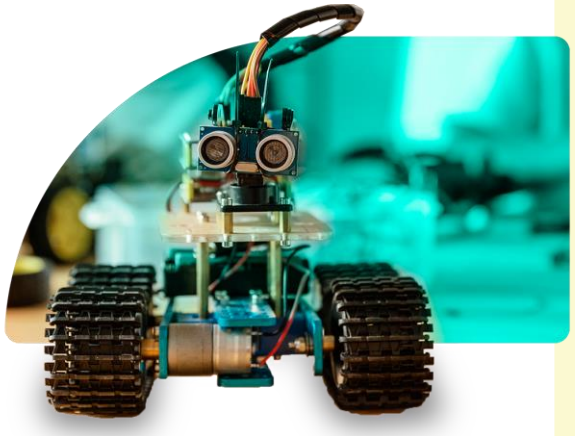
Innovation Centres

in the 13 Regional Directorates of Education



Kostikas Ioannis
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CTI Diophantus

Innovation Centres
A General Overview

What Innovation Centres are?

Structure & Infrastructure

Location – Mapping

How will they operate?

HELLENIC REPUBLIC
Ministry of Education,
Religious Affairs and Sports

CTI DIOPHANTUS

Greece 2.0
NATIONAL RECOVERY AND RESILIENCE PLAN

Funded by the European Union
NextGenerationEU

Innovation Centres in the 13 Regional Directorates of Education

Project Manager: Ministry of Education, Religious Affairs and Sport

Implementing Agency: CTI "Diophantus"

- Design and supervision of the implementation of the Innovation Centres (including both the central digital infrastructure and the physical Innovation Centres)
- Maintenance, support, and operation of the Central Support Infrastructure

Duration: 3 years

Project Budget: €4.7 million (plus VAT)

Funded under "**Recovery and Resilience Facility (RRF)**"

Enhancing Experiential and Participatory Learning

They offer a holistic approach to knowledge by combining elements of both formal and non-formal education

Students and teachers gain access to cutting-edge technologies through hands-on interaction
Key criteria for equipment selection include:

- Pedagogical suitability
- Technological superiority
- Functionality
- User-friendliness

21st-Century Skills Development

The Innovation Centres are partly inspired by the Future Classroom Labs framework (European Schoolnet), which promotes the transformation of traditional classrooms through the integration of state-of-the-art technologies

Blending Learning Environment

Blended learning refers to an educational approach that integrates face-to-face (physical) learning settings with a combination of digital and analogue tools, offering a flexible and enriched learning experience.

Innovation Centers in the 13 Regional Directorates of Education

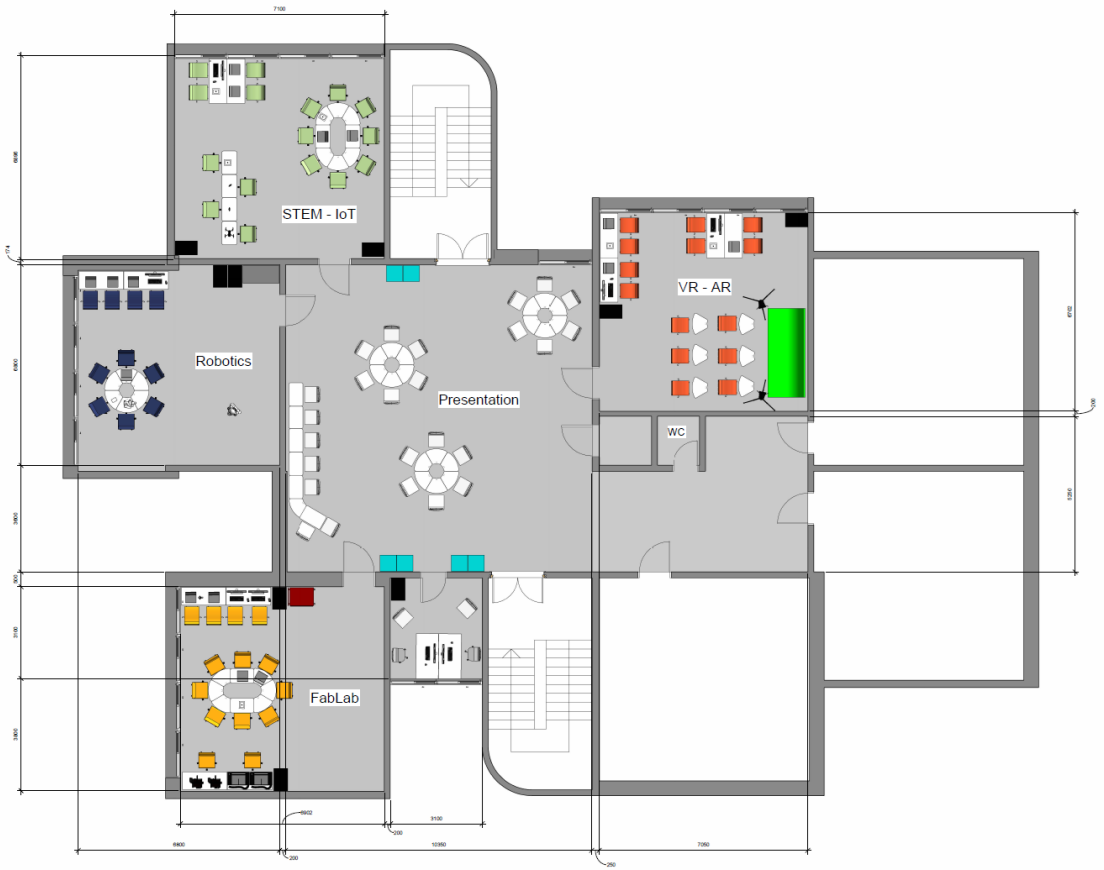
Project Objective

The objective is to create a knowledge ecosystem (Innovation Centres) that integrates and interconnects **school community, local society, research institutions, universities,** and **local businesses,** while simultaneously establishing links with similar **educational ecosystems** across **Europe** and **worldwide.**

Innovation Centres in the 13 Regional Directorates of Education

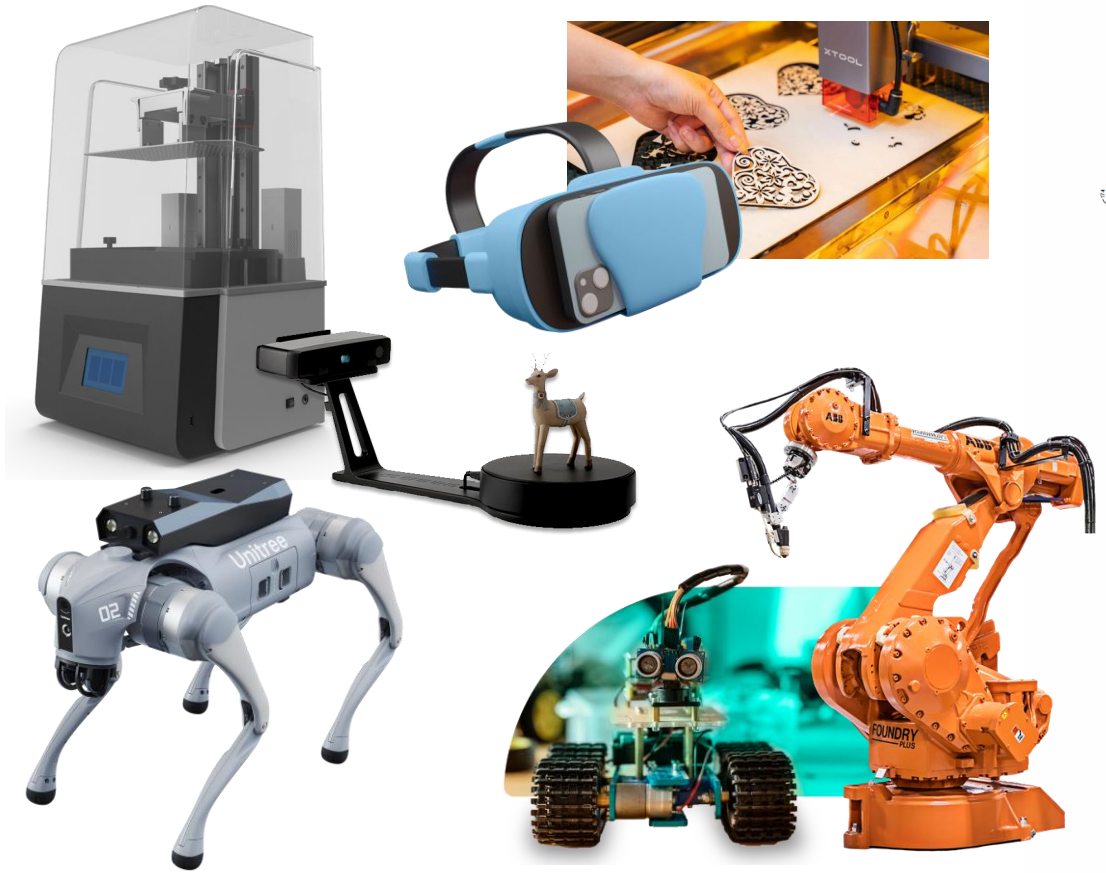
Learning Spaces

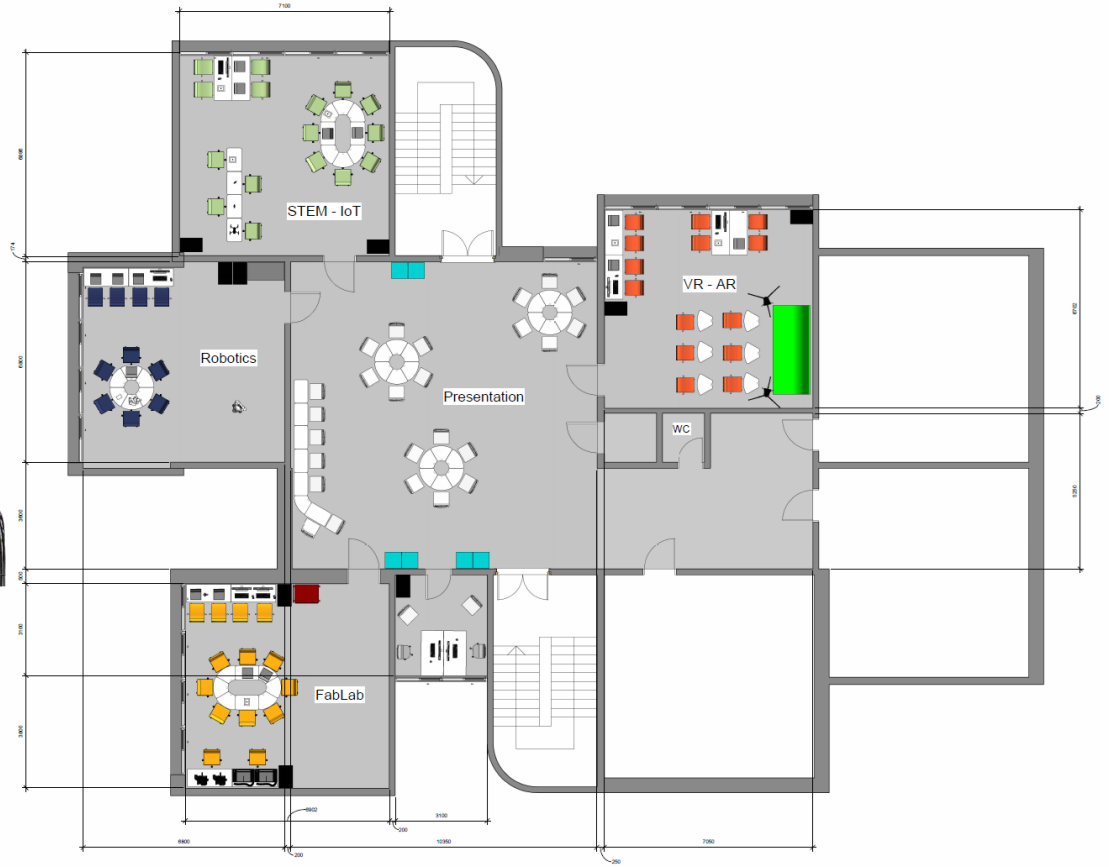
- Extended Reality
- Internet of Things
- Robotics
- Fabrication
- Interaction



Innovation Centres in the 13 Regional Directorates of Education

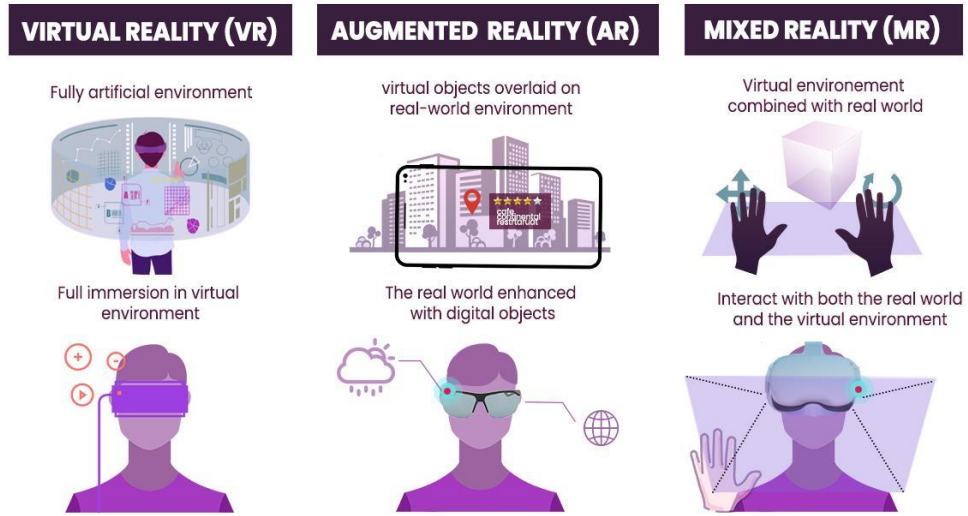
Learning Spaces





XR (Extended Reality) Learning Space

- **Autonomous state-of-the-art Virtual and Augmented Reality (VR/AR) headsets** equipped with a powerful processor, at least 512 GB of storage, and integrated front-facing cameras for creating Extended Reality (XR) environments.
- **High-performance development workstations** suitable for running demanding software applications including video and image editing, 3D graphics creation, mobile device emulators, and other applications necessary to fully support the accompanying equipment.
- **3D Projector:** A high-powered projector capable of displaying 3D video content.
- **Stereoscopic camera:** Designed for content creation, capturing high-resolution video and photography.
- **Brain-Computer Interface (BCI) Headset:** Introducing an innovative mode of interaction that enhances the learning experience and accessibility.
- **Green Room:** A dedicated space for video development and production.



Robotics Learning Space

- **Robotic arm** with high degrees of freedom, featuring at least 6 degrees of freedom (DoF) and the capability of highly precise repeatable movements with an accuracy of 0.5 mm. It supports multiple programming options, including Python and visual programming languages.
- **Drones** (programmable and non-programmable) equipped with high-resolution video and image recording capabilities.
- **Construction robotics kits** for hands-on learning and building of robotic systems.
- **Mobile robots** designed for introducing primary and secondary education students to concepts in artificial intelligence and programming.
- **Programmable robots for young children** that enable the understanding of basic programming concepts through educational activities.
- **Portable Laboratory Kits** integrated with various sensors for practical experiments and data collection.
- **Stereoscope** for 3D visualization and depth perception enhancement.

IoT Learning Space

- **Animal-like social robot** with AI capabilities, equipped with high-resolution cameras to capture the environment and perform real-time recognition of objects, faces, and surroundings. It can interact with humans through voice communication.
- **Humanoid social robot** featuring a wide range of supportive functions. It can express emotions such as joy, sadness, and anger via an integrated display representing its face.
- **AI Bionic robotic system kit** with advanced capabilities, suitable for learning fundamental concepts of programming, robotics and artificial intelligence. It incorporates numerous embedded sensors and offers extensive degrees of freedom in movement. Programming support is available via Python or visual programming languages.
- **Kits compatible with Microbit, Arduino, and Raspberry Pi**, accompanied by various sensors (temperature, ultrasonic, pressure, conductivity, particulate matter, etc.) enabling the implementation of Big Data and IoT educational scenarios.

Fabrication Learning Space

- **3D Printer** using appropriate filaments. With accompanying software, it allows the design or printing of 3D objects available from online libraries.
- **3D Scanner** creates a digital replica of a real-world object, which can be edited with suitable software and utilized in various applications.
- **Laser Engraver** is a laser cutting and engraving device capable of cutting wood and other materials, producing a wide variety of high-precision shapes and patterns. With appropriate software, it enables the design of complex shapes and objects.
- **Manual craftwork** using safe and pedagogically appropriate wood processing systems.

Interaction Learning Space

- **Interactive whiteboard** of at least 85″ suitable for presenting digital content, equipped with an integrated mini PC running Windows OS. Additionally, it is accompanied by an advanced video conferencing camera and an appropriate audio system to enhance presentation capabilities.
- **High-performance tablets** with Windows and Android operating systems. They offer programming capabilities via suitable software, internet browsing, and the use of a wide range of applications (educational, design, sharing, presentation, e-reading) available from official stores. Moreover, with compatible peripherals such as keyboards or styluses, they can be used as portable touchscreen laptops.
- **Use of appropriate presentation and sharing software** to improve online interaction and communication.

Innovation Centres in 13 Regional Directorates of Education

01. Thirteen physical Innovation Centres
located in physical spaces
(one per region)

02. Innovation Lab on the premises of CTI (Athens)
for prelimenary studies and activities, but also to support the educational community with hands on applications, webinars and help desk.

03. A Central Support Infrastructure
to be set up by CTI, supporting remote areasand educational institutions, but also the innovation centres themshelves.

Fundamental Design Principles

- **Multifunctionality of Spaces:** Creation of a dynamic system that can accommodate flexible teaching formats. Spaces in Innovation Centres (ICs) must be flexible and easily adaptable to different needs.
- **Integration of Interactive Media:** Interactive media have become an integral part of modern education, with the aim of facilitating direct communication between teachers and students.
- **Operational Transparency:** Transparency refers to the structure of the organization and the functioning of the spaces, reinforcing the sense of community. Designing spaces that promote transparency creates an environment that encourages collaboration and open communication among members of the educational community.
- **Familiarity and Safety:** A friendly and safe space is essential for the integration of participants and the smooth running of activities. Learners must feel comfortable and safe, both physically and psychologically, as they participate in educational activities.
- **Common Identity:** A common identity that connects the 13 Innovation Centres, even if they are located in different places. This common identity is ensured through the use of specific color palettes, logos, and equipment that indicate participation in a broader set of educational and research activities.

ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ

Innovative pedagogical and teaching approaches that the project will exploit:

AI in Education - Preparing for life and learning in the AI era.
Meta-humanistic perspectives - Addressing the relationship between humans and technology.
Learning from open information sources - Using real world data for personal learning.
Inclusion of data ethics - Ethical use of data in digital life and learning.
Social justice pedagogy - Addressing injustices in life and society.
e-Sports - Learning and teaching through competitive virtual play.
Learning through animation - Watching and interacting with short animations.
Multisensory Learning - Using multiple senses to enhance learning.
Offline learning - Online learning beyond the Internet.
Online workshops - Workshops for all.

Innovation Centres
Operational Framework

- Each Centre will host daily visits from student groups who will participate in structured educational scenarios in collaboration with their teachers.
- Innovation Centres will be supported by specialized personnel of seconded educators and will offer learning scenarios linked to the technologies of the future!
- Simultaneously, they will have the opportunity to develop partnerships with universities, research institutions, businesses, and the local community.

ic.cti.gr

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