PRIME-6G

Pilot for Resilient Industrial Manufacturing Environments with 6G Technologies

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prime-6g.eu

PRIME-6G at a glance

A Stream D pilot that brings 6G to the factory floor: deterministic connectivity, AI-native network and compute control, and sensing by the network itself, **validated in a factory-like environment.**

30 months
1 June 2026 – 30 November 2028

€6.0 M
SNS JU grant · €7.76 M total cost

13 partners
6 countries · coordinated by UC3M

TRL 6-7
pilot at ARENA2036, Stuttgart

The challenge

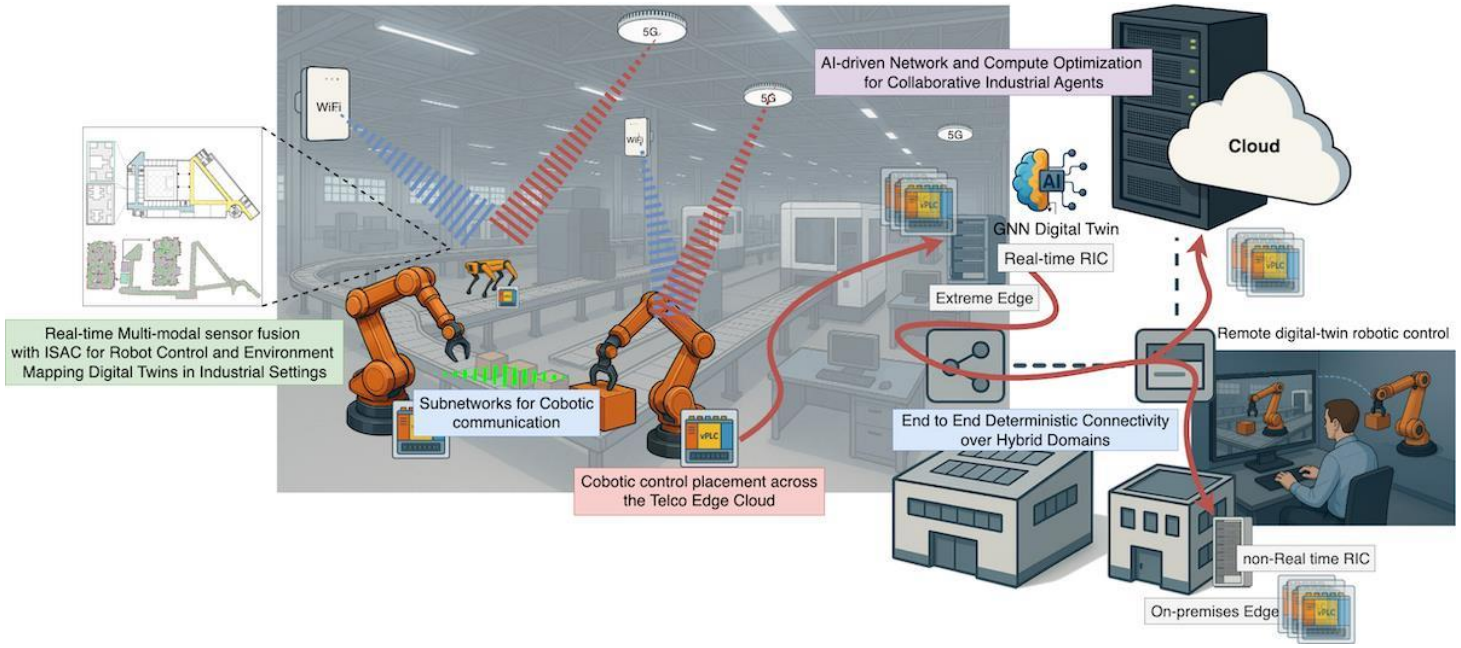
- Batch-size-one production needs AGVs and cobots that can be deployed on demand — no cabling, no lengthy reconfiguration.
- Wireless still cannot guarantee bounded latency end to end across Ethernet, Wi-Fi and 5G, and environment awareness depends on costly dedicated sensors.
- Industrial uptake needs evidence at high TRL in a real plant, and a business case to go with it.

The consortium

- **Research & academia:** UC3M (coordinator), IMDEA Networks, CTTC, University of Amsterdam
- **Industry & operators:** Siemens, Nokia, Telefónica Innovación Digital
- **SMEs:** 5COMM, Robotnik, Laude, AUSTRALO, iNCITES
- **Pilot site:** ARENA2036, the manufacturing research campus in Stuttgart

PRIME-6G technical objective

One end-to-end 6G platform over the Cloud-Edge continuum, **validated in a factory-like environment (ARENA2036)**: from lab components (TRL 5-6) to an integrated pilot (TRL 6-7).



PRIME-6G concept: the four technical enablers across the factory, edge and cloud.

AURORA

WP2 · Siemens, Munich · TRL 5-6

Deterministic 6G links virtualised robot control to the robots, with AI-optimised network and compute.

< 10 ms latency · 1-2 ms jitter

SENTINEL

WP3 · NEXTONIC, Madrid · TRL 5-6

ISAC and multi-modal sensor fusion keep a real-time digital twin of the factory floor.

< 50 ms twin update · ≥ 90 % detection

ARENA2036

WP4 · Stuttgart · TRL 6-7

Both use cases in one platform: real-time contextual awareness for self-organising logistics.

Use-case KPIs held after integration

PRIME-6G

From the lab to the factory floor

Three overlapping stages over 30 months, ending with a **month-long integrated trial and an open showcase at ARENA2036.**

Stage 1 · Design
M1 – M12

Use cases, requirements and the PRIME-6G platform blueprint.

Stage 2 · Integration & validation
M10 – M27

Components upscaled to TRL 6 and validated at Siemens (AURORA) and in Madrid (SENTINEL), then integrated at ARENA2036.

Stage 3 · Trial, showcase & uptake
M23 – M30

Integrated trial at ARENA2036, showcase to industry, business models and exploitation.

What PRIME-6G will deliver

- An end-to-end platform blueprint for industrial 6G, designed for replication at other sites
- At least six software components released as open source
- KPIs and KVIs validated at TRL 6-7 and fed into the SNS KPI/KVI repository
- At least ten contributions to 3GPP, IEEE, IETF, ETSI and O-RAN
- Business models, a pain-point register and a commercialisation plan

Where we want to work with you

- We build on earlier SNS and national results (PREDICT-6G, MultiX, DESIRE6G,Hexa-X II and 6G-DATADRIVEN among others) and want to take more of them into a real plant
- Active in the SNS JU Working Groups and in the Technology Board trackers (KPIs, standards, vertical engagement)
- PRIME-6G Innovation Challenge: open to EIT Manufacturing, VDMA and EFFRA communities
- **Talk to us:** prime-6g.eu