

Laboratory of Parallel, Embedded architectures and Intensive Computing

(LAPECI : <https://www.lapeci-dz.org/index.php>)

Organizes the

Thematic days on IoT, Big data and Real-time data processing

June 30th and July 1st, 2025

University Oran1

Thematic days on IoT, Big data and Real-time data processing are dedicated to exploring the latest innovations in the Internet of Things (IoT), Big data, and Real-time data processing. Through a blend of theoretical sessions and hands-on workshops, participants will gain practical experience working with time-series data from IoT sensors and discover advanced tools for real-time monitoring and decision-making.

During this event, an advanced platform for real-time processing of IoT sensor data will be presented, with a specific focus on agricultural applications. The main purpose is to introduce IoT data collection methods using sensors, ESP32 and Arduino micro-controllers, and Raspberry Pi computers. The **WALLeSmart** project will also be presented, showing how Big data, Cloud computing and IoT can revolutionize digital agriculture by improving farm management and traceability.

Furthermore, the National Research Program project titled '**EUB-AGR*: Integrated, Efficient, and Intelligent Management of Bio-Treated Wastewater for Agriculture**' will be presented.

This presentation will include the introduction of a prototype IoT platform designed for real-time monitoring of wastewater quality.

Monday, June 30th, 2025

08:15 – 09:00 Reception and registration

09:00 – 09:30 Opening allocution:

- Pr Abou El Hassane BENYAMINA, University Oran1, Algeria
LAPECI lab director
- Pr Lakhdar LOUKIL, University Oran1, Algeria
Chairman of the workshop organizing committee
- Pr Mohammed HAMADOUCHE, University Oran1, Algeria
Dean of the Faculty of Exact and Applied Sciences

09:30 – 10:30 Pr. Said MAHMOUDI, University of Mons, Belgium

- Introduction to IoT and data collection techniques at scale.

10:30 – 10:45 Coffee Break

10:45 – 11:15 Pr. Said MAHMOUDI, University of Mons, Belgium

- Presentation on the challenges of Smart Farming and the exploitation of agricultural data.

11:15 – 12:30

- Presentation of WALLeSmart's technical architecture.
- Real-time demonstration: collection, processing, and analysis of IoT sensor data.

12:30 – 14:00 Lunch Break


14:00 – 15:30 Pr Abou El Hassane BENYAMINA, University Oran1, Algeria

- Presentation of LAPECI's international and intersectoral projects.

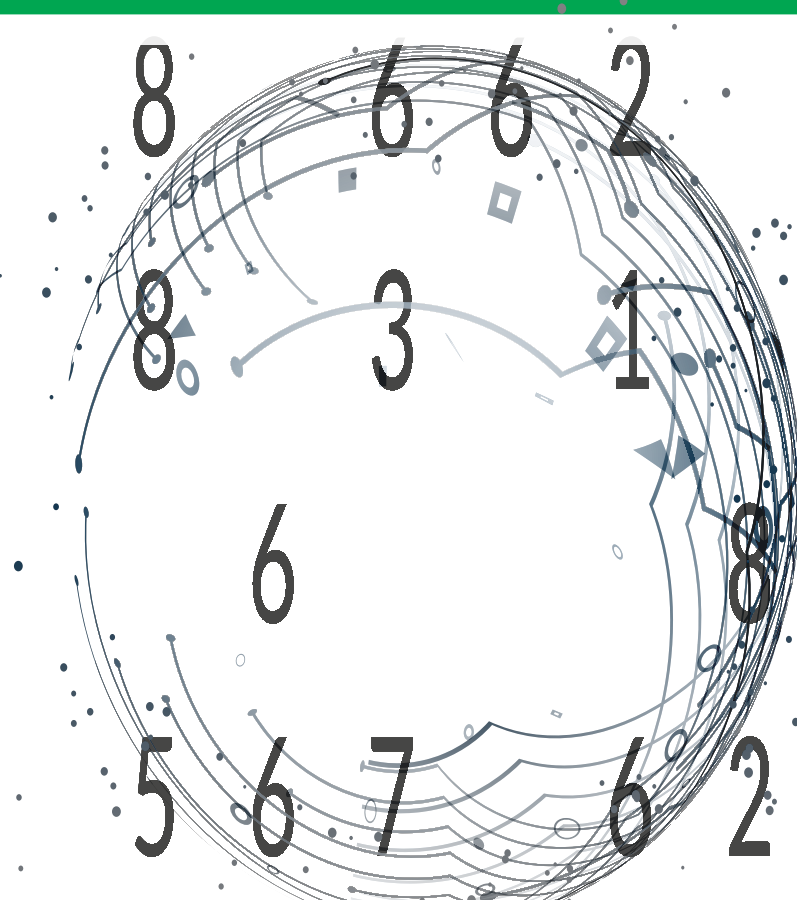
Pr. Lakhdar LOUKIL, University Oran1, Algeria

- Presentation of the National Research Program Project 'EUB-AGR : Integrated, efficient and intelligent management of bio-treated wastewater intended for agriculture'.
- Presentation of a prototype IoT platform designed for real-time monitoring of wastewater quality. Application to the Mascara wastewater treatment plant.

15:30 – 15:45 Coffee Break – End of the first day



Saïd MAHMOUDI
Professor at the Faculty of Engineering, Computer Science department. University of Mons, Belgium.



Nouredine BENDJELLOUL
Research engineer, ILIA team, University of Mons, Belgium.

Tuesday, July 1st, 2025

Practical workshops

08:30 – 10:30 Dr. Nouredine BENDJELLOUL, University of Mons, Belgium

- Deployment of a Big Data processing infrastructure tailored to the agricultural sector.
- Real-time data manipulation: ingestion, storage, visualization, and advanced analysis.

10:30 – 10:45 Coffee Break

10:45 – 12:45 Dr. Nouredine BENDJELLOUL, University of Mons, Belgium

- Real-time data manipulation: ingestion, storage, visualization, and advanced analysis (continued).
- Experimentation on real-life scenarios and feedback.

12:45 – 13:30 • Round table and closing of the thematic days.

Organization committee:

- Abdeldjalil AIDI
- Bakhta AMRANE
- Sarah BALBOUZI
- Abou El Hassane BENYAMINA
- Walid BENZINEB
- El Abbassia DEBA
- Lamia DJEBBOUR
- Nesrine HAMDANI
- Ahlem KENNICHE
- Lakhdar LOUKIL
- Kheira MECHACH
- Karima MOKHTARI
- Lougmiri ZEKRI
- Abderrazak ZEBOU DJ
- Issam ZERNAH

*This event is partly funded by the National Research Program Project 'EUB-AGR'.