

NEWSLETTER #4

[CONVERGE-PROJECT.EU](https://converge-project.eu)

CONVERGE project has received funding under the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101094831, including top-up funding by UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee.

2025 EuCNC & 6G Summit – Poznan

At the **2025 IEEE EuCNC & 6G Summit**, **CONVERGE** showcased an **immersive XR demonstration** that made the invisible world of radio communications visible. Through **real-time digital twins** of laboratories in Porto (Portugal) and Oulu (Finland), visitors explored how advanced 5G and 6G networks can be monitored and controlled using augmented and virtual reality.

The demonstration allowed participants to **interact with remote equipment**, including robotic arms, radio units, signal-blocking curtains, and reconfigurable intelligent surfaces (RIS), while visualizing radio-wave propagation and live network performance indicators in a gamified 3D environment.

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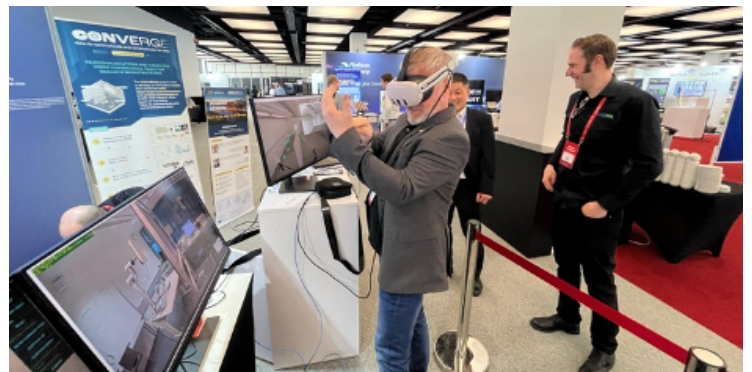


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Milestones & Highlights

- 2025 EuCNC & 6G Summit
- SLICES-RI / CONVERGE Summer School 2025
- End of WP2
- SLICES-Ready Architecture
- CONVERGE ICASSP 2026 Challenge
- Updated CONVERGE Dashboard
- CONVERGE at ICC 2025
- Special Session at EUSIPCO 2025
- Sixth Meeting in Sophia Antipolis

By combining XR technologies, digital twins, and next-generation communications, **CONVERGE demonstrated how future networks can become more intuitive, interactive, and accessible.**



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The **immersive platform** showcased potential applications ranging from remote operation and industrial monitoring to collaborative research, enabling users to interact with complex network infrastructures in a more intuitive and human-centered way.

The showcase was a **joint effort involving CONVERGE, 6G Flagship, and 6G-Sandbox**, highlighting a shared vision of interoperable digital twins and connected experimentation facilities across Europe. The live integration of testbeds demonstrated the potential of **immersive tools to simplify complex network operations** and accelerate 6G innovation.

Scan the QR code to watch the demo video.

Beyond its exhibition activities, **CONVERGE** contributed to several **discussions on 6G experimentation, collaboration, and innovation** at EuCNC & 6G Summit 2025.

In the workshop **“EU-US Cooperation on Advanced Research Platforms”**, CONVERGE joined initiatives such as SLICES-RI and 6G-Sandbox to discuss how interoperable research infrastructures and FAIR data practices can accelerate 6G development.

CONVERGE also contributed to the workshop **“6G Experimentation Methodologies, Pitfalls and Best Practices.”**

Filipe B. Teixeira (INESC TEC) presented the project’s work on **multi-modal data synchronisation and annotation**, supporting reliable and reproducible research.

These contributions reinforce **CONVERGE’s** commitment to openness, international cooperation, and real-world validation, helping advance the future of 6G research.



SLICES-RI / CONVERGE Summer School 2025

INESC TEC hosted the Summer School “**Hands-On 6G: Accelerating Innovation through Open Architectures and Advanced Testbeds**”, jointly organised by the **CONVERGE** and **SLICES-RI** projects. The three-day event brought together **70 participants** from more than 10 countries, including researchers, PhD students, and industry professionals interested in the latest advances in 6G technologies.



Combining expert **lectures** with **practical training**, the Summer School provided hands-on experience with advanced experimentation platforms and technologies developed within CONVERGE, including **OpenAirInterface**, reconfigurable intelligent surfaces (**RIS**), **xApps**, **computer vision**, and **digital twins**. Participants also explored topics such as Integrated Sensing and Communication (ISAC), Open RAN, artificial intelligence for network optimisation, and experimental reproducibility.



The programme featured keynote **talks from internationally recognised experts**, including Ahmed Alkhateeb (Arizona State University), Jakob Hoydis (NVIDIA), and Abhimanyu Gosain (Northeastern University), alongside tutorials delivered by researchers and industry specialists from across Europe.

By **combining theory with experimentation**, the initiative helped strengthen the European 6G research community and equip the next generation of researchers with the skills needed to develop and validate future communication systems.

WP2 Milestone: Building the Core of CONVERGE's Vision-Radio Framework

The CONVERGE project has **successfully completed Work Package 2 (WP2)**, delivering the core components of the CONVERGE framework, including: 1) **Vision-aided Large Intelligent Surface (LIS)**, 2) **Vision-aided Base Station and User Equipment Systems**, 3) **3D Environment Modeller (3D-S)**, 4) **Signal Propagation Simulation Tools (VR-S and NET-S)**, 5) **Machine Learning for Dataset Analysis (CMLF)**, and 6) **Camera Network System (CVCF)**.

Together, these technologies enable advanced digital twins, reproducible experimentation, and innovative vision-radio interactions for future 6G systems. With WP2 completed, the **project is now focused on integrating and validating these technologies** across its experimental sites, paving the way for a fully interoperable platform for next-generation wireless research.

CONVERGE: A SLICES-Ready Architecture for 6G Experimentation

CONVERGE is developing a common architecture that integrates communications, sensing, computer vision, digital twins, and machine learning within a unified experimentation framework. **Designed in alignment with the SLICES Beyond-5G Blueprint**, the architecture promotes interoperability, modularity, and reproducibility across distributed research facilities.

By adopting local and cloud services, common control interfaces, deployment nodes, and shared experiment workflows, **CONVERGE enables heterogeneous tools to operate consistently across multiple sites**. The framework also supports **FAIR data management and metadata publication through SLICES-compatible mechanisms**, paving the way for federation with future European 6G research infrastructures.



CONVERGE Challenge: Multimodal Learning for 6G Wireless Communications

IEEE ICASSP 2026

2026 IEEE International Conference on Acoustics, Speech, and Signal Processing

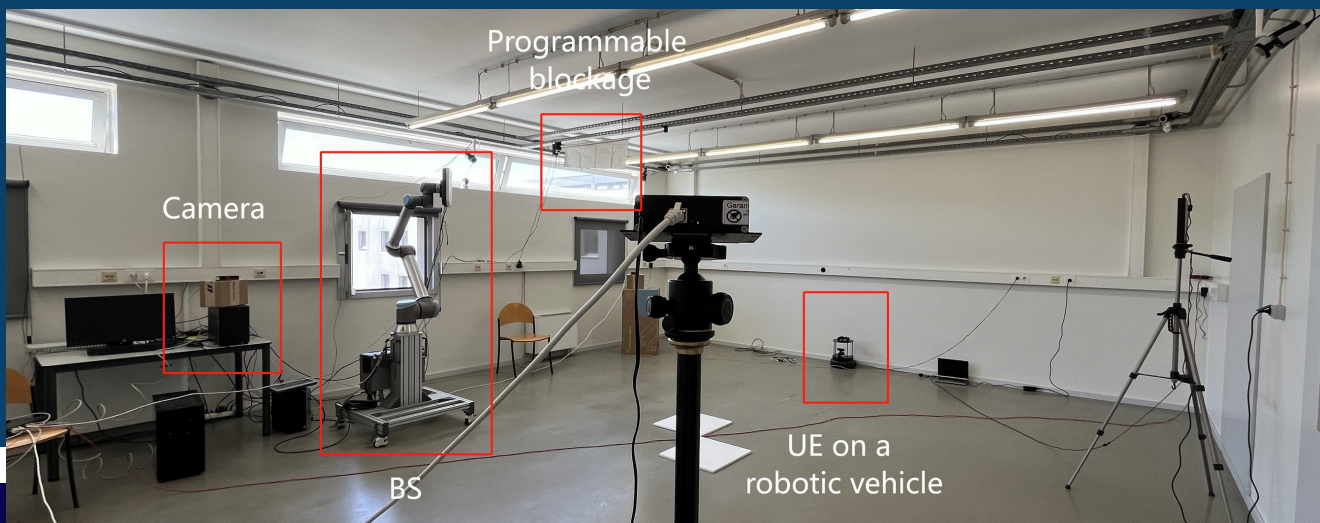
3-8 MAY 2026 - Barcelona



CONVERGE is launching a **Grand Challenge at ICASSP 2026** focused on Multimodal Learning for 6G Wireless Communications. The challenge invites researchers to **develop machine learning solutions that combine visual and radio data** to improve the performance of future wireless networks.

Using a **real-world multimodal dataset collected in the CONVERGE Porto site**, participants will compete across four tasks: 1) **blockage prediction**, 2) **user localisation and position prediction**, 3) **channel prediction**, and 4) **beam prediction**. The challenge aims to foster collaboration between the wireless communications, signal processing, computer vision, and AI communities.

The **best-performing** teams will be **invited to present their work at ICASSP 2026**, providing an opportunity to showcase innovative approaches to some of the key challenges facing future 6G systems.



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Updated CONVERGE Dashboard

The **CONVERGE Dashboard** has been enhanced to provide a **unified interface for experiment control, monitoring, and visualisation** across the project's research infrastructure. By integrating communications, sensing, digital twin, and data-management functions into a single platform, the dashboard **simplifies the deployment and execution of experiments** while offering researchers real-time access to key system information and performance metrics.



CONVERGE at IEEE ICC 2025

At IEEE ICC 2025, Dr. Ibrahim Hemadeh (InterDigital) represented **CONVERGE** by presenting **research on RIS-aided communications** and participating in the panel **“Future 6G Base Stations for Communications, Sensing and Positioning”**.

The discussions highlighted **emerging trends** in Integrated Sensing and Communication (**ISAC**), **standardisation activities**, and the role of **reconfigurable intelligent surfaces (RIS)** in future networks. CONVERGE was presented as a **pioneering initiative** combining computer vision and communications to enable smarter and more capable 6G systems.



CONVERGE Special Session at EUSIPCO 2025

CONVERGE was featured at EUSIPCO 2025 through the special session “Signal Processing for Imaging and Digital Twins”, coordinated by Miguel Bordallo Lopez (University of Oulu). The session highlighted the convergence of computer vision, radio sensing, and digital twin technologies.



Two CONVERGE papers were presented, covering high-fidelity radio simulation with reconfigurable intelligent surfaces and Radio Propagation as a Service. The session showcased the project’s advances in vision-guided radio systems and next-generation wireless research.

Sixth Meeting in Sophia Antipolis



In November 2025, CONVERGE partners met at EURECOM in Sophia Antipolis, France, for the project’s sixth face-to-face meeting, focused on integration activities and preparations for the final project phase.

Discussions focused on the integration of the developed technologies, and prepare for upcoming demonstrations, dataset releases, and dissemination activities.



With the project entering its final stages, the consortium remains focused on delivering a fully integrated and interoperable platform for future 6G experimentation.



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