Call for papers – Extended deadlines

FRAME 2024 : 4th Workshop on Flexible Resource and Application Management on the Edge

*Affiliated with the **33nd ACM International Symposium on High-Performance Parallel and Distributed Computing (HDPC) 2024***

News: a special issue of the **Journal of Grid computing** (Springer) related to FRAME 2024 is in preparation, the call is to appear shortly after the workshop.

Due to multiple requests, we extended the registration and submission deadlines.

<u>**Key deadlines:**</u>
~~12/02~~ **26 February, 2024**   Title and abstract submission
~~19/02~~   **4 March, 2024**   Submission of regular papers, WIP papers, and demos
    25 March, 2024   Notification of acceptance
    14 April, 2024   Camera-ready paper submission
    3-7 June, 2024   HPDC conference (workshops are June 3rd and 4th)

<u>**Website:**</u>   https://www.accordion-project.eu/frame2024/

This year besides **regular**, **short**, and **work-in-progress** papers we open an additional session dedicated to **demos**.
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Cloud computing architectures and related paradigms are gaining an ever-increasing degree of popularity and interest both from the industrial and the scientific community. They allow customers to "outsource" the management of physical resources by renting a variable amount of resources according to their actual needs, in a pay-per-use fashion. Research and technological efforts in this field keep expanding with the emergence of Edge computing infrastructures, as new problems and exploitation opportunities surface. Cloud and Edge infrastructures can work together to fulfill requirements from a variety of applications, composing the so-called Cloud/Edge Continuum. Clouds must provide appropriate levels of performance to large groups of different users, whereas Edge resources act as a first layer of computing capacity that is close to the user, enabling reduced latency and increasing the exploitable portion of network bandwidth. Edge infrastructures typically belong to different administrative domains, are resource constrained with respect to central Clouds, and are composed of a very heterogeneous set of resources, introducing new challenges in the fields of security, orchestration, and resource management. From a business point of view, organizations can benefit from the distributed nature of Edge computing to deploy dedicated services on a

context-driven, tenancy-driven or time-driven basis to serve certain areas. From a technological perspective, the scalability, interoperability, and efficient (de-)allocation of resources at the edge can enable a whole new set of scenarios. Interactive and time-sensitive services can be extended towards the edge, thereby closing the proximity gap with (potential) users. Data collection can happen within geographically/administratively bounded areas, ensuring compliance with data privacy and data retention policies. Real-time data-driven decisions can be promptly taken on the spot, without the need to wait for data to travel to the Cloud and back and allowing collaborative and interactive systems to perform live data processing fully exploiting the closest available devices.

The immersive data processing of Extended Reality (XR) applications such as VR, AR and Holography is a key example where dynamically shifting computation towards the network edges can also allow for a better computation to communication trade off, smoother connections and improved perceived QoE and collaboration. An even wider range of heterogeneous resources is nowadays available thanks to the integration of HPC-clusters and hardware-accelerated devices within Cloud platforms, leading to the scenario known as Hybrid Cloud HPC HC-HPC). The HC-HPC paradigm can aim at new tradeoffs in advanced system solutions by combining the computational prowess of HPC clusters, the dynamic management of virtually limitless resources of Cloud Computing, and the low-latency of Edge devices, overcoming the limitations of HPC systems designed for their peak performance and bringing cost savings as well as increased dynamic scalability and reliability.

Improvement and innovation opportunities like these call for new solutions and theoretical frameworks. The 4th International Workshop on Flexible Resource and Application Management on the Edge (FRAME 2024) aims at bringing together cloud and edge computing experts from academia and industry to identify new challenges, discuss novel systems, methods and approaches for the management of resources in cloud-edge infrastructures, as well as to promote this vision toward academia and industry stakeholders.

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Topics of interest

Topics of interest for the workshop include but are not limited to the following ones:

- Monitoring of Resources and Applications at the Edge
- Efficient management of storage at the Edge
- Efficient orchestration and Resources management for the Cloud/Edge continuum
- Fault detection and prevention in the Cloud/Edge continuum
- Adaptive management of Applications in the Cloud/Edge continuum
- Application Models for the Cloud/Edge continuum
- Lightweight virtualization tools and techniques for Edge devices
- Novel Computing and Data Architectures for the Cloud/Edge Continuum and Federations
- Edge OS approaches for hyper-distributed applications
- ML/AI techniques and algorithms for Cloud/Edge orchestration

- Distributed, decentralized and privacy-preserving ML/AI in the Continuum
- Neural Network architectures for edge computing such as TinyML and compressed neural networks.
- QoE/QoS modeling and assessment for the Cloud/Edge continuum
- Distributed infrastructures, architectures, network protocols for ultra-low latency
- Techniques and methods for streaming 3D and VR data in Continuum platforms
- Next-gen applications in the Continuum like AR, VR and Holography
- Workflows on highly heterogeneous and distributed platforms
- Cybersecurity, privacy, rights and sensitive/strategic data management in the Cloud/Edge Continuum
- Infrastructure as Code and automation in the Cloud/Edge Continuum
- Hybrid Cloud HPC and integration of HPC and Continuum platforms

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Submissions and attendance

Accepted papers will be published in the conference Proceedings and in the ACM digital Library. Submitted papers must be original work that has not appeared in and is not under consideration for another conference or a journal. Every submitted paper will be reviewed by at least three members of the Program Committee. Reviewing will be single blind.

Authors are invited to submit papers of the following types and lengths, in the ACM Proceedings format style:

- **Regular papers** (maximum 8 pages + 1 extra page) should present innovative works whose claims are supported by solid justifications.
- **Short papers** (maximum 4 pages + 1 extra page) should target position papers.
- **Work-in-Progress** (maximum 2 pages+1 extra page) should be new and promising approaches that still await full development and validation.
- **Demo presentation contributions** (maximum 2 pages +1 extra page), see below.

Submissions will be received via HotCRP: https://frame2024.hotcrp.com/

Please note that registering on the submission site with a title and meaningful abstract by the earliest deadline is required for enabling the actual paper submission. For full submission rules please refer to the workshop website.

This year FRAME introduces as a new type of contribution, the "demos". We call for demo-like presentations of prototypes, results of projects, and features of Continuum and HPC systems which are relevant to the workshop theme. Specific rules are applied to demos as we strive for quick, effective, and fast-paced presentations of systems that are related to the main workshop topics. The demo review and selection will be made considering the relevance, novelty, and degree of maturity of the demoed system. Live demos are encouraged, but video and

presentation based ones are accepted. A backup video is anyway mandatory for all demos on final submission, submitting a draft video for review is possible and advised. Each demo slot will consist of 15 minutes for the demo/video (at least 5 minutes) and the presentation (up to 10 minutes), plus 5 minutes for Q&A. Long-abstract like papers of the demos will appear in the proceedings, the demo video may also be submitted as accompanying media.

Detailed instructions will be posted on the workshop web site, but feel free to contact the organizers for any question or issue.

Publication

FRAME proceedings will be published by ACM in the HPDC proceedings companion book, as in previous years. The authors must be prepared to sign a copyright transfer statement. At least one author of each accepted paper/demo must register to the workshop by the early registration date (TBD), attend and present the work.

We are working to organise a Journal Special Issue on the **Journal of Grid computing** (Springer) dedicated to the topics of the workshop. Authors of selected papers will be invited to submit extended versions of their work. The SI call is to appear after the workshop.

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Organizers:

* **Massimo Coppola**, ISTI-CNR, massimo.coppola@isti.cnr.it, General Chair
* **Hanna Kavalionak**, ISTI-CNR, hanna.kavalionak@isti.cnr.it, Program Co-Chair
* **Luca Ferrucci**, University of Pisa, luca.ferrucci@unipi.it, Program Co-Chair
* **Ioannis Kontopoulos**, Harokopio University, kontopoulos@hua.gr, Program Co-Chair

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Preliminary list of program committee members:

- Jörn Altmann, Seoul National University
- Ferran Diego Andilla, Telefonica
- Lorenzo Blasi, HPE
- Emanuele Carlini, ISTI-CNR
- Patrizio Dazzi, University of Pisa
- Karim Djemame, University of Leeds
- Maria Fazio, University of Messina
- Katsiaryna Labunets, University of Utrecht
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