4th Workshop on Data Driven and AI-Enabled Digital Twin Networks and Applications (TwinNetApp)

Workshop organized in conjunction with
IEEE International Communications Conference (ICC) 2026

Scope and Motivation

Digital Twin (DT) technology has emerged as a critical enabler for next-generation communication networks. Regarding this, DTs provide real-time synchronization between physical and digital systems and support advanced monitoring, emulation, and optimization capabilities. By bridging the physical and virtual domains, DTs provide novel approaches to design, analyze, and operate complex infrastructures that go far beyond traditional simulation methods. Real-time network monitoring, predictive modelling, proactive management, and what-if simulation are significant examples that highlight DT's potential in the communication domain and beyond. When combined with next-generation mobile communications (5G/6G), Artificial Intelligence (AI), Generative AI (GenAI), Internet of Things (IoT), Transfer Learning (TL), Augmented Reality (AR), Virtual Reality (VR), Edge/Fog Computing, federated architectures, and microservice-based platforms, DT becomes a foundation to guarantee latency-sensitive, energy-efficient, and secure services. These synergies create opportunities for sustainable and scalable solutions in diverse sectors, from smart cities and agriculture to healthcare, manufacturing, and autonomous systems. This workshop invites original contributions that address all aspects of DT networks, systems, and applications, including theoretical models, system architectures, optimization methods, security mechanisms, and real-world testbeds. By bringing together academia, industry, and standardization bodies, the workshop aims to establish a cross-disciplinary forum to explore the transformative role of DT in shaping sustainable, intelligent, and connected communication infrastructures.

Important Dates

Submission Deadline
~~18 January 2026~~
31 January 2026 (Firm)

Notification of Acceptance
8 March 2026

Camera Ready
22 March 2026

icc26-twinnetapp.bcrg.uk

Topics of Interest

Topics of interest include, but are not limited to:

- Data-driven and IoT-based DT networks for real-time communication systems
- Real-time communication protocols for DT networks
- DT-enabled health applications
- Wireless communications for cyber-physical DT applications
- Security and privacy concepts in DT
- Quantum-enabled DT networks
- DT-assisted AI applications for smart cities
- Communication protocols for enabling DT deployment in real-world applications
- AI applications of DT systems
- DT in Edge/Fog/Cloud Computing
- DT for enhanced Mobile Broadband (eMBB), massive Machine Type Communications (mMTC), and Ultra Reliable Low Latency Communications (URLLC) applications
- DT for resource management and network optimization
- Connected DT networking systems for environmental sensing
- DT for precision agriculture, and industry 4.0 applications
- Real-world DT simulations, prototypes, and testbed demonstrations

General Chairs

- Kubra Duran, Edinburgh Napier University, UK (K.Duran@napier.ac.uk)
- Berk Canberk, Edinburgh Napier University, UK (B.Canberk@napier.ac.uk)
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