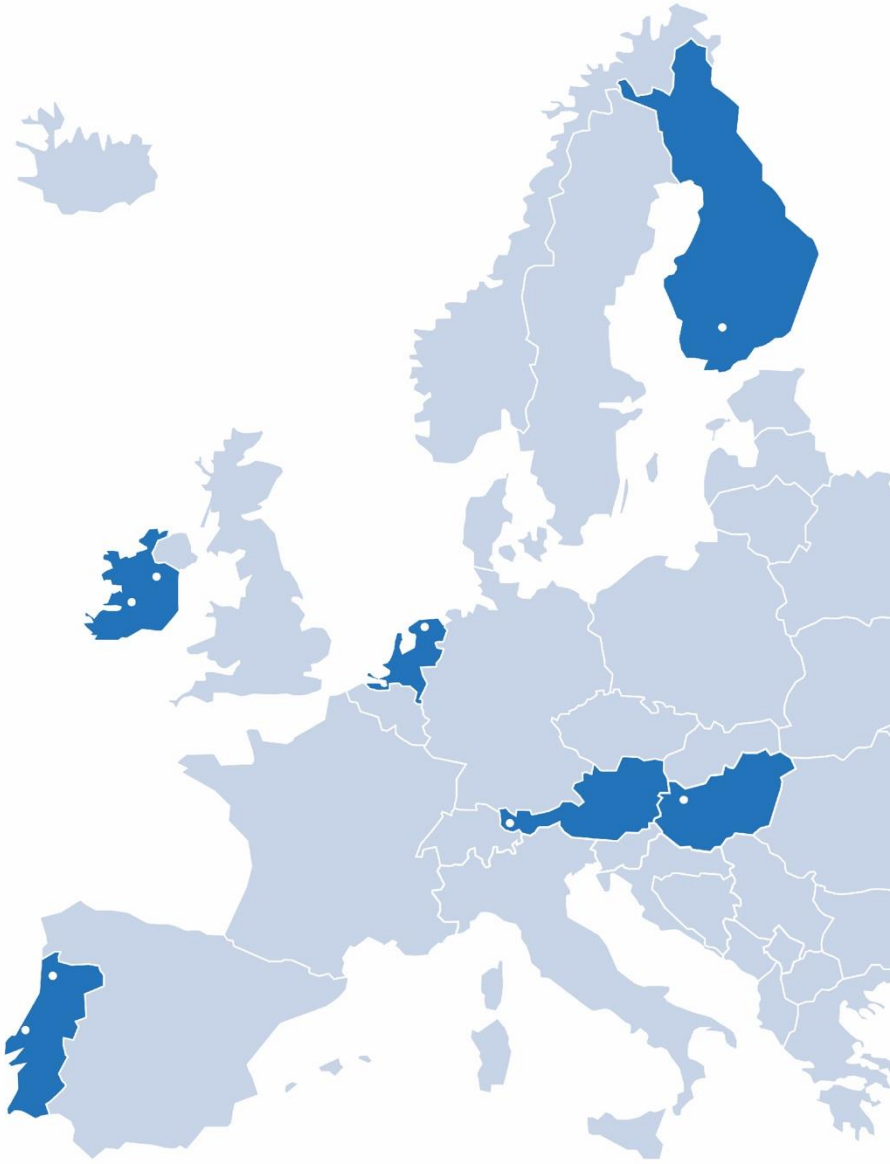
REGIONAL UNIVERSITY NETWORK PLUS

EUROPEAN UNIVERSITY



D7.9 ICARUS 2021

Annual International Conference on Applied Research with Business and Society

December 2021

Széchenyi István University, Hungary

Horizon 2020
European Union Funding
for Research & Innovation

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Table of Contents

Table of Images

1. Conference Overview

Hosted by the University of Győr – Széchenyi Istvan University, Hungary, the first RUN-EU PLUS Annual International Conference on Applied Research with Business and Society (ICARUS) was held online on 14 December 2021 (10h00-15h00 CET). There were 279 Eventbrite registrations for the conference. This was the first of the annual RUN-EU PLUS ICARUS conference since the project was launched on 5 November 2021, at the RUN-EU General Assembly in Ireland. The annual ICARUS conference will engage research students, scholars, researchers, and business and society stakeholders in discussions concerning the development of practice-based research degree programmes, open science practice and researcher career development across the Regional University Network – European University (RUN-EU).

The 'PLUS' of RUN-EU PLUS stands for 'Professional Research Programmes for Business and Society', which is based on the project vision of adapting the RUN-EU research outcomes to regional labour markets and societal demands, with measurable downstream societal benefits that will lead to the transformation of the European regions. Its three tracks are linked to the focus areas of the alliance and its future European Innovation Hubs (Future Industry and Sustainable Regional Development; Bioeconomy; and Social Innovation).

The RUN-EU PLUS project recognises the significance of its human capital and will support RUN-EU researchers and supervisors through the design and implementation of a common Researcher Career Framework Programme, a Research Career Development Evaluation System, a Research Skills Training Programme, a Cloud of Knowledge Portal and an Open Science Skills Training Programme to support and reward research excellence at all researcher career development stages.

The RUN-EU PLUS project will build on the ambitious RUN-EU Discovery Programme and develop an integrated, long-term strategy for research and innovation within our European University. It will create a collaborative action plan focused on strengthening academic-business partnerships in research and innovation.

The annual ICARUS conference will:

- provide a space for the presentation of the most relevant scientific results in the focus areas, including special tracks for students of professional research programmes;
- contribute to the open science agenda through close contact and informal discussion with business and society actors, in which the conclusions of the scientific world are presented in a clear way, which is accessible to the general public and particularly to business and society representatives;

- increase the cooperation and identify possible practical problems to be addressed by research students within the professional practice-based research degrees;
- implement annual innovation awards to recognise the companies or society actors that have a special contribution to the development of joint programmes, professional research activities and the development of the Research & Innovation ecosystem in the regions of the RUN-EU PLUS alliance;
- disseminate the impact of the professional research programmes in the companies and society, notably those that host the professional practice-based research degrees.

2. Branding

2.1 ICARUS 2021 Conference Banner

Image 1 – RUN-EU PLUS Annual International Conference on Applied Research with Business and Society

2021 Conference Banner

3. Conference Agenda

ICARUS 1 On-line Conference

14 December 2021

Central European Time (CET) 10.00-15.00

10.00-10.15	**Conference Opening SZE** ***Prof. Dr. Mihályka Lívia President's Envoy for External Relations***
	Chair: Dr Attila Borsos, vice-dean of Science, Faculty of Architecture, Civil Engineering and Transportation Engineering, SZE, Hungary
10.15-10.40	**RUN-EU/RUN-EU+ Overview Dr. Siobhan Moane, RUN-EU+ Project Manager, TUS, Ireland**
10.40-11.05	**RUN-EU+ Member presentation Future and Sustainable Industries Case Study- Research Masters in the Digitalisation of Manufacturing Dr John Cosgrove, Programme Manager, TUS, Ireland**
11.05-11.20	**Break**
11.20-11.45	**Impact of the professional research programmes in the companies and society - Dr. Krisztina Bárdos, Managing Director of the Mechanical Engineering Scientific Association and the Hungarian Medical Cluster, Associated Partner of RUN-EU**
11.45-12.10	**Professional Practice-based Research Case Study – Dr. Zoltán Dobra, Head of Series Analysis and Pre-Series Centre at FAW-VW Automotive Co. Ltd.**
12.10-13.00	**Lunch**
13.00-13.25	**Research & Innovation across the RUN-EU – Professor Nuno M. Rodrigues Vice President, Instituto Politécnico de Leiria, Portugal**
13.25-13.50	**Strengthening Human Capital – Dr. Liisa Postareff, Leading Research Scientist at Häme University of Applied Sciences, HAMK Edu Research Unit, HAMK, Finland**

13.50-14.15	**What is Open Science and what are the WP5 benefits for RUN EU+-** **Mrs. Ingrid van Gorkum, project leader, WP leader NHL Stenden, Netherlands**
14.15-15.00	**Open Forum Discussion and Q&A**
15.00	**Conference Ends**

Registration: RUN-EU+ ICARUS Conference - 14th December, 2021 Tickets, Tue 14 Dec 2021 at 10:00 | Eventbrite

4. Presenter Profiles

4.1 Dr Petra Szakonyi (Conference chair)

Dr Petra Szakonyi received Msc. in Urban Planning at Corvinus University, Hungary in 2007. She was working as a strategic planner for the Municipality of Győr for 11 years. She completed her doctoral thesis in the Doctoral School of Multidisciplinary Engineering of the Széchenyi University (SZE), Győr, Hungary. Since 2013, she is working as a lecturer in the Faculty of Architecture, Civil Engineering and Transport Sciences of SZE. She also works as an SZE international project coordinator in addition to representing SZE on both the RUN-EU European Innovation Hubs and the RUN-EU Research Discovery Programme (Research Clusters).

4.2 Dr Siobhán Moane

Dr Siobhán Moane is Project Manager of the RUN-EU PLUS project of the Regional University Network European University (RUN-EU) at Technological University of the Shannon: Midlands Midwest. She has a PhD in Analytical Chemistry from DCU and has undertaken research placements at the University of Oviedo, Spain and the University of Kansas, USA. She is a Principal Investigator of the TUS LIFE Health & Biosciences Research Institute and its research centres including Shannon Applied Biotechnology Centre, the CELLS Research Group and Food@LIT. Siobhán supervises PhD and MSc students in these areas and delivers collaborative research projects for industry funded through contract research as well as Enterprise Ireland's Innovation Partnership and Innovation Voucher schemes. She was a PI of the LIT co-ordinated EU Framework 7 BAMMBO research project in addition to managing the CELLS plant-based EU funded research projects EDEN-ISS and the CELLS Marie Curie programme. Since 2016 she has led a supervisor mentoring initiative for PhD supervisors within the Faculty of Applied Sciences and IT. Siobhán is a Senior Female Leader in the Aurora Women's Leadership Development programme providing mentoring support to female managers.

4.3 Dr John Cosgrove

Dr John Cosgrove, Head of Graduate Studies at the Technological University of the Shannon, leads the Smart Sustainable and Advanced Manufacturing Research Cluster in RUN-EU and is a founding architect of RUN-EU PLUS and a member of the Management Committee. John is also the Director of Smart Manufacturing at TUS and a Lead Researcher in Manufacturing Automation with over 30 years experience working with Industry on innovative solutions. Trained as both an Electrician and Electrical Engineer, John also holds a Master's in Advanced Manufacturing Technology and a Professional Doctorate in

Engineering. His Doctoral Thesis is based on the development of advanced analytics for applications in sustainable manufacturing and involved collaboration with leading multinational manufacturing sites in Ireland. As Technical Director of the ACORN Research Centre in LIT, John has been awarded competitive funding of over €3.5 million as PI and was co-ordinator of a large multi-partner project (TEMPO 2011-2015). John is the lead researcher for initiatives in Digitalisation of Manufacturing, including the IDEAM Industry Cluster, the Masters in Digitalisation of Manufacturing, the Industrial Skills Academy, and the EU Digital Innovation Hub (IS4PROD) and candidate EDIH (FactoryxChange). A regular invited speaker on Industry 4.0 and Manufacturing Digitalisation, John has a comprehensive list of publications, completed postgraduate projects and industry partnerships.

4.4 Dr Krisztina Bárdos

Dr Krisztina Bárdos is the Managing Director of the Mechanical Engineering Scientific Association and the Hungarian Medical Cluster. She is a senior manager with broad experience in initiating and implementing national business development programs, ranging from digitalization demonstration factories to high growth company focuses. Kirisztina successfully transformed a ministry-owned institution into a strategic national policy instrument, with over €6 million annual sales and 150 staff. She completed her PhD at the Corvinus University of Budapest, followed by research fellowships at the University of Newcastle in the United Kingdom, and at the Research Institute of the Hungarian Academy of Science. She worked as a platform expert in the establishment of the European Institute of Innovation and Technology (EIT) in Budapest, actively participated in the development and implementation of the National Medium-Term Logistics Strategy, had a lead role in the development of the National Smart Specialization Strategy (S3) and member of the Lead Group of the European ManuFuture Platform. She is a founding member of the Industry 4.0 National Technology platform, former member of the boards of the Hungarian Logistics, Procurement and Inventory Association, as an expert of the Hungarian Standards Body and as elected member of Hungarian Innovation Association's Committee Board for six years. Her talent-support focus led to collaborative development of the Organizational Innovation Award within the Innovation Grand Prix awarded annually at the Hungarian Parliament.
Currently, she is the managing director of the Scientific Association for Mechanical Engineering - an organization that has national coverage, almost 1,000 individual, SME and large corporate members.

4.5 Dr Zoltán Dobra

Dr Zoltan Dobra received his Msc. in Management and Leadership at Széchenyi Istvan University, Hungary in 2010, MBA qualification in 2017 at the Széchenyi Istvan University Hungary. He started the Doctoral School of Regional Sciences and Business Administration of the Széchenyi University, Győr, Hungary in 2016 and finished it in 2021. His research field is the human-robot collaboration in manufacturing. He works as a Production Manager at the Audi car manufacturing in Hungary and is currently undertaking a three-year international assignment in China at FAW-VW Automotive Co. Ltd.

4.6 Prof. Nuno M. Rodrigues

Professor Nuno M. M. Rodrigues is the Vice-President for Research of the Polytechnic of Leiria (www.ipleiria.pt) and the Coordinator of the Regional University Network - European University (www.run-eu.eu). He is a Professor in the Department of Electrical Engineering at the School of Technology and Management and has a track record in pedagogical and scientific management activities, including Coordinator of the Electrical Engineering course (2010-2013), Vice-Director of the School of Technology and Management (2014-2018) and the participation in several academic and management bodies. He holds a PhD in Electrotechnical Engineering from the University of Coimbra and is a senior researcher at the Institute of Telecommunications. He has led and participated in several national and international projects, oriented three PhD theses and several MSc theses. He is co-author of a book and more than 100 publications, including book chapters and papers in national and international journals and conferences.

4.7 Dr Virve Kallioniemi-Chambers

Dr Kallioniemi-Chambers has just recently started to work as the Education development specialist in the field of global education (November 2021-) at the School of Teacher Education in Häme University of Applied Sciences, Finland. She has over 20 years experience at the Tampere University where she worked as a teacher, researcher, and also as the Project Manager in several EU funded (FP7 and Horizon 2020 programmes) research projects with the focus on global migration. The past 4 years she has been engaged with the doctoral education as an expert at the Doctoral School. Besides the extensive planning, teaching and administrative tasks on doctoral education she was involved in the implementation of the university's research program on the research competence development. Her dissertation (2010) in educational sciences was on the pedagogical collaboration between the traditional university, the university of applied sciences and other kind of organisations.

4.8 Ingrid van Gorkum

Ingrid van Gorkum has a Master of Science (MsC) degree in psychology and has worked as a librarian for 13 years, where she delved into Open Science. She is currently the project leader of the Research Support Group at NHL Stenden University of Applied Sciences, The Netherlands. The aim of this group is to inform and support researchers in conducting their research on the following themes: GDPR, ethics, open access and datamanagement. In addition, she is a work package leader in the Digital Competence Centre Praktijkgericht Onderzoek (DCC-PO), a national network of universites of applied sciences that have united to support practice-based researchers. The work package task is to ensure that the DCC will become a platform where research support staff can meet each other and work on further facilitating research support. Within the RUN-EU PLUS project, she will work on Workpackage 5: Mainstreaming of Open Science Practices.

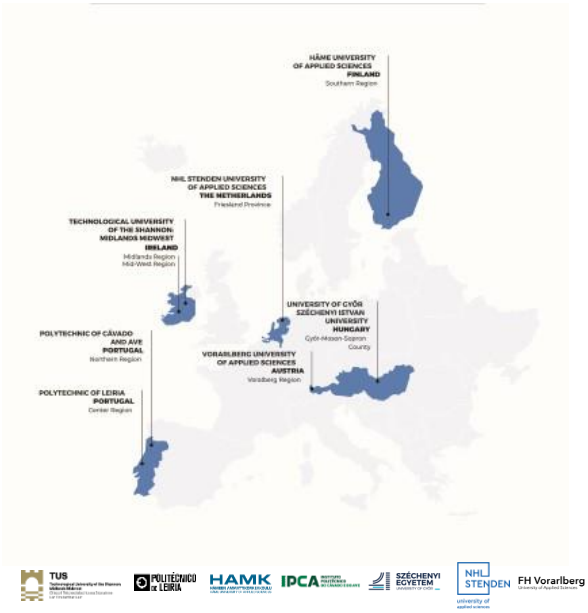
5. Conference Presentations

5.1 Dr Siobhán Moane, RUN-EU PLUS Project Manager, TUS, Ireland.

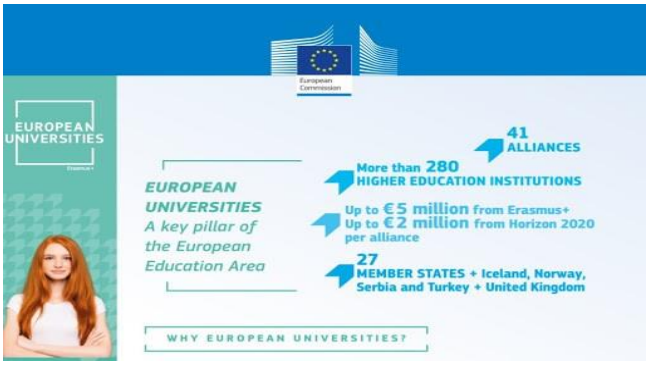
THE REGIONAL UNIVERSITY NETWORK - EUROPE (RUN-EU)

Dr Siobhán Moane

RUN-EU+ Project Manager,
TUS Midwest
Moylish Campus,
Limerick,
Ireland



European Universities Initiative
The aim of this initiative is to bring together a new generation of creative Europeans able to cooperate across languages, borders and disciplines to address societal challenges and skills shortages faced in Europe.



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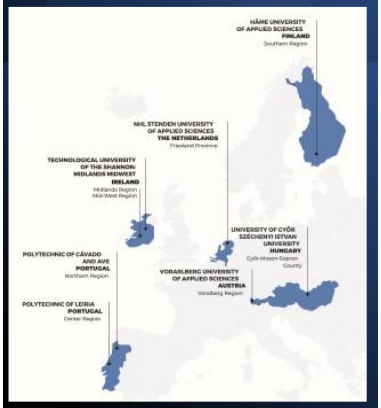
RUN-European University



REGIONAL UNIVERSITY NETWORK
EUROPEAN UNIVERSITY

Uniting over...

76 000 STUDENTS

8 000 STAFF, INCLUDING 4 550 ACADEMIC STAFF/RESEARCHERS

53 FACULTIES

97 RESEARCH CENTRES AND GROUPS

8 pioneers

- Politécnico de Leiria (Portugal)
- Limerick Institute of Technology (Ireland)
- Athlone Institute of Technology (Ireland)
- Häme University of Applied Sciences (Finland)
- Politécnico do Cávado e do Ave (Portugal)
- NHL Stenden University of Applied Sciences (The Netherlands)
- Széchenyi István University (Hungary)
- FH Vorarlberg University of Applied Sciences (Austria)

OUR VISION FOR THE FUTURE

34 associates

17 regional authorities	5 national authorities	1 higher education institution
3 chambers of commerce	3 research centres	1 International Policy Unit
	3 NGOs	1 business

REGIONAL UNIVERSITY NETWORK
EUROPEAN UNIVERSITY

MISSION AND VISION

- **Foster excellence and innovation in HEIs through collaboration** — ensuring the core principles and values of the EU
- **Delivering future and advanced skills** — necessary for students and regional stakeholders to successfully meet the challenges of the future, engage in societal transformation and promote active citizenship
- **Improve national and international competitiveness of associated regions through collaboration** — **Allowing them to:** complement existing capital and large city-regions; retain and attract young talent; correct existing unfavorable bias in development trends in peripheral European (EU) regions.
- **Strive to secure the sustainable economic, social, cultural and environmental progress** — of associated regions and stakeholders
- **Address big societal challenges and become a true engine of regional development** — leading in the creation of a new type of multinational interregional alliance **European Zone for Interregional Development (EZ-ID)**

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REALISING OUR VISION

- **Transnational alliance of higher education institutions and associated partners** — with a full program designed to develop long-term structural cooperation.
- **Systematic mobility programs for academic staff and students** — recognition of learning periods in the alliance universities; complementary curricula and collaborative European degrees; joint RDI activities and program
- **Unique new educational platforms** — “European Mobility Innovation Centre”; “Future and Advanced Skills Academies”; “European Innovation Hubs”

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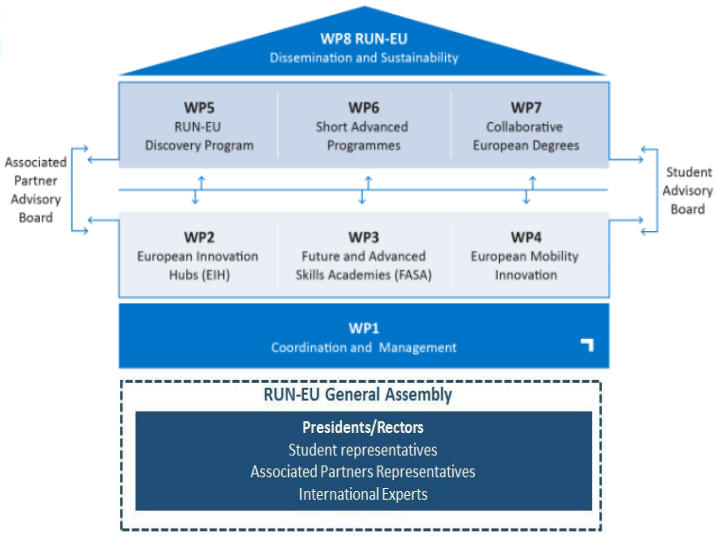
RUN-EU PROJECT STRUCTURE



FUTURE AND ADVANCED SKILLS ACADEMIES

Course development and delivery

Innovative pedagogical approaches and assessment methodologies

Operating across the regional university at both a central and institutional level thus promoting integration

Target group: Young and adult, full-time, part-time, flexible and life-long learners

Targets:

- 1 central FASA and 8 institutional FASAs are created;
- 320 teachers and 960 students surveyed;
- 5 editions of the Continuous Development Advanced Programme involving 72 teachers;
- 2 editions of the Design Factory Bootcamp involving 48 teachers;
- 2 editions of the Design Factory Workshops involving 160 students.

EUROPEAN MOBILITY INNOVATION CENTRE

Embedding mobility at all levels

Increasing the number of mobility activities, including physical, virtual or blended forms of mobility

Social innovation network for the promotion of multilingualism and multiculturalism

Increasing the participation of underrepresented and disadvantaged groups

Targets:

- 1500 students and 160 staff surveyed;
- 8 focus groups implemented;
- RUN-EU students have access to innovative mobility opportunities;
- 1 European Mobility Innovation Centre is created;
- 1 Multilingualism and multiculturalism network is created.

EUROPEAN INNOVATION HUBs

Multinational RD&I Units with shared infrastructure and teams

Oriented towards UN SDG, RIS3 and meeting future challenges

Three EIH to be establishes:

Future Industry and Sustainable Regional Development

Bio-Economy

Social Innovation

Targets:

- Strategic plan;
- Audit of thematic research area groups;
- 3 European Innovation Hubs are created.

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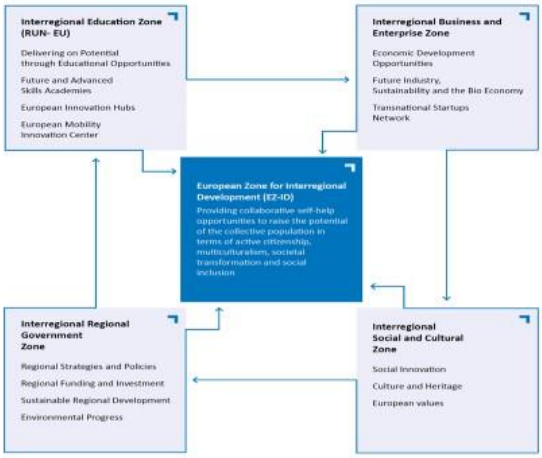
EUROPEAN ZONE FOR INTERREGIONAL DEVELOPMENT (EZ-ID)



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RUN-EU DISCOVERY PROGRAMME

Targets: and outcomes:

- RUN-EU research framework of research skills and infrastructure
- Future-looking joint RDI teams are created aligned to the Horizon Europe Pillar 2 Clusters
- RDI internship mobility actions;
- At least 15 joint research and innovation projects are prepared;

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Professional Research Programmes for Business and Society

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Objectives

1: Implementation of a **common R&I agenda** focussed on the **strengthening of academic-business partnerships** in R&I.

2: Deliver **joint and collaborative practice-based research degree programmes at both masters and PhD level** in association with **regional industry, business and societal stakeholders.**

3: Develop and implement strategies which **strengthen the capacity of the human capital** through the development of a shared **cloud of knowledge portal.** This will equip researchers with a combination of pedagogical and research skills and a research career evaluation system to support researchers and research excellence at all career development stages.

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4: **Mainstream Open Science practices and skills** within the RUN-EU R&I platforms, through the delivery and adoption of new and innovative programmes and initiatives across the alliance aimed at further strengthening our commitment to open science principles.

5: Reinforce **cooperation in R&I activities** across and between alliance members and their associated industry, business and societal stakeholders and partners.

6: Contribute to the development of the ERA Hubs by fostering **joint R&I activities** across the RUN-EU alliance.

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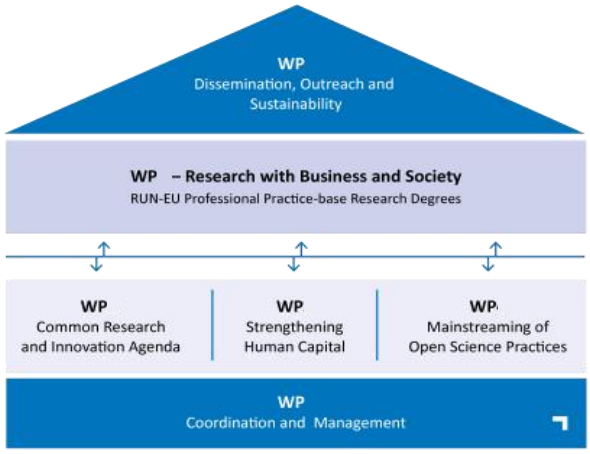

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Kick-off meeting

4th November 2021
TUS Midwest
Limerick

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Deliverables:

- Identification of Strategic Research Priority Areas for Masters & PhD programmes
- Degree Development Roadmap
- Accreditation Action Plan
- Researcher Career Development Programme
- Cloud of Knowledge Portal
- Open Science Skills Training Programme
- Networks of R&I Ambassadors, Open Science Ambassadors and Gender & Diversity Ambassadors
- Annual International Conference on Applied Research with Business and Society

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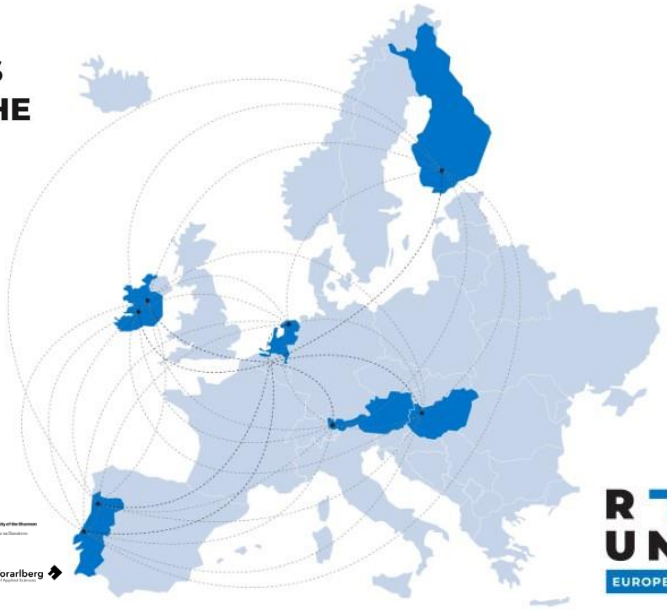
“OUR LEARNERS WILL INHERIT THE FUTURE”

THANK YOU



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5.2 Dr John Cosgrove, Programme Manager Practice-based MEng Digitalisation of Manufacturing and IDEAM Cluster Director

Industry Based Research Degrees

Dr John Cosgrove
Head of Graduate Studies
Director of Smart Manufacturing
Management Committee – RUN-EU+

Lead

- IDEAM
- Masters in Digitalisation of Manufacturing
- FactoryxChangeEDIH
- Change2Twin

TUS
Technological University of the Shannon: Midlands Midwest
Ollscoil Teicneolaíochta na Sionainne: Lár Tíre Iarthar Láir
www.ideam.ie john.cosgrove@tus.ie

Holistic Approach

- Apprenticeships
  - Electrician / Industrial Electrical Engineer
  - Manufacturing Technology / Manufacturing Data Integration Engineer
- Industrial Skills Academy / Bespoke Industry based Training
- Postgraduate Certificate in Leadership in Digitalisation of Manufacturing
- Postgraduate Diploma- Smart Manufacturing Technology
- Masters in Engineering (By Research) in Digitalisation of Manufacturing.
- Manufacturing Solutions Conference– 15th/16th June 22

Participants

- October – December 2021
- Engineering Director – Senior IT Manager – Quality Manager – Maintenance/Reliability Manager – Operational Manager - Production Manager – Director NPI – Maintenance Engineer – R&D Engineer – Edge Technologist – Manufacturing Engineer – Consultant
- Next Intake in Feb 2022

ZIMMER BIOMET
matrox
Dawn
ALEXION
Johnson & Johnson VISION
DELL
Ei
GMIT
MS Midland Steel Reinforcement Supplies
intel

Leadership in Digitalisation of Manufacturing

Level 9 Certificate (10 ECTS)

- **Digitalisation of Manufacturing: Seminar Series**
- 10 Week Programme (Online) – focused on the application of technological solution and new business models (Thursdays 17:00 – 19:00)
- 8 Workshops: Digital Maturity, Business Models, Data Acquisition and Visualisation, Data Analytics and Artificial Intelligence, Smart Maintenance, Smart Industrial Control Systems, Collaborative Robotic Systems, & Digitalisation of Production.
- Guest Speakers – 16 CEO/MD/CTO Presenters
- Breakout Discussions

Digitalisation Case Study: Industry-based Practical

- One-to-one coaching
- Report and Presentation on a potential digital transformation project
- including; an analysis of the digital maturity index, a digitalisation roadmap, the relevant advanced digital skills needs of the individual and the industry context and an analysis of the relevant key performance indicators for the specific digital transformation including the current baseline.
- Final Peer Presentation and Reports

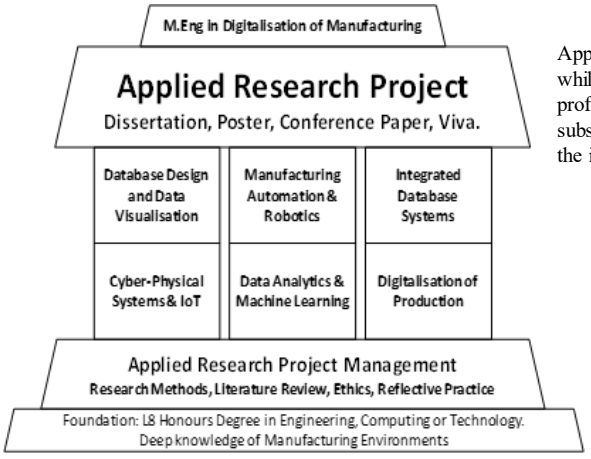
Takeaways

- Industry are taking significant steps to address digitalisation, but maturity levels are still low.
- Deployment of data visualisation, robotics, smart maintenance
- Artificial Intelligence applications are being piloted
- New roles are being hired – Data Engineer, Maths Graduate
- Sustainability is starting to be driven at CEO level – required by customers
- Reluctance to move production data to the Cloud
- Cyber-security problems are endemic

Masters of Engineering in Digitalisation of Manufacturing

- Structured Masters by Research (NFQ Level 9 90 ECTS)
- Industry-funded (75%) with support (25%) from SkillNet (~€500,000 to date) and input from an Industry Expert Working Group.
- Practice-based professional award for experienced employees
- The Learning Outcomes are work-based, supported by a training programme of masterclasses, delivered through bootcamps, workshops, on-line tutorials, knowledge platforms, guest lecturers and site-visits.
- The programme aims to develop a **'Digital Champion'** to operate within a manufacturing enterprise, who can focus on the integration of systems, analysis of key data and the demonstration of opportunities and added value for the business.

Structure



Apply an innovative approach to a complex problem while collaborating with an industry partner in a professional manner. The scale of the project should be substantial and demonstrate significant added-value to the industry partner.

On-campus Time: 18 contact days per year. The learner effort estimated at approximately 15% of their working time commitment.

Registrations

- **Cohort 01:** 14 Researchers - 2 Transfers to PhD, 9 Graduating in Nov 21, 2 ongoing, 1 withdrew.
  - 7 Conference Publications
- **Cohort 02:** 5 Researchers – Progression to second year.
  - 1 Conference Publication
- **Cohort 03:** 9 Researchers – Started Nov 2021.

- Masterclass Modules – Delivered individually to **48** Industry Employees

Programme Co-ordinator – Frank Doyle
Dept of Electrical & Electronic Engineering

Target Audience

- Engineering Director – Facilities Director – R&D Director – Production Manager – Manufacturing Engineer – Engineering Manager – Technical Specialist – Mechanical Engineer – Automation Engineer – CEO/Business Owner – NPI Engineer

- Up-skilling Programme to manage Advanced Digital Technologies

Impacts

- ..benefit of reducing the cost implications of product rework..
- ..time saving of 12% for manufacturing and engineering technicians
- ..90% reducing in sampling and process time, and a 34% reduction in scrap within 2 months
- ..37% reduction in scrap and a projected saving of $100,000
- ..potential for a 50% reduction in process time

Eamonn O'Dea, Manufacturing Engineer, Lufthansa Technik Turbine Shannon (LTTS), said; "The information and knowledge I have gained from the masters has helped with identifying areas where the company could benefit from digitalisation and also how to investigate these areas further to realize the potential benefits".

Gerry Cronin, Senior Manufacturing Engineer – Stryker, said;
"We are starting to kick off projects associated with assessing OEE of equipment and using real-time data to display on our shop floor. With the knowledge gained in the course, I can assist in getting these projects over the line".

Essentials for an Industry based Research Degree

- Strong collaborative Industry cluster – Industry Steering Board
- Foundation in an active Research Institute / Faculty
- Dedicated Programme Management, co -ordination and promotion
- Experienced Supervisory Team and supports
- Flexible Delivery Mechanisms, Pathways and Common Modules
- Effective (Re -)Accreditation and Registration Processes
- Clear Funding Model
- Introductory / Screening Module?
- Scholarships to promote strategic recruitment for: SMEs / Gender / Diversity

Industry Based Research Degrees

Dr John Cosgrove

Head of Graduate Studies

Director of Smart Manufacturing

Lead

- IDEAM
- Masters in Digitalisation of Manufacturing
- FactoryxChangeEDIH
- Change2Twin

5.3 Dr Krisztina Bárdos, Managing Director of the Mechanical Engineering Scientific Association and the Hungarian Medical Cluster, Associated Partner of RUN-EU

Impact of the professional research programmes in the companies and society

RUN-EU program
ICARUS conference

14.December 2021

Krisztina Bárdos, PhD
managing director

Scientific Association for Mechanical Engineering
Hungary

Nature of Industry -Academy Interactions

- Vary from industry to industry
- Among companies within a given industry and individual academic institutions
- Each industry has a distinctive environment with different challenges
- Most financial support by industry is negotiated company by company
  - different needs and abilities to interact with academic researchers,
  - universities have different resources to devote to research of value to industry

Generalizations about what works best for all industries and universities should examined very cautiously

Contributions of Academic Research

- Graduates trained in modern research techniques
- Fundamental concepts and key ideas resulting from research
- Development and testing tools, prototypes and marketable products
- Source of contribution:
  - engineering, natural sciences, computer sciences, mathematics, behavioural sciences
  - management and policy

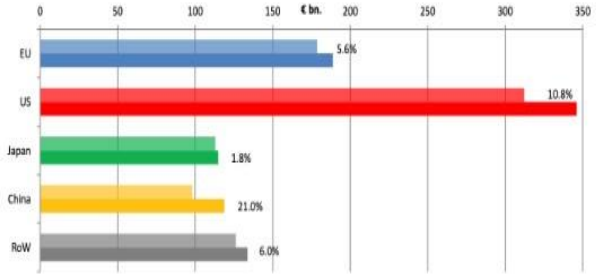
Why EU supports industrial research?

- Industrial research and innovation has a direct impact on 3 EU Commission priorities:
  - European Green Deal
  - Economy works for People
  - Europe fit for the Digital Age
- Research and innovation: core of EU Industrial Strategy
- Twin and green transition:
  - ERA Industrial Technology Roadmap
  - Horizon Europe Partnership with Industry
- Research and innovation investments as a trigger of private investments

EU R&D Investment Scoreboard

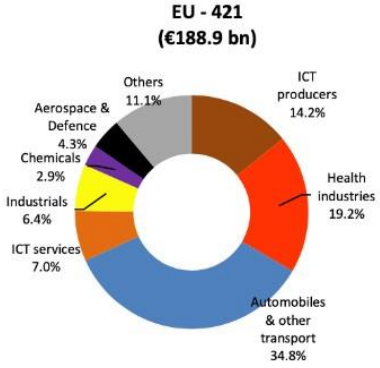
Figure S1: R&D, net sales, and profitability growth 2010-2019.

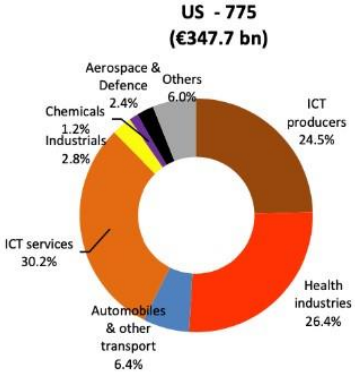
Figure S2: R&D investment growth 2018-2019 by region/country.



source: The 2020 EU Industrial RD Investment Scoreboard

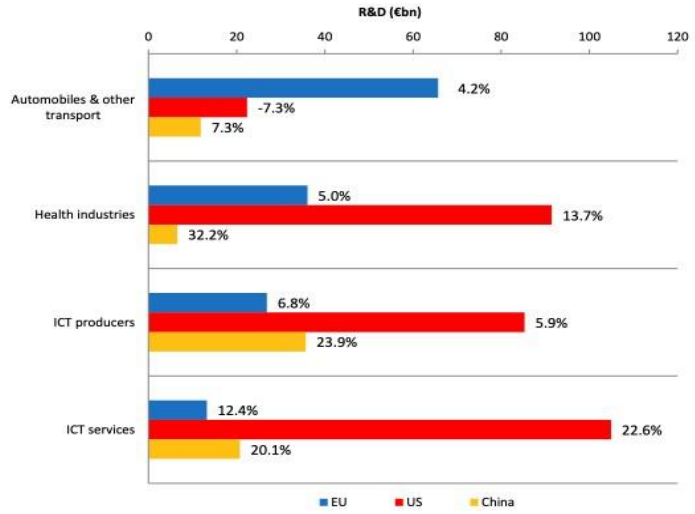
R&D investment by region/country and sector





source: The 2020 EU Industrial RD Investment Scoreboard

R&D investment in 2019 by region/country/sector



Industry 5.0 and society

European industry as driver in **economic and societal transition**

Industry must lead the digital and green transition

I 5.0: vision of industry beyond efficiency and productivity

Wellbeing of workers: centre of production processes

Completing Industry 4.0 approach to a sustainable, human-centric and resilient Europe

University-Business Research Collaboration

- Development of third missions of HEIs
  - at policy level: through new initiatives
  - at regional, national and EU -level: to foster innovation and job creation through research and training
  - in political discourse: how to improve European competitiveness
- Europe's universities need to do more to engage with business to achieve the creation of innovative products and services
- Aim: identifying main trends and crosscutting issues
  - in the long -term collaborative research projects/initiatives presented by universities and their external partners.

Profile of staff involved in collaborative research projects

Source: EUIMA Collaborative Research case studies

Case studies

- **Politecnico di Torino (Institutional case):** "The Region of Piedmont has assigned research a strategic role in the development of the local economy, considering it an instrument to overcome the current global crisis. For this reason, 'Innovation Hubs have been introduced by EU -law relating to state aids for research, development and innovation, which has been absorbed by the region in its policy."

- **TuTech Innovation – Klimzug Nord:** "the objective of KLIMZUG is the development of innovative strategies for adaptation to climate change. The funding activity particularly stresses the regional aspect since global problems such as climate change must be tackled at regional and local level."
-

Source: EUIMA Collaborative Research case studies

Thank you for your kind attention.

krisztina.bardos@gteportal.eu

5.4 Dr Zoltán Dobra, Head of Series Analysis and Pre-Series Centre at FAW-VW Automotive Co. Ltd

Professional Practice-based Research Case Study
Dr. Zoltan Dobra,
Head of Series Analysis and Pre-Series Centre at FAW-VW Automotive Co. Ltd.
Hungary-China | 14.12.2021

2
Agenda

01 **introduction**
the PhD journey

02 **experience**
review of my progress

03 **further steps**
life after PhD program

Based on personal experience during my PhD journey together with

SZÉCHENYI UNIVERSITY
SzEEDS[M] DOCTORAL PROGRAM

Audi Hungaria

INTERNAL

Agenda

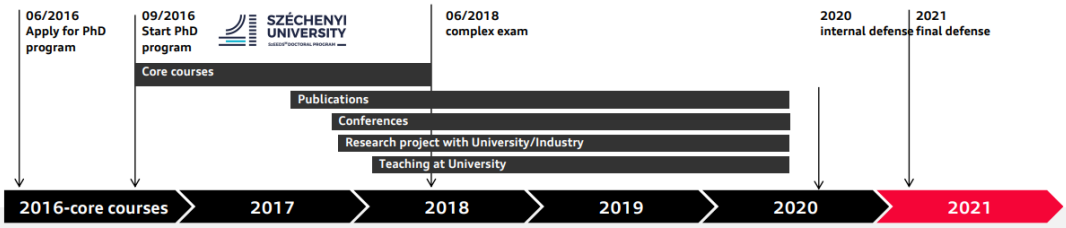
01 **introduction**
the PhD journey

02 **experience**
review of my progress

03 **further steps**
life after PhD program

Introduction

the PhD journey



My class:

23 started

12 PhD degree before the deadline

Monograph type dissertation/Paper based dissertation: 40/60%

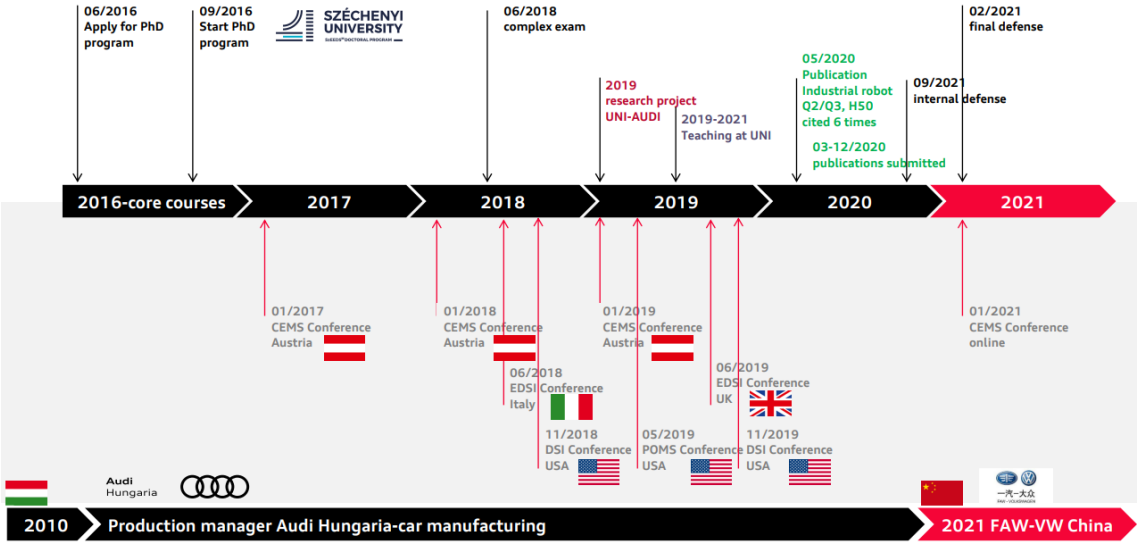
Practice based research activity: 7 candidate

Fields:
operations control,
robotization,
cross-cultural management,
energy law,
project management,
digitalization,
hybrid corporate reality

General requirement: publishing globally ranked articles and papers.

5

Introduction
the PhD journey

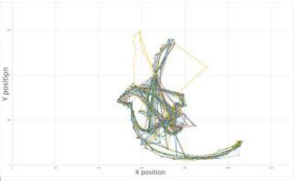


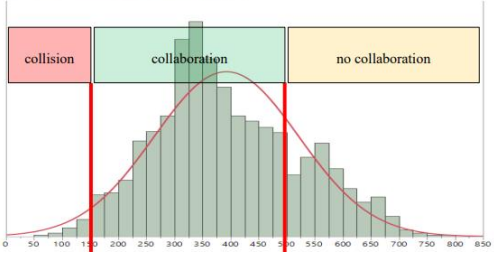
6

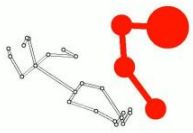
Introduction
the PhD journey

Thesis:

Measuring the complexity inherent in robot-human interaction







-human robot interaction is new technology in Industry 4.0
-combined with object detection
-to measure the collaboration

INTERNAL

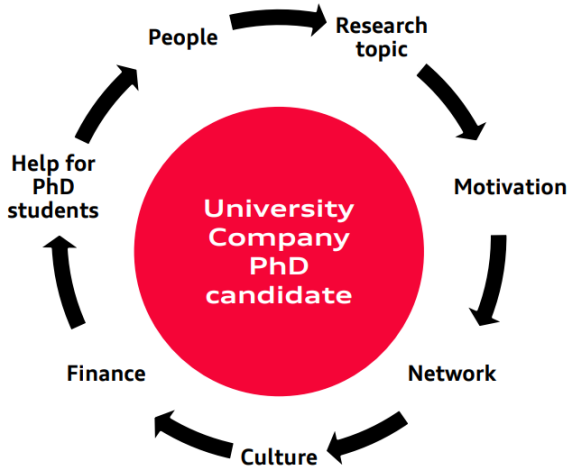
Agenda

01 **introduction**
the PhD journey

02 **experience**
review of my progress

03 **further steps**
life after PhD program

Experience
review of my progress



9

Experience

review of my progress

Field	Industry/company has	University has	PhD candidate has
Research topic	› problems in practice › experience in real life › new technology usage	› theory for everything › methods for analysis › limited access to latest technology › eager to cooperate	› experience at own work › facing industrial problems › no idea at the beginning › to identify, and follow own research field › interest in problem
Motivation	› PhD program is not a core business › time allocated to PhD as a program is low › limited resources for „open result" › no experience with PhD program	› PhD program as core business › interest in PhD topic › time allocated to PhD: pre-defined, flexible › support PhD due to University success › motivation speeches (publication journey, where to fail with PhD) › hard feedback to student („this is not a research") › platform for promote PhD student	› motivation › time („PhD is an every day job") › pressure to make progress › inspiration from University, Professors, publications, conferences › „Try and error" conferences, publication

10

Experience

review of my progress

Field	Industry/company has	University has	PhD candidate has
Network	› more production facilities all over the world › not to share with outside world › process for intellectual property › access to latest developments › Formal relationship with University (support, research, teaching)	› network within University › international network › conference knowledge › journal knowledge › contact with start up companies › „inside man" at the university, build a bridge between Uni and PhD student	› network within the company › network at the University › want to share/publish but do not hurt company interests › see latest technology in practice › „inside man" at the company, build a bridge between Uni and Company › Small physical distance to Uni, Company
Culture	› company culture and DNA › own „company" universe › rules to follow (GDPR, company image) › performance indicator oriented	› own culture and diversity › hard to measure progress	› own personality › use diversity from the University › align and comply to Company life and to University way of working
Finance	› money for economical solutions › support PhD but expect financial advantage	› fund for PhD program › subprojects within „big" project	› money through scholarship › possibilities offered by University or Company

11

Experience
review of my progress

Field	Industry/company has	University has	PhD candidate has
People	› mainly engineers BSc, MSc, › few PhD, different field › scattered in the organization	› concentrated, 100% academic (PhD, Professors) › wide view and experience (mainly theory) › Helpful for PhD student	› to use the resources › find the right people (supervisor, „inside man", „the lions") › Balance between two world
Help for PhD students	› tolerate the PhD study	› organized courses › possibility for teaching › stage for PhD students	› ask, demand and use the offered help

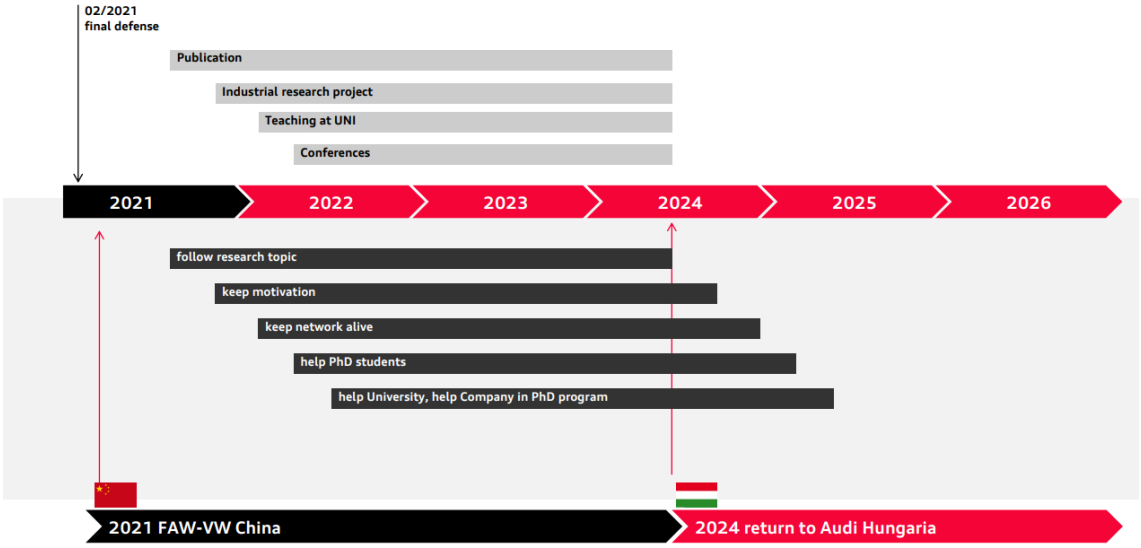
12

Agenda

13

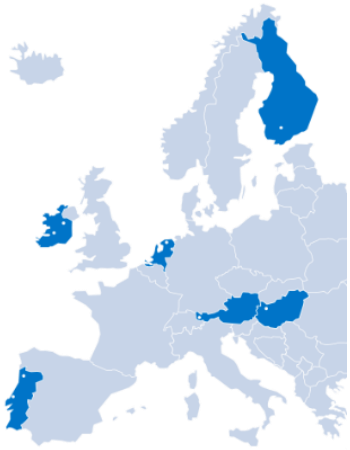
Further steps

life after PhD program



Thank you!

5.5 Prof. Nuno M. Rodrigues, Vice President, Instituto Politénico de Leiria, Portugal



Research & Innovation across RUN-EU

Nuno M. M. Rodrigues
Politécnico de Leiria

ICARUS 2021 - International Conference on Applied Research with Business and Society

Co-funded by the Erasmus+ Programme of the European Union

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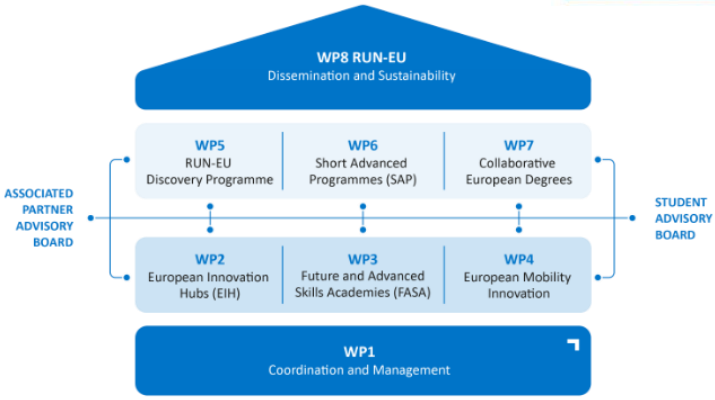
Research & Innovation is at the core of RUN-EU

"Our Students will inherit the future"



The RUN-EU Discovery Programme

Objectives:

Operationalisation of RDI activities, through strong collaboration among partners, Regional Innovation Clusters and European Innovation Hubs.

Increase international collaborative RDI activities within among RUN-EU members; create joint future-looking international RDI teams addressing real challenges related to major societal challenges;

Promote social and industrial innovation, leading to viable products and activities with real commercial and societal potential;

Improve the links between teaching, research and innovation

The RUN-EU Discovery Programme

Achievements:

Audit and characterisation of the RUN-EU RDI units

8 Future-looking joint RDI teams aligned to the Horizon Europe Pillar 2 Clusters

RUN-EU research framework

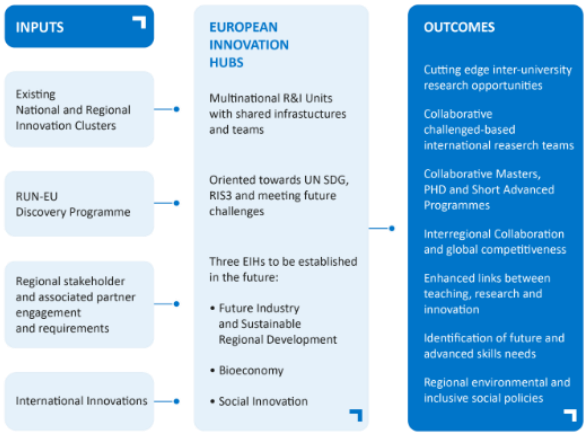
The RUN-EU Discovery Programme

Achievements:

RUN-EU collaborative projects:
- 30 project submissions
- 16 projects approved
- 6 joint supervisions (PhD and master's students)

RUN-EU Discovery International Mobility Programme
- 4-week mobility for research staff (72 grants)
- 12-week mobility for research staff (24 grants)
- 4-week mobility for research and postgraduate students (72 grants)

RUN-EU European Innovation Hubs



FUTURE INDUSTRY AND REGIONAL SUSTAINABLE DEVELOPMENT

THE BIOECONOMY

SOCIAL INNOVATION

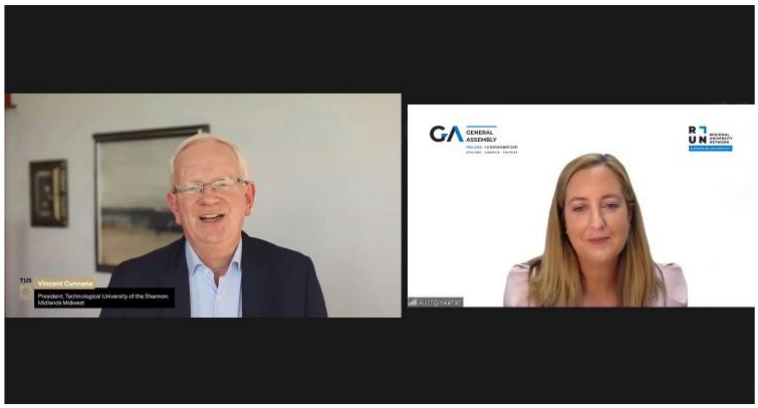
RUN-EU European Innovation Hubs

Achievements:

- Detailed audit and characterization of the existing regional innovation clusters, Research, Development, and Innovation (RDI) teams and their activities
- • European Innovation Hubs Strategic Plan
- Networking meeting with RUN-EU associated partners and regional stakeholders (June 2021, Online) and RUN-EU GA (November 2021, Ireland)

RUN-EU European Innovation Hubs Virtual Conference

(November 2021, TUS and online).



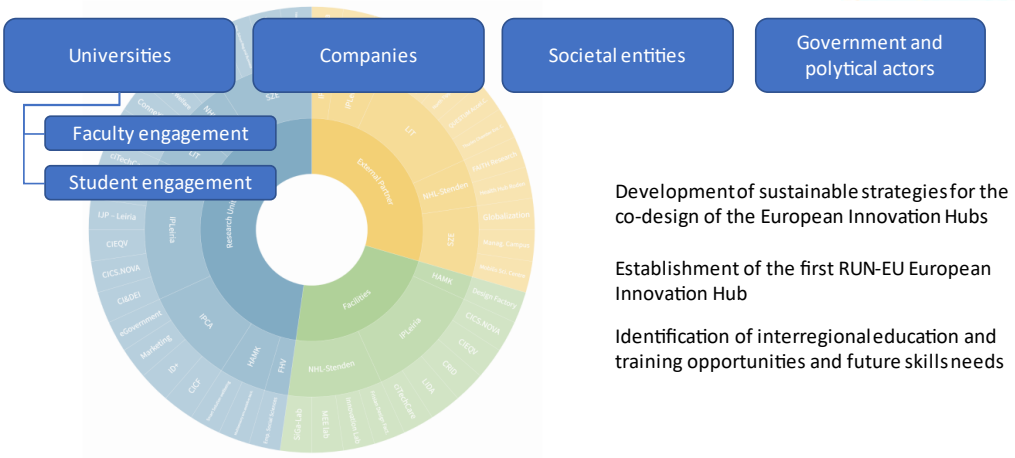
RUN-EU European Innovation Hubs

RUN-EU Regional RDI

Ecosystems

(Social Innovation EIH)

RUN-EU European Innovation Hubs



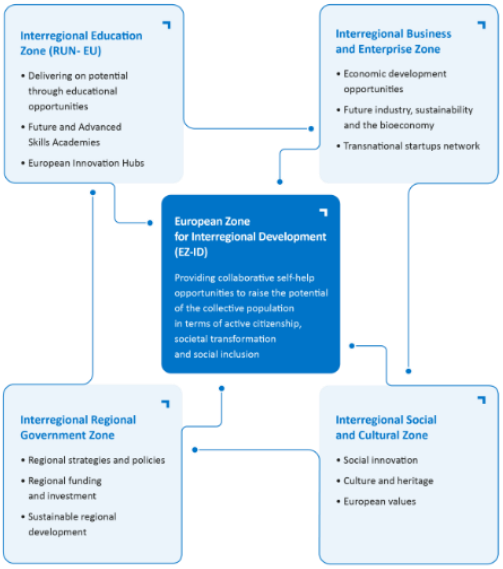
Development of sustainable strategies for the co-design of the European Innovation Hubs

Establishment of the first RUN-EU European Innovation Hub

Identification of interregional education and training opportunities and future skills needs

RUN-EU
& A EUROPEAN ZONE FOR INTERREGIONAL DEVELOPMENT

www.run-eu.eu



RUN-EU EZ-ID MoU – April 2021

REGIONAL UNIVERSITY NETWORK PLUS

EUROPEAN UNIVERSITY

Professional Research Programmes for Business and Society

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101035816
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TUS · POLITÉCNICO DE LEIRIA · HAMK · IPCA · SZÉCHENYI EGYETEM · NHL STENDEN · FH Vorarlberg

REGIONAL UNIVERSITY NETWORK PLUS

EUROPEAN UNIVERSITY

Objectives

1: Implementation of a **common R&I agenda** focussed on the **strengthening of academic-business partnerships** in R&I.

2: Deliver **joint and collaborative practice-based research degree programmes at both masters and PhD level** in association with **regional industry, business and societal stakeholders.**

3: Develop and implement strategies which **strengthen the capacity of the human capital** through the development of a shared **cloud of knowledge portal.** This will equip researchers with a combination of pedagogical and research skills and a research career evaluation system to support researchers and research excellence at all career development stages.

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TUS · POLITÉCNICO DE LEIRIA · HAMK · IPCA · SZÉCHENYI EGYETEM · NHL STENDEN · FH Vorarlberg

Objectives

4: **Mainstream Open Science practices and skills** within the RUN-EU R&I platforms, through the delivery and adoption of new and innovative programmes and initiatives across the alliance aimed at further strengthening our commitment to open science principles.

5: Reinforce **cooperation in R&I activities** across and between alliance members and their associated industry, business and societal stakeholders and partners.

6: Contribute to the development of the ERA Hubs by fostering **joint R&I activities** across the RUN-EU alliance.

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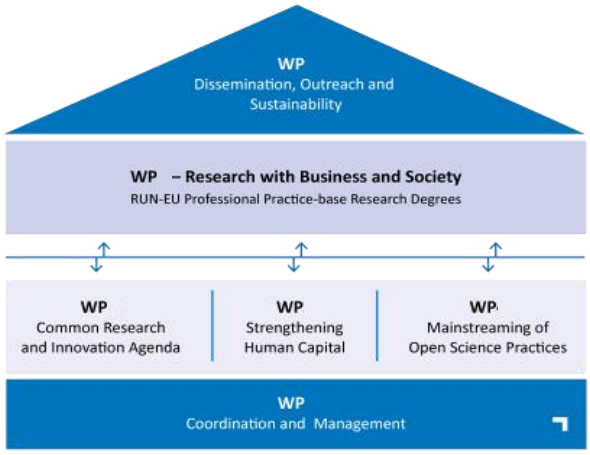

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COMMON RESEARCH AND INNOVATION AGENDA

O3.1 To define the main regional priority areas.

O3.2 To design the roadmap for the development of Professional Practice-based Research Degrees.

O3.3 To specify a shared Action Plan for validation and accreditation of Collaborative Professional Practice Research Degrees.

O3.4 To develop an Economic Resource/Impact Assessment Model.

O3.5 To assess the potential for innovation impact and scaling of the action.

COMMON RESEARCH AND INNOVATION AGENDA

T3.1. Identification of Strategic Research Priorities

T3.2 Roadmap Building

T3.3 Preparation of Action Plan

T3.4 Identification of Added-Value Model

T3.5 Scaling Excellence

Research with Business & Society–
RUN-EU Professional Practice-based Research Degrees

O6.1 Enhance the regional R&I eco-system within RUN-EU+ members.

O6.2 Strengthen the research capacity in business-academia.

O6.3 Support innovation development.

O6.4 Develop & mainstream entrepreneurship and transversal skills.

O6.5 Pilot initial cohorts of Professional Practice-based Research Degrees in collaboration with industry/business.

Research with Business & Society–
RUN-EU Professional Practice-based Research Degrees

T6.1 Creation of an innovation eco-system

T6.2 Strengthening Innovation Capacity Programme

T6.3 Strengthening Research Supervision Capacity

T6.4 Inducing Innovation Co-operation

T6.5 Mainstreaming Entrepreneurship & Transversal Skills Programme

T6.6 Pilot Practice-based Research Masters Programme

T6.7 Pilot Practice-based Doctoral Programme

THANK YOU

REGIONAL UNIVERSITY NETWORK

EUROPEAN UNIVERSITY

5.6 Dr Virve Kallioniemi-Chambers, Doctoral Education Development Specialist, Global Education at Häme University of Applied Sciences, HAMK Edu Research Unit, HAMK, Finland

HAMK
HÄMEEN AMMATTIKORKEAKOULU
HÄME UNIVERSITY OF APPLIED SCIENCES

ICARUS 1 Online Conference

14 December 2021

REGIONAL UNIVERSITY NETWORK PLUS
EUROPEAN UNIVERSITY

Strengthening Human Capital

Virve Kallioniemi -Chambers, PhD
Education Development Specialist, Global Education
School of Professional Teacher Education
Häme University of Applied Sciences (HAMK)
Finland

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REGIONAL UNIVERSITY NETWORK PLUS
EUROPEAN UNIVERSITY

HAMK
HÄMEEN AMMATTIKORKEAKOULU
HÄME UNIVERSITY OF APPLIED SCIENCES

Researcher Career Development & Research Impact

Scientific research is expected to contribute to society, for example:

- Human understanding and world view
- Wealth and prosperity
- Basis for decision-making
- **Practice development (focus in RUN-EU+)**

The vision of European Universities (2021) underlines the hybrid nature and structure of future universities with strong societal engagement and contributions.

WP4. Objectives

Researcher career development and evaluation

- **O4.1 To identify current practice across the RUN-EU+ consortium and best practice** within Europe as outlined in the charter and code in the deployment of human resource strategies **for researcher career development.**
- **O4.2 To introduce a 'Research Career Development Programme'** adhering to the European charter and code principles **to support our researchers in identifying clear personal career paths** which will encourage inter-sectoral and international mobility during their careers and fostering diversity and inclusiveness, including fostering gender equality and balance in research teams, to close the gaps in the participation of women.
- **O4.3 To introduce a research career evaluation** system across the RUN-EU consortium to reward researchers and research excellence at all career development stages.
- **O4.4 To develop a cloud of knowledge portal equipping researchers with a combination of pedagogy and research skills.** The European Charter regards Teaching as an essential means for the structuring and dissemination of knowledge and therefore considers it a valuable option within the researchers' career paths.

The European Charter for Researchers, The Code of Conduct for the Recruitment of Researchers (2005)

- Research freedom
- Ethical principles
- Professional responsibility
- Professional attitude
- Contractual and legal obligations
- Accountability
- Good practice in research
- Dissemination, exploitation of results
- Public engagement
- Relationship with supervisors (and managers)
- Supervision and managerial duties
- Continuing professional development.

Researcher education, training!

- **RUN-EU+ Task 4.2 Development, design and implementation of researcher career development framework training workshop programs**

Transferable skills needed in non-academic sector e.g.

- communication and presentation skills (incl. empathy, motivation, resilience, flexibility, ethics, social responsibility)
- organisational skills (e.g. project management, financial management, creativity, out-of-the-box thinking)
- management and entrepreneurial skills, leadership, supervision skills, problem solving, critical thinking.
- teamwork
- language skills

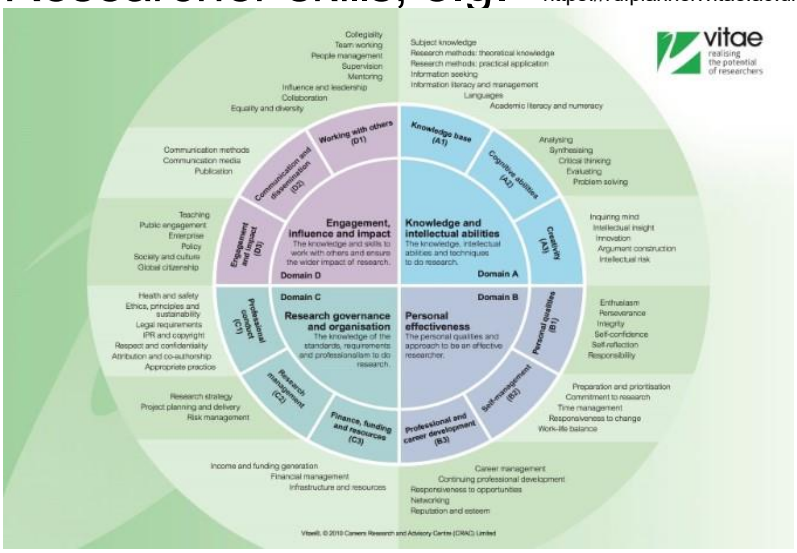
doctoral education should ensure a broad competence that is transferable to different kinds of work environments!

See Educational collaboration model for doctoral education between the academic and non-academic sector, DocEnhance project

Transferable skills, e.g.

- Report on 'Transferable Skills and Competences' (2018, Eurodoc)

Researcher skills, e.g. https://rdfplanner.vitae.ac.uk/



Collaborative doctoral education 1/2

Replacing the old master -apprentice model

->joint supervision, credit -bearing courses and transferable skills training

- Criteria for the responsible supervisor and the co- supervisor?
- Recognition of the supervision tasks on the organisational level (salary, work time allocated for the task, etc.)?
- Shared understanding of the general goals of the doctoral education?
- The roles between in the supervision process?
- Practices in the supervision (regular meetings, etc.)

Collaborative doctoral education 2/2

Challenges and skills needed in collaboration, e.g.:

- It takes time to build understanding on the shared goals of collaboration and to identify both individual and organisational interests and objectives. ->COGNITIVE, COMMUNICATION AND INTERPERSONAL SKILLS
- Formal agreements and arrangements are important-> PROJECT AND ENTREPRENEURAL SKILLS
- The diversity of possible actors requiresflexibilityin collaboration and regular evaluation of the goals. -> COGNITIVE, COMMUNICATION AND INTERPERSONAL SKILLS
- Transparent collaboration practices and supervision agreements (roles, work division, practices) secure the quality.-> COMMUNICATION AND RESEARCH SKILLS, TEACHING AND SUPERVISION SKILLS
- Pedagogical practices grounded in two contexts ideallyengage the doctoral candidates to be active in the process. ->SUPERVISION SKILLS
- Continuity in collaboration requires trust between parties. ->COGNITIVE, COMMUNICATION AND INTERPERSONAL SKILLS

Knowledge exchange is very much about mindset and personal qualities!

The structural and cultural obstacles in the process cannot solely be overcome by economic solutions.

RUN-EU+ Task 4.3 Development, design and implementation of a researcher career evaluation system

O4.1 To identify current practice across the RUN-EU+ consortium and best practice within Europe as outlined in the charter and code in the deployment of human resource strategies **for researcher career development.**

RUN-EU+ partners will be asked to describe their research environment from the following point of views (draft):

- ***the national level guidelines, documents*** e.g. that the university is committed to follow
- ***administrative research structures*** (e.g. research services), recruitment practices
- ***internal collaboration between*** the researchers (resources and structures to develop it?)
- ***collaboration with research stakeholders, partners*** (external) (how it is monitored, developed, etc.)
- ***research ethics and integrity*** (how it is taken care of?)
- the concrete ***resources for conducting research***, e.g. research equipment, software, other infrastructures, etc.
- ***mobility possibilities*** for the researchers
- ***financial resources*** for the research (e.g. the role of external funding)
- ***research assessment and research career evaluation system***
- ***integration of research and teaching*** (e.g. do all researchers also teach?)
- existing ***doctoral and post doc programmes*** for the researchers

Supportive networks, e.g.

EUA-CDE, https://eua-cde.org/

- The EUA Council for Doctoral Education (EUA-CDE) was launched in 2008 at the initiative of the European University Association, responding to a growing interest in doctoral education and research training in Europe.

PRIDE Network https://pride-network.eu/

- The Association for Professionals in Doctoral Education aims to be the leading professional resource for the advancement of professionals in doctoral education. We are also open to all who wish to learn more about the field and pursue a career as higher education professionals.

Eurodoc, https://pride-network.eu/eurodoc/

- The European Council of Doctoral Candidates and Junior Researchers, is an umbrella organization of national associations representing doctoral candidates and junior researchers in European countries. Eurodoc was established in 2002 and is based in Brussels. As representatives of early-career researchers (ECRs) at European level, we engage with all major stakeholders in research and innovation in Europe.

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EUROPEAN UNIVERSITY

Thank you!

HAMK
HÄMEEN AMMATTIKORKEAKOULU
HÄME UNIVERSITY OF APPLIED SCIENCES

References

- Universities without walls. A vision for 2030. EUA European Universities Association. Report February 2021.
- Collaborative doctoral education in Europe: Research partnerships and employability for researchers. EUA Publications 2015.
- DocEnhance project (Horizon 2020), https://docenhance.eu/main -goals/
- Handbook for Supervisors of Doctoral Researchers. The handbook is produced in the SuperProfDoc project by Eurodoc (the European Council of Doctoral Researchers and Junior Researchers)
- The European Charter for Researchers. The Code of Conduct for the Recruitment of Researchers 2005.
- Report of the ERA Steering Group Human Resources and Mobility (ERA SGHRM)
- The road towards structured doctoral education: insights from Ireland https://eua-cde.org/the-doctoral-debate/251-test-hp.html

5.7 Ingrid van Gorkum, Project Leader, WP Leader Mainstreaming of Open Science Practices, NHL Stenden, Netherlands

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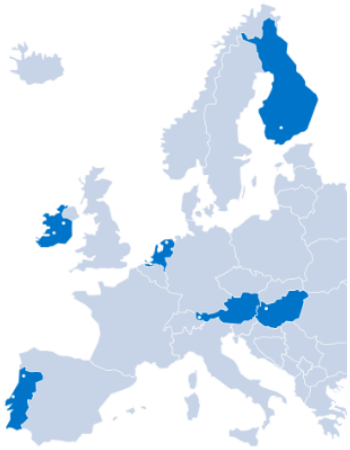

OPEN SCIENCE IN RUN-EU+
BENEFITS FOR SCIENCE, BUSINESS AND SOCIETY

RUN-EU+ ICARUS conference
December 14th 2021

Co-funded by the Erasmus+ Programme of the European Union

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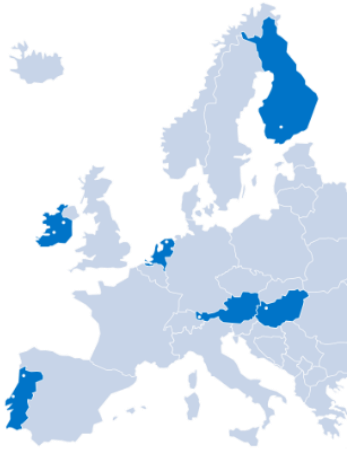

Work-package 5 – Mainstreaming of Open Science Practices

WP Leader: NHL Stenden
Ingrid van Gorkum
Co Leader: FH Vorarlberg

Co-funded by the Erasmus+ Programme of the European Union

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Programme

- Two research stories in relation to open acces
  - Neural Network – Dr. Klaas Dijkstra
  - Overtourism – Dr. Albert Postma
- Benefits
  - For business and society
  - For science and research
- RUN EU+ work package 5
  - Deliverables

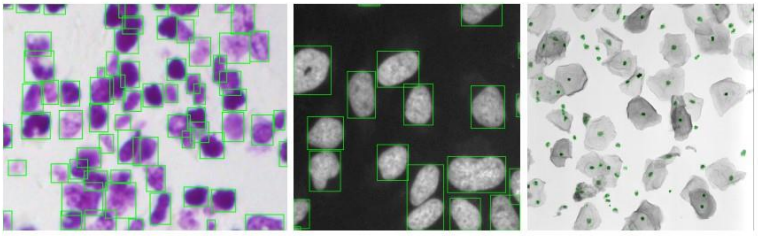
Dr. Klaas Dijkstra

Professorship Computer Vision & Data Science

CentroidNet: A Deep Neural Network for Joint Object Localization and Counting

K. Dijkstra[1,2], J. van de Loosdrecht[1], L.R.B. Schomaker[2], and M.A. Wiering[2]

[1] NHL Stenden University of Applied Sciences
Centre of Expertise in Computer Vision & Data Science
[2] University of Groningen
Bernoulli Institute, Dept. of Artificial Intelligence

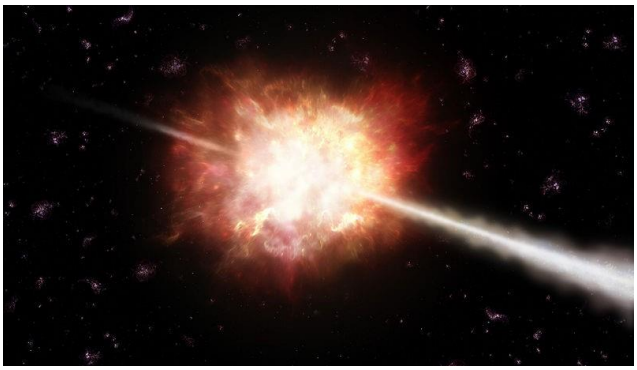


Reuse Data

- Time and money
- Transparancy
- Knowledge circulation
  - Other disciplines
  - International

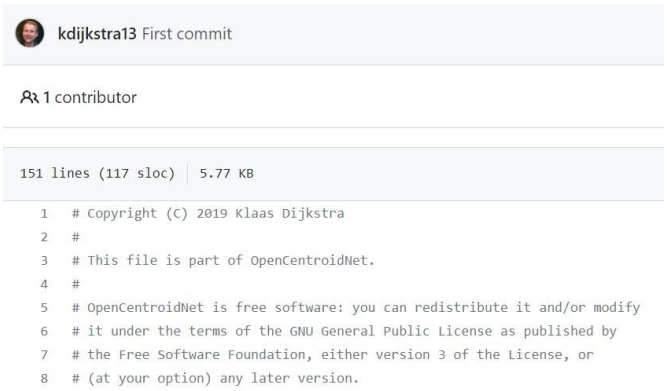
GitHub


```
48      def forward(self, result, target):
49          loss = F.mse_loss(result, target, size_average=True, reduce=True)
50          self.loss = loss.item()
51          return loss
52
53      def __str__(self):
54          return f"{self.loss}"
55
56  def encode(coords, image_height: int, image_width: int, max_dist: int, num_classes: int):
57      y_coords, x_coords, _, _, _, _  = np.transpose(coords)
58
59      #Encode vectors
60      target_vectors = calc_vector_distance(y_coords, x_coords, image_height, image_width, max_dist)
61      if not max_dist is None:
62          target_vectors /= max_dist
63      target_vectors = np.transpose(target_vectors, [2, 0, 1])
64
65      #Encode logits (bounding box is drawn as ellipses)
66      target_logits = np.zeros((num_classes, image_height, image_width))
67      target_logits[0] = 1
68      for (y, x, ymin, ymax, xmin, xmax, id) in coords:
```



Open Science Definition

Open Science is the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods.

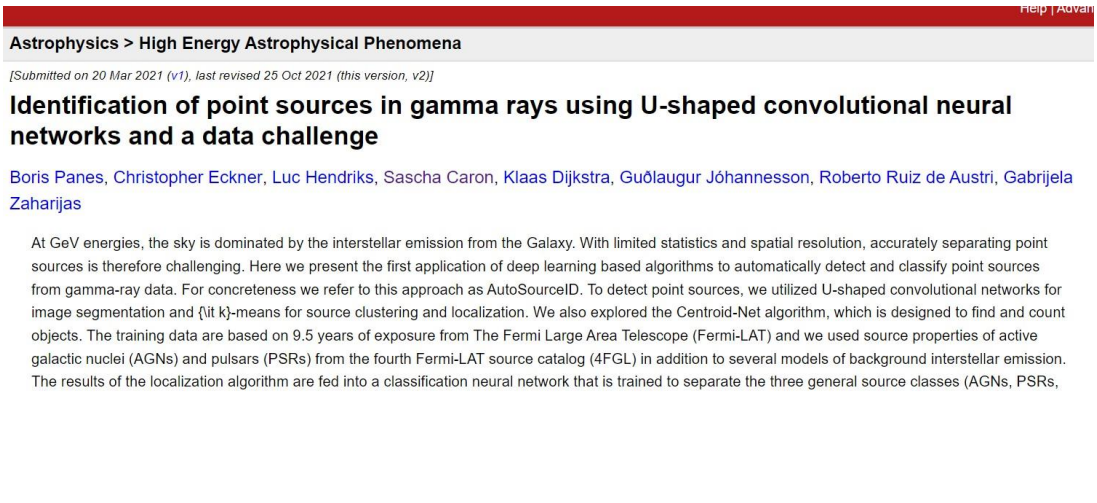


kdijkstra13 First commit

1 contributor

151 lines (117 sloc) | 5.77 KB

```
1  # Copyright (C) 2019 Klaas Dijkstra
2  #
3  # This file is part of OpenCentroidNet.
4  #
5  # OpenCentroidNet is free software: you can redistribute it and/or modify
6  # it under the terms of the GNU General Public License as published by
7  # the Free Software Foundation, either version 3 of the License, or
8  # (at your option) any later version.
```



Astrophysics > High Energy Astrophysical Phenomena

[Submitted on 20 Mar 2021 (v1), last revised 25 Oct 2021 (this version, v2)]

Identification of point sources in gamma rays using U-shaped convolutional neural networks and a data challenge

Boris Panes, Christopher Eckner, Luc Hendriks, Sascha Caron, Klaas Dijkstra, Guðlaugur Jóhannesson, Roberto Ruiz de Austri, Gabrijela Zaharijas

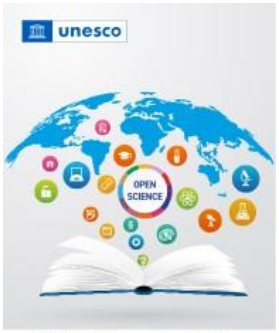
At GeV energies, the sky is dominated by the interstellar emission from the Galaxy. With limited statistics and spatial resolution, accurately separating point sources is therefore challenging. Here we present the first application of deep learning based algorithms to automatically detect and classify point sources from gamma-ray data. For concreteness we refer to this approach as AutoSourceID. To detect point sources, we utilized U-shaped convolutional networks for image segmentation and {\it k}-means for source clustering and localization. We also explored the Centroid-Net algorithm, which is designed to find and count objects. The training data are based on 9.5 years of exposure from The Fermi Large Area Telescope (Fermi-LAT) and we used source properties of active galactic nuclei (AGNs) and pulsars (PSRs) from the fourth Fermi-LAT source catalog (4FGL) in addition to several models of background interstellar emission. The results of the localization algorithm are fed into a classification neural network that is trained to separate the three general source classes (AGNs, PSRs,

New funding

"Results paid for by public funds should be freely accessible worldwide. This applies to both scientific publications and other forms of scientific output. In principle, it must be possible to share the research data with others as well. In this way, valuable knowledge can be utilised by **researchers, businesses and civil society organisations**".

Faster knowledge development

- COVID
- Citizen science:
  - Patient's organisations



UNESCO Recommendation on Open Science

United Nations

Article 19

Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.

Article 27

1. Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.
2. Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.

Sustainable Development GOALS:

-reduce inequality within and among countries -no paywalls-

-quality education- everyone has access to the latest developments -

- knowledge development is fast– all goals have a scientific part

Among others:

- Research institutions and organisations support proper infrastructure for the management and protection of data and research materials in all their forms (encompassing qualitative and quantitative data, protocols, processes, other research artefacts and associated metadata) that are necessary for reproducibility, traceability and accountability

- Research institutions and organisations reward open and reproducible practices in hiring and promotion of researchers.

Dr. Albert Postma

Professorship Scenario Planning

foresight tourism scenario planning overtourism social sustainability of tourism

TITEL	GECITEERD DOOR	JAAR
Is overtourism overused? Understanding the impact of tourism in a city context K Koens, A Postma, B Papp Sustainability 10 (12), 4384	469	2018
Understanding and overcoming negative impacts of tourism in city destinations: conceptual model and strategic framework A Postma, D Schmuecker Journal of Tourism Futures 3 (2), 144-156	207	2017

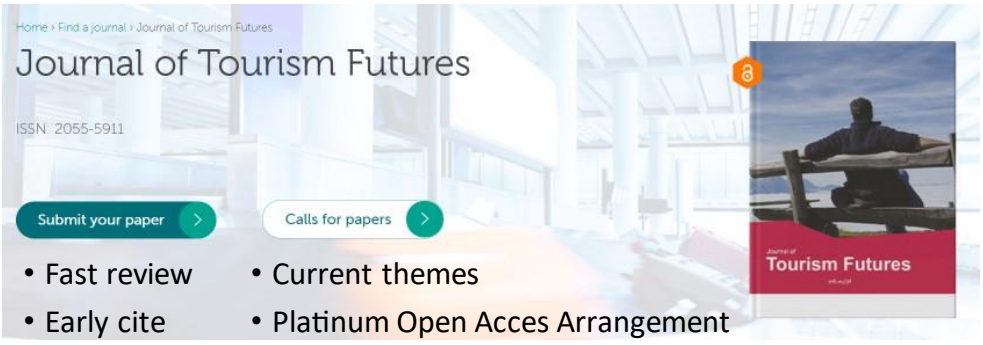
Triggers that cause a turning point in the acceptance of tourism among residents of a tourism destination

- Islands: Vlieland, Terschelling, Bonaire, Curacao

Findings in one situation can also apply in another situation

- Cities like Amsterdam, Copenhagen, Lisbon, Munich, Barcelona

Open Journal



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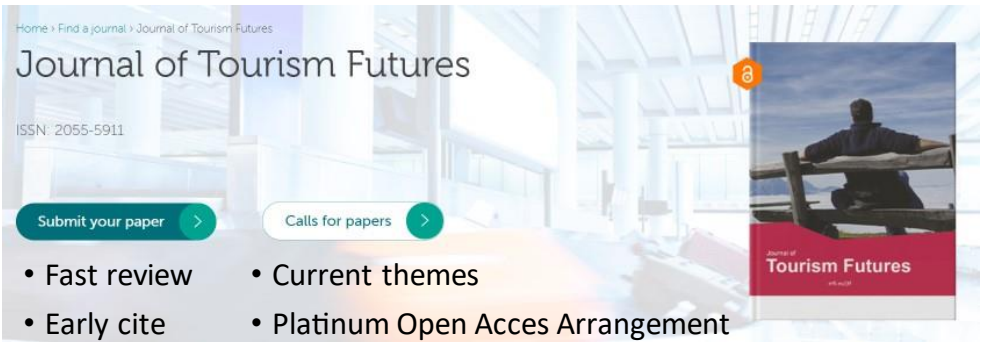
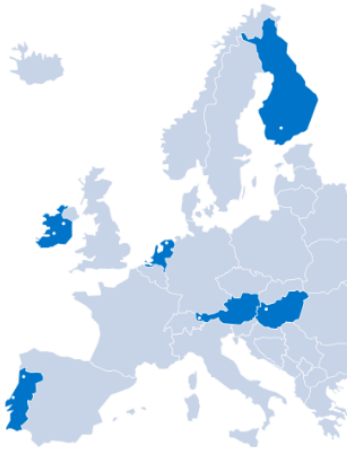


Benefits Researcher

- citations
- (social) media attention
- potential collaborators
- job opportunities
- funding opportunities



Work-package 5 – Mainstreaming of Open Science Practices

WP Leader: NHL Stenden
Ingrid van Gorkum
Co Leader: FH Vorarlberg

Co-funded by the Erasmus+ Programme of the European Union

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WP Objectives:

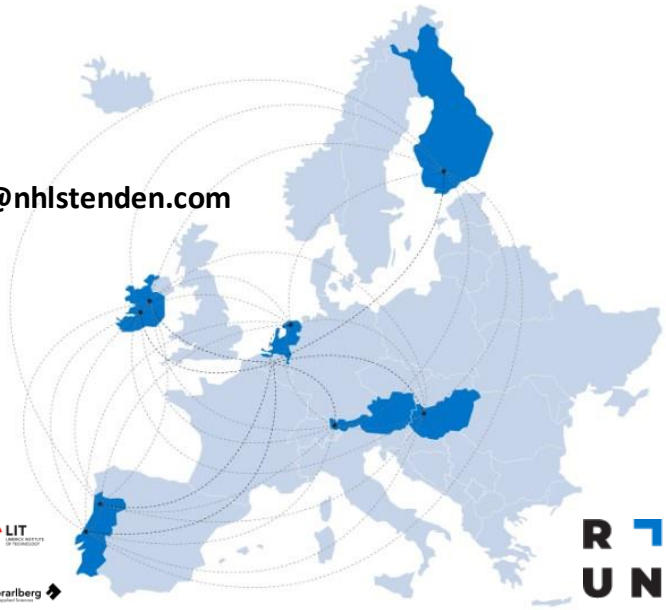
- To mainstream Open Science practices and skills
- Cultivating awareness and equipping the researchers with the necessary tools
- To apply the consistent application and internalization of the principles listed in the European Code of Conduct for Research Integrity (ECoC) across the consortium establishing dissemination, innovative training program and novel tools.
- To develop a series of commonly agreed principles and training workshops
  - Including topics: intellectual property and knowledge transfer, preprints, postprints, FAIR data, open sourceware

Upcoming deliverables:

D5.1	Report on audit and GAP analysis in training and education on open science skills	WP5	6 - NHL Stenden	Report	Public	8
D5.2	RUN-EU+ network of Open Science Ambassadors	WP5	8 - FHV	Report	Public	6
D5.3	Open Science Skills training workshop programs	WP5	6 - NHL Stenden	Report	Public	10
D5.4	Annual report on the implementation of the Open Science Skills training workshop programs - 1st Report	WP5	6 - NHL Stenden	Report	Public	12

THANK YOU

ingrid.van.gorkum@nhlstenden.com



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university of applied sciences

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Horizon 2020
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