

**... WHERE KNOWLEDGE
DRIVES INNOVATION!**

Ui

**UNIDADES DE
INVESTIGAÇÃO**

RESEARCH UNITS

**... WHERE KNOWLEDGE
DRIVES INNOVATION!**



. POLYTECHNIC UNIVERSITY .

TECHNICAL DATA

Title:

Research Units...
where knowledge
drives innovation!

Ownership and editing:



Polytechnic Institute of Leiria

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Project title:

INOVC+: Ecosistema de Inovação para
a Transferência de Conhecimento e
Tecnologia da Região Centro



Co-funding:



Year:

2025



CONTENTS

Introduction	1
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SOCIAL SCIENCES AND HUMANITIES

CARME – Centre of Applied Research in Management and Economics	3
CICS.NOVA.IPLeiria – Interdisciplinary Centre of Social Sciences	9
CI&DEI-IPLeiria – Center for Studies in Education and Innovation	15
CiTUR – Center for Tourism Research, Development and Innovation	21
IJP-IPLeiria – Portucalense Institute for Legal Research	27
LiDA – Laboratory in Design and Arts	33



EXACT SCIENCES AND ENGINEERING

ADAI-IPLeiria – Association for the Development of Industrial Aerodynamics	39
CDRSP – Center for Rapid and Sustainable Product Development	45
CIIC – Computer Science and Communication Research Centre	51
LSRE-LCM-IPLeiria – Laboratory of Separation and Reaction Engineering – Laboratory of Catalysis and Materials	57
INESCC-IPLeiria – Institute for Systems Engineering and Computers at Coimbra	63
IT-IPLeiria – Instituto de Telecomunicações	69



NATURAL AND ENVIRONMENTAL SCIENCES

MARE-IPLeiria – Marine and Environmental Sciences Centre	75
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LIFE SCIENCES AND HEALTH

CIDESD-IPLeiria – Research Center in Sports Sciences, Health Sciences and Human Development	81
ciTechCare – Center for Innovative Care and Health Technology	87



The Research Units of Polytechnic of Leiria are functional structures dedicated to creating and sharing knowledge in multiple scientific, technological, and artistic domains, involving the academic community in research and innovation projects, both national and international.

They are also active partners in the regional R&D+i ecosystem, contributing for the development of new products, processes, and services in close collaboration with companies, technological centres, startup incubators and other social and cultural organizations.

The Research Units of Polytechnic of Leiria, funded by the Foundation for Science and Technology (FCT), conduct their activities in the fields of social sciences and humanities, arts and culture, exact sciences and engineering, natural and environmental sciences, and life sciences and health.

The research and innovation activities are aligned with the institutional strategic plan, by creating regional impact in economic and social dimensions, and playing an active role on a global scale, also aligned with national and European development strategies.

Carlos Rabadão

President of Polytechnic Institute of Leiria



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CARME
Centre of Applied Research in
Management and Economics

Centre of Applied Research in Management and Economics (CARME) is a research and development (R&D) unit, which emerges from the combined efforts of professors and researchers from the Department of Management and Economics of the Polytechnic of Leiria to pursue R&D activities in the areas of management and economics, in a close collaboration between academia, industry and social partners.

CARME's activity contributes to the following SDGs



CARME
CENTRE OF APPLIED RESEARCH
IN MANAGEMENT AND ECONOMICS

Research Areas

Creation of management models and information systems to support decision-making by managers in areas such as:

- Territorial, regional, and local strategic planning
- Sustainable development
- Processes
- Innovation and entrepreneurship
- Human resources and organizational behaviour

- Marketing
- International business
- Digitalization

Research directed to industry and societal challenges, contributing to adaptation to imminent production and consumption transformations, such as industrial digitalization, servitization, and fast decision-making, always keeping in mind the need to adopt sustainable production processes.

Mission

CARME mission is to enhance regional development and innovation, through integration between basic and applied research in management and economics, strongly oriented towards professional practice and engaging researchers, students, industry and non-profit organizations in a collaborative manner.

Projects



Promotion of entrepreneurship through the training of young students and entrepreneurs, aiming to improve job quality and create innovative companies (COMPETE 2020).

<https://portal.cocreationportugal.com/>



Incentive for the launch of new products by agri-food SMEs, responding to new market trends (natural products, with sustainable processes) (FEDER/INTERREG).

<https://reinova-si.eu/en/homeen/>



Development and operationalization of a methodology to support co-decision in forest planning and management, reinforcing territorial governance principles (FCT).

<https://shareforest.pt/en/>



This project aims to produce and market more economical, more digital, and more inclusive packaging solutions on a global scale (PRR).

<https://embalagemdofuturo.pt/en/>

Scientific Domains

- Regional economics and development
- Management and international business
- Marketing
- Accounting and finance
- Human resources and organizational Behaviour
- Sustainable development

CARME
CENTRE OF APPLIED RESEARCH
IN MANAGEMENT AND ECONOMICS





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CICS.NOVA.IPLeiria
Interdisciplinary Centre of Social Sciences

The research unit of CICS.NOVA at Leiria develops its activity since 2002, when the Research Center on Identity(ies) and Diversity(ies) was created. It's researchers became, in 2015, members of the CICS.NOVA.IPLeia, and since then actively contributing to the co-creation and knowledge transfer in conjunction with policy makers, companies and other civil society organizations.



CICS's activity contributes to the following SDGs



Research Areas

- Evaluation and supervision of social projects
- Human development studies
- Promotion of intercultural mediation activities
- Integration of migrant populations
- Inclusive education: services in communication, mediation, and accessibility
- Social diagnostics
- Training in the social sector

Mission

CICS.NOVA's mission is to conduct interdisciplinary research in social sciences, to promote critical thinking and disseminate new knowledge in the concerned communities, both at the national and international levels, namely through the action of its regional Poles (Leiria, Lisbon, Évora, Minho and Azores).

Projects

FYT_ID - Fifty Years of Teaching in Portugal: Intergenerational Dialogues

This study explores the social, political, and educational transformations of the past 50 years, the current aging of the teaching workforce, and the opportunities opened by biographical research.

New Portuguese Emigrants: Reintegration and Mobilities

The project addresses the expectations and return experiences of migrants and their integration into the destination society, as well as their predisposition to return.

360 REWIN - Resilient Immigrant Women Interventions for Inclusion

An international project funded by the European Union, aimed primarily at combating violence against migrant women.

"100% With You"

This research-action project aims to minimize the effects of loneliness and social isolation among the elderly population in rural areas.



Scientific Domains

-  Sociology
-  Geography
-  Anthropology
-  Inclusive education
-  Social service
-  Social pedagogy





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CI&DEI-IPLeiria
Center for Studies in Education and Innovation

The Center for Studies in Education and Innovation (CI&DEI) was established in 2017 with the aim of fostering quality research in the field of education, assuming itself as a coordination and support structure for research and innovation in socio-educational projects, promoting science and culture, as well as, services to the society.

CI&DEI's activity contributes to the following SDGs



Research Areas

- Educational policies, didactics, and training
- Education for health and quality of life
- Education for entrepreneurship and sustainability
- Education, citizenship, and inclusion
- ICT and multimedia in education

Mission

Develop research in education. Support research and socio-educational intervention projects. Encourage interdisciplinary network research activities. Develop the integrated cooperation of its researchers. Establish the transfer of knowledge and technology, promote science and culture, and provide services to the community.

Projects



Rabisco-me – Writing that (in)flows | 2023-2025

"The Rabisco-me project – Writing that (in)flows has two interdependent objectives: promoting good management of emotions/self-regulation and improving written production, whether short, critical and creative responses, or longer textual structures" "

<https://events.ipv.pt/cidei/en/proj-idi-cidei-012-rabisco-me-a-escrita-que-influimembros-do-ci-dei-paula-cristina-ferreira-ir-marta-fonseca/>



The outdoor space as a learning environment in Early Childhood Education | 2022-2024

This action research project seeks to examine the educational project and involve actors in a reflection on the potential of pedagogical options focused on valuing outdoor space, with the ultimate objective of improving the quality of children's learning.

<https://events.ipv.pt/cidei/proj-idi-cidei-008-o-espaco-exterior-como-espaco-de-aprendizagem-na-educacao-de-infanciamembros-do-cidei-susana-reis-ir-ana-oliveira-hugo-menino-marina-rodrigues-miguel-oliveira-susana-re/>



Early Childhood Education: Mathematics in the Nursery context | 2022-2024

The Early Childhood Education: Mathematics in a daycare context (EIM2C) project aims to study the emergence of mathematical skills in a daycare context. Framed in Early Childhood Education, it is based on Mathematics Education to discuss numerical skills, spatial thinking skills and mathematical reasoning in day-to-day care in daycare, in a logic of authentic assessment.

<https://events.ipv.pt/cidei/en/proj-idi-cidei-006-educacao-de-infancia-matematica-em-contexto-de-crechemembros-do-cidei-helia-pinto-ir-isabel-simoes-dias-nicole-gaspar/>



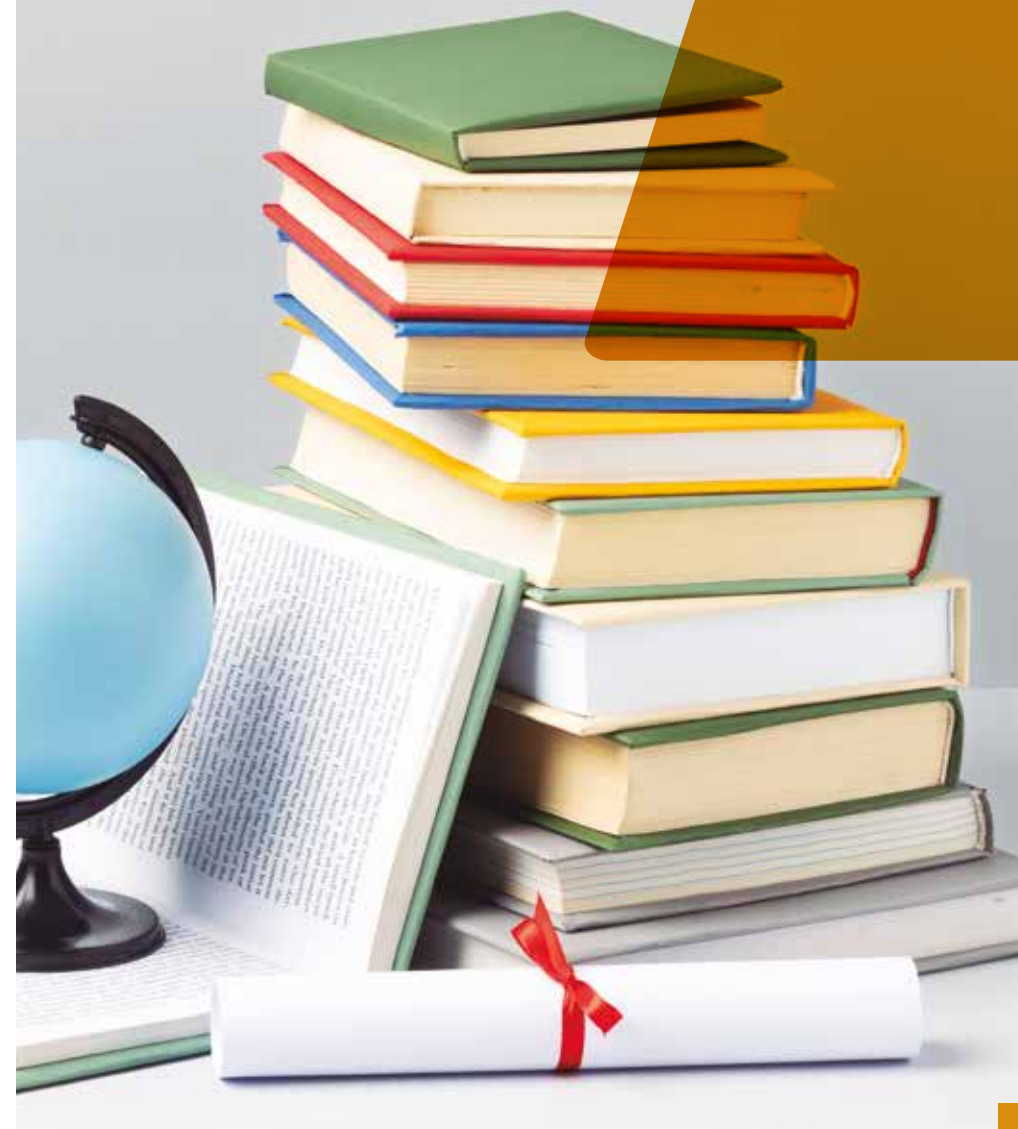
Computational Thinking in the early years teachers' initial training | 2022-2024

With this project, it is expected, not only, to raise awareness among future teachers about the importance that Computational Thinking assumes in the curriculum and in the development of students' transversal skills, enabling them to significantly integrate these tasks into Pedagogical Practice, but also collect data that contribute to increasing knowledge in this area, through dissemination in research publications and scientific events.

<https://events.ipv.pt/cidei/proj-idi-cidei-007-o-pensamento-computacional-na-formacao-inicial-de-professores-dos-primeiros-anosmembros-do-cidei-hugo-menino-ir-ana-oliveira-dina-tavares-helia-pinto-marina-rodrigues-s/>

Scientific Domains

- Social sciences
- Educational sciences
- General education
- Pedagogical innovation





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CiTUR
Center for Tourism Research,
Development and Innovation

CiTUR is a R&D unit comprising over 230 researchers from 17 institutions (polytechnics and universities). CiTUR Leiria is based at ESTM, Peniche, develops research focused on Tourism and related areas of economics, management, technology and culture, seeking a sustainable social and economic development.

CiTUR's activity contributes to the following SDGs



Research Areas

- ▶ Surfing and coastal area sustainability
- ▶ Branding and digital promotion in tourism
- ▶ Hospitality management
- ▶ Tourist destinations

Mission

Focus on fostering multidisciplinary and interdisciplinary applied research, and on stimulating the production and sharing of scientific knowledge in tourism.

CiTUR Leiria aims to promote applied research, scientific dissemination, training and to provide external services in tourism and related areas.

Projects



SmartFish

To develop and promote the concept of a “sustainable restaurant” and, consequently, the concept of a “sustainable consumer,” as a way to raise awareness about presenting dishes made with sustainable and/or low-value species.



SPOT. Sustainable Spatial Planning of Tourism Destinations

Tourism planning in destinations/regions should follow sustainable development principles. Modern educational techniques, such as project-based learning, should enhance awareness of geographical, environmental, economic, social, political, and cultural issues in tourism development.



Olive4All

The goal is to study and promote olive heritage, considering its representative character of Mediterranean identity, with strong values and symbols that are insufficiently recognised in the Euro-Mediterranean region.

<https://www.heritageresearch-hub.eu/project/olive4all-olive-heritage-for-sustainable-development-raising-community-awareness-of-living-heritage/>



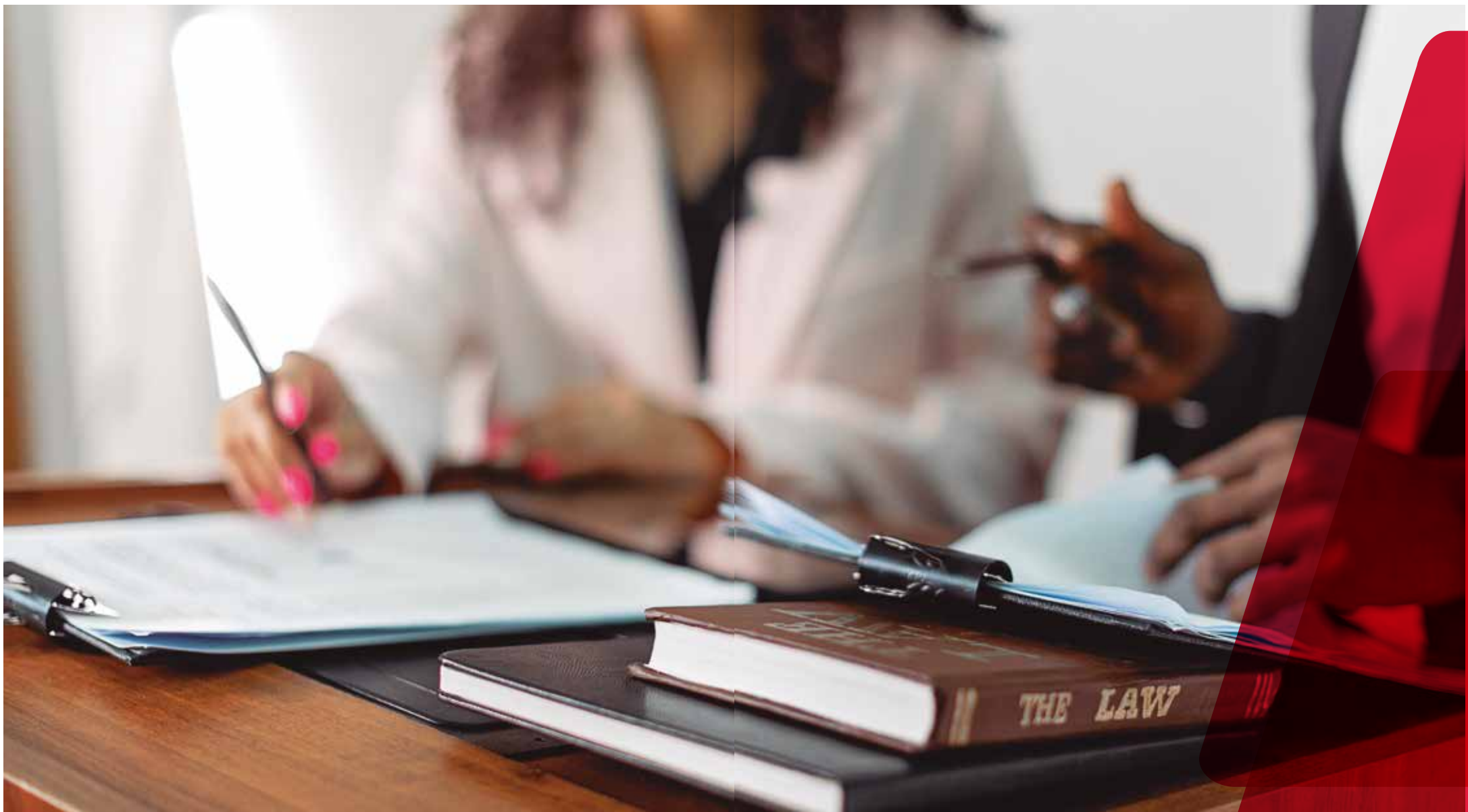
SMAT Centro

Aiming to promote knowledge of tourism activities through scientifically validated methods, the creation of the Tourism Activity Monitoring System for the Centro region of Portugal involves the participation of 100 municipalities in the Central region of Portugal.

Scientific Domains

- ▶ Tourism economics and management
- ▶ Tourism, hospitality and restaurant industry
- ▶ E-tourism, culture, society and language
- ▶ Territory and tourist destinations
- ▶ Planning and management of tourism products





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IJP-IPLeiria
Portugalense Institute for Legal Research

The Leiria branch of the Portucalense Institute for Legal Research (IJP) is a multidisciplinary research unit, composed of researchers from different areas of research, and its mission is to carry out research projects and scientific activities in combination with teaching, training and external services activities.

IJP's activity contributes to the following SDGs



Research Areas

- Property** – constitution, organisation, and functioning of companies; rights and duties of employers and employees; norms and principles regulating taxation; consumer education and information; insolvency and business recovery
- Persons** – reflection on contemporary issues related to people (e.g., human rights, family, migrants, vulnerable individuals, health, environment)
- International politics and governance** – problematisation of concepts (such as National and International Security or Democracy), processes (such as globalisation, foreign policies, decision-making processes, and multilevel governance), and actors (such as states, international organisations, and non-state groups/entities)
- Legal procedure** – research on current issues in procedural law and dispute resolution

Mission

The mission of IJP-IPLeia is to carry out academic research in the field of legal sciences applied to the needs of citizens, individuals, consumers, companies and local institutions, with a particular focus on ecological transition and digital transformation.

Projects



EDULAW

The main objective of this project is to enhance education in the field of agro-environmental and agri-food legislation by developing and implementing a set of pedagogical content and tools that ensure inclusive and high-quality digital education.

<http://edulaw.uniag.sk/content/about-project>



Ação COST

The IGCOORD aims to connect research lines to provide systematic and comparable insights into institutions, mechanisms, and processes of horizontal and vertical intergovernmental coordination, across levels of government, political sectors, and territorial units.

<https://www.cost.eu/actions/CA20123/>



EMEDEU

The EMEDEU project developed a legislative proposal for the implementation of online mediation in the resolution of civil and commercial disputes at the European level.

<https://ijp.ipleiria.pt/projetos/emedeu/>



REDLAB

The study on the labour impact of business networks aimed to investigate the effects of coordinated production by various companies (as frequently occurs in the modern economy) on employment and working conditions.

<https://ijp.ipleiria.pt/projetos/redlab/>



Scientific Domains

- Commercial and corporate law
- Labor law
- Contract law and consumer law
- European law and human rights
- Extrajudicial conflict resolution: mediation and arbitration
- Public policies
- Public administration





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Coordination

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LiDA
Laboratory in Design and Arts

LiDA – Laboratory in Design and Arts is a research unit based at the School of Arts and Design of the Polytechnic of Leiria. LiDA comprises a team of researchers mainly composed by ESAD.CR professors, with 50 PhD members or specialists.

LiDA's activity contributes to the following SDGs



LiDA

Research Areas

The LiDA team comprises a complete and multifaceted group of researchers with expertise in various domains:

- Product design
- Space design
- Eco-design
- Interaction design
- Communication design
- Participatory design
- Design for health and well-being
- Multimedia design
- Visual arts
- Cultural programming
- Audiovisual production

Mission

LiDA's mission is to develop research activities through projects in cooperation with companies, public entities or other national and international institutions. It seeks to promote awareness about the role of Design, Arts and Culture as forms of knowledge and sociocultural intervention.

Projects



SafeTrack

A research project that uses an interactive co-design process to improve the monitoring of patients in emergency hospital services.

<https://lida.pt/research/safetrack/>



Quarry Sonnets

A research project in art and ecology aimed at developing proposals for the rehabilitation of former quarries in dialogue with the entire ecosystem.

<https://lida.pt/research/quarry-sonnets/>



Seed Reef

A project to create substrates – structures of organic origin – to promote the repopulation of sea urchins, mimicking their natural habitat.

<https://lida.pt/research/living-surfaces/>



Oughtred's Proportion Circles

Reproduction of functional models of historical scientific objects held in national museum collections, using additive manufacturing with environmentally sustainable plastics.

<https://lida.pt/research/out-of-the-cabinets/>

Scientific Domains

- ▶ Design
- ▶ Arts
- ▶ Culture

LIDA





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ADAl-IPLeiria
Association for the Development
of Industrial Aerodynamics

The ADAI Polytechnic of Leiria Delegation operates within the scope of scientific-technological research and development in the area of automotive Engineering, with the aim of developing projects and activities to provide services to the community, integrating the skills, resources and know-how of both ADAI and the Polytechnic of Leiria

ADAI's activity contributes to the following SDGs



Research Areas

Based on the area of Automotive Engineering, the Leiria delegation team of ADAI carries out activities of research and development that include energy and sustainability analysis applied to the transportation sector, namely:

- ▶ On-road vehicle testing
- ▶ Wind tunnel testing
- ▶ Life cycle assessment
- ▶ Analysis of mechanical failures
- ▶ Engine testing and simulation
- ▶ Evaluation of pollutant emissions
- ▶ Vehicle testing on a dynamometer (homologation cycles)
- ▶ Analysis of fuel consumption and CO₂ impacts
- ▶ Comparative evaluation of the use of different fuels
- ▶ Assessment of the energy efficiency of various automotive systems
- ▶ Evaluation and monitoring of vehicle fleets
- ▶ Computational fluid dynamics (CFD)

Mission

Within the scope of its areas of specialty, ADAI's main objectives are:

- Creation and dissemination of scientific and technological knowledge;
- Advanced scientific training;
- Promotion and carrying out fundamental and applied research;
- External services provider.

Projects



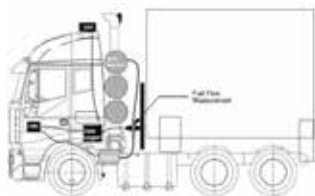
Exhaust Gas Heat Recovery

Development of a system for recovering energy lost through exhaust gases in internal combustion engines.



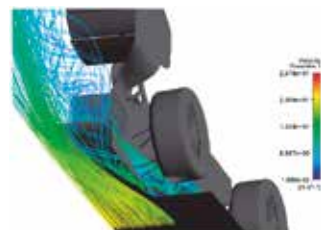
Advanced Fuels in Engines

Evaluate the efficiency, performance, and gaseous emissions of engines when fueled by different fuels, containing varying amounts of biodiesel or bioethanol.



H₂, CNG, and Biomethane

Assess and compare the efficiency, performance, and gaseous emissions of vehicles fueled by different alternative fuels (hydrogen, natural gas, and biomethane).



Fluid Dynamics Simulation

Numerical analysis considering the prediction of fluid behaviour in different circumstances (aerodynamics, combustion, flow in ducts, among others).

Scientific Domains

- Heat transmission and thermodynamics
- Fuels and environmental sustainability
- Fluid dynamic simulation
- Motor vehicle propulsion systems
- Life cycle analysis



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CDRSP – Center for Rapid and Sustainable Product Development | Polytechnic of Leiria

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CDRSP
Center for Rapid and Sustainable
Product Development

CDRSP is a research unit at the Polytechnic of Leiria. It currently has 12 laboratories and more than 200 national and international partnerships that contribute to the success of its activities. It carries out scientific and technological research, consultancy services and advanced training.

CDRSP's activity contributes to the following SDGs



CDRSP CENTRE FOR
RAPID AND SUSTAINABLE
PRODUCT DEVELOPMENT

Research Areas

- Direct digital manufacturing of metals, ceramics, polymers, composites, and cementitious materials
- Biofabrication
- Manufacturing technologies
- Multiscale computational modeling and simulation
- Green technologies
- Material synthesis and characterization
- Material structure and morphology
- Cell culture and tissue engineering
- Sustainable manufacturing

Mission

CDRSP is a leading research center that aims to contribute to scientific and technological development through new products, materials, and more sustainable, effective, and efficient processes. Since 2021, CDRSP is part of the Advanced Production and Intelligent Systems (ARISE) Associated Laboratory (AL). ARISE comprises five R&D Units, interfacing public entities of 3 Universities – Coimbra, Minho, and Porto, through the R&D Units CEMMPRE, ISR-C, ISISE, SYSTEC – and one Higher Education institution – IPL, through CDRSP.

Research, advanced training, and consultancy services are essential areas that complement the CDRSP's strategy. The CDRSP's activities cover diverse areas, but it has focused much of its work on the additive manufacturing, processing, and characterization of new materials for applications in engineering fields like mechanical, biomedical, automotive, aeronautics, and civil. The internationalization strategy of CDRSP aims at pursuing a leading global position in the research field of Direct Digital Manufacturing.

Projects



Sustainable Stone by PORTUGAL

In stone industry, beyond the recent developments, is essential to reduce waste production, and in the treatment/recovery of waste.

<https://sustainable.stonebyportugal.com/?lang=en>



Surf L-SAM

Transforming old phishing nets in eco-friendly products for maritime industries. Using 3D printing to develop new products using old nets material.

<https://www.vinnova.se/en/p/surf-lsam-developing-sustainable-resilient-circular-economy-microfactories-with-lsam/>



RN21

RN21, is a research project aiming to develop innovative and added-value products from Natural Resin.

<https://rn21.forestwise.pt/>



INOV.AM

Development and dissemination of knowledge, innovative technologies and materials for additive manufacturing towards the creation of high quality and customized value-added products.

<https://inovam.pt/pt/>

Packaging of the Future

This project intends to develop four innovative types of food packaging made from recycled polyethylene (PE), fossil and bio-based, flexible, and rigid, for food products consumed without the peel, minimizing contact with the edible part.

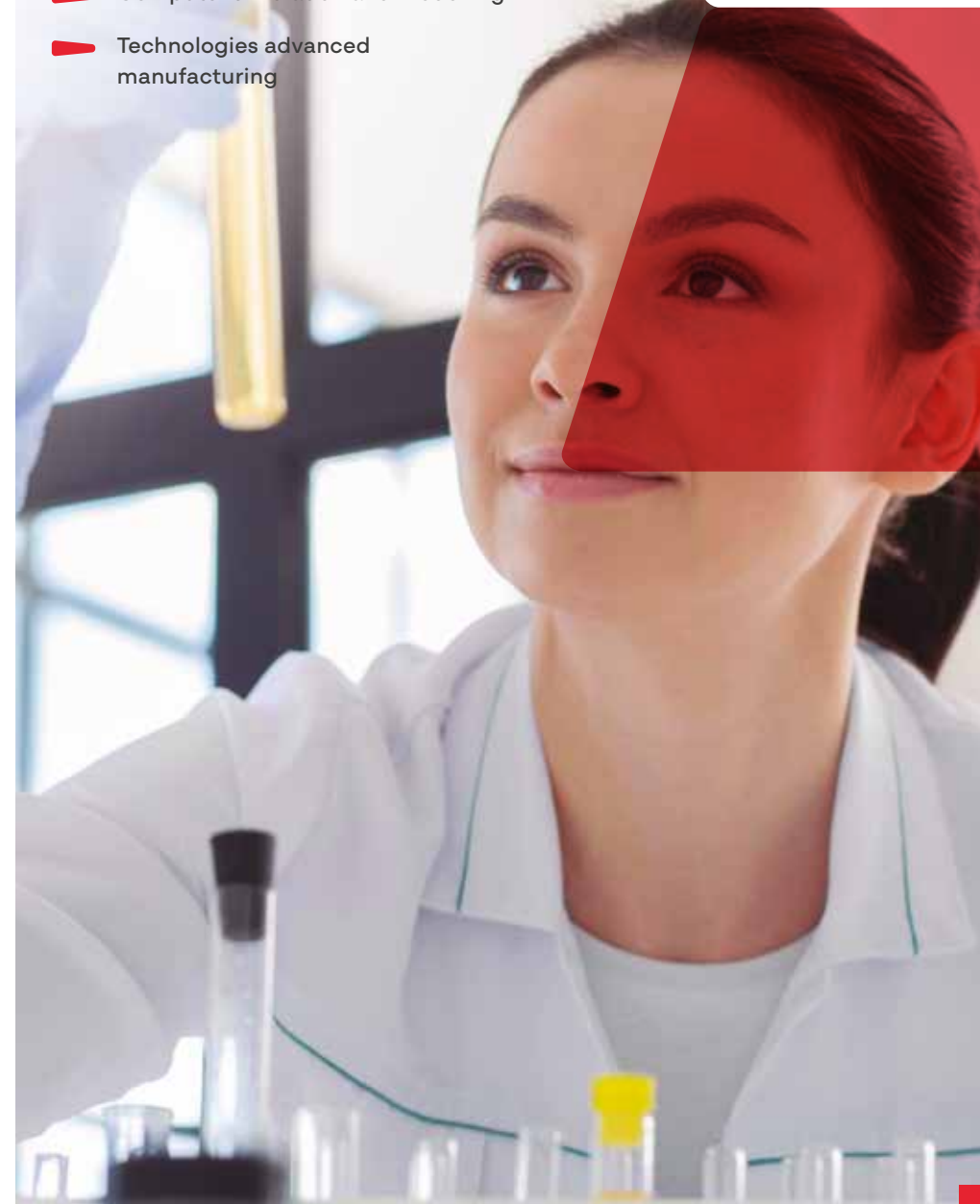
<https://embalagemdofuturo.pt/>

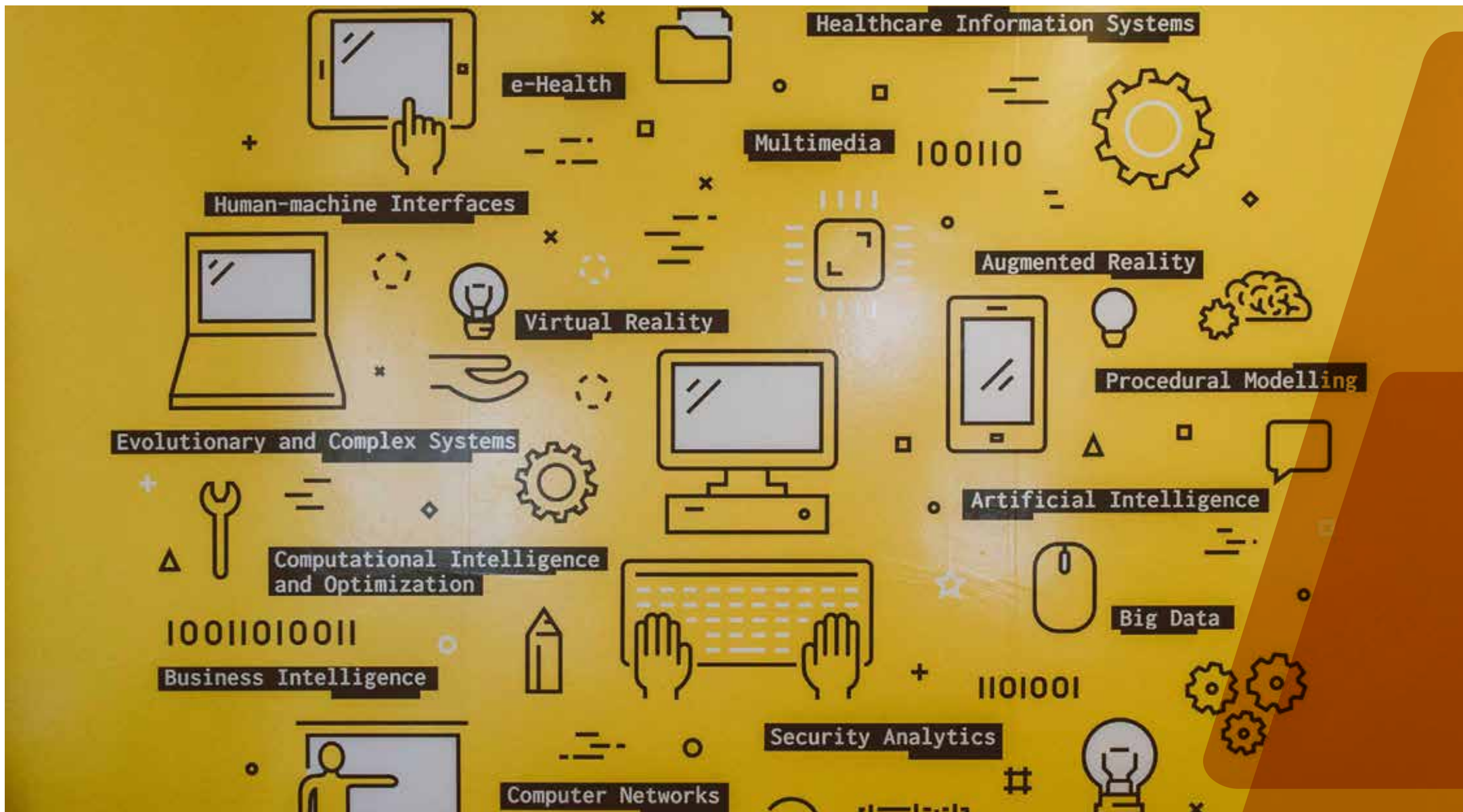


Scientific Domains

- Engineering
- Materials
- Computer simulation and modelling
- Technologies advanced manufacturing

CDRSP CENTRE FOR
RAPID AND SUSTAINABLE
PRODUCT DEVELOPMENT





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CIIC

Computer Science and Communication
Research Centre

CIIC is a research centre of IPLeiria in the areas of Smart IoT Ecosystems, Virtual and Augmented Reality, Cybersecurity and Digital Forensics, Artificial Intelligence, with scientific specialization in an international context. CIIC has proven experience in solving technology-based problems and focus on contributing for innovation through digital transformation with impact on the national economy and global knowledge dissemination.



CIIC's activity contributes to the following SDGs



CIIC
COMPUTER SCIENCE
AND COMMUNICATION RESEARCH CENTRE

Research Areas

- Industry 4.0, internet of things, digital twins, cloud robotics, smart heterogeneous unmanned vehicle ecosystems
- Artificial intelligence and machine learning
- Digital forensic expertise and cybersecurity audits
- Virtual and augmented reality
- Digital games
- Application of technology in workplace training, well-being, and quality of life improvement

Mission

CIIC's mission is to conduct high-quality research and innovation with regional, national and global impact, provide advanced education and training, promote and disseminate scientific knowledge and technological development, provide technical services and scientific advice to private and public organisations and stimulate technology transfer in the main areas of Information and Communication Technologies.

Projects



CONNECT5 – DIH for Connectivity, CPS, IoT, Cloud/Edge and Data Analytics

Aims to support the digital and green transformation of SMEs and public organizations.

<https://ciic.ipleiria.pt/index.php?page=project&id=14>



ATTRACT European Digital Innovation Hub

Digital Innovation Hub for Artificial Intelligence and High-Performance Computing.

<https://ciic.ipleiria.pt/index.php?page=project&id=41>



Sustainable Stone by Portugal

Aims to contribute to increasing exports and their added value in Portuguese Natural Stone sector, increasing investment in R&D and Innovation, and support the decarbonization to reach climate-neutral objectives.

<https://sustainable.stonebyportugal.com/>



GAME4CHANGE

Aims to empower academic staff in the use of serious games and gamification strategies in courses to combat climate change impacts.

<https://g4c-nge.eu/>

Harvesting with Intelligence

It aims to develop Deep Learning-based models for analysing and extracting information from text and a Big Data solution for storing and processing data and distributed services based on Cloud Computing platforms.



Scientific Domains

- Smart IoT ecosystems
- Virtual and augmented reality
- Cybersecurity and digital forensics
- Artificial intelligence

CIIC
COMPUTER SCIENCE
AND COMMUNICATION RESEARCH CENTRE





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LSRE-LCM-IPLeiria

Laboratory of Separation and
Reaction Engineering – Laboratory
of Catalysis and Materials

The LSRE-LCM-IPLeiria was created in 2011 and currently integrates the largest Portuguese Associated Laboratory in Chemical Engineering, ALiCE, with very relevant research activity in the areas of Environmental Engineering and Bioengineering.

LSRE-LCM's activity contributes to the following SDGs



Research Areas

- Sustainability and environment
- Environmental biotechnology
- Life cycle assessment (LCA)
- Circular economy: recovery, reuse & valorization
- Development of new materials and products
- New chemical and biological processes
- Physico-chemical and environmental analyses
- Specialised training

Mission

The mission of the LSRE-LCM – IPLeiria Pole is to contribute to scientific and technological knowledge in Chemical and Biological Processes through the development of environmentally sustainable and economically viable processes, being involved in such areas as environmental science and technology, material science, process and product development and optimization, and alternative agricultural production systems.

Projects



Combined Vermifiltration Hydroponic System for Swine Wastewater Treatment and Sustainable Plant Production

The vermifiltration-hydroponics system incorporates the principles of circularity and sustainability by valorising various by-products, wastewater and biomass.



Wastewater Treatment Using Integrated Multitrophic Systems: Aquaponics and Hydroponics

Using wastewater as a nutrient solution for plant production contributes to more effective management of water and nutrients in the agricultural and environmental sectors.



Biogas Production from Swine Effluents

Optimisation of biogas production through the anaerobic co-digestion of piggery waste streams, within a context of circular economy and decarbonisation.



Biodegradable Materials for Emerging Contaminant Removal

Adsorbent particles and microparticles developed from alginate, activated carbon, graphene, and polycaprolactone for removal emerging contaminant from water.

Scientific Domains

-  Chemical engineering
-  Environmental biotechnology
-  Environmental sciences and technologies



LABORATORY OF SEPARATION AND REACTION ENGINEERING
LABORATORY OF CATALYSIS AND MATERIALS





Address

Polytechnic of Leiria delegation
ESTG – School of Technology and
Management

Campus 2 | Edifício C
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Apartado 4163, 2411-901 Leiria
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Coordination

Professor Luís Neves

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<https://www.inescc.pt/>



INESCC-IPL Leiria
Institute for Systems Engineering
and Computers at Coimbra

INESCC is a non-profit R&D institute, affiliated with the IPLeiria and the University of Coimbra. The INESCC delegation of Leiria is particularly focus on research and innovation activities in the broad areas of energy, robotics and decision support systems.



INESCC's activity contributes to the following SDGs



INESCC
Institute for Systems Engineering
and Computers at Coimbra

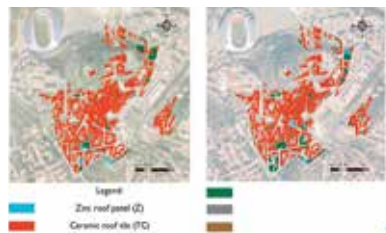
Research Areas

- Decision support systems
- Energy systems and policies
- Computational mechanics applied to structural systems
- Geospatial information
- Advanced robotics and smart factories
- Planning and management of hydraulic infrastructures and water resources
- Spatial decision support in regional and urban planning

Mission

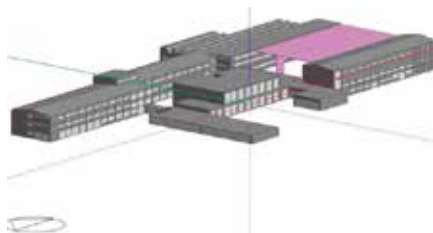
Carrying out scientific research, technological development, transfer and integration of knowledge, and support for the training of human resources, based on Engineering and Management Sciences/Operational Research, aiming to contribute on the improving of the performance of companies and institutions and progress of knowledge.

Projects



Application of Remote Sensing and Geospatial Information Systems

Various studies applying remote sensing, based on aerial photography and drones for urban planning, fire surveillance, tracking marine litter, etc.



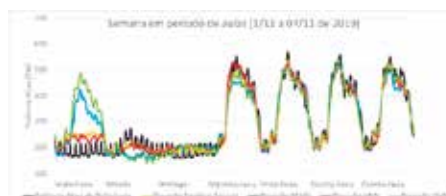
Energy Audits, Energy Efficiency, Building Energy Performance Simulation

Seeking solutions to minimise energy consumption in buildings and industries. Developing action plans for energy efficiency. Studies on cogeneration.



Industry 5.0, manufacturing, and automation

Industrial process automation projects, including digital twins and AI techniques to design autonomous systems, mobile and stationary, ready to be integrated in advanced factory systems.



Application of Artificial Intelligence Techniques to Energy Planning

Studies for optimising the planning and management of energy systems, including forecasting energy and water consumption, network reconfiguration, and using energy storage systems to maximise the utilisation of renewable energies.

Scientific Domains

- ▶ Mechanical engineering
- ▶ Civil and geospatial engineering
- ▶ Electrical and computer engineering
- ▶ Management
- ▶ Mathematics





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Coordination

Professor Sérgio Faria

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<https://www.it.pt/ITSites/Index/7>

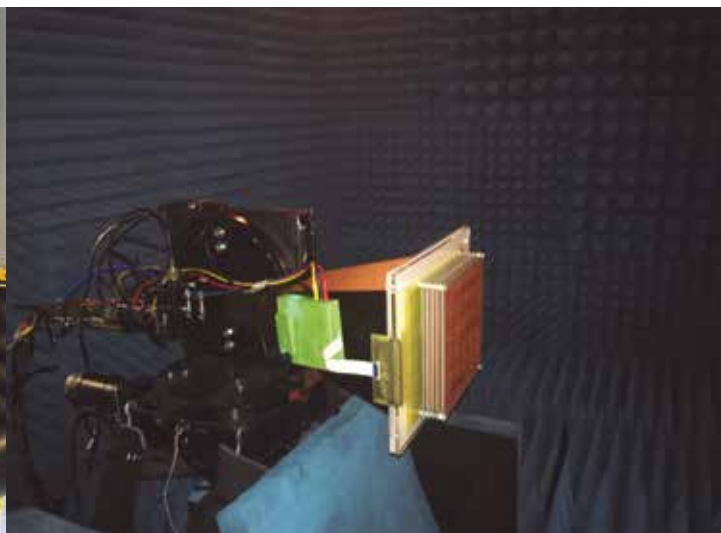
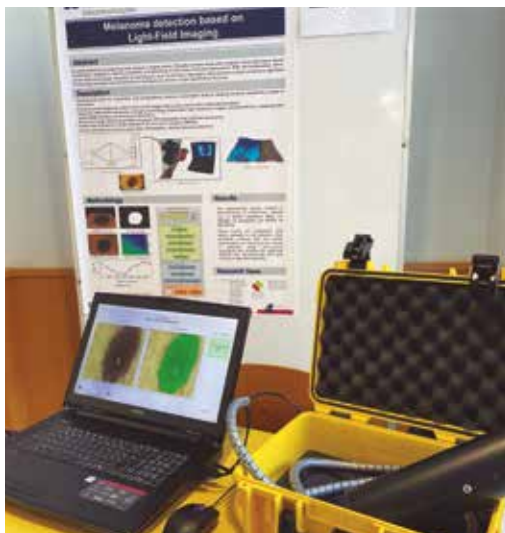


IT-IPLeiria
Instituto de Telecomunicações

IT is a private, not-for-profit organization, of public interest, funded in 1995, with the status of associate laboratory since 2001 and recognized as Centre of Technological Interface since 2018. IT is a partnership of 9 institutions, with 3 branches, 4 delegations and 1 external laboratory with R&D in the field of Telecommunications. The IT delegation of Leiria has two main research groups in the field of Digital Signal Processing and Radio Frequency Digital technologies.



IT's activity contributes to the following SDGs



it instituto de telecomunicações

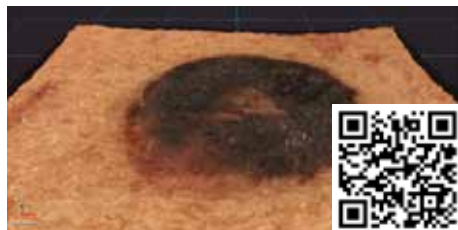
Research Areas

- ▶ Telemedicine
- ▶ Computer vision
- ▶ Industrial surveillance
- ▶ Smart antennas
- ▶ Signal processing
- ▶ SmartHome
- ▶ Data compression
- ▶ Smart radio environments
- ▶ Critical radio communications
- ▶ Private 5G networks for industry
- ▶ Remote sensing
- ▶ Electromagnetic compatibility

Mission

IT's mission is to create and disseminate new knowledge and support advanced training in the broad field of the Technologies of Information, Communications and Electronics (TICE), with a special emphasis on Telecommunications. IT is involved in the research field of telecommunications both nationally and internationally. It also promotes higher education and training, by welcoming and monitoring undergraduate and postgraduate students.

Projects



PlenoISLA

Development of non-invasive imaging techniques for characterising and diagnosing skin lesions using 3D images with plenoptic technologies.

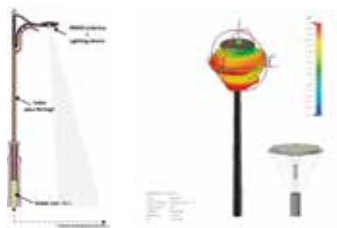
<https://www.it.pt/Projects/Index/4583>



ARoundVision

Development of image compression algorithms for 360-degree and ultra-high-definition images using algorithms of low computational complexity.

<https://www.it.pt/Projects/Index/4602>



Invisible 5G

Development of a compact, low-power, and discreet 5G base station, which can be seamlessly integrated into urban furniture, such as utility poles, streetlights, or technical cabinets.



INOV.AM

Innovation in additive manufacturing processes supported by 5G connectivity for remote inspection and qualification of new materials for the telecommunications and radar industries.

Scientific Domains

- ▶ Processing and coding of multimedia signals and medical images
- ▶ Computer vision
- ▶ Antennas and propagation
- ▶ Electromagnetic compatibility
- ▶ Cyber-physical systems
- ▶ Remote detection
- ▶ Radio connectivity





Address

Regional Research Unit MARE –
Polytechnic of Leiria
ESTM – School of Tourism and Maritime
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Coordination

Professor Maria Jorge Campos

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<https://mare.ipleiria.pt/>



MARE-IPLeiria
Marine and Environmental Sciences Centre

MARE-IPLeia focuses its research and technological development on marine sciences, more specifically on the emerging sectors of the blue economy, such as Marine Biotechnology, Aquaculture, Marine Biology and Conservation and Marine Food Resources.

MARE's activity contributes to the following SDGs



Research Areas

- ▶ Sustainable blue biotechnology for the development of natural products and technological innovation
- ▶ Food innovation and valorisation of marine resources
- ▶ Marine ecosystem restoration
- ▶ Conservation and sustainability of marine organisms
- ▶ Advanced training
- ▶ Science communication and dissemination
- ▶ Promotion of health and well-being in aquaculture and production of new species

Mission

MARE-IPLeia's mission is to study marine ecosystems, promoting human progress in the areas of biotechnology, aquaculture and food resources, in a sustainable manner and with a strong focus on the conservation of these ecosystems. Through fundamental and applied research, in collaboration with national and international networks, we aim to contribute to the transfer of knowledge and technology, as well as to education and dissemination, generating information that supports decision-making and policy-making, promoting sustainable development.

Projects



BEAP-MAR

BEAP-MAR aims to address key challenges in the Blue Bioeconomy by exploring less-known marine organisms, such as new types of algae, marine fungi, and sponges, to create innovative products for various industries. By fostering partnerships and sharing knowledge across the Atlantic Area, the project seeks to enhance sustainable resource use and boost regional competitiveness.

<https://beap-mar.eu/>



Cure4Aqua

Funded by the EU Horizon Europe Programme, this project aims to develop new approaches to prevent fish diseases by introducing and validating novel technologies for early disease detection, while also supporting the advancement of alternative treatments to replace pharmaceuticals in disease control.

<https://mare.ipleiria.pt/marine-biology-and-aquaculture/cure4aqua-curing-eu-aquaculture-by-co-creating-health-and-welfare-innovations/>



OceanFire

It aims to explore seaweeds for the development of new sustainable alternatives against fire blight in Rocha pears.

<https://mare.ipleiria.pt/marine-biotechnology/oceanfire-extinguishing-fire-blight-with-the-sea-potential-of-the-invasive-seaweed-asparagopsis-armata-against-erwinia-amylovora/>



3DNutrients4Food

It aims to use 3D technology to develop healthier and more sustainable foods, using by-products from the agro-industry such as discarded vegetable parts and non-standard fruit.

<https://inov.am/en/project/work-packages-wp/wp21-3dnutrients4food/>

Scientific Domains

- Marine biotechnology
- Aquaculture
- Marine biology and conservation
- Marine food resources
- Science dissemination





Address

Polytechnic of Leiria branch
ESECS – School of Education and
Social Sciences

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Coordination

Professor Rui Matos

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<https://cidesd.pt/>



CIDESD-IPLeiria

Research Center in Sports Sciences, Health
Sciences and Human Development

The Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD) is a cross-institutional technical and scientifically multi-disciplinary unit of applied research hosted in the University of Trás-os-Montes and Alto Douro (Vila Real) and composed by 7 Higher Educational Institutions and scored with the rating of 'Very Good' in the last evaluation cycle by the FCT.



CIDESD's activity contributes to the following SDGs



Research Areas

- **HEART** investigates exercise for healthy aging, using AI to promote healthier lifestyles.
- **ELITE** works on training methods and technologies, using AI to improve the sports performance of young people and elite athletes through creativity, non-linear pedagogy, and predictive analysis of athlete movement.

Mission

The mission of CIDESD is to help developing human resources, capable of handling autonomous interventions under the domains of sports sciences, health and human development. This mission is particularly integrated in the goal 3 from the Sustainable Development Goals described in the 2030 agenda from the United Nations: ensure healthy lives and promote well-being for all at all ages.

Projects



Line Up

Systematize and analyze existing data at national and regional levels to assess the impact of effective educational interventions in reducing educational inequalities

<https://www.lineup-project.eu/>



Train for Brain

Strength and Fitness Training Program for Individuals with Mild Cognitive Impairment. The project aims to assist in identifying the optimal training dose for the preservation and enhancement of cognitive function and functional capacity in the study population.

<https://www.ubi.pt/Noticia/7649>



Sport for All

Physical Exercise Program for Institutionalized People with intellectual and developmental disabilities (IDD). Since 2023, the project "Sport for All at ESECS" has promoted sports activities for institutionalised individuals with IDD, with regular weekly sessions. This project has demonstrated a highly positive impact on the quality of life of the target population, unquestionably improving their levels of well-being and physical fitness, which are particularly important for a group with a high tendency towards sedentary behaviour, leading to detrimental consequences for their health.

<https://cidesd.pt/community-intervention/>



Tripela

Project to create a new team sport with the inherent research associated with its development, with the creation of an oculo-segmental coordination test.

Game excerpt: <https://youtu.be/zMpP9uwJaaQ>

Youtube: @tripela.ipleiria

<https://www.youtube.com/channel/UCrHz4SMW92mbqnAR-9H99Pdw>

Site: www.tripela.ipleiria.pt

Scientific Domains

- Sports Sciences
- Health
- Human development





Address

ciTechCare – Center for Innovative
Care and Health Technology
Health Innovation Hub | Polytechnic
of Leiria

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Coordination

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ciTechCare
Center for Innovative Care
and Health Technology

The **Center for Innovative Care and Health Technology**, ciTechCare, is a leading research, and innovation unit, dedicated to advancing healthcare through interdisciplinary collaboration. ciTechCare's current research efforts include two distinct topics: i) **Health Promotion and Care** (HPC), encompassing aspects such as Healthy Lifestyle Changes, Sustainable Nutrition, Rehabilitation, Occupational Health, and End-of-Life Care addressing contemporary societal demands. ii) **Innovation in Clinical Technology** (ICT), leveraging biomedical engineering and computational health data management and analysis techniques across a spectrum of domains in healthcare.

ciTechCare's activity contributes to the following SDGs



ciTechCare
CENTER FOR INNOVATIVE
CARE AND HEALTH TECHNOLOGY

Research Areas

- Assistive technology
- Chronic conditions
- Clinical engineering
- Nutrition innovation
- Health literacy
- Lifestyle changes
- Digital health
- Palliative care
- Rehabilitation
- Person centred care
- Sustainable human development

Mission

ciTechCare is dedicated to advancing health by developing cutting-edge solutions that enable early diagnosis to improve therapeutic outcomes, and empower patients and caregivers to enhance their quality of life. We invest in excellence, foster a dynamic environment for scientific discovery, and engage with the community to address real-world healthcare challenges, while deepening our commitment to sustainable human development.

Projects

MultiPrev

A multidisciplinary approach based on infection prevention and control measures, with a focus on combating antimicrobial resistance.



Google Play
Veggies4MyHeart



Veggies4MyHeart

A digital game that promotes health literacy in the prevention of cardiovascular diseases, encouraging vegetable consumption among preschool children.

<https://citechcare.ipleiria.pt/veggies4myheart1/>
<https://veggies4myheart.ipleiria.pt/>

OnTrack

mHealth platform that recognizes individual context and preferences to combat physical inactivity in people with Chronic Obstructive Pulmonary Disease (COPD).

<https://citechcare.ipleiria.pt/projects/health-promotion-and-care-2/ontrack/>

AGILidades

Recreational therapies as a means to assess and train motor, cognitive, social function, and health education in individuals and families with some degree of disability and fragility.

<https://agilidades.pt/>



Advanced Laboratory for
Diagnosis and Innovation

YouTube

<https://youtu.be/TfAVuW2WLH0>



ATOPlab - Assistive Technology and
Occupational Performance Laboratory

YouTube

https://youtu.be/SblRunu_Y5k



Biosignals Laboratory

YouTube

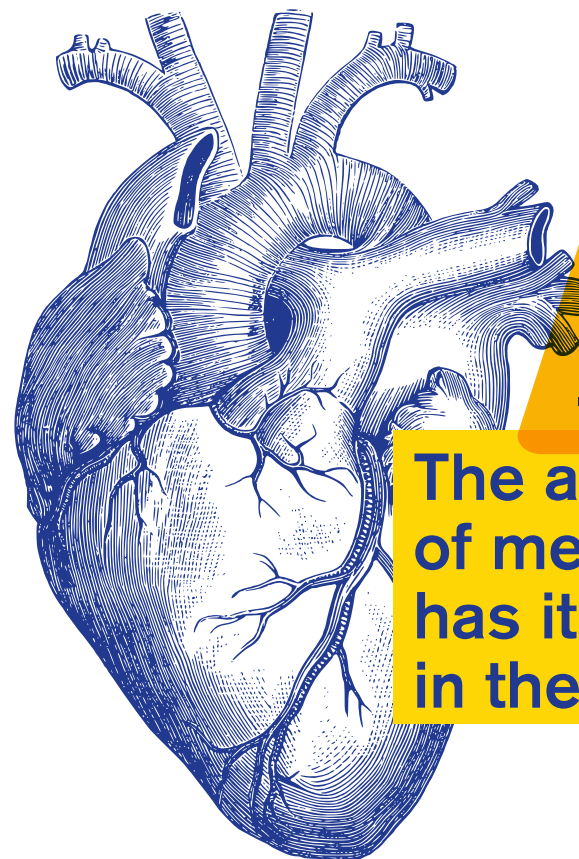
<https://youtu.be/R4GJaMJQ2VU>



Scientific Domains

Health Promotion and Care
(HPC)

Innovation in Clinical Technology
(ICT)



The art
of medicine
has its roots
in the heart.

PARACELSUS

ciTechCare
CENTER FOR INNOVATIVE
CARE AND HEALTH TECHNOLOGY

Cardiopulmonary Exercise
Testing Laboratory - CPET Lab

YouTube

<https://youtu.be/dMjNneRnlnw>



Clinical Practice Simulation Centre (C2S)

YouTube

<https://youtu.be/v7n2w3x4uKg>

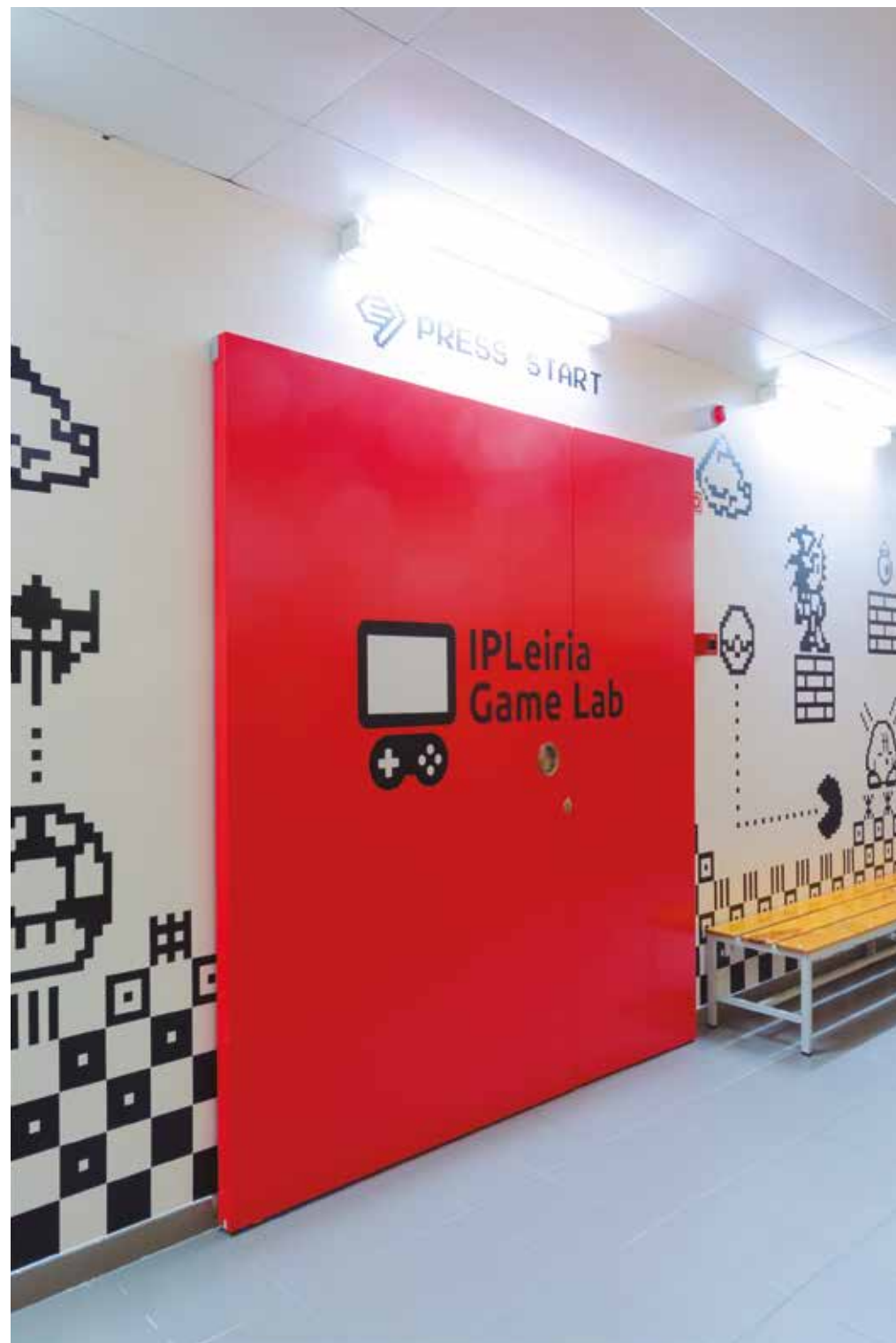


Functional Assessment
Laboratory

YouTube

https://youtu.be/uw_EMfXEgRc





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