

Call for Papers

The growing number and complexity of ubiquitous applications, combined with the rising demand for the services they provide, require increasingly robust computing support that must be dynamically provided by powerful and flexible resources. The increasing integration of computing resources across edge, fog, and cloud infrastructures, commonly referred to as the Compute Continuum, presents significant opportunities to enable ubiquitous computing paradigms. The Compute Continuum concept refers to the opportunity to take advantage of a broad ecosystem of heterogeneous and geographically sparse computing resources that applications access in a transparent and uniform fashion.

As emerging applications demand real-time processing, adaptive decision-making, and resilient computing infrastructures, the Compute Continuum becomes a critical enabler in bridging gaps between distributed resources. The integration of ubiquitous computing with the Compute Continuum promises enhanced efficiency, scalability, and responsiveness for a wide range of domains, including the smart homes, smart cities, and cyber-physical systems. Several challenges must be addressed to make this integration profitable. Among them are multi-tier orchestration, efficient latency-sensitive tasks offloading, intelligent workload distribution, and cross-layer security.

This "Cloud2Things" workshop aims to bring researchers, practitioners, and industry experts to examine how the Compute Continuum can effectively enable and enhance the Ubiquitous Continuum. Our goal is to discuss state-of-the-art advancements, identify key challenges, and promote collaborations that drive innovation in this fast-evolving field. We welcome contributions from both academia and industry, covering theoretical insights, practical implementations, and real-world applications that showcase the potential of this interdisciplinary domain.

Conference topics

Topics of the workshop include (but are not limited to):

Architectures and Frameworks for Compute Continuum and Ubiquitous Continuum

- Scalable and adaptive architectures for seamless integration of edge, fog, and cloud computing
- Middleware solutions for interoperability among edge, fog, cloud, and IoT systems
- Distributed computing frameworks to support latency-sensitive ubiquitous applications
- Software-defined and AI-driven orchestration for intelligent workload distribution
- Hybrid and multi-cloud approaches for ubiquitous service delivery

Resource provisioning in the ubiquitous continuum

- Dynamic resource provisioning and adaptive load balancing
- Serverless and microservices computing;
- Cross-context and cross-domain service migration;
- Efficient offloading strategies for latency-sensitive and compute-intensive tasks;
- Network-aware workload placement and orchestration;
- Blockchain-based and ML-based resource orchestration;
- Energy-efficient computing and sustainability in the compute continuum.

Data management and analytics

- Scalable storage architectures in pervasive contexts;
- Data migration issues across heterogeneous infrastructures;
- Implementation of data pipes along the Things-to-Cloud path;
- Data governance in the computing continuum;
- Distributed analytics in the computing continuum;
- Orchestration of complex mixed data-parallel dataflow workloads in the computing continuum;

- Event-driven and publish-subscribe models for real-time processing.

Intelligent and Autonomous Decision-Making

- AI and machine learning techniques for autonomous resource orchestration;
- Federated and distributed learning approaches for ubiquitous intelligence;
- Reinforcement learning approaches for autonomous and distributed systems optimization;
- ML-based and continuum-powered solutions to enhance adaptivity in the ubiquitous continuum.

Digital Twins

- Frameworks for Distributed Digital Twins (DDTs) in pervasive contexts;
- Design methodologies for DDTs;
- DDT-based applications and solutions in pervasive contexts;
- Resilient, scalable and secure DDTs.

Security, Privacy, and Trust

- Secure data sharing and access control across heterogeneous platforms;
- Privacy-preserving computing techniques in ubiquitous environments;
- Threat modeling and mitigation strategies for distributed infrastructures;
- Blockchain and decentralized approaches for trust management.

Paper Submission

Authors are invited to submit papers electronically through the following link: <https://cmt3.research.microsoft.com/Cloud2Things2025>.

Submitted manuscripts must represent original unpublished research that is not currently under review for any other conference or journal. Manuscripts are submitted in PDF format and may not exceed six (6) pages excluding the references in the ACM sigconf double-column format.

The review process will be single-blind. Each submission will be assigned to (at least) three independent Reviewers. The selected reviewers will not be from the same country/countries from where the author(s) submitted the paper.

All accepted publications will be published on the workshop website and the ACM Digital Library as part of the UbiComp/ISWC 2025 Adjunct Proceedings.

At least one author of each accepted paper needs to register for the conference and the workshop itself. During the workshop, each paper will be presented by one of the authors.

A "Best Paper Award" certificate will be conferred on the author(s) of a paper presented at the workshop, selected by the workshop organizers based on scientific significance, originality and outstanding technical quality of the paper.

Important Dates

Timezone: Anywhere in the world!

Paper Submissions Due: 29th June 2025

Acceptance Notification: 20 July 2025

Camera Ready Papers Due: 27 July 2025 (FIRM)

Organizing Committee

General Co-Chair(s)

Dr. Giuseppe Di Modica, University of Bologna, Italy

Dr. Alessio Catalfamo, University of Messina, Italy

Dr. Ioannis Konstantinou, University of Thessaly, Greece