

Call for Papers: 2024 1st International Workshop on Energy Neutral and Sustainable IoT Devices and Infrastructure

A significant share of the IoT landscape is increasingly dominated by ultra-constrained devices. Due to their massive number and targeted applications, such devices should be maintenance-free, self-sustained/sustainable, cheap, autonomous, and imperceptible. We refer to such devices as energy-neutral devices (ENDs) and note that they remain partially/fully unsupported by modern connectivity solutions. There are many well-known END technical enablers, including robust energy harvesting and management techniques, efficient energy storage (if any), sustainable materials, advanced backscattering systems, non-RF communication technologies, duty cycling and wake-up protocols, TinyML, and lightweight (and energy-aware) sensing, actuation, computing, and communication protocols. Many of these require support at the network infrastructure level, while all of them have relevant challenges and open research issues. This workshop focuses on this and on innovative approaches to developing ENDs that operate sustainably within their environmental contexts. Specifically, we aim to discuss typical energy harvesting sources, operational environments, memory and computational resources, and materials selection for ENDs; delve into key END-enabling technologies; and provide insights into specific challenges for the future. We invite researchers, industry professionals, and innovators to contribute to our workshop, and thus advance the state of the art in sustainable IoT technologies and practices.

Topics of interest include but are not limited to:

- *Design and optimization of ENDs*
- *Sustainable materials and manufacturing processes for IoT*
- *Energy harvesting technologies and their integration into IoT systems*
- *Ultra-low power communication technologies and network protocols*
- *Environmental impact assessments of IoT systems*
- *Lifecycle management of IoT devices*
- *Policy and regulatory considerations for sustainable IoT*
- *Case studies and applications of sustainable IoT, e.g., in smart cities, transportation, agriculture, and healthcare.*
- *Technical enablers for ENDs, e.g., energy management for IoT devices, backscattering, duty cycling and wake-up protocols, non-RF communication technologies, wireless power transfer for IoT, TinyML, federated learning in IoT, and application scenarios*
- *Low-power machine-type communications in 6G*
- *Ambient IoT standardization advances and perspectives*

This event is co-organized in collaboration with [Hexa-X-II](#), [SUPERIOT](#), [INTERACT](#), and [6G Flagship](#).
Accepted papers will be eligible for publication in the IEEE Xplore Digital Library!

Important Dates:

Full Paper Submission Deadline: 13th August 2024
Acceptance Notification: 2nd September 2024
Camera-Ready Submission: 16th September 2024
Workshop Date: 21st October 2024

Submission Portal:

Please submit your papers through [this EDAS link](#)

Contact:

For more information or queries, please contact the Workshop Chairs at onel.alcarazlopez@oulu.fi, konstantin.mikhaylov@oulu.fi, ritesh.singh@imec.be, c.buratti@unibo.it

Why Participate:

This workshop provides a unique platform to share cutting-edge research, network with leaders in the field from academia and industry, and explore collaborative opportunities. It aims to foster the development of practical, scalable, and sustainable IoT solutions that align with global sustainability goals.

We look forward to your submissions and an exciting exchange of ideas at this leading-edge workshop!
