



The Standards People

ETSI Research Conference 2023

Maximizing the Impact of European 6G
Research through Standardization

Terahertz Reconfigurable Metasurfaces for Ultra-High Rate Wireless Communications (TERRAMETA)

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6G SNS

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1. Project Overview

- **Project Name:** Terahertz Reconfigurable Metasurfaces for Ultra-High Rate Wireless Communications

- **Project website:** terrameta-project.eu



- **Stream:** B-01-02

- **Members:** Institute for Systems and Computer Engineering, Technology and Science (PT), National and Kapodistrian University of Athens (EL), University of Hertfordshire (UK), University of Oulu (FI), Instituto de Telecomunicações (PT), Intracom Telecom (EL), CEA-Leti (FR), University of Luxembourg (LU), Dell EMC Research (IE), Technische Universität Braunschweig (DE), ACST (DE), NOVA.ID.FCT (PT), British Telecommunications (UK).

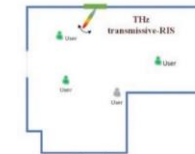
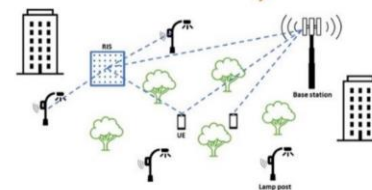
- **Other:** Novel high-performance THz hardware (wideband switches, metasurfaces/RISs, and TXs/RXs) and relevant network analysis/optimization techniques will be developed; Indoor, outdoor, and indoor-to-outdoor scenarios will be demonstrated in a real factory setting and a telecom testing field.

2. Technical Information

- **Project Key Objectives:**

1. Novel THz hardware development and testing.
2. Development of THz-tailored network architectures with realistic models.
3. Development of signal processing techniques for THz communications, localization, and sensing with various forms of reconfigurable metasurfaces.
4. Demonstrate THz metasurfaces in an “Industrial Edge” environment and an outdoor Telecom scenario with real-world equipment.
5. Actively influence 6G and THz communications standardization and regulation.

- **Key technologies used/investigated:** CMOS/memristors/microfluidics switches, multi-functional RISs (i.e., T-RIS, R-RIS, hybrid RISs with sensing capability, dynamic metasurface antennas and holographic MIMO).



3. Planned Standardization Activities (1/2)

- **Standardization plans / objectives:**
 - Standardization is seen as a means to disseminate the project's results as pre-normative input to standardization.
- **Project activities / technologies that may lead to standardization:**
 - Definition of scenarios and use cases;
 - THz channel measurements and modelling in scenarios with RISs; and
 - RF impairment modeling of RISs.
- **Potential targeted standardization bodies / groups:**
 - ETSI ISG THz;
 - ETSI ISG RIS;
 - IEEE 802 SC THz; and
 - ITU-R (Preparation of WRC 2027, ITU-R SG3).

3. Planned Standardization Activities (2/2)

- **Standardization planning and estimated time plan:**
 - Project results will be continuously assessed w.r.t. the potential input to standardization.
 - Mid of 2023:
 - Simulation scenarios and use cases defined in the project.
 - Mid of 2024:
 - Channel models and RF impairment models based on simulations; and
 - Interference models in RIS-supported X-haul networks.
 - Mid of 2025
 - Channel models and RF impairment models based on measurements.