



The Standards People

ETSI Research Conference 2023

Maximizing the Impact of European 6G
Research through Standardization

Introduction to 6G-SHINE project



Gilberto Berardinelli, Aalborg University,
Denmark

gb@es.aau.dk

6G SNS

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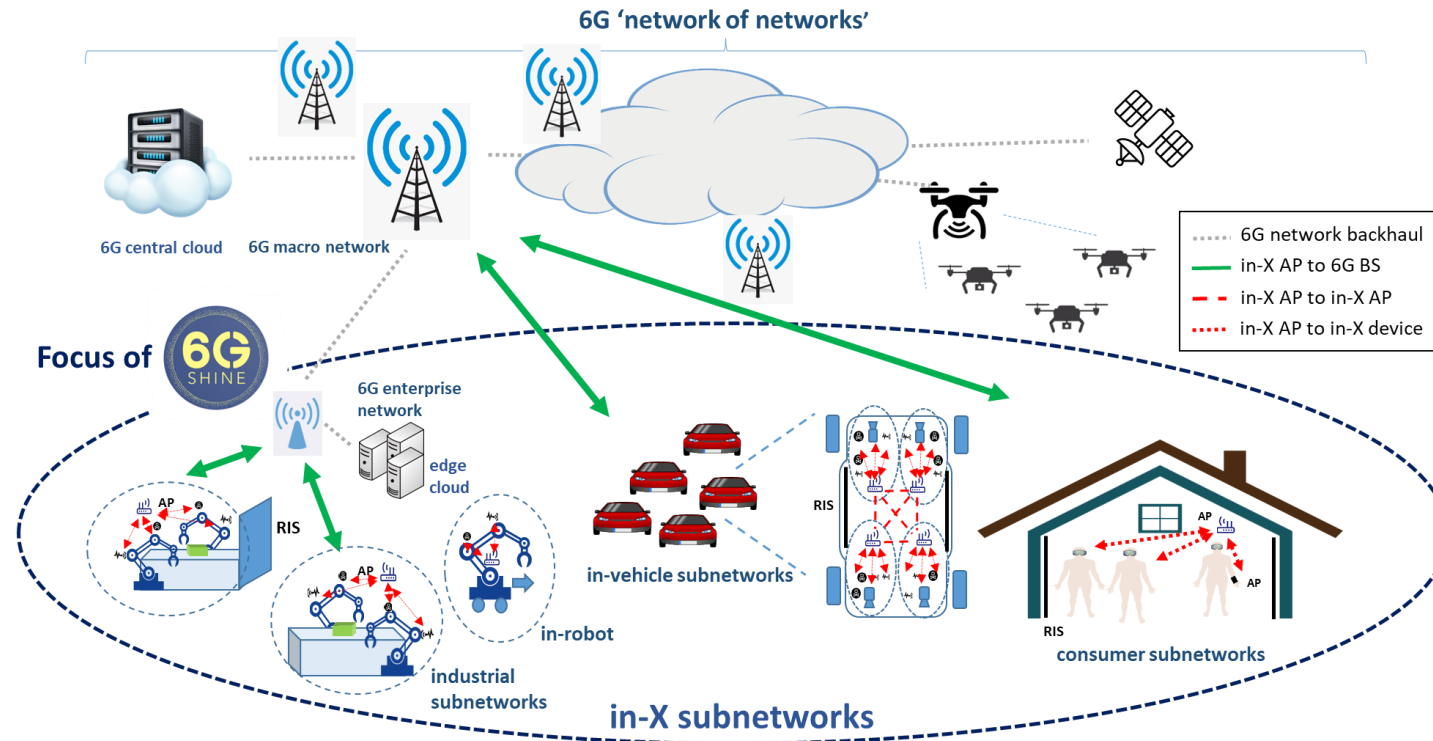
1. Project Overview



- **Project Name:** 6G SHort range communication IN Entities (6G-SHINE)
 - **Start/end date:** March 1, 2023 – August 31, 2025
 - **Project website:** soon online
- **Stream:** B-01-03, “Communication infrastructure technologies and devices”
- **12 partners:**
 - **Academia:** Aalborg University (Denmark) (Coordinator & TM); Universidad Miguel Hernandez de Elche (Spain); National Inter-University Consortium for Telecommunications (Italy)
 - **Device/User equipment vendors:** Apple (Germany); Sony (Sweden)
 - **Network equipment vendor:** Nokia (Denmark)
 - **Manufacture of equipment and components for cars/vehicles, industrial automation and consumer electronics:** Bosch (Germany)
 - **Research and development institutions:** Fraunhofer IIS (Germany); IMEC (Belgium); InterDigital (UK)
 - **Test equipment manufacturers:** Keysight (Finland)
 - **High-tech SME:** Cogninn (Greece)



2. Technical Information



Focus on *in-X subnetworks*, short range low power cells to be installed in entities like robots, vehicles, production modules, classrooms, etc.

• Project Key Objectives:

- Define relevant application scenarios, use cases and architectures for in-X subnetworks, and analyze related performance requirements.
- Design novel radio enablers for 'extreme' communication in-X subnetworks, and their smooth integration into the larger 6G 'network of networks'
- Validate the most promising technology components via proof-of-concepts in laboratory facilities.

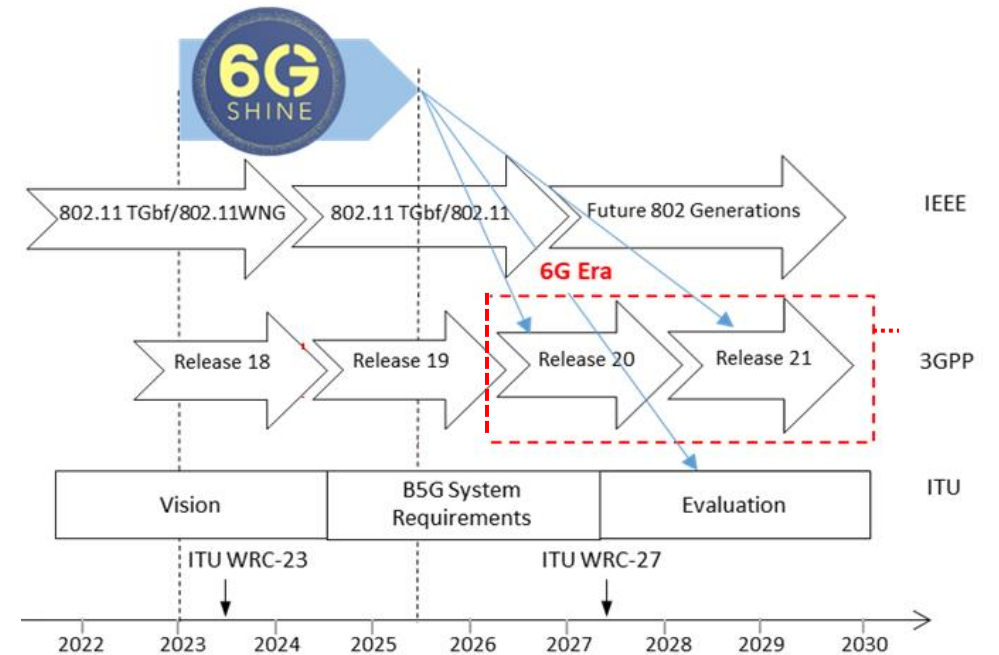
• Key technologies investigated:

- **PHY/MAC enablers:** e.g., ultra-reliable low latency communication, predictive schedulers, subTHz communication, RIS, analog hybrid beamforming/beamfocusing, intra-subnetwork macro-diversity
- **RRM enablers:** centralized/distributed/hybrid radio resource management, jamming detection and mitigation
- **Management of traffic, spectrum and computational resources:** coordination of operations of subnetworks in the same entity (e.g., same vehicle); traffic offloading techniques with computational resource profiling

• Focus on low TLR: 2-4

3. Planned Standardization Activities

- 6G-SHINE counts on partners intensively participating in standardization (Nokia, IDE, Sony, Apple, Keysight, Bosch, UMH) to support transferring 6G-SHINE contributions to standardization bodies.
 - Focus on pre-standardization, input for coming releases
 - Possibility of providing input already to Rel-19 (e.g., initial use cases for subnetworks)
 - Preparation of whitepapers
- **Potential targeted standardization bodies / groups:**
3GPP, ETSI, IEEE / 5G-ACIA, 5G-AA



3. Planned Standardization Activities

| | | Activity/technology | Potential targeted standardization body/group |
|---------------------|---|--|--|
| scenarios | } | Use cases and requirements for subnetworks | 3GPP SA1 |
| | | 6G in-X subnetwork channel models | 3GPP, ETSI ISG THz |
| PHY/MAC | } | Beam-based short-range communication for constrained devices | 3GPP RAN1, ETSI TG28 |
| | | Jamming-robust PHY design | 3GPP RAN1, IEEE WNG, ETSI DECT NR |
| | | RIS-enabled smart repeaters | 3GPP RAN1, ETSI ISG RIS |
| | | Network coded cooperation | 3GPP RAN1, ETSI, IEEE 802.11 WNG |
| | | Flexible/full duplexing with new signaling procedures | 3GPP RAN1, RAN2 |
| | | In-X predictive scheduling | ETSI TC ITS, IEEE 802.1 TSN TG, C2C-CC, 5G-ACIA, 5G-AA |
| | | MAC solutions for (new) unlicensed bands | ETSI TG28 |
| | | Centralized/distributed interference management | 3GPP RAN2 |
| RRM & architectures | } | Architectural components and signaling | ETSI ISG MEC |
| | | Data routing for collaborative subnetworks | 3GPP RAN2, IEEE 802.11 WNG |