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NEON NEWSLETTER 2023

The Internet of Things (IoT) is considered as one of the most significant technological developments of the 21st century. It has various applications such as vehicular communications, Smart Grids, Smart Cities, e-health, Industry 4.0, sensors-based agriculture, civil security, and emergency and disaster response. We at NEON, Erasmus+ Capacity Building in Higher Education (CBHE) project, are happy to be part of this global trend. With a main focus on Argentina and Uruguay, the project aims to contribute to IoT growth by aligning academia with industry with the help of the created IoT Hub called "Network of Competence on IoT (NoC)".

The project NEON started in January 2021, and now, in January 2024, it is officially completed. In 2023, NEON focused on accomplishing its main objectives and goals. The performed activities can be split into the following categories:

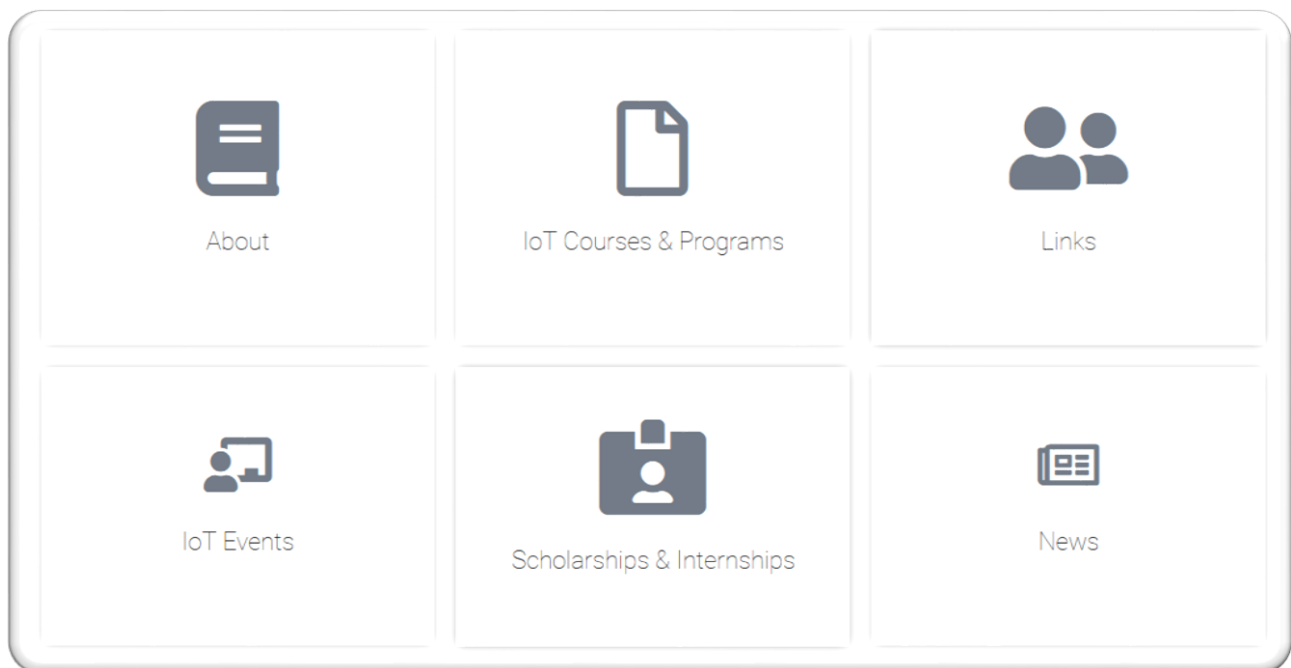
- establishing the IoT Hub "[Network of Competence on IoT](#)".
- creation and modernization of [teaching material](#) including the development of a publicly open web repository with the developed materials;
- creation of modern [joint industry-academia labs](#);
- execution of [student and staff mobility](#);
- miscellaneous project implementation, reporting, and [dissemination](#) activities.

During the entire project duration, NEON activities, deliverables, and events were announced on the project website, NEON YouTube channel, and other social media channels, including LinkedIn, Facebook, and Instagram.



NETWORK OF COMPETENCE

The “**Network of Competence on IoT**” is an IoT Hub established by the NEON members to promote cooperation between the NoC members, academic institutions, industries, and independent individuals in order to coordinate and cooperate in preparing and training human resources in the IoT domain. The NoC activities include the development of educational materials, organizing training and networking events such as seminars and workshops, offering internships and scholarships for talented students, and management of shared infrastructure and mutual research projects. To exchange information, educational material, IoT events, employment and scholarship opportunities, the NOC website was created that is accessible via a link (<https://neon-iot.org/>). In 2023, the NEON partners finalized the NoC **cooperation agreements** and established the NoC **governance** to maintain and broaden NoC.




- **PROMOTING IOT ACTIVITIES**, screenshot from NoC website

DEVELOPED TEACHING MATERIALS

In the framework of NEON, teaching material, including **13 modernized courses** and **8 newly created** ones, have been developed. All courses introduce some aspects related to the Internet of Things (IoT). All courses are provided in Spanish (SP) and/or English (EN). All materials are publicly available on GitHub (<https://github.com/neon-iot>). The developed materials (**21 repositories**) are planned to be used in **27 courses**.

Newly created IoT Courses	Modified Courses
Cellular IoT Systems(UNS)[EN]	Communication Systems Based on SDR (UNMDP)[SP+EN]
Hardware and Microwave Circuit Design for IoT (UNMDP)[SP]	Antenna Design (UDELAR)[EN]
IoT Design and Embedded Systems (UCU) [SP]	Fundamentals of Communication Systems (UNS)[EN]
IoT in Agribusiness (UCU)[EN]	Cognitive Software Defined Radio (UNC) [SP]
Hands on IoT (UNMDP)[SP]	Wireless Communications Systems (UNS)[SP]
Fundamentals of Internet of Things (UNC)[EN]	Communication Labs (UNC)[SP]
Communication Technologies for IoT(UDELAR)[SP]	Introduction to Digital Communications (UNS)[SP]
IoT Programming (UNC)[SP]	Antennas (UNS)[SP]
	Wireless Sensor Networks(UDELAR)[SP]
	Real Time Embedded Systems (UDELAR)[SP]
	Radio-localization and Radar (UNS) [SP]
	Fundamentals of Communication Systems (UCU)[SP]
	Digital Design for Low Power (UDELAR)[SP]



neon-iot
 Working repositories for modernized and new classes on IoT

[Overview](#)
[Repositories 21](#)
[Projects](#)
[Packages](#)
[People](#)

Popular repositories

communication_labs
 Communications Labs
 Jupyter Notebook ☆ 7 🍴 1

cellulariotsys
 Cellular IoT Technologies
 ☆ 1

hands-on-iot
 Hands on IoT
 Python

antenna_design
 Diseño de antenas (Antenna Design)

- PUBLICLY AVAILABLE MATERIAL, screenshot from GitHub repository

CREATED JOINT LABS

The **five joint industry-academia labs** have been established and have been already used in teaching various university courses as well as for training company employees. The industrial partners were involved in the acquisition of the lab equipment to ensure diversity and quality in the training of human resources, properly reflecting industrial needs in the IoT domain. Five created labs are as follows.

- (1) Signal Processing for Communications Laboratory (UNS, Argentina);
- (2) Communications Technology applied to IoT (UNdMP, Argentina);
- (3) Digital Communications Laboratory (UNC, Argentina);
- (4) IoT for Agribusiness Laboratory (UCU, Uruguay);
- (5) IoT Laboratory (UdelaR, Uruguay).



■ Laboratory in UCU

■ Laboratory in UdelaR

NEON EVENTS AND MEETINGS

In 2023, we organized and participated in various events:

- ✓ **Webinar on the presentation of the NEON Network of Competence** took place on the 19th of April 2023 organized by Universidad de la República (UdelaR) from Montevideo, Uruguay.
- ✓ The Open Event "**How to start an IoT Company?**" took place on 28th April 2023 in Mar del Plata. The organizer was Universidad Nacional de Mar Del Plata (UNMDP), Argentina.
- ✓ **Workshop on IoT Technologies for the Agriculture Market** showcased the latest research and developments related to IoT in the agricultural sector. The event took place in Montevideo on the campus of Universidad de la República (UdelaR) on 29-30th June 2023.
- ✓ The **Project NEON Meeting in Cordoba** was held on 3rd and 4th July 2023.
- ✓ The Open Event "**Journey over Internet of Things**" took place on 29th September 2023 in the Department of Electrical and Computers Engineering of Universidad Nacional del Sur (UNS) in Bahía Blanca, Argentina.
- ✓ The University of Klagenfurt presented the project activities at **Carintian EU-Project Day** ([5. Kärntner EU-Projekte-Tag](#)). The event took place on 17th October 2023 in Pädagogische Hochschule in Klagenfurt, Austria.
- ✓ **Final NEON Meeting** was held in Klagenfurt 30th November – 1st December 2023.



■ FINAL MEETING IN KLAGENFURT, 30 November – 1 December 2023