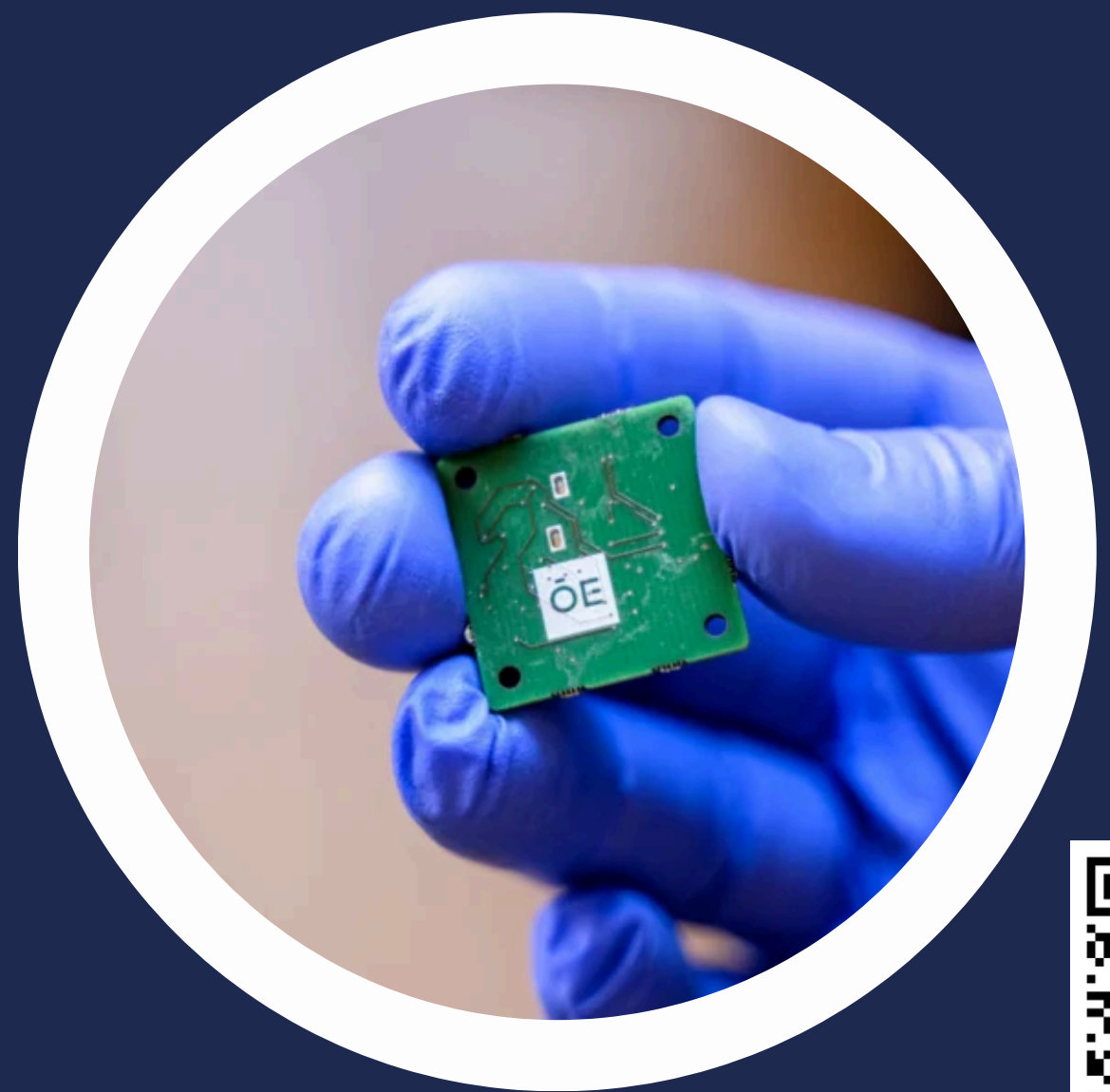


5G COMMUNICATION SYSTEMS TESTING AND CYBER-RESILIENCE SERVICES

This competency provides advanced testing, validation, and cyber-resilience assessment of 5G communication systems, covering performance, reliability, and security aspects. Building on research conducted within the NATO DIANA framework, the activity supports partners in evaluating 5G components, IoT devices, and mobile network infrastructures in both private and public network environments. The work contributes to secure deployment of next-generation communication technologies and strengthens RDI capacity in digital, industrial, and defence-related domains. It enables partners to identify vulnerabilities, validate compliance, and improve the robustness of critical communication systems.



ACHIEVEMENTS

- Inaugurated an advanced 5G measurement and test-network laboratory in May 2022 in cooperation with the National Security Service, Vodafone Hungary, and Nokia Enterprise Hungary
- Established a private 5G campus network with Yettel Hungary enabling hands-on experimentation with 5G radio, core, and test equipment
- Developed a Security Operation Center (SOC) methodology for 5G networks supporting simulated attack–defence scenarios
- Scientific publication on 5G RAN research activities at Óbuda University and maintenance of an international laboratory publication platform



INFRASTRUCTURE

- Stand-alone 5G SA test network with pico and micro RRH hardware operating in the 3.4 GHz band with GPS-synchronised RAN
- Virtualised 5G simulation environment using Open5GS and Free5GC cores with SDR-based software-defined RAN
- Cybersecurity testbed with SIEM and log-management infrastructure for intrusion detection, attack analytics, and resilience research
- Collaboration infrastructure supporting industry-grade private 5G network usage, applied RDI activities, and lab-based education



REFERENCES

- Radiation biology communication tests conducted with NNGYK (Sugárbiológiai és Sugáregészségügyi Főosztály)
- 4G and 5G radio-parameter measurement and evaluation projects with NMHH
- 5G RAN vulnerability assessment activities in cooperation with the Special Service for National Security
- 5G Mobile and Optical Communications Research Laboratory publication platform