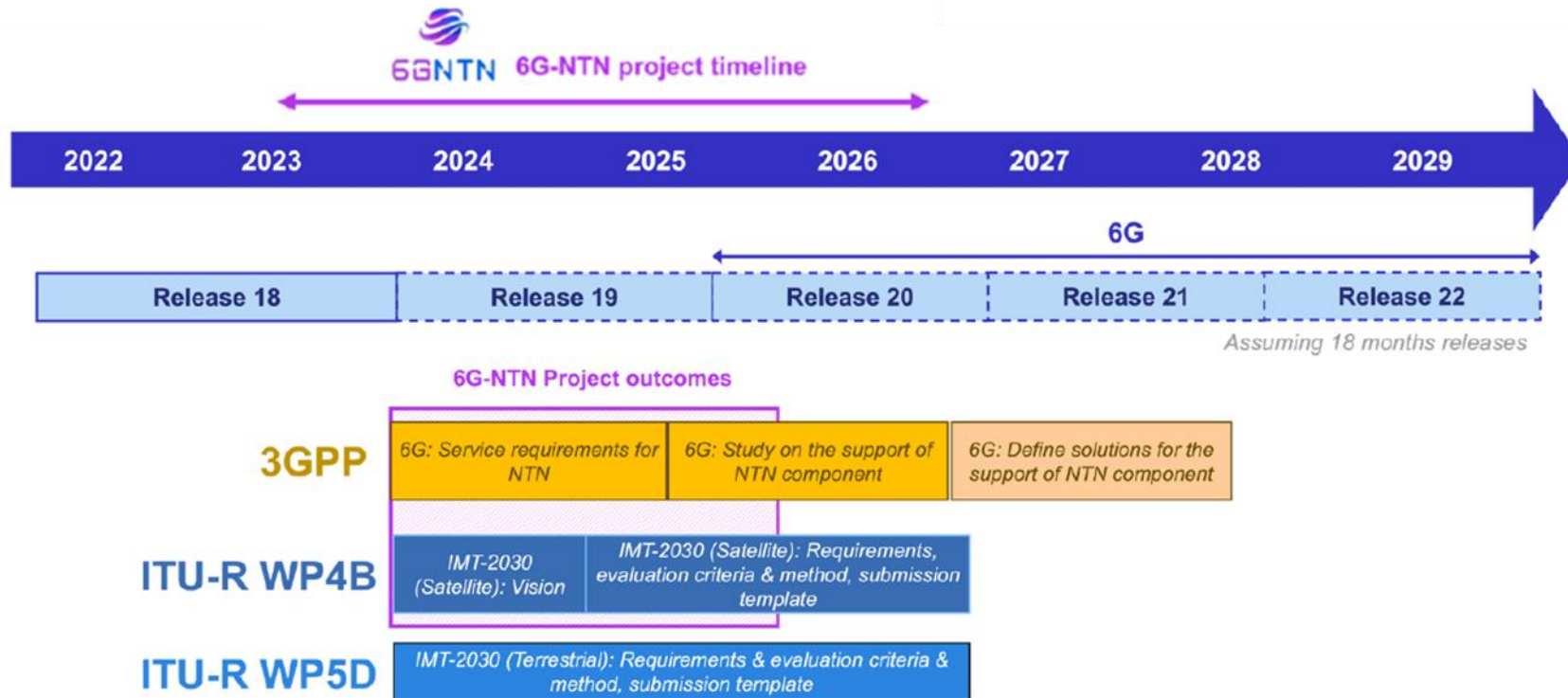
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