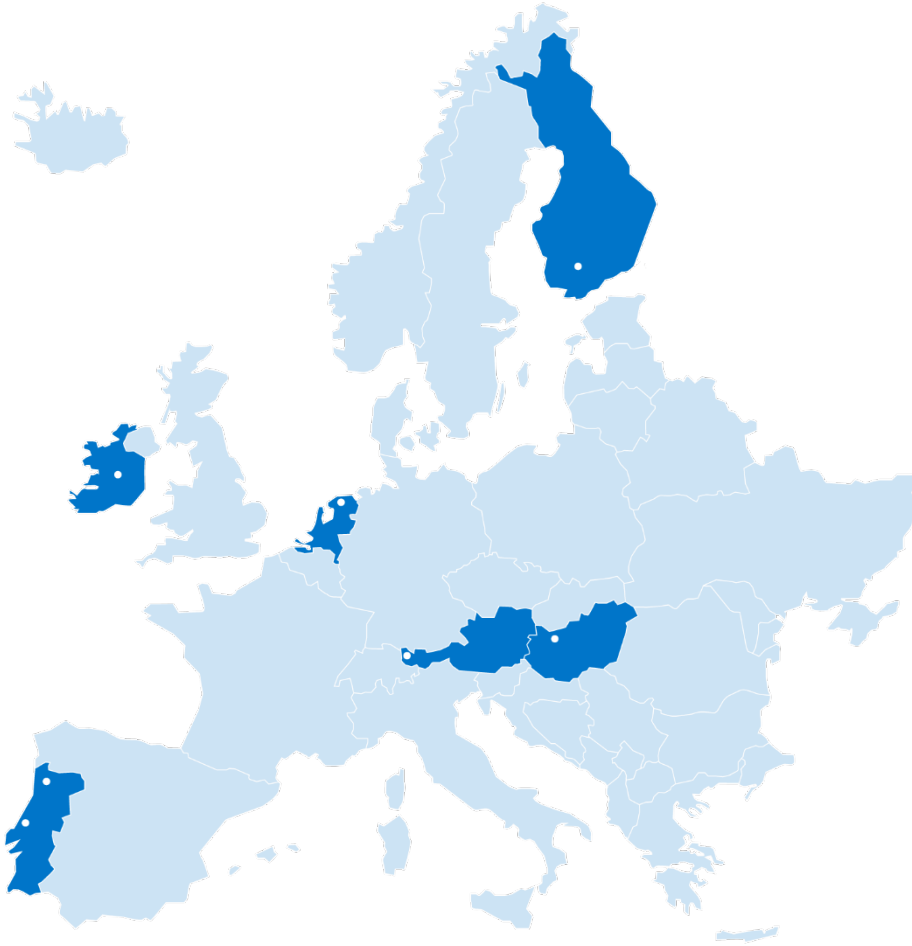
REGIONAL UNIVERSITY NETWORK PLUS

EUROPEAN UNIVERSITY



D3.5 INNOVATION IMPACT AND SCALING POTENTIAL

Type of Deliverable: Report, Public

September 2024

Technological University of the Shannon: Midlands Midwest (TUS), Ireland and

Polytechnic University of Leiria (IPL), Portugal

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European Union Funding
for Research & Innovation

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Abbreviations

CoARA	Coalition for Advancing Research Assessment
D	Deliverable
DORA	Declaration of Research Assessment
ECTS	European Credit Transfer and Accumulation System
EIH	European Innovation Hub
ERA	European Research Area
FHV	Vorarlberg University of Applied Sciences, Austria
HAMK	Häme University of Applied Sciences, Finland
Howest	Howest University of Applied Sciences, Belgium
IPCA	Polytechnic of Cávado and Ave, Portugal
IPL	Polytechnic of Leiria, Portugal
KPI	Key Performance Indicator
MSA	Main Scientific Area
NHL Stenden	NHL Stenden University of Applied Sciences, The Netherlands
R&I	Research & Innovation
RUN-EU	Regional University Network – European University
RUN-EU PLUS	Regional University Network – European University: Professional Research Programmes for Business and Society
SME	Small-to-Medium Enterprise
SZE	University of Györ – Széchenyi István University, Hungary
TRL	Technology Readiness Level
TT	Technology Transfer
TUS	Technological University of the Shannon: Midlands Midwest, Ireland
UAS	University of Applied Sciences
UBU	University of Burgos, Spain
WP	Work Package

1. Introduction

A key task of work package 3 (Common Research and Innovation Agenda) of the RUN-EU PLUS project was to develop an approach to monitoring the innovation impact potential of the Professional Practice-based Research Degrees at a network level. This report presents the RUN-EU PLUS approach to optimising the innovation potential and scalability of research collaboration between RUN-EU PLUS partners, including the potential for synergy with other trans-European initiatives. The document shares how the partners undertook an audit of available technologies developed across the network, including services, patents, innovations and social innovations. Also presented is how these technologies were identified, information collated, reviewed by the Research & Innovation Committee created by the RUN-EU PLUS project and are now being presented in the form of an Innovation Showcase across the network to allow for partner benefit, cooperation, and most importantly for industry and society benefit across all RUN-EU regions.

The innovation and scaling potential of this deliverable will contribute to the development of intra-regional research and innovation models (R&I). The intention of the audit of RUN-EU partner innovations/patents/services and social innovations is to support the development of intra-regional R&I models designed to deliver on societal transformation. Profiles of ongoing research offerings of partner institutions across the network have been captured, which it is believed have the potential to be shared for the benefit of other regions beyond the host country. These are wide ranging projects, mapped against the United Nations Sustainable Development Goals. This action has helped to develop a common R&I agenda and convergence actions, which are complementary to the education strategies and regional engagement initiatives detailed within the 'Interuniversity Future and Advanced Skills Academies', 'European Innovation Hubs' and 'European Mobility Innovation Centre' of the original RUN-EU PLUS proposal.

This deliverable also helps to promote Open Access, by showcasing the positive and transforming impact on the members regions and economic competitiveness, environmental responsibility and social inclusion policies, of the research outputs and

practices across the network. Many of these projects were additionally showcased at the annual ICARUS conferences, hosted by RUN-EU PLUS in December 2021, 2022 and 2023, with a combined attendance of over 600 representatives.

This **D3.5** action aims to empower RUN-EU researchers by providing them access to research outputs across the network, access to a blend of pedagogy, research skills, and open science principles through targeted training programmes, and ultimately benefit regions by fostering collaboration across sectors. While the RUN-EU PLUS collaborative Research Degree programmes are still in their infancy, the process of capturing and exploiting innovation potential presented in this report will be applied in the future to the Practice-based Research Degrees as a basis to scale scientific and technical excellence at an EU level, further enhanced by joining forces with other partners in the European University's surrounding ecosystem and/or through synergies with financial engineering.

The dissemination actions resulting from the suite of innovations presented in the Innovation Showcase will engage the RUN-EU R&I community, promote cooperation, and highlight achievements via events, education on open science, and sharing best practices. Examples of this are presented in **D7.6 Sustainability Strategy – 2nd Report**, which documents the long-term sustainability strategy of the project. A key goal is ensuring the long-term success of our common R&I agenda, through the Professional Practice-based Research Degrees and aligning with European initiatives to expand educational and research offerings through the RUN-EU alliance.

2. Creation of RUN European University Catalogue of Innovation Offerings

To commence work for **D3.5** we surveyed the RUN-EU Research and Innovation Ambassadors across the network. A survey was designed on Microsoft Forms to capture information from the researchers and Ambassadors were asked to distribute this among their networks. The Ambassadors were requested to collate information from their Senior Research Community. The survey was distributed by email and social media, with requests for Senior Research Managers to encourage colleagues to share information which would be relevant across the regions.

The aim was to gather a wide range of innovations across the network, representing all partners, and covering all thematic research areas represented in the project. Screenshots of the survey are presented in **Appendix 1**. 66 responses were received from partners, with all thematic areas and partners represented in the responses.

In **Section 3** of this deliverable, the responses from the 66 completed surveys are analysed. Each response is then presented in turn with some high-level information about the potential for the innovation to impact on partners, or on European regions. Each case study presents a response from the partner university, naming the Service/ Innovation/ Patent, documenting how it can benefit industry and documenting how it can benefit the region. In **Section 4** we discuss how the Innovations Meet Regions innovations events of the RUN-EU Cycle 2 project (Erasmus+ no. 101124674) will act as dissemination events, before concluding the deliverable in **Section 5** 'Innovation and Scaling Impact Potential', with the proposition of a conceptual model to bring forward for project sustainability into RUN-EU 2.0.

The following sections showcase research innovations from across the RUN-EU network. Focus is placed on the benefit which each innovation can bring to research collaborations, including Professional Practice-based Research Degrees, inter-institutional collaboration and benefit to the regions. Each case study presents how these initiatives can leverage

partnerships within university ecosystems and offers the opportunity to sustain the momentum as RUN-EU Cycle 2 progresses. As outlined in the RUN-EU 2.0 grant agreement, these events will not only foster collaboration between academia and industry but also contribute to the overarching goal of enhancing national and international competitiveness while addressing green and digital transitions and socio-economic challenges. A promotional video showcasing the offerings presented in this report is currently under creation which will be presented at each Innovation Meets Regions Event. Creators of the offerings will be invited to present their offerings at the events in line with the profile of the regional partners in attendance at each event.

The integration of this RUN-EU PLUS Innovation Showcase into the RUN-EU 2.0 Innovation Meets Regions events which was proposed by the RUN-EU PLUS Project Management Committee during their in-person meeting held in NHL Stenden on February 27, 2024, further underscores the network's commitment to bridging the gap between research, innovation, and education, ensuring that the outcomes of research activities inform future skills programs and educational content developed within the RUN-EPA framework.

2.1 Overview of RUN-EU Innovations, Patents and Service Offerings

This section presents an overview of the innovation offering collection currently available across the RUN-EU alliance which has been created from the audit described previously and which will be promoted and made available to regional partners via the Innovation Meets Regions events of the RUN-EU 2.0 project. 8 of these events are scheduled between 2024 and 2028, one to be hosted by each RUN-EU partner.

In question one of the Technology Offerings survey, respondents were asked to provide a name for the Innovation/Patent/Service/Social Innovation. These are listed at the top of each individual table in the following section. A word cloud of commonly used words in the Innovation/Patent/Service/Social Innovations is presented below, with a clear emphasis on Sustainability, Digital and Food.

Figure 1: Word Cloud from our Innovation/ Patent/ Social Innovation Responses

A very good response to the survey from across the RUN-EU network was received, including additional responses gathered from our new RUN-EU partners (University of Burgos, Spain and Howest University of Applied Sciences, Belgium).

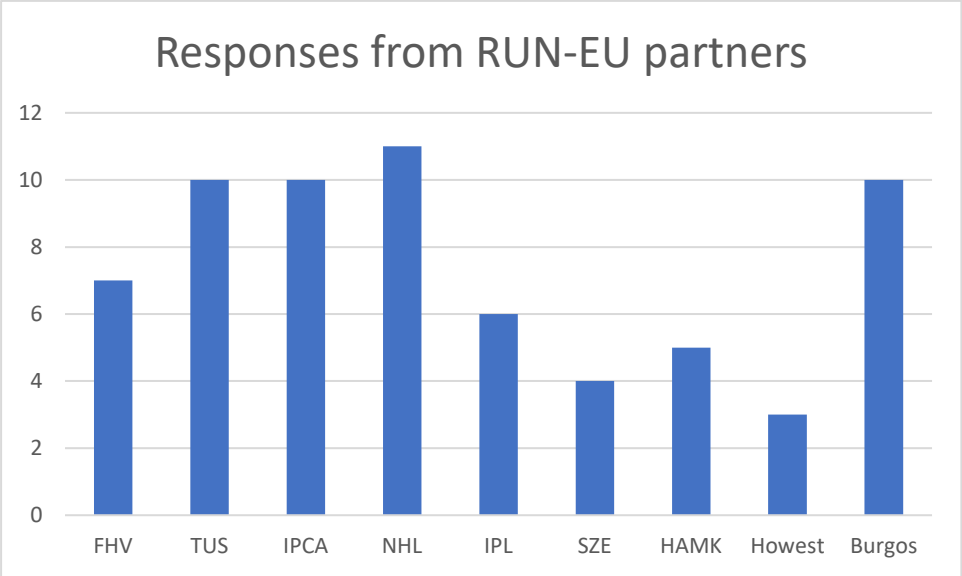


Figure 2: Responses from RUN-EU partners to our Innovation/ Patent/ Social Innovation survey

For each Innovation/Service/Patent/Social Innovation, respondents were asked to map where the offering was against Technology Readiness Levels (TRLs). TRLs are a type of measurement system used to assess the maturity level of a particular technology. **Figure 3** illustrates the system, ranging from basic principles at TRL1 to the actual system being utilised at TRL9. Respondents mapped their offerings against the TRL table, with a good spread of offerings at early, mid and late stages of maturity.

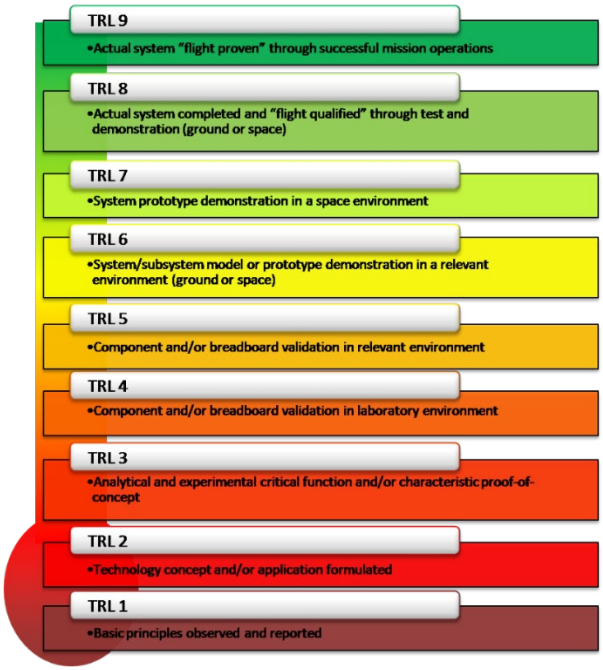


Figure 3: TRL, NASA, https://www.nasa.gov/directorates/somd/space-communications-navigation-program/technology-readiness-levels/

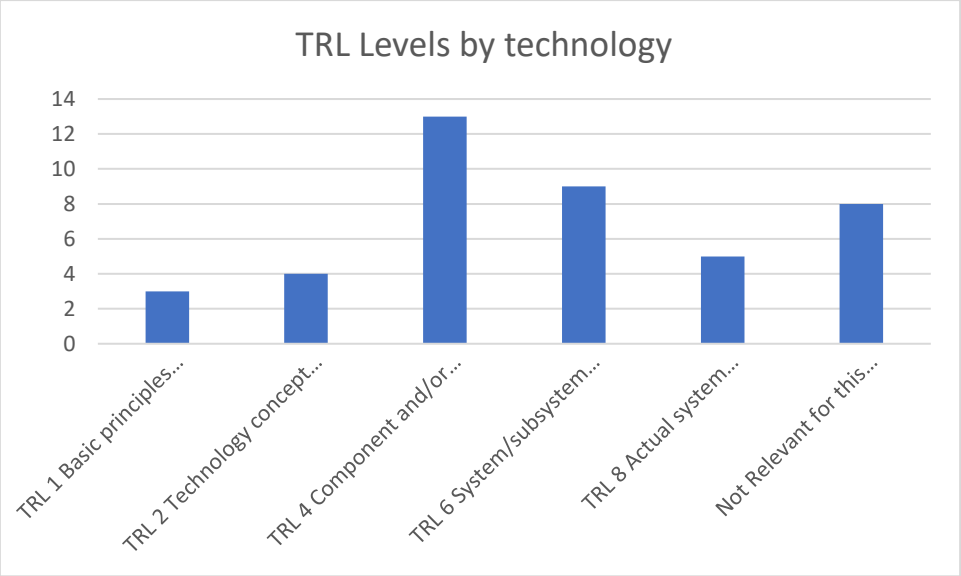


Figure 4: Responses concerning TRL of innovations presented by partners

Question 5 asked the respondents to identify the type of Intellectual Property (IP) the against which the innovation offering could be mapped. The majority of responses categorised the offering as 'know-how.'

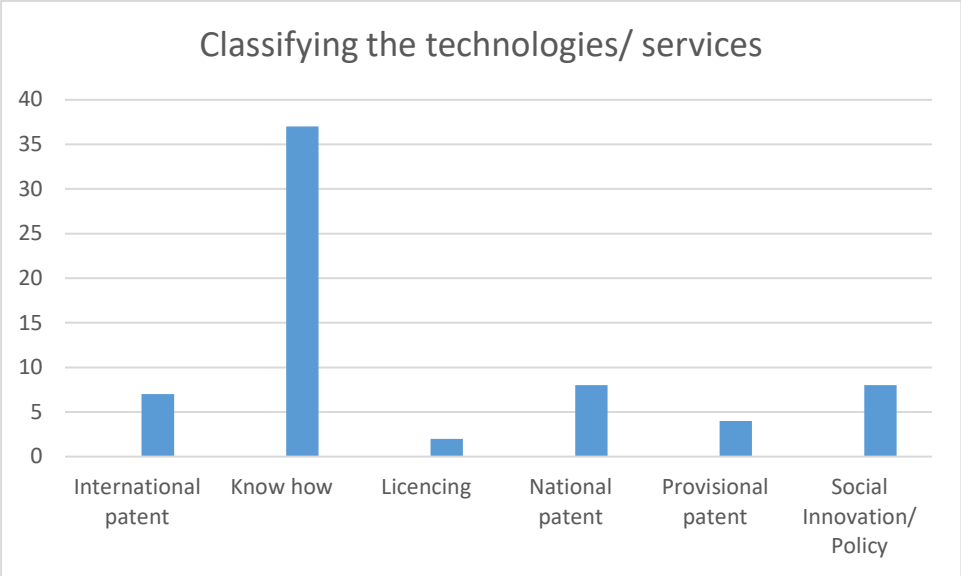


Figure 5: Type of Innovation/ Service/ Patent

Question 6 focused on the type of collaboration sought by partners from the Innovation offering to the regions and to RUN-EU partners.

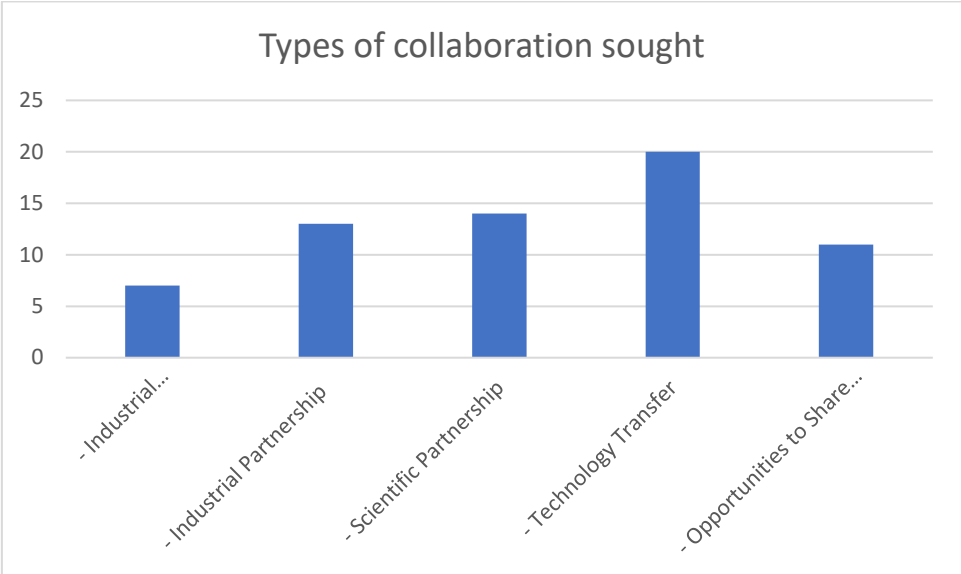


Figure 6: Type of collaboration sought by partners

In **Question 7** the research partners were asked to name the research unit where the innovation offering originated. These are presented in **Table 1**, organised by partner. This shows that the research units play a key role in development of technology offerings across the partnership.

Table 1: Research Units where Innovation Offerings were created

University	Research Unit Name	Thematic Area
IPL	CDRSP - Centro para o Desenvolvimento Rápido e Sustentado de Produto	Creative Art, Design and Materials Thinking
IPL	Laboratory Of Separation And Reaction Engineering-Laboratory Of Catalysis And Materials	Climate Change – Circular Economy & Decarbonisation
IPL	Adai-Leiria Delegation Research Unit	Climate Change – Circular Economy & Decarbonisation
IPL	Instituto De Telecomunicações (It) + Computer Science And Communication Research Center (Ciic)	IOT & Cybersecurity
IPCA	2AI	Health & Wellbeing
FHV	Microtechnology Research Centre	Food and Biotechnology
FHV	FHV - Smart Engineering Technologies Research Group	IOT & Cybersecurity
FHV	Energy Research Centre (Sustainable Materials Group)	Climate Change – Circular Economy & Decarbonisation / Smart, Sustainable and Advanced Manufacturing / Food & Biotechnology
FHV	Microtechnology Research Centre	Creative Art, Design & Materials Thinking
FHV	Microtechnology Research Centre	Smart, Sustainable & Advanced Manufacturing
FHV	Energy Research Centre (Sustainable Materials Group)	Food & Biotechnology
HAMK	HAMK Smartbio	Food and Biotechnology
TUS	Applied Polymer Technology	Circular Economy
TUS	Tourism Innovation Research Group	Tourism
TUS	COMAND Technology Gateway	IT, Software Engineering
TUS	Technology Gateway within PRISM	Polymer Research

TUS	Smarter Factory Technology Gateway	Smart, Sustainable & Advanced Manufacturing
IPL	MARE-Polytechnic of Leiria	Food & Biotechnology
TUS	Software Research Institute; LSAD Research Institute; Creative Informatics Group.	Creative Art, Design & Materials Thinking

TUS	Smarter Factory Technology Gateway	IOT & Cybersecurity
NHL Stenden	Green Pac, Circular Plastics	Smart Sustainable and Advanced Manufacturing
NHL Stenden	Cybersafety	IoT and Cybersecurity
NHL Stenden	Leisure & Tourism, International Hospitality Research	Tourism
NHL Stenden	Transformational Media	Food and biotechnology
NHL Stenden	Care and Welfare	Health and Wellbeing
NHL Stenden	Care and Welfare	Education and Social Science
NHL Stenden	Care and Welfare	Education and Social Science
NHL Stenden	Care and Welfare, Innovation in higher education, Business & Leadership	Health and Wellbeing
NHL Stenden	Care and Welfare	Health and Wellbeing

UBU	Sintorg Nuevos Métodos En Síntesis Orgánica, Chemistry Department	Food & Biotechnology
UBU	Biochemistry And Biotechnology (Bbt), Biotechnology And Food Science Department	Food & Biotechnology
UBU	Ingeniería De Edificación (Giie), Department Of Construction, Architecture, And Engineering Of Construction And Terrain	Climate Change – Circular Economy & Decarbonisation
UBU	Bioind (Biotecnología Industrial Y Medioambiental), Biotech And Food Science Department	Food & Biotechnology
UBU	Sams (Sensores En Alimentación, Medioambiente Y Salud), Chemistry Department	Food & Biotechnology
UBU	Construcción Sostenible (Sucons),	Climate Change – Circular Economy & Decarbonisation
UBU	Bioind Biotecnología Industrial Y Medioambiental, Chemical Engineering Area	Food & Biotechnology, Health & Wellbeing
UBU	Giie (Ingeniería De Edificación), Department Of Architectural Construction And Construction Engineering	Climate Change – Circular Economy & Decarbonisation
UBU	Polymers (Polímeros), Chemistry Department	Food & Biotechnology, Health & Wellbeing
Howest	Research Group Life Sciences	Food & Biotechnology
Howest	Research Group Life Sciences	Food & Biotechnology

Question 12 identified the companies and/or areas of society which might benefit from the identified Innovation Offerings. Responses are summarised in the list below, highlighting a broad range of industries that could leverage the new innovations to improve sustainability, efficiency, and overall performance.

- Manufacturing Industries: Particularly those involved in construction materials, chemical manufacturing, and food processing.
- Energy Industries: Focused on renewable energy and sustainable solutions, including waste management and recycling.
- Pharmaceutical and Healthcare Sectors: Including pharmaceutical companies, healthcare institutions, and medical device manufacturers.
- Food and Beverage Industry: Emphasising the use of natural ingredients, food packaging, and quality control.
- Biotechnology: Involved in the research, development, and production of natural compounds and biopharmaceuticals.
- Construction Companies: Those incorporating sustainable and innovative materials, such as sustainable concrete and prefabricated gypsum panels.
- Water and Waste Management: For technologies related to wastewater treatment and recycling.
- Cosmetics Industry: Using natural extracts in skincare and beauty products.
- Retailers and Distributors: Especially in food-related sectors, focusing on packaging and reducing food waste.
- Educational and Research Institutions: Engaging in vocational training, agricultural research, and precision farming technologies.
- Automotive Industry: Benefiting from innovation in materials and design.
- Local Governments and Municipalities: Especially in small towns, looking for sustainable and cost-effective solutions for infrastructure and utilities.
- SMEs and Startups: Across various sectors, including cybersecurity, biotechnology, and manufacturing, seeking to innovate or improve operations.

The full survey is presented at the end of this document in **Appendix 1**.

3. Review of Innovation Offerings by RUN-EU PLUS Commercialisation Committee

The R&I Committee for the RUN European University was created by the RUN-EU PLUS project (**D6.1 Innovation Ecosystem**) to facilitate innovation development and knowledge transfer to collaborating partners for regional development. The Committee is involved in supporting IP management and commercial exploitation of technology offerings developed by RUN-EU through its research activities or research degree programmes, supporting research partnerships between business and RUN-EU partner institutions and business incubation.

The inaugural meeting of the Committee was held online on 12 June 2024 to review the innovations, patents and service offerings submitted by the partner institutions using the online survey presented previously in **Section 2**.

In line with the committee membership description provided in **D6.1**, key roles of the RUN-EU innovation ecosystem were represented at the meeting, these are listed in **Table 2**.

Table 2: RUN-EU R&I Committee Meeting representation

R&I Committee role	Representative	Professional title	RUN-EU partner institution
Independent Chair	Dr Siobhan Moane	RUN-EU PLUS Project Manager	TUS
RUN-EU co-ordinator	Dr Liam Brown	Vice President Research, Development & Innovation	TUS
RUN-EU PLUS co-ordinator	Dr Patrick Murray	Head of Research	TUS
FASA representative	Dr. Liisa Posteref	Leading Principal Research Scientist	HAMK
EIH Bio-economy	Dr Annukka Pakarinen	Director of Research	HAMK
EIH Social Innovation	Ellen de Bruin	EIH Director	NHL Stenden
EIH Future Industries	Dr Joao Vilaça	Head of Research	IPCA
Research Cluster Area representative	Marcos Lemos	Principal Researcher,	IPL

		MARE Research Institute	
Research Cluster Area representative	Dr Tony Johnston	Director of Tourism Research	TUS
Research & Innovation Ambassador	Dr Markus Preißinger	Director of Research	FHV
Research & Innovation Ambassador	Dr John Cosgrove	Director of IDEAM National Industry Cluster	TUS
University-Industry Collaboration Representative	Petra Szakonyi	Faculty of Architecture, Civil Engineering and Transport Sciences	SZE
University-Industry Collaboration Representative	Dr Ruben Gallo	Knowledge Transfer Office	UBU
University-Industry Collaboration Representative	Lies Vanhaelemeesch	RUN-EU Project Leader & RUN-ESEC	Howest
Industry representative	Frank Doyle	Digitalisation Cluster Manager	IDEAM
Technology Transfer Case Manager	Jan van der West	Technology Transfer & Industry Liaison	NHL Stenden
New RUN-EU Partners	Vic Vansevenant	Entrepreneurship Manager	Howest
	Tine Wyckhuys	Technology Transfer & Industry Liaison	Howest
	Geoffrey Hamon	Head of Research	Howest
	David Calvo	European Project Officer	UBU
	Miliam Lopez	Entrepreneurship Support Manager	UBU
	Javier Valdeolmillos Azpeleta	Technology Transfer Officer	UBU

Table 2 shows the agenda for the meeting. A RUN-EU Innovation Showcase in the form of a video is currently being created which will be presented at the next Innovation Meets Regions events of the RUN-EU 2 project hosted by the new RUN-EU partner University of Burgos, Spain, scheduled for the 4th October 2024.

Table 3: RUN-EU R&I Committee Meeting Agenda

Inaugural meeting of the RUN-EU Research & Innovation Committee
Agenda
1. Welcome and introductions 2. Overview of RUN-EU PLUS R&I Committee 3. Presentation of RUN-EU Technology Offerings collated by RUN-EU PLUS 4. Innovation development and detection in RUN-EU PLUS co-supervised PhD research 5. Overview of RUN-EU 2.0 Innovation Meets Regions Events 6. Next steps 7. AOB

The following Section presents the RUN-EU Innovation Offerings Showcase. The Offerings are categorised into 3 sections namely:

- Digitalisation
- Sustainability
- Social Innovation

RUN-EU PLUS Innovation Offerings Showcase

Innovation Offerings in Digitalization

Digital Development Centre	
Research Area	
Digitalisation Engineering	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Know-how	
Keywords	
Digital transformation, 5G technology, IT, ICT, AI	
Technology Readiness Level	
TRL 7 - System prototype demonstration in an operational environment.	
Type of collaboration sought	
Industrial Partnership	
Description	
Digital Development Centre (DDC) is one of the newest organization units at Széchenyi István University. It starts its operation within the framework of the project and will operate as an integrated competence centre for general digitalization and 5G development projects. The DDC focuses on digital transformation and 5G technology in R&D and education as well. These development focus fields include measurement technologies and techniques, data security, healthcare, industry 4.0, mobility and agriculture. Building on the university's telecommunications and IT knowledge base, the Centre aims to integrate digitization and 5G networks with experts and ICT companies, and promote its interdisciplinary industrial diffusion, use-cases and socialization.	
Explain the concept and how it works.	
The Digital Development Centre will carry out complex RDI activities, developing products and services tailored to the needs of market players, facilitating digital transformation and the widespread deployment of 5G technology. The Digital Development Centre, in cooperation with its academic and corporate partners, supports digital transformation and the diffusion of 5G technology through education and training programmes.	

The Digital Development Centre builds on the University's telecommunications and IT knowledge base, involving external experts and ICT companies, and contributes to the interdisciplinary industrywide dissemination and use of digitalization and 5G networks, and to their socialization.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

All companies that are interested in research and innovation in the areas mentioned below (e.g. precision farming, telecommunications, etc.)

- Research areas of the Competence Centre:
- 5G wireless communication technologies, RAN and CORE measurement ecosystem
- Health impact assessment of wireless technologies
- Supporting drone technology development
- V2X vehicle communication technologies research.
- Precision farming and 5G SMART Farm.
- Autonomous ground and air vehicle fleet management system development, research on near:
- Ground airborne solutions.
- Real-time Digital Twin applications development.
- Research on virtual and augmented reality-based systems.
- Digital Economy - Sharing Economy.
- Research into metamaterial antenna technology.
- Research on technological and regulatory background for BVLOS flights.
- Application of mobile communication systems for UAV control Research.
- eSports and Cloud Gaming.

Services of the Competence Centre:

- 5G CORE network and metrology / measurement technology / test ecosystem
- 5G RAN network and metrology / measurement technology ecosystem
- 5G medical effect investigation
- 5G supported drone technologies
- Sharing economy
- eSport and Cloud Gaming

Further information

https://szolgaltatas.sze.hu/en_GB/digital-development-centre; https://ddc.sze.hu/

Management Campus Competence

SZÉCHENYI EGYETEM
UNIVERSITY OF GYŐR

Research Area

Social Sciences

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Technology transfer activities; student Innovation projects; innovation facilitation

Technology Readiness Level

TRL 1 - Basic principles observed and reported

Type of collaboration sought

Technology Transfer

Description

The Management Campus Competence Centre has an ever-expending service portfolio, which helps the collaboration with the industrial partners and the local businesses. The Management Campus Competence Centre is a collaboration platform, which furthers with its services the international contestability and the development of the innovation capability of the local businesses, primely the small- and middle businesses. The Management Campus Competence Centre has the responsibility for the technology-transfer activity on university level, including the announcement and the exploitation of the intellectual property, defences, and the systematization and offering of the university knowledge assets, acting together with the National Research Development and Innovation Agency. The Business Development Managers of the Centre stead a survey of the intellectual properties of the University Researchers, drafting of the recovery strategy, then the quest of the industrial partners and enterprises, who want to exploit of the university know-how. The exploration of the business research and development of the innovative cooperative opportunity and the projects defining belong to the Competence Centre's activity, and the relationship- and networking thru the Regional Innovation Platform Győr established in November 2019.

Explain the concept and how it works.

Technology transfer activities: the Competence Centre is responsible for the technology transfer activity at the University, including the announcement and exploitation of the intellectual properties, and the systematization and offering of the university knowledge assets.
Student Innovation Projects: Students from different science areas, who are working together in multidisciplinary team with 4-5 members on development tasks by the partner companies with mentor instructor's support for three months.
Innovation facilitation: our experts help the development of the partner companies innovation capability with the adaptation of the FORTH methodology, and the defining od the new services and products, in the phase of the idea- and the concept development.
Management research: first of all the research topic areas of the Management Campus aim at the academic and methodological foundation of the innovation services and trainings.
Generation of the international projects: international tender lookout, development of the project ideas, searching of the project partners, assistance in completion of international tenders
Support of the Student Innovation Actions: support of the prototype-development realized in the students-teachers cooperation (SZE-DUÓ), Spinoff-Club events, innovation trainings, organizing the preparation of the getting the venture capital, and actuation of the university incubator.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

- Services of the Competence Centre:
- Actuation of the H2020 Info point
- Business partner-analysis
- Crises management
- Digitalization solutions
- Facilitation
- IFRS advice
- Innovation trainings organizing
- Market research
- Project generation
- Start-up services and incubation
- Student Innovation Project (HIP-SIP)
- Technology transfer

Further information

https://szolgaltatas.sze.hu/en_GB/management-campus

Vehicle Industry Research

SZÉCHENYI EGYETEM
UNIVERSITY OF GYŐR

Research Area

IT & Automation

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Autonomous vehicle technology and electromobility, computer science; automation research

Technology Readiness Level

TRL 8 - Actual system completed and qualified through test and demonstration.

Type of collaboration sought

Scientific Partnership

Description

The Research Centre for the Vehicle Industry conducts research in the field of autonomous vehicle technology and electromobility in close cooperation with the staff of the Computer Science and Automation Research Institute.

Explain the concept and how it works.

- To establish and operate an internationally acclaimed professional workshop and school in the main professional fields.
- To attract highly qualified researchers and nurture talent to achieve the growing number of research tasks.
- To connect to the Hungarian higher education and academic vehicle engineering research network and establish and operate a research infrastructure and critical volume of knowledge.
- To participate in international projects and actively take part in EU tenders.
- To establish strong business relations with national and international industrial partners.
- ZalaZONE the Vehicle Industry Testing Track in Zalaegerszeg is another important site for the research activity of the Research Centre for the Vehicle Industry where

the research and development relating to autonomous vehicles and electric driven vehicles done in Győr, can be tested in real professional circumstances.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Main tasks and targets of the Research Centre for the Vehicle Industry: • To establish and operate an internationally acclaimed professional workshop and school in the main professional fields. • To attract highly qualified researchers and nurture talent to achieve the growing number of research tasks. • To connect to the Hungarian higher education and academic vehicle engineering research network and establish and operate a research infrastructure and critical volume of knowledge. • To participate in international projects and actively take part in EU tenders. • To establish strong business relations with national and international industrial partners. • ZalaZONE the Vehicle Industry Testing Track in Zalaegerszeg is another important site for the research activity of the Research Centre for the Vehicle Industry where the research and development relating to autonomous vehicles and electric driven vehicles done in Győr, can be tested in real professional circumstances.
Further information
https://szolgaltatas.sze.hu/en_GB/competence-centre

Personalized Phantom Models

IPCA INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE

Research Area

2AI

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Phantom models, training, validation, testing

Technology Readiness Level

TRL 4 - Component and/or breadboard validation in laboratory environment.

Type of collaboration sought

Industrial Partnership

Description

The service holds potential for supporting regional partners, industry, and society in several ways:

- Improved medical training and validation for healthcare professionals: healthcare facilities can benefit from access to tailored phantom models for their specific imaging modalities and procedures.
- Enhanced education and learning: Universities, medical schools, and training centers in the region can use this service to incorporate realistic phantom models into their training programs.
- Aid medical device manufacturers: Companies developing medical imaging devices can use the personalized phantoms to validate and refine their products.
- Enhanced research development: Research institutions can leverage this service to conduct experiments and validation studies for new medical treatments and technologies.
- Improved healthcare quality: By ensuring the accuracy and reliability of medical imaging systems, this service contributes to improved healthcare quality and patient outcomes,
- Advancement of medical knowledge: Through medical training and experimentation facilitated by personalized phantom models, continuous improvement in healthcare practices and outcomes is fostered.

Explain the concept and how it works.
2Ai-IPCA has dedicated services to support the creation of dedicated phantom models for medical training, products experiments and validation. Medical imaging quality assurance, medical training and quality control is facilitated by these well-designed physical phantoms. Most imaging phantoms are designed for a single imaging modality and require complex experimental setups to mimic the real organ.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Medical device manufacturers, healthcare institutions, educational institutions, research institutions, healthcare professionals
Further information
Knowledge Portal (ipca.pt)

Method for determining the Three-dimensional Position and Orientation of Implants in Medical Images

IPCA INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE

Research Area

2AI

Type of Innovation/ Service/ Patent Offering/ Social Innovation

National Patent

Keywords

Dental implants, medical imaging, CBCT, 3D models

Technology Readiness Level

TRL 5 - Component and/or breadboard validation in relevant environment

Type of collaboration sought

Technology Transfer

Description

The patent holds potential for supporting regional partners, industry, and society in several ways.
- Improved modelling of dental prosthesis: Dental professionals and implantologists can benefit from a more precise method of modelling a dental prosthesis using the information about the implants, leading to improved treatment outcomes for patients.
- Enhanced treatment planning: The method outlined in the patent allows for detailed pre-operative planning by providing accurate three-dimensional information about the implants;
- Facilitation of research and development: The method described in the patent can support research efforts in the field of dental implantology by providing a standardized approach for evaluating implant placement outcomes;
- Promotion of technological innovation: The patent encourages the integration of advanced imaging technologies, computerized simulation, and database management systems in the field of dental implantology;
- Potentiate collaborations: The method outlined in the patent can be implemented in dental practices, hospitals, and research institutions worldwide, fostering collaboration and knowledge exchange among dental professionals across the region.

Explain the concept and how it works.

The present invention consists of a method for determining the position and orientation of dental implants by combining volumetric imaging techniques with a simulated 3D model of the implant obtained through computerized simulation. Specifically, the method involves locating the implants in the maxilla/mandible image manually or automatically, extracting the volume containing information about the implant's profile and/or contour, identifying the implant models in an available implant database to obtain them in a 3D format, generating a three-dimensional volume with the characteristics of the volumetric imaging technique used based on the previously identified dental implant model, aligning the volume obtained from the database with the previously obtained volume, relating the two volumes in terms of translation and rotation, and exporting the Cartesian coordinates of the points corresponding to each implant.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Medical imaging companies, dental implant manufacturers, healthcare software developers, dental clinics and practices, research institutions, healthcare providers
Further information
https://patentscope.wipo.int/search/en/detail.jsf?docId=PT232592247&_cid=P22-LFB4KO-52196-2%20

Device For Laser Skin Treatment

IPCA INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE

Research Area

2AI

Type of Innovation/ Service/ Patent Offering/ Social Innovation

International Patent

Keywords

Laser treatments, robotic support, veins, sensor data

Technology Readiness Level

TRL 5 - Component and/or breadboard validation in relevant environment

Type of collaboration sought

Technology Transfer

Description

The patent holds potential for supporting regional partners, industry, and society in several ways:
- Improved treatment accuracy for patients: By combining robotic precision with human guidance, this device can deliver more accurate and effective laser skin treatments;
- Facilitated and efficient treatments for healthcare professionals: Regional partners in healthcare facilities or dermatology clinics can benefit from improved treatment outcomes, leading to higher patient satisfaction and better reputation for the facility;
- Enhanced safety: The integration of sensors and automated controls in the device enhances safety during laser treatments;
- Increased accessibility: With improved safety and accuracy, laser skin treatments using this device may become more accessible to a broader range of patients (with different skin types and conditions) and healthcare professionals with different skill levels;
- Technological advancement: The development and patenting of this device contribute to technological advancement in the field of medical aesthetics and foster further research;
- Economic growth: The commercialization of this patented device can stimulate economic growth within the industry.

Explain the concept and how it works.

The laser skin treatment device integrates a laser head with a robotic support system and operator-controlled handles, aiming to treat skin features like veins collaboratively. Initially, a camera captures images of the skin surface, identifying the target path for treatment via an electronic data processor. The robotic support then adjusts the laser head's position along this path, while the operator guides overall movement using handles. This collaborative approach ensures precise targeting of skin features, allowing the laser treatment to be administered accurately and effectively, ultimately enhancing treatment outcomes while maintaining operator control and flexibility.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
• Medical device manufacturers, healthcare professionals, healthcare facilities, research institutions, cosmetic industry, patients • Advanced treatment options, increased safety and efficacy, technological development, market differentiation, economic growth, improved quality of life and well-being
Further information
https://patents.google.com/patent/US20220339465A1/en

Device for assisting in collecting a biological sample from a subject using a collection needle

IPCA INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE

Research Area

2AI

Type of Innovation/ Service/ Patent Offering/ Social Innovation

International Patent

Keywords

Breast cancer, medical biopsy, collection needle, ultrasound guidance

Technology Readiness Level

TRL 3 - Analytical and experimental critical function and/or characteristic proof of concept

Type of collaboration sought

Technology Transfer

Description

The patent holds potential for supporting regional partners, industry, and society in several ways:
- Improved healthcare: By enhancing the accuracy and safety of ultrasound-guided biopsies, this innovation can ensure that patients receive timely and accurate diagnostic procedures;
- Empowering healthcare providers: This innovation empowers healthcare providers by equipping them with advanced tools to perform biopsies more effectively;
- Fostering innovation and industry growth: The development and adoption of this patented device can stimulate innovation and growth within the medical device industry;
- Technological advancement: The development and patenting of this device contribute to technological advancement in the field of research and foster further research;
- Enhancing patient outcomes: this innovation can lead to improved patient outcomes and quality of life;

Explain the concept and how it works.

The device facilitates ultrasound-guided biopsies by integrating a stable support structure for an ultrasound probe and a specialized needle guide. The ultrasound probe visualizes the target tissue within the subject's body in real-time, while the needle guide receives and directs the biopsy needle precisely to the target area. An adjustable arm mechanism holds

the needle guide, allowing for flexible positioning relative to the ultrasound probe and the target tissue. Rotatable and possibly slidable couplings enable healthcare professionals to adjust the orientation of the ultrasound probe and needle guide during the procedure, optimizing needle visibility and precision. This comprehensive design enhances the accuracy and safety of ultrasound-guided biopsies, particularly beneficial for inexperienced practitioners, by facilitating optimal needle guidance and visualization throughout the procedure.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
• Medical device manufacturers, healthcare professionals, healthcare facilities, research institutions, cosmetic industry, patients • Advanced treatment options, increased safety and efficacy, technological development, market differentiation, economic growth, improved quality of life and well-being
Further information
https://register.epo.org/application?number=EP23158078

Biotechnology Solutions – Shannon Applied Biotechnology

Research Area

Biotechnology

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how technologies

Keywords

Biotechnology, Bio-resources, Bioeconomy, Environmental solutions, Bioactive compounds

Technology Readiness Level

TRL 3 - Analytical and experimental critical function and/or characteristic proof of concept

Type of collaboration sought

Scientific Partnership

Description

Shannon ABC supports regional partners, industry, and society by developing innovative biotechnological solutions derived from bio-resources. These innovations can enhance the competitiveness of regional industries, create sustainable practices, and foster economic growth. The research services assist in product development, quality improvement, and process optimization. Shannon ABC's work in environmental and health sectors can lead to improved public health outcomes and environmental sustainability, benefiting society as a whole.

Explain the concept and how it works.

Shannon ABC leverages applied biotechnology to support regional partners, industries, and society by developing innovative solutions from bio-resources. The centre collaborates with local enterprises to advance research in various sectors, including agriculture, food, health, and environmental sustainability. By using the extensive laboratory facilities and expertise,

they help create new products, improve existing processes, and enhance the overall quality and sustainability of regional industries.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
The centre collaborates with local enterprises to advance research in various sectors, including agriculture, food, health, and environmental sustainability. Shannon ABC provides significant benefits to the industry by offering advanced biotechnological solutions that drive innovation and competitiveness. They assist companies in developing new products and improving processes, leading to enhanced product quality and market opportunities. Their expertise helps businesses adopt sustainable practices and reduce environmental impact. Shannon ABC supports industry partners in securing research funding.
Further information
www.shannonabc.ie

Breeding Experiments	HAMK Häme University of Applied Sciences

Research Area

Botany

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how and service

Keywords

Crops, green house, metabolic compounds, environmental tests, breeding

Technology Readiness Level

TRL 6 - System/subsystem model or prototype demonstration in a relevant environment

Type of collaboration sought

Scientific Partnership, Industrial Partnership

Description

The service holds potential for supporting regional partners, companies and research partners in several ways in our own horticulture campus; condition cabinet, layer cultivation container, greenhouse, open field

- We can study the effect of cultivation conditions (e.g. fertilization, watering, light intensity: spectrum, climatic conditions) on plant growth, metabolic compounds and chemical composition.

- Testing different fertilizers, growing media alternatives, biochar etc.

- Variety testing

Explain the concept and how it works.

Research plan for trials is planned together with HAMK experts and the company/other research organization. Research is done for the company in private research project or in the public funded research project

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Industry using plant-based raw materials (cosmetics, drug, food etc.). Stakeholders working in horticulture sector. Testing new varieties, environments etc. in a secure testing infrastructure
Further information
Coming to our website soon

Acoustic Measurement and Modelling. ISO/CEN Standards Expertise for MPEG and Acoustics.

Research Area

Software Research Institute; LSAD Research Institute; Creative Informatics Group.

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Acoustic measurement equipment; room acoustics; sound-source measurements; impulse response data for VR/AR/XR and digital twins.

Technology Readiness Level

TRL 9 - Actual system has proven through successful mission operations

Type of collaboration sought

Scientific Partnership

Description

Building and transport standards relating to acoustics, such as vehicle pass-by analysis and sound transmission;

Acoustic capture of spaces for VR/AR/XR and digital twin development. These would complement 3D laser scanning of heritage/historical sites for archival purposes or for the development of VR/AR/XR immersive environments.

TUS have specialist hardware and software for this acoustic capture and analysis, such as a 12-sides speaker called a dodecahedron speaker (B&K), a binaural mannequin with in-ear microphones (Neumann KU100); and calibrated measurement microphones.

Explain the concept and how it works.

The measurement and data capture process is industry standard. Data relating to the spectral, temporal, energy, and location features of sound sources, as well as those relating to reflective properties of materials and spaces is gathered using standardised methods.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Building and road authorities. VR/AR/XR immersive education projects. European Cultural Heritage Data Space initiatives and projects.
Further information
doi.org/10.3390/app11115064

Indoor Positioning System and Method (Sistema e método de localização em interiores) Patente PT 109950	POLITÉCNICO DE LEIRIA
Research Area	
Research Area 4: IOT & Cybersecurity (Cluster lead: NHL Stenden)	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
National Patent	
Keywords	
Antenna, RFID, IPS, Location, AoA	
Technology Readiness Level	
TRL 4 - Component and/or breadboard validation in laboratory environment	
Type of collaboration sought	
Scientific Partnership	
Description	
The invention can be used in RFID tag localization applications, in Indoor Positioning System (IPS), in Industry 4.0 and/or in Industrial Internet of Things (IIoT) and in inventory management.	
Explain the concept and how it works.	
The invention relates to an indoor position system combining three solutions: triangulation system, smart glove or smart case and wireless receiver device using access points with directional and motorized antennas. Global Positioning System is accurate and reliable when used outdoors. However, in indoor spaces, due to the signal loss, caused by walls and rooftops, the detection of GPS signals becomes an impossible task. As a solution to the indoor area coverage problem, an indoor positioning system based on wireless triangulation is proposed and designed with directional motorized antennas that uses the signal strengths and the angle of arrival (AoA) of at least three wireless access points.	

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Any company that wants to locate parts, products, animals, or people. The location system works in indoor environments where the classic GPS system cannot work.
Further information
https://www.deep-ai-plus.com/

Low Temperature Micro-computed Tomography	FHV Vorarlberg University of Applied Sciences

Research Area

Energy Research Centre (Sustainable Materials Group)

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Frozen samples, micro computed tomography, cryo investigations, food science, pharmaceutical stability

Technology Readiness Level

TRL 5 - Component and/or breadboard validation in relevant environment

Type of collaboration sought

Scientific Partnership

Description

FHV has special know-how when it comes to in-situ measurements of frozen samples in a micro computed tomography. With the cooling device being located within the tomograph, phenomena otherwise being undetected can be investigated. To the present, we used the technology for the

- Investigation of crystals or structures in frozen food and

- for the Stability of food or pharmaceuticals at low temperatures

In the future, we want to use the technology together with partners from industry and science in further fields as well.

Explain the concept and how it works.

Samples will be frozen (up to -80°C) directly in the micro computed tomograph and are investigated at this temperature ultra-low temperature. By doing so, structural information with a resolution of a few µm can be shown in-situ.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
The know-how can be used in a variety of industrial fields. All companies who are interested in 3D resolved structural information of their product or material at temperatures between -80°C and +20°C can benefit from the in-situ measurements.
Further information
https://www.fhv.at/en/research/energy/sustainable-materials https://www.fhv.at/en/research/service%20offerings/material%20characterization

SME IT Cyber Security Maturity Assessment Service

Research Area

IOT & Cybersecurity

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

SME, Cybersecurity, IT

Technology Readiness Level

TRL 8 - Actual system completed and qualified through test and demonstration

Type of collaboration sought

Industrial Partnership

Description

Allowing SMEs to quickly assess their Cybersecurity maturity against similar-sized SMEs according to the European Union Agency for Cybersecurity (ENISA) framework.

Explain the concept and how it works.

Why assess your company?

- Helps you baseline your cybersecurity maturity level
- Provides a personal and confidential approach
- Gives you an achievable cybersecurity action plan

The process begins with an assessment preparation session where we provide you with an introduction to the assessment framework, outlining its objectives and key components. Any preparatory tasks you should complete before the assessment are identified.

Key focus areas:

- People
- Technology
- Processes

During the assessment, SMEs are guided through a questionnaire, covering various cybersecurity aspects such as governance, risk management, compliance, and technical security measures. Honest and accurate responses are emphasized to ensure reliable assessment results. Throughout the process, SMEs are supported with the interpretation of assessment questions and the selection of their responses to maximize the value of the assessment. Assessment results are available immediately at the end of the assessment. We help you understand the assessment results and guide you through the associated action plan.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
By conducting the ENISA Cybersecurity Maturity Assessment SMEs can demonstrate their commitment to cybersecurity and advance their resilience against cyber-attacks in today's digital landscape. SMEs that have limited Cybersecurity capability and require support to improve their Cybersecurity Maturity.
Further information
https://tus.ie/rdi/research/tech-gateways-industry-clusters/smarter-factory/

Smarter Factory Technologies (Smart Factory Gateway)	TUS

Research Area

Smart, Sustainable & Advanced Manufacturing

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

DCS, Smarter Factory, processes automation, Innovation, Digitalisation

Technology Readiness Level

TRL 6 - System/subsystem model or prototype demonstration in a relevant environment

Type of collaboration sought

Opportunities to Share Good Practice

Description

Knowledge sharing, upskilling of technical staff, process engineering, prove concept development, prototyping.

Explain the concept and how it works.

Companies and industry engagement, to obtain training in latest process technology in pharma chem and F&B.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

Improve business efficient operation, increased regional competitiveness.

Further information

https://www.linkedin.com/company/smarter-factory-technology-gateway/posts/?feedView=all

Applied Polymer Technologies

TUS

Research Area

Polymer research

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Polymer, Plastic processing, Testing, Product Design

Technology Readiness Level

TRL 4 - Component and/or breadboard validation in laboratory environment

Type of collaboration sought

Industrial Partnership

Description

Our mission at APT Ireland Gateway is to support the development of innovative, high-value polymer and plastics products. We aim to increase the global competitiveness of Irish-based plastics and polymer companies, open up export opportunities, and ultimately boost revenues and employment across key industry sectors such as Sustainability, Packaging, MedTech, and GreenTech.

The Key Objectives of the APT gateway are:

APT
Applied Polymer Technologies

At APT, we offer industry various value propositions through our design and implementation of industry-focused projects. These include:

Access to our comprehensive knowledge base, world-class R&D infrastructure, and technological expertise to address the specific needs of Irish industries.

Innovation through a community of technologists, managers, consultants, and students who share innovative ideas and research.

Industrial partnerships with national companies, multinational corporations, SMEs, chambers, and sector-specific associations provide further opportunities for collaborative research projects, technology transfer, and professional development.

Access to a wide range of industry-relevant polymer processing equipment based in our new state-of-the-art facility, which includes equipment for injection moulding, extrusion, compounding, and polymer-based additive manufacturing.

Explain the concept and how it works.

The technology gateway programme has 17 specialist gateways where a company can leverage the expertise of over 300 industry-focused researchers with specialist equipment and facilities.

Key technology areas - Expertise across polymers, photonics, biotech, pharmaceuticals, mechatronics, IoT, manufacturing and wireless services.

Industry can access R&D solutions to develop new products or services, or optimisation of a process, for business and industry.

Gateways support projects of all sizes to all types of company (startups, HPSUs, SMEs, large indigenous, multinationals, etc.) through a range of Innovation supports.

Industry can benefit from financial supports from Enterprise Ireland such as the Innovation Voucher scheme, Innovation Partnerships and the Agile Innovation Fund.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

APT offers industry the following value propositions through its design and implementation of industry focused projects: Knowledge base: access to comprehensive knowledge base of APT and PRISM, world-class R&D infrastructure and the use of technological expertise to generate solutions for the close-to-market needs of Irish industry, as identified by our broad polymer and plastics industry client base, which will underpin sustainability, support exports and drive job creation Innovation Services: access to a community of, technologists, managers, consultants and students sharing innovative ideas and research Further Industrial Linkages: access to university's thriving multi-sectoral industrial partnerships with large national companies, multinational corporations, SMEs in various sectors as well as chambers and sector-specific associations across the country. These links provide further opportunities for collaborative & partnership industrial research projects with societal impact, technology transfer and product diffusion,

PRISM
Polymer, Recycling, Industrial, Sustainability and Manufacturing Research Institute

industry-specific trainings & talk series, professional trainings & employment Convenient terms: Convenient economic terms and conditions for further access to research facilities
Further information
https://prism.tus.ie/apt-gateway/

Technical Output generated by COMAND Technology Gateway
Research Area
IT SW Eng
Type of Innovation/ Service/ Patent Offering/ Social Innovation
Know-how
Keywords
Technology Advancement, SW Application Development, Machine Learning, Artificial Intelligence, Robotics
Technology Readiness Level
TRL 2 - Technology concept and/or application formulated
Type of collaboration sought
Industrial Partnership
Description
Provides leading edge solution to Industrial partners, to foster increased business growth for all collaborations
Explain the concept and how it works.
Research, develop solutions, deploy & apply to industrial needs
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
All IR, SW, Applied Engineering companies of all sizes benefit from improved performance and efficiency.
Further information
www.comand.ie

Mesa Modular

Research Area

IT SW Eng

Type of Innovation/ Service/ Patent Offering/ Social Innovation

National Patent

Keywords

Table, modular, square, octagonal, configuration

Technology Readiness Level

TRL 1 - Basic principles observed and reported

Type of collaboration sought

Industrial Commercialization

Description

Furniture companies can use this table for kitchens or for meeting rooms.

Explain the concept and how it works.

This table allows you to adopt a square and octagonal configuration just by easily handling some of its parts. There are no tables on the market that allow these two configurations.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

The solution makes it possible to have two very different solutions on one compact table. Companies like IKEA, JOM, Staples and others sell tables for offices and homes.

Further information

https://worldwide.espacenet.com/patent/search?q=pn%3DPT110766

Multifunctional Ecological Tootbrush - Escova de Dentes Sustentável Multifuncional

Research Area

IT SW Eng

Type of Innovation/ Service/ Patent Offering/ Social Innovation

National Patent

Keywords

Toothbrush, Water jet, Sustainability, Rotation, Multifunctional (*Escova de dentes, Jato de água, Sustentabilidade, Rotação, Multifuncional)*

Technology Readiness Level

TRL 2 - Technology concept and/or application formulated

Type of collaboration sought

Industrial Commercialization

Description

This innovation could be a concept for saving water, electricity and material resources, promoting a more sustainable future.

Explain the concept and how it works.

The multifunctional ecological toothbrush consists of the compilation of three concepts that make it sustainable: toothpaste capsule; water jet and rotation of the bristles without energy consumption. The entry of water into the brush will be responsible for the release of dosed toothpaste, provides the release of the central water jet and, at the same time, promotes the rotation of the set of bristles. This invention describes a toothbrush that allows the rotation of the bristles without using electrical energy. It allows saving time, water and toothpaste, since several activities are carried out simultaneously (brushing, washing and passing the water jet). The present invention presents a base consisting of the front part, a back part, a brush head the back part, the front part of the brush head, where the turbine is located for the rotation of the bristles through the impulse coming from the water that is reused for the water jet.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

Companies that develop dental hygiene products and that focus on innovation and sustainability.

Further information
https://servicosonline.inpi.justica.gov.pt/pesquisas/main/patentes.jsp?lang=PT&pk_vid=ff7f392c734f4fa11717784478046cdd

Biogas Process turned into a Biorefinery

HAMK Häme University of Applied Sciences

Research Area

Food and Biotechnology

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Biogas, high rate, wet processing, dry processing, nutrient recycling

Technology Readiness Level

TRL 4 - Component and/or breadboard validation in laboratory environment

Type of collaboration sought

Scientific Partnership

Description

Utilization of different organic waste and side streams into energy, value added compounds, fertilizers

Explain the concept and how it works.

We conduct biogas process research with different reactor types:

- Wet and dry processing, high-rate processing
- Input-based methane and biogas yield tests and continuous process research
- Process monitoring and end-product analyses
- Biogas potential tests for various materials

Research project partner or research service directly to the company

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Companies or stakeholders that provide waste or side streams. Biogas plants. Companies developing biogas equipment or solutions.
Further information
Coming soon on the website.

Deep11 - Chip design for Lab-on-chip Sensors	FHV Vorarlberg University of Applied Sciences

Research Area

IOT & Cybersecurity

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Chip design, lab on chip, analogue circuit design, digital circuit design, RISC-V

Technology Readiness Level

TRL 2 - Technology concept and/or application formulated

Type of collaboration sought

Scientific Partnership

Description

Deep11 is a 5 years research project of FHV in which competences for industry in the field of semi-conductors are established. Deep11 focuses on the chip design industry including lab on chip applications based on novel mixed signal chip designs.

Explain the concept and how it works.

The Deep11 chip design concept is based on a mixed signal architecture consisting of a RISC-V on chip signal decoding unit and an analogue front end for SAW based micro manipulator.

What companies/ areas of society might benefit from the above Know How?

The competences developed within Deep11 will strengthen especially the semi-conductor design industry.

Further information

https://www.fhv.at/en/research/microtechnology/projects-microtechnology/ongoing-projects/deepl11

Robotplast	
Research Area	
Smart, Sustainable and Advanced Manufacturing	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Licensing	
Keywords	
Injection moulding, industry 4.0, automatic analysis, computer vision	
Technology Readiness Level	
TRL 7 - System prototype demonstration in an operational environment	
Type of collaboration sought	
Industrial Partnership	
Description	
The innovation holds potential for supporting regional partners, industry, and society in several ways: - Enhanced industrial competitiveness: By automating identification, evaluation, and handling processes, RobotPlast increases efficiency, reduces downtime, and improves the overall quality of manufactured parts; - Reduced environmental impact: By minimizing defects and optimizing production processes, RobotPlast reduces material waste and energy consumption associated with manufacturing; - Safety and ergonomics: Automation through RobotPlast reduces the need for manual labor in repetitive and potentially difficult tasks, improving workplace safety and reducing the risk of work-related injuries; -Technology transfer and knowledge sharing: Implementing RobotPlast encourages knowledge transfer and collaboration between industries, research institutions, and educational organizations;	

- Enriched innovation ecosystem: RobotPlast can motivate other technological advancements and advanced research.
Explain the concept and how it works.
Framework for computer vision-based robotic systems for automatic identification, picking and storing of injected polymeric parts. This technology presents a new framework that enables the identification and evaluation of parts, produced by plastic injection moulding machines, for preventive actions and/or automatic placement of the same, through robotic or other automated systems.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Increased efficiency, improved product quality, cost reduction, enhanced safety, environmental sustainability, technological advancement. Manufacturing companies, robotics and automation companies, supply chain and logistics companies, technology and software providers, research institutions and universities
Further information
https://knowledge.ipca.pt/innovation-management/technologies/2

MITT: Medical Image Tracking Toolbox	IPCA INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE
Research Area	
Smart, Sustainable and Advanced Manufacturing	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Licensing	
Keywords	
Image tracking, cardiac imaging, toolbox, function	
Technology Readiness Level	
TRL 7 - System prototype demonstration in an operational environment	
Type of collaboration sought	
Technology Transfer	
Description	
The innovation holds potential for supporting regional partners, industry, and society in several ways: - Advanced medical image analysis: healthcare providers, clinics, and medical facilities can benefit from MITT's capabilities by leveraging advanced medical image analysis for improved patient diagnosis, treatment planning, and monitoring; - Fostering academic research: Universities and research institutions in the region can utilize MITT for academic research purposes, facilitating studies in medical imaging, cardiovascular health, and computational analysis; - Technological advancement: Companies in the medical device industry can integrate MITT's algorithms and technologies into their imaging systems, such as MRI machines, CT scanners, and ultrasound devices; - Improved healthcare: By enhancing diagnostic capabilities and treatment planning, MITT can contribute to improved access to quality healthcare services; - Advancements in medical research: MITT's contribution to medical imaging research can lead to breakthroughs in understanding disease mechanisms, developing new therapies, and	

improving patient outcomes, ultimately benefiting society by advancing medical science and improving overall health and well-being.
Explain the concept and how it works.
The Medical Image Tracking Toolbox (MITT) was designed to ease the customization of image tracking solutions in the medical field. It is built upon an object-based image tracking algorithm – the anatomical affine optical flow (AAOF). Several AAOF variants have been embedded in MITT, increasing the toolbox's versatility and permitting its adaptation towards multiple applications. While its workflow principles make it suitable to deal with both 2D or 3D image sequences, its underlying modules, together with a command-line interface, permit an easy setup of computationally efficient tracking solutions, even for users with limited programming skills. MITT is implemented in C/C++, with both CPU- and GPU-based executables, for Microsoft Windows ® x64 OS, being available. A MATLAB-to-C++ interface is also available, allowing to take advantage of MATLAB for code prototyping and of C/C++ for computational speed.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Medical device manufacturers, medical imaging industry, healthcare professionals, healthcare facilities, research institutions, patients. Enhanced healthcare increased diagnostic efficiency, improved patient outcomes, stimulated innovation and economic growth, advancements in medical research.
Further information
https://knowledge.ipca.pt/innovation-management/technologies/1

Liquid mixing movement system

IPCA INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE

Research Area

Health & Wellbeing

Type of Innovation/ Service/ Patent Offering/ Social Innovation

National Patent

Keywords

Liquid mixing, blood analysis, portable system

Technology Readiness Level

TRL 3 - Analytical and experimental critical function and/or characteristic proof of concept

Type of collaboration sought

Technology Transfer

Description

The patent holds potential for supporting regional partners, industry, and society in several ways:

- Improved healthcare services: By automating the process of mixing liquids, namely blood with reagents for pre-transfusion tests, healthcare facilities can enhance their efficiency and accuracy in diagnosing diseases and ensuring blood compatibility for transfusions;

- Time and cost savings: With the ability to perform tests on-site rather than sending samples to laboratories, healthcare facilities can save time and reduce costs associated with transportation and outsourcing of tests;

- Enhanced accuracy and reliability: Automation reduces the likelihood of human error in the testing process, leading to more accurate and reliable results;

- Increased accessibility: The portability of the mixing system allows for testing to be conducted in various settings, including hospitals, clinics, and even mobile healthcare units;

- Industry advancement: This patent contributes to the advancement of technology in the healthcare, pharmaceutical, and chemical industries by introducing an innovative solution to a common challenge.

Explain the concept and how it works.
The present invention is a fluid mixing system. More specifically, it is a system capable of mechanically and quickly mixing blood with its respective reagents for blood analysis. In general, the system comprises a base, a lower bar, an upper bar, a manual actuation button, the paddle base, and the paddle. The mechanical connection between the lower bar and the base is ensured by a rotation pin when inserted into the corresponding hole in the base. The mechanical connection between the upper bar and the base) is ensured by a rotation pin) when inserted into the corresponding hole in the base. The system operates by allowing the paddle to rotate at variable speeds (acceleration/deceleration) through manual operation of the button.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Improved healthcare delivery, cost and time savings, enhanced patient safety, increased accessibility, advancement of industry, support for research and development, contribution to public health initiatives, economic benefits. Healthcare institutions, pharmaceutical companies, medical device manufacturers, biotechnology companies, emergency medical services, donation centres, healthcare professionals, patients
Further information
https://patentimages.storage.googleapis.com/53/fc/ae/1ae64a39e8e30c/PT107064B.pdf

Meta Structure at Low Frequency

FHV Vorarlberg University of Applied Sciences

Research Area

Expertise with equipment/ technology

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Acoustic black hole, structural dynamics, acoustics, vibration mitigation, transmission loss

Technology Readiness Level

TRL 6 - System/subsystem model or prototype demonstration in a relevant environment

Type of collaboration sought

Technology Transfer

Description

The competence to design and test meta structures that passively reduce the vibrations within the structure as well as the acoustic emission of a structure in the low-frequency range (down to 100 Hz) and mid-frequency range (up to 2000 Hz). Our ideas were tested successfully on real machines like heat pumps or CNC machines. We have developed a full design cycle starting from the customer needs over design and numerical prediction down to optimization and manufacturing.

Explain the concept and how it works.

This is a purely passive concept based on the acoustic black hole, a special kind of meta structure. Vibration localization is achieved by reduction of wave reflections, which eventually reduces the vibration levels as well as the transfer of structural vibration to acoustic radiation.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

The technology can be used by a variety of industrial manufacturers but also by consultants for acoustics.
Further information
https://www.fhv.at/event/industrial-day-01-17730

Material Analysis with Raman-Microscopy or SEM/EDX	FHV Vorarlberg University of Applied Sciences
Research Area	
Material analysis, Raman, SEM, EDX	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Know-how	
Keywords	
Material analysis, Raman, SEM, EDX	
Technology Readiness Level	
Not Relevant for this Innovation	
Type of collaboration sought	
Industrial Partnership	
Description	
FHV has a strong track-record in material analysis based on different technologies alone and innovative combinations of these technologies. This service can support (industrial) partners to identify defects in products and to improve their products in the future.	
Explain the concept and how it works.	
SEM with EDX and Raman are microscopy and spectroscopy techniques to identify elements and molecular bindings within a material and/or a product.	
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?	
Most companies in the area of production from automotive or electronic industry to food and life-science might benefit from material analysis.	
Further information	

https://www.fhv.at/en/research/service%20offerings/material%20characterization

Femtosecond Laser Applications

FHV Vorarlberg University of Applied Sciences

Research Area

Material analysis, Laser Applications

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Femtosecond laser, ablation, micro structuring, laser cutting, pump-probe microscopy

Technology Readiness Level

TRL 9 - Actual system has proven through successful mission operations

Type of collaboration sought

Scientific Partnership

Description

We have been specializing in micromachining using ultrashort pulse lasers for many years and have built up a high level of expertise in this field. By integrating a laser source into the Vario micromachining system from 3D Micromac, industry-oriented research can be carried out for company partners. Further applications of the femtosecond laser at FHV include a setup for pump-probe microscopy and various lab set-ups. We are a strong cooperation partner in the field of laser processing using femtosecond lasers and have flexible laboratory setups as well as an industry-oriented laser processing system.

Explain the concept and how it works.

The laser micromachining system microSTRUCTTM vario is ideal for activities in applied research as well as industry-related development. It is equipped with a femtosecond laser (Spectra Physics) of the latest generation. This can be operated at three different wavelengths, depending on the application. Depending on the application, processing with scanners as well as with fixed optics allow the best possible technical implementation of the processes to be developed.
Femtosecond laser processing enables precise and material-friendly cutting, drilling of holes of almost any cross-section, as well as the production of three-dimensional surface structures and smallest parts.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
The application of this technology is manifold. The machining of a wide variety of materials, such as soft plastics, hard metals, glasses, sapphire or diamond is possible. Mechanical fine machining processes are complemented by laser ablation to open up new manufacturing fields in the micro range.
Further information
https://www.fhv.at/en/research/service%20offerings/laser%20processing-litho

Infant Head and Brain Segmentation in MR Images

INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE

Research Area

Health & Wellbeing

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Deep learning, head analysis, brain analysis, paediatrics

Technology Readiness Level

TRL 3 - Analytical and experimental critical function and/or characteristic proof of concept

Type of collaboration sought

Technology Transfer

Description

The method holds potential for supporting regional partners, industry, and society in several ways:

- Enhanced diagnostic capabilities: High clinical impact through automated segmentation methods to improve patient outcomes and reduce healthcare costs.

- Provide research advancements: The innovation supports large-scale studies on infant neurodevelopment, paving the way for new diagnostic tools and treatment approaches.

- Improved education and training: Healthcare professionals can improve their skills in interpreting MR images, leading to better care for infants and families.

- Possibility of technology transfer: Opportunities for collaboration and commercialization arise, fostering the development of healthcare technology solutions.

- Potentiate community health initiatives: Early detection and intervention initiatives target at-risk populations, reducing healthcare disparities and improving overall community health.
Explain the concept and how it works.
The method utilizes deep learning techniques to segment infant head and brain structures from multiple MR image sequences. It combines information from axial, sagittal, and coronal T1-weighted sequences using fusion-based strategies. Three fusion approaches - early, intermediate, and late - are employed within encoder-decoder networks, with each capturing different levels of image integration. These networks learn to extract features and generate precise segmentations of infant head and brain anatomy, facilitating clinical evaluation and diagnostic processes.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Healthcare technology companies, medical device manufacturers, healthcare providers and hospitals, research institutions and universities
Further information
https://link.springer.com/article/10.1007/s00530-024-01267-2

Innovation Offerings in Sustainability

FoodTurisitic	TUS
Research Area	
Tourism	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Know-how	
Keywords	
Technology and food waste, circular economy, composting, training	
Technology Readiness Level	
TRL 2 Technology concept and/or application formulated.	
Type of collaboration sought	
Scientific Partnership	
Description	
We are a consortium of five vocational and higher education institutions across Europe who are passionate about campus food growing, reducing food waste, and circularity of food. This project has produced a number of VET resources, including a good practice user guide, website, mobile application and we can share these with organisations across RUN-EU.	
Explain the concept and how it works.	
The FoodTuristic project addresses the lack of green technology curriculum in European culinary and hospitality schools, which have traditionally focussed more on gastronomy and hospitality management skills. It is funded via the Erasmus Key Action 2 framework, with the project running from November 2023 - November 2025.	
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?	
Rural communities. SMEs. Vocational education and trainers.	

Food waste reduction. Training on using technology as an intervention to reduce and reuse food waste.
Further information
https://www.foodturistic.com/ Project runs 2023-2025

Applied Polymer Technology

Research Area

Polymer Science

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Provisional Patent

Keywords

Testing & Investigation, Polymer Processing, Product Design

Technology Readiness Level

TRL 7 System prototype demonstration in an operational environment.

Type of collaboration sought

Industrial Partnership

Description

Knowledge base: access to comprehensive knowledge base of APT and PRISM, world-class R&D infrastructure and the use of technological expertise to generate solutions for the close-to-market needs of Irish industry, as identified by our broad polymer and plastics industry client base, which will underpin sustainability, support exports and drive job creation.

PRISM
Polymer, Recycling, Industrial, Sustainability and Manufacturing Research Institute

Innovation Services: access to a community of, technologists, managers, consultants and students sharing innovative ideas and research.

Further Industrial Linkages: access to university's thriving multi-sectoral industrial partnerships with large national companies, multinational corporations, SMEs in various sectors as well as chambers and sector-specific associations across the country. These links provide further opportunities for collaborative & partnership industrial research projects with societal impact, technology transfer and product diffusion, industry-specific trainings &

talk series, professional trainings & employment Convenient terms: Convenient economic terms and conditions for further access to research facilities
Explain the concept and how it works.
The Technology Gateway continues to underpin TUS strategic research goal to develop strong nationally and internationally recognized centres and groups within PRISM, which are independent yet closely aligned and we will continue to engage our industry support base strongly in our ongoing strategic development to ensure the continued relevance of the Gateway to evolving polymer and plastics industry requirements
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Knowledge base: access to comprehensive knowledge base of APT and PRISM, world-class R&D infrastructure and the use of technological expertise to generate solutions for the close-to-market needs of Irish industry, as identified by our broad polymer and plastics industry client base, which will underpin sustainability, support exports and drive job creation Innovation Services: access to a community of, technologists, managers, consultants and students sharing innovative ideas and research
Further information
https://prism.tus.ie/apt-gateway/

Agricultural and Food Technologies	
Research Area	
Biotechnology	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Know-how	
Keywords	
Agriculture; food industry; food science; physical, chemical and microbiological testing (water, soil, feed, food)	
Technology Readiness Level	
TRL 7 - System prototype demonstration in an operational environment.	
Type of collaboration sought	
Scientific Partnership	
Description	
The main goal of the Agricultural and Food Research Centre (SZE-AÉKK) is to conduct research activities related to agriculture and the food industry (food science). The strategic goal of the Centre is to develop innovative research units the launching of which are aimed at fulfilling practice-oriented education and research tasks in connection with the precision food production product path.	
Explain the concept and how it works.	
The Centre is involved in the writing up and implementation of relevant R&D&I proposals. SZE-AÉKK coordinates the smooth operation of laboratories providing agricultural and food industry research and corporate collaborations (e.g. physical, chemical and microbiological testing of water, soil, feed and food samples).	
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?	
• Development of precision and sustainable crop production, horticulture, animal husbandry and feeding practices, as well as food industry technologies.	

- Developing sustainable crop production practices with low carbon dioxide emissions.
- Applied reproductive biology (embryo transfer, ET and Ovum Pick Up-OPU, in Vitro Embryo Production-IVP).
- An extensive exploration of the advantages of ecological/organic farming.
- Development and trial of rapid testing methods (e.g. NIRS) in agriculture.
- Automation, digitization, robotization and the possibilities of using artificial intelligence (AI) in agriculture and the food industry.
- Research activities related to sustainable fish management in natural waters.

Further information

https://szolgaltatas.sze.hu/en_GB/agricultural-and-food-research-centre

Growing Media and Cultivation Testing

HAMK Häme University of Applied Sciences

Research Area

Food and Biotechnology

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Crops, green house, metabolic compounds, environmental tests, breeding

Technology Readiness Level

TRL 6 - System/subsystem model or prototype demonstration in a relevant environment

Type of collaboration sought

Scientific Partnership

Description

- Testing the functionality of growing media in different environments: condition cabinets, greenhouse, layered cultivation container, open field
- Cultivation trials with new substrate materials
- Fertilizer Product Testing
- Research on the properties of growing media and fertilisers, for example to support product development
- analytics complement the studies

Explain the concept and how it works.

Research plan for trials is planned together with HAMK experts and the company/other research organization. Research is done for the company in private research project or in public funded research project

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Companies developing fertilizers, additives, growing media, new crops etc. Product development, proof of concept etc.
Further information
Coming to our website soon

European Patent EP3560988 “Food conditioning food film and respective manufacturing process”

POLITÉCNICO DE LEIRIA

Research Area

Food & Biotechnology

Type of Innovation/ Service/ Patent Offering/ Social Innovation

International Patent

Keywords

Fish; frozen seafood; food packaging; shelf-life; natural-based

Technology Readiness Level

TRL 4 - Component and/or breadboard validation in laboratory environment

Type of collaboration sought

Technology Transfer

Description

The Patent EP3560988 “Food conditioning food film and respective manufacturing process” below described as SeaFilm, is a biodegradable packaging innovation that can contribute to enhancing the competitiveness of regional fish industries by reducing environmental impact and promoting sustainability. It also supports local economies by creating opportunities for seaweed aquaculture and advancing eco-friendly practices within the community.

Explain the concept and how it works.

Ensuring the sustainability of a food product requires securing the entire value chain. The primary goal of the market leaders is to combine freezing technologies with functional or active packaging to maintain the quality of fish during and after freezing, offering frozen fish with organoleptic characteristics very similar to fresh fish. However, the active and flexible packaging solutions available on the market are scarce and do not offer the same functionality as the SeaFilm technology in preventing freezer burn, maintaining the quality of frozen and thawed fish, and extending the product's shelf life. In this regard, the SeaFilm technology meets this market need and provides the food industry and consumers with a

sustainable packaging solution with reduced environmental impact, offering technological and commercial advantages.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
The SeaFilm innovation offers significant benefits to both industry and society by providing a sustainable packaging solution that reduces reliance on fossil fuel-based plastics and minimizes environmental impact. For the industry, it enhances product quality and shelf life, boosting market competitiveness. For society, it promotes environmental stewardship and supports the transition to a circular economy, fostering a healthier planet for future generations.
Further information
https://mare.ipleiria.pt/marine-biotechnology/seafilm-development-of-edible-film-for-sustainable-fish-freezing/

Industrial Bio-colourants

HAMK Häme University of Applied Sciences

Research Area

Food and Biotechnology, Climate Change

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Bio-colourants, side streams, materials, long term durability, fungi

Technology Readiness Level

TRL 4 Component and/or breadboard validation in laboratory environment

Type of collaboration sought

Industrial Partnership

Description

The service holds potential for supporting regional partners, companies and research partners in several ways in our facilities and equipment; bioreactors, climate chambers,

- We can study the effect of cultivation conditions (e.g. fertilization, watering, light intensity: spectrum, climatic conditions) on fungi or algae, metabolic compounds and chemical composition.

- Developing and testing potential colourants from different side streams, biochar etc.

- Long term durability, colour stability, accelerated ageing/Lifetime testing in different materials and products

Explain the concept and how it works.

Research plan for research, development or testing is planned together with HAMK experts and the company/other research organization. Research is done for the company in private research project or in the public funded research project

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Several industrial fields using colorants will benefit from new sustainable materials.
Further information
Only in Finnish : https://www.hamk.fi/projektit/bio-osake/

Valorisation of Side Streams into Biogas

HAMK Häme University of Applied Sciences

Research Area

Food and Biotechnology

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how, service

Keywords

Biogas, high rate, algae, value addition, waste waters

Technology Readiness Level

TRL 4 - Component and/or breadboard validation in laboratory environment

Type of collaboration sought

Industrial Partnership, Research Partnership

Description

The service holds potential for supporting regional partners, companies and research partners in several ways in our facilities and equipment;

- Biogas potential test for different materials
- Biogas processing tests in dry process, wet process and high-rate (liquids)
- We can study the effect of feed material, mixed feeds, reactor parameters, long-term process loads, supplements etc.
- Process, raw material and digestate analyses

Explain the concept and how it works.

Research plan for research, development or testing is planned together with HAMK experts and the company/other research organization. Research is done for the company in private research project or in the public funded research project

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

Industry or other stakeholder producing organic side streams; solid, wet or liquids. Benefits are in more sustainable value chains, new products or better profitability
Further information
https://www.hamk.fi/en/projects/vesitar/

Accelerated Ageing/Lifetime Testing of Materials and Products

FHV Vorarlberg University of Applied Sciences

Research Area

Climate Change – Circular Economy & Decarbonisation / Smart, Sustainable and Advanced Manufacturing / Food & Biotechnology

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Accelerated Ageing, Microstructure Analysis, Materials Science, Environmental Testing, Modelling

Technology Readiness Level

TRL 5 - Component and/or breadboard validation in relevant environment

Type of collaboration sought

Industrial Partnership

Description

The aging of components plays an important role in sustainable product development. In our specially equipped ovens, climatic chambers and our temperature shocker, we cover a wide range of temperature and humidity ranges and enable rapid lifetime testing (Accelerated Lifetime Testing)

Our service will help to:

- Finding operational limits of a product or material
- Estimate the Lifetime of a product under environmental stresses
- Estimate the service life of a used material (warranty claim)
- Understand the ageing and degradation of a product or material
- Prototype testing and increase the product reliability

Explain the concept and how it works.

To investigate the effect of rapid temperature change on materials and products, we use the Weiss ShockEvent T/60/V2 temperature shock test chamber. The dual-chamber design of this device allows for very fast and extreme temperature changes. This makes it possible to detect damage processes in materials and products that would not be apparent through a slow temperature change, or only after a very long period of stress.

To investigate the effects of environmental conditions on materials and products, the ATT Discovery DM340 C ES and DY110 C climatic chambers are available at our research department. These devices can be used to realize test conditions in a wide variety of temperature and humidity ranges in order to be able to make statements about damage mechanisms or durability. External measurements can also be carried out on the exposed materials and products via special inlets in the climatic chambers.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

Our service is relevant for manufacturing companies (polymers, wood, food, electronics, building materials, pharmacy, …), Startups and R&D-institutes. We offer accelerated ageing of materials and products on three different levels:

1) Accelerated ageing based on increased stress levels (temperature, CO2, moisture, UV)

2) Investigation of microstructure (micro computed tomography, electron microscopy, Raman spectroscopy, compression and tensile testing)

3) Modelling of the ageing process

Further information

https://www.fhv.at/en/research/service%20offerings/environmental%20simulations

Sustainable Wastewater Treatment Systems	POLITÉCNICO DE LEIRIA

Research Area

IOT & Cybersecurity

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Verm filtration, Swine wastewater, Treated wastewater reuse, Edible plants

Technology Readiness Level

TRL 6 - System/subsystem model or prototype demonstration in a relevant environment

Type of collaboration sought

Scientific Partnership

Description

Cleaner practices, such as Verm filtration combined with hydroponics, hydroponics can be used simultaneously for food production and wastewater recovery, with proven benefits to industry and society.

Explain the concept and how it works.

Swine wastewater is treated in a recirculating vermifiltration and hydroponic culture system. Results showed positive perspectives of the use of vermifilters coupled with downstream hydroponic cultivation units as biological solutions for the treatment of animal farming effluents. Vermifiltered wastewater provides a good nutritional basis for hydroponics, and a careful supplementation with some key nutrients, namely phosphate, to attain better nutrient ratios is a promising strategy to ensure both efficient wastewater treatment and productive greenery cultivation. The results suggest that hydroponically grown cultures with commercial value other than lettuce, such as ornamental plants and plants for energetic valorisation, could be cultivated with simultaneous remediation of vermifiltered wastewater for reuse in irrigation. Hydroponic culture valorisation will boost the sustainability of the treatment system and circular economy.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Wastewater treatment and valorisation - circular economy. Facing water scarcity.
Further information
doi.org/10.3390/app11115064

Introduction of renewable fuels in heavy-duty fleets

POLITÉCNICO DE LEIRIA

Research Area

ADAI-Leiria Delegation Research Unit

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Renewable fuels, sustainable transportation, energy and efficiency, internal combustion engines, heavy-duty vehicles

Technology Readiness Level

TRL 7 - System prototype demonstration in an operational environment

Type of collaboration sought

Technology Transfer

Description

A procedure and methodology to follow the change to renewable fuels in heavy-duty vehicles is a very valuable asset, at a time when the transportation sector needs to reduce its dependence on fossil fuels more than ever. This will enable the best and most sustainable options to be identified, ensuring both the minimization of environmental impacts of the vehicles and their use and their reliability.

Explain the concept and how it works.

The objective is to follow some vehicles through this process to use various environmentally friendly alternatives, such as biofuels, HVO, or even biogas, and gather all the data available to determine the true impacts, taking into account the energy, environmental, and efficiency of the vehicles. This will ensure that the regular use of those vehicles is unaffected, and if possible, it will increase their availability and reliability by appropriately adjusting the maintenance operations.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

This makes it possible to guarantee the sustainability of eco-friendly energy supply options for vehicles by facilitating a more reliable and well-known transition.
Further information
Not publicly available at present.

Trans-Plant: Implementation and Facilitating a Plant-based Society

NHL STENDEN hogeschool

Research Area

Food & Biotechnology

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Social Innovation

Keywords

Network Plant-based Society

Technology Readiness Level

Not relevant

Type of collaboration sought

Opportunities to Share Good Practice

Description

Trans-Plant's objective is to form a growing network, a living mycelium, by bringing together and supporting all actors implementing and facilitating the transition to a plant-based society. While there are already many initiatives from companies, universities, and other knowledge institutions, we still know little about farmer and citizen initiatives in this field. Trans-Plant wants to focus on mapping these smaller initiatives and adding them to the already known network. As a result, alternative solution approaches and "good practices" may emerge and develop in parallel.

Explain the concept and how it works.

There are currently many local and small-scale initiatives working on alternative solutions for the current food, nutrition, and food systems. These initiatives work alone and often lack the resources to sustain or expand their impact. Trans-Plant supports and connects these local initiatives. Through the co-creation and co-learning of producers, consumers,

knowledge institutions, and other societal actors, we can facilitate the desired transition to a plant-based society.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
The Trans-Plant project is a collaboration between NHL Stenden University of Applied Sciences, Hanze University of Applied Sciences and University of Groningen with the aim of accelerating the transition to a plant-based society, particularly in the Northern part of the Netherlands. Later also in other parts of the Netherlands and other countries
Further information
https://www.nhlstenden.com/en/projects/trans-plant

Manufacture of Fully Recyclable PET Containers

Research Area

Smart Sustainable and Advanced Manufacturing

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know how

Keywords

Chemical recycling, pet-trays

Technology Readiness Level

TRL 8

Type of collaboration sought

Partnerships

Description

The combination of limited recyclability of PET trays and the increased demand for PET materials are both trends of recent years, which need to be actively addressed in the future. The discrepancy of these two trends is what prompted research into the use of newly recyclable materials in PET trays. By making all materials in PET containers recyclable, we can better guarantee the material security of sustainable solutions for manufacturers.

In addition, it has dire environmental impact. A successful outcome would guarantee about a reduction of 900 kilo tonnes per year in the waste stream

Explain the concept and how it works.

The project team divides the various steps required to make PET containers fully circular into seven steps.

1. Manufacture of the design to make the PET container circular. Including labels, covering film, etc.

2. Investigation of the effects of possible contaminants from printing, labels, etc.

3. Development of new PET-based capping films.

4. Evaluation of the quality of treatment layers, including drawing up cleaning protocols.

5. Development of ways to process the recycled PET in the trays.

6. Production of trays with recycled PET from the trays themselves and the recycled PET from the sealing films.

7. Testing and validating these trays on a commercial basis

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

Dutch Polymer Institute

TNO/BMC - research into closure and quality analysis of recyclate

NHL Stenden Hogeschool - research into contaminants in rPET, washing protocol for removal of seal layer

Industry:

PET tray producer, production tests, contact with market

Development of PET seal layer

Capping film solutions.

Further information

https://www.nhlstenden.com/projecten/vervaardiging-van-volledig-recyclebare-pet-bakjes-0

Water Application Center (WAC)

Research Area

Food and Biotechnology, High tech, Energy

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Service

Keywords

Water technology, bio-economy

Technology Readiness Level

Services are market ready. Technologies are being developed from the lowest TRL levels upwards

Type of collaboration sought

Partners from industry and academia that would like to use the available test facilities for their technological innovations.

Description

The Water Application Center (WAC) is a fully equipped center in which companies, knowledge institutes and other organizations can carry out (or have carried out) innovative experiments in the field of water technology. With high-tech facilities, international environment, innovation and support.

https://www.vhluas.com/research/water-application-center-wac/

Explain the concept and how it works.

Research hall - 900 m2 of surface area, here companies or universities/researchers can hire a space in order to perform experiments with their own setups, also using the technical support from the WAC and some equipment, such as:

- Research infrastructure - (technical) gases, (waste) water and electricity
- Furnished with standard instruments such as process meters, pumps, etc.

• In collaboration with (commercial) laboratories in the vicinity, the WAC offers a total analysis package, so that all components can be measured during the research.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Partners from industry and academia that would like to use the available test facilities for their technological innovations.
Further information
https://www.vhluas.com/research/water-application-center-wac/ Claudia Sousa <claudia.sousa@nhlstenden.com>

Innovation Offerings in Social Innovation

Epic Stays - Opportunities in Alternative Tourism Accommodation Development

Innovation/ Service/ Patent Offering Discipline Area

Tourism

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Alternative Tourism Accommodation, Rural Tourism, Rural Development, SDGs

Technology Readiness Level

TRL 1 Basic principles observed and reported

Type of collaboration sought

Technology Transfer

Description

Epic Stays is more than just a project; it's a partnership fuelled by a shared vision. Inspired by insights from global leading organisations like the United Nations World Tourism Organisation (UNWTO) and the Organisation for Economic Co-operation and Development (OECD). As a European collaboration, we are on a mission to redefine tourism accommodation.

We aim to bridge the shortage of tourism accommodations across Europe and the need for rural tourism development and regeneration. We believe that tourists deserve more than just one kind of place to stay, they deserve choice and variance — they deserve an unforgettable stay tailored to their unique tastes, dream stays and interests.

Explain the concept and how it works.

Epic Stays is aptly timely as we navigate the future of tourism, particularly now and in the next decade. It will empower tourism accommodation businesses with the agility, tools, resources, and acumen needed to thrive in a rapidly changing landscape. From the

picturesque hills of Italy to the windswept shores of Iceland, Europe is fostering a new era of accommodation that demands us to embrace authenticity, regenerative and environmental principles, and sustainability.
But our ambitions extend beyond mere lodgings, Epic Stays offers an edge of inspiration, authenticity, and that WOW factor. Our stakeholders are already pioneering change and actively reshaping the very fabric of European tourism accommodation. We celebrate this and intend to share their learned best practice and showcase their ambitions and signature achievements. Through innovative approaches like the “albergo diffuso” model in Italy’, Ireland’s ‘tree houses’, the Netherlands ‘barge boats’ and Iceland’s ‘cave houses’ we will endeavour to develop a dedicated VET Vocational Education and Training program. Such initiatives will pave the way for newcomers and enhance existing initiatives propelling tourism accommodation into a more resilient future.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

Rural communities. VET providers. Tourism businesses. Policy makers.
Low-cost opportunities in rural tourism development utilizing alternative accommodation.

Further information

https://epicstays.eu/
Project launched 2024, completes end 2025.

Soccer Pitch Areas Segmentation	IPCA INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE

Research Area

Research Area 8: Health & Wellbeing (Cluster lead: IPCA)

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Know-how

Keywords

Soccer videos, computer vision, segmentation, pitch area

Technology Readiness Level

TRL 3 - Analytical and experimental critical function and/or characteristic proof of concept

Type of collaboration sought

Technology Transfer

Description

The method holds potential for supporting regional partners, industry, and society in several ways:

- Enhanced products and services: Sports analytics companies can leverage this innovation to enhance their products and services aimed at professional soccer teams, broadcasters, and sports organizations;

- Enhanced analysis: Broadcasters and media outlets covering soccer matches can use this innovation to enhance their live broadcasts and post-match analysis;

- Offer insights: By providing accurate and real-time analysis of player positioning and team tactics, these companies can offer valuable insights to their clients, enabling them to make data-driven decisions to improve performance and strategy;

- Promote fan engagement and education: For soccer fans, this innovation offers an opportunity to deepen their understanding and appreciation of the sport;

- Potentiate academic and research communities: Researchers and academics in the fields of computer vision, machine learning, and sports science can benefit from access to advanced segmentation models and annotated datasets.

Explain the concept and how it works.

Soccer video analysis is a challenging area of research in computer vision. Several soccer video analysis systems exist for tasks such as player detection and tracking, player performance analysis or team behaviour analysis. These systems are composed of several building blocks, such as image classifiers for shot classification, object detectors for player and ball detection, or object trackers for player and ball tracking. Another useful building block is an image semantic segmentation module, which may be used to segment different elements in the frame. In our setting, it is used to segment the different areas of the soccer field. This method is a semantic segmentation network, that segments the 10 different areas of the soccer pitch.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

Sports analytics companies, broadcasting and media companies, professional soccer teams, soccer coaching and training organizations, sports technology startups, academic and research institutions, fan engagement platforms, soccer governing bodies

Further information

https://ieeexplore.ieee.org/document/10194128

Dark Sky Ecotourism Guidance for SMEs
Innovation/ Service/ Patent Offering Discipline Area
Tourism
Type of Innovation/ Service/ Patent Offering/ Social Innovation
Service for business
Keywords
Ecosystem services, sustainable tourism, regional development
Technology Readiness Level
TRL8 - Actual system completed and qualified through test and demonstration
Type of collaboration sought
Technology Transfer
Description
The Dark Sky Project aims to empower training bodies and business in remote and rural European tourism to seize a more equitable share of Europe's future post pandemic tourism opportunities. It will play a key role in rebuilding and refocusing European tourism to be more sustainable, resilient, and future orientated.
Explain the concept and how it works
Observing the night skies have inspired people since the time of antiquity. Today, the interest in the night sky, such as dark sky observation, astronomy, and astro-photography is seeing increasing popularity. Protecting the night sky from light pollution is vital for rural communities to allow them to access this frugal resource opportunity.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

Rural communities. SMEs. Vocational education and trainers. Low-cost rural development opportunity for tourism businesses.
Further information
https://darkskytourism.eu/

European Influencers Academy	
Research Area	
Creative Art, Design and Materials Thinking	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Know how	
Keywords	
European Influencers Academy	
Technology Readiness Level	
Not relevant	
Type of collaboration sought	
Opportunities to Dhare Good Practice, making societal impact	
Description	
Conspiracy theories, fake news, and filter bubbles can lead to unsubstantiated or extreme opinions. This is something that an influencer may have more influence on than they realize. Therefore, the European Influencers Academy focuses on responsible influence through events, masterclasses, and workshops where influencers engage in meaningful dialogue with other influencers, students, local businesses, and government representatives. Influencers often have a significant influence on their followers, with the influencer being seen as a role model. The European Influencers Academy therefore focuses on raising awareness of this influence and the impact of online communication in society. We do not focus on how to sell more products, develop marketing strategies, or use audiovisual equipment. Our goal is to create awareness about topics such as responsible leadership, meaningful communication, cultural differences, and polarisation.	
Explain the concept and how it works.	

By organising so-called 'Swipe Up Weeks', conversations are initiated with European influencers. These weeks are designed to bring together a group of up to 10 European social media influencers to discuss topics related to responsible influencing in an offline setting in Leeuwarden. They follow a programme that allows them to reflect on their role and influence in societal developments. By organising 'Swipe Up Weeks', connections are established between influencers, students, organisations, and researchers. Students participate as organisers, members of the social media team, or researchers to prepare themselves for the future media industry. Additionally, there is room for the professorship to conduct research on various themes in the influencer economy. There is also collaboration with RUN-EU partners Politecnico de Leiria and TUS, and Media Innovatie Campus Friesland (MICA).
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
The Netherlands but also partners from other countries
Further information
https://www.nhlstenden.com/en/projects/european-influencers-academy

FAITH : Frailty by Assessment, Intervention and Technology towards Health. Grow old in a pleasant way in a place that feels good
Research Area
Health & Wellbeing
Type of Innovation/ Service/ Patent Offering/ Social Innovation
Know how
Keywords
FAITH : Frailty by Assessment, Intervention and Technology towards Health.
Technology Readiness Level
Ongoing and completed research projects: - Vulnerability during the corona pandemic - MONDAY - Monitoring Nutritional Status and Dietary Intake - Learning from cases; A Frisian learning network aimed at improving support for people who exhibit confused behavior - Dementia caremapping in care for people with intellectual disabilities and dementia
Type of collaboration sought
Opportunities to Share Good practice, making societal impact
Description
Everyone wants to grow old in a pleasant way in a place that feels good. That is easier said than done. The FAITH research project aims to enable vulnerable people to lead a good quality life for as long as possible, with their own control. By developing knowledge and sharing it with other healthcare organisations, knowledge institutions and companies, we can improve healthcare. When we work together on practical issues, we raise practical knowledge to a higher level and arrive at solutions that have an impact where they are needed. FAITH research works on increasing the knowledge and skills of professionals, with the aim of supporting vulnerable people.

Explain the concept and how it works.

In learning networks, workshops, (innovation) workshops and projects, healthcare professionals, researchers, lecturers and students work together on current challenges and issues, which are often brought in by clients and their loved ones.

Within FAITH, a large number of parties bundle their expertise and experiences in the field of frailty. Together we provide more insight, practice-oriented knowledge, evidence-based interventions and we conduct research into the application of these in a personalized approach with an eye for the possibilities of technology and eHealth. We share knowledge and skills about vulnerability. The FAITH Academy focuses specifically on the knowledge development of professionals, researchers, students and lecturers through lectures, training courses, learning network meetings and in innovation workshops where students from various courses conduct research into current issues and provide solutions with prototypes. The cross-pollination within FAITH regularly results in new projects that are taken up by the lectorate, as well as PhD trajectories based on specific research questions.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

The Netherlands but also partners in other countries.

Further information

https://www.nhlstenden.com/projecten/faith-research

Future Proof Nurses: Simulating the Nurse of the Future	
Research Area	
Health & Wellbeing	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Social Innovation	
Keywords	
Simulating the Nurse of the Future	
Technology Readiness Level	
TRL3/ Simulation programs are developed	
Type of collaboration sought	
Opportunities to share good practice, making societal impact, partners where we can provide training	
Description	
Healthcare is coming under increasing pressure, which hampers the inflow of new and well-equipped nurses. To tackle this, digital simulation education is being used in which students practice realistic nursing professional situations and experience what it is like to have certain conditions. As a result, students are better prepared for internships, they can practice [unlimited] real-life situations in a safe setting and make mistakes without it having consequences for the patient. The outflow of recently graduated nurses is high due to the workload and the negative atmosphere that comes with it. This affects education: there is a shortage of internship supervisors and internship places, which makes the inflow of new and well-equipped nurses more difficult. In cooperation with healthcare institutions we have found out what students need to be trained for the future. This revealed that students: have insufficient insight into the actual professional context, have insufficient insight into the target group, have difficulty with communication skills and are insufficiently prepared for acute situations and then do not know how to act despite having learned this within the school setting.	

Based on the needs from the field, a number of digital simulations were purchased. These were first tested on a small scale with teachers and nursing students as well as with various practical institutions. Now we share this knowledge with Dutch hospitals and is it part of the curriculum.

In 2023 this project won the National Higher Education Price, a prestigious prize for innovative education.

Explain the concept and how it works.

Among other things, by having students actively search for situations that [student] nurses encounter in practice based on design-oriented research. Among other things: what are difficult situations that they did not feel well (enough) prepared for? What are experiences that they had never anticipated? Such questions form the basis for co-creative design sessions in which these questions are explored in depth, illuminated and analysed from different perspectives, in order to then form the basis for developing new scenarios and content to then use and investigate their effectiveness.

The great thing is that students of all levels can work together, from associate degree level to master level. This has an impact on the learning process of students, but also on the teachers and the [practice] supervisors. In addition, research is being done into where digital simulations can be of added value in education and can be used to prepare future nurses even better.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

The Netherlands but also educational and health partners in other countries

Further information

https://www.nhlstenden.com/projecten/future-proof-nurses-simulerend-naar-de-verpleegkundige-van-de-toekomst

Inclusive Community

Research Area

Health and Wellbeing

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Social Innovation

Keywords

Inclusive Community Lab, social inclusion, equal opportunities for everybody

Technology Readiness Level

TRL 6/
In 2019 the Inclusive Community Lab was created and is a well-known centre of expertise on social innovation. In the lab we work with learning communities in which students from various study programmes and lecturer-researchers work together with employees of the municipality, with working professionals, companies, NGP's, residents and experience-experts on solutions for complex social issues.
The lab has grown organically, which has ensured that regular testing and evaluation has taken place from the start. Based on the results, lessons have been learned and adjustments have been made under the guidance of educational support staff. In addition, evidence-based knowledge is being developed. This is done by means of research from the DBE lectorate of lector Migchiel van Diggelen. This research examines the educational approach and in particular the transferable success factors. These results can be used for scientific publications, but they can certainly also be disseminated to colleagues at other universities of applied sciences. In 2022 the lab won the National Higher Education Price, a prestigious prize for innovative education.

Type of collaboration sought

Opportunities to share good practice, making societal impact, partners with who we can work together on wicked problems concerning inclusion, provide social innovations.

Description

Poverty is a common, persistent problem. As SDG1 of the United Nations, it is high on the agenda of governments. The Inclusive Community Lab (ICL) tries to contribute to tackling poverty with the fresh perspective of students. The lab works with various multidisciplinary groups, a learning community. The academies involved saw the impact of the persistent social problem of poverty. They also had the vision that integral cooperation between academies, public and private parties, was necessary to find other solutions. A number of enthusiastic university colleagues from various disciplines work daily on ways/methods/paths in which education and research can contribute to the poverty problem, tackle social injustice and enforce inclusion.

The problems surrounding poverty are complex and affect many factors; such as finances, education, social quality, health, low literacy, employment law position, etc. In the ICL, various disciplines come together to develop creative solutions for problems/issues in society. The multidisciplinary collaboration requires learning to understand each other's language by being curious about the added value of working together from different disciplines. The field of work provides a concrete issue from practice. This is addressed by a team in which financial, business and social work students (any many more disciplines) work together with experts by experience. The experts by experience have a good eye for what does and does not work. This allows the multidisciplinary team to develop more effective solutions.

Explain the concept and how it works.

NHL Stenden University of Applied Sciences works according to the concept of Design Based Education (DBE). This is an educational approach based on design thinking in which students work on concrete assignments from practice. At DBE, an investigative attitude, the ability to apply knowledge and conduct research are central. At DBE, we mainly apply Design Based Research.

The design of the ICL, with a physical location in a neighbourhood in Leeuwarden, offers a unique, lifelike educational setting to the students. Social organizations are active in the building where this lab is situated, such as social entrepreneurs, the social area team, artists and entrepreneurs in creative professions. This neighbourhood district was chosen because it offers a wonderful cross-section of society: households with a large - or small - budget, entrepreneurs, educational institutions, rental and owner-occupied homes, healthcare and welfare institutions. The ICL is therefore close to the people it concerns.

Students from various programs, lecturers, experts by experience and professionals from the field together form a multidisciplinary team. The

contact with cases from reality and the multidisciplinary character of the team ensures a change in the perception of the students. For example, students of Finance & Control learn to look at the person behind the numbers and students of Social Work are challenged to look beyond the social domain. By moving education outside the own walls, the lecturers

are stimulated to look again at their role in making a social impact through education and research.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
The Netherlands but also educational, social and business partners in other countries.
Further information
https://www.nhlstenden.com/projecten/inclusive-community-lab-fryslan https://www.youtube.com/watch?v=x7gD1BgOhbc

Sexy and Safety Toolkit

Research Area

Education and Social Sciences

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Social Innovation

Keywords

Sexy & Safe, safe online sexual development and resilience for children

Technology Readiness Level

TRL 9/
Commissioned by Sociaal Domein Fryslân, the Lectorate Digital Innovation in Healthcare and Welfare developed a digital toolkit with (teaching) materials, tools and tips to make issues such as (shame) sexting and grooming more discussable at school. The toolkit is being further developed by the lectorate in collaboration with the Pedagogy and teacher training courses of NHL Stenden University of Applied Sciences.
The tips and practical guidelines in the toolkit have proven to be an eye-opener for many educational institutions, but also for parents. For many adults, online flirting and sexting are unknown territory. This makes it difficult to provide information, which is usually lacking at schools or at home. In addition to the toolkit, an app has also been launched in which children can battle their parents about the use of social media and are playfully informed about the less pleasant aspects of being online.

Type of collaboration sought

Opportunities to Share Good Practice, making societal impact

Description

Online sexual resilience is extremely important for children and young people today. But how do you make this a topic of discussion as a teacher? Sexy&Safe - a new, digital toolkit with (teaching) materials, tools and tips - offers a solution. The Sexy & Safe Project focuses on the safe (online) sexual development of children and young people. The project focuses

specifically on Dutch schools. In close collaboration with teachers in primary and secondary education, a digital toolkit was developed in 2022. This toolkit - with (teaching) materials, tools and tips - helps teachers to make issues such as (shame) sexting and grooming more discussable at school. These materials can also be of interest to schools in other countries, as this problem does not stop at the border.

Explain the concept and how it works.

The Digital Innovation in Care and Welfare lectorate has put together a toolkit for education on safe online sexual development and resilience. This provides tools, tips and teaching materials to start the conversation in the classroom. The Sexy & Safe project is aimed at teachers in primary, special and secondary education. A panel of ten teachers tested the existing teaching materials. The toolkit also offers help and advice in the event of calamities and helps schools to anchor the subject in sustainable policy. The 'toolkit' for education is part of the provincial Sexy & Safe campaign of Sociaal Domein Friesland.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

The Netherlands but also schools and Youth organizations partners in other countries

Further information

https://www.nhlstenden.com/en/projects/the-role-of-teachers-in-students-mental-health

Role of Teachers in Student Mental Health

Research Area

Education and Social Science

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Social Innovation

Keywords

The role of teachers in mental health

Technology Readiness Level

Not relevant/
With our research we aim to find answers to how students can best be supported in their mental health and in what way academic career counsellors can be instrumental in this. We have reported on our research by means of:

- Scientific publications
- Reports
- Recommendations

Type of collaboration sought

Opportunities to Share Good Practice, making societal impact

Description

Mental health of students in higher education is increasingly in the spotlight. Study-delay and even dropping out of school is more common and in an increasing demand for equipped employees, is this an undesirable situation. Universities and colleges are therefore actively developing ways to provide appropriate support in the area of student wellbeing. Lecturers and student counsellors play a major role in this. However, we do not yet have a clear picture of how student counsellors take account of student welfare and specifically mental health in their guidance. Therefore, in 2020 we started a research project to map how mental health of students is part of the study career guidance.

This problem is recognized in many countries. Sharing information and setting up new collaborations can provide joint programs and insight in a problem we all have the face.

Explain the concept and how it works.

In our research we focus on student career counselling from the perspective of students and teachers. The questions that are central to this research:

- What is the view on student wellbeing and mental health from the student's perspective?
- How do students perceive the role of student counsellors in their mental health?
- What are the views of the student counsellors themselves and can we distinguish different types?
- To what extent do the views of students and teachers correspond?
- What design can be used to further improve the support for students' mental health, taking into account the needs and views of both students and counsellors?

With our research we want to contribute to the shaping of this. We will do this in such a way that it does justice to the needs of both students and student counsellors.

What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?

The Netherlands but also educational partners from other countries.

Further information

https://www.nhlstenden.com/en/projects/the-role-of-teachers-in-students-mental-health

Workplace Social Domain

Research Area

Health and Wellbeing

Type of Innovation/ Service/ Patent Offering/ Social Innovation

Social Innovation

Keywords

Workplace Social Domain, complex issues in municipalities

Technology Readiness Level

Not relevant
Since 2016, the Workplace Sociaal Domain Friesland has been working with Frisian municipalities within the Ateliergroups Sociaal Domain. These are local learning communities in which students from various study programmes and lecturer-researchers work together with employees of the municipality in question, with locally working professionals and residents on solutions for complex social issues.

Type of collaboration sought

Opportunities to share good practice, making societal impact

Description

The complex issues in the social domain require a long breath. In Friesland, within the Workplace Sociaal Domein Friesland (WSD), solutions are devised for various of these issues, such as: How can we grow old and healthy in areas where there are fewer and fewer facilities? How can a 'Blue Zone' contribute to social cohesion? How do we deal with alcohol and drug-use among young people? We work on these issues in so-called Ateliers Sociaal Domain: local learning communities in which all those involved in an issue learn and work together on the issue.

Explain the concept and how it works.

The WSD Friesland falls under the Social Quality lectorate of NHL Stenden and uses the knowledge and skills of researchers, lecturers and students. They work from various perspectives and study programmes, together with the professional field to solve practical issues within these multidisciplinary Ateliergroups Sociaal Domain. By working together locally in these workshops, the workshop contributes to the development of learning practices.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
The Netherlands but also municipalities, educational and social organisations in other countries.
Further information
https://www.nhlstenden.com/projecten/werkplaats-sociaal-domein-friesland

Wadden Gastronomy	
Research Area	
Tourism	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Social Innovation	
Keywords	
Tansition Wadden Gastronomy	
Technology Readiness Level	
Not relevant	
Type of collaboration sought	
Share Good Practice	
Description	
The ambition of the programme is 'establishment of a culinary tradition of high-quality Wadden gastronomy, supported by sustainable local products and culinary tourism entrepreneurs and linked to experience of the Wadden Sea World Heritage Site as a cradle of authentic taste, healthy food and conscious living. The first two-year phase is over. In it, we made an inspiration trip to Zeeland, network meetings were held and there is a training module for entrepreneurs who want to work with regional products. There are recipes and clips for inspiration and gaining knowledge, and from ETFI we conducted research into the use and experience of regional products by residents, visitors and companies. We are also research into further developing the Waddengoud quality mark or relaunching it in the form of a network.	
Explain the concept and how it works.	
The overall programme is comprehensive and that means we need different areas of expertise to bring it all together. Think of collecting Wadden recipes and working them out,	

which requires different experience, knowledge and network than recording video clips or doing research in the Wadden area. We therefore seek contact with various experts in a very open-minded way; where possible, we let students think along and gain experience and, at the same time, they in turn form the entrance for us to get in touch with young entrepreneurs in the area.
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?
Firda (chef training), restaurants in the region, shops selling Wadden products
Further information
https://www.nhlstenden.com/projecten/waddengastronomie-versterkt-werelderfgoedbeleving https://www.visitwadden.nl/nl/smaak-van-de-wadden-voor-ondernemers https://www.nritmedia.nl/kennisbank/45666/de-weg-van-het-streekproduct-van-zaadje-tot-regiobeleving/?topicsid= https://www.youtube.com/watch?v=2CYBFu5-AFo

Crisis Simulation Cybercrime	
Research Area	
IoT and Cybersecurity	
Type of Innovation/ Service/ Patent Offering/ Social Innovation	
Social innovation	
Keywords	
Crisis simulation, Cybercrime	
Technology Readiness Level	
Not relevant	
Type of collaboration sought	
Share good practice	
Description	
The exercise mainly brought the base teams a piece of awareness about (growing) cybercrime and how the base teams can support organisations (Police North Netherlands) in this regard	
Explain the concept and how it works.	
The cyber incident scenario practised concerns an online hack at an MBO school in the north of the Netherlands. This involved formulating a number of real-life dilemmas that could occur during this scenario. The police were asked what they would do in those situations and why.	
What companies/ areas of society might benefit from the above Innovation/ Patent/ Service?	

Police North Netherlands, Security training courses
Further information
https://www.nhlstenden.com/projecten/aanpak-cybercrime-politie-noord-nederland

4. Promotional Activities

To disseminate the Innovation Offerings of the RUN European University, several communication and dissemination channels have been applied to the dissemination of the Innovation, Patent and Services to our regions and wider. These included the below channels and are discussed in depth in **D7.14 Annual Communication and Outreach Report – 3rd Report**.

- Social media
- Internal dissemination in our universities via newsletters and websites
- RUN-EU 2 Innovation Meets Regions Events
- RUN-EU ICARUS conferences
- RUN-EU PLUS Cloud of Knowledge Portal
- Video produced to showcase offerings

4.1 Potential for synergy with other trans-European initiatives

This **D3.5** report highlights the innovation potential and scalability of research collaboration within the RUN-EU PLUS network, showing our potential for synergy with other trans-European initiatives. By auditing and sharing the technologies, services, patents, and social innovations developed by RUN-EU PLUS partners, the report underscores the collaborative efforts aimed at benefiting industry and society across all regions involved.

At the highest level there are many examples of synergies with other trans-European initiatives, including, for example, our commitment to the UN SDGs, our commitment to the themes of digitalisation, sustainability and social innovation. One significant aspect of the report is the development of an approach to encourage the innovation impact potential of the Professional Practice-based Research Degrees at a network level. This is presented in the following section. This approach, rooted in capturing and disseminating available technologies across partner universities, lays the foundation for scaling scientific and technical excellence at the EU level. The initiative seeks to create synergies with other partners in the universities' ecosystems and align with financial and mobilization strategies.

By doing so, it aims to contribute to the formation of intra-regional research and innovation models (R&I) designed to drive societal transformation and align with the broader goals of trans-European initiatives.

The audit of partner innovations and the creation of the Innovation Showcase presented in this report is crucial in developing a common R&I agenda, which complements existing education strategies and regional engagement initiatives. This agenda aligns with European initiatives such as the 'Interuniversity Future and Advanced Skills Academies,' 'European Innovation Hubs,' and the 'European Mobility Innovation Centre.' Specific partners on some of the projects, include, for example, representative bodies for tourism, for wastewater management, local authorities, regional assemblies, healthcare providers, all who are aligned with our same European values and targets.

Our efforts contribute to a shared vision of societal transformation, grounded in the United Nations Sustainable Development Goals. Additionally, the report promotes Open Access by showcasing the transformative impact of research outputs on regional competitiveness, environmental responsibility, and social inclusion policies. This is further supported by the annual ICARUS conferences, which have facilitated broad engagement across the research and innovation community.

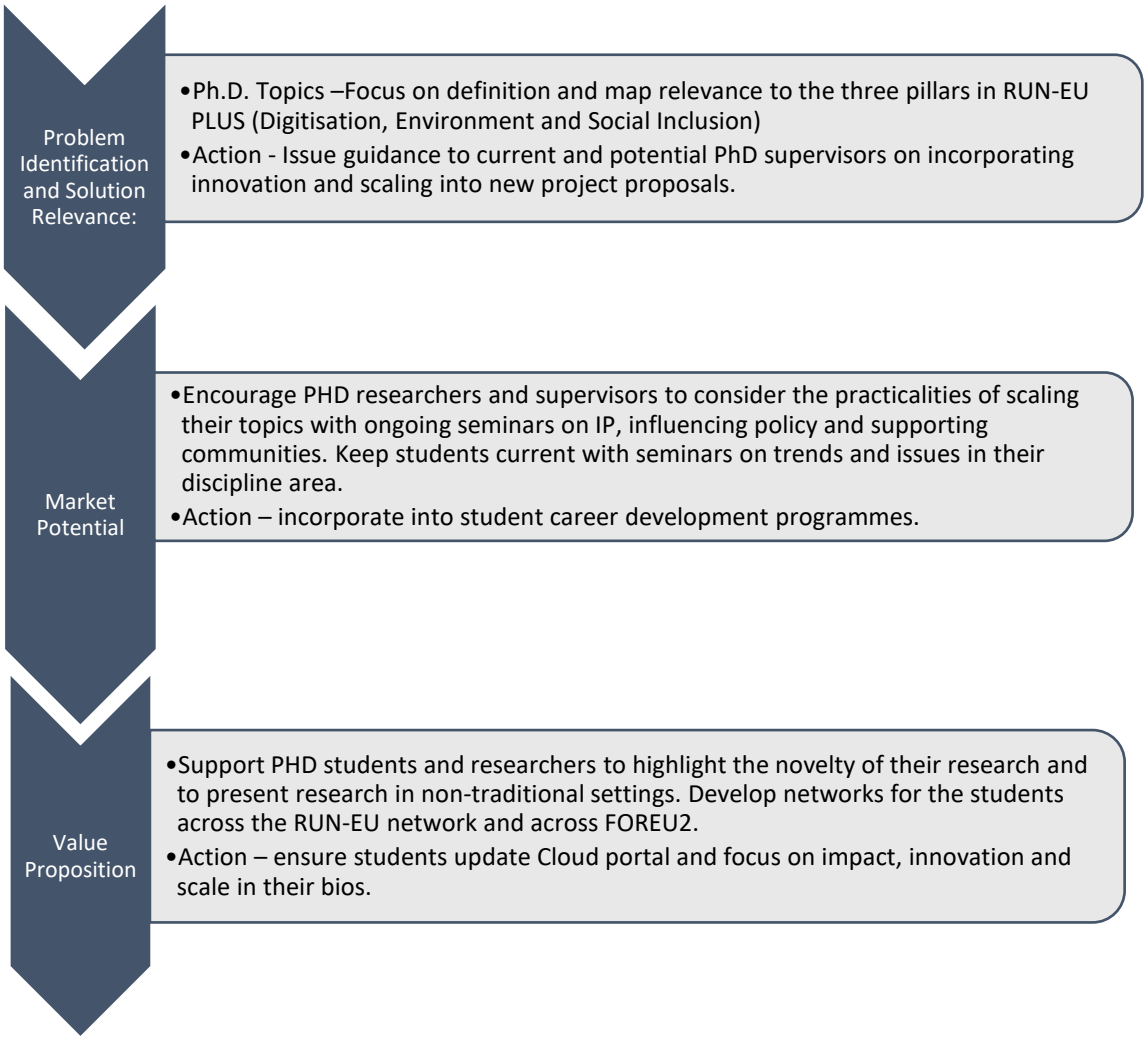
The approach to Innovation Impact and Scaling Potential presented in this report aims to empower researchers with access to network-wide research outputs and foster collaboration across sectors. It also highlights the importance of targeted training programs in pedagogy, research skills, and open science principles, ensuring that the RUN-EU alliance aligns with and contributes to the long-term sustainability of European research and education initiatives. In summary, this deliverable identifies and leverages synergies with other trans-European initiatives by promoting collaborative research, innovation sharing, and the development of common agendas that resonate with broader European goals, particularly in education, research, and regional engagement. This strategy not only strengthens the RUN-EU PLUS network but also positions it as a key contributor to the European research and innovation landscape.

5. Connectivity to the RUN-EU PLUS PhDs and our Innovation and Scaling Impact Potential Conceptual Model

The PhD programmes referenced in RUN-EU PLUS **D6.6 Practice-based Research Degrees Showcase** map are clearly against the three themes of Digitalisation, Sustainability and Social Inclusion. We have utilised the Innovation and Scaling Impact Potential audit conducted for this deliverable to assess the connectivity between the PhD topics, the Innovations, Services, Patents and Social Innovations we are producing in the research units, and the benefits for the regions. To ensure deliverable dissemination, impact, exploitation and sustainability beyond the project lifetime, and successful integration with the RUN-EU 2 Erasmus+ project, we discussed how to embed sharing and scaling of research innovations across the RUN European University. During our Work Package 3 meetings related to this deliverable, (online, Feb 2024), and our Project Management Committee meetings (NHL Stenden, Feb 2024), we discussed how to translate the Research, Development and Innovation work conducted in each institution into scalable impact for the RUN-EU network. The following model was proposed which encourages R&I units to move through a journey from Problem Identification and Solution Relevance to Market Potential, Value Proposition, Scalability, Target Adoption, Regulatory Compliance, Partnerships, Promotion and Future Proofing. This conceptual model will connect to the RUN-EU 2 project and provide project sustainability and legacy for collaboration and cooperation between the partners and regional stakeholders.

The conceptual model presented in **Figure 7** is a proposal for how the RUN-EU PLUS project can continue past its lifetime in supporting researcher candidates on RUN-EU Practice-based Research Degree Programmes and their supervisors to continue creating innovative technologies and services of value to regional companies and policy makers so that all partners can share their research outputs for the benefit of the RUN-EU regions, therefore improving the innovation impact and scaling potential. Researchers will be supported in identifying problems and solutions, encouraged to give consideration to market potential

at PHD research design, preparing students to present research design and findings in non-traditional settings, collaborating with companies on scalability, target adoption and regulatory compliance, developing partnerships, promoting impact and finally future proofing the offerings. The below model will be presented to new and existing PHD students at regular opportunities across their programmes, including for examples in supervisory meetings, in induction, at research presentation days and in their documentation.



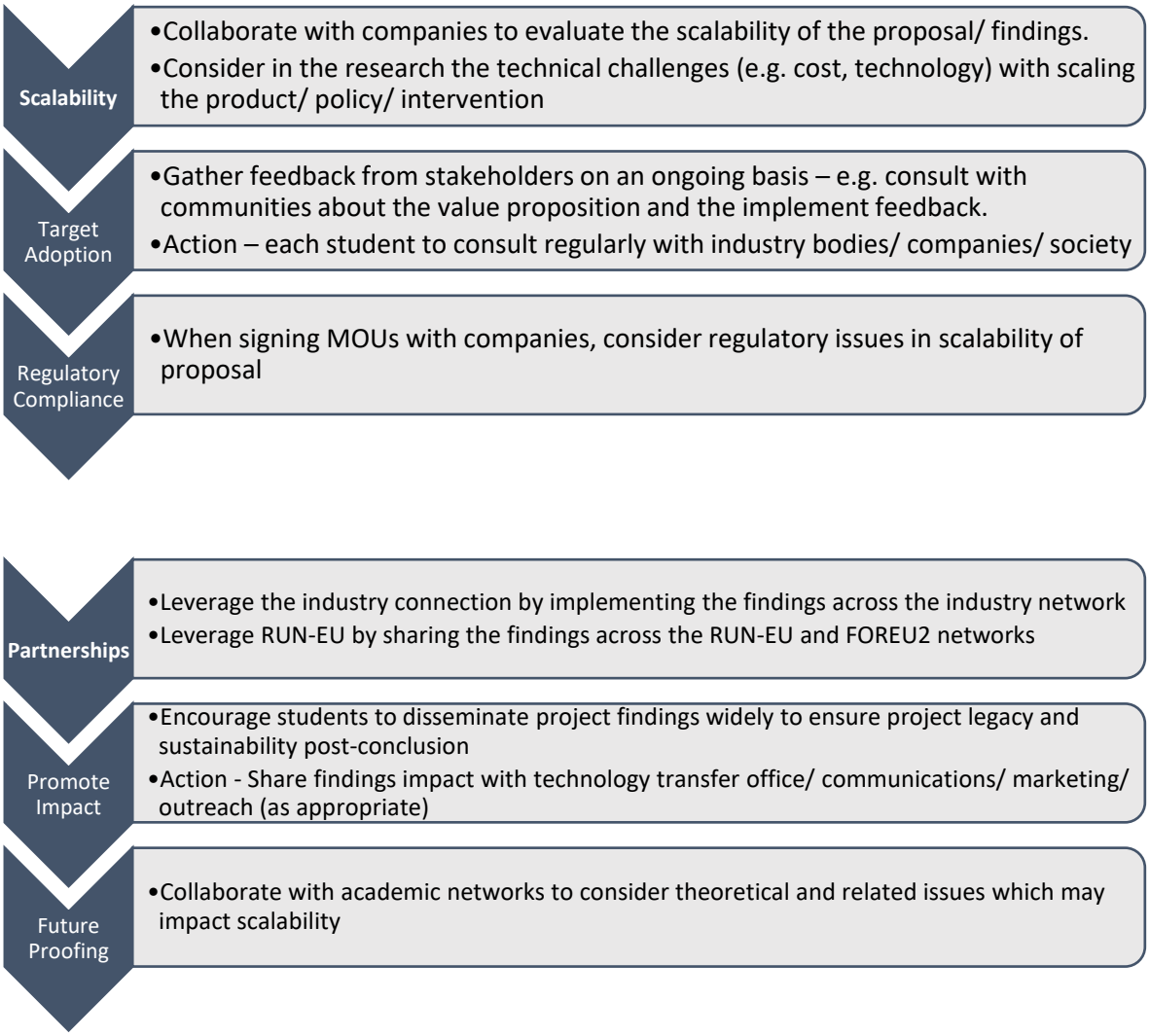


Figure 7: Innovation and Scaling Impact Potential Conceptual Model for RUN-EU PLUS

6. Conclusion

To conclude this phase of work we have commenced production of a video showcasing the innovation offerings and technologies of the RUN-EU partners. We will use this video to promote to regional companies and it will be placed on our RUN-EU YouTube website at https://www.youtube.com/@RUN-EuropeanUniversity/videos, it will be disseminated at the Innovation Meets Regions events and provided to the RUN-EU PLUS Research & Innovation Ambassadors for distribution among the RUN-EU research community and external stakeholders.

The process developed and implemented in the identification, capture and review of these innovation offerings will be applied to the outcomes of the Practice-based Research Degree Programmes developed by the RUN-EU PLUS project in order to optimise impact of their research. The R&I Committee created by the RUN-EU PLUS project will lead activities and initiatives to maximise the Innovation Impact and Scaling Potential of the Research Degree Programmes. The Innovation and Scaling Impact Potential Conceptual Model proposed in **Section 5** of this report will be implemented to support RUN-EU researchers in this endeavour.

Appendix 1

RUN European University Innovation Showcase

Thank you for your time. This form is aimed at RUN-EU Research and Innovation Ambassadors, who we request to collate with their senior research community.

The form allows for multiple submissions. Please complete one form per offering/ innovation/ service.

We aim to gather 90 innovations across the network, so are aiming for 10 per partner.

The 'Innovation Meets Regions' events of RUN-EU 2.0 WP3 states:

Nine regional "Innovation meets Regions events" will be organised over time (1 per Alliance member from M7 to M42) targeting 250 visitors for each event (2250) and showcasing around 10 intellectual property offerings and/or technologies each (90). At these events, the partners will open up the doors to industry and society, in general, to showcase to the regional companies and partners the portfolio of research, patents and technologies of the different members.

We are looking at technologies which are **not** protected by a non-disclosure agreement and which are free to be disclosed.

1. Innovation/ Patent/ Service Name *

Enter your answer

2. Lead partner completing this form. *

- TUS
- IPCA
- IPL
- NHL
- SZE
- FHV
- HAMK
- Howest
- Burgos

3. Are you completing the form in relation to: *

- A patent
- A service
- Expertise with equipment/ technology
- Other

4. Stage of development (select) *

- ◯ TRL 1 Basic principles observed and reported
- ◯ TRL 2 Technology concept and/or application formulated.
- ◯ TRL 3 Analytical and experimental critical function and/or characteristic proof of concept.
- ◯ TRL 4 Component and/or breadboard validation in laboratory environment.
- ◯ TRL 5 Component and/or breadboard validation in relevant environment.
- ◯ TRL 6 System/subsystem model or prototype demonstration in a relevant environment.
- ◯ TRL 7 System prototype demonstration in an operational environment.
- ◯ TRL 8 Actual system completed and qualified through test and demonstration.
- ◯ TRL 9 Actual system has proven through successful mission operations.

5. Intellectual Property (select): *

- ◯ - International Patent
- ◯ - Know-how
- ◯ - Licensing
- ◯ - National Patent
- ◯ - Provisional Patent

6. Seeking *

- ◯ - Industrial Commercialization
- ◯ - Industrial Partnership
- ◯ - Industrial Protection

- Scientific Partnership

- Technology Transfer

7. R&D Unit (if applicable)

Enter your answer

8. Keywords (up to 5, please separate with ,) *

Enter your answer

9. Describe how this Innovation/ Patent/ Service can support regional partners/ industry/ society. *

Enter your answer

10. Explain the concept and how it works. *

Enter your answer

11. Please provide a weblink for further information. E.g. to a database/ video/ photographs. *

Enter your answer

12. What companies/ areas of society might benefit from the above Innovation/ Patent/ Service? *

Enter your answer

13. What is the benefit to industry/ society of the Innovation/ Patent/ Service? *

Enter your answer

14. Please provide any information (e.g. dates/ weblinks/ locations) of any launch events related to this Innovation/ Patent/ Service. *

Enter your answer

15. Do we have permission to upload this information to the RUN-EU Cloud of Knowledge Portal? *

- ◯ Yes
- ◯ No

16. Research Area Assoc (RUN-EU Research area) *

Enter your answer

17. Contact (email) *

Enter your answer

18. Please email image of Innovation/ Service/ Patent to ali.ahmed@tus.ie *

- ◯ Yes
- ◯ No

Submit

Figure 8: Survey of Research and Innovation Ambassadors for D3.5

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