

D2.4 ESTABLISHMENT OF EUROPEAN INNOVATION HUBS

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*Technological University of the Shannon: Midlands Midwest, Ireland and
NHL-Stenden University of Applied Science, The Netherlands*

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Abbreviations

D	Deliverable
EIH	European Innovation Hub
ERA	European Research Area
EZ-ID	European Zone for Interregional Development
FHV	Vorarlberg University of Applied Sciences, Austria
HAMK	Häme University of Applied Sciences, Finland
IP	Intellectual Property
IPCA	Polytechnic of Cávado and Ave, Portugal
IPL	Polytechnic of Leiria, Portugal
KPI	Key Performance Indicator
KT	Knowledge Transfer
MOU	Memorandum of Understanding
NDA	Non-disclosure Agreement
NGO	Non-Governmental Organisation
NHL Stenden	NHL Stenden University of Applied Sciences, The Netherlands
R&I	Research and Innovation
RUN-EU	Regional University Network – European University
RUN-EU PLUS	Regional University Network – European University: Professional Research Programmes for Business and Society
SWAFS	Science with and for Society
SZE	University of Győr – Széchenyi István University, Hungary
T	Task
TT	Technology Transfer
TTO	Technology Transfer Office
TUS	Technological University of the Shannon: Midlands Midwest, Ireland
WP	Work Package

EXECUTIVE SUMMARY

This report describes the creation of the three European Innovation Hubs of the Regional University Network European University (RUN-EU) with particular reference to their governance structure and the RUN-EU Innovation Ecosystem in which they operate. The report also describes the supports which are in place for the effective operation of the hubs including research facilities, Business Incubation & Acceleration Facilities, the RUN-EU Knowledge Transfer Agreements, and an online dissemination platform created by the RUN-EU PLUS (Horizon 2020) project known as the Cloud of Knowledge Portal. RUN-EU and RUN-EU PLUS have also developed programmes which will support the delivery of the hub objectives. These include Professional Practice-based Research master's and PhD Programmes where research candidates work within a company or a RUN-EU research institute on a research project which addresses a challenge faced by the company, an Innovation Capacity Programme which supports the sustainable development of the RUN-EU Research and Innovation Ecosystem, and an Entrepreneurship & Transversal Skills Development Programme to promote the development of innovative products and processes and nurture spinout formation from research activity.

1.0 Introduction

The RUN European University is focused on working with its regional partners to achieve regional and interregional development which is sustainable. RUN-EU alliance members have existing strong working relationships with their regions and associated partners. Through the creation of the RUN-EU European Innovation Hubs (EIH) in the thematic areas of Future and Sustainable Factories, Bioeconomy and Social Innovation, these relationships will expand to all RUN-EU member regions, thus ensuring sustainable regional and interregional innovation and development. By increasing the collaborative strength of the European University in this manner, RUN-EU will stimulate and drive the creation of a future European Zone for Interregional Development (EZ-ID). To support achievement of this RUN-EU goal, the EIHs will:

- a) Use the expertise gained from interregional funded research delivered in the RUN Discovery Programme (WP5) and the mobility initiatives delivered by the RUN-EU European Mobility Innovation work package (WP4), to work with regional industry to drive SME development in all partner regions through innovation-based projects.
- b) Create a strong collaborative network among existing regional innovation clusters, by establishing cooperation between regional government bodies, chambers of commerce, enterprises, enterprise centres, incubators, design labs and entrepreneurial stakeholders.
- c) Establish a multinational Enterprise innovation knowledge transfer infrastructure, to support enhanced collaboration between member region spinouts and SMEs.
- d) Increase interregional cooperation, seeking formal agreements between the alliance member regions.
- e) Embed an entrepreneurial mind-set in the RUN-EU alliance members, programmes, staff, and student body and positively influence the future strategies of our associate partners and regional stakeholders.

EIHs will achieve their goals and complete their identified tasks via the newly established RUN-EU advanced multinational research and innovation units and networks, focused on the creation and dissemination of cutting-edge knowledge in the identified areas.

The principal output of these hubs will be the delivery of interregional RDI activities designed to deliver on societal transformation requirements, within the framework of the relevant Smart Specialisation Strategies (RIS3) and the UN goals for sustainable development.

The EIHs will support and influence the member regions economic global competitiveness, environmental responsibility, and inclusive social policies, as well as guiding higher education strategies, future skills programmes, interregional activities and joint applications to European research and innovation calls by alliance members.

2.0 Creation of EIH Networks

Operational structures have been defined for each EIH, which, along with their shared teams and infrastructures, support achievement of their overarching goal for the creation and dissemination of cutting-edge knowledge in the identified thematic strategic areas.

2.1 Hub Composition

2.1.1 Governance

The 3 RUN-EU EIHs have a common, joint governance structure (**Figure 1**). Within this generic structure, which will be adapted for each EIH, a Management Board will be created which is comprised of a Hub Director, Programme Managers, and Thematic Area Managers. The program managers are ideally members of external partners (preferably industrial partners, who in this way ensure proper connection between the hub and different professional activities and events), while thematic area managers are ideally from the associated research centers. Through its Director, the Management Board will ensure proper articulation of the Hub activities with other work packages of RUN-EU, namely WP5 research groups, and integrating the goals of the Hub into the activities of the RUN-EU Future Advanced Skills Academies (WP3), European Mobility Innovation Centre (WP4), Short Advanced Programmes (WP6), and Collaborative Degree Programmes (WP7).

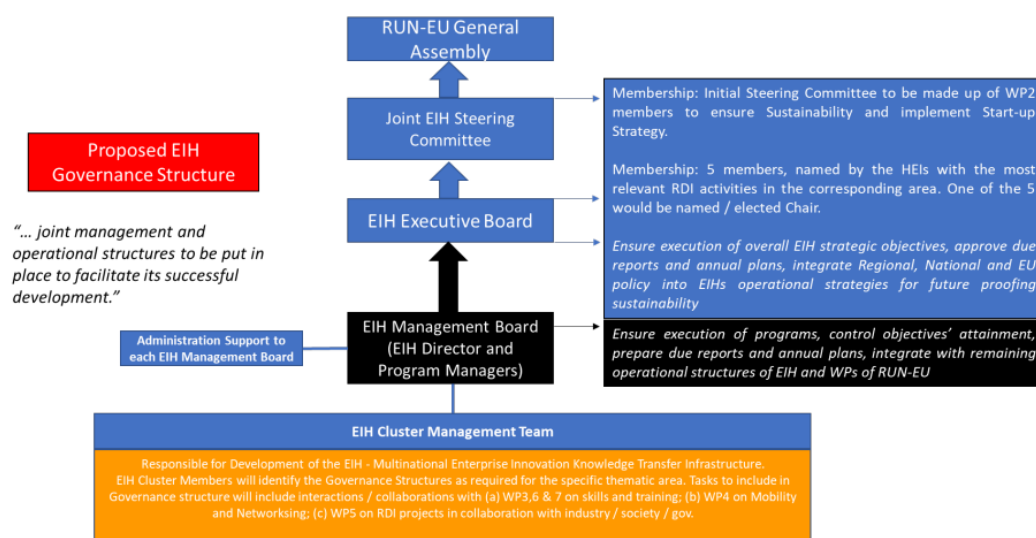


Figure 1 - Governance Structure of the RUN-EU European Innovation Hubs

2.2 Research clusters

The RUN-EU Discovery Programme (Work package 5 of RUN-EU) has built European future-looking Research, Development, and Innovation (RDI) teams of researchers, research students, academic staff, and regional partners (businesses and social) to address societal challenges in a multi-disciplinary approach thus delivering innovative solutions adaptable to different regions in Europe. Following an audit and characterisation of RUN-EU alliance Research, Development, and Innovation, **eight** RUN-EU Research Cluster Areas have been identified. The areas are (Figure 2):

Research Area 1: Creative Art, Design and Materials Thinking (Cluster lead: IPCA)

Research Area 2: Food & Biotechnology (Cluster lead: HAMK)

Research Area 3: Tourism (Cluster lead: TUS)

Research Area 4: IOT & Cybersecurity (Cluster lead: NHL Stenden)

Research Area 5: Smart, Sustainable and Advanced Manufacturing (Cluster lead: TUS)

Research Area 6: Climate Change – Circular Economy & Decarbonisation (Cluster lead: SZE/IPL)

Research Area 7: Education & Social Sciences (Cluster lead: NHL Stenden)

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

These clusters have each carried out a characterisation of each member's existing regional innovation cluster activities and capacity with a view to identifying areas for cooperation and

collaboration particularly aligned with the Horizon Europe, Erasmus, Creative Europe etc. research and innovation actions and programmes. To date, R&I projects including jointly supervised researcher programs have been developed and successfully funded both nationally and within the EC Commission funding mechanisms across the consortium clusters.



Figure 2 - RUN-EU 8 future-looking joint RUN-EU RDI teams indicative research areas

The characterisation of member research unit skills and infrastructures has been completed. This has identified:

- I) technological systems and infrastructures that are available across the RUN-EU alliance.
- II) good practice approaches to our activities with a view to developing complementary collective expertise and knowledge.
- III) existing Intellectual Property/Knowledge Know-how and tools have been completed.

The future-looking RDI teams will evolve in a broad spectrum of areas, including: Creative art and design and materials thinking; Food and Biotechnology; Tourism; IoT and Cybersecurity; Advanced Manufacturing; Climate change – Circular economy & decarbonisation and Education and Social Sciences aligned to the Horizon Europe Vision research cluster areas and the broader EU initiatives and directives encompassed with the Sustainable Development, Digital compass, Green Deal, Erasmus+ and other research, innovation and educational programs (**Figure 3**).



Our vision

A sustainable, fair and **prosperous** future for **people** and **planet** based on European values.

- Tackling **climate change** (35 % budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's **competitiveness and growth**



Figure 3 - Horizon Europe Vision

As teams, these research clusters bring together researchers from multiple members of the RUN European University and it is envisaged the utilisation of our collective expertise, knowledge and facilities will deliver on a larger number, and scale of innovative educational, training and research activities across the alliance. The ambition of our long-term vision and researcher ecosystem within RUN-EU continues to be shaped by international policies and initiatives including Horizon Europe which has a

sustainable and prosperous future for people and the planet as its vision, thereby helping to achieve the sustainable development goals. *‘This ambitious EU research and innovation framework programme (2021-2027) aims to strengthen the EU’s scientific and technological bases and the European Research Area (ERA) and to boost Europe’s innovation capacity, competitiveness, and jobs to deliver on citizens priorities and sustain our socioeconomic model and values’.*

2.3 EIH Hub Associated Partners

Associated partners of the RUN-EU EIHs include Regional Government Bodies, Chambers of Commerce, Enterprises, NGOs, Enterprise Centres, Business incubators, design labs and entrepreneurial stakeholders. A list of Associated Partners was included with the original application for the RUN-EU project to the Erasmus+ Funding Programme call. The hub networks have increased substantially since the establishment of the EIHs. Network partners of the Future and Sustainable Industries EIH is referred to in **Appendix 1**, for Bioeconomy EIH in **Appendix 2** and for Social Innovation EIH in **Appendix 3**.

3.0 EIH Support Infrastructure

3.1 RUN-EU Innovation Ecosystem

The establishment of the RUN-EU European Innovation Hubs is supported by the RUN-EU PLUS project Horizon 2020 project (Grant Agreement number 101035816) which primarily focuses on enhancing the development of R&I with and for society through the implementation of a common R&I agenda and associated collaborative action plan focused on the strengthening of regional business and society partnerships in R&I across the network. This plan will complement the existing RUN-EU strategic vision for teaching, learning, research, and engagement activities, delivering institutional and societal transformation and ultimately contributing to the success of RUN-EU’s proposed European Zone for Interregional Development (EZ-ID). In collaboration, the RUN-EU EIHs, Research Clusters and RUN-EU PLUS have developed an Innovation Ecosystem for the RUN European University, along with a Knowledge Transfer Model which was initially presented in RUN-EU PLUS **D6.1 Innovation Ecosystem** and which will be explained comprehensively in RUN-EU **D2.4 Multinational Spinout and SME Support Infrastructure**.

The knowledge and expertise along with support programmes and structures encompassed in the RUN-EU Innovation system play a key role in the relevance of the EIHs for their members and therefore the long-term sustainability of the hubs themselves. The expert groups which support the EIHs in the delivery of their vision and mission include:

3.1.1 EIH Directors

Directors of the 3 RUN-EU European Innovation Hubs namely Future and Sustainable Industries, Bioeconomy and Social Innovation, are charged with enhancing the link between teaching, research, and innovation within the RUN European University and hence are a vital vehicle in supporting industry-academic collaboration. It is through the functioning of the hubs that these directors act as a bridge between the RUN-EU Research Clusters and the regional stakeholders. Hub directors collaborate with associated partners in business, society organisations, government and uniquely with the OECD Secretariat of Higher Education and outcomes of these collaborations feed back into education, research, and innovation development opportunities within the regions. EIH Directors work closely with all other experts within the RUN-EU Innovation Ecosystem to ensure that the needs of their networks are met by informing the strategic direction of the Ecosystem in addition to transferring relevant knowledge from the RUN-EU Innovation Ecosystem to hub members.

3.1.2 Research Cluster Area Managers

Cluster managers of the RUN-EU Research Cluster Areas, described previously in **Section 2.2**, coordinate the strategic direction of the cluster research and are the international facilitator between Research Institutes/Centres/Groups across RUN-EU in their specific discipline area. These managers are drivers of the RUN-EU Innovation Ecosystem and play a key role in the implementation of the Programmes developed by the RUN-EU PLUS project which support the development and detection of innovation. These include the Innovation Capacity Programme (RUN-EU PLUS **MS11**), Innovation Detection System (RUN-EU PLUS **D6.2**) and the Entrepreneurial and Transversal Skills Development Programme (**MS13**).

3.1.3 R&I Ambassadors

The RUN-EU PLUS project has created a R&I Ambassador Network whose role is to support innovation development by consolidating the connection of the RUN European University with other actors of the R&I ecosystem including the wider business community, agencies, and investors.

Represented by two ambassadors from each partner, the network develops strategies to strengthen the engagement with business and society, inducing collaboration between researchers, students and academic staff, and local companies and institutions. It advises the RUN-EU alliance on the best policies for strengthening the academia-business cooperation.

The R&I ambassadors are members of a RUN-EU Research & Innovation Committee (presented in **D2.4 Multinational Spinout and SME Support Infrastructure**) where they facilitate knowledge transfer between their institution's researchers and research centres/groups, their regional strategies, and the larger RUN-EU Innovation Ecosystem. They play a key role in developing the innovation capacity within their institution, assisting with implementation of the RUN-EU PLUS Innovation Capacity Programme (also presented in **D2.4 Multinational Spinout and SME Support Infrastructure**).

R&I Ambassadors each possess a significant track record in external stakeholder engagement and innovation development.

3.1.4 Academic Staff

Academic Staff of RUN-EU partner institutions support the EIHs through their role as academic supervisors of the RUN-EU Professional Practice-based master's and PhD programmes (a key focus of the RUN-EU PLUS project), programmes which are co-designed and co-delivered with regional partners in the thematic areas of **Sustainability, Digitalisation and Social Innovation**. These broad themes support the development of research master's and doctoral programmes within the specific specialisation areas of the RUN-EU European Innovation Hubs as well as enabling cross-fertilisation of research discipline areas through interdisciplinary RUN-EU research projects and master's and doctoral supervision teams. They are aligned to the Horizon Europe Vision research cluster areas and the broader EU initiatives and directives encompassed with the Sustainable Development, Digital compass, Green Deal, Erasmus+ and other research, innovation, and educational programmes.

Additionally, along with Research Cluster Area Managers, Academic play a key role in the implementation of the Programmes developed by the RUN-EU PLUS project which support the development and detection of innovation. These include the Innovation Capacity Programme (RUN-EU PLUS **MS11**), Innovation Detection System (RUN-EU PLUS **D6.2**) and the Entrepreneurial and Transversal Skills Development Programme (**MS13**).

3.1.5 Technology Transfer Experts

Not all RUN-EU partners have Innovation Support Managers (in the form of Technology Transfer Officers, Business Incubation Officers etc) and some alliance partners are further down that innovation development road than others. Expertise which exists within the alliance will be shared in the form of experiences and best practices through the Research & Innovation Committee described in **Section 2.1.7**.

3.1.6 Enterprise Support Managers

A small number of RUN-EU partner institutions have Enterprise or Business Incubation Centres, but those that do have a very important resource in their managers. They are the ones who liaise with business leaders every day and are in a key position to identify best practice in developing and managing business-academic relationships with EIH members, identify commercial opportunities for RUN-EU research, develop commercialisation/valorisation strategies for new RUN-EU innovations and advise and mentor other RUN-EU partners in these activities.

3.1.7 RUN-EU Research & Innovation Committee

The RUN-EU Innovation Ecosystem will be managed by its Research & Innovation Committee, a central oversight committee proposed by the RUN-EU PLUS project (RUN-EU PLUS **D6.1 Innovation Ecosystem**), which will strategically lead both knowledge creation and future skills training across the RUN-EU alliance in accordance with the needs of RUN-EU regional business and societal partners. The committee is comprised of key roles in the ecosystem including the directors of the RUN-EU European Innovation Hubs, Research Cluster leads, RUN-EU PLUS R&I ambassadors, TT Case Managers and the RUN-EU co-ordinators. Between them there is extensive expertise in TT, research, innovation development and commercialisation.

The knowledge transfer model of the RUN-EU Innovation Ecosystem is presented in more detail in **D2.5 Multinational Spinout and SME Support Infrastructure**. Essentially, regional business and societal organisations inform RUN of their future innovation and skills needs through consultation with their RUN-EU Innovation Hub. The Research & Innovation Committee supports the development of new RUN skills training programmes (from researcher training workshops to doctoral programmes and entrepreneurship training) in addition to collaborative research projects with industry. The new knowledge created by researchers within their research group will be protected in accordance with best practice, promoted as new technology offerings to

RUN-EU regional partners via their EIH and which will be commercialised through licensing agreements with them or through the creation of RUN-EU spin-out companies.

3.2 Research Facilities

An audit and review of research facilities and expertise was undertaken at the commencement of the RUN-EU project. The results of this exercise are presented in RUN-EU **D5.1 Report – Audit and Characterisation of Alliance RDI Units**, RUN-EU audit of expertise and infrastructures which informed the development of the 8 Research Cluster Areas (a detailed description of which is presented in **D5.2 Creation of Future-looking joint RDI Teams**). D5.1 and D5.2 enabled the connection of research expertise and infrastructure available across the RUN-EU consortium into one document and this is currently being transferred into the Cloud of Knowledge Portal (developed by the RUN-EU PLUS project and presented in **Section 3.5** of this document), a common platform which offers RUN EU innovation hub partners access to a wide research network. RUN-EU partner Universities can provide exceptional set of different laboratories, piloting, and analytical facilities in different fields of research.

3.3 Business Incubation & Acceleration Facilities

Entrepreneurship is recognised internationally as a key contributor to economic performance. Correlation exists between economic performance and entrepreneurship in terms of economic growth, innovation, employment, technological change, and exports. Entrepreneurship stimulates sustainable economic growth and job creation (Evaluation of Supports for Research Development and Innovation, Forfás).

Business incubation which is carried out at universities accelerate the commercialisation of research outcomes by combining the entrepreneurial drive of business and social enterprise start-ups with the knowledge, research, resources, and today's innovation-driven centres.

Business incubators accelerate successful development of entrepreneurial companies through an array of business support resources and services, developed and managed by incubator management and offered through a network of experienced contacts.

IPL are associated to 4 regional business incubation centres:

StartUp Leiria <https://startupleiria.com/en/home-en/> – IPL assumes a majority position and assume the presidency of the incubation centre.

OPEN <https://open.pt/>

OBITEC <https://obidosparque.com/pt/a-obitec>

Smart Ocean <https://smartoceanpeniche.com/>

TUS provides support to innovation and enterprise in the Midlands and Midwest regions of Ireland using a wide variety of tools. Together, these mechanisms form the TUS Enterprise Ladder. The Enterprise Ladder is a unique approach to the provision of support to enterprise, through which the resources of the Institute – academic, research, business mentoring, facilities, and finance – are combined in an integrated way to make the right type of support available to an enterprise in the right way at the right time. **TUS** runs four campus incubators located in Athlone, Clonmel, Limerick and Thurles. Start-up companies are supported by two Enterprise Ireland New Frontiers programmes.

HAMK is currently not involved in formal business incubation activities, however it does provide support to companies through its Design Factory and some modules on entrepreneurship for students.

IPCA does not have a formal business incubation center rather it partners with business innovation centers that allow physical incubation of companies created by IPCA's academic community. Within the Knowledge Circle Network, VilaWork (Barcelos Business Center and Science Park) is a partner that provides incubation services, and delivers a programme called Vilaldea which supports incubation and entrepreneurship. The network also includes a science park (Avepark) and an Industrial Park (Parque industrial Barbosa de Oliveira). With our internal services and with our partners, the IPCA academic community has the support for their spin-off and start-up companies.

NHL Stenden works closely with organisations that offer direct innovation assistance and support for start-up companies (YnBusiness in Fryslân, GroBusiness in Groningen and IBDO in Drenthe). To support student entrepreneurial development and help ensure they can work in their own (start-up) company while studying, NHL Stenden has a Centre for Entrepreneurship. Currently, the latter does not have a connection with research.

A small business incubation facility currently exists at **SZE**. Uni-Inno Ltd. and the SZE management committee manage it. In 2023, one floor of a new science park building will be dedicated to business incubation and coworking places will attract external partners.

At **FHV** the Startup Center, Startupstube and the Business Intelligence & Innovation Hub all support business incubation.

All RUN-EU partner institutions indicate business incubation activity. TUS runs 4 of its own incubator buildings while IPL and IPCA have incubation partnerships with local business incubation centres.

3.4 RUN-EU Knowledge Transfer Agreements

A suite of model template agreement forms has been developed for the RUN European University by its WP 5 (RUN Discovery Programme) and is presented in **D5.3 RUN-EU Knowledge Transfer Agreements**. These agreements, listed in **Table 1**, serve as the central point of reference for internal RUN-EU-alliance and industry-RUN-EU alliance research partnerships from the perspective of knowledge transfer (KT) and Intellectual Property (IP) management. The template forms are designed to be suitable for research transactions assisting in removing ambiguity in KT by encouraging predictability and transparency across the RUN-EU KT system. The model agreements are offered in a 'clean' form Word document, ready to download and use as a starting point for drafting and discussion with research partners.

This suite of common research and IP agreement templates have been established to include how material, knowledge and intellectual property transfer within the RUN-EU Innovation Ecosystem will be managed. The basis of the agreements is based on the results of European best practice across the partnership members following partner consultations. The RUN-EU suite of research documents and the information documents concerning IP management and

commercialization available through the European Commission IP Helpdesk (<https://intellectual-property-helpdesk.ec.europa.eu>) will provide exemplar templates for engagement. All the draft templates are available on the RUN-EU PLUS Cloud of Knowledge Portal (**Section 3.5**) for access by RUN-EU members.

Table 1 - RUN-EU Template Knowledge Transfer Agreements (RUN-EU D5.3 RUN-EU Research Framework - Research, Material, Intellectual and Knowledge Transfer Agreements)

RUN-EU Model Agreement Type:
Research Consortium Agreement
Collaborative Research Agreement (Part Industry Funded)
Collaborative Research Agreement (Wholly Industry Funded)
Material Transfer Agreement Outward
Material Transfer Agreement Inward
Innovation/IP Disclosure Form
Joint Ownership and Management Agreement
Exclusive License Agreement
Non-exclusive License Agreement
Option and Evaluation Agreement
Confirmatory Assignment Agreement
Contract Research Agreement
Learner MOU

These agreements are key enablers in the development and maintenance of strong collaborative research links between the RUN European University and regional stakeholders including EIH hub network members with whom we co-design and co-deliver research and innovation.

3.5 Cloud of Knowledge Portal

A Cloud of Knowledge Portal has been designed and developed by the RUN-EU PLUS Horizon 2020 Swafs project (Grant Agreement 101035816). The European Innovation Hubs developed by the RUN-EU project, along with its research expertise and facilities

of RUN-EU research institutes, centres, and groups and individual researcher profiles are showcased on this research Cloud of Knowledge Portal (**Figure 4**) which acts as a collaborative research space, research repository and portfolio of data, results, progress, and publications and highlight the potential for societal added-value and contributions to knowledge and practice.

The Polytechnic Institute of Cavado and Ave (IPCA) in Portugal have led development of the portal, which is a training resource for the RUN-EU research community, and which includes a wide variety of resources for researchers which have been gathered from all RUN-EU partners (existing and new ones) and from other institutions outside the consortium. The archive portal will include different resources including publications, policy documents, informative and training materials and videos focusing on a variety of researcher career development topics such as resilience and independent working, communication skills, networking and influencing skills, prizes and recognitions, education, areas of interest, expertise project management, personal development, strategic career planning, time management, writing and publishing skills.

The RUN-EU PLUS Cloud of Knowledge Portal provides an intersectoral collaborative space and supports local innovation networking. The RUN-EU Research and Innovation strategy, supported by the RUN-EU PLUS project, fundamentally reinforces cooperation in research and innovation with other sectors, particularly in academia-business cooperation in a quadruple helix approach. The portal will facilitate international collaboration through common approaches to research skills, intellectual property, ethics, research integrity and impact assessment. It is also designed as a tool to showcase excellent and impactful research of the RUN European University.

All public project results and evaluation of changes in practice and added-value will be published for peer review and the results, datasets, presentations, and theses will be made available through this RUN-EU PLUS developed open access repository. Research graduates of the RUN European University will have greatly increased their research

skills and knowledge to enhance their career and will have made a valuable contribution to their company's competitiveness and innovation capacity.

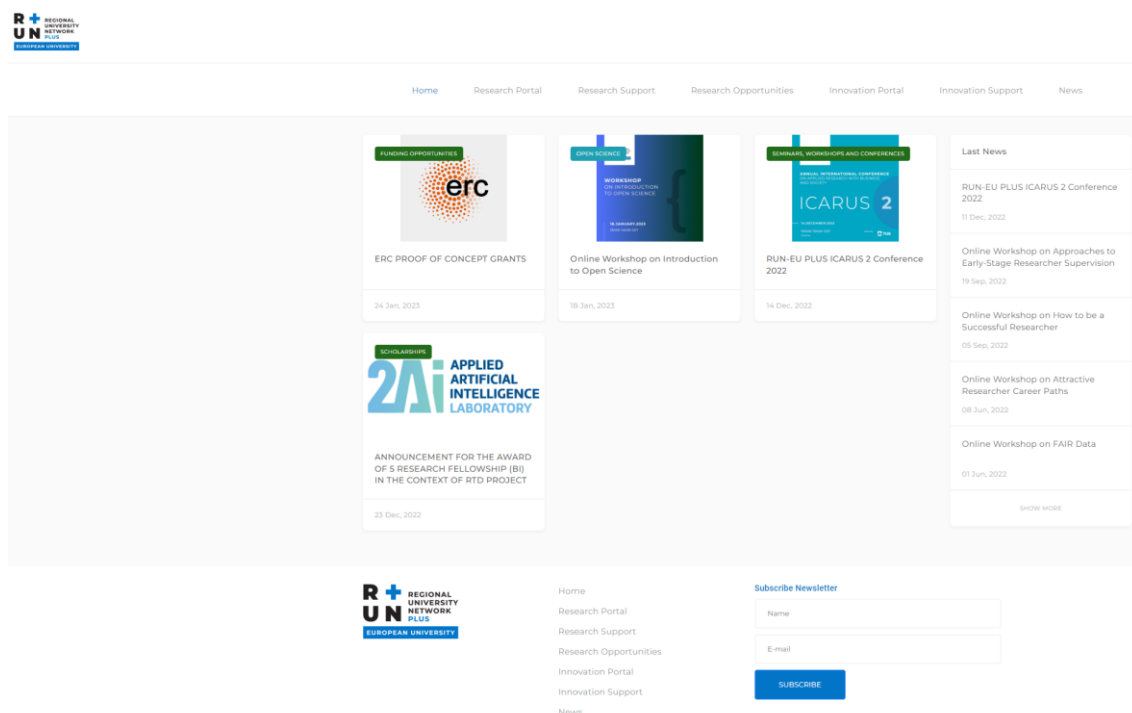


Figure 4 – Cloud of Knowledge Portal developed by RUN-EU PLUS

The portal also supports researchers with their skills development and is a source of all training material and therefore a support tool for all researchers. It is a repository for the delivered RUN-EU PLUS training workshops, presentations, research grants, mobility possibilities and RUN-EU contact points in different research fields.

A section of the Portal has been dedicated to the European Innovation Hubs, a screenshot of which is shown in **Figure 5**. Each hub is provided with its own page where it displays its vision and mission along with information regarding its strategy and hub members (**Figure 6**).

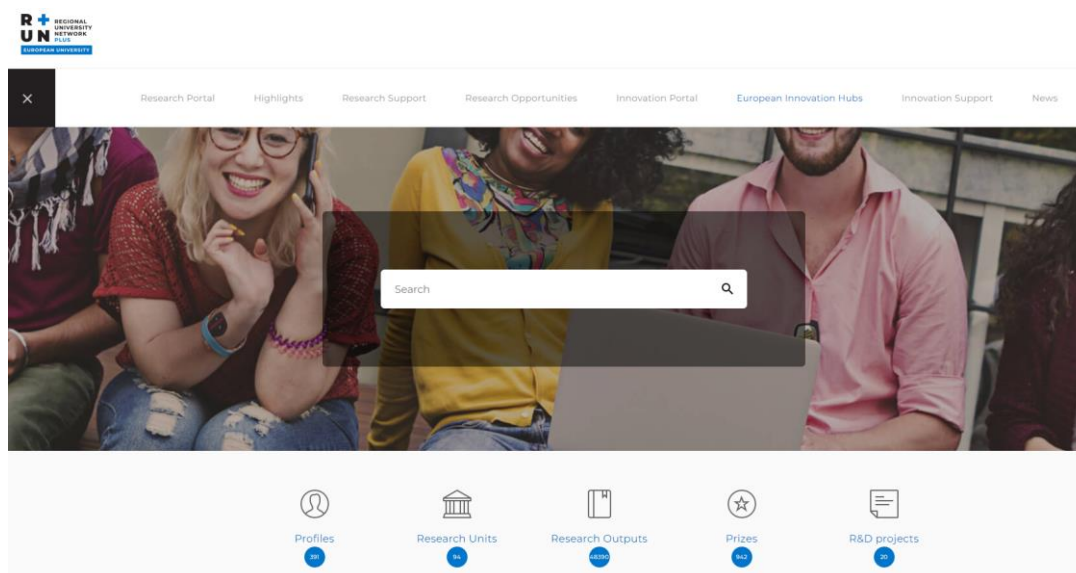


Figure 5 – European Innovation Hubs featuring on Cloud of Knowledge Portal landing page

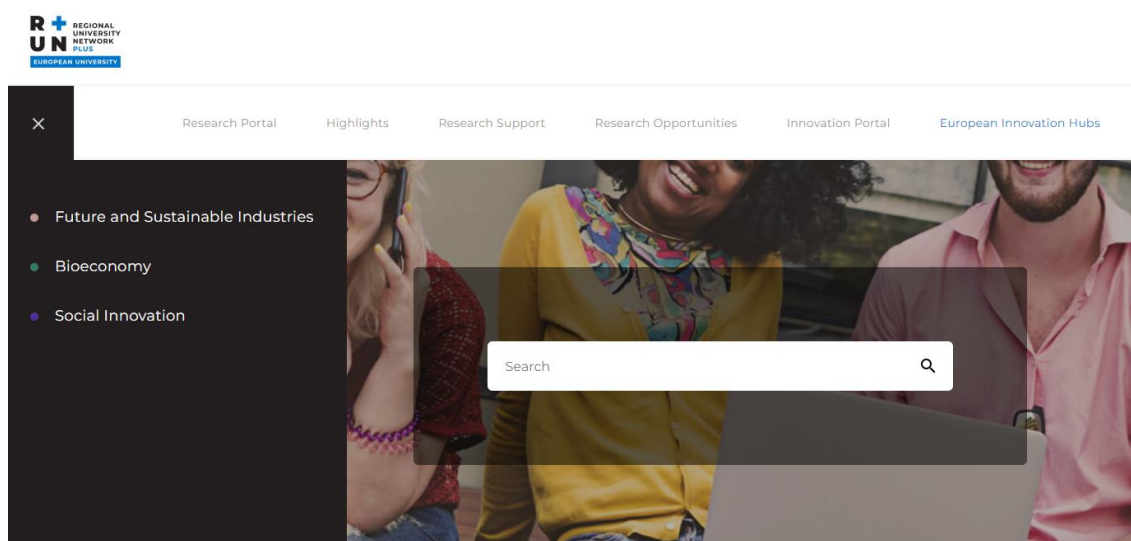


Figure 6 – Individual page for each RUN-EU European Innovation Hub

A beta version of the Cloud of Knowledge Portal is already accessible at [Cloud of Knowledge \(ipca.pt\)](https://cloudofknowledge.ipca.pt). During Year 2 of the RUN-EU PLUS project (October 2022 to October 2023), efforts were primarily focused on three key objectives:

- 1) Implementing dynamic features to gather scientific information from all RUN-EU researchers.
- 2) Integrating a new platform format.
- 3) Providing user training and incorporating researcher profiles onto the platform.

Some key features of the Portal include:

- **Dynamic features:** To automate the process of updating scientific data on the platform, an investigation into the ORCID Application Programming Interface (API) was conducted. As a result, a collaborative operational model for the platform was established within the consortium. Specifically, this model includes:
 - a. All users must have a valid ORCID profile.
 - b. All user's ORCID iD are manually inserted into the platform by a user administrator (one in each RUN-EU PLUS partner – see **Figure 7**).
 - c. The platform will automatically collect (daily) all information from all the inserted ORCIDs, updating all fields available in the platform (namely user profile, publication per RUN-EU scientific area and scientific projects).
 - d. Instead of directly modifying the Cloud of Knowledge Portal, it was also defined that each user has the responsibility to keep their scientific outputs updated directly on the ORCID website (see research profile presented in the knowledge portal – **Figure 8**).

Researchers Contents

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Editor Save Delete Refresh Close Actions

Name: José Henrique de Araújo Silveira de Brito Email: jbrito@ipca.pt

ORCID: 0000-0002-4544-4698 CIENCIAID: 3C16-2D14-7403

Keywords:

Biography: José Henrique Brito holds a PhD in Electronic and Computer Engineering from the University of Minho, a Master's Degree in Computer Graphics and Virtual Environments also from the University of Minho, and a Degree in Electrical and Computer Engineering, in the field of Electronic Systems and Computers from Instituto Superior Técnico. He is currently an Assistant Professor and Director of the Degree in Electrical and Computer Engineering at Escola Superior de Tecnologia (EST) of the Polytechnic Institute of Cávado and Ave (IPCA), having been teaching at this institution since 2004. He has held several academic and management positions, namely President of the Pedagogical Council, Member of the Academic Council, Member of the Technical-Scientific Council, in addition to several directorates of undergraduate courses and Higher Professional Technical courses (CTEP). He is an interested researcher at 7AI - Artificial Intelligence Laboratory at IPCA, participating in several projects in this area. His main research interests are in the field of computer

Photo

Figure 7 - Backend of researcher profiles on RUN-EU PLUS Cloud of Knowledge Portal

Pedro Morais

Institutions: Polytechnic of Cávado and Ave

Pedro Morais is an Assistant PhD Researcher at 2AI-IPCA. In 2019, he received a Ph.D. degree in Biomedical Engineering from the University of Porto, Portugal, and Biomedical Sciences from KU Leuven, Belgium (Doctoral thesis under co-supervision). His Ph.D. thesis was a collaborative project between FEUP/NEGI, KU Leuven and ICVS/3B's, focused on the development of novel image-based solutions to improve the planning of left atrial interventions. In 2013, he received an MSc in Biomedical Engineering from the University of Minho. His dissertation was related to cardiac motion and deformation estimation, in a collaborative project between the University of Minho and KU Leuven. Currently, his main interests are imaging processing, image segmentation, image-guided minimally invasive interventions, image tracking, image fusion, robotics and biomedical applications.

Experience

Polytechnic Institute of Cávado and Ave - Assistant Researcher 09-2020

RUN R&D projects

NORTE-01-0145-FEDER-000045 | SmartHealth - Artificial Intelligence for Lifelong Personalized Patient Care

Investment: 1 609 551,04 €

Keywords

MEDICAL IMAGING
CARDIAC INTERVENTIONS
IMAGE REGISTRATION
IMAGE SEGMENTATION
BIOMECHANICAL SIMULA

Research areas

HEALTH AND WELLBEING

Figure 8 - Partial frontend of researcher profiles on RUN-EU PLUS Cloud of Knowledge Portal

- **New Platform Organisation:** To maximize the capabilities of this platform, a restructured menu system has been implemented (displayed in **Figure 9**), comprising the following menus:
 - (i) **Research Portal** – a search engine that allows, using keywords or RUN-EU research areas, information on RUN-EU PLUS researchers, scientific works, R&D units, and projects.

- (ii) Research Support - where the researchers and supervisors can find information pertaining to the RUN EU capacity programme.
- (iii) Research Opportunities – where information concerning R&D collaboration opportunities, prizes and information for regional and European project calls will be published.
- (iv) Innovation Portal – where information on RUN-EU R&D services, equipment, infrastructures, and Intellectual Property offered by the different R&D units/groups will be presented.
- (v) Innovation Support – where the RUN-EU research community can find information regarding intellectual property protection and transfer.
- (vi) European Innovation Hub information – the missions and visions and strategic plans of each hub is presented. A plan is in place for this area of the portal to be a ‘network of networks’ where information on associated partners is collected and where organisations can share their research and educational needs and search for common interests. Outcomes of events such as the RUN-EU Science Meets Regions event held in 2023 will be presented here.

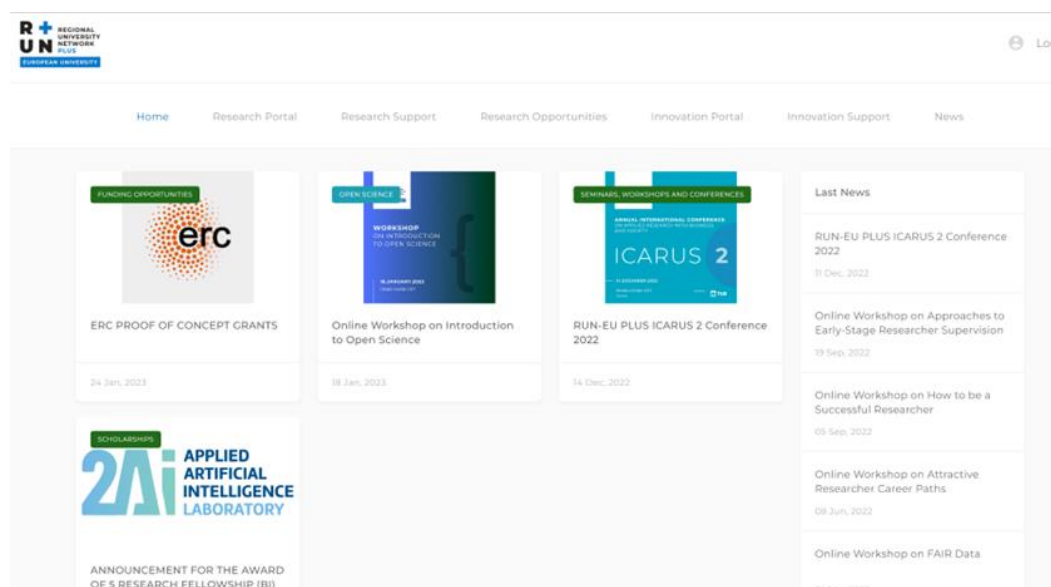


Figure 9 - Organization of Menus on the Cloud of Knowledge Portal

Each of these menus encompasses the following sub-menus:

- (i) Research Portal (**Figure 10**)
 - a. Profiles (with all RUN-EU researchers)
 - b. Research Units
 - c. Research Outputs
 - d. Prizes
 - e. R&D Projects

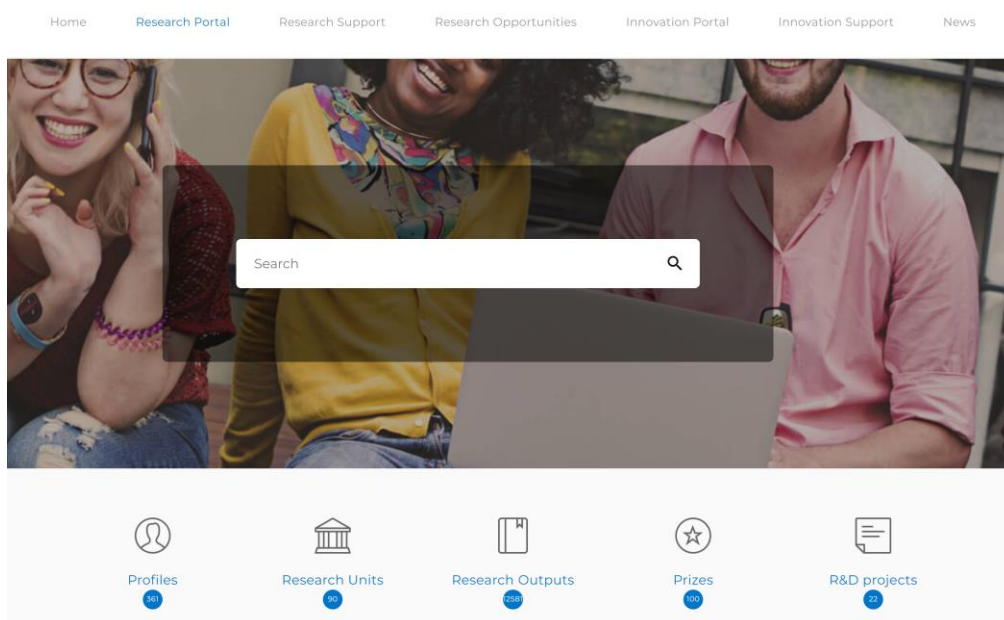


Figure 10 - Submenus available at Research Portal Menu

- (ii) Research Support (**Figure 11**)
 - a. Resilience and independence working
 - b. Open Science
 - c. Networking and influencing skills
 - d. Education
 - e. Expertise Project Management
 - f. Strategic Career Development
 - g. Writing and publishing skills
 - h. Communication skills
 - i. Personal development
 - j. Time Management

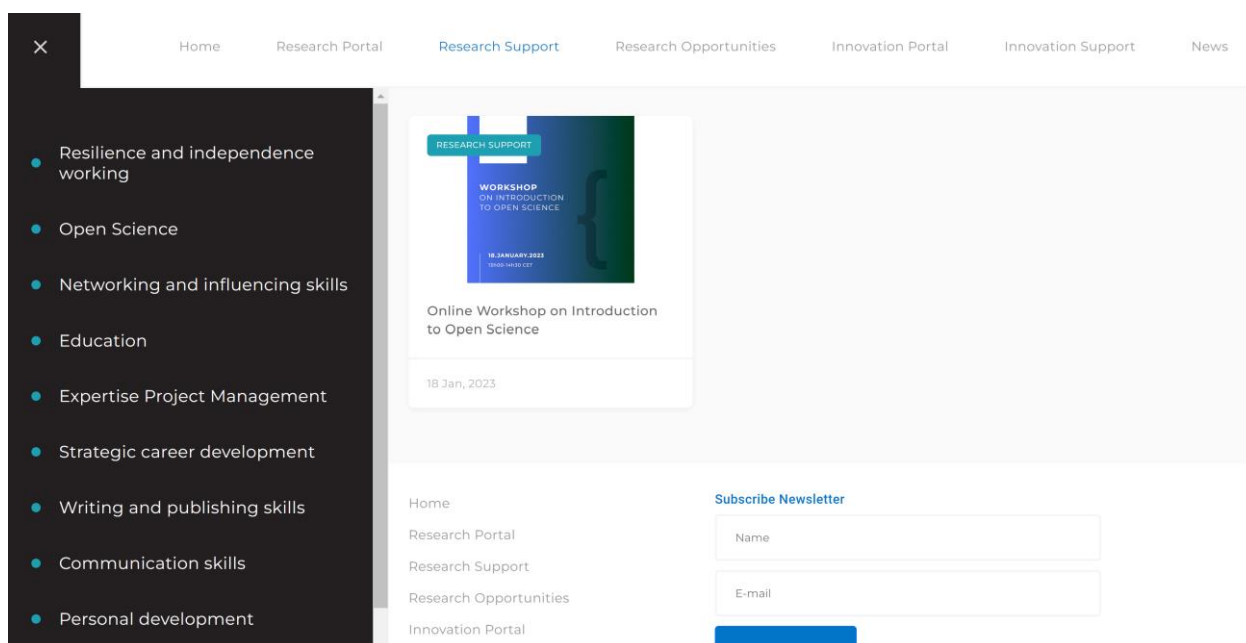


Figure 11 - Submenus available at Research Support Menu

- (iii) Research Opportunities (**Figure 12**)
 - a. Scholarships
 - b. Funding Opportunities
 - c. R&D Project Collaboration
 - d. Seminars, Workshops, and conferences
 - e. Prizes Opportunities
 - f. R&D Internships
 - g. R&D Theses Collaboration

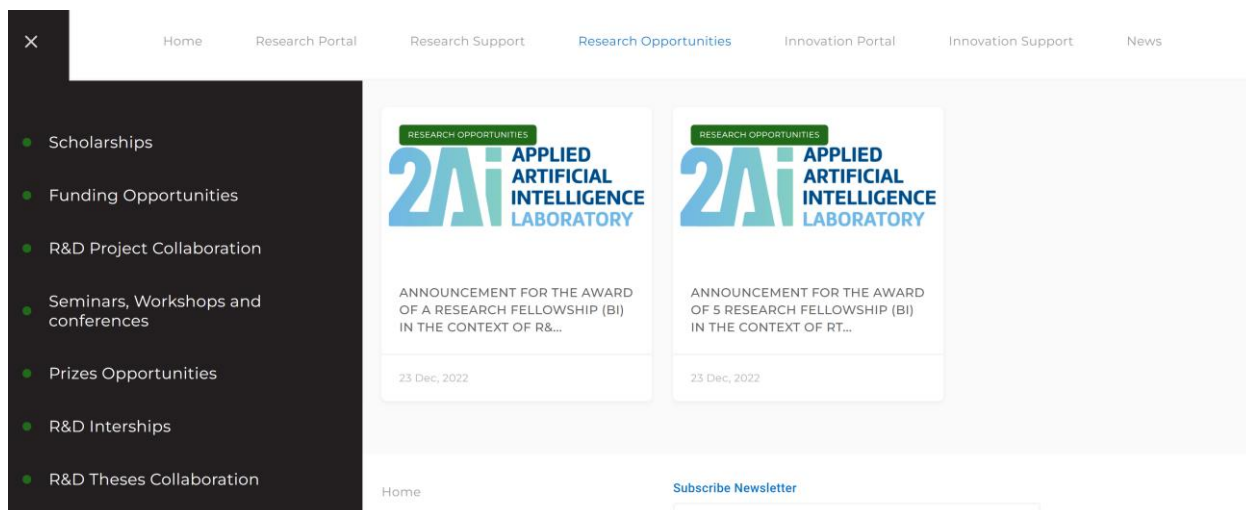


Figure 12 - Submenus available at Research Opportunities Menus

(iv) Innovation Portal (**Figure 13**)

- a. Spin-offs
- b. R&D infrastructure
- c. Technologies
- d. Services

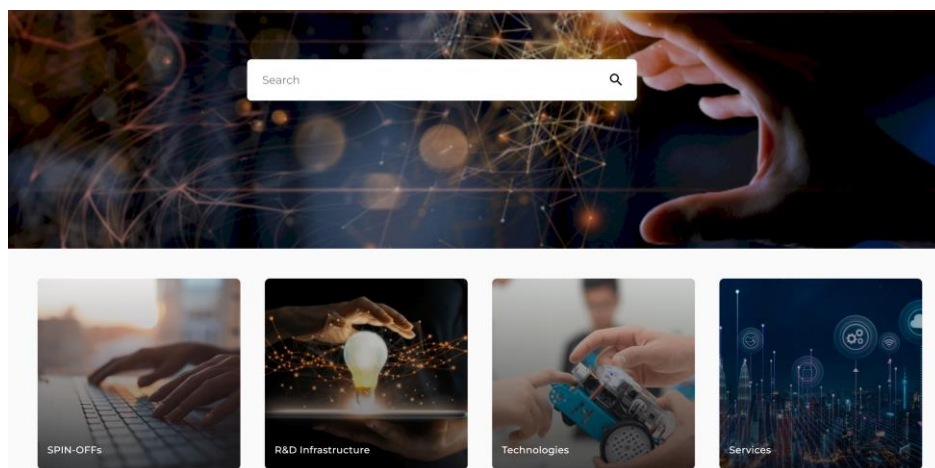


Figure 13 - Submenus available at Innovation Portal Menu

(v) Innovation Support (**Figure 14**)

- a. Disclosure Forms
- b. Disclose & Protect your Inventions
- c. TTO
- d. Knowledge Transfer Agreement
- e. Legislation/Country

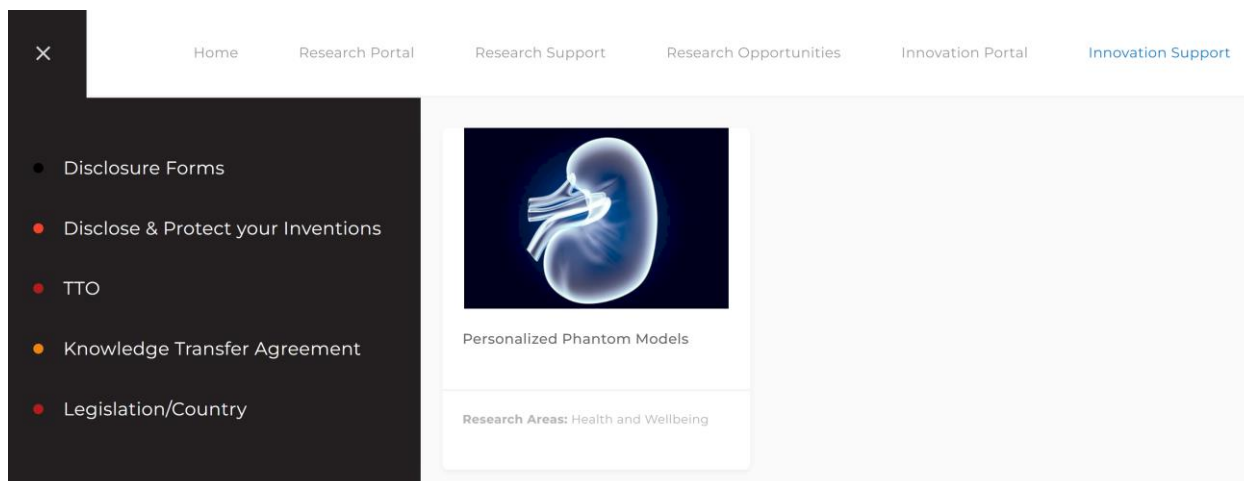


Figure 14 - Submenus available at Innovation Support Menu

(vi) European Innovation Hubs (Figure 15)

A Section of the Portal dedicated to the EIHs is currently being populated and is designed to be used by RUN-EU researchers and innovators in addition to Associated Partners (Business, NGOs and Regional Developers) to identify other network members and collaboration opportunities (research and technology offerings).

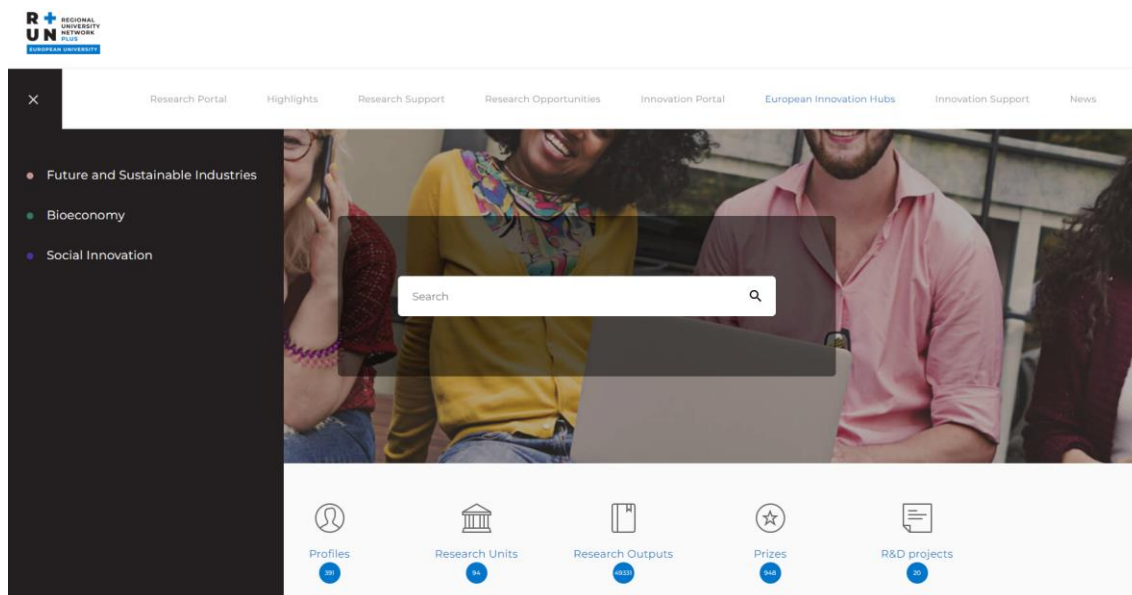


Figure 15 – European Innovation Hubs

- Innovation offerings will be disseminated on a dedicated section of the platform which also makes RUN-EU template agreements available to RUN-EU researchers. **Figure 16**, **Figure 17** and **Figure 18** display the sections of the Cloud of Knowledge Portal dedicated to Technology Transfer activities of the RUN European University.

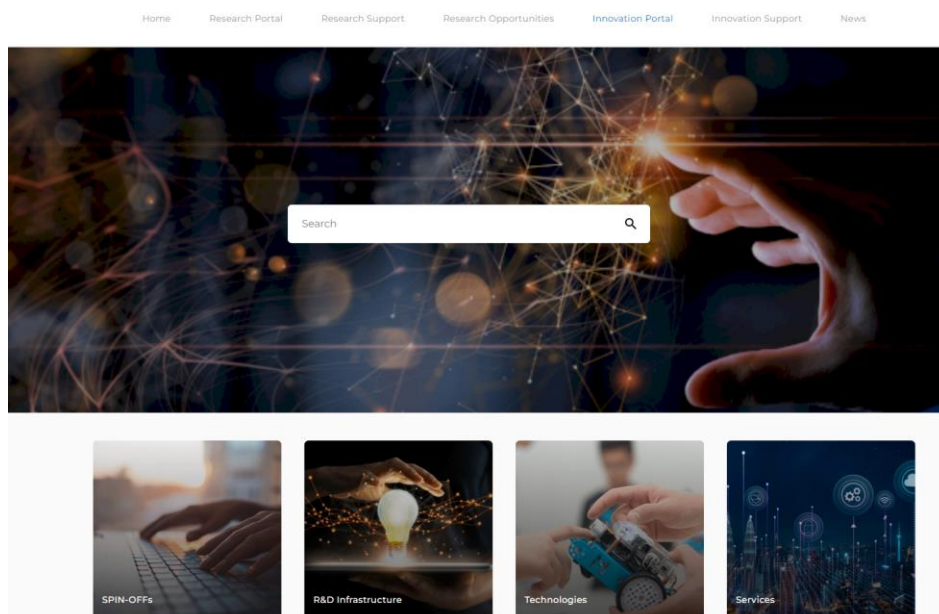


Figure 16 – Innovation Portal of the RUN-EU PLUS Cloud of Knowledge Portal

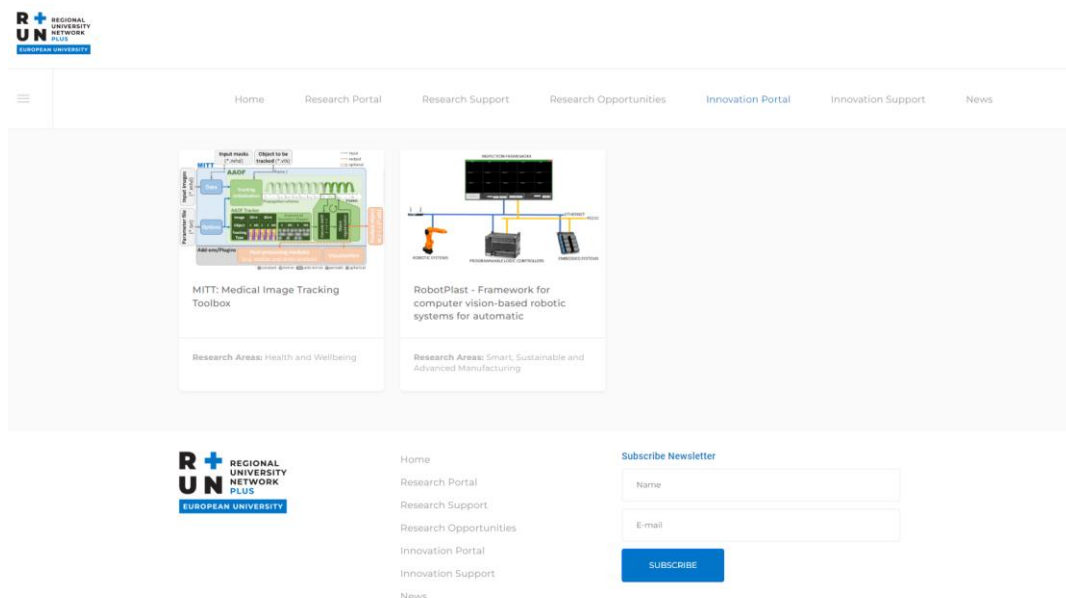


Figure 17 - Technology Offerings promoted on the RUN-EU PLUS Cloud of Knowledge Portal

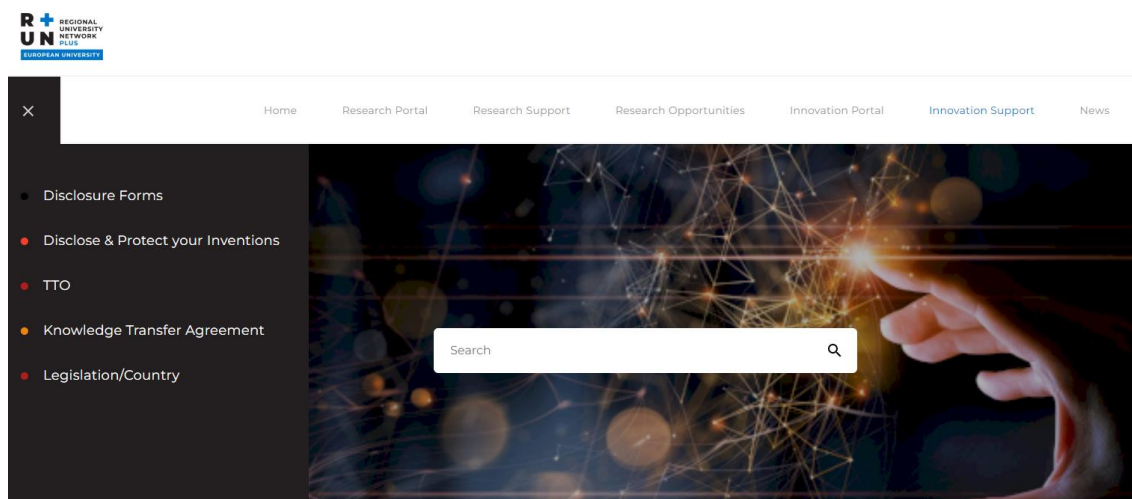


Figure 18 – Template Agreements available to RUN-EU researchers on RUN-EU PLUS Cloud of Knowledge Portal

- User Training and data collection: A representative from each RUN-EU partner institution has been designated as a user/administrator. In March 2023, an initial online meeting with the group of representatives to introduce the platform's back-office was held. Following this, each partner institution commenced the

important task of gathering and integrating relevant data into the platform. As of now, the platform boasts over 361 user profiles, 90 research units, more than 12,000 publications, over 100 awards, and > 20 R&D projects. All information associated with the RUN-EU PLUS workshop training is being transferred to the Research Support Menu. Throughout this period, modifications have been made continually to the platform based on user feedback. The complete platform has been designed for easy adaptability, enabling the addition or removal of menus and sub-menus as needed. Furthermore, a sophisticated search engine has been integrated to streamline navigation throughout the platform.

The following steps are imminent which will enable the Cloud of Knowledge Portal to be launched as live:

- 1) to upload as many as possible RUN-EU researcher research profiles onto the Portal.
- 2) establish an IT group that brings together IT specialists from each RUN-EU partner university.
- 3) after the Portal functions and conditions are checked by the IT specialist group, it will be launched.

4.0 EIH Support Programmes

4.1 Professional Practice-based Research master's and PhD Programmes

Sustainability, Digitalisation and Social Innovation were identified as the priority research areas which are informing the design of the RUN-EU PLUS research masters and PhD programmes.

Designed to be scalable and interdisciplinary, PhD programmes are being developed by the RUN-PLUS project in the areas of Sustainable Tourism, Sustainable Polymers, Digitalisation Engineering, Social Sciences, Sustainable Design and Biotechnology.

Programme teams comprised of academic representatives from each RUN-EU partner have been created for the co-design of each PhD programme. These collaborative research programmes, leading to a master's or PhD award, are structured with taught elements supporting the industry focused PhD research project which will be jointly supervised across the RUN European University alliance with a mobility placement included. The research project element will be co-designed with regional partners and the researcher based either with the

collaborative partner or in a research facility of one of the RUN-EU Research Cluster Areas. Multi-disciplinary and trans-disciplinary research projects are encouraged. These programmes provide EIH network members with access to expertise and research facilities across the RUN-EU alliance. Emphasis is placed on the transfer of new knowledge created out to the collaborative organisation to ensure maximum regional impact.

4.2 Innovation Capacity Programme

RUN-EU PLUS has developed an Innovation Capacity Programme which is the corner stone of the RUN-EU Innovation Eco-system developed across the partner organisations of RUN-EU in collaboration with the EIHs and the Research Discovery Programme (WP5). This Innovation Capacity Programme is designed to promote the sharing of knowledge, the identification of skills needs and the valorisation of an entrepreneurial mindset amongst the RUN-EU research community and partners. It will help to lead research and innovation (R&I) development across the consortium, supported by an innovation detection scheme which will identify new innovations, and innovators. The programme integrates technology transfer functions across RUN-EU, including innovation support staff and business incubators.

The Innovation Capacity Programme has been designed to enhance the regional R&I ecosystem within RUN-EU members, which will be applied to strengthen the collaborative research capacity between EIH network members and academia, to support innovation development and to develop & mainstream entrepreneurship and transversal skills. The Programme identifies knowledge transfer support, an innovation detection scheme, commercialisation support and entrepreneurship training as key supports to be implemented across RUN-EU.

The programme is also referred to in **D2.5 Multinational Spin-out and SME Support Infrastructure** and presented in detail in the RUN-EU PLUS **D6.1 Innovation Eco-system** report.

4.3 Entrepreneurship & Transversal Skills Development Programme

An Entrepreneurship and Transversal Skills Programme has been defined by RUN-EU PLUS (**MS 13**) and is currently in development. The Programme will educate researchers at all career stages on the necessary tools and skills to develop and implement innovation. The programme includes skills training in entrepreneurship, intellectual property, data management, patenting, research management and commercialisation. This training will be complemented by the Researcher Career Development Framework Training Programme (RUN-EU PLUS D4.2) which includes training in research methods, complex problem solving, creativity and critical thinking. The

Entrepreneurship and Transversal Skills Programme will be offered to all members of the RUN-EU Innovation Ecosystem including network members of the RUN European Innovation Hubs, Research Clusters, RUN-IN Business Network and RUN-EU PLUS practice-based research programmes.

5.0 Summary

This deliverable report summarises the governance structure of the RUN-EU EIHs as well as the infrastructure and expertise available within RUN-EU to support their long-term effectiveness and sustainability. Each hub presents its individual composition, associated RUN-EU research cluster areas and provides an overview of partners associated with it.

Appendix 1: Future and Sustainable Industries EIH Network

1. Hub Composition

The Future and Sustainable Industries EIH is expected to be overseen by a Management Board that will include a Hub Director, Program Managers, and Thematic Area Managers. The program managers will ideally be members of external partners (preferably industrial partners, who will in this way ensure proper connection between the hub and different professional activities and events), while thematic area managers will ideally be from the associated research centers. Through its Director, the Management Board will ensure proper articulation of the Hub activities with other workpackages of RUN-EU, namely WP5 research groups, and integrating the Hub's goals into the activities of WP3, WP4, WP6, and WP7 (see Figure below).

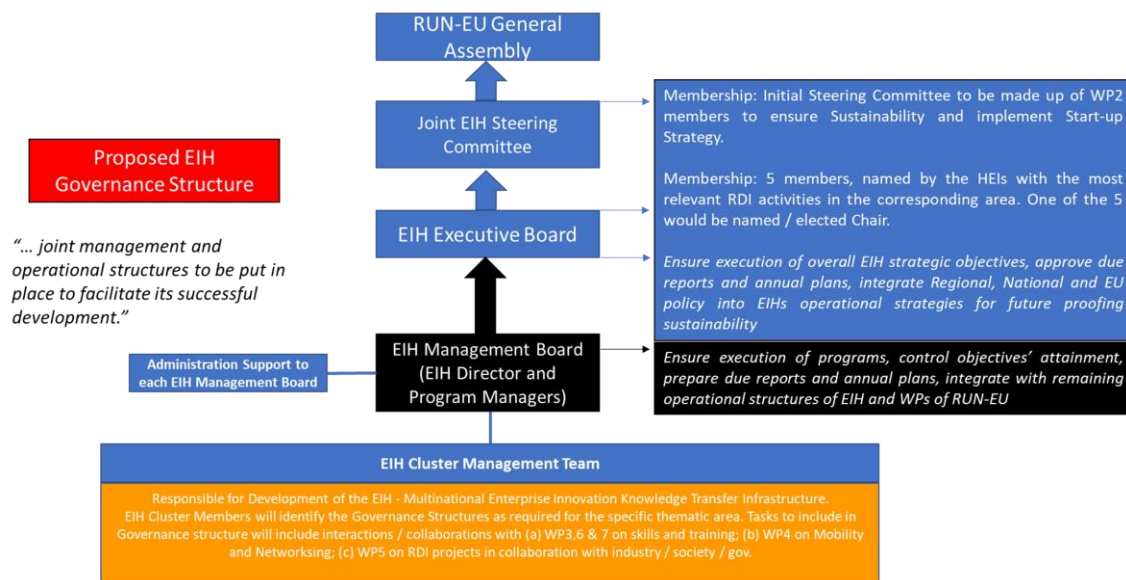


Figure: Governance of the Future and Sustainable Industries EIH

2. Research clusters

This EIH is focused on industrial sustainable productivity and competitiveness, through the use of technology and design that can foster progress, promoting and then applying innovative research in the areas of Robotics & Autonomous Systems, Optimized & Sustainable Manufacturing, Digitization, Computer Science, Materials & Circularity, and Industrial Design & Product Engineering. The Hub will exist as a virtual overarching interregional network, bridging

RDI with knowledge transfer and training, with the target of creating significant regional impact on the RUN partner regions.

<i>RUN partner</i>	<i>Research Group</i>	Area 1 - Robotics and autonomous systems	Area 2 - Optimized and sustainable manufacturing	Area 3 - Digitalization	Area 4 - Computational science & engineering	Area 5 - Materials and circularity	Area 6 - Industrial design and product engineering
FHV	Digital Factory	•	•	•			
FHV	User centered technologies	•	•		•	•	•
FHV	Business Informatics		•		•		
HAMK	Long term durability					•	
HAMK	Robotics	•			•		
HAMK	Reverse engineering		•				•
HAMK	Energy		○				
IPCA	2Ai	•	•		•		•
IPL	CDRSP		•	•		•	•
IPL	INESCC	•	•	•	•	•	
IPL	IT				•		
NHL	Circular plastics		•			•	•
NHL	CESSM	•	•			•	
NHL	Computer vision				○		
NHL	Serious gaming				•		
SZE	Digitalization and automation	•		•	•		
TUS	PRISM		•	•	•	•	
TUS	ACORN	•	•	•	•		
TUS	CEEDD		•			•	
TUS	SRI	•		•			
TUS	IDEAM	•	•	•	•	•	
TUS	ATIM Cluster		•		•	•	

Table: Alignment of RUN-EU Partner Research groups with EIH thematic areas.

3. Associated Partners

Associated partners of RUN-EU that support entrepreneurship, enterprises involved in funding applications and / or activities concerning professional practice-based research programmes in topics of practical industrial interest, within a broad sphere of technical areas (from automation and digitalization, through AI and production optimization, and up to sustainable design and materials), external research partners in challenging industrial fields and participants of Science Meets Regions events are potential partners of RUN-EU Future and Sustainable Industries EIH. All stakeholders willing to join the hub will have an access and space in the forthcoming Cloud of Knowledge Portal.

Appendix 2: Bioeconomy EIH Network

1. Hub Composition

RUN-EU Bioeconomy EIH consists of research activities of RUN-EU partner universities, regional developers, and enterprises from the bioeconomy value chain.

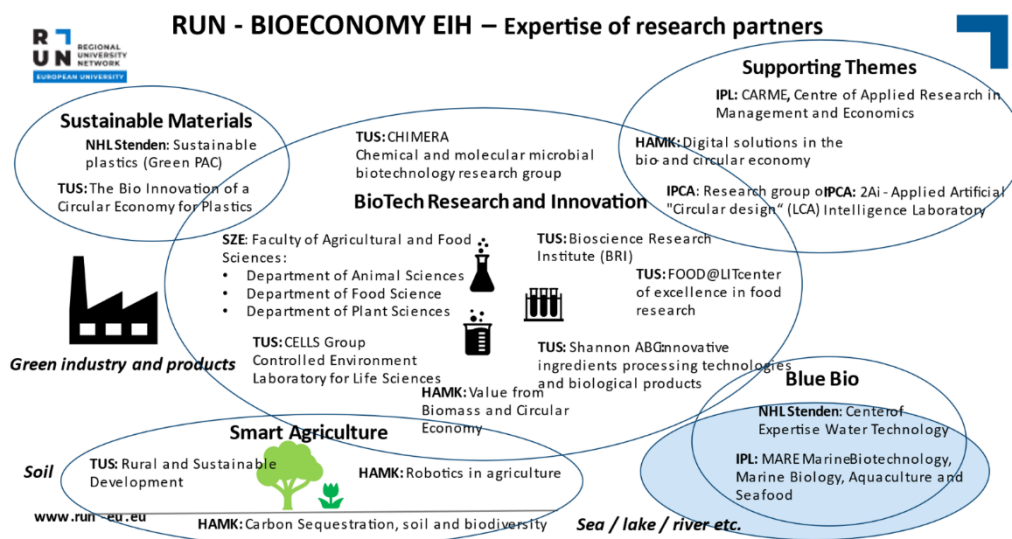


Figure: Research units/centers/areas/clusters involved in RUN Bioeconomy EIH

2. Research clusters

Bioeconomy EIH has chosen four thematic areas to focus on Smart Food Security and Sustainable Food Production, Smart Value chain from Waste to Sustainable Products, Smart Utilization of Water and Smart Built Environment. Therefore, Bioeconomy EIH is supported by all RUN-EU research clusters that develop new technologies (Research Areas 4 and 5: IOT & Cybersecurity and Smart, Sustainable and Advanced Manufacturing). However, bioeconomy is somewhat involved also in Research Areas 1, 3, 7 and 8: Creative Art, Design and Materials Thinking, Tourism, Education & Social Sciences, Health & Wellbeing. The most relevant research and co-operation-based research are Research Area 2: Food & Biotechnology and Research Area 6: Climate Change – Circular Economy & Decarbonisation. Work and networks with people working in Food and Biotechnology research area are mainly the same working in Bioeconomy EIH.

3. Associated Partners

Associated partners of RUN-EU that support entrepreneurship, enterprises involved in funding applications and / or activities concerning professional practice-based research programmes in bioeconomy, external research partners in the bioeconomy field and participants of Science Meets Regions events are potential partners of RUN-EU bioeconomy EIH. All stakeholders willing to join the hub will have an access and space in the forthcoming Cloud of Knowledge Portal.

Appendix 3: Social Innovation EIH Network

1. Hub Composition

The Social Innovation Hub of RUN-EU is a network of RUN-EU partners together with partners in society. By combining education and research we work on making social impact on the issues we all recognize from the regions where we work. We are a network of people who have the skills to create social innovation with and for people in society, together with regional developers, regional public organisations, regional (social) enterprises and above all the people in our regions.

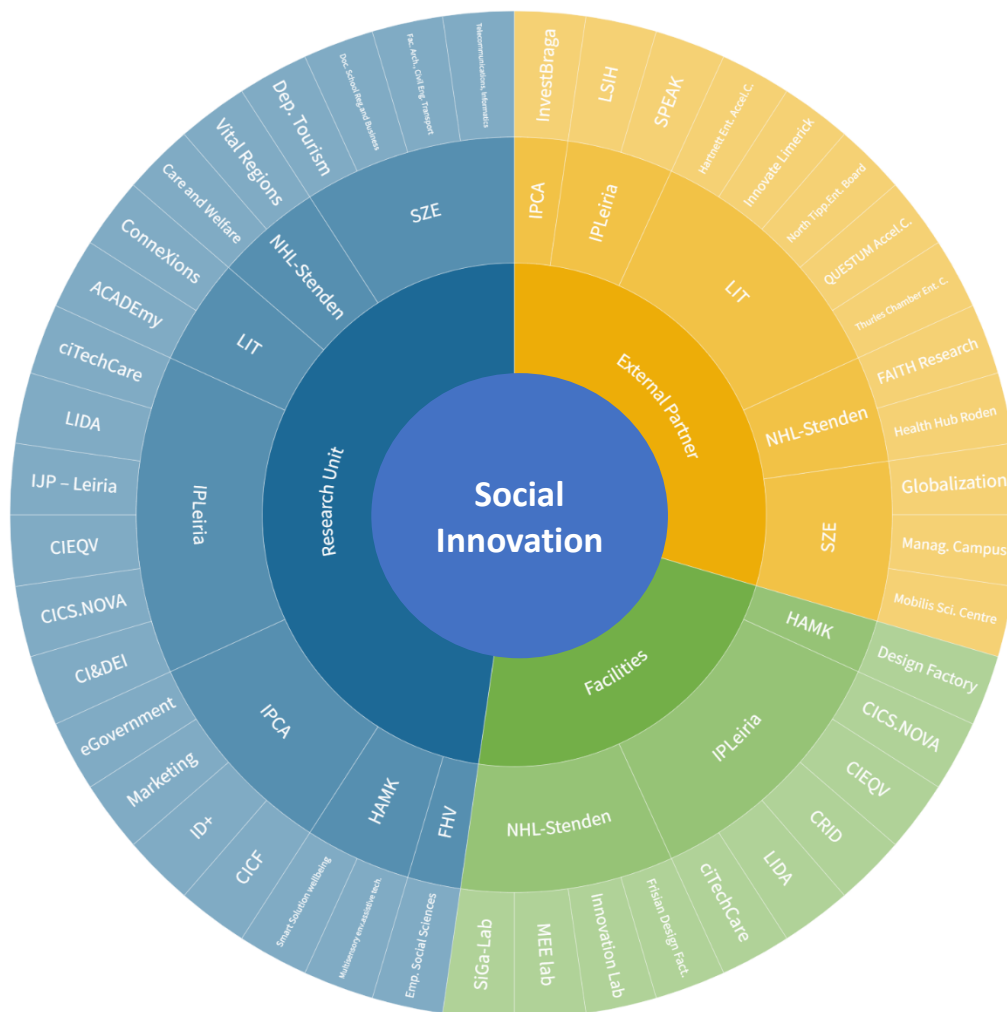


Figure 19 – Research Cluster, Hub, External Partner Audit output for EIH 3: Social Innovation

2. Research clusters

Social Innovation is a broad theme, there is no rigid definition of which sub-themes are susceptible to be considered. However linked to the WP5 scientific areas, some topics will be privileged, such as:

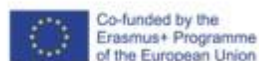
- Health and wellbeing
- Culture and Creative Industries
- Tourism
- Social Science and Social Transformations
- Education

For the Social Innovation Hub we have made a more specific focus on topics which enables us to find a new repertoire to make learning-communities close to our students and partners in our regions. As the social problems in our regions need a urgent approach, we should prevent losing time on inventing tools which already are provided. Maybe the biggest innovation is to connect and share what we also know and practice. The specific topics of the Social Innovation Hub are inclusion and advocacy, social entrepreneurship, social imagination, digitalisation, working multidisciplinary in making policies (public & business administration).

3. Associated Partners

Associated partners of RUN-EU that have commitment to and are already involved in, support entrepreneurship, enterprises involved in funding applications and / or activities concerning professional practice-based research programmes in social innovation, external research partners involved in programs on social innovation (public and private partners) and participants of Science Meets Regions events are potential partners of RUN-EU Social Innovation Hub. Also members of the public, the experience experts, are welcome in our hub. All stakeholders willing to join the hub will have an access and space in the forthcoming Cloud of Knowledge Portal.

The Inclusive Community Lab of NHL Stenden is already a learning community where we combine research and education to make impact through social innovation. The regional partners of this lab want to stay and be more in connection with the RUN-EU partners and their stakeholders.



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