

CALL FOR PAPERS



TASIR Workshop: Testbeds for Advanced Systems Implementation and Research

January 8 2023, Hosted by IEEE COMSNETS 2023

https://www.comsnets.org/TASIR_workshop.html

The historic separation between the network and the compute has vanished. As defined by Sun microsystems long ago, “the Network is the Computer” (John Gage 1984); resources are everywhere supported by virtualization, distribution and cloud SaaS. This trend is going to impact the telecommunication and computer-based sectors, from design to products to operation. This will disqualify the multi-year planification approach based on new generations (2G/3G/4G/5G, etc.) and threaten the corresponding legacy industry. The science of Digital Infrastructures raises multiple complex challenges for the research community due to this convergence but also presents significant opportunities as the ITU, WRC and IMT 2030 vision for future networks is developed over the next decade.

Experimentation is becoming an essential methodology to assess and qualify the diverse design assumptions and choices in realistic conditions. It addresses the future Internet roadmap with an ambitious agenda regarding the fundamentals and technologies for operating reliable, safe, scalable and efficient infrastructures as well as support the vertical applications that will land on these digital infrastructures. This is the motivation for developing a holistic approach where all resources (compute, storage, network) are associated to continuously design, operate and automate the full life cycle management of applications and services.

The need for a scientific instrument, as a reference to a rigorous methodology developed in many scientific domains, is justified by the emergence of a future Internet including beyond 5G infrastructures that require adapted and well-tailored tools for testing and developing trust and confidence regarding the design and deployment phase. Experimental platforms should be able to address the end-to-end scenario, integrating all technologies and components.

Such platforms will allow researcher and industry to question scientific challenges regarding the future technologies and services. They will be based on a technology roadmap that will be consolidated on the basis of the analysis of several inputs provided by the community regarding the wireless technology advances, that are pertinent to the evolution of new radio (NR) and core network (CN) over the next decade 2020-2030.

It is important to note that initiatives exist at the international level with ambitious projects like [EU ESFRI SLICES](#) (2021-2040, 150M€), in the US ([NSF PAWR](#) 2017-2022 100M\$, [NSF FABRIC](#) 2019-2024 20M€), BRIDGES (2021-2024, 2.5M\$) , India (DoT [5G Testbed](#) 2018-2022 15M\$), and Japan ([Beyond5G](#) Promotion Consortium).

We are seeking original, previously unpublished papers empirically addressing key issues and challenges in experimental wireless networking. We are particularly interested in papers describing developments, lesson-learned and new results obtained through platforms for at-scale wireless research mentioned above.

Topics of interest include, but are not limited to:

- Design and evaluation of wireless testbeds and prototyping platforms for
 - New waveforms;
 - Spectrum frontiers for frequencies mmwave up to THz;
 - Spectrum and wireless management;
 - Integrated sensing and communication;
 - Multiple heterogeneous radio management;
 - Digital Twins ;
- Measurement, curation and characterization (modeling) of large scale datasets aspects of wireless testbeds such as
 - Advanced protocols and architecture
 - Usage patterns, traffic, mobility and channel characteristics
 - AI applied to infrastructure operation and optimization at all layers;
 - Generation of data to train algorithms;
 - Distribution of intelligence into the Edge of the network;
- Design and validation of new Edge/Fog infrastructures
 - Software and components deployment
 - Distributed resource management
 - Geo-distributed data management
 - Federated deep-learning
 - Machine Learning applied to wireless systems
- Methodology for designing and operating testbeds as a service (TaaS)
 - Instrumentation and measurement;
 - Architecture and APIs;
 - Experiment design and life-cycle management;
 - Data management and reproducibility;
 - Testbed implementation and operation.

Structure of the workshop

The workshop will follow a full day structure. The Workshop program is structured for a full day with Talks/Panels in the workshop session, complemented with demonstrations and posters.

This workshop also continues the work started in the INFOCOM 2019 “Workshop on Experimentation Meets Platforms: A Survey of macro trends in mobile communication research and its impact on future testbed development”. Several other workshops and panels have been organized successfully over the last few years at IEEE Infocom, EuCNC, and IFIP Networking.

Important Dates

- Paper submission: ~~10 November 2022~~ **20th November 2022, AoE**
- Paper acceptance notification: 10 December 2022
- Camera ready: 15 December 2022
- Workshop date: 8 January 2023

Paper Submission Information

Papers should not exceed 6 page limit in IEEE format (double-column, 10pt font), including figures and references and should be submitted through EDAS in PDF format. <https://edas.info/N29765>.

Only original papers that have not been published or submitted for review elsewhere will be considered for publication in the proceedings. The review process is single-blind – authors should present their names and affiliations in the submitted manuscript.

Papers will appear in the conference proceedings and will be submitted to IEEE Xplore Digital Library. At least one author of each accepted paper is required to register and present the work in the workshop.

Workshop Co-Chairs



Serge Fdida

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Technical Program Committee (TPC):

- Serge Fdida, Sorbonne Université, Co-Chair, France
- Manu Gosain, Northeastern University, Co-Chair, USA
- Srinivas Shakkottai, Texas A&M University, USA
- Aloizio Pereira da Silva, Commonwealth Cyber Initiative & Virginia Tech, USA
- Tommaso Melodia, Northeastern University, USA
- Stefano Basagni, Northeastern University, USA
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- Bartosz Belter, PSNC, Poland
- Yuri Demchenko, University of Amsterdam, The Netherlands
- Antonio de la Oliva (University Carlos III of Madrid)
- Ari Pouttu, University of Oulu, Finland
- Christian Perez, INRIA, France
- Costas Filis, Cosmote, Greece

- Sebastien Ziegler, Mandat International, Switzerland
- José Rezende, RNP, Brazil
- Aki Nakao, University of Tokyo, Japan
- Ruslan Smelianski, Applied Research Center on Networking, Russia
- Alain Mourad, Interdigital, UK
- Raymond Knopp, Eurecom, France
- Per Hjalmar Lehne, TELENOR, Norway
- Vijay Shah, George Mason University, USA
- Chandra R. Murthy, Indian Institute of Science, Bangalore, India
- Anthony Franklin, Indian Institute of Technology Hyderabad, India