

D5.2 Research and Innovation Teams

M12 October 2021

WPL- Limerick Institute of Technology (TUS Midwest)

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Executive summary

The ambition of our long-term vision and researcher ecosystem plan in WP5 within RUN-EU is shaped by international policies and initiatives including Horizon Europe which has as its vision a sustainable and prosperous future for people and the planet helping to achieve the sustainable development goals (SDG). 'This ambitious EU research and innovation framework program (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.

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**



Credit: https://www.ec.europa.eu/euro-observatory/en/observatory/infographic/sustainable-development-goals

May 2019 | Version 25



Figure 1 Horizon Europe Vision

(https://ec.europa.eu/info/sites/info/files/research_and_innovation/strategy_on_research_and_innovation/presentations/horizon_europe_en_investing_to_shape_our_future.pdf).

RUN-EU strives to secure the sustainable economic, social, cultural and environmental progress of our regions and their partners by delivering on the future and advanced skills necessary for its students and regional stakeholders to successfully meet the challenges of the future, engage in societal transformation and promote active citizenship. This mission is driven through the development of joint activities, by innovative collaborative inter-university and interregional approaches to higher education, including pedagogical development, **research, innovation and regional stakeholder engagement**, enabled by physical and virtual mobility activities, which will foster at their core existing European Union principles, values and objectives. We believe the existing members' regional innovation clusters and the collaborative European Innovation Hubs to be developed from them constitute one of the central pillars of sustainable regional development and will, therefore, underpin the collaborative activities to be developed within this European University. In the first three years, RUN-EU will establish three EIHs in the areas

of Future Industry and Sustainable Regional Development, the Bio-Economy and Social Innovation. With a view to enhancing the collective research and innovation capabilities of the members, it is proposed to focus on developing a detailed audit and characterization of each members' existing regional innovation cluster activities and capacity with a view to identifying areas for cooperation and collaboration. Once areas for intense collaboration had been identified as part of D5.1 and our next step was to create inter-university research area clusters complimentary to the European Innovation Hubs. We have used a Challenge-based approach, to build our eight European future-looking multinational research and innovation team units and networks with shared teams and infrastructures, focused on the creation and dissemination of cutting-edge knowledge in the identified areas: 1: Creative Art, Design and Materials Thinking; Research Area 2: Food & Biotechnology; Research Area 3: Tourism; Research Area 4: IOT & Cybersecurity; Research Area 5: Smart, Sustainable and Advanced Manufacturing; Research Area 6: Climate Change – Circular Economy & Decarbonisation; Research Area 7: Education & Social Sciences and Research Area 8: Health & Wellbeing.

These RDI teams will address societal challenges in a multi-disciplinary approach thus delivering innovative solutions adaptable to different regions in Europe through the operationalisation of the RUN-EU RDI activities, with strong collaboration among Partners, Regional Innovation Clusters and European Innovation Hubs to increase and embed sustainable Inter-regional research and innovation projects across the RUN-EU alliance. The work of the international RDI teams formed in WP 5 will be progressively integrated in a sustainable manner into the relevant EIH's through sustainable Inter-regional Research and Innovation projects. The principal output of these hubs will be the delivery of interregional Research, Development and Innovation (RD&I) 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 European Innovation Hubs will support and influence the members' 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. Mobility between the research clusters of RUN will be facilitated at all levels of the network by combining traditional approaches to mobility with new, innovative and sustainable forms of mobility allowing for equal and accessible opportunities for all students and staff through the RUN-Discovery Program Mobility fellowships D5.4. As part of the Audit and characterization the of RUN-EU Alliance RDI units within D5.1 we carried out an internal audit of member research unit skills and infrastructures aimed at identifying: 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. Building on the knowledge and the results from task 5.1 and from the EIHs we then created collaborative future-looking joint RDI teams with shared RUN-EU infrastructures. Based on the current and previous cooperation in joint research projects and research student supervision, it is envisaged 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. As teams they will bring together researchers from multiple members of RUN-EU 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.

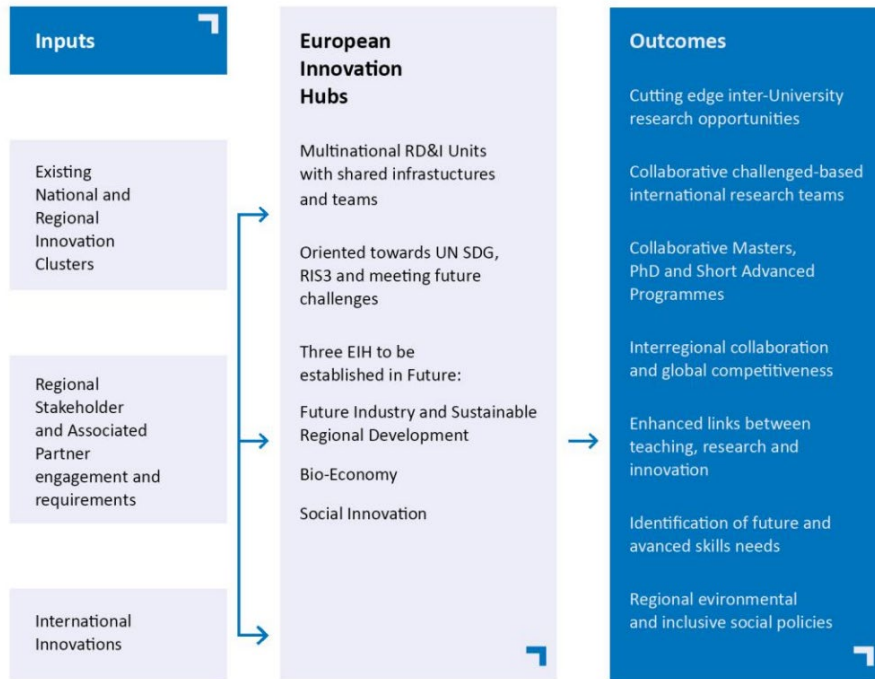


Figure 2 – European Innovation Hubs Operating Principles

RUN-EU RESEARCH AREA 1 CLUSTER GROUP

Research Area Cluster Name

Creative Art, Design and Materials Thinking

Research Area Cluster Lead

Paula Tavares, IPCA Polytechnic Institute of Cávado and Ave

Short Description

The EU represents a unique diverse way of combining economic growth with societally impactful development. This model is constantly evolving to deal with the societal challenges as they emerge. **Horizon Europe Cluster 2, Culture, Creativity and Inclusive Society** aims to foster greater understanding of a culturally and socially rich Europe. Specifically identified within this cluster is 'a need for research and innovation that increases our knowledge about the current developments of European societies and that directly develops solutions for the future'. Further cluster 2 states that in order to develop new solutions driven by innovative new thinking in addressing existing and emerging societal challenges the 'cultural and creative sectors should be integrated in research and innovation processes'. New 'inter-disciplinary, inclusive, cross-sectorial, cross-national' teams should be developed to elaborate new innovative theories and blueprints should combine the social sciences and the humanities with the sciences and technological discipline areas in multi-disciplinary research an innovation team. It is therefore necessary to find new ways to gain access to knowledge and to connect disciplines that do not normally work alongside one another. RUN-EU is aware that single organisations cannot develop all the knowledge necessary to take major steps forward. Collaboration is a must, particularly when it comes to solving complex social issues. To this end, it is necessary to find new ways to gain access to knowledge and to connect disciplines that do not normally work alongside one another in Future Design Factory's, Circular Design Labs and Master Design Driven Innovations.

Within **Research Area 1** of the RUN-EU discovery program we aim to directly address these assertions. We aim to co-develop applied research and creative activity ways of transferring knowledge between scientific and technological disciplines of different origins through art and design methodologies. The heuristic potential of creativity in the relationship between technology and art will be a central theme within this research area 1 team's mission to develop applied research activities, experimental development and knowledge transfer in the domains of design, materials, creative arts and culture. RUN has identified research capacity that will bring together a complete and multifaceted team of researchers, with experience in various fields such as product design, environmental design, interaction, multimedia, communication, eco-design, participatory co-design and social engagement. This will include design for a good digital life where research focuses on user experience and design for

emotions and employs design thinking in research projects and product development including the application of design thinking for the wearable intelligent to integrate new and intelligent textile, sensors, actuators and software. Similarly gaming technology and VR/AR design thinking which is rapidly on the rise in companies and social organizations to create sustainable impact has been identified in the audit as a specialist research knowledge base within the consortium. ‘Serious gaming is serious business’. Within this area the audit identified human-computer interaction, informatics, and machine learning capability with a focus on modelling and codifying human perceptual systems for applied design frameworks aiming to apply these frameworks to creative-arts applications and technologies, impacting the inherent synergies between the creative arts and computing/informatics.

The design of objects, processes, relations, and situations seeks to open up new ways of thinking and acting sustainably with cognizance to global carbon dioxide mitigation challenges central to the horizon Europe research and innovation program. Sustainable materials design, resource wisdom and sustainability are critical to design and product property. Minimizing the use of fossil raw materials, for instance in optimized additive manufacturing designs and utilization of side stream materials with added value will allow truly ecological design of products. Also, the additional design properties, such as color palette created from bio-based colorants will bring new aesthetics to interior design. Similarly, digital simulations research will focus on the finite element simulations of complex structures under various environmental loads. The durability of the modern (small or large) artwork to resist the environmental loads is essential in art design, and digital simulations can be performed to check the strength of the structures and additive manufactured design works in early phase. These crosscutting environmentally conscious research capabilities and interest areas identified within the audit will also become research active pillars within this research area.

Individual Institute Lead(s)

TUS Midwest (formerly LIT)	Adam deEyto
TUS Midlands (formerly AIT)	Sean Lyons
FHV	Margarita Köhl
HAMK	Satu Jumisko-Pyykkö
HAMK	Päivi laaksonen
IPCA	Paula Tavares
IPCA	Jorge Pereira
SZE	Imre Tolnay
NHL Stenden	Marcel Crul
NHL Stenden	Peter Joore
NHL Stenden	Ivo Wenzler
IPL	Sandra Neves

Aims and Objectives

- To create joint RDI teams and procedures;
- To increase and embed sustainable Inter-regional research and innovation projects across the RUN-EU alliance during the years of the project;
- To co-develop applied research and creative activity ways of transferring knowledge between scientific and technological disciplines of different origins through art and design methodologies;
- To increase knowledge transfer in the domains of design, materials, creative arts and culture;
- To boost Future Design Factory's, Circular Design Labs and Master Art and Design Driven Innovations.

Academic & Research Staff Profile to include details of:

- | | |
|--------------------------------------|--|
| Primary Investigators (PIs) | Contributing Staff (Academic Staff) (CS) |
| Researchers (R) | Management (M) |
| Research Leads (Academic Staff) (RL) | Technical (T) |
| | Administration Staff (A) |

TUS Midwest, Ireland

Name	Qualifications	Type* PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED Codes*)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to	ORCID, H-index, and No. of Peer-reviewed publications
Flaithri Neff	PhD	PI	0610,0611 0612 0613	8	1	1		0000-0003-1975-012X
John Hannafin	MA	PI	214, 0610,0611 0612, 0613					0000-0003-4633-0083
Fiona Quill	MA	PI	21,301,100,114					0000-0002-5503-713X
Susan Halvey	PhD	PI	0114, 0213,0220	1	2	4	4	
Eleanor Moloney	MA	PI	214, 0581					

Marie Walsh	PhD	PI	0313, 0314	2	1			0000-0003-4140-8726
Adam de Eyto	PhD, SDip, BDes	PI	214, 542, 725	0	2	4	10	0000-0002-4628-5289

Vorarlberg University of Applied Sciences, Austria

Name	Qualifications	Type * PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED Codes*)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Margarita Köhl	PhD	PI	0220, 0288, 0312, 0610, 0712,0731	8	1	0	3	6
Hubert Matt	PhD	PI	0220, 0288, 0312, 0610, 0712,0731	8			10	
Michael Kneidl	Dipl.-Des.	R	0610,0613,0312,0288,0212	1	2		10	
Guido Kempter	PhD	PI	0312,0288,0610					
Angelika Simma-Wallinger	PhD	R	0211,0220,0413					
Sarah Schlatter	Dipl.-Des.	CS	0210,0312					
Natasha Doshi	MA	CS	0220,0288					

Häme University of Applied Sciences, Finland

Name	Qualifications	Type* PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED Codes*)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Päivi Laaksonen	PhD	PI	0531,0722	2	0	2	6	0000-0003-2029-5275, h-index 23, No of papers 56
Satu Jumisko-Pyykkö	PhD	PI	0212,0611	1	0	0	15	

IPCA Polytechnic Institute of Cávado and Ave, Portugal

Name	Qualifications	Type* PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED Codes*)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Paula Tavares	PhD	PI, R	0211 0212 0213	5	2	2	35	0000-0002-6955-3389, Hindex 5, nºpapers peer-reviewed 65
Jorge Pereira	PhD	R	0211 0222	11	1	0	18	0000-0002-1044-9042 / H index 1,

								nºpapers peer-reviewed 51
Ricardo Simões	PhD	PI	0722	2	2	11	33	0000-0002-3097-8849, H-index 21, Peer-reviewed publications: 204
Nuno Martins	PhD	R	0211	6	0	0	19	0000-0002-5228-5453
Demétrio Matos	PhD	R	0212	9	0	0	15	0000-0003-4417-6115, H-index 5, Nº of papers 53
João Sampaio	PhD	R	0212	5	0	1	25	0000-0003-2741-7351, h-index 2, No of papers 20
Catarina Silva	PhD	R, PI	0210, 0288	6	1	0	13	0000-0002-9229-9032, Nº of papers: 32

Szechevy Istvan University, Hungary

Name	Qualifications	Type* PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED Codes*)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Dr. Imre Tolnay	DLA, habil	PI	021	0	0	0	15	66 publications

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NHL Stenden University of Applied Sciences, The Netherlands

Name	Qualifications	Type* PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED Codes*)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Marcel Crul	PhD	PI	0214 0700 0712 1015	2	0	4	20	0000-0002-2873-2604 H 6 (scopus) H13 (G scholar) 11 peer reviewed publications
Ir. Peter Joore	PhD	PI	0211 0214 0700 0312	20	2	4	60	0000-0002-4585-008X H 6 scopus, H12 G Scholar 9 peer reviewed publications
Ivo Wenzler	PhD	PI	0211 0413 0417 0613 0731	29	1		33	
Derek A Kuipers	PhD	PI	0031 0111 0211 0312 0613	29	2	0	33	0000-0003-0647-9019, Nº of peer reviewed papers 16, H-index 6

Instituto Politécnico de Leiria, Portugal

Name	Qualifications	Type* PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED Codes*)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Sandra Neves	PhD	R	0212	1	0	0	0	0000-0002-1679-6002, Nº of papers 3
Renato Bispo	PhD	R	0212	6	0	0	22	0000-0002-6401-9427, Nº of papers 10
Elga Ferreira	PhD	R	0211	1	0	0	8	0000-0003-0348-7574
José Frade	PhD	R	0212,0722	0	0	0	4	0000-0003-0011-0480, Nº of papers 9
Nuno Fragata	PhD	R	0211,0213	4	0	0	0	0000-0002-5168-4620, Nº of papers 8

Supporting Faculty/School and Department(s)

IPCA Polytechnic Institute of Cávado and Ave, Portugal

Design School: Department of Art and Communication, Department of Product and Industrial Design

ID+ Research Institute in Design Media and Culture

TUS Midwest, Ireland

Limerick School of Art and Design

Instituto Politécnico de Leiria, Portugal

Art and Design School

LIDA Research Center

NHL Stenden University of Applied Sciences, The Netherlands

Research Group Open Innovation

Research Group Serious Gaming

Vorarlberg University of Applied Sciences, Austria

InterMedia, Faculty of Design

Research through Design Group in cooperation with Research Centre for User Centred Technologies

Areas of Research Specialization and – Specific ISCED Fields (ISCED-F 2014)

0031 Personal skills and development

0111 Education science

021 Arts

0210 Arts not further defined

0211 Audio-visual techniques and media production

0212 Fashion, interior and industrial design

0213 Fine arts

0214 Product Design

0220 Humanities (except languages) not further defined

0222 History and archaeology

0288 Inter-disciplinary programmes and qualifications involving arts and humanities

0312 Societal systems and innovation

0413 Management and administration

0417 Work skills

0531 Chemistry

0610 Information and Communication Technologies (ICTs) not further defined or elsewhere classified

0610 Information and Communication

0611 Computer use

0612 Database and network design and administration

0613 Software and applications development and analysis

0700 Technology, Industry

0700 Circular Plastics

0700 Industrial Innovation

0712 Sustainable design, sustainability

0722 Materials (glass, paper, plastic and wood)
0731 Architecture and town planning
1015 Sustainable tourism

Alignment to the Horizon Europe research cluster and research and innovation programme

Considering the multidisciplinary of this Research Area, we can affirm that we could be aligned with Global Challenges and European Industrial Competitiveness in general. However, considering the specialization of this group we cast two areas:
1st - Culture, Creativity and Inclusive Society (the natural cluster for RA1)
2nd - Digital, Industry and Space.

Track Record over the last 5 years (summaries of the following)

- Completed research projects
- Graduated students at Masters and PhD level (incl. Title and details of supervisors)
- Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

TUS Midwest, Ireland

Completed research projects

- Creative Europe project SYMBOLS
- INTERREG project 4-H CREAT

Graduated students at Masters and PhD level

Neff, F.

- M.Sc. Artem Razumov. A UI design framework for immersive multimodal synthesizers in head-mounted VR environments. Co-supervision: Eoghan Neff, Aidan Kehoe.
- Ph.D. Joe Fitzpatrick. Designing a Perceptually Congruent Sonification Model using Auditory Scene Analysis Principles. Co-supervision: Ian Pitt.

Halvey, S.

- Ph.D. Mandy Parslow. Perspectives on place: a ceramic response. Co-supervision: Susan Halvey, Bonnie Kempke, Cormac Morrison
- Ph.D. Gemma Dardis. Investigation into the fired photographic ceramic image. Co-supervision: Susan Halvey, Patrick Murray

Vorarlberg University of Applied Sciences, Austria

Completed research projects

Pictorial Affect – Articulating Together-ness in Converging Media Environments/ Examining Image Practices and Concepts of Sociality among Young People Living in Malaysia, Vietnam and Austria. (2016-2020)

Margarita Köhl in cooperation with the department of communication/ University of Vienna, Department of Media and Communication Studies, National University of Malaysia and Faculty of Journalism and Communication, Vietnam National University Hochiminh City

Probiere amol (2013-2016) <http://www.probieramol.at/>

How can climate change measures be gently communicated without this being perceived as a loss of quality of life but perhaps even as a gain? Together with the Energy Institute Vorarlberg, a concept, a design manual and a brand were developed and twelve media channels were used. Together with the ALLMENDA cooperative and the Ecology Institute, experiments were offered to associations, departments or kindergartens to whet their appetite for a climate-friendly lifestyle. Monitoring showed that 10,000 Vorarlbergers ate less meat or drove less by car as a result of Probiere amol and the viral communication elements.

MapTrans (2020-21)

How can social transformation processes be better accompanied by the media? Up to now, problem situations, ideas, approaches to solutions or stakeholder networks have often been presented in analog form in workshops. Popular tools for this are moderation cards, posters, Post-Its, pens or cords. What do digital counterparts look like that enable hybrid or completely virtual working methods?

<https://www.fhv.at/en/research/user-centred-technologies/>

Additionally, Vorarlberg University of Applied Sciences has a **Research Centre for User Centred Technologies**, which focuses on making technical products and systems user-friendly.

The research and teaching activities of the research centre for User Centred Technologies aims at fostering inter-disciplinary dialogue between developers and designers to better understand the users of their technical products and systems. The research centre for User Centred Technologies acts accordingly to the objectives mentioned above, by understanding and interpreting human experience and behavior:

- in rooms and buildings (Ambient Technology Research)
- with hardware and software (User Interface Research)
- in virtual reality (Virtual Reality Research).
- Depending on the specific fields of application, user data is gathered continuously or case-by-case, in order to: regulate control circuits (Smart Room Development)
- optimise operating interfaces (User Interface Design)
- visualise information (3D Computer Animation).

Graduated students at Masters and PhD level (incl. Title and details of supervisors)

Kneidl, M.

- MA. Marcus Auchter. Development of an adaptive graphical user interface for multimodal operating systems in agricultural tractors, Co-supervision: Karl-Heinz Weidmann
- Lisa Kostrzewa. Between consumers and cachet. Communication concept for the value of a certified product using the FSC as an example, Co-supervision: Karl-Heinz Weidmann

Köhl, M.

- MA. Jule Pallasch. Conception and implementation of a modular tool for the interdisciplinary teaching of digital literacies.
- MA. Karin Andrea Bleiweiss. Playbook and model for intercultural mentoring relationships.

Matt, H.

- MA. Angelina Juliane Tschögl. Ritual Design
- MA. Robert Ötting. Practices of Audio Cartography

Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

- Köhl, M./ Götzenbrucker, G. (2020). Bilder als Affektgeneratoren: Eine transkulturelle Studie zur bildlichen Verhandlung von Nähe und Distanz in Social Media Umgebungen. In: Brandtner, Cornelia/Götzenbrucker, Gerit/Lobinger, Katharina/Schreiber, Maria (Hg.) (2020). Vernetzte Bilder. Visuelle Kommunikation in Sozialen Medien. Herbert von Halem Verlag, 54–88.
- Götzenbrucker, G./ Köhl, M. (2021): „You can tell that we all like each other, right?“ Perspectives of Togetherness in adolescents’ photographs in urban Austria, Malaysia, and Vietnam. In Pohn-Lauggass/Bernhard/Liebhart/Breckner (Hg.) (2020) Visuelle Analysen aus sozialwissenschaftlicher Perspektive. Routledge (in print)
- Köhl, M. (2016): Lifestreaming and the Pressure of Reciprocity: Exploring Practices of Connected Presence among Adolescents from Taiwan and Austria; Acta Univ. Sapientiae, Communicatio, 3, p. 49-55.
- Köhl, M./ Götzenbrucker, G. (2014): Networked technologies as emotional resources? Exploring Emerging Emotional Cultures on Social Network Sites like Facebook and Hi5: A Trans-Cultural Study; Media, Culture & Society Volume 36 Issue 4, May 2014, p. 508-525, first published on April 11, 2014; mcs.sagepub.com/content/36/4/508
- Kempter, G., Ritter, W., Trommelschläger, K. & Werner, T. (2021). IBH Living Lab AAL. In: Kempter, G. & Ritter, W. (Hrsg.) (2021). Grenzüberschreitende Reallabore für Assistenztechnik, S. 2-6. Lengerich: Pabst Science Publisher.
- Kempter, G. & Ritter, W. (Hrsg.) (2021). Grenzüberschreitende Reallabore für Assistenztechnik. Lengerich: Pabst Science Publisher.

Häme University of Applied Sciences, Finland

Completed research projects

Laaksonen, P.

- 2019, Scientific advisory board for defence Finland, Stealth properties from biobased materials (Biohäive), HAMK budget 63 k€
- 2019, Business Finland, Bio-based colour coated steel sheet products, HAMK budget 500 k€

Graduated students at Masters and PhD level

Laaksonen, P.

- PhD. Wenwen Fang, Chemical Engineering (Prev. Organiz.), Nanocellulose for bio-inspired nanocomposites - surface modification with recombinant proteins.
- PhD. Alessandra Griffo. Chemical Engineering (Prev. Organiz.), On the Nanoscale Interactions and the Self-Assembly of Recombinant Proteins and Hybrid Nanostructures: an AFM Study. Co-supervisor: Markus Linder
- MSc. Woojae Lim. Chemical Engineering (Prev. Organiz.), Deposition of indigo thin films by Langmuir-Schaefer technique. Co-supervisor: Alessandra Griffo.
- MSc. Tia Lohtander. Chemical Engineering (Prev. Organiz.). Sustainable dyeing of cellulosic materials with willow bark extract. Co-supervisor: Suvi Arola.
- Master. Hedar Al-Terke. Chemical Engineering (Prev. Organiz.), Study of hydrophobin behaviour at air-water interface. Co-supervisor: Arja Paananen.

Notable Research Outputs

Laaksonen, P.

- Lohtander, T., Grande, R.; Österberg, M., Laaksonen, P., Arola, S. Bioactive films from willow bark extract and nanocellulose double network gels, *Frontiers in Chem. Eng.* accepted.
- Lohtander, T., Arola S., Laaksonen P. Biomordanting of a natural dye from willow bark on cellulosic materials, *Coloration Technol.* 2020, 136 (1), 3-14.
- Dhar, P., Phiri, J., Szilvay, G.R., Westerholm-Parvinen, A., Maloney, T., Laaksonen, P. Genetically engineered protein based nacre-like nanocomposites with superior mechanical and electrochemical performance, *J. Mat. Chem. A*, 2020, 8 (2), 656-669.
- Dong, Y.; Paukkonen, H., Fang, W., Kontturi, E., Laaksonen, T., Laaksonen, P. "Entangled and Colloidally Stable Microcrystalline Cellulose Matrices in Controlled Drug Release" *Int. J. Pharm.* 2018, 548 (1), 113-119.

- Kontturi, E., Laaksonen, P. Linder, M.B., Nonappa, Gröschel, A.H., Rojas, O.J., Ikkala, O. "Novel materials through assembly of nanocelluloses", Adv. Mat., 2018, 30, 1703779.

Jumisko-Pyykkö, S.

- S. Jumisko-Pyykkö, K. Vänni. Four critical design challenges for future smart wearable textile. Aachen-Dresden-Denkendorf International Textile Conference 2021 (accepted)
- S. Jumisko-Pyykkö, T. Viita-aho, E. Tiilikainen and E. Saarinen (2021): Towards Systems Intelligent Approach in Empathic Design, Academic Mindtrek 2021 (Mindtrek '21), June 01–03, 2021, Tampere/Virtual, Finland.
- Anke van Oosterhout, Miguel Bruns Alonso, and Satu Jumisko-Pyykkö. 2018. Ripple Thermostat: Affecting the Emotional Experience through Interactive Force Feedback and Shape Change. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18). ACM, New York, NY, USA, Paper 655, 12 pages. DOI: <https://doi.org/10.1145/3173574.3174229>
- Strohmeier, D., & Jumisko-Pyykkö, S. Audiovisual quality. In Sensory Evaluation of Sound. Nick Zacharov (ed.), CRC Press, Boca Raton, FL, 2019.
- Anke van Oosterhout, Satu Jumisko-Pyykkö, and Miguel Bruns Alonso. 2016. Counteract or assist?: influence of dynamic force-feedback on emotions. In Proceedings of the 15th International Conference on Mobile and Ubiquitous Multimedia (MUM '16). ACM, New York, NY, USA, 241-247. DOI: <https://doi.org/10.1145/3012709.3012739>
- Satu Jumisko-Pyykkö, Emilia Pesonen, and Heli Väättäjä. 2016. Temporal dimensions of affect in user experience of digital news in the field. In Proceedings of the 20th International Academic Mindtrek Conference (AcademicMindtrek '16). Association for Computing Machinery, New York, NY, USA, 192–197. DOI: <https://doi.org/10.1145/2994310.2994370>

IPCA Polytechnic Institute of Cávado and Ave, Portugal

Completed research projects

Tavares, P.

- P. Researcher. DEI Design Enterprises and Innovation. "Inovar pelo Design - Capacitação pelo Design". IPCA School of Design, ID+. SIAC NORTE 2020. <https://web.ipca.pt/dei/>

Simoes, R.

- Project “FIREND – Projectile for fire fighting”. January 2016 – December 2019. Portuguese Ministry for National Defense [institutional coordination]. Budget = 1,165,919 € (from which 38,204 € is IPCA’s budget).
- Project “ICT4Silver - ICT Key Enabling Technologies to meet the needs of Silver Economy in the SUDOE area”. July 2016 – December 2018. Project n.º SOE1/P1/F0370, Interreg V-B Sudoe [institutional coordination]. Budget = 998,250 € (from which 145,000 € is IPCA’s budget).
- Project “SAM – Smart Active Mould”. October 2016 – December 2019. POCI-01-0247-FEDER-017620 [institutional coordination]. Budget = 1,220,713 € (from which 202,125 € is IPCA’s budget).
- Project “ActiveRest”. October 2016 – September 2019. POCI-01-0247-FEDER-018011 [institutional coordination]. Budget = 654,967 € (from which 112,031 € is IPCA’s budget).
- Project “Ecobond”. August 2016 – July 2019. POCI-01-0247-FEDER-017930 [institutional coordination]. Budget = 846,593 € (from which 192,474 € is IPCA’s budget).

Pereira, J.B.

- Researcher. AntiAmnésia: Design research as an agent for narrative and material regeneration and reinvention of vanishing Portuguese manufacturing cultures and techniques. POCI-01-0145-FEDER-029022
- Researcher. Towards the scientific inscription of individual legacies in contexts of retirement from art and design higher education and research. POCI- 01-0145-FEDER- 029038
- Researcher. ICT4SILVER Digital technologies to meet the needs of Silver Economy. SOE1/P1/F0370
- Researcher. DEI Design Enterprises and Innovation. “Inovar pelo Design - Capacitação pelo Design”. IPCA School of Design, ID+. SIAC NORTE 2020. <https://web.ipca.pt/dei/>
- Researcher. Paredes Centre for Furniture Design and Art on Chairs Design Biennale. Executive Director of ‘Stories of Chairs’ project. ID+. 2010-2013. Financed by the European Union, QREN and ON.2.

Sampaio, J.

- Local coordinator: KATCH_E - Knowledge Alliance on Product-Service Development Towards Circular Economy and Sustainability in Higher Education (jan. 2017 a dez. 2019)
- Program: ERASMUS +, KA2: Cooperation for innovation and the exchange of good practices – Knowledge Alliances, Call: EAC/04/2015
- Researcher. DEI Design Enterprises and Innovation. “Inovar pelo Design - Capacitação pelo Design”. IPCA School of Design, ID+. SIAC NORTE 2020. <https://web.ipca.pt/dei/>

Silva, A.C.

- Researcher. DEI Design Enterprises and Innovation. “Inovar pelo Design - Capacitação pelo Design”. IPCA School of Design, ID+. SIAC NORTE 2020. <https://web.ipca.pt/dei/ SOE1/P1/F0370>

Matos, D.

- Researcher. **DEI Design Enterprises and Innovation.** “Inovar pelo Design - Capacitação pelo Design”. IPCA School of Design, ID+. SIAC NORTE 2020. <https://web.ipca.pt/dei/>
- Researcher: **Thertact** - Manga termotátil para reabilitação. Projeto realizado através do MEDISIS IDEAS – Ideias que dão saúde, com financiamento de 10000€.

Graduated students at Masters and PhD level

Tavares, P.

PhD: Sofia Barreira. O que me fez o Desenho? - Do não desenhar ao escrever: será para isso que serve também desenhar, ter pretexto de escrever? Co Supervision with Catarina Martins. Faculdade de Belas Artes da Universidade do Porto. 2016

PhD: Pedro Sarmiento. Os desenhos animados e a infância: da Classificação Indicativa à Educação para as Mídias. Co Supervision with Nilton Gamba Jr. Pontifical Catholic University of Rio de Janeiro (PUC-Rio). 2018

Master: Ana Paula Caruso. The contribution of 2d animation in a digital game with a tangible interface. Co supervision with Cristina Sylla. IPCA. 2020

Master: Sara Alexandra Capela Covelo. Contributo para o estudo de personagens em animação infantojuvenil. Representações estereotipadas e suas potenciais alternativas. Co Supervision with Pedro Mota Teixeira. IPCA. 2020

Master: Bruno Rajão. Abecedário abominável (ou bestiário bestial). Estudo e desenvolvimento de personagens para uma compilação ilustrada. Co Supervision with Pedro Mota Teixeira. IPCA. 2020

Simoes, R.

- PhD supervision: Carlos Nuno Barbosa, Integration of Engineering, Manufacturing and Economic Issues in Design against Impact of Polymer Automotive Components, PhD in Polymer and Composites Science and Engineering, University of Minho, September 2011 – July 2020.
- PhD supervision: Paulo R. Valentim Francisco, Analysis and Design of a Functional Material for Combined Heat Transfer and Stiffness - Application to the Injection Molding Industry, PhD in Mechanical Engineering, Instituto Superior Técnico, January 2016 – January 2020.
- PhD supervision: Susana Fernandes, Design interior de veículo elétrico urbano: Interfaces com o condutor senior, PhD in Design, University of Aveiro, September 2015 – November 2018.
- PhD supervision: Carlos Diogo Alves da Costa Gonçalves, Wearable Technology Impact: study through the development of a soft-orthotic device, PhD program in Leaders for Technical Industries, University of Minho, September 2013 – June 2018.
- PhD supervision: Irene Carvalho, A Manifold City Car: A Concept for an Urban Car Calling for Flexibility in Car Occupancy According to Users' Needs, PhD program in Leaders for Technical Industries, Instituto Superior Técnico, October 2009 – December 2016.

Sampaio, J.

- PhD: Fernandes, S. (2019) Design interior de veículo elétrico urbano: interfaces com o condutor sénior. (J. N. Sampaio, J. Esteves & R. Simões). Universidade de Aveiro, Aveiro.
- Master: Machado, A. (2020) Food Quality & Safety (FQ&S): Desenvolvimento de um dispositivo de controlo de qualidade de produtos alimentares . (J. N. Sampaio & D. Matos). Instituto Politécnico do Cávado e do Ave, Barcelos
- Master: Baganha, A. (2019) A Produção de louça preta portuguesa
- — Desenvolvimento de Produtos que promovam a relação entre as raízes artesanais e o design . (J. N. Sampaio). Instituto Politécnico do Cávado e do Ave, Barcelos

- Master: Gomes, O. (2019) Estimulação Olfativa: Perturbação do Espectro do Autismo (J. N. Sampaio & J. Oliveira) Universidade de Aveiro, Aveiro
- Master: Marques, D. (2019) Desenho de uma vending machine de botijas de gás (J. N. Sampaio & M. Mendonça) Universidade de Aveiro, Aveiro

Pereira, J.B.

- Master: Bühner, T. (2021). Curadoria e Memória na Era do Superarquivismo. Co-supervision with Heitor Alvelos. Master in Multimedia. University of Porto.
- Master: Leite, T. (2021). Desenvolvimento da interface de uma plataforma digital de auxílio na motivação e produtividade empresarial. Master in Digital Design. IPCA.
- Master: Norte, M. (2019). Projeto de design digital para o desenvolvimento da interface de uma plataforma de pagamentos eletrónicos. Master in Digital Design. IPCA.
- Master: Ferreira, E. (2019). O design de produto como agente para a interpretação de cultura industrial desaparecida: As cadeiras da fábrica “A Boa Nova” de Paredes. Master in Product Design and Development. IPCA.
- Master: Marques, J. (2017). A ilustração no online: as possibilidades e desafios da curadoria digital. Master in Illustration and Animation. IPCA.

Silva, A.C.

- Master: Marília Silva. “Contributo do álbum infantil ilustrado na consciencialização de temáticas sociais”. Co Supervision with Susana Jorge. IPCA. 2020
- Master: Eva Vieira. “Transversalidades entre representações em arquitectura e ilustração”. Co Supervision with Marta Madureira. IPCA. 2020
- Master: Catarina Bico. “Leitura e Mediação do livro-objeto infantil ilustrado. A experiência de leitura”. Co Supervision with Ana Lúcia Pinto. IPCA. 2020
- Master: Marlene Miranda. “Upa! Livro-Jogo para a Promoção da Atividade Física na Infância”. Co Supervision with Marta Madureira. IPCA. 2019
- Master: João Barroso. “Designing towards motivation in doing physical activity using a smart-toy with asthmatic children as users. Co Supervision with Luís Eustáquio. IPCA. 2019

Matos, D.

- Master: Machado, A. (2020). Food quality and safety (FQ&S). Desenvolvimento de uma máquina de controlo de qualidade de produtos alimentares. (MSc). Instituto Politécnico do Cávado e do Ave, Barcelos. Co Supervision with João Sampaio
- Master: Moreira, F (2019). Design e desenvolvimento de kit biomédico de apoio a doentes acamados. (MSc). Instituto Politécnico do Cávado e do Ave, Barcelos.
- Master: Colaço, P (2019). Análise das semelhanças metodológicas entre designers e artesãos. Exploração do potencial colaborativo. (MSc). Instituto Politécnico do Cávado e do Ave, Barcelos.
- Master: Gonçalves, M (2018). Desenvolvimento de jogo sério para combate à obesidade infantil. (MSc). Instituto Politécnico do Cávado e do Ave, Barcelos.
- Master: Ferreira, R (2017). O contributo do Design no brincar: Melhoria da qualidade de vida das crianças com necessidades especiais. (MSc). Instituto Politécnico do Cávado e do Ave, Barcelos.

Notable Research Outputs

Tavares, P

- Tavares, P. (2021) "Investigação e desenvolvimento de projetos em tempos de pandemia. Fusion - Europa Criativa, um projeto em realização no online." In MXRio Design Conference. Distanciamentos e Aproximações. Rio de Janeiro, Brasil, 8 e 9 de Setembro 2021.
- Ferreira, M.; Tavares, P. & Teixeira, P., (2020). The presence of Fauvism in animation. Contribution to the study of color in contemporary animation. In Proceedings Book CONFIA 8th International Conference on Illustration and Animation, IPCA, Portugal, 23-24 Outubro, (210-227)-(online). [Link](#)
- Jorge, S., Albino, M., Tavares, P., (2020). "Course Director and Academic Success: a strategy developed in a Polytechnic Higher Education Institution". In Proceedings of ICERI2020 Conference, **International Conference of Education, Research and Innovation, Seville. Conference Proceedings**, pp. 6958-6965. ISBN: 978-84-09-24232-0. doi: 10.21125/iceri.2020
- Ronconi, M.; Brandão Pereira, J.; & Tavares, P.. "Representation and reconstruction of memories on public space – a documentary strategy about graffiti writing". Trabalho apresentado em *CONNECTIONS Exploring Heritage, Architecture, Cities, Art, Media, Kent*, 2020. <https://architecturemps.com/canterbury-conference/>
- Sá, G.; Tavares, P. (2019) "Color Differences in Male and Female Protagonists of Mainstream Animation Film." In: : CONFIA – 7th International Conference in Illustration and Animation, Volume 7. Viana do Castelo, Portugal, 14-15 Junho (pp. 135-145). ISBN: 978-989-54489-0. [Link](#)

Simoes, R.

- Barbosa, Carlos; Viana, Julio; Franzen, Markus; Baranowski, Thomas; Simoes, Ricardo, Integrative simulation chain for improved components design: linking mould filling and structural simulations, *Polymer Bulletin* (2021) DOI 10.1007/s00289-021-03794-8.
- Pereira, S; Simoes, R; Fonseca, J; Carvalho, R; Almeida, J; ActiveRest, Design and Development of an Embedded Sensors Matrix for Pressure Mapping and Monitoring Applications, *Microprocessors and Microsystems* 74 (2020) 103004, DOI 10.1016/j.micpro.2020.103004
- Carlos Goncalves , Alexandre Silva , Ricardo Simoes, Joao Gomes, Leia Stirling, and Brad Holschuh, Design and Characterization of an Active Compression Garment for the Upper Extremity, *Transactions on Mechatronics* 24 (2019) 1464-1472, DOI 10.1109/TMECH.2019.2916221
- Silva, A; Marco, L.; Vilas-Boas, J. & Simões, R. (2018) How education background affects design outcome: teaching product development to mechanical engineers, industrial designers and managers, *European Journal of Engineering Education*, DOI: 10.1080/03043797.2018.1465029
- RJ63. Carvalho, I.; Simoes, R.; Silva, A.; Applying the Theory of Inventive Problem Solving (TRIZ) to identify design opportunities for improved passenger cars eco-effectiveness, *Mitigation and Adaptation Strategies for Global Change* 23 (2018) 907-932, DOI 10.1007/s11027-017-9765-9

Pereira, J.B.

- Brandão Pereira, J.; Alvelos, H.; & Chatterjee, A. (2021). "Design education as research path towards the heritage and semantics of the Portuguese graphic tradition of 'Azulejos'". In *AMPS Proceedings Series 20.2. Connections: Exploring Heritage, Architecture, Cities, Art, Media*, 308-315. Kent, United Kingdom: AMPS PROCEEDINGS SERIES 20.2 ISSN 2398-9467.
- Brandão Pereira, J. (2021). "Design education between past and future – pedagogical actions towards heritage preservation". *Conference Proceedings The Future of Education 2021*, Filodoritto Publisher, 41-46.
- Alvelos, H.; Brandão Pereira, J.; Chatterjee, A.; Amado, P. (2020). "A pedagogy of the quotidian – letterpress and typography as heritage towards a restorative action of design". *Hyphen, a typographic forum* [ISSN 1108-2413] XII 18, 9-16.
- Chatterjee, A.; Alvelos, H.; & Brandão Pereira, J. (2020). "Media for Mediation: the role of multidisciplinary design pedagogy in the inscription of a dissipating millenary weaving culture". *Media Education Research Journal MERJ* 9, 116-126.

- Brandão Pereira, J.; & Alvelos, H. (2020). "Design as lever towards a participatory model for territory". Conferência Internacional "Comunidades e Redes para a Inovação Territorial", Aveiro, 2020.
- Paredes "Art on Chairs" 2014 RegioStars Award [Smart Growth – SME Innovation] by the European Commission. ID+ team involved: [commissioners] Francisco Providência, Heitor Alvelos, Teresa Franqueira, Vasco Branco [technical team] Álvaro Sousa, Gonçalo Gomes, João Sampaio, Jorge Pereira, Paulo Bago D'Uva, Rui Costa. Promoted by the City Hall of Paredes – Furniture Route – 2010/2013. Financed. European Union; QREN; ON.2.

Sampaio, J.

- Rocha, C., Sampaio, J., Camocho, D., Ferreira, J. (2020) Product-Service Development for Circular Economy and Sustainability Course September 2020, ISBN: 978-989-675-063-3
- Sampaio J., Afonso, A. (2021) Innovation through circular economy: Tool development for multidisciplinary approach to product-service-system Design In: Cumulus Conference Proceedings Series with the title "Design Culture(s). Cumulus Conference Proceedings Roma 2021. 8-11 June 2021, Roma, Italy
- Terroso M., Sampaio J., Vilaça J. (2021) Office Personal Assistant. Towards a Design and AI Approach. In: Martins N., Brandão D. (eds) Advances in Design and Digital Communication. Digicom 2020. Springer Series in Design and Innovation, vol 12. Springer, Cham. https://doi.org/10.1007/978-3-030-61671-7_7
- Rocha, C., Camocho, D., Alexandre, J., Schmidt, K., Celades, I., Ros, T., Kalleitner-Huber, M., Hernaez, O., Atin, E., Pamminer, R., Schmidt, S., Sampaio, J., Afonso, A., Mulet, H., Ruiz, L. (2019) KATCH_e: Training materials and tools for circular economy in practice. En: SEGALÀS, Jordi ; LAZZARINI, Boros (eds.). Proceedings of the 19th European Roundtable for Sustainable Consumption and Production. Barcelona: Institute for Sustainability Science and Technology of the Universitat Politècnica de Catalunya; 2019. p. 67-88. ISBN - 9788409167913 (o.c.); 9788409168927 (v. 1)
- Sampaio, J., Baganha, A., Gomes, F. & Terroso, M. (2018). Bounding fields of knowledge: co-designing regional pottery of the Cávado sub-region as a strategic potential of museological differentiation and product development, in Broega et al. (Eds) Reverse Design: A Current Scientific Vision From the International Fashion and Design Congress, CRC Press, Taylors & Francis ISBN 978-1-138-37011-1

Silva, A.C.

- Amado P., Silva A.C., Napoleão E. (2021) Kickstarting Type Design Education with SLOType. In: Martins N., Brandão D. (eds) Advances in Design and Digital

Communication. Digicom 2020. Springer Series in Design and Innovation, vol 12. Springer, Cham. https://doi.org/10.1007/978-3-030-61671-7_18

- Costa, N., Branco, V., Costa, R., Borges, A., Modesto, A., Silva, C., & Cunca, R. (2020). TOWARDS A DESIGN OBSERVATORY: THE CASE OF SCHOLARLY DESIGN RESEARCH IN PORTUGAL. In Proceedings of the Design Society: DESIGN Conference (Vol. 1, pp. 827-836). Cambridge University Press.
- Tavares, P., Silva, A. C., Pereira, J. B., Albino, M., Matos, D., & Teixeira, P. M. (2019). “Transformação regional pelo design – o projeto “capacitar pelo design” na Região Cávado”. In Tavares, P. (Org.) (2019). CAOS Communication, Art and Object Sinergies – Practice Research, the time is now. DRX: Registos de Investigação em Design, pp.11-21. ISBN 978-989-99861-9-0
- Amado, P., Quelhas, V, Silva, A. C. (2019). “Revival of Letterpress: The Portuguese Scenario”. In Tavares, P. (Org.) (2019). CAOS Communication, Art and Object Sinergies – Practice Research, the time is now. DRX: Registos de Investigação em Design, pp.81-97. ISBN 978-989-99861-9-0.
- Oliva, R., Matos, D., Silva, C., Terroso, M. (2019). SIM & PIM: Diseñando SIN Límites. Interdisciplinarietà entre las Escuelas EINA & IPCA. In Foro de Innovación Docente Comunicaciones, 8º encuentro BID enseñanza y diseño, pp.291-300, Fundación Diseño Madrid. ISBN 978-84-09-21554-6

Matos, D.

- Arruda, L., Calado, A., Boldt, R., Yu, Y., Carvalho, H., Carvalho, M., Ferreira, F., Soares, F., & Matos, D. (2020). Design and testing of a textile EMG sensor for prosthetic control. In N. Garcia, I. Pires, & R. Goleva (Eds.), IoT Technologies for HealthCare. HealthyIoT 2019. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering (Vol. 314, pp. 37–51). <https://doi.org/10.1007/978-3-030-42029-1>
- Matos, D., Terroso, M., & Sampaio, J. (2019). Exploração de uma nova identidade do curso de design Industrial. *8º Encuentro BID de Enseñanza y Diseño - Foro de Innovación Docente*.
- Calado, A., Soares, F., & Matos, D. (2019). A Review on Commercially Available Anthropomorphic Myoelectric Prosthetic Hands , Pattern-Recognition-Based Microcontrollers and sEMG Sensors used for Prosthetic Control. *ICARSC 2019: 19TH IEEE International Conference on Autonomous Robot Systems and Competitions*.

- Rego, M., Matos, D., & Riobom, D. (2021). Considerações ergonômicas no design de vestuário para seniores - caso de estudo. *Ergotrip Design - Revista de Estudos Luso-Brasileiros em Design e Ergonomia*, 5, 64–73.
- Silva, V., Soares, F., Esteves, J. S., Pereira, A. P., & Matos, D. (2020). Adequacy of Game Scenarios for an Object with Playware Technology to Promote Emotion Recognition in Children with Autism Spectrum Disorder. *International Conference on Human Systems Engineering and Design: Future Trends and Applications*, 293–298.
https://doi.org/10.1007/978-3-030-27928-8_44

NHL Stenden University of Applied Sciences, The Netherlands

Completed research projects

- University Campus project - Design in Innovation Networks research projects resulting in 4 PhDs (see below), finished 2019
- Innovation Lab education project, focused on digital developments and e-didactics; and MySchoolsNetwork (finished 2019)
- L4IDS Learning for Innovative Design for Sustainability, aiming to promote sustainable consumption and production of innovative products and services in Europe. Erasmus+, finished 2019
- SMACC - Smart Cities Coaching project, focused on multi-stakeholder training concepts for the City of the Future project. Erasmus +, finished 2017
- Innolabs, Erasmus+ finished 2016
- BioCas - Biocascades project, aims to stimulate the development of a regional circular bio-economy. NHI Stenden was involved in the Biocup sub-project for developing the value chain for biobased drinking cups at festivals. Interreg North Sea region, finished 2021

Research Group Serious Gaming, NHL Stenden University of Applied Sciences

- iLift Serious Game, A health behavior change support system for lifting and transfer techniques to prevent lower-back injuries in healthcare (RAAK SIA);
- Reducept, VR gaming aimed at reducing chronic pain without the use of medication;
- M.A.T.T.I.E., Mobile adaptive therapeutic tool in psycho-education;

- Ascaped, Virtual Escape Room to Enact Social Interaction and Communication between High Functioning Children with Autism and their Peers (RAAK.PUB03.038);
- BABLR, Maximizing Authentic Learning and Real-world Problem Solving in Health Curricula through Psychological Fidelity in a Game-like intervention;
- FORK platform, Critical incidents simulator training, dealing with multiple alliances in multi-problem families;
- Circularity Game; board game that confronts players with the importance of an integrative view in circular issues and how this leads to sustainable solutions;
- Provinve of Groningen: A serious game for and by people around inherited poverty, aimed at building understanding about long-term financial consequences of choices in the now;
- OD Security: Training game aimed at airport personnel for making objective decisions in randomly checking people when operating advanced body scanners intended for the detection of contraband.
- Zestor: Critical Incident Simulator aimed at creating awareness of the importance of intercultural sensitivity among college students (Comenius).

Graduated students at Masters and PhD level

PhD Level:

Assessing residential Smart Grids pilot projects, products and services: Insights from stakeholders, end-users from a design perspective. Uchechi Obinna. promotor prof.dr. A.H.M.E. Reinders and co-promotor lector dr.ir. J.P. Joore (November 2017).

Sustainable Food by Design. Jotte de Koning. TU Delft. Promotores prof.dr.ir. J.C. Brezet and Prof. dr. Ir J van Engelen. co-promotor dr. M. Crul

From New to Normal: Designing for product category legitimacy. Sarah Bork. promotor prof.dr. J.P.L. Schoormans. co-promotores lector dr.ir. J.P. Joore and dr.ir. S. Silvester (November 2017).

On the Paradoxical Nature of Innovation: Evidence from Social Networks in Fryslân. Sine Celik. promotores prof.dr.ir. J.C. Brezet en prof.dr. J.M.L. van Engelen ; co-promotor lector dr.ir. J.P. Joore (Juni 2018)

Conceptualizing inter-household energy exchanges: An anthropology-through-design approach. Promovendus. Abhygian Singh. promotor prof.dr. D. Keyson and lector dr.ir. H.W. van Dijk (Januari 2019).

The Intangibles. Value of Heritage Products for Design for Sustainability Initiatives. Sarah Suib. TU Delft. Promotores Prof. Dr. Ir J.C. Brezet and Prof. Dr. Ir. J. van Engelen. co-promotor dr. M. Crul

Master Level:

Master Design Driven Innovation, 15 - 30 students each year

Ivo Wenzler and Derek Kuipers supervised a total of 33 students toward the Master's degree to date. Each Master's student has been active in multiple research projects within the research group during the course of the program. Graduation took place through practice-based research into the design and deployment of serious gaming in the student's own practice context, including health, cybersafety, theater, welfare, primary and higher education, youth work, organizational change, sustainability and maritime.

- Biewenga, Gelein. 2018. "Precision Agriculture 4.0: Towards Data-Driven Agriculture by Strengthening the Farmer's Data Position." MSc, NHL Stenden University of Applied Sciences.
- Blaauw, Winout. 2019. "Lost: A Serious Game about Problems with Stimulus Processing in Patients with Non-Inherited Brain Injury." MSc, NHL Stenden University of Applied Sciences.
- Blok, Timon. 2017. "The Fodor Woods: An Adventurous Assessment Game." MSc, NHL Stenden University of Applied Sciences.
- Burg, Rinze van der. 2018. "Posizon, a Serious Game about Introducing the Concept of Positive Health to Health Care Providers." MSc, NHL Stenden University of Applied Sciences.
- Dam, Simon. 2019. "FORK: A Game Aimed at Training Youth Workers in Learning How to Deal with Complex Social Dilemmas in Problem Families." MSc, NHL Stenden University of Applied Sciences.
- Deli, Balint. 2017. "Overflow! A Serious Game for Promoting External Collaboration." MSc, NHL Stenden University of Applied Sciences.
- Derks, Frederik. 2018. "Using Dungeons and Dragons with Children Diagnosed with ASD." NHL Stenden University of Applied Sciences.
- Dijkema, Matthijs. 2019. "BOOZT: A Serious Game That Uses Virtual Reality (VR) to Train Imagination to Improve Motor Skills." MSc, NHL Stenden University of Applied Sciences.

- Dortmund, Janke. 2019. "Fostering Entrepreneurship among Students of MBO Terra through Simulation Gaming." MSc, NHL Stenden University of Applied Sciences.
- Fransz, Mandy. 2019. "Inducing Environmentally Friendly Behavior in Young People by Playing a Serious Game." MSc, NHL Stenden University of Applied Sciences.
- Hoekstra, Yvonne. 2019. "The Art of Reflection." MSc, NHL Stenden University of Applied Sciences.
- Huitema, Patrick. 2017. "Participatory Game Design Dutch Railways." MSc, NHL Stenden University of Applied Sciences.
- Jannink, Eelco. 2019. "Hanoi Logistics: Overcoming Programming Logistics." MSc, NHL Stenden University of Applied Sciences.
- Jansma, Anke. 2019. "Gaming against Climate Change." MSc, NHL Stenden University of Applied Sciences.
- Kerkstra, Marjet. 2018. "Beyond Florence & Virginia, a Serious Game on Nursing Leadership and Identity." MSc, NHL Stenden University of Applied Sciences.
- Kimpe, Frank de. 2019. "A Serious Intake Game as a Predictor of Study Dropout." MSc, NHL Stenden University of Applied Sciences.
- Kloër, Stephan. 2018. "Naxariis: Introducing Clinical Observational Skills in Nurses through Gaming." MSc, NHL Stenden University of Applied Sciences.
- Kostrowska, Agnieszka. 2018. "Grip on the Compliance Risks within Contracts Management." MSc, NHL Stenden University of Applied Sciences.
- Loves, Rob. 2019. "Data Protection Council: Play It Safe." MSc, NHL Stenden University of Applied Sciences.
- Magré, Martijn. 2017. "Jetman: A Subversive Climate Game." MSc, NHL Stenden University of Applied Sciences.
- Molema, Martin. 2019. "Risky Business: A Serious Gaming Simulation for Raising Awareness about Cyber Crime." MSc, NHL Stenden University of Applied Sciences.
- Nahon, Frido. 2019. "Liquit, a Serious Game That Helps Fight Alcohol Addiction." MSc, NHL Stenden University of Applied Sciences.
- Nauta, Jeroen. 2019. "Serious Gaming as a Supporting Tool for the Deanery of a Bachelor's Degree Program." MSc, NHL Stenden University of Applied Sciences.
- Spieard, Daan. 2018. "A Serious Gaming Intervention as Boundary Object to Support the Definition Provision of the Inquisitive Attitude." MSc, NHL Stenden University of Applied Sciences.
- Stal, Laura. 2018. "Ta(a)lentenjacht: Rediscovering Talent at Vanhulley through Serious Gaming." MSc, NHL Stenden University of Applied Sciences.

- Veenhoven, Gert. 2018. "Playing with Feelings: Sensitivity as a Super Power." MSc, NHL Stenden University of Applied Sciences.
- Veldwijk, Rebecca. 2017. "Escaping the MILL." MSc, NHL Stenden University of Applied Sciences.
- Wieren, Jacob van. 2019. "Escaperoom the Game." MSc, NHL Stenden University of Applied Sciences.
- Zuiderveen, Jan-Pieter. 2019. "Student Engagement Game." Msc, NHL Stenden University of Applied Sciences.

Notable Research Outputs

Dr. Marcel Crul selection publications 2017 - 2021 (incl 4 journal papers):

Marcel Crul (2021) Plastic-free Tourism and Hospitality on Dutch Wadden Islands: Multi-level Design Approaches and Experiences. Proceedings ERSCP 2021 Graz

Marije Boonstra; Eileen Blackmore; Rasmus Hørsted Stensen; **Marcel Crul**; Thiemo van der Weij; Jerke de Vries; Amarens de Wolff (2020) Designing **Local Circular Value Chains** - A Quick Guide for Multi-stakeholder Collaborations. Interreg North Sea Region, EU.

Segalas, Jordi; De Eyto, Adam; McMahon, Muireann; Bakirlioglu, Yekta; Joore, Peter; Jimenez, Adam; Tejedor, Gemma; Lazzarini, Boris; **Crul, Marcel**; Celik, Sine; Martens, Jonas; Wever, Renee (2020) Learning resources For Sustainable Design in Engineering Education. Proceedings 48th SEFI Annual Conference, Enschede the Netherlands.

M. Crul and U. Obinna (2020) Guidelines on Reduction of Single Use Plastics and Circularity of Plastic Products in Hospitality and Tourism. NHL Stenden University of Applied Sciences

S. Suib, **M. Crul** and J. van Engelen (2020) Enhancing Knowledge Exchange and Collaboration between Craftspeople and Designers using the Concept of Boundary Objects. International Journal of Design Vol 14(1)

Alex Jimenez Higuera, Jordi Segalàs Coral, Gemma Tejedor Papell, Boris Lazzarini, Adam DeEyto, Muireann McMahon, Yekta Bakirlioglu, Sine Celik, Jonas Martens, Peter Joore, **Marcel Crul**, Eileen Blackmore, Anna Verlander, Karin Haberman, Alba Obiols Sales, Pat O'Donnell, Marc O'Riain, Nazli Ozkan (2019) Best Practice Publication in Circular Design. Circular Design/L4IDS, EU Erasmus+ publication.

M. Crul and P. Joore and S. Celik, (eds.) (2019) Teaching Circular Design Guide: Professional Development Course. Circular Design/L4IDS, EU Erasmus+ publication.

Judith Ogink and **Marcel Crul** (2019) Industrial experiences with circular product design of plastic products. ERSCP 2019 Proceedings, Barcelona.

M. Crul (2019). External mid-term review of the UN Environment project Transforming tourism value chains in developing countries and Small Island Developing States (SIDS) to accelerate more resource efficient, low carbon development. UN Environment, Paris Office.

Adam De Eyto, Jorge Segalàs Coral, Muireann McMahon, Yekta Bakirlioglu, Gemma Tejedor Papell, Boris Lazzarini, **Marcel Crul**, Peter Joore, Patrick O'Donnell, Marc O'Riain, Alex Jimenez, Alba Albiols, Renee Wever, Anna Velander-Gisslen, Eileen Blackmore, Karin Haberman, Jonas Martins (2018). *Circular design – Adventures in Interdisciplinary Collaboration and Learning for a Circular Economy*. EESD 2018 Conference Proceedings.

M. Crul, D. van Beers, D. Eaton, J. Wildish and M. Spilsbury (2018) Evaluation of the UN Environment Sub-Programme on Resource efficiency. UN Environment, Nairobi.

M. Crul, J. Jager and R. Folkersma. Report of the Circular Plastics Lectorate Programme 2016-2018. NHL Stenden, Leeuwarden (in Dutch)

M.R.M. Crul and R. Suzana B.R. Kasim (2018) Independent Terminal Evaluation of the GEF UNIDO Cleantech Programme for SMEs in Malaysia. UNIDO, Vienna

M.R.M. Crul (2018) Exploration report on a National Test Centre for Circular Plastics in The Netherlands. NHL Stenden University (in Dutch).

A. Zazueta, **M. Crul** and J Jones (2018). Terminal Evaluation of the UNIDO/UNEP Global Programme on Resource Efficiency and Cleaner Production 2012-2017. UNIDO, Vienna.

Wouter C. Kersten , Nguyen H. Long, Jan Carel Diehl, **Marcel R.M. Crul**, Jo M.L. Van Engelen (2018). Comparing performance assessments of biomass gasifier stoves: influence of a multi-context approach. Sustainability 2018, 9(7) 1140

Marcel Crul and Floris van der Marel (2017) Sustainable Island Lab Terschelling. Proceedings of workshop 19 May 2017 (In Dutch). NHL University of Applied Sciences. Leeuwarden.

Segalas, Jordi; De Eyto, Adam; McMahon, Muireann; Joore, Peter; **Crul, Marcel**; Wever, Renee; Jimenez, Alex (2017). CIRCULAR DESIGN – LEARNING FOR INNOVATIVE DESIGN FOR SUSTAINABILITY: ERAMUS + KNOWLEDGE ALLIANCE PROJECT FOR SUSTAINABLE DESIGN , 19th International Conference on Engineering and Product Design Education, HiOA in Oslo, Norway, 7–8 September 2017.

Dinh, T.H, Nguyen, H.L. and **M.R.M. Crul**. (2017). 7 SME case studies on eco-innovation in Vietnam. CCS, Hanoi

W.C. Kersten, J.C. Diehl, **M.R.M. Crul**. (2017) Influence of context variation on quality of solutions: experiences with gasifiers stoves. *Procedia Manufacturing* 8, pp. 487 – 494.

J.I.J.C. de Koning, **M.R.M. Crul**, R. Wever, J. van Engelen and J.C. Brezet (2017). Mental Innovation Space of Vietnamese agro-food firms. *British Food Journal*.

Publications Prof dr Ir Peter Joore 2017-2021, including 5 journal papers

- A framework for exploration of relationship between the psychosocial and physical learning environment. S Baars, GLM Schellings, S Krishnamurthy, JP Joore, PJ den Brok, *Learning Environments Research* 24, 43-69 (2021).
- Joore, Blom, Coelen, Van der Zee (2020), *Atlas Onderzoek - Design Based Research in Perspectief*, ISBN/EAN: 978-94-91589-30-0
- Joore, Blom, Coelen, Van der Zee (2020), *Research Atlas - Design Based Research in Perspective*, ISBN/EAN: 978-94-91589-31-7
- Joore, Scholten, Barendsen, Wierda, Van der Zee, Geitz (2019), *Open Innovatie Netwerk NHL Stenden: Ateliers, Studio's, Living Labs, Werkplaatsen, Design Factory's en Innovatiehubs*, ISBN/EAN: 978-94-01589-24-9
- Joore, Scholten, Barendsen, Wierda, Van der Zee, Geitz (2019), *Open Innovation Network NHL Stenden: Workshops, Studios, Living Labs, Ateliers, Design Factories and Innovation Hubs*, ISBN/EAN: 978-94-91589-99-7
- Joore, Crul, Celik, Bakırlıoğlu, Blackmore, DeEyto, Velandar Gisslén, Habermann, Jiménez, Lazzarini, Martens, McMahon, Obiols, O'Donnell, O'Riain, Ozkan, Santamaría, Segalas, Tejedor, Trullols, Wever (2019), *Teaching Circular Design - Professional Development Course*, developed for the Learning for Innovative Design for Sustainability-Innovation project, funded by Erasmus+ contract: 575777-EPP-1-2016-1-ES-EPPKA2- KA.
- Baars, Schellings, Krishnamurthy, Joore, Den Brok, Van Wesemael (2019), A framework for exploration of relationship between the psychosocial and physical learning environment, *journal of Learning Environments Research*, <https://doi.org/10.1007/s10984-020-09317-y>
- Aranka M. Dijkstra, Sybrith M. Tiekstra, Marije Boonstra, Gertjan de Werk, Peter Joore (2019), *Festivals as Living Labs for System Innovation: Experiences from the interdisciplinary innovation programme DORP*, proceedings of 19th European Roundtable for Sustainable Consumption and Production (ERSCP 2019), Barcelona.

- Preferred attributes of home energy management products for smart grids - Results of a design study and related user survey, *Journal of Design Research*, Volume 16, Issue 2 (2018), Uchechi Obinna, Peter Joore, Linda Wauben, Angèle Reinders, <https://doi.org/10.1504/JDR.2018.092809>
- Constructing a framework for the exploration of the relationship between the psychosocial and the physical learning environment, Siebren Baars, Pieter den Brok, Sukanya Krishnamurty, Peter Joore, Pieter van Wesemael (2018), in: *Transitions Australasia: What is needed to help teachers better utilize space as one of their pedagogic tools* / Imms, W., Mahat, M., Melbourne, Australia : - p. 90 - 97.
- Circular Design - adventures in interdisciplinary collaboration and learning for a circular economy. *Proceedings of EESD 2018, 9th conference on Engineering Education of Sustainable Development*, Adam de Eyto, Jordi Segalas, Muireann McMahon, Yekta Bakirlioglu, Gemma Tejedor, Boris Lazarin,, Marcel Crul, Peter Joore, Patrick O'Donnell, Marc O'Riain, Alex Jiménez, Alba Obiols, Renee Wever, Anna Velander-Gisslen, Eileen Blackmore, Karin Haberman, Jonas Martins.
- Comparison of two residential Smart Grid pilots in the Netherlands and in the USA, focusing on energy performance and user experiences, Uchechi Obinna, Peter Joore, Linda Wauben, Angele Reinders, *Journal of Applied Energy*, Volume 191, April 2017, Pages 264-275.
- Van der Marel, F., Joore, P. Enhanced Capabilities through Design-Based Approaches. *Design Management Academy Conference "Research Perspectives on Creative Intersections"*, 7-9 June 2017 Hong Kong.
- Insights from stakeholders of five residential smart grid pilot projects in the Netherlands. Authors: Uchechi Obinna, Peter Joore, Linda Wauben, Angele Reinders. *Journal: Smart Grids and Renewable Energy* (Volume 7, January 2016, Pages 1-15)
- Terlouw, G., Kuipers, D. A., Veldmeijer, L., van't Veer, J. T., Prins, J. T. & Pierie, J. P. E. (2021). *Boundary Objects as Dialogical Learning Accelerators for Social Change in Design for Health: Systematic Review. Medicine and Social Sciences.* (Submitted)
- Terlouw, G., van't Veer, J. T. B., Kuipers, D. A., & Metselaar, J. (2020). Context analysis, needs assessment and persona development: Towards a digital game-like intervention for high functioning children with ASD to train social skills. *Early Child Development and Care*, 190(13), 2050-2065.
- Kuipers, D. A., Terlouw, G., Wartena, B. O., Prins, J. T., & Pierie, J. P. E. (2019). Maximizing authentic learning and real-world problem-solving in health curricula through psychological fidelity in a game-like intervention: Development, feasibility, and pilot studies. *Medical Science Educator*, 29(1), 205-214.
- Terlouw, G., van't Veer, J. T., Prins, J. T., Kuipers, D. A., & Pierie, J. P. E. (2020). *Design of a Digital Comic Creator (It's Me) to Facilitate Social Skills Training for*

Children With Autism Spectrum Disorder: Design Research Approach. *JMIR mental health*, 7(7), e17260.

- Terlouw, G., Kuipers, D., van't Veer, J., Prins, J. T., & Pierie, J. P. E. (2021). The Development of an Escape Room–Based Serious Game to Trigger Social Interaction and Communication Between High-Functioning Children With Autism and Their Peers: Iterative Design Approach. *JMIR Serious Games*, 9(1), e19765.
- Kuipers, D., Terlouw, G., Wartena, B., & van Dongelen, R. (n.d.). Design for Vital Regions in Vital Regions. In M. Coenders, J. Metselaar, & J. Thijssen (Eds.), *Vital Regions, SAMEN BUNDELEN VAN PRAKTIJKGERICHT ONDERZOEK* (pp. 251–261). Eburon.
- Kuipers, D. A., Terlouw, G., Wartena, B. O., van't Veer, J. T., Prins, J. T., & Pierie, J. P. E. (2017). The Role of Transfer in Designing Games and Simulations for Health: Systematic Review. *JMIR serious games*, 5(4).
- Kuipers, D. A., Wartena, B. O., Dijkstra, A., Prins, J. T., & Pierie, J. P. E. (2013, September). Design for transfer. In *International Conference on Serious Games Development and Applications* (pp. 239-246). Springer, Berlin, Heidelberg.
- Kuipers, D. A., Wartena, B. O., Dijkstra, B. H., Terlouw, G., van t Veer, J. T., van Dijk, H. W., ... & Pierie, J. P. E. (2016). iLift: A health behavior change support system for lifting and transfer techniques to prevent lower-back injuries in healthcare. *International journal of medical informatics*, 96, 11-23.
- Kuipers, D. A., Terlouw, G., Wartena, B. O., van Dongelen, R., Prins, J. T., & Pierie, J. P. E. (2018). Maximizing Authentic Learning and Real-world Problem Solving in Health Curricula through Psychological Fidelity in a Game-like intervention: Development, Feasibility and Pilot Studies. *Medical Teacher* (in press)
- Wartena, B. O., Kuipers, D. A., & van Dijk, H. W. (2015). Play It Safe; A Situational Game for Occupational Safety. In *Subconscious Learning via Games and Social Media* (pp. 11-26). Springer Singapore.
- Wenzler, I., Kuipers, D. A. Dijkstra, B. H. (2019) 50th International Simulation and Gaming Association Conference, ISAGA 2019, Warsaw, Poland.
- Kuipers, D. A. (2019, oktober) Instigating Figural Transfer through the intentional application of metaphorical recontextualisation in *Reducept: A virtual reality training game for supporting treatment of Chronic Pain*, Games for Health Europe, Amsterdam, NL. www.gamesforhealth.org
- Kuipers, D. A. (2018, januari) 2nd LEARN symposium on health professions education & research : The Role of transfer in designing games and simulations for health: Systematic review
- Kuipers, D. A. (2018, januari) 2nd LEARN symposium on health professions education & research : Maximizing authentic learning and real-world problem solving in health

curricula through psychological fidelity in a game-like intervention: Development, feasibility and pilot studies

- Kuipers, D. A. (2016, december) Lifelong Learning, Education & Assessment Research Network (LEARN) symposium: The role of Transfer in Designing Games for Health
- Van 't Veer J., Kuipers, D.A. (2016).
Project iLift: Zorgprofessionals motiveren tot correct til- en verplaatsgedrag middels een health Behavior Change Support System (hBCSS). Congres Supporting Health by Technology

Instituto Politécnico de Leiria, Portugal

Health and Care Design Research group

Completed research projects

- **Help2Care: Help to care for dependent person and caregivers:** Supported by FEDER and FCT under the program Portugal 2020. The interdisciplinary, collaborative, multiregional and practice-based research Help2Care project, aims at developing a model of empowerment of caregivers and the dependent person for self-care and also to enable health professionals to use it. This model will include a handbook to support the caregiver (paper, audio and digital format) with accessible text and images, digital platform (website and app) and a handbook (script) with the caregivers/dependent person training model to be used by the health professionals.
- **TeenPower - e-Empowering teenagers to prevent obesity:** Supported by FEDER and FCT under the program Portugal 2020. TeenPower is a transdisciplinary practice-based action research project that envisages the development of innovative interventions to promote healthy behaviors. The main objective is the development, implementation and evaluation of a program to promote healthy behaviors and prevent obesity in adolescence. The project aims at the cognitive-behavioral empowerment of adolescents, through increased and interactive contact between the adolescent and the multidisciplinary health team.

Notable research outputs

Publications

- Neves, S., Macdonald, A., McLellan, E., Poole, M., Harrison-Dening, K., Tucker, S., Bamford, C. and Robinson, L. (2021) Co-designing a Care Plan Guide App to Support Early Conversations About End-of-Life Care in Dementia. In: Martins N., Brandão D. (eds) Advances in Design and Digital Communication. Digicom 2020. Springer Series

in Design and Innovation, vol 12. Springer, Cham. https://doi.org/10.1007/978-3-030-61671-7_31

- Neves S., Macdonald A., Poole M., Harrison Denning K. (2021) Participatory Co-design: Approaches to Enable People Living with Challenging Health Conditions to Participate in Design Research. In: Martins N., Brandão D., Moreira da Silva F. (eds) Perspectives on Design and Digital Communication II. Springer Series in Design and Innovation, vol 14. Springer, Cham. https://doi.org/10.1007/978-3-030-75867-7_13
- Reis, C., Pernencar, C., Carvalho, M., Fragata, N., Martinho, R., Alves, R., Morais, T (2019). Capítulo III – Promovendo Comportamentos Saudáveis na Adolescência com uma aplicação móvel: O Processo de Ilustração, Design e Gamificação. In Spousa, P. (Ed.), TEENPOWER – TECNOLOGIA & INOVAÇÃO NA PROMOÇÃO DE COMPORTAMENTOS SAUDÁVEIS EM ADOLESCENTES, (pp. 77-112). Leiria: Grácio Editor. ISBN: 978-989-54412-1-1
- Sousa, P., Duarte, E., Ferreira, F., Esperança, A., Frontini, R., Santos-Rocha, R., Luís, L., Dias, S. S., & Marques, N. (2018). An mHealth Intervention Program to Promote Healthy Behaviors and Prevent Adolescent Obesity (TeenPower): a Study Protocol. *Journal of Advanced Nursing*, online first. doi:10.1111/jan.13905

Stakeholder/public engagement

- Neves S. (2020) Participatory co-design: an approach for healthcare service and experience improvement. Guest speaker at *Centro Hospitalar de Leiria*, networking event. 3rd of February 2020

Culture, creativity and inclusive society group

Completed research projects

- **ProLearn4ALL - Learning Products for ALL:** Supported by FEDER under the program Portugal 2020. Scientific Research and Technological Development Project (IC&DT) with the objective of combating situations of exclusion for people with disabilities or with any type of limitation. Increasing the knowledge of children in primary education about the characteristics of disability, through the creation and use of playful-pedagogical materials, different habits and attitudes of inclusion are fostered.
- **SCRATCH** - Research project developed with the support of the Institute for Cinema and Audiovisual (ICA) relating the work of investigators in performance, writing and

design in a non-linear approach to the animation creation and production processes, resulting in a animated short film.

Graduated students at Masters

- Maria Fialho: “O Potencial da Criação de Recursos Didáticos para o Desenvolvimento de Competências Multinível em Crianças com Necessidades Específicas) (completed on 2021). Master in Accessible Communication. Dr Nuno Fragata Marques, Principal supervisor, with Dr Carla Freire.
- Stéfanie Lavos Rosa: “Baloço de Irmãs: Um baloço inclusivo para cadeiras de rodas”. Master in Product Design (completed on 2020). Dr. Renato Bispo. Principal Supervisor.
- Joana Inês Abraúl Barros: “Sobreposições - Cadernos que potenciam a criatividade e a imaginação”. Master in Product Design (completed on 2019). Dr. Renato Bispo. Principal Supervisor.
- Paulo Eduardo Vanzeler Oliveira: “Ludus 2.x – Do brincar à música”. Master in Product Design (completed on 2018). Dr. Renato Bispo. Principal Supervisor.
- Laura Correia de Matos David Bosne: “Conexão - A (in)visualidade na Esgrima ”. Master in Product Design (completed on 2018). Dr. Renato Bispo. Principal Supervisor.
- Viktoryia Sydorenko: “As Formas do Informe” (completed on 2017). Master in Fine Arts. Dr Nuno Fragata, Principal supervisor.

Notable research outputs

Publications

- Fragata, N.; Mangas, C. & Freire, C. (2021). ProLearn4ALL: a brincadeira e o jogo a favor da construção de recursos lúdico-pedagógicos inclusivos. In Vieira, R.; Marques, J.; Silva, P.; Vieira, A.; Margarido, C.; Matos, R. (Orgs) *Livro de Atas 8ª Conferência Internacional de Mediação Intercultural e Intervenção Social* (pp. 111-119). Leiria, Portugal. ISBN:978-989-8797-57-5
- Rodrigues, A.; Marques, N.; & Sousa, J. (2020). Língua Gestual e Cinema de animação – Cruzamento de Arte e Cultura em Prol da Inclusão (no prelo). *Atas da VI Conferência Internacional para a Inclusão*
- Santos, V., Macedo; M., Bispo, R. (2020). MASK: A Visual Study on the Facial Expression Behind the Health Mask. in Martins, N., Brandão, D. (eds.) *Advances in*

Design and Digital Communication - Proceedings of the 4th International Conference on Design and Digital Communication, Digicom 2020. Springer.

- Rosa, S., Bispo, R (2020). Baloço de irmãs: Um baloço inclusivo para cadeiras de rodas. VI Conferência Internacional para a Inclusão - Livro de Resumos. pp. 195-203. Escola Superior de Educação e Ciências Sociais do Politécnico de Leiria
- Fragata, N.; Amaral, T.; Mangas, C. & Freire, C. (2019). Desenhar para capacitar. In Freire, C.; Mangas, C. & Sousa, C. (Orgs.) *Atas da V Conferência Internacional para a Inclusão* (pp. 19-30). ISBN:978-989-8797-34-6
- Fragata, N., Mangas, C., Freire, C., & Ferreira, P. (2019). Inclusive Pedagogical Books: Strategies and Options to Build Accessible Resources. In Pixel (Ed.) Conference Proceedings International Conference New Perspectives in Sciences Education. Bologna, Italy. Filodiritto Publisher (pp. 334-340). ISBN:978-88-85813-56-4
- Bispo, R. (2019). Design as Translation: what does it mean to have an healthy life?. Conferência internacional Design Culture and Somaesthetics. Moholy-Nagy University of Art and Design, Budapest. <https://doktori.mome.hu/en/conference-2019/program/>
- Fragata, N. & Mangas, C. (2018). A ilustração como ferramenta de comunicação acessível: Refletir sobre o lugar do outro. In Magalhães, F., Sousa, J., Lopes, M.S.P. (Orgs.) *Reflexões sobre Património e Intervenção Artística*, (pp. 68-78). ISBN:978-989-8797-26-1
- Fragata, N. (2017). Compreender: Possibilidades na criação de ilustração expressiva por meio de técnicas oficinais de impressão. In Freire, C., Mangas, C. & Sousa, C. (Orgs.) *Livro de Atas da 4ª Conferência Internacional para a Inclusão*, (pp. 334-343). ISBN:978-989-8797-14-8-

Environment and Sustainable Design group

Completed research projects

- **DEGREN:** Cross-border research project funded under the Interreg Espana Portugal programme financed by FEDER, with the aim of generating new knowledge and transferring it to companies; boost applied innovation in strategic sectors of the EUROACE zone and favour the generation of new business models based on ECODISEÑO, the circular economy and the green economy.
- **CP2S - Cerâmica, Património e Produto Sustentável – do ensino à indústria:** Supported by Portugal 2020 and Fundação para a Ciência e Tecnologia; (Projetos de Investigação Científica e Desenvolvimento Tecnológico), for creating innovative and

experimental resources for pedagogical, research and design of sustainable ceramic products that contribute to increasing the competitiveness and sustainability of this economic sector.

- **InEDIC:** EU Lifelong Learning Programme: Training materials and ecodesign tools targeted at ceramics sector.
- **HomeGreens – Household Aquaponics: Integrated Multi Trophic Aquaculture:** Supported by Programa Operacional Competitividade e Internacionalização and FCT – Fundação para a Ciência e a Tecnologia. Homegreens aims to build small eco-designed aquaponic systems that can be placed in personal homes, schools, hospitals or similar places, and serve as pioneer systems to allow consumers and stakeholders (present and future) to allow them to observe biology working in a sustainable and economically viable way.

Graduated students at Masters and PhD level

- Paulo César Machado Ferroli, docente na UFSC – Universidade Federal de Santa Catarina (Brasil): “Materiais sustentáveis para design industrial” (from 1st September 2019 to 28th de February 2020). Post Doctorate supervision.
 - Josiane W. Vieira, docente na UFSC – Universidade Federal de Santa Catarina (Brasil): “Cerâmica de Caldas da Rainha – PT. Investigação dos processos de produção cerâmica na formação em design” (from 1st september 2013 to 31st august 2014). Dr. José Frade. Post Doctorate Supervision.
 - Paolo Martini: “Ico drums – tarolas em cerâmica” (completed on 2017)- Master in Product Design. Dr. José Frade. Principal Supervisor.
 - Mirko Pierini: “Nalu Pranchas Eco-Sustentáveis” (completed on 2016)- Master in Product Design. Dr. José Frade. Principal Supervisor.
 - João Aboim: “Estratégias de Eficiência na Cozinha” (completed on 2015)- Master in Product Design. Dr. José Frade. Principal Supervisor.
- Marco Balsinha: “Uruboro - compostor cerâmico” (completed on 2015)- Master in Product Design. Dr. José Frade. Principal Supervisor.

Notable research outputs

Publications

- Venâncio, F.; Bispo, R.; Frade, J.; From Industry to the table: the tableware sector in Portugal; 2nd International Conference on Food Design and Food Studies,

Experiencing Food, Designing Sustainable and Social Practices.; Lisboa, 28 a 30 novembro; 2019.

- Vieira, J. W.; Frade, J. M. C. B. C.; Frutuoso R.; O projeto cerâmico, património e produto sustentável do ensino à indústria (CP2S) como exemplo do reforço da extensão ensino superior-industria-sociedade; RIO 2019 Graphica | XIII International Conference on Graphics Engineering for Arts and Design; 2019; (co-autor do artigo e da comunicação)
- Venâncio, F.; Bispo, R.; Frade, J.; Talha Wine: A secular production technique recovered for the presente; Forma 19; X Congresso Internacional de Diseño de La Habana; 4th to 7th June 2019.
- Frade, J.M.; Potencialidades e Percepção de Estratégias de eco-design na indústria cerâmica através do estudo crítico dos respetivos produtos; revista Técnica; Centro Tecnológico de Cerâmica e Vidro (CTCV); March de 2020
- Frade, J.M.C.B.C.; Cerâmica Vieira – A singularidade de um processo cerâmico; publicado no contexto da exposição “Cerâmica Vieira: indústria e identidade”.
- Ferroli, P.; Librelotto, L.; Frade, J.M.C.B.C.; Bártolo, H.; Materiais e Sustentabilidade no Mobiliário Urbano Encontrados na Europa; Mix Sustentável; págs 97-114; Vol. 5 nº 4 (2019); ISSN: 24473073.
- Frade, J.M.C.B.C.; Gouveia; L.; Gomes; L.; Estratégias de eco-design e de sustentabilidade na área da cerâmica estrutural em Portugal; Mix Sustentável (edição Especial – VII ENSUS); págs 185-187; Vol. 5 nº 2 (2019); ISSN: 24473073.
- Frade, J.; Produtos Cerâmicos Industriais Sustentáveis em Portugal; Kéramica, Revista da Indústria Cerâmica Portuguesa; págs. 42-43; julho – agosto; 2018.
- Frade, J.; Do design experimental em ambiente académico às propostas e desafios para novos produtos industriais; Kéramica, Revista da Indústria Cerâmica Portuguesa; págs. 6-12; março – abril; 2018.
- Frade, J. e outros; Catálogo 12 conversas em torno de 12 projectos em cerâmica; ISB-N 978-989-96914-7-6; julho 2018.
- Frade, J. e outros; Catálogo Produtos Cerâmicos Industriais Sustentáveis em Portugal; ISB-N 978-989-96914-8-3; julho 2018.

Progress updates on current activities (Summaries of the following)

- Research projects
- Postgraduate Research Degrees (incl. Level, Title and Supervisors)

- Other notable activities

Häme University of Applied Sciences, Finland

Research projects

Laaksonen, P.

2021, EU regional funding, Center of competence for bio-based raw materials, 304 k€. Project has just started, no progress yet.

2019, Council of Strategic Research / Academy of Finland, Bio-based Dyes and Pigments for Colour Palette (BioColour), HAMK Budget 434 k€.

Multiple research partners including chemistry, materials science, bioresources, toxicology, consumer research, arts and fashion design.

Project is on-going. 1 PhD thesis is related to the project, currently 3 researchers at HAMK are occupied in the project. 2 peer-reviewed papers have been submitted, 1 in preparation. 1 conference presentation has been given, arts exhibition with the project partners will be held in autumn 2022.

Jumisko-Pyykkö, S.

2020-, EU regional funding, Digital Culture, 178k€

2020-, EU regional funding, Developing expertise in smart wearables, 243k€

2020-, EU regional funding, Change Driver, 227k€

Postgraduate Research Degrees

Laaksonen, P.

Doctor: Tia Lohtander. Chemical Engineering, Aalto University. Functionalization of cellulosic materials using natural colourants. Supervisor and advisors: Monika Österberg, Suri Arola, Päivi Laaksonen

Doctor: Juha Jordan, Chemical Engineering, Aalto University. Long-term durability of natural colourants. Supervisor and advisor: Prof. Jaana Vapaavuori, Dr. Päivi Laaksonen

Other notable activities

Laaksonen, P.

New master level education programme (60 cr) has started: Sustainable Technologies, Coordinator and responsible teacher Päivi Laaksonen.

IPCA Polytechnic Institute of Cávado and Ave, Portugal

Research projects

Tavares, P.

Local Coordinator / Researcher (portuguese team). FUSION. Fashion Up-Skilling Innovation Network. Project code EACEA-34-2018. <https://cefusion.com>

Local Coordinator / Researcher. MOTIRÔ. <https://www.dad.puc-rio.br/2020/11/12/projeto-de-pesquisa-motiro/>

Simoes, R.

Institutional coordinator. Project “Beyond Ecobond”. Portugal 2020, co-promoção SI&IDT, projeto 46991 - 17/SI/2019, 2021-2024

Institutional coordinator. Project “TECH - Technology, Environment, Creativity, and Health”. NORTE-01-0145-FEDER-000043, 2020-2023.

Team leader / Researcher. Project “GreenHealth - Digital Strategies based on biological actives to improve well being and promote green health”. NORTE-01-0145-FEDER-000042, 2020-2023.

Researcher. Project “SmartHealth – Inteligência Artificial para Cuidados de Saúde Personalizados ao Longo da Vida”. NORTE-01-0145-FEDER-000045 (Portugal 2020, FEDER), 2020-2023

Sampaio, J.

Researcher (portuguese team). BEYOND ECOBOND, projeto n.º 46991 (Portugal 2020 SI&IDT Empresarial Copromoção n.º 17/SI/2019)

Pereira, J.B.

Researcher. Motirô – O festejo como testemunho. In partnership with ID+, PUC Rio de Janeiro, Museu da Pessoa (Brasil).

Co-Chair, Special Session “Design and territory – policies and strategies with the creative industries for the recovery and resilience of regional development”, held at the 28th APDR Congress - Portuguese Association for Regional Development.

Silva, A.C.

Researcher. Design OBS. Towards a Portuguese Design Observatory: Models, Instruments, Representation and Strategies. IPCA, UA, FBAUL, FBAUP. <https://designobs.pt/pt-pt/>, POCI-01-0145-FEDER-032445.

Matos, D.

Researcher (Portuguese team). FUSION. Fashion Up-Skilling Innovation Network. Project code EACEA-34-2018. <https://cefusion.com/>

Researcher: OncoNAVIGATOR - Intelligent System for Personalized Navigation and Mapping of Oncological Interventions. NORTE-45-2020-75 - SISTEMA DE APOIO À INVESTIGAÇÃO CIENTÍFICA E TECNOLÓGICA - “PROJETOS ESTRUTURADOS DE I&D&I” - HORIZONTE EUROPA. NORTE-01-0145-FEDER-000059

Researcher: SmartHealth – Inteligência Artificial para Cuidados de Saúde Personalizados ao Longo da Vida” (IC&DT PROJECT). This project is co-funded by operation no. NORTE-01-0145-FEDER-000045 (NORTE-45-2020-21 | “Sistema de apoio à investigação científica e tecnológica projetos estruturados de I&D&I (programas integrados de IC&DT) – APNOR), NORTE2020, Portugal 2020, FEDER

Postgraduate Research Degrees

Tavares, P.

Phd: António Rui Ferreira. A interação entre os *Fashion Films* e a Arte nas representações Contemporâneas do Desejo. Facultad de Bellas Artes Universidad de Vigo. Co Supervision with Chelo Matesanz.

PhD: Gabriela Sá Ferrinho. Doutoramento Design. Faculdade de Belas Artes da Universidade do Porto

Master: Margarida Ferreira. O fauvismo presente na animação. A cor na animação contemporânea. Co Supervision Pedro Mota Teixeira. IPCA

Master: Isabel Trigueiros.

Master: Helena Carneiro. A representação de problemas e hábitos alimentares em séries de animação no âmbito do projeto Célia Celíaca.

Pereira, J.B.

PhD: Pedro Fragoso Lopes. “O acto criativo como ferramenta contra a desertificação populacional: para uma dinâmica viável entre criadores e empreendedores locais em ambientes rurais”. Co-supervision with Gonçalo Gomes and Heitor Alvelos. PhD in Design. University of Porto/University of Aveiro/ ID+.

Master: António Santos. “Modelos conceptuais de gestão de identidade corporativa para Micro, Pequenas e Médias Empresas. Identidade digital em economia local”. Master in Digital Design. IPCA.

Master: Bruna Cardoso. “Desenvolvimento de uma plataforma digital de coordenação de ações cívicas, sociais e políticas”. Master in Digital Design. IPCA.

Master: Soraia Morais. “Mobile Health: Design e Desenvolvimento de uma aplicação móvel de saúde para pessoas com dificuldades locomotoras”. Master in Digital Design. IPCA.

Master: Mattia Ronconi. “A animação como estratégia documental no graffiti writing. Representação e reconstrução de memórias”. Co-supervision with Paula Tavares. Master in Illustration and Animation. IPCA.

Master: Mariana Clemente. “A ilustração como expressão na impressão de um livro sustentável – Creative Spark Print Studio”. Master in Illustration and Animation. IPCA.

Sampaio, J.

Master: Carvalho, L. Redesign e indústria: Projeto aplicado à Almas Design S.A. (D. Matos & J. N. Sampaio). Instituto Politécnico do Cávado e do Ave, Barcelos

Master: Rodrigues, J. Privado vs público no trabalho: proposta de um assento cápsula que permite a privacidade do utilizador de escritório . (M. Terroso & J. N. Sampaio). Instituto Politécnico do Cávado e do Ave, Barcelos

Master: Meneses, J. Abrigos para fumadores em contexto das smart cities: Prevenção à exposição involuntária ao fumo do tabaco. (J. N. Sampaio. Instituto Politécnico do Cávado e do Ave, Barcelos

Master: Nunes, J. Inserção de cinzeiros interativos nas smart cities para o controlo da poluição causada pelas pontas de cigarro . (J. N. Sampaio. Instituto Politécnico do Cávado e do Ave, Barcelos

Master: Silva, O. O transporte de prancha de surf: proposta de produto de proteção e acomodação de pranchas de surf em trânsito aéreos . (J. N. Sampaio. Instituto Politécnico do Cávado e do Ave, Barcelos

Silva, A.C.

PhD: Maria Margareth Rodrigues. “Proposta Para Criação de Uma Biblioteca Virtual do Grafite Urbano”. FLUC. Co Supervision with Maria Manuel Borges

Master: Maria Inês Silva. Design para Aplicações Móveis de Agendas Culturais. Como uma plataforma online pode contribuir para a divulgação de eventos culturais em Guimarães. IPCA. Co Supervision with João Antunes

Master: Ana Luísa Costa Gomes. “Desenvolvimento de dashboards para crianças e jovens com diabetes tipo 1”. IPCA.

Master: José Carlos Freitas Azevedo “A aplicação móvel ao serviço do turismo: o design de roteiros urbanos”. IPCA

Master: Patrícia Gabriela Oliveira Gonçalves. Plataforma de Divulgação e Registo para Voluntariado em Portugal. IPCA. Co Supervision with João Antunes

Matos, D.

Master: Mariana Rêgo. “Ergonomia e usabilidade ao serviço do design de vestuário, como meio para a inclusão de pessoas de 3ª idade.” IPCA

Master: Gabriela Ferreira. “Design para a mobilidade: Otimização e valorização de uma cadeira de rodas para crianças”. IPCA

Master: Ana Carvalho. “Desenvolvimento de poltrona hospitalar para doentes hemodialisados”. IPCA

Master: Nazaré Marques. “Design para a saúde: Intervenção na influência da aicmofobia no tratamento de doenças, na taxa de vacinação e na dádivas de sangue”. IPCA

Master: Octavio Lima. “Smarthealth - Inteligência artificial para cuidados de saúde personalizados ao longo da vida. Desenvolvimento de um assistente virtual com dispensador de medicamentos para idosos”. IPCA

Other notable activities

Tavares, P.

Advisory Committee: Barcelos Creative City UNESCO - Arts and Crafts, since 2017

Advisory Committee: Braga Creative City UNESCO - Media Arts, since 2017

Advisory Committee: Braga European Culture Capital 2027 - since 2021

General Chair at CONFIA - International Conference on Illustration and Animation (since 2012)
<https://confia.ipca.pt/>

Co-Chair, Special Session “O design como agente para o desenvolvimento territorial e a territorialização”, held at the 26th APDR Congress - Portuguese Association for Regional Development.

Pereira, J.B.

Research Coordinator. “The Mediated City” – Architecture, Media, Politics and Society (AMPS) International Nonprofit Research Organisation

Vice-President for Design Ethics at the United Designs Alliance.

Co-Chair, Special Session “O design como agente para o desenvolvimento territorial e a territorialização”, held at the 26th APDR Congress - Portuguese Association for Regional Development.

Silva, A.C.

Research Coordinator IPCA “European Digital Treasures: Management of centennial archives in the 21st century” for DGLAB. 2020/2021

Co-chair of the conference “Post-Digital Letterpress Printing”, 2020 FBAUP, Porto, Portugal.
<https://pdlp.fba.up.pt/>

Member of the College of Reviewers da ATypI – Association Typographique Internationale (since 2018)

Member of the Scientific Board of the Encontro de Tipografia (since 2011)

Member of the Scientific Board and Organization Committee of da DIGICOM — International Conference on Design & Digital Communication

NHL Stenden University of Applied Sciences, The Netherlands

Research projects ongoing

Research group Open Innovation:

Network Applied Design research NADR (SIA Dutch Government): NADR connects lecturers who focus on practical design research. One of the activities of NADR is its yearly exhibition during the Dutch design week.

Design Driven Innovation for Water and Circularity - Netherland & South Africa, Orange research Programme: the project aims at design solutions for cross-sectoral sustainability issues relating to water supply and plastic waste, between the Netherlands and Bali and South Africa (two international campus sites of NHL Stenden)

Inno-quarter - Festival driven Innovation: with 10 European partners, this project aims to facilitate innovations and start-up programmes developed and tested during festivals.

RELEASE project NWO, Dutch government: Research project on reversable large-scale energy storage technologies. The research group is responsible for the topic 'assessment of field labs and innovation ecosystems'.

Future Design Factory/design factory global network. The research group stood at the basis of the local Future Design Factory, a physical and organisational platform for innovation in Friesland, stays involved in its development and is an active member of the global network.

Beyond Scale project Erasmus +: the project aims to develop a community of practice around the topic how higher education institutes can promote regional entrepreneurship.

Circular Plastics programme, SIA and Dutch Government 2017- ongoing: this project is aimed at circular product design, mechanical and chemical recycling of plastics in packaging, textiles and building products.

Plastic Free Wadden Islands, Dutch government project 2019 -21 ongoing: this project aims to reduce plastic consumption in hospitality, tourism and retail on the Wadden islands

PhD research project on the relationship between physical and psycho-social learning environments

PhD research project on the relation Creativity and Art, focusing on the possible effect of dealing with art on the creativity of UAS students who work according to design-based education.

Postgraduate Research Degrees

Master Design Driven Innovation at NHL Stenden (30 students/year)

Other notable activities

Member of National Network Applied Design Research in The Netherlands (Joore)

Members of Design Factory Global Network (Joore, Crul)

Evaluator and Advisor for the United Nations Environment Programme (UNEP) and Industrial development Organisation (UNIDO) (Crul)

Member of European PREPARE and ERSCP Networks on cleaner production and consumption (Crul)

Member of audits/ evaluations for other knowledge institutes in Europe (Joore)

Instituto Politécnico de Leiria, Portugal

Health and Care Design Research group

Ongoing research projects

SafeTrack: Miniaturized wireless devices for continuous monitoring of patients in emergency settings. This research is funded by the programme *Operacional Regional do Centro* (CENTRO 2020) under its programme *Portugal 2020*, through funding from *Europeu de Desenvolvimento Regional* (FEDER).

Postgraduate Research Degrees

Vera Santos: (No title yet). Master in Design for health and wellbeing. Dr Sandra Neves, Principal supervisor.

Eurico Fernandes: (No title yet). Master in Design for health and wellbeing. Dr Elga Ferreira, Principal supervisor.

2020 - Lu Wanjou, Title: Interactive Communication via Virtuality and Reality. AR Application Game Design, Master in Graphic Design. Dr Elga Ferreira, Principal supervisor.

<http://hdl.handle.net/10400.8/5158>

2020 - Melissa Trevino, Title: Redefining editorial experience: user experience & user interface design in digital publications, Master in Graphic Design. Dr Elga Ferreira, Principal supervisor. <http://hdl.handle.net/10400.8/4372>

2018 - Yara Neves, Title: User experience & user interface. Desenvolvimento e concepção de projetos digitais, Master in Graphic Design. Dr Elga Ferreira, Principal supervisor. <http://hdl.handle.net/10400.8/3747>

2014 – João Guerra, Title: Responsive Web Design, Master in Graphic Design. Dr Elga Ferreira, Principal supervisor. <http://hdl.handle.net/10400.8/1724>

Other notable activities

Planning and designing: Health and Wellbeing Design Seminars with Research Proposal Presentations (Students of Master in Health and Wellbeing Design) December 2021.

Planning and designing: Symposium Health and Care Design Research 2022.

Culture, creativity and inclusive society group

Ongoing research projects

Invisible 5G: Virtually Invisible Small-Cells for 5G Densification: Supported by FEDER and FCT under the program Portugal 2020, this project aims the development of antenna integration strategies that enable the democratization of information access through the 5G network, particularly in urban centres, such as historic centres, squares or other urban areas where the visual integration of the antenna is considered particularly relevant.

Oughtred's Circles of Proportion: Supported by FCT under the program Verão com Ciência, this project aims the development of a functional replica of the circular slide rule developed by William Oughtred in 1630, to be presented as an interactive object to be manipulated by visitors, in the exhibition "The intimacy of numbers: Stafford's amazing instrument in Lisbon", organised in partnership by the National Museum of Natural History and Science of Lisbon (MUHNAC) and the British Embassy in Lisbon, which will be on view at the MUHNAC from 22 September to 15 November 2021.

Projeto Link Me Up - 1000 ideias - Sistema de Apoio à co-criação de inovação, criatividade e empreendedorismo: The Polytechnic of Leiria, together with 13 Polytechnics in Portugal, participates in this Co-creation of Innovation project. Multidisciplinary teams of students from different areas, employees of companies/organizations and professors creatively study real problems/challenges that companies/organizations pose, creating future possibilities and visions.

Projeto “Exploração de metodologias online no desenvolvimento de competências na área do audiovisual” - Research project promoted by the Polytechnic of Viseu with the Polytechnic of Guarda and the Polytechnic of Leiria. The objective of the project is to develop teaching-learning approaches in an online context to improve skills to produce an audiovisual product. An inclusive project that intends to promote the acquisition of basic skills in students and non-teaching staff regardless of the participant's education level.

Posgraduate Research Degrees

Ivone Santos: (No title yet). Master in Accessible Communication. Dr Nuno Fragata Marques, Principal supervisor, with Dr Carla freire

Karina Werner: (No title yet). Master in Graphic Design. Dr Nuno Fragata Marques, Principal supervisor, with Specialist Marco Correia

Ana Carvalho: (No title yet). Master in Graphic Design. Dr Nuno Fragata Marques, Principal supervisor, with Dr Catarina Mangas

João Rosa: (No title yet). Master in Fine Arts. Dr Nuno Fragata Marques, Principal supervisor, with Dr. Célia Ferreira

Environment and Sustainable Design group

Ongoing research projects:

LIMO DO CAIS – Sustainable Exploitation of the Endogenous Resources of S, Martinho do Porto: Supported by FEDER, under the operational program Mar 2020. The project aims to develop new products taking into account the physical-chemical properties of sustained exploitation of the endogenous resources – the marine red macroalga.

Water2move: Supported by FEDER, under the program Portugal 2020, through COMPETE 2020. The aim is to develop urban mobility products through a production process of polymeric foam hollow components to replace metallic alloy components, in order to reduce the weight of the parts and the possibility of integrating embedded RFID technology.

Fores4Future: Supported by FEDER, under the program Portugal 2020, through COMPETE 2020. With the aim of developing a constructive system in wood for configuring spaces, based on the use and valorisation of species from the Portuguese forest, including its conception, design and experimental characterisation.

External Collaborations

Häme University of Applied Sciences, Finland

ICP Materials

HAMK is a partner in the International Co-operative Programme on Effects on Materials (ICP Materials) network. The aim of ICP Materials is to investigate effects of air pollution on soiling and corrosion of materials and cultural heritage. ICP Materials is nationally funded to support United Nations Economic Commission for Europe (UNECE) and its air pollution convention. It is one of several effect oriented International Co-operative Programmes reporting to the Working Group on Effects, which together with the European Monitoring and Evaluation Programme provides the science for the policy process of the air convention to develop protocols for lowering air pollution and corresponding effects in the UNECE region.

IPCA Polytechnic Institute of Cávado and Ave, Portugal

IPCA collaborations on Art and Design Research group

The Design School and ID+ Research Group have several partners on applied research in art and design and materials, we present the ones with whom we are working on the present.

- INL <https://inl.int/>
- DST Group <https://www.dstsgps.com/>
- Valérius Textiles <http://www.valerius.pt/>
- Santa Casa da Misericórdia de Barcelos <https://www.misericordiabarcelos.org/>
- Braga Media Arts <https://www.bragamediaarts.com/pt/>
- Barcelos Arts and Crafts <https://cidadecriativa.barcelos.pt/>
- Museu da Pessoa <https://museudapessoa.org/>

Instituto Politécnico de Leiria, Portugal

Health and Care Design Research group

- Centro Hospitalar do Oeste
- Centro Hospitalar de Leiria
- ciTechCare – Center for Innovative Care and Health Technology

Strategic Outlook for Research & Innovation Development and external funding

As an interdisciplinary group we believe that we can operate at different levels and areas, exploring synergies between the areas of art and design, namely visual communication, visual arts, audiovisuals, games and sustainable product design, design for health and wellbeing. Aligned with the objectives of RUN in fulfilling the European Universities' main mission creating and promoting the university of the future: delivering future and advanced skills to transform our EU regions.

Considering the position of our regional net of institutions, and knowing we have strong relations and connections with regional creative industries and aim to support their transition towards sustainable and digital research projects at international levels, we intend:

- to participate (and we are participating) in the Horizon Europe calls (RIA, IA, ERC, ...);
- to participate in the Creative Europe calls;
- to participate in European Institute of Innovation & Technology calls;
- Others.

RUN-EU RESEARCH AREA 2 CLUSTER GROUP

Research Area Cluster Name

Food and Biotechnology

Research Area Cluster Lead

Annikka Pakarinen (HAMK)

Short Description

Food and biotechnology are essential areas of research and education towards sustainable and secure globe. New technologies and innovations are needed to feed the world's growing population and turn industrial production into greener pathway. Working group of Food and Biotechnology enhances the co-operation between RUN expertise's on this specific area. This working group is an important part of established European Innovation Hub in Bioeconomy which is one of the planned Hub's in RUN-EU. In this first phase Food and Biotechnology working group consists of six RUN-EU partners: TUS Midlands, HAMK, IPL, LIT TUS Midwest, NHL Stenden and SZE. Expertise and facilities within this group allow interesting openings, knowledge transfer and innovative co-operation with companies and other stakeholders across Europe.

Individual Institute Lead

IPL	Sara Novais
TUS Midlands (formerly AIT)	Michelle McKeon-Bennett
HAMK	Annikka Pakarinen
NHL STENDEN	Jan Jager/Rudy Folkersma
TUS Midwest (formerly LIT)	Patrick Murray
SZE	Zoltan Molnar

Aims and Objectives

The main aim of this group is to establish joint and flexible RUN research group in the area of Food and Biotechnology. Research group is tightly linked to other research groups and EIH-Bioeconomy

Within WP5, RUN-EU, using a Challenge-based approach, has create European future-looking RDI teams of researchers to address societal challenges in a multi-disciplinary approach thus delivering innovative solutions adaptable to different regions in Europe. This food and biotechnology research area group will focus on the operationalisation of the RDI activities in food and biotechnology areas with particular relevance to the biotechnology, agriculture and environment within Horizon Europe Pillar 2 cluster. Through strong collaboration among Partners, Regional Innovation Clusters and European Innovation Hubs we aim to increase and embed sustainable Inter-regional research and innovation projects across the RUN-EU alliance during the three years of the project and into the future. We aim as part of the overall WP 5 aim to deliver:

- increased international collaborative RDI activities within among RUN-EU members, thus strengthening the current individual and joint RDI capabilities.
- create joint future-looking international RDI teams addressing real challenges identified in the biotechnology agriculture and environment within Horizon Europe Pillar 2 cluster related to major societal challenges;
- ensure that technological and social breakthroughs are transformed into viable products and activities with real commercial and societal potential, built upon partnerships with industry and governments
- improved the links between food and biotechnology teaching, research and innovation, by engaging teachers and research staff.

Tasks to meet aims are the following:

1. Capture funding opportunities
 - a. Horizon Europe, Interreg, Erasmus+ and capacity building, Infra etc.
2. Develop innovation-based projects with industry / government / social partners
3. Promote inter-university international RDI working teams
 - a. Short term mobility program to bring together multidisciplinary and international teams working with industry / government
4. Ensure fluent communication among all partners

Academic & Research Staff Profile to include details of:

Primary Investigators (PIs)

Researchers (R)

Research Leads (Academic Staff)

(RL)

Contributing Staff (Academic Staff) (CS)

Management (M)

Technical (T)

Administration Staff (A)

Name	Qualifications	T. A	Type * PI, R, RL, CS, M, (Code*)	Research Interests and related specialisms (ISCED)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Jari Hyväluoma	PhD	PI		0521, 0530, 0722	0	0	0	2	0000-0003-1113-439X
Päivi Laaksonen	PhD	PI		0531, 0722	2	0	2	6	0000-0003-2029-5275
Maritta Kymäläinen	PhD	PI		0531, 0712, 0711, 0721	0	0	1	9	https://scholar.google.com/citations?hl=fi&user=my4rN0AAAAJ
Marika Tossavainen	PhD	PI		0511, 0513, 0521, 0812	1	0	0	5	0000-0003-3334-1496
Ulla Moilanen	PhD	PI			1	0	0	2	
Annikka Pakarinen	PhD	PI		0711, 0721, 0512, 0521	0	0	0	1	0000-0002-1796-4143
Siobhan Moane	PhD	PI		0510, 0512, 0521, 0522, 0530, 0531	19	2	6	1	0000-0001-9651-9162

Patrick Murray	PhD	PI	0510,0511,0512,0520,0530,0531,0213,0819,0721,0722,0711,	36	8	4	3	0000-0001-6349-7761
Peter Downey	PhD	PI	0510,0512,0521,0522,0530,0531	6	0	0	0	0000-0001-6902-4455
Lena Madden	PhD	PI	0510,0511,0512,0533,0722	01	0	0	0	0000-0002-1692-6954
Catherine Collins	PhD	PI	0510,0511,0512,0520	00	3	0	1	0000-0002-3076-789X
Sushanta Saha	PhD	PI	0510,0511,0512,0520	03	0	1	1	0000-0002-3981-8833
Daniel Walsh HOD	PhD	PI	0510,0511,0512,	1	0	1	0	0000-0002-7479-5016
Tanya Beletskaya	PhD	PI	0510,0512,0521,0522,0530,0531	0	1	0	0	
Sara Novais	PhD	PI	0510,0511,0512,0521,0522	2	6	0	10	0000-0003-1306-3396
Marco Lemos	PhD	PI	0510,0511,0512,0521,0522	6	7	6	22	0000-0001-9887-1864
Rui Pedrosa	PhD	PI	0510,0511,0512,0521,0522,0914,0916	3	2	2	21	0000-0003-0970-0575

Maria Manuel Gil	PhD	PI	0510, 0511, 0531, 0721	13	4	0	29	0000-0002- 8008-9839
Susana Silva	PhD	PI	0711, 0721	2	2	0	12	0000-0002- 5764-5665
Rui Ganhão	PhD	PI	0510, 0511, 0512, 0711, 0721, 0811	8	0	0	9	0000-0003- 4814-3177
Susana Bernardino	PhD	PI	0512, 0531	4	0	0	10	0000-0001- 9454-3281
Maria Jorge Campos	PhD	PI						
Teresa Mouga	PhD	PI	0511,0512,0 522,0811	10	1	0	8	0000-0003- 4849-8840
Susana Mendes	PhD	PI	0542, 0521, 0522, 0511, 0613	7	1	1	29	0000-0001- 9681-3169
Carla Tecelão	PhD	PI	0512, 0531, 0721	4	0	0	12	0000-0003- 2423-0495
Clélia Afonso	PhD	PI	0511, 0512	11	1	0	19	0000-0002- 4167-5237
Neil Rowan	PhD	PI	0510; 0510; 0512; 0521; 0721; 0811; 0812; 0910; 0914	0	6	25	16	0000-0003- 1228-3733 H factor index 39 189 publications 5,279 citations (Google Scholar)

Michelle McKeon-Bennett	MSc	PI	0510,0512, 0521,0522, 0530,0531, 0721,0810, 0811,0812	1	2	4	4	0000-0003-1079-1494
Zoltán Molnár	PhD	PI, R	0510, 0512	4	3,5	1	5	H-index: 6 PP:50
Erika Lakatos Hanczné	PhD	PI, R	0510, 0512	5	2,5	0,5	6	H-index: 6 PP:92
Vince Ordog	PhD	PI, R	0510, 0512	0	5,5	3,5	2	H-index 17, PP:124
Karoly Tempfli	PhD	PI, R	0510, 0512	4	0	2	4	H-index: 4 PP:61

Supporting Faculty/School and Department(s)

TUS Midwest, Faculty of Applied Science and Technology, Department of Applied Science
IPL, Marine and Environmental Science Centre (MARE)
TUS Midlands, Faculty of Science and Health, Faculty of Business and Hospitality
HAMK, HAMK Bio and HAMK Tech research units, School of Bioeconomy,
SZE, Faculty of Agricultural and Food Sciences: Department of Animal Science, Department
of Food Science, Department of Plant Science

Areas of Research Specialisation and – Specific ISCED Fields (ISCED-F 2014)

0510 Biological and related sciences
0511 Biology-cultivation of Plants, Fungi and Algaeculture, Microbial Biotechnology
0512 Biochemistry - the Biodiscovery and Bioprospecting of High Value Compounds from
Natural Resources
0521 Environmental sciences - Circular Bioeconomy, Life Cycle Assessment
0530 Physical Sciences
0531 Chemistry
0711 Chemical Engineering and processes
0712 Environmental protection technology
0721 Food processing - Food Biotechnology
0722 Materials (wood, plastic etc.)
0811 Crop and livestock production - Controlled Environmental plant cultivation

0812 Horticulture
0910 Health
0912 Medicine-Health and wellness, and public health
0914 Medical diagnostic and treatment technology - Medical Microbiology, Medical Technologies, Cell Culture and Diagnostics, application of mined compounds in Health and Cancer Biology
0916 Pharmacy - Nutraceuticals, Cosmeceuticals, Pharmaceuticals, Biopharmaceuticals

Alignment to the Horizon Europe research cluster and research and innovation programme

Food and Biotechnology research area aligns most closely to Horizon Europe cluster 6 Food, bioeconomy, natural resources, agriculture and environment. Human activities driven by growing global population and unsustainable resource utilization and consumption patterns are placing pressures on life ecosystems and natural resources such as soils, water, air and biodiversity which if not addressed will have catastrophic effects on the planet. The EU has the ambition 'to lead the transition to a sustainable, climate-neutral, circular and environment-friendly economy in full compliance with the United Nations 2030 Agenda, the Paris Climate Agreement and the Convention on Biological Diversity, as "Clean Planet for All" and "Towards a Sustainable Europe by 2030. Therefore, aligned with the Horizon Europe Cluster 6 targeted impacts this RUN-EU research area will build 'capacities and develop and demonstrate innovative solutions to accelerate the transition to a sustainable and circular management' and use of natural resources as well 'as sustainable development and human well-being, including food and nutrition security, in the EU and globally'. Food and Biotechnology RUN research group is active throughout the sustainable food chain as well as enhancing greener industry and bio-based materials and thus deals with activities related to European Green Deal and related strategies

Central concepts and skillsets to produce innovative developments and to align with EU-programs within this research area are:

- the circular economy,
- the bioeconomy,
- the blue economy
- the Food 2030 initiative

With strong expertise in the area of e.g. microbiology, biotechnology, molecular biology, controlled environmental life-sciences, digitalisation, analytical science, fungal biology, food development, nutraceuticals, food for health, cell culture, marine and marine extracts.

Following EU policies and strategies will frame the work of this research area within RUN-EU

- the Common Agricultural Policy,
- the Common Fisheries Policy,
- the Maritime Policy,
- the Circular Economy Package,

- EU Bioeconomy Strategy,
- the Blue Growth Strategy,
- the Food 2030 initiative,
- the new Industrial Strategy Policy
- the 2030 Climate and Energy Framework

Connection to RUN European Innovation Hub in Bioeconomy may align also to Horizon Europe pillar II (European Innovation Systems). Interconnected Innovation Ecosystem destination encourages proposals to contribute to one or more EU priorities and challenges, including climate action, green deal, and digital transformation

Research Infrastructures in Horizon Europe pillar I may also open up some funding opportunities for Bioeconomy EIH and thus for this research group

Track Record over the last 5 years (summaries of the following)

- Completed research projects
- Graduated students at Masters and PhD level (incl. Title and details of supervisors)
- Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

YEAR	FUNDING AGENCY	PROJECT/SPECIALISATION AREA
2019	EU BioCEP	Bio Innovation of a Circular Economy for Plastics
2019	EU H2020 Proposal Prep	RUN EU proposal prep
2019	EU H2020 Proposal Prep	Sea4Society
2020	EU Erasmus+ Project	Regional University Network – European University
2021	H2020 RUN-EU+	RUN-EU Professional research programmes for Business and Society
2017	EU EASME	AMALIA - Algae-to-MARket Lab IdeAs, Adding value to invasive seaweeds of the Iberian northwest
2014	INTERREG ATLANTIC AREA	SHAREBIOTECH – developing sustainable sharebiotech clusters for Atlantic Region
2019	MSCA RISE	IVCHTHYS -Optimization of novel value chains for fish and seafood by developing an integrated sustainable approach for improved quality, safety and waste reduction
2020	INTERREG ATLANTIC AREA	NEPTUNUS - WATER-ENERGY-SEAFOOD NEXUS: ECO-INNOVATION AND CIRCULAR ECONOMY STRATEGIES IN THE ATLANTIC AREA

Graduated Students at Masters and PhD level

Name	Dept.	Level	Title	Supervisors
Rachel Tobin	Applied Science	PhD	Organic vs. Conventional Fruits and Vegetables: A bio-fingerprint	Dr. Tracey Larkin; Dr. Siobhán Moane
Oonagh Quinn	Applied Science	MSc	Development of LCMS Methods for the Detection of Drugs in Sport	Dr. Jim Healy
Adam Shinnners	Applied Science	MSc	Microgravity Induced Phytohormones	Ms. Michelle McKeon-Bennett
Rebecca Lloyd	Applied Science	MSc	An exploration of the role of public facing services in caring for the dying, deceased and the bereaved	Dr. David Sutton; Dr. Martina O'Reilly, Milford Care Centre
Emily Panter	Applied Science	MSc	Mushrooms and Fungi, Functional and Life Enhancing Reservoirs (MuFFLER)	Dr. Catherine Collins; Dr. Patrick Murray
Lena Madden	Applied Science	PhD	Green biosynthesis and application of plasmic nanoparti-cles using extracellular systems of extremophilic fungi	Dr. Patrick Murray; Dr. Daragh Naughton
Sarah McMahon	Applied Science	PhD	Investigation into the Medicinal Bioactive content of Wheatgrass (<i>Triticum aestivum</i> L.)	Dr. Siobhan Moane; Michelle McKeon-Bennett;
Shane Wilmoth	Applied Science	MSc	Development and validation of methods for quantification of TPH's, DRO and PRO in Environmental Samples	Dr. William Fitzgerald; Dr. Josephine Treacy
Norma Browne	Applied Science	PhD	Evaluation of Irish marine cyanobacteria for UV-screening compounds: growth optimisation and genetic improvement	Dr. Sushanta Kumar Saha; Dr. Patrick Murray

Jack Hassett	Applied Science	PhD	Genetic Analysis of the Native Irish Honeybee (<i>Apis mellifera mellifera</i>)	Dr. Elizabeth Moore; Dr. Michael Geary
Mary O'Shea	Applied Science	MSc	Development of methods for the detection of drugs used in sports	Dr Jim Healy
Mary O'Sullivan	Applied Science	MSc	Development of hydrogel MIPs for proteomic studies	Dr Ann Murphy; Dr Ciaran Fagan
Niamh Devane	Applied Science	MSc	The development of a quality management system for urban wastewater treatment plans in Ireland	Dr Josephine Treacy
Niamh O'Connor	Applied Science	MSc	The development and validation of rapid resolution liquid chromatographic methods for pharmaceutical application	Dr Michael Geary
Richard Kelly	Applied Science	MSc	Development of Methods for the Detection of Drugs Used in Sport	Dr Jim Healy; Dr Michael Lambert, TCD
Sinead Morrissey	Applied Science	MSc	The Study of <i>Poa annua</i> L as a biomonitor of organic and inorganic air emissions from Urban Waste Water Treatment Plants in Ireland	Dr Josephine Treacy; Dr John Breen, UL
Anna-Maria Casey	Applied Science	MSc	Application of a wireless sensor technology on wastewater treatment plant environmental monitoring system	Dr Josephine Treacy; Dr Ken Oakley
Jeremiah Hayes	Applied Science	PhD	Novel bioanalytical applications of molecularly imprinted polymers	Dr Siobhan Moane; Dr Patrick Murray

Joanne O'Connor	Applied Science	PhD	Enzyme conjugated molecular imprinted polymers	Dr Ann Murphy; Dr Ciarán Ó'Fágáin, DCU
Laura Keating	Applied Science	MSc	An investigation of bioactive compounds in native Irish hawthorn	Dr Mary Lehane
Leah Wallace	Applied Science	PhD	Evaluating an active learning approach to teaching introductory physics through an analysis of student academic performance, metacognitive development, and changes to cognitive expectations	Dr Philip Ryan; Dr George McClelland, UL
Lisa Marrinan	Applied Science	MSc	A study of the nitrogen footprint in the vicinity of the shannon river basin	Dr Josephine Treacy
Mary Wharton	Applied Science	MSc	The development and validation of more efficient methods of liquid chromatography employing rapid resolution (RRLC) conventional HPLC with elevated temperatures and various column technologies.	Dr Michael Geary
Laura Curtin	Applied Science	M.Sc.	The development and validation of rapid resolution liquid chromatographic methods for pharmaceutical application	Dr Michael Geary; Dr jim Healy
Peter Downey	Applied Science	PhD	The determination of isoflavonoids in plants grown under enclosed	Dr Siobhan Moane; Dr Gary Stutte; Michelle McKeon-Bennett

			environmental conditions	
Tony Skerritt	Applied Science	PhD	The environmental enhancement of the bioflavonoids content of lactuca sativa as a means of increasing nutraceutical value	Dr Daniel Walsh; Dr Gary Stutte; Michelle McKeon-Bennett
Huma Sanawar	Applied Science	MSc	An environmental forensic investigation into the levels of disinfectant by-products and organic compounds in drinking water supplied	Dr Josephine Treacy; Paul Vesey
Regina Kelly	Applied Science	PhD	Developing an interactive engagement technique for enhancing the teaching and learning of first year practical physics using a range of technologies, including a classroom response system	Dr George McClelland UL; Dr Leah Wallace
Sarah Dempsey	Applied Science	MSc	Development Methods for the detection of drugs used in sports	Dr Jim Healy
Martin Hayes	Applied Science	MSc	Plant/microbe interactions: a study on mutualism between the root endophytic fungus – Piriformospora indica and the leguminous forage crop – Medicago truncatula	Dr Patrick Murray; Dr Gary Stutte; Michelle McKeon-Bennett
Pamela Brennan	Applied Science	MSc	The Comparative Determination of Pharmacologically Active compounds in Orchid Species	Michelle McKeon-Bennett; Dr Gary Stutte

Catherina O'Keeffe	Applied Science	PhD	Extraction and Characterisation of Pyrrolizidine Alkaloids (PA's) from Senecio Jacobea (Ragwort) with application to the food and health industry.	Dr Gary Stutte; Michelle McKeon-Bennett;
Stacey Shine	Applied Science	MSc	Rapid Determination of Phenolic Compounds in Berries utilising Liquid Chromatography and Biological Assays	Dr Michael Geary; Dr Gary Stutte; Michelle McKeon-Bennett
Fiona Donovan	Applied Science	MSc	Establishment of Irish Marine Cyanobacterial Germplasm: Molecular Characterisation and Bioactive Properties	Dr Sushanta Saha; Dr Patrick Murray
Michelle Breathnach	Applied Science	PhD	A study of the presence of biological material deposited by secondary transfer followed by the identification of the biological material by mRNA profiling	Dr Elizabeth Moore
Meave Broderick	Applied Science	MSc	The 'Irish Average Consumer' - generation of a profile with a comprehensive insight into Irish consumer food preferences that drive choice and expectation	Dr Tracey Larkin; Agnes Bouchier Hayes
Wenwen Fang	Chemical Engineering (Prev. Organiz.)	DSc	Nanocellulose for bio-inspired nanocomposites - surface modification with recombinant proteins	Dr Päivi Laaksonen, Dr Markus Linder
Alessandra Griffo	Chemical Engineering (Prev. Organiz.)	DSc	On the Nanoscale Interactions and the Self-Assembly of Recombinant Proteins and Hybrid	Dr Markus Linder, Dr Päivi Laaksonen

			Nanostructures: an AFM Study	
Yujiao Dong	Chemical Engineering (Prev. Organiz.)	MSc	Characterization and drug delivery of AaltoCell™ microcrystalline cellulose	Dr Päivi Laaksonen, Wenwen Fang, Heli Paukkonen
Woojae Lim	Chemical Engineering (Prev. Organiz.)	MSc	Deposition of indigo thin films by Langmuir-Schaefer technique	Dr Päivi Laaksonen, Alessandra Griffo
Tia Lohtander	Chemical Engineering (Prev. Organiz.)	MSc	Sustainable dyeing of cellulosic materials with willow bark extract	Dr Päivi Laaksonen, Dr Suvi Arola
Karri Mannermaa	Chemical Engineering (Prev. Organiz.)	MSc	Friction of micropatterned elastomer surface lubricated with fusion protein	Dr Päivi Laaksonen, Katri Kurppa
Hedar Al-Terke	Chemical Engineering (Prev. Organiz.)	MSc	Study of hydrophobin behaviour at air-water interface	Dr Päivi Laaksonen, Dr Arja Paananen
Evelina Bäck	Chemical Engineering (Prev. Organiz.)	MSc	A superporous hydrogel: Production development and material characterization	Dr Päivi Laaksonen, Mikael Eriksson
Leon Mercier	Ecosystems and Environment (Prev. Organiz.)	MSc	Nutrient uptake, growth, protein production and cobalamin accumulation of <i>Euglena gracilis</i> in baker's yeast production wastewater	Prof. Martin Romantschuk, Dr Anne Ojala, Dr Marika Tossavainen
Usman Ilyas	Ecosystems and Environment (Prev. Organiz.)	MSc		
Neha Katyal	Engineering and technology (Prev. Organiz.)	MSc	Enhancement of biomass and lipid production of microalgae in mixed populations in waste water	Dr. Silja Kostia, Dr. Sarita Sachdeva, co-supervisor: Dr. Marika Tossavainen

Nina Hemminki	Development and Management of Cosmetics Expertise (Laurea)	MSc	Microalgae -From the Side Stream to the Raw Material of Cosmetics	Dr. Satu Vuorela, Dr. Marika Tossavainen
Katariina Lahti	Ecosystems and Environment (Prev. Organiz.)		Kobalamiinin ja tiamiinin vaikutus <i>Euglena gracilis</i> -mikrolevän biomassan tuottoon ja viljelmän bakteerien lukumäärään ja yhteisön koostumukseen (Engl. Influence of cobalamin and tiamin for algal biomass production, and bacterial community in <i>Euglena gracilis</i> culture)	Dr. Martin Romantschuk, Dr. Anne Ojala, Dr. Marika Tossavainen
Aki Koivula		MSc (University of Applied Sciences)	Kuivamädätys orgaanisten jätteiden käsittelymenetelmänä. Case: Kymenlaakson Jäte Oy (In English: Dry anaerobic digestion as organic waste processing method)	Dr. Maritta Kymäläinen, Licentiate of Science Antti Peltola
Sanna Tuomi		MSc (University of Applied Sciences)	Termofiilinen kuivamädätyslaitos – Prosessin toimintaedellytykset ja hallinta (in English: Dry thermophilic anaerobic digestion plant – Operating conditions and process control means)	Dr. Maritta Kymäläinen
Satu Kivimäki		MSc (University of Applied Sciences)	Sivuvirroista arvoa kotisirkkatuotantoon. (in English: Value from side	Dr. Tuija Pirttijärvi, Dr. Maritta Kymäläinen

			streams for house cricket production.	
Colin McReynolds	Marine Resources Biotechnology	MSc	Invasive Marine Macroalgae and their Current and Potential Use in Cosmetics	Dr. Francois Sieber; Dr. Clélia Afonso
Duarte Carvalho	Marine Resources Biotechnology	MSc	Marine collagen-chitosan-fucoidan cryogels as cell-laden biocomposites envisaging cartilage tissue engineering	Dr. Tiago Silva; Dr. Clélia Afonso
João Francisco	Marine Resources Biotechnology	MSc	Bioaccessibility of antioxidant compounds, fatty acids, essential elements and contaminants from <i>Fucus spiralis</i>	Dr. Maria Manuel Gil; Dr. Rui Pedrosa
Rita de Sousa	Marine Resources Biotechnology	MSc	Valorization of cod (<i>Gadus morhua</i>) by-products by extraction of collagen with potential application in cosmetic and biomedical field	Dr. Tiago Silva; Dr. Clélia Afonso
Marta Freitas	Marine Resources Biotechnology	MSc	The biotechnological potential of the seaweed <i>Gracilariopsis longissima</i> (Rhodophyta, Gracilariales): assessment of growth performance and nutraceutical value of a natural resource	Dr. Clélia Afonso; Dr. Teresa Mouga
Ana Inácio	Biotechnology of Marine Resources	MSc	Fucoidan extracted from brown seaweed <i>Bifurcaria bifurcata</i> : seasonal variations on physicochemical features and anti-tumor activity against breast cancer cell line	Dr. Clélia Afonso

Tatiana Pereira	Biotechnology of Marine Resources	MSc	Use of <i>Gracilaria gracilis</i> pigments in food products in substitution of artificial colorants	Dr. Maria Manuel Gil; Dr. Susana Mendes; Teresa Baptista
Joana Rosa	Biotechnology of Marine Resources	MSc	Evaluation of the antioxidant and anti-inflammatory potential of the marine sponge <i>Cliona celata</i> and assessment of its chemical profile	Dr. Celso Alves; Dr. Rui Pedrosa
Ana Carmona	Biotechnology of Marine Resources	MSc	Biotechnological potential of <i>Grateloupia turuturu</i> for the cosmeceutical industry – photoprotection screening of optimized extracts	Dr. Sara Novais; Dr. Marco Lemos
Celso Alves	Marine Science, Technology and Management	PhD	<i>Sphaerococcus coronopifolius</i> bromoterpenes: antitumor activity and intracellular signal pathways characterization on in vitro human cellular cancer models	Dr. Rui Pedrosa, Dr. Luis Botana López, Dr. Maria Alpoim
Susete Pintéus	Marine Science, Technology and Management	PhD	Add Value to the Marine Invaders <i>Asparagopsis armata</i> and <i>Sargassum muticum</i>	Dr. Rui Pedrosa, Dr. Luis Botana López, Dr. Marco Lemos

Notable Research Outputs

Greff, B.; Lakatos, E.; Szigeti, J.; Varga, L. (2021): Co-composting with herbal wastes: potential effects of essential oil residues on microbial pathogens during composting. CRITICAL REVIEWS IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY 51: 457-511.

Sik B, Hanczke Erika L, Kapcsandi V, Ajtony Z (2020): Conventional and nonconventional extraction techniques for optimal extraction processes of rosmarinic acid from six Lamiaceae plants as determined by HPLC-DAD measurement. *J. Pharm. Biomed. Anal.*, 184 (2020), Article 113173

Szalai K, Tempfli K, Zsédely E, Lakatos E, Gáspárdy A, Bali Papp (2021): Linseed oil supplementation affects fatty acid desaturase 2, peroxisome proliferator activated receptor gamma, and insulin-like growth factor 1 gene expression in turkeys (*Meleagris gallopavo*). *Anim Biosci* 34(4): 662-669

W.A. Stirk, P. Balint, M. Vambe, C. Lovasz, Z. Molnar, J. van Staden, V. Ördög (2020): Effect of cell disruption methods on the extraction of bioactive metabolites from microalgal biomass. *J. Biotechnol.*, 307 (2020), pp. 35-43

Michelle M.P. McKeon-Bennett, Trevor R. Hodgkinson (2021). Sphagnum moss as a novel growth medium in sustainable indoor agriculture systems. *Current Opinion in Environmental Science & Health*, Volume 22, 2021, 100269, ISSN 2468-5844, <https://doi.org/10.1016/j.coesh.2021.100269>. (<https://www.sciencedirect.com/science/article/pii/S2468584421000416>)

Hadil Alaydi, Peter Downey, Michelle McKeon-Bennett, Tanya Beletskaya (2021). Supercritical-CO₂ extraction, identification and quantification of polyphenol as a bioactive ingredient from Irish trees species. *Scientific Reports* 11(1):7461. DOI: 10.1038/s41598-021-86393-x

Hogan, P., Otero, P., Murray, P. and Saha, S.K. (2021). Effect of biomass pre-treatment on supercritical CO₂ extraction of lipids from marine diatom *Amphora* sp. and its biomass evaluation as bioethanol feedstock. *Heliyon*. 7 (1), e05995,

Chique C, Hynds P, Burke L, Morris D, Ryan MP, O'Dwyer J. (2021) Contamination of Domestic Groundwater Systems by Verotoxigenic *Escherichia coli* (VTEC): A Global Scoping Review. *Water Research*. 188: 116498.

Zamboni F, Chinonso O, Ryan MP, Pembroke JT, Culebras M, Collins MN. (2021) On the bacteriostatic activity of hyaluronic acid composite films. *Carbohydrate Polymers*. 260: 117803

Shiels, K., Tsoupras, A., Lordan, R., Nasopoulou, C., Zabetakis, I., Murray, P. and Saha, S.K. (2021). Bioactive Lipids of Marine Microalga *Chlorococcum* sp. SABC 012504 with Anti-Inflammatory and Anti-Thrombotic Activities. *Marine Drugs* 19, 28.

Rashmi, V., Darshana, A., Bhuvaneshwari, T., Saha, S.K., Uma, L. and Prabakaran, . (2021). Uranium adsorption and oil emulsification by extracellular polysaccharide (EPS) of a halophilic unicellular marine cyanobacterium *Synechococcus elongatus* BDU130911. *Current Research in Green and Sustainable Chemistry*, 4, 100051.

Treacy, J. Eslamian, (2021). S 'Sampling and Analytical methods for flood Water Quality monitoring', in Floodwater Handbook edited by Eslamian, S. Taylor and Francis Group; in press accepted for publication in

Lohtander, T., Grande, R.; Österberg, M., Laaksonen, P., Arola, S. (2021) Bioactive films from willow bark extract and nanocellulose double network gels, *Frontiers in Chem. Eng.* accepted.

Ferreira CA, Félix R, Félix C, Januário AP, Alves N, Novais SC, Dias JR, Lemos MF (2021). A Biorefinery Approach to the Biomass of the Seaweed *Undaria pinnatifida* (Harvey Suringar, 1873): Obtaining Phlorotannins-Enriched Extracts for Wound Healing. *Biomolecules* 11(3): 461. (doi: <https://doi.org/10.3390/biom11030461>)

Pinteus S, Lemos MFL, Alves C, Silva J, Pedrosa R (2021). The marine invasive seaweeds *Asparagopsis armata* and *Sargassum muticum* as targets for greener antifouling solutions. *Science of The Total Environment* 750: 141372: 141372. (doi: <https://doi.org/10.1016/j.scitotenv.2020.141372>)

Sales S, Lourenço HM, Pessoa MF, Pombo A, Félix PM, Bandarra NM (2021). Chemical Composition and Omega 3 Human Health Benefits of Two Sea Cucumber Species of North Atlantic. *Journal of Aquatic Food Product Technology* 30(5): 596-614. (doi: <https://doi.org/10.1080/10498850.2021.1909683>)

Alves C, Silva J, Pinteus S, Alonso E, Alvariño R, Duarte A, Marmitt D, Goettert MI, Gaspar H, Alfonso A, Apaim MC, Botana LM, Pedrosa R (2021). Cytotoxic Mechanism of Sphaerodactylomelol, an Uncommon Bromoditerpene Isolated from *Sphaerococcus coronopifolius*. *Molecules* 26(5): 1374. (doi: <https://doi.org/10.3390/molecules26051374>)

Félix C, Félix R, Carmona AM, Januário AP, Dias PD, Vicente TFL, Silva J, Alves C, Pedrosa R, Novais SC, Lemos MF (2021). Cosmeceutical Potential of *Grateloupia turuturu*: Using Low-Cost Extraction Methodologies to Obtain Added-Value Extracts. *Applied Sciences* 11(4): 1650. (doi: <https://doi.org/10.3390/app11041650>)

de Juan Mora B, Filipe L, Forte A, Santos MM, Alves C, Teodoro F, Pedrosa R, Carrott MR, Branco LC, Gago S (2021). Boosting Antimicrobial Activity of Ciprofloxacin by Functionalization of Mesoporous Silica Nanoparticles. *Pharmaceutics* 13(2): 218. (doi: <https://doi.org/10.3390/pharmaceutics13020218>)

Adão P, Reboleira J, Teles M, Santos B, Ribeiro N, Teixeira CM, Guedes M, Pessoa JC, Bernardino S (2021). Enhancement of the Antioxidant and Antimicrobial Activities of Porphyran through Chemical Modification with Tyrosine Derivatives. *Molecules* 26(10), 2916. (doi: [10.3390/molecules26102916](https://doi.org/10.3390/molecules26102916))

Afonso C, Correia AP, Freitas MV, Baptista T, Neves M., Mougá T. (2021). Seasonal Changes in the Nutritional Composition of Agarophyton vermiculophyllum (Rhodophyta, Gracilariales) from the Center of Portugal. *Foods* 10(5): 1145. (doi: <https://doi.org/10.3390/foods10051145>)

Lourenço S, Mendes S, Raposo A, Santos PM, Gomes AS, Ganhão R, Costa JL, Gil MM, Pombo A (2021). Motivation and preferences of Portuguese consumers' towards sea urchin roe. *International Journal of Gastronomy and Food Science* 24: 100312. (doi: <https://doi.org/10.1016/j.ijgfs.2021.100312>)

Pereira T, Barroso S, Gil MM (2021). Food Texture Design by 3D Printing: A Review. *Foods* 10(2): 320. (doi: <https://doi.org/10.3390/foods10020320>)

Silva F, Duarte AM, Mendes S, Borges P, Magalhães E, Pinto FR, Barroso S, Neves A, Sequeira V, Vieira AR, Magalhães MF, Rebelo R, Assis C, Gordo LS, Gil MM (2021). Adding Value to Bycatch Fish Species Captured in the Portuguese Coast—Development of New Food Products. *Foods*, 10(1): 68. (doi: <https://doi.org/10.3390/foods10010068>)

Almeida B, Barroso S, Ferreira ASD, Adão P, Mendes S, Gil MM (2021). Seasonal Evaluation of Phlorotannin-Enriched Extracts from Brown Macroalgae *Fucus spiralis*. *Molecules* 26:4287. (doi: <https://doi.org/10.3390/molecules26144287>)

Calado ML, Silva J, Alves C, Susano P, Santos D, Alves J, Martins A, Gaspa H, Pedrosa R, Campos MJ (2021). Marine endophytic fungi associated with *Halopteris scoparia* (Linnaeus) Sauvageau as producers of bioactive secondary metabolites with potential dermocosmetic application. *PLoS ONE* 16 5 (2021): e0250954. (doi: <https://doi.org/10.1371/journal.pone.0250954>)

Silva J, Alves C, Pinteus S, Susano P, Simões M, Guedes M, Martins A, Rehfeldt S, Gaspar H, Goettert M, Alfonso A, Pedrosa R (2021). Disclosing the potential of eleganolone for Parkinson's disease therapeutics: Neuroprotective and anti-inflammatory activities". *Pharmacological Research* (2021): 105589. (doi: <http://dx.doi.org/10.1016/j.phrs.2021.105589>)

Silva J, Alves C, Martins A, Susano P, Simões M, Guedes M, Rehfeldt S, Pinteus S, Gaspar H, Rodrigues A, Goettert M, Alfonso A, Pedrosa R (2021). Loliolide, a New Therapeutic Option for Neurological Diseases? In Vitro Neuroprotective and Anti-Inflammatory Activities of a Monoterpenoid Lactone Isolated from *Codium tomentosum*. *International Journal of Molecular Sciences* 22 4 (2021): 1888-1888. (doi: <https://doi.org/10.3390/ijms22041888>)

Forte A, Gago S, Carrott MR, Carrott P, Alves C, Teodoro F, Pedrosa R, Marrucho IM, Branco LC (2021) Mesoporous silica nanoparticles with manganese and lanthanide salts: synthesis, characterization and cytotoxicity studies. *Dalton Transactions* (2021): (doi: <https://doi.org/10.1039/D1DT00605C>)

Afonso C, Correia AP, Freitas MV, Mouga T, Baptista T (2021). In Vitro Evaluation of the Antibacterial and Antioxidant Activities of Extracts of *Gracilaria gracilis* with a View into Its Potential Use as an Additive in Fish Feed. *Applied Sciences* 11(14): 6642. (doi: <https://doi.org/10.3390/app11146642>)

Pedro B, Guedes L, André R, Gaspar H, Vaz P, Ascensão L, Melo R, Serralheiro ML (2021). *Undaria pinnatifida* (U. pinnatifida) bioactivity: Antioxidant, gastro-intestinal motility, cholesterol biosynthesis and liver cell lines proteome. *Journal of Functional Foods* 83: 104567 (doi: <https://doi.org/10.1016/j.jff.2021.104567>)

Brito C, Bertotti T, Primitivo MJ, Neves M, Pires CL, Cruz PF, Martins PAT, Rodrigues AC, Moreno MJ, Brito RMM, Campos MJ, Vaz DC, Pessoa MF, Lidon F, Reboredo F, Ribeiro VS (2021). *Corema album* spp: Edible wild crowberries with a high content in minerals and organic acids. *Food Chemistry*, 345, 128732. (doi: <https://doi.org/10.1016/j.foodchem.2020.128732>)

Lemos MFL, Novais SC, Silva SFJ, Felix C (2021). Marine Resources Application Potential for Biotechnological Purposes. *Applied Sciences* 11(13): 6074. (doi: <https://doi.org/10.3390/app11136074>)

Sousa G, Trifunovska M, Antunes M, Miranda I, Moldão M, Alves V, Vidrih R, Lopes PA, Aparicio L, Neves M, Tecelão C, Ferreira-Dias S (2021). Optimization of Ultrasound-Assisted Extraction of Bioactive Compounds from *Pelvetia canaliculata* to Sunflower Oil. *Foods* 10: 1732. (doi: <https://doi.org/10.3390/foods10081732>)

Neves M, Antunes M, Fernandes W, Campos MJ, Azevedo ZM, Freitas V, Rocha JM, Tecelão C (2021). Physicochemical and nutritional profile of leaves, flowers, and fruits of the edible halophyte *chorão-da-praia* (*Carpobrotus edulis*) on Portuguese west shores. *Food Biosciences* 43: 101288. (doi: <https://doi.org/10.1016/j.fbio.2021.101288>)

Niemitalo O, Koskinen E, Hyväluoma J, Tahvonon O, Lientola E, Lindberg H, Koskela O, Kunttu I (2021). A year in acquisition and publication of drone aerial images in research on agriculture, forestry, and private urban gardens. *Technology and Innovation Management Review* 11, 5-16

Turunen M, Hyväluoma J, Keskinen R, Kaseva J, Nikama J, Reunamo A, Rasa K (2021). Pore structure of wastewater sludge chars and their water retention impacts in different soils. *Biosystems Engineering* 206, 6-18.

Rasa K, Viherä-Aarnio A, Rytönen P, Hyväluoma J, Kaseva J, Suhonen H, Jyske T (2021). Quantitative analysis of feedstock structural properties can help to produce willow biochar with homogenous pore system. *Industrial Crops and Products* 166, 113475.

Turunen M, Urbano-Tenorio F, Rasa K, Hyv luoma J, Ryt k nen P, Kaseva J, Beuker E, Suhonen H, Jyske T (2021). How clonal differences and within-tree heterogeneity affect pore properties of hybrid aspen wood and biochar? *Biomass Conversion and Biorefinery*, in press, doi: 10.1007/s13399-021-01464-3

Mundo L, Del Porro L, Granai M, Siciliano MC, Mancini V, Santi R, Marcar L, Vrzalikova K, Vergoni F, Di Stefano G, Schiavoni G, Segreto G, et al. (2020). Frequent traces of EBV infection in Hodgkin and non-Hodgkin lymphomas classified as EBV-negative by routine methods: expanding the landscape of EBV-related lymphomas. *Modern Pathology* <https://www.nature.com/articles/s41379-020-0608-y>.

Tsoupras, A.; Lordan, R.; O'Keefe, E.; Shiels, K.; Saha, S.K.; Zabetakis, I. 2020. Structural Elucidation of Irish Ale Bioactive Polar Lipids with Antithrombotic Properties. *Biomolecules*, 10, 1075.

Xinxin X, Ryan MP, Magner E. (2020) An antimicrobial enzymatic biofuel cell. *Chemical Communications* 56: 15589-15592.

Ryan, MP, Pembroke, JT. (2020). The genus *Ochrobactrum* as major opportunistic pathogens. *Microorganisms*. 8: 1797.

Slattery S, Pembroke JT, Munrane JG, Ryan MP. (2020) Isolation, nucleotide sequencing and genomic comparison of a Novel SXT/R391 ICE mobile genetic element isolated from a municipal wastewater environment. *Scientific Reports*. 10: 8716.

Chique C, Andrade L, Hynds P, Burke L, Morris D, Ryan MP, O'Dwyer J. (2020) *Cryptosporidium* spp. in groundwater supplies intended for human consumption - A descriptive review of global prevalence, risk factors and knowledge gaps. *Water Research*. 176: 115726.

Murphy J, Ryan MP, Walsh G (2020) Purification and characterization of a novel β -galactosidase from the thermoacidophile *Alicyclobacillus vulcanalis*. *Applied Biochemistry and Biotechnology*. 191 (3): 1190-1206.

ShylajaNaciyar, M.; Karthick, L.; Prakasam, P.A.; Deviram, G.; Uma, L.; Prabakaran, D.; Saha, S.K. (2020). Diversity of glutathione S-transferases (GSTs) in cyanobacteria with reference to their structures, substrate recognition and catalytic functions. *Microorganisms*, 8, 712.

Megha Bansal, Prem Kishore Patnala, Tom Dugmore (2020). "Adsorption of Erichrome Black T (EBT) using tea waste as a lowcost adsorbent by batch studies: A green approach for dye effluent treatments", *Current Research in Green and Sustainable Chemistry*, Vol.3, 10036.

Saha, S. K., Ermis, H., & Murray, P. (2020). Marine microalgae for potential lutein production. *Applied Sciences*, 10(18), 6457.

Ermis, H., & Altinbas, M. (2020). Effect of salinity on mixed microalgae grown in anaerobic liquid digestate. *Water and Environment Journal*. <https://doi.org/10.1111/wej.12580>

F. Houghton, D. O Doherty, B. Duncan, and C. Meaney Jan. 2020, "Combatting the Big Tobacco Hydra in Sport: Another Case of Alibi Marketing Through False Flag Advertising", *mir*, vol. 28, no. 113, pp. 199–204.

Hande, E., Unzile, G. G., Tunahan, C., & Mahmut, A. (2020). Effect of iron and magnesium addition on population dynamics and high value product of microalgae grown in anaerobic liquid digestate. *Scientific Reports*, 10(1).

Lohtander, T., Arola S., Laaksonen P. (2020) Biomordanting of a natural dye from willow bark on cellulosic materials, *Coloration Technol.* 136 (1), 3-14.

Dhar, P., Phiri, J., Szilvay, G.R., Westerholm-Parvinen, A., Maloney, T., Laaksonen, P. (2020) Genetically engineered protein based nacre-like nanocomposites with superior mechanical and electrochemical performance, *J. Mat. Chem. A*, 8 (2), 656-669.

Alves C., Serrano E., Silva J., Rodrigues C., Pinteus S., Gaspar H., Botana L.M., Pedrosa R. (2020). *Sphaerococcus coronopifolius* bromoterpenes as potential cancer stem cell-targeting agents. *Biomedicine & Pharmacotherapy* 128: 110275. (doi: <https://doi.org/10.1016/j.biopha.2020.110275>)

Beeby E., Magalhães M., Poças J., Collins T., Lemos M.F.L., Barros L., Ferreira I.C.F.R., Cabral C., Pires I.M. (2020). Secondary metabolites (essential oils) from sand-dune plants induce cytotoxic effects in cancer cells. *Journal of Ethnopharmacology* 258: 112803. (doi: <https://doi.org/10.1016/j.jep.2020.112803>)

Câmara J.S., Lourenço S., Silva C., Lopes A., Andrade C., Perestrelo, R. (2020). Exploring the potential of wine industry by-products as source of additives to improve the quality of aquafeed. *Microchemical Journal* 155: 104758. (doi: <https://doi.org/10.1016/j.microc.2020.104758>)

de Melo M.M.R., Sapatinha M., Pinheiro J., Lemos M.F.L., Bandarra N.M., Batista I., Paulo M.C., Saraiva J.A., Portugal I., Silva C.M. (2020). Supercritical CO₂ extraction of *Aurantiochytrium* sp. biomass for the enhanced recovery of omega-3 fatty acids and phenolic compounds. *Journal of CO₂ Utilization* 38: 24-31. (doi: <https://doi.org/10.1016/j.jcou.2020.01.014>)

Duarte A.M., Guarino M.P., Barroso S., Gil M.M. (2020). Phytopharmacological Strategies in the Management of Type 2 Diabetes Mellitus. *Foods* 9(3): 271. (doi: <https://doi.org/10.3390/foods9030271>)

Duarte A.M., Silva F., Pinto F.R., Barroso S., Gil M.M. (2020). Quality Assessment of Chilled and Frozen Fish - Mini Review. *Foods* 9(12): 1739. (doi: <https://doi.org/10.3390/foods9121739>)

Félix R., Carmona A.M., Félix C., Novais S.C., Lemos M.F.L. (2020). Industry-friendly hydroethanolic extraction protocols for Grateloupia turuturu UV-shielding and antioxidant compounds. *Applied Sciences (Switzerland)* 10(15): 5304. (doi: [10.3390/app10155304](https://doi.org/10.3390/app10155304))

Félix R., Félix C., Januário A.P., Carmona A.M., Baptista T., Gonçalves R.A., Sendão J., Novais S.C., Lemos M.F.L. (2020). Tailoring shrimp aquafeed to tackle Acute Hepatopancreatic Necrosis Disease by inclusion of industry-friendly seaweed extracts. *Aquaculture* 529:735661. (doi: <https://doi.org/10.1016/j.aquaculture.2020.735661>)

Félix R., Valentão P., Andrade P.B., Félix C., Novais S.C., Lemos M.F.L. (2020). Evaluating the In Vitro Potential of Natural Extracts to Protect Lipids from Oxidative Damage. *Antioxidants* 9(3): 231. (doi: <https://doi.org/10.3390/antiox9030231>)

Francisco J., Horta A., Pedrosa R., Afonso C., Cardoso C., Bandarra N.M., Gil M.M. (2020). Bioaccessibility of Antioxidants and Fatty Acids from *Fucus spiralis*. *Foods* 9(4): 440. (doi: <https://doi.org/10.3390/foods9040440>)

Freitas R., Martins A., Silva J., Alves C., Pinteus S., Alves J., Teodoro F., Ribeiro H.M., Gonçalves L., Petrovski Ž., Branco L., Pedrosa R. (2020). Highlighting the Biological Potential of the Brown Seaweed *Fucus spiralis* for Skin Applications. *Antioxidants* 9(7): 611. (doi: <https://doi.org/10.3390/antiox9070611>)

Goncalves E.M., Abreu M., Pinheiro J., Brandão T.R.S., Cristina C.L.M. (2020). Quality changes of carrots under different frozen storage conditions. A kinetic study. *Journal of Food Processing and Preservation*: e14953. (doi: <https://doi.org/10.1111/jfpp.14953>)

Gonçalves E.M., Pinheiro J., Alegria C., Moldaos M., Abreu M. (2020). Quality changes during thermal processing of two mixed formulas of fruits and vegetables pulps. *Emirates Journal of Food and Agriculture* 32(4): 271-280. (doi: [10.9755/ejfa.2020.v32.i4.2093](https://doi.org/10.9755/ejfa.2020.v32.i4.2093))

Majolo F., Bitencourt S., Monteiro B.W., Viegas G.H., Alves C., Silva J., Pinteus S., Santos R.C.V., Torquato H.F.V., Paredes-Gamero E.J., Oliveira J.R., De Souza C.F.V., Pedrosa R.F., Laufer S., Goetter M.I. (2020). Antimicrobial and antileukemic effects: in vitro activity of *Calyptanthus grandifolia* aqueous leaf extract. *Journal of Toxicology and Environmental Health Part A*: 1-13. (doi: <https://doi.org/10.1080/15287394.2020.1753606>)

Marmitt D.J., Alves C., Silva J., Pinteus S., Schneider T., Christ Vianna Santos R., de Freitas E.M., Pedrosa R., Laufer S., Goettert M.I. (2020). Neuroprotective potential of *Myrciaria plinioides* D.

Legrand extract in an in vitro human neuroblastoma model. *Inflammopharmacology* 28(3): 737-748. (doi: 10.1007/s10787-019-00652-y)

Neves M., Miranda A., Lemos M.F.L., Silva S., Tecelão C. (2020). Enhancing oxidative stability of sunflower oil by supplementation with prickled broom (*Pterospartum tridentatum*) ethanolic extract. *Journal of Food Science* 85(9): 2812-2821. (doi: <https://doi.org/10.1111/1750-3841.15378>)

Paulo M.C., Coutinho J., Saraiva J.A., Pinto C., Amaral R., Melo M.M.R., Pinheiro J., Lemos M.F.L., Cardoso C., Sapatinha M., Bandarra N.M. (2020). Effect of Airflow Conditions on Growth and Simultaneously DHA and Squalene Production by *Aurantiochytrium* sp. PRA-276. *Journal of Nutritional Biology* 6(1): 420-429. (doi: <https://doi.org/10.18314/jnb.v6i1.2060>)

Pereira T., Barroso S., Mendes S., Amaral R.A., Dias J.R., Baptista T., Saraiva J.A., Alves N.M., Gil M.M. (2020). Optimization of phycobiliprotein pigments extraction from red algae *Gracilaria gracilis* for substitution of synthetic food colorants. *Food Chemistry* 321: 126688. (doi: <https://doi.org/10.1016/j.foodchem.2020.126688>)

Pereira, T., Barroso, S., Mendes, S., Gil, M.M. (2020). Stability, kinetics, and application study of phycobiliprotein pigments extracted from red algae *Gracilaria gracilis*. *Journal of Food Science* 85(10): 3400-3405. (doi: <https://doi.org/10.1111/1750-3841.15422>)

Pinheiro J., Rodrigues S., Mendes S., Maranhão P., Ganhão R. (2020). Impact of Aqueous Extract of *Arbutus unedo* Fruits on Limpets (*Patella* spp.) Pâté during Storage: Proximate Composition, Physicochemical Quality, Oxidative Stability, and Microbial Development. *Foods* 9(6): 807. (doi: <https://doi.org/10.3390/foods9060807>)

Pinteus S., Lemos M.F.L., Freitas R., Duarte I.M., Alves C., Silva J., Marques S.C., Pedrosa R. (2020). Medusa polyps adherence inhibition: A novel experimental model for antifouling assays. *Science of The Total Environment* 715: 136796. (doi: <https://doi.org/10.1016/j.scitotenv.2020.136796>)

Pinteus S., Lemos M.F.L., Simões M., Alves C., Silva J., Gaspar H., Martins A., Rodrigues A., Pedrosa R. (2020). Marine invasive species for high-value products' exploration – Unveiling the antimicrobial potential of *Asparagopsis armata* against human pathogens. *Algal research* 52: 102091 (doi: <https://doi.org/10.1016/j.algal.2020.102091>)

Reboleira J., Adão P., Guerreiro S.F., Dias J.R., Ganhão R., Mendes S., Andrade M., Vilarinho F., Sanches-Silva A., Mateus A., Alves N., Bernardino S. 2020. Poultry Shelf-Life Enhancing Potential of Nanofibers and Nanoparticles Containing *Porphyra dioica* Extracts. *Coatings* 10(4): 315. (doi: <https://doi.org/10.3390/coatings10040315>)

Reboleira J., Ganhão R., Mendes S., Adão P., Andrade M., Vilarinho F., Sanches-Silva A., Sousa D., Mateus A., Bernardino S. (2020). Optimization of Extraction Conditions for *Gracilaria gracilis* Extracts

and Their Antioxidative Stability as Part of Microfiber Food Coating Additives. *Molecules* 25(18): 4060. (doi: <https://doi.org/10.3390/molecules25184060>)

Santos M.M., Alves C., Silva J., Florindo C., Costa A., Petrovski Ž., Marrucho I.M., Pedrosa R., Branco L.C. (2020). Antimicrobial Activities of Highly Bioavailable Organic Salts and Ionic Liquids from Fluoroquinolones. *Pharmaceutics* 12(8): 694. (doi: <https://doi.org/10.3390/pharmaceutics12080694>)

Silva F., Duarte A.M., Mendes S., Pinto F.R., Barroso S., Ganhão R., Gil M.M. (2020). CATA vs. FCP for a rapid descriptive analysis in sensory characterization of fish. *Journal of Sensory Studies* 35(6): e12605. (doi: <https://doi.org/10.1111/joss.12605>)

Silva J., Alves C., Pinteus S., Mendes S., Pedrosa R. (2020). Seaweeds' neuroprotective potential set in vitro on a human cellular stress model. *Molecular and Cellular Biochemistry* 473 (1): 229-238. (doi: <https://doi.org/10.1007/s11010-020-03824-5>)

Silva J., Martins A., Alves C., Pinteus S., Gaspar H., Alfonso A., Pedrosa R. (2020). Natural Approaches for Neurological Disorders - The Neuroprotective Potential of *Codium tomentosum*. *Molecules* 25(22) 5478. (doi: <https://doi.org/10.3390/molecules25225478>)

Silva. F, Duarte A.M., Mendes S., Magalhães E., Pinto F.R., Barroso S., Neves A., Sequeira V., Vieira A.R., Gordo L., Gil M. M. (2020). Seasonal Sensory Evaluation of Low Commercial Value or Unexploited Fish Species from the Portuguese Coast. *Foods* 9(12): 1880. (doi: <https://doi.org/10.3390/foods9121880>)

Simões C., Mendes S., Martins A., Gil M.M. (2020). Risk assessment of trihalomethanes exposure by consumption of IV gamma products. *Toxicology Reports* 7: 288-295. (doi: [10.1016/j.toxrep.2020.01.019](https://doi.org/10.1016/j.toxrep.2020.01.019))

Tavares C.S., Martins A., Faleiro M.L., Miguel M.G., Duarte L.C., Gameiro J.Á., Roseiro L.B., Figueiredo A.C. (2020). Bioproducts from forest biomass: Essential oils and hydrolates from wastes of *Cupressus lusitanica* Mill. and *Cistus ladanifer* L.. *Industrial Crops and products* 144: 112034. (doi: [10.1016/j.indcrop.2019.112034](https://doi.org/10.1016/j.indcrop.2019.112034))

Hyväluoma J, Rätty M, Kaseva J, Keskinen R (2020). Changes over time in near-saturated hydraulic conductivity of peat soil following reclamation for agriculture. *Hydrological Processes*, 34, 237-243.

Turunen M, Turtola E, Vaaja MT, Hyväluoma J, Koivusalo H (2020). Laser scanning data and 3D hydrological modeling decipher the role of tillage in eld water balance and runoff generation. *Catena* 187, 104363.

Turunen M, Hyväluoma J, Heikkinen J, Keskinen R, Kaseva J, Hannula M, Rasa K (2020). Quantifying the pore structure of different biochars and their impacts on the water retention properties of Sphagnum moss growing media. *Biosystems Engineering* 191, 96-106.

Soinne H, Keskinen R, Heikkinen J, Hyväluoma J, Uusitalo R, Peltoniemi K, Velmala S, Pennanen T, Fritze H, Kaseva J, Hannula M, Rasa K (2020). Are there environmental or agricultural benefits in using forest residue biochar in boreal agricultural clay soil? *Science of the Total Environment* 731, 138955.

Ermis, H., & Altinbas, M. (2019). Determination of biokinetic coefficients for nutrient removal from anaerobic liquid digestate by mixed microalgae. *Journal of Applied Phycology*, 31(3), 1773-1781.

Ryan MP, Slattery S, Pembroke JT. (2019) A novel arsenate resistant determinant associated with the ICE pMERPH a member of the SXT/R391 group of mobile genetic elements. *Genes*. 10(12):1048.

Quinn L, Armshaw P, Soulimane T, Sheehan C, Ryan MP, Pembroke JT. (2019). *Zymobacter palmae* Pyruvate Decarboxylase is less effective than that of *Zymomonas mobilis* for ethanol production in metabolically engineered *Synechocystis* sp. PCC6803. *Microorganisms*, 7: 494.

Pembroke JT, Ryan, MP (2019). Autothermal Thermophilic Aerobic Digestion (ATAD) for heat, gas, and production of a Class A biosolids with fertilizer potential. *Microorganisms*, 7: 215.2

Prem Kishore Patnala, Pankaj, S. Tilvi (2019). "Experimental and Kinetic studies on the combined influence of Ultrasonication and Rare Earths on removal of azo dyes" *Separation science and Technology*, Vol.54(10), 1632-1649 [I.F-1.35].

R.Rani, P.K.Patnala, V.V.Pathak (2019). "Prospects of Pesticide Contamination and Control Measures in Aquatic Systems: A Green Approach" *Handbook of Research on the Adverse Effects of Pesticide Pollution in Aquatic Ecosystems*.

Treacy, J. (2019). 'Drinking Water Treatment and Challenges in Developing Countries', in *The Relevance of Hygiene to Health in Developing Countries*, Natasha Potgieter and Afsatou Ndama Traore Hoffman, IntechOpen, DOI: 10.5772/intechopen.80780. Available from: <https://www.intechopen.com/books/the-relevance-of-hygiene-to-health-in-developing-countries/drinking-water-treatment-and-challenges-in-developing-countries>.

Marcar L, Bardhan K, Gheorghiu L, Dinkelborg P, Pfäffle H, Liu Q, Wang M, Piotrowska Z, Sequist LV, Borgmann K, Settleman JE, Engelman JA, Hata A, Willers H. (2019). Acquired Resistance of EGFR-Mutated Lung Cancer to Tyrosine Kinase Inhibitor Treatment Promotes PARP Inhibitor Sensitivity. *Cell Reports*. <https://www.cell.com/action/showPdf?pii=S2211-1247%2819%2930687-4>

Franzoni M, O'Connor DT, *Marcar L, Walsh MT. (2019). The presence of a high peak feature within a low-average shear stress stimuli induces quiescent phenotype in venous EC in-vitro. <https://link.springer.com/article/10.1007/s10439-019-02371-5>.

Tsoupras, A.; Lordan, R.; Demuru, M.; Shiels, K.; Saha, S.K.; Nasopoulou, C. and Zabetakis, I. (2019). In Vitro Antithrombotic Properties of Salmon (*Salmo salar*) Phospholipids in a Novel Food-Grade Extract. *Mar. Drugs*, 17(1), 62.

Shiels, K., Murray, P. and Saha, S.K. 2019. Marine cyanobacteria as potential alternative source for GABA production. *Bioresource Technology Reports*, 8, 100342.

Kumari, B., Tiwari, B.K., Walsh, D., Griffin, T.P., Islam, N., Lyng, J.G., Brunton, N.P. and Rai, D.K., (2019). Impact of pulsed electric field pre-treatment on nutritional and polyphenolic contents and bioactivities of light and dark brewer's spent grains. *Innovative Food Science & Emerging Technologies*, 54, 200-210.

Piccin A, Murphy C, Eakins E, Rondinelli M, Daves M, Vecchiato C, Wolf D, Mc Mahon C, Smith OP. (2019) Insight into the complex pathophysiology of sickle cell anemia and possible treatment *Eur J Haematol*.

Shiels, K., Browne, N., Donovan, F., Murray, P. and Saha, S.K. (2019). Molecular Characterization of Twenty-Five Marine Cyanobacteria Isolated from Coastal Regions of Ireland. *Biology*, 8, 59.

Meaney, C.L., Mitchell, K.A, Zingone, A., Brown, D., Yu, Y., Cao, L. Wenzlaff, A.S., Schwartz, A.G. and Ryan, B.M. (2019) 'Inflammatory Based Diagnostic Markers of Lung Cancer in African Americans' *Journal of Thoracic Oncology*.

Griffo, A. Rooijackers, B.J.M., Hähl, H., Jacobs, K., Linder M. B., Laaksonen P. (2019) Binding Forces of Cellulose Binding Modules on Cellulosic Nanomaterials, *Biomacromolecules*, 20 (2), 769-777.

Hähl, H. Vargas, J.N. Jung, M., Griffo, A., Laaksonen, P., Lienemann, M., Jacobs, K., Seemann, R., Fleury, J.-P. (2019) "Adhesion Properties of Freestanding Hydrophobic Bilayers", *Langmuir*, 35 (28), 9202-9212.

Tossavainen, M., Ilyass, U., Ollilainen, V., Valkonen, K., Ojala, A., Romantschuk, M. 2019. Influence of long term nitrogen limitation on lipid, protein and pigment production of *Euglena gracilis* in photoheterotrophic cultures. *Peer J*. PeerJ 7:e6624 <https://doi.org/10.7717/peerj.6624>

Avelelas F., Horta A., Pinto L.F., Marques S.C., Nunes, P.M., Pedros Chemistry a R., Leandro S.M. (2019). Antifungal and Antioxidant Properties of Chitosan Polymers Obtained from Nontraditional *Polybius henslowii* Sources. *Marine drugs* 17(4): 239. (doi: <https://doi.org/10.3390/md17040239>).

Bassan N., Rodrigues R.H., Monti R., Tecelão C., Ferreira-Dias S., Paula A.V. (2019). Enzymatic modification of grapeseed (*Vitis vinifera* L.) oil aiming to obtain dietary triacylglycerols in a batch reactor. *LWT* 99: 600-606. (doi: <https://doi.org/10.1016/j.lwt.2018.05.013>).

Ganhão R., Pinheiro J., Tino C., Faria H., Gil M.M. (2019). Characterization of Nutritional, Physicochemical, and Phytochemical Composition and Antioxidant Capacity of Three Strawberry "Fragaria x ananassa Duch." Cultivars ("Primoris", "Endurance", and "Portola") from Western Region of Portugal. *Foods* 8(12): 682. (doi: <https://doi.org/10.3390/foods8120682>).

Horta A., Alves C., Pinteus S., Lopes C., Fino N., Silva J., Ribeiro J., Rodrigues D., Francisco J., Rodrigues A., Pedrosa R. (2019). Identification of *Asparagopsis armata* associated bacteria and characterization of their bioactive potential. *MicrobiologyOpen* 8(11): e00824. (doi: <https://doi.org/10.1002/mbo3.824>).

Kich D.M., Bitencourt S., Faleiro D., Immich S.M., Marmitt D.J., Baldasso T., Haute G.V., de Oliveira J.R., Laufer S., Pedrosa R., de Souza C.F.V., Goettert M.I. (2019). Adjunctive role of *Calyptanthes tricona* extract with probiotic *Kluyveromyces marxianus* on colorectal adenocarcinoma Caco-2 cells. *Phytochemistry Letters* 30: 1-5. (doi: <https://doi.org/10.1016/j.phytol.2019.01.001>).

Marmitt D.J., Alves C., Silva J., Pinteus S., Schneider T., Santos R.C.V., Freitas E.M., Pedrosa R., Laufer S., Goettert M.I. (2019). Neuroprotective potential of *Myrciaria plinioides* D. Legrand extract in an in vitro human neuroblastoma model. *Inflammopharmacology* 1-12. (doi: <https://doi.org/10.1007/s10787-019-00652-y>).

Matos C.P., Addis Y., Nunes P., Barroso S., Alhoc I., Martins M., Matos A.P.A., Marques F., Cavaco I., Pessoa J.C., Correia I. (2019). Exploring the cytotoxic activity of new phenanthroline salicyldimine Zn(II) complexes. *Journal of Inorganic Biochemistry* 198: 110727. (doi: <https://doi.org/10.1016/j.jinorgbio.2019.110727>).

Pinheiro J., Ganhão R., Gonçalves E.M., Silva C.L.M. (2019). Assessment of Thermosonication as Postharvest Treatment Applied on Whole Tomato Fruits: Optimization and Validation. *Foods* 8(12), 649. (doi: <https://doi.org/10.3390/foods8120649>).

Silva J., Alves C., Freitas R., Martins A., Pinteus S., Ribeiro J., Gaspar H., Alfonso A., Pedrosa R. (2019). Antioxidant and Neuroprotective Potential of the Brown Seaweed *Bifurcaria bifurcata* in an in vitro Parkinson's Disease Model. *Marine drugs* 17(2): 85. (doi: <https://doi.org/10.3390/md17020085>).

Silva S.P., Alves C., Pinteus S., Silva J., Valado A., Pedrosa R., Pereira L. (2019). Antioxidant and antitumor potential of wild and IMTA-cultivated *Osmundea pinnatifida*. *Journal of Oceanology and Limnology* 37(3): 825-835. (doi: <https://doi.org/10.1007/s00343-019-8110-4>).

Tecelão C., Perrier V., Dubreucq E., Ferreira-Dias S. (2019). Production of Human Milk Fat Substitutes by Interesterification of Tripalmitin with Ethyl Oleate Catalyzed by *Candida parapsilosis* Lipase/Acyltransferase. *JAOCS, Journal of the American Oil Chemists' Society* 96(7): 777-787. (doi: <https://doi.org/10.1002/aocs.12250>).

Teixeira M., Altmayer T., Bruxel F., Orlandi C.R., de Moura N.F., Afonso C.N., Ethur E.M., Hoehne L., de Freitas E.M. (2019). *Rubus sellowii* Cham. & Schlitdl. (Rosaceae) fruit nutritional potential characterization. *Brazilian Journal of Biology*: 3. (doi: <https://doi.org/10.1590/1519-6984.186435>).

Heikkinen J, Keskinen R, Soinne H, Hyväluoma J, Nikama J, Wikberg H, Källi A, Siipola V, Melkior T, Dupont C, Campargue M, Larsson SH, Hannula M, Rasa K (2019). Possibilities to improve soil aggregate stability using biochars derived from various biomasses through slow pyrolysis, hydrothermal carbonization, or torrefaction. *Geoderma* 344, 40-49.

Keskinen R, Rätty M, Kaseva J, Hyväluoma J (2019). Variations in near-saturated hydraulic conductivity of arable mineral topsoils in south-western and central-eastern Finland. *Agricultural and Food Science* 28, 70-83.

Turunen M, Hyväluoma J, Heikkinen J, Keskinen R, Kaseva J, Koestel J, Rasa K (2019). Quantifying physical properties of three Sphagnum-based growing media as affected by drying-wetting Cycles. *Vadose Zone Journal* 18, 190033.

Keskinen R, Hyväluoma J, Sohlo L, Help H, Rasa K (2019). Fertilizer and soil conditioner value of broiler manure biochars. *Biochar* 1, 259-270.

Patricia Erickson, Lisa D. Gardner, Christopher A. Loffredo, Diane Marie St. George, Elise D. Bowman, Janaki Deepak, Khadijah Mitchell, Claire L. Meaney, Patricia Langenberg, Deborah Bernat, Sania Amr, Bríd M. Ryan (2018) 'Racial and Ethnic Differences in the Relationship Between Aspirin Use and Non-Small Cell Lung Cancer Risk and Survival'.

O'Dwyer J, Hynds, P.D, Byrne K.A, Ryan MP, Adley, CC. (2018). Development of a hierarchical model for predicting microbiological contamination of private groundwater supplies in a geologically heterogeneous region. *Environmental Pollution*, 237: 329-338.

Ryan, MP, Pembroke, JT. (2018). *Brevundimonas* spp: emerging global opportunistic pathogens. *Virulence*, 9: 480-493.

Linda Shore, Louise Kiernan, Adam de Eyto, Deirbhile Nic a Bhaired, Anne Connolly, PJ White, Tracy Fahey and Siobhan Moane (2018) "Older Adult Insights for age friendly Environments, Products and Service Systems." *International Journal of Design and Technology Education*. 23(2) 40-58.

Noah Nichols, Khadijah Mitchell, Adriana Zingone, Claire Meaney, Elise D. Bowman, Bríd M. Ryan (2018) *Cancer Epidemiology, Biomarkers & Prevention*. DOI: 10.1158/1055-9965.EPI-18-0366. 'Relationship between the TP53 SNP rs1800371 and Lung Cancer in African Americans' *Cancer Health Disparities*.

Kumari, B., Tiwari, B.K., Hossain, M.B. et al. (2018), Recent Advances on Application of Ultrasound and Pulsed Electric Field Technologies in the Extraction of Bioactives from Agro-Industrial By-products. *Food Bioprocess Technol* 11, 223–241.

Maria Hayes, Leen Bastiaens, Luisa Gouveia, Spyros Gkelis , Hanne Skomedal , Kari Skjanes , Patrick Murray, Marco García-Vaquero , Muge Isleten Hosoglu , John Dodd , Despoina Konstantinou , Ivo Safarik , Graziella Chini Zittelli , Vytas Rimkus , Victória del Pino , Koenraad Muylaert , Christine Edwards , Morten Laake , Joana Gabriela Laranjeira da Silva , Hugo Pereira , Joana Abelho (2018). Microalgal Bioactive Compounds Including Protein, Peptides, and Pigments: Applications, Opportunities, and Challenges During Biorefinery Processes. <https://onlinelibrary.wiley.com/doi/abs/10.1002/9781119385332.ch12>

Tsoupras, A.; Lordan, R.; Demuru, M.; Shiels, K.; Saha, S.K.; Nasopoulou, C. and Zabetakis, I. (2018). Structural Elucidation of Irish Organic Farmed Salmon (*Salmo salar*) Polar Lipids with Antithrombotic Activities. *Mar. Drugs*, 16, 176.

Saha, S.K. (2018). Microalgae and Cyanobacteria: The Heroes of Growing Industrial Biotechnology Sectors. *J. Microbiol Biotechnol.* 3(1): 000123.

Saha, S.K. and Murray, P. (2018). Exploitation of Microalgae Species for Nutraceutical Purposes: Cultivation Aspects. *Fermentation*, 4, 46.

Saha, S.K., Kazipet, n. and Murray, P. (2018). The Carotenogenic *Dunaliella salina* CCAP 19/20 Produces Enhanced Levels of Carotenoid under Specific Nutrients Limitation. *BioMed Research International*, vol. 2018, Article ID 7532897, 11 pages,

Dong, Y.; Paukkonen, H., Fang, W., Kontturi, E., Laaksonen, T., Laaksonen, P. (2018) “Entangled and Colloidally Stable Microcrystalline Cellulose Matrices in Controlled Drug Release” *Int. J. Pharm.* 548 (1), 113-119.

Kontturi, E., Laaksonen, P. Linder, M.B., Nonappa, Gröschel, A.H., Rojas, O.J., Ikkala, O. (2018) “Novel materials through assembly of nanocelluloses”, *Adv. Mat.*, 30, 1703779.

Fang, W., Linder M.B., Laaksonen P. (2018) “Modification of Carbon Nanotubes by Amphiphilic Glycosylated Proteins” *J. Colloid & Interface Sci.*, 512, 318-324.

Tossavainen, M., Lahti, K., Edelmann, M., Eskola, R, Lampi, A-M., Piironen, V., Korvonen, P., Ojala, A. & Romantschuk, M. 2018. Integrated utilization of microalgae cultured in aquaculture wastewater: wastewater treatment and production of valuable fatty acids and tocopherols. *Journal of Applied Phycology*. <https://doi.org/10.1007/s10811-018-1689-6>

Tossavainen, M., Katyal Chopra, N., Kostia, S., Valkonen, K., Sharma, A., Sharma, S., Ojala, A. Romantschuk, M. 2018. Conversion of biowaste leachate to valuable biomass and lipids in mixed cultures of *Euglena gracilis* and chlorophytes. *Algal Research*. 35, 76-84. <https://doi.org/10.1016/j.algal.2018.08.007>

Alves C., Pinteus S., Rodrigues A., Horta A., Pedrosa R. (2018). Algae from Portuguese Coast presented high cytotoxicity and antiproliferative effects on an in vitro Model of Human colorectal cancer. *Pharmacognosy Research* 10: 24-30 (doi: 10.4103/pr.pr_151_16).

Alves C., Silva J., Pinteus S., Gaspar H., Alpoim M.C., Botana L.M., Pedrosa R. (2018). From marine origin to therapeutics: The antitumour potential of marine algae-derived compounds. *Frontiers in Pharmacology* 9: 777 (doi: 10.3389/fphar.2018.00777).

Augusto A., Dias J.R., Campos M.J., Alves N.M., Pedrosa R., Silva S.F.J. (2018). Influence of *Codium tomentosum* extract in the properties of alginate and chitosan edible films. *Foods*, 7(4): 53 (doi: 10.3390/foods7040053).

Blowman K., Magalhães M., Lemos M.F.L., Cabral C., Pires I.M. (2018). Anticancer properties of essential oils and other natural products. *Evidence-based Complementary and Alternative Medicine*: 3149362 (doi: 10.1155/2018/3149362).

Cabral C., Efferth T., Pires I.M., Severino P., Lemos M.F.L. (2018). Natural products as a source for new leads in cancer research and treatment. *Evidence-Based Complementary and Alternative Medicine*: 8243680 (doi: 10.1155/2018/8243680).

Pinteus S., Lemos M.F.L., Alves C., Neugebauer A., Silva J., Thomas O.P., Botana L.M., Gaspar H., Pedrosa R. (2018). Marine invasive macroalgae: Turning a real threat into a major opportunity - the biotechnological potential of *Sargassum muticum* and *Asparagopsis armata*. *Algal Research* 34: 217-234 (doi: 10.1016/j.algal.2018.06.018).

Silva J., Alves C., Pinteus S., Mendes S., Pedrosa R. 2018. Neuroprotective effects of seaweeds against 6-hydroxidopamine-induced cell death on an in vitro human neuroblastoma model. *BMC Complementary and Alternative Medicine* 18(1): 58 (doi: 10.1186/s12906-018-2103-2).

Sousa R., Pedrosa R, Gil M.M. (2018). Lipid oxidation inhibition by natural tocopherols increases the nutritional value of tuna salami. *Advances in Food Technology and Nutritional Sciences Open Journal* 4(1): 4-9 (doi: 10.17140/AFTNSOJ-4-146).

Souza R.B., Frota A.F., Silva J., Alves C., Neugebauer A.Z., Pinteus S., Rodrigues J.A.G., Cordeiro W.M.S., Almeida R.R., Pedrosa R., Benevides N.M.B. (2018). In vitro activities of kappa-carrageenan isolated from red marine alga *Hypnea musciformis*: Antimicrobial, anticancer and neuroprotective

potential. *International Journal of Biological macromolecules* 112: 1248-1256 (doi: 10.1016/j.ijbiomac.2018.02.029).

Hyväluoma J, Niemi V, Thapaliya M, Turtola E, Järnstedt J, Timonen J (2018). Lattice Boltzmann simulation of ow-induced wall shear stress in porous media. *Transport in Porous Media* 121, 353-368.

Siipola V, Tamminen T, Källi A, Lahti R, Romar H, Rasa K, Keskinen R, Hyväluoma J, Hannula M, Wikberg H (2018). Effects of biomass type, carbonization process and activation method on the properties of bio-based activated carbons. *BioResources* 13, 5976-6002.

Keskinen R, Hyväluoma J, Wikberg H, Källi A, Salo T, Rasa K (2018). Possibilities of using liquids from slow pyrolysis and hydrothermal carbonization in acidification of animal slurry. *Waste and Biomass Valorization* 9, 1429-1433.

Hyväluoma J, Kulju S, Hannula M, Wikberg H, Källi A, Rasa K (2018). Quantitative characterization of pore structure of several biochars with 3D imaging. *Environmental Science and Pollution Research* 25, 25648-25658.

Hyväluoma J, Hannula M, Arstila K, Wang H, Kulju S, Rasa K (2018). Effects of pyrolysis temperature on the hydrologically relevant porosity of willow biochar. *Journal of Analytical and Applied Pyrolysis* 134, 446-453.

Rasa K, Heikkinen J, Hannula M, Arstila K, Kulju S, Hyväluoma J (2018). How and why does willow biochar increase a clay soil water retention capacity? *Biomass and Bioenergy* 119, 346-353.

Liu Q, Gheorghiu L, Drumm M, Clayman R, Eidelman A, Wszolek MF, Olumi A, Feldman A, Wang M, Marcar L, Citrin DE, Wu CL, Benes CH, Efstathiou J and Willers H. (2017). PARP-1 inhibition with or without ionizing radiation confers reactive oxygen species-mediated cytotoxicity preferentially to cancer cells with mutant TP53. *Onogene*. <https://www.nature.com/articles/s41388-018-0130-6>.

Piccin A, Steurer M, Feistritzer C, Murphy C, Eakins E, Van Schilfgaarde M, Corvetta D, Di Pierro AM, Pusceddu I, Marcheselli L, Gambato R, Langes M, Veneri D, Perbellini O, Pacquola E, Gottardi M, Gherlinzoni F, Mega A, Tauber M, Mazzoleni G, Piva E, Plebani M, Krampera M, Gastl G. (2017). Observational retrospective study of vascular modulator changes during treatment in essential thrombocythemia. *Transl Res*.

Ryan MP, Armshaw P, O'Halloran J, Pembroke JT. (2017) Analysis and comparative genomics of R997, the first SXT/R391 integrative and conjugative element (ICE) of the Indian Sub-Continent. *Scientific Reports*. 7: 8562.

Hands Schuh H, Ryan MP, O'Dwyer J, Adley CC. (2017) Assessment of the Bacterial Diversity of

Aircraft Water: Identification of the Frequent Fliers. PLOS ONE. 12: e0170567.

O'Dwyer J, Hynds P, Pot M, Adley CC, Ryan MP. (2017) Evaluation of levels of antibiotic resistance in groundwater-derived *E. coli* isolates in the Midwest of Ireland and elucidation of potential predictors of resistance. *Hydrogeology Journal*. 25: 939-951.

Ryan MP, O'Dwyer J, Adley CC. (2017) Evaluation of the complex nomenclature of the clinically and veterinary significant pathogen *Salmonella*. *BioMed Research International*, Article ID 3782182.

Meaney, C.L., Zingone, A., Brown, D., Yu, Y., Cao, L., and Ryan, B.M. (2017) 'Identification of serum inflammatory markers as classifiers of lung cancer mortality for stage I adenocarcinoma', *Oncotarget*, 8(25), 40946-40957, available: <http://dx.doi.org/10.18632/oncotarget.16784>.

Kumari, B., Tiwari, B. K., Hossain, M. B., Rai, D. K. and Brunton, N. P. (2017), Ultrasound-assisted extraction of polyphenols from potato peels: profiling and kinetic modelling. *Int J Food Sci Technol*. doi:10.1111/ijfs.13404

Wang M, Han J, *Marcar L, Black J, Liu Q, Li X, Nagulapalli K, Sequist L, Mak R, Benes C, et al. (2017). Radiation Resistance in KRAS-Mutated Lung Cancer Is Enabled by Stem-like Properties Mediated by an Osteopontin-EGFR Pathway. *Cancer Research*. <http://cancerres.aacrjournals.org/content/77/8/2018.long>

Otero, P., Saha, S.K., Joanne, M., Siobhan, M., John, B. and Murray, P. (2017). Identification of optimum fatty acid extraction methods for two different microalgae *Phaeodactylum tricornutum* and *Haematococcus pluvialis* for food and biodiesel applications. *Analytical and Bioanalytical Chemistry*. 409, 4659-4666.

Griffo, A., Hähl, H., Grandthyll, S., Müller, F., Paananen, A., Ilmén, M., Szilvay, G.R., Landowski, C. P., Penttilä, M. E., Jacobs, K., Laaksonen, P. (2017) "Single molecule force spectroscopy study on modular resilin fusion protein" *ACS Omega*, 2, 6906-6915.

Fang, W., Paananen, A., Vitikainen, M., Koskela, S., Westerholm-Parvinen, A., Joensuu, J.J., Landowski, C.P., Penttilä, M., Linder, M.B., Laaksonen, P. (2017) "Elastic and pH-Responsive Hybrid Interfaces Created with Engineered Resilin and Nanocellulose", *Biomacromolecules*, 18, 1866-1873.

Tossavainen, M., Nykänen, A., Valkonen, K. S., Ojala, A., Silja, K. & Romantschuk, M. 2017. Culturing of *Selenastrum* on diluted composting fluids; conversion of waste to valuable algal biomass in presence of bacteria. *Bioresource Technology*. 238, 205-213. <http://dx.doi.org/10.1016/j.biortech.2017.04.013>

Gil, M.M., Miller, F. A., Brandão, T.R.S., Silva, C.L.M. (2017). Mathematical Models for Prediction of Temperature Effects on Kinetic Parameters of Microorganisms' Inactivation: Tools for Model

Comparison and Adequacy in Data Fitting. *Food and Bioprocess Technology* 1–18. (doi: 10.1007/s11947-017-1989-x)

Miller, F.A., Ramos, B.F., Gil, M.M., Brandão, T.R.S, Teixeira, P., Silva, C.L.M. (2017). Influences of physicochemical stresses on injury and inactivation behaviour of *Listeria Innocua*. *International Journal of Food Studies* 6: 139-151. (doi: 10.7455/ijfs/6.2.2017.a2)

Pinteus S, Silva, J, Alves C, Horta A., Fino, N., Rodrigues, A., Mendes, S., Pedrosa R. (2017). Cytoprotective effect of seaweeds with high antioxidant activity from the Peniche coast (Portugal). *Food Chemistry*, 13, 713-726. (doi: <http://dx.doi.org/10.1016/j.foodchem.2016.09.067>)

Pinteus, S*, Silva, J.*, Alves, C., Horta, A., Thomas, O.P., Pedrosa, R. (2017). Antioxidant and cytoprotective activities of *Fucus spiralis* seaweed on a human cell in vitro model. *International Journal of Molecular Sciences*, 18(2):1-14. (doi:10.3390/ijms18020292).

Pinteus, S.; Lemos, M.F.L.; Silva, J.; Alves, C.; Neugebauer, A.; Freitas, R.; Duarte, A.; Pedrosa, R. (2017). An Insight into *Sargassum muticum* Cytoprotective Mechanisms against Oxidative Stress on a Human Cell In Vitro Model. *Mar. Drugs*, 15(11), 353. (doi:10.3390/md15110353).

Vala M., Augusto A., Horta A., Mendes S., Gil M.M. (2017). Effect of tuna skin gelatin-based coating enriched with seaweed extracts on the quality of tuna fillets during storage at 4°C. *International Journal of Food Studies*, 6: 201-221. (doi: 10.7455/ijfs/6.2.2017.a7).

Lilja H, Hyväluoma J, Puustinen M, Uusi-Kämpä J, Turtola E (2017). Evaluation of RUSLE2015 erosion model for boreal conditions. *Geoderma Regional* 10, 77-84.

Hyväluoma J (2017). Reducing the grid orientation dependence of flow routing on square-grid digital elevation models. *International Journal of Geographical Information Science* 31, 2272-2285.

Nuutinen V, Butt KR, Hyväluoma J, Ketoja E, Mikola J (2017). Soil faunal and structural responses to the settlement of a semi-sedentary earthworm *Lumbricus terrestris* in an arable clay field, *Soil Biology and Biochemistry* 115, 285-296.

Otero, P., Saha, S.K., Hussain, A., Barron, J. and Murray, P. (2016). Simultaneous determination of 23 azo dyes in paprika by Gas Chromatography-Mass Spectrometry. *Food Analytical Methods*. pp 1-9. DOI 10.1007/s12161-016-0648-6

O. Madden and M. D. Naughton, "Manufactured recycled glass beds for water purification systems", 2016, IMC 33 Conference proceedings, p. 137-142.

Ryan MP, Armshaw P, Pembroke JT. (2016) SXT/R391 ICE elements encode a novel 'trap-door' strategy for mobile element escape. *Frontiers in Microbiology*. 7: 829.

Ryan MP, Walsh G. (2016) The biotechnological potential of Whey. *Reviews in Environmental Science and Biotechnology*. 15: 479-498.

Whelan, N., Kenny, I.C., & Harrison, A.J., An Insight into Coaches' Knowledge and Use of Sprinting Drills to Improve Sprinting Technique and Performance (2016) *International Journal of Sport Science and Coaching*, 11(2): 182-190.

Hähl, H, Vargas, J.N., Griffo, A., Laaksonen, P., Szilvay, G., Lienemann, M., Jacobs, K., Seemann R. and Fleury, J.-B. (2016) "Functional Lipid-free Pure Protein Bilayers and Vesicles from Native Fungal Hydrophobins" *Adv. Mater.*, 29, 1602888.

Soinne H, Hyväluoma J, Ketoja E, Turtola E (2016). Relative importance of organic carbon, land use and moisture conditions on aggregate stability of post glacial clay soils. *Soil and Tillage Research* 158, 1-9.

Sten J, Lilja H, Hyväluoma J, Westerholm J, Aspäs M (2016). Parallel flow accumulation algorithms for graphical processing units with application to RUSLE model. *Computers & Geosciences* 89, 88-95.

Uusitalo R, Hyväluoma J, Valkama E, Ketoja E, Vaahtoranta A, Virkajärvi P, Grönroos J, Lemola R, Ylivainio K, Rasa K, Turtola E (2016). A simple dynamic model of soil test P responses to P balances. *Journal of Environmental Quality* 45, 977-983.

E McGillicuddy, I Murray, S Kavanagh, L Morrison, A Fogarty, M Cormican, Rowan, N., Morris, D. (2017). Silver nanoparticles in the environment: Sources, detection and ecotoxicology. *Science of the Total Environment* 575, 231-246. Citations 281 [IF 6.551]

NJ Rowan, JG Laffey. 2020. Challenges and solutions for addressing critical shortage of supply chain for personal and protective equipment (PPE) arising from Coronavirus disease (COVID19) pandemic—Case study from the Republic of Ireland. *Science of The Total Environment* 725, 138532. 151 citations [IF 6.551].

EJ Tiedeken, A Tahar, B McHugh, NJ Rowan. 2017. Monitoring, sources, receptors, and control measures for three European Union watch list substances of emerging concern in receiving waters—a 20 year systematic review. *Science of the Total Environment* 574, 1140-1163 106 citations. [IF 6.551]

B McEvoy, NJ Rowan. 2019. Terminal sterilization of medical devices using vaporized hydrogen peroxide: a review of current methods and emerging opportunities. *Journal of Applied Microbiology* 127 (5), 1403-1420. 33 citations. [IF 3.066]

EJ Murphy, C Masterson, E Rezoagli, D O'Toole, I Major, GD Stack, J. Laffey, Rowan, N.J. 2020. β -Glucan extracts from the same edible shiitake mushroom *Lentinus edodes* produce differential in-vitro immunomodulatory and pulmonary cytoprotective effects—Implications for COVID-19. *Science of the Total Environment* 732, 139330 29 citations. [IF 6.551]

NJ Rowan, CM Galanakis. 2020. Unlocking challenges and opportunities presented by COVID-19 pandemic for cross-cutting disruption in agri-food and green deal innovations: Quo Vadis? *Science of the Total Environment*, 141362. 26 citations. [IF. 6.551]

NJ Rowan. 2019. Pulsed light as an emerging technology to cause disruption for food and adjacent industries—Quo vadis? *Trends in Food Science & Technology* 88, 316-332. 25 citations. [11.077]

M Barrett, K Fitzhenry, V O'Flaherty, W Dore, S Keaveney, M Cormican, Rowan, N. ...2016. Detection, fate and inactivation of pathogenic norovirus employing settlement and UV treatment in wastewater treatment facilities. *Science of the Total Environment* 568, 1026-1036 23 citations. [IF 6.551]

A Tahar, EJ Tiedeken, E Clifford, E Cummins, N Rowan. 2017. Development of a semi-quantitative risk assessment model for evaluating environmental threat posed by the three first EU watch-list pharmaceuticals to urban wastewater*Science of The Total Environment* 603, 627-638 16 citations. [6.551]

NJ Rowan, D Kirf, P Tomkins. Studies on the susceptibility of different culture morphotypes of *Listeria monocytogenes* to uptake and survival in human polymorphonuclear leukocytes. *FEMS Immunology & Medical Microbiology* 57 (2), 183-192. 16 citations. [2.166]

NJ Rowan, JG Laffey. Unlocking the surge in demand for personal and protective equipment (PPE) and improvised face coverings arising from coronavirus disease (COVID-19) pandemic—Implications for ...*Science of the Total Environment*, 142259. 15 citations. [IF 6.551]

CM Galanakis, T Aldawoud, M Rizou, NJ Rowan, SA Ibrahim. 2020. Food ingredients and active compounds against the Coronavirus disease (COVID-19) pandemic: a comprehensive review. *Foods* 9 (11), 1701. 12 citations. [IF 4.092]

M Garvey, NJ Rowan. 2019. Pulsed UV as a potential surface sanitizer in food production processes to ensure consumer safety. *Current Opinion in Food Science* 26, 65-70 12 citations. [IF 4.577]

JE Smith, NJ Rowan, KK Tan. Functional food science and the medicinal mushrooms. *International Journal of Medicinal Mushrooms* 2 (4) 12 citations. [IF 1.39]

A Tahar, AM Kennedy, RD Fitzgerald, E Clifford, N Rowan. 2018. Longitudinal evaluation of the impact of traditional rainbow trout farming on receiving water quality in Ireland. PeerJ 6, e5281
11 citations. [IF 2.38]

EA O'Neill, NJ Rowan, AM Fogarty. 2019. Novel use of the alga *Pseudokirchneriella subcapitata*, as an early-warning indicator to identify climate change ambiguity in aquatic environments using freshwater finfish ...Science of the Total Environment 692, 209-218. 9 citations. [IF 6.551]

A Tahar, A Kennedy, RD Fitzgerald, E Clifford, N Rowan. 2018, Full water quality monitoring of a traditional flow-through rainbow trout farm. Fishes 3 (3), 28 9 citations. [IF 1.3]

NM Taufek, HH Harith, MH Abd Rahim, Z Ilham, N Rowan, WAAQI Wan. 2020. Performance of mycelial biomass and exopolysaccharide from Malaysian *Ganoderma lucidum* for the fungivore red hybrid Tilapia (*Oreochromis* sp.) in Zebrafish embryo. Aquaculture Reports 17, 100322
8 citations. [IF 2.12]

IMT Murray, NJ Rowan, S McNamee, K Campbell, AM Fogarty. 2018. Pulsed light reduces the toxicity of the algal toxin okadaic acid to freshwater crustacean *Daphnia pulex*. Environmental Science and Pollution Research 25 (1), 607-614 8 citations. [IF 3.056]

J Naughton, EJ Tiedeken, M Garvey, JC Stout, NJ Rowan. 2017. Pulsed light inactivation of the bumble bee trypanosome parasite *Crithidia bombi*. Journal of Apicultural Research 56 (2), 144-154
8 citations. [IF 1.872]

CH Masterson, EJ Murphy, H Gonzalez, I Major, SD McCarthy, D O'Toole, Laffey, J, Rowan, N.J. 2020. Purified β -glucans from the Shiitake mushroom ameliorates antibiotic-resistant *Klebsiella pneumoniae*-induced pulmonary sepsis. Letters in Applied Microbiology 71 (4), 405-412. 7 citations. [IF 2.173]

EA O'Neill, V Stejskal, E Clifford, NJ Rowan. 2020. Novel use of peatlands as future locations for the sustainable intensification of freshwater aquaculture production—a case study from the Republic of Ireland. Science of the Total Environment 706, 136044 7 citations. [IF 6.551]

A Tahar, EJ Tiedeken, NJ Rowan. 2018. Occurrence and geodatabase mapping of three contaminants of emerging concern in receiving water and at effluent from waste water treatment plants—A first overview of the ...Science of the total environment 616, 187-197. 7 citations. [IF 6.551]

E McFadden, AL Cost Ramos, D Bradley, O Vrain, B McEvoy, N Rowan. 2016. Comparative studies on the novel sterilisation of Irish retailed infant milk formula using electron beam and pulsed light. International Journal of Science, Environment and Technology 5 (6), 4375-4377. 7 citations.

I Ruiz-Salmón, M Margallo, J Laso, P Villanueva-Rey, D Mariño, ..2020. Addressing challenges and opportunities of the European seafood sector under a circular economy framework. *Current Opinion in Environmental Science & Health* 13, 101-106 6 citations. [IF 9.2]

S Naughton, S Kavanagh, M Lynch, NJ Rowan. 2020. Synchronizing use of sophisticated wet-laboratory and in-field handheld technologies for real-time monitoring of key microalgae, bacteria and physicochemical parameters ...*Aquaculture* 526, 735377 5 citations. [IF 3.224]

K Fitzhenry, N Rowan, AV del Rio, A Cremillieux, E Clifford. 2019. Inactivation efficiency of *Bacillus* endospores via modified flow-through PUV treatment with comparison to conventional LPUV treatment. *Journal of Water Process Engineering* 27, 67-76 5 citations. [IF 3.465]

K Fitzhenry, N Rowan, W Finnegan, X Zhan, E Clifford. 2018. Microbiological characterisation and impact of suspended solids on pathogen removal from wastewaters in dairy processing factories. *Journal of Dairy Research* 85 (3), 391-395 5 citations. [IF 1.628]

M Garvey, A Stocca, N Rowan. 2016. Use of a real time PCR assay to assess the effect of pulsed light inactivation on bacterial cell membranes and associated cell viability. *Water Environment Research* 88 (2), 168-174 5 citations. [IF 1.369]

CH Masterson, E Murphy, I Major, H Gonzalez, D O'Toole, S McCarthy, Rowan, N. 2019. Purified beta-glucan from the *Lentinus edodes* mushroom attenuates antibiotic resistant *Klebsiella pneumoniae*-induced pulmonary sepsis. A28. BACTERIAL AND VIRAL LUNG INFECTIONS AND PATHOGENESIS, A1222-A1222 4 citations.

EJ Murphy, E Rezoagli, I Major, NJ Rowan, JG Laffey. 2020. β -glucan metabolic and immunomodulatory properties and potential for clinical application. *Journal of Fungi* 6 (4), 3563 citations. [IF 4.621]

Y Chen, M Neff, B McEvoy, Z Cao, R Pezzoli, A Murphy, N Gately, Rowan, N. 2019. 3D printed polymers are less stable than injection moulded counterparts when exposed to terminal sterilization processes using novel vaporized hydrogen peroxide and electron beam. *Polymer* 183, 121870 3 citations. [IF 3.426]

M Garvey, G Coughlan, N Murphy, N Rowan. 2016. The pulsed light inactivation of veterinary relevant microbial biofilms and the use of a RTPCR assay to detect parasite species within biofilm structures. *Open Veterinary Journal* 6 (1), 15-22 3 citations. [IF 2.1]

CM Galanakis, M Rizou, TMS Aldawoud, I Ucak, NJ Rowan. 2021. Innovations and technology disruptions in the food sector within the COVID-19 pandemic and post-lockdown era. *Trends in Food Science & Technology* 2 citations. [IF 11.077]

W Finnegan, E Clifford, J Goggins, N O'Leary, A Dobson, N Rowan, 2018. DairyWater: striving for sustainability within the dairy processing industry in the Republic of Ireland. *Journal of Dairy Research* 85 (3), 366-374. 2 citations. [IF 1.628]

NJ Rowan, RA Moral. 2021. Disposable face masks and reusable face coverings as non-pharmaceutical interventions (NPIs) to prevent transmission of SARS-CoV-2 variants that cause Coronavirus disease. *Science of the Total Environment*, 145530 1 Citation [IF 6.551]

I Ruiz-Salmón, J Laso, M Margallo, P Villanueva-Rey, E Rodríguez, Rowan, N. 2020. Life cycle assessment of fish and seafood processed products—a review of methodologies and new challenges. *Science of The Total Environment*, 144094 1 citations. [IF 6.551]

E Crowley, NJ Rowan, D Faller, AM Friel. Natural and Synthetic Isothiocyanates Possess Anticancer Potential Against Liver and Prostate Cancer In Vitro. *Anticancer research* 39 (7), 3469-3485 1 citations. [IF 1.994]

EJ Murphy, C Masterson, E Rezoagli, D O'Toole, JG Laffey, I Major, Rowan, N. 2019. Immunomodulation Properties of a Novel β -Glucan Extract from the Mushroom *Lentinus Edodes* in an In-Vitro Lung Injury Model. A60. LUNG INJURY, SEPSIS, AND ARDS, A2114-A2114 1 Citations.
N Murray, J Buckley, N Seery, NJ Rowan. 2019. Blending immersive and educational technologies to inform sustainability and diversification of workforce training through machine interface learning using sterilization ...10th Kilmer 3-6 June 2019. 1 citations.

M Broderick, A Fogarty, NJ Rowan. 2017. Development of a high-intensity, pulsed-plasma, gas-discharge technology for destruction of hazardous aqueous environment micropollutants. *International Journal of Science, Environment and Technology*. 1

WAAQI Wan, NM Taufek, JP Thiran, JFP Rahman, G Yerima, Rowan, N. 2021. Investigations on the use of exopolysaccharide derived from mycelial extract of *Ganoderma lucidum* as functional feed ingredient for aquaculture-farmed red hybrid *Tilapia*. *Future Foods*, 100018 [IF 4.0]

WAAQI Wan-Mohtar, Z Ilham, AA Jamaludin, N Rowan. 2021. Use of Zebrafish Embryo Assay to Evaluate Toxicity and Safety of Bioreactor-Grown Exopolysaccharides and Endopolysaccharides from European *Ganoderma applanatum* Mycelium. *International Journal of Molecular Sciences* 22 (4), 1675 [IF 4.556]

NJ Rowan. 2021. Introduction to food disruptions. *Food Technology Disruptions*, 1-36
IZ Abidin, E Rezoagli, B Simonassi-Paiva, GW Fehrenbach, K Masterson, Rowan, N., Major, I. 2020. A bilayer vaginal tablet for the localized delivery of disulfiram and 5-fluorouracil to the cervix. *Pharmaceutics* 12 (12), 1185. [IF 4.865]

IIZ Abidin, E Rezoagli, E Murphy, K Masterson, N Rowan, I Major. 2020. Mucoadhesive bilayer vaginal tablet as a potential adjuvant treatment for cervical cancer. *International Journal of Gynecologic Cancer* 30 (Suppl 4)

B McEvoy, M Lynch, NJ Rowan. 2020. Opportunities for the application of real-time bacterial cell analysis using flow cytometry for the advancement of sterilization microbiology. *Journal of Applied Microbiology* [IF 3.066]

Pogue, R., Murphy, E.J., Fehrenbach, G.W., Rezoagli, E., Rowan, N.J. 2021. Exploiting immunomodulatory properties of beta-glucans derived from natural products for improving health and sustainability in aquaculture-framed organisms: concise review of exiting knowledge, innovation and future opportunities. *Current Opinion in Environmental Science and Health*. <https://doi.org/10.1016/j.coesh.2021.100248>. [IF 9.2]

Rowan, N.J., Casey, O. 2021. Empower Eco Multi-Actor HUB: a triple helix “academia-industry-authority” approach to creating and sharing potentially disruptive tools for addressing novel and emerging new Green Deal opportunities under a United Nations’ Sustainable Development Goals framework. *Current Opinion in Environmental Science and Health*. <https://doi.org/10.1016/j.coesh.2021.100254> [IF 9.2]

Fitzhenry, K., Clifford, E., Rowan, N., Val del Rio, A. (2021). Bacterial inactivation, photoreactivation and dark repair post flow-through pulsed UV-disinfection. *Journal of Water Process Engineering*. <https://doi.org/10.1016/j.jwpe.2021.102070>

WAAQI Wan-Mohtar, Z Ilham, AA Jamaludin, N Rowan. 2021. Use of Zebrafish Embryo Assay to Evaluate Toxicity and Safety of Bioreactor-Grown Exopolysaccharides and Endopolysaccharides from European *Ganoderma applanatum* Mycelium . *International Journal of Molecular Sciences* 22 (4), 1675 [IF 4.556]

NM Taufek, HH Harith, MH Abd Rahim, Z Ilham, N Rowan, WAAQI Wan Mohtar. 2020. Performance of mycelial biomass and exopolysaccharide from Malaysian *Ganoderma lucidum* for the fungivore red hybrid Tilapia (*Oreochromis* sp.) in Zebrafish embryo. *Aquaculture Reports* 17, 100322 [IF 2.60]

Wan Abd Al Qadr ImadWan-Mohtar, Norhidayah Mohd Taufek, Jaganath Puvanén Thiran, Janathu Ferdous Pajaru Rahman, Grema Yerim, Kumeera Subramaniam, Neil Rowan. 2021. Investigations on the use of exopolysaccharide derived from mycelial extract of *Ganoderma lucidum* as functional feed ingredient for aquaculture-farmed red hybrid Tilapia (*Oreochromis* sp.) *Future foods*. <https://doi.org/10.1016/j.fufo.2021.100018>

Goblirsch, M., Eakins, J., Rowan, N. 2021. COESH_COESH-D-20-00074 Article title: Disease-Mitigating Innovations for the Pollination Service Industry: Challenges and Opportunities. *Current Opinions in Environmental Science and Health*.

Patents

Óleos Alimentares suplementados com extratos de macroalgas e/ou plantas halófitas. Inventors: Tecelão C., Neves M., Silva S., Ferreira-Dias S., Frederico C. Patent Portugal 115610 (2021).

Ração para cultivo de peixes omnívoros. Inventors: Ferreira S. M. F., Gonçalves S. C., Catarino M. M. R. S. Patent Portugal 109547 (2020).

Feed for Rearing Omnivorous Fish. Inventors: Ferreira S. M. F., Gonçalves S. C., Catarino M. M. R. S. Patent Irelan 3491932 (2020).

Feed for Rearing Omnivorous Fish. Inventors: Ferreira S. M. F., Gonçalves S. C., Catarino M. M. R. S. Patent Germany 602017025518.1(2020).

Feed for Rearing Omnivorous Fish. Inventors: Catarino M. M. R. S., Gonçalves S. C., Ferreira S. M. F. European Patent Application 17752492.3 (2020).

Food conditioning food film and respective manufacturing process. Inventors: Augusto A.L.S., Silva S.F.J., Marques S.P.E., Felix R.A.F.C., Carmona A.M.F., Novais S.C., Lemos M.F.L. European Patent Application EP19171400.5 (26/04/2019).

Progress updates on current activities (Summaries of the following)

- Research projects
- Postgraduate Research Degrees (incl. Level, Title and Supervisors)
- Other notable activities

FUNDING AGENCY	PROJECT
Enterprise Ireland Innovation Partnership	DHA for Cosmetic Applications
Enterprise Ireland Innovation Partnership	Pilot Scale Biomass Production and formulations of cosmetic products with microalgal bioactive ingredients
Enterprise Ireland Innovation Partnership	New Product Development Testing Standards for Food & Pharma Sector

Enterprise Ireland Innovation Partnership	Design, Modelling and Performance Testing of Bespoke PDC Bearings
Enterprise Ireland Innovation Partnership	Enrichment of Quarried Topsoil Using Novel Soil Improvers and Fertilisers for Horticultural Applications
EU BioCEP	Bio Innovation of a Circular Economy for Plastics
HEA	RUN EU proposal prep
EU H2020 Proposal Prep	Sea4Society
EU Erasmus Project	Regional University Network – European University
EI Technology Gateway	Shannon ABC Technology Gateway
LCMS	Equipment
Food grade microalgal suite	Equipment
GCIR	Equipment
KTI Technology Transfer Strengthening Initiative	TTSI3
HRB Research Project	Cancer Imaging
EPA Research Project	Industry
BIM Research Project	Microalgal BioFactories
LIT GRO/IRC	Student Scholarships
SFI Future Innovator Prize	Disruptive technologies to valorise food WASTE into VALUE added commodities (WAVA)
Finnish Ministry of Culture and Education	Bioeconomy and Carbon 4.0 – towards smart applications in bioeconomy
Foundation of Culture	Processing and utilization of waste waters
Finnish Ministry of Agriculture	Disruptive research and technology development to evaluate and measure carbon sequestration in soils
European Regional Development Fund	Value and new bio-based products for greener industry and products
Portuguese Foundation for Science and Tehcnology (FCT)	MarTics - Marine bioactive compounds for therapeutic applications in neurodegenerative

Portuguese Foundation for Science and Tehcnology (FCT)	CROSS-ATLANTIC – CReating Opportunities from Seaweed Sulfated polysaccharides for Application in Therapeutics
Portuguese Ministry of the Sea, Mar2020	LIMO DO CAIS: Sustainable exploitation of the endogenous resources of S. Martinho do Porto
Portuguese Ministry of the Sea, Mar2020	SMART FISH –Sustainable Restaurant
Portuguese Ministry of the Sea, Mar2020	PAS: Barnacle pate with blackberry
Portuguese Ministry of the Sea, Mar2020	ProValgas@Oeste: Promotion and valorisation of algae for healthy eating
Portuguese Ministry of the Sea, Mar2020	INNOVATION WITH TRADITION for sustainable consumption
Portuguese Ministry of the Sea, Mar2020	COSMOS: Biotechnological valorisation of the invasive seaweed <i>Asparagopsis armata</i> off the coast of Peniche
Fundo Azul	Ocean2Oils - Integrated approach for seaweeds application as sustainable source of functional compounds for edible oils stabilization and food processing
European Regional Development Fund (ERDF)	HP4A: Healthy pasta for all
Portuguese Ministry of the Sea, Mar2020	ProReMar - Marine Resources-based Food Products
Portuguese Ministry of the Sea, Mar2020	SeaFilm - Development of edible film for sustainable fish freezing
ERDF/FCT	ORCHESTRA - add-value to Orchards through the full valorisation of macroalgae
European Regional Development Fund (ERDF)	100% Figo - biofunctional product with high circularity efficiency in the transformation and conservation by advanced technologies for the extraction and incorporation of bioactive compounds
	Total

Postgraduate Research Degrees (mentored programs not included)

Name	Thesis Title	Department	Level	Supervisor	Co-Supervisor
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Tia Lohtander	Functionalization of cellulosic materials using natural colourants	Chemical Engineering, Aalto University	PhD	Monika Österberg	Päivi Laaksonen, Suvi Arola
Sarah Naughton	Investigation into critical factors influencing eco-innovation in freshwater aquaculture	Science and Health	PhD	Neil Rowan	Siobhan Kavanagh
Mary Garvey	Pulsed UV light inactivation of <i>Cryptosporidium parvum</i> and other pathogens in drinking water	Science and Health	PhD	Neil Rowan	Paul Tomkins
Emma Murphy	Pre-clinical studies on the efficacy of using beta glucans with human MSC to treat <i>K. pneumonia</i> respiratory infections	Science and Health	PhD	Neil Rowan	Ian Major
Kelly Fitzhenry	Evaluations of modified flow through pulsed UV technology for bacterial inactivation	Science and Health	PhD	Eoghan Clifford	Neil Rowan
Juha Jordan	Long-term durability of natural colourants	Chemical Engineering, Aalto University	PhD	Jaana Vapaavuori	Päivi Laaksonen
Jaswinder Kaur	Mining of fungi found in Irish habitats for pharmaceutically important compounds	Applied Science	PhD	Catherine Collins	Patrick Murray

Hadil Alaydi	Novel environmentally friendly supercritical CO2 extraction, identification, and quantification of polyphenols as health promoting bioactive food ingredients from plant tissues	Applied Science	PhD	Tanya Beletskaya	Michelle McKeon-Bennett/ Peter Downey
Patrícia Susano	Dermatological potential of seaweed-derived components on the skin inflammatory diseases	MARE, IP Leiria	PhD	Rui Pedrosa, Alice Martins, Celso Alves	Patrick Murray
Joanne McGushin	Microalgae - Reference standards for lipid analysis	Applied Science	MSc	Patrick Murray	Siobhán Moane
Katie Shiels	Non-proteinogenic amino acids GABA and ergothioneine bioproduction in cyanobacteria for human health applications	Applied Science	MSc	Sushanta Saha	Patrick Murray
Lisa Connole	Extraction and Characterisation of antioxidant polyphenols from selected Sphagnum Moss Species.	Applied Science	MSc	Michelle McKeon-Bennett	Siobhán Moane
Mariana Fuinhas Alves	Microbial fermentation systems scale up for nanoparticle production and associated applications	Applied Science	PhD	Patrick Murray	Catherine Collins
Martin Hayes	Mushroom and Fungi, Functional and Life Enhancing Reservoirs – Fungi Bioactives	Applied Science	PhD	Catherine Collins	Patrick Murray
Paul Hogan	Evaluation of Marine Diatoms for Biofuel Production	Applied Science	MSc	Sushanta Saha	Patrick Murray

Rebecca Coughlan	Physiochemical, biochemical, and sensory analysis of Irish Rapeseed oils	Applied Science	PhD	Tracey Larkin	Siobhán Moane
Jessica Walshe	Study of composition of essential oils extracted by various methods from Irish hemp plants	Applied Science	MSc	Lena Madden	
Nesreen Ramdan	Isolation and optimisation of Irish microalga <i>Porphyridium</i> spp. for enhanced nutritional composition	Applied Science	MSc	Sushanta Saha	
Naomh Burke	Microbead encapsulation of plant-derived bioactive compounds	Applied Science	MSc	Peter Downey	Siobhán Moane
Morgan McNamara	Microbead encapsulation of proteins and select nutrients of relevance to sport nutrition	Applied Science	MSc	Peter Downey	Siobhán Moane
Akanksha Joshi	Biochemical characterization of <i>Smallanthus sonchifolius</i> (yacon) root and yacon products and in vitro investigation of their prebiotic effect	Applied Science	MSc	Tanya Beletskaya	Catherine Collins/Bibha Kumari
Ciara Davis	Bioavailability of supplementary mineral nutrients in various crops species for health promoting applications	Applied Science	MSc	Peter Downey	Siobhán Moane
Oonagh Quinn	Master of Arts in Academic Practice	Applied Science	MA	Brendan Murphy	
Gavin O'Donnell	Determination of glucosinolate compounds found in plants	Applied Science	MSc	Siobhán Moane	Peter Downey
Stephen Evans	The production of Plant Bio-active Compounds using Controlled Environment Systems	Applied Science	MSc	Siobhán Moane	Peter Downey

Telma Orvalho	Characterization of the physicochemical properties of bee pollen and determination of shelflife	Quality Management and Food Safety	MSc	Maria Jorge Campos	Daniela Vaz, Vânia Ribeiro
Ana Oliveira	BRC food safety management system implementation in the production of frozen bakery products	Quality Management and Food Safety	MSc	Maria Jorge Campos	
Pedro Dias	Cosmeceutical applications for <i>Asparagopsis armata</i> from the coast of Peniche	Biotechnology of Marine Resources	MSc	Marco Lemos	Carina Félix
Ana Augusto	SeaCoat-Marine based edible coatings for minimally processed fruit.	Food Science	PhD	Keshavan Niranjana	Susana Silva; Geoffrey Mitchel
Andreia Miranda	News strategies to increase shelf life of fresh fish products	Food Technology	PhD	Jorge Saraiva	Maria Manuel Gil; António Vicente
Joana Silva	Neuroprotective molecules isolated from <i>Bifurcaria bifurcata</i> and <i>Codium tomentosum</i> in an in vitro and in vivo Parkinson Disease mode	Marine Sciences	PhD	Rui Pedrosa	Amparo Alfonso
Adriana Januário	The potential of the seaweed <i>Asparagopsis armata</i> in the treatment of acne vulgaris	Pharmaceutical Sciences	PhD	Patrícia Valentão	Marco Lemos; Félix Figueroa
João Reboleira	Seaweed fermentation as a bioprocess for the development of novel functional foods and nutraceuticals	Food and Nutritional Sciences	PhD	Afroditi Chatzifragkou	Susana Silva; Marco Lemos; Keshavan Niranjana
Tânia Vicente	Algae-derived compounds against phytopathogenic fungi of <i>Vitis vinifera</i>	Pharmaceutical Sciences	PhD	Patrícia Valentão	Marco Lemos;

					Dick Roelofs
Carolina Ferreira	Seaweeds polyphenolic bioactive extracts as a potential source for incorporating in multi-fiber orientation electrospun meshes for chronic wound healing applications: Diabetic ulcers	Biomedical Sciences	PhD	Ana Maurício	Marco Lemos; Juliana Dias
Rafael Félix	Designing a biorefinery for the valorization of invasive seaweed: the case of <i>Sargassum muticum</i> and <i>Asparagopsis armata</i>	Pharmaceutical Sciences	PhD	Marco Lemos	Patricia Valentão; Angel Irabien
Marisa Ribeiro	Valorization of the endogenous marine resource <i>Salicornia ramosissima</i> : application in food and pharmaceuticals industries.	Environmental Sciences	PhD	Fernando Hermínio Ferreira Milheiro Nunes	Sérgio Leandro; José Carlos Laranjo
Abdul Latif Adams		Biotechnology	PhD	Michelle McKeon-Bennett	Siobhan Moane
Frederica Silva	Marine Resources as food material for 3D-printing – innovative strategies to improve the efficiency of fish value chain	Food Engineering	PhD	Maria Manuel Gil	Leonel Serrano Gordo; Geoffrey Robert Mitchell
Andreia Miranda	News strategies to increase shelf life of fresh fish products	Food Science and Technology and Nutrition	PhD	Jorge Saraiva	Maria Manuel Gil; António Vicente
André Horta	Evaluation of the benefit/risk associated to	Pharmacy	PhD	Narcisa Bandarra	Maria Manuel Gil;

	the consumption of seaweed based on the bioaccessibility/bioavailability of omega 3 fatty acids, essential elements, antioxidant compounds and contaminants				Maria Beatriz da Silva Lima
Tatiana Duarte	Designing foods by 3D-printing: customized food structures for optimal bioaccessibility of nutrients	Food Science and Technology and Nutrition	PhD	Maria Manuel Gil	António Vicente; Ana Pinheiro

Other notable activities-(see selected external collaborations below)

Members of the Institute are also members of Institutional and National bodies and committees supporting research and innovation development within LIT and beyond.

These include-

- TUS Midlands, Executive Management Team,
- TUS Midlands, Equality, Diversity and Inclusion Steering Committee,
- TUS Midlands, Learning Enhancement Steering Committee,
- TUS Midlands, Empower Eco Innovation Hub Steering Committee,
- Empower Eco CLG member,
- Athlone Co-Working Hub CLG Member,
- Athlone Chamber of Commerce Board Member (Elect),
- CELLS Research Group Steering Committee,
- TUS Midwest, Research Ethics Committee,
- TUS Midwest, Research and Postgraduate Matters Committee,
- TUS Midwest, Academic Council,
- TU Research working group,
- British Biotechnological Research Council Research Evaluator,
- Regional University Network European University management committee,
- TUS Midwest Executive Management Team,
- Irish Bioeconomy Foundation Board,
- Members of the research representative group for the TU International panel visit,
- TUS Midwest, Safety Advisory Committee
- Limerick Chamber of Commerce
- European Commission Research and Innovation Evaluator,
- Technological Higher Education Association Research Development and Innovation and Enterprise steering group,

- Technological Higher Education Association Knowledge Transfer Innovation and Enterprise steering group RDIE group,
- TUS Midwest, Equality, Diversity and Inclusion steering committee,
- National Open Research Forum Steering group,
- National Research Integrity,
- Technology Transfer Office,
- Irish Bioeconomy Foundation Technical group,
- Shannon Applied Biotechnology Steering Group

External Collaborations

EU H2020 BIOiCEP

Researchers from the LIFE institute are part of a multi-national H2020 led by TUS Midlands Materials Research Institute spearheading a major research effort aimed at tackling plastic pollution - a global crisis of prodigious proportions. The €5 million project, which will span four years and commenced in February 2020 under the European Commission Horizon 2020 research innovation program. With research and industry partners from China and across Europe including TUS Midwest's fungal molecular biotechnology research team. The Bio Innovation of a Circular Economy for Plastics (BioiCEP) is a pan European-Chinese collaboration formed to ultimately reduce the burden of plastic waste in the environment. The countries have been selected to represent different mixed plastic pollution environments, with specific partners selected which have the expertise and facilities to carry out the necessary technical innovations. Global production and consumption of plastic has grown exponentially in recent decades. Since the 1950s, approximately 8.3 billion tonnes of the material have been produced – 60% of which has ended up in landfill or the natural environment. Using an innovative triple action process, the BioiCEP team will attempt to accelerate the degradation of traditional plastic and turn it into biopolymers, which can be used as natural biodegradable replacement plastics. Several innovative booster technologies are at the core of this solution accentuating, expediting, and augmenting mixed plastics degradation to levels far in excess of those current achievable. The project's overall objective is to demonstrate a seamless sustainable route to a circular economy for plastics by developing an advanced energy, carbon, and cost-efficient waste plastic biotransformation into high market demand bioproducts and bioplastics. The consortium brings together leading experts from industry and academia contributing a set of purpose-designed and ground-breaking technologies to achieve the project specific objectives. Mechano-biochemical disintegration processes, including a new proprietary sonic-green-chemical technology to reduce the polymer molecular weight of the base polymer to make it amenable to biodegradation;

SFI FOOD CHALLENGE The LIFE institute team at TUS Midwest has successfully competed for up to €2 million with a project to transform food waste. The team is developing technology to turn food waste into products which include energy, nutrients and fertiliser to reduce food loss and waste across the food supply chain. In partnership UCD and the BIOoRBIC SFI research centre, the project aims to develop technology which will transform organic food waste, destined for landfill, into nutrient-rich food, ingredients, clean energy and balanced fertiliser. The project, known as WAVA, is also one of five food challenge projects shortlisted for a prize fund of €2 million for Science Foundation Ireland's (SFI) Future Innovators Prize. In total, 15 teams were announced by Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris TD for the SFI Innovators Prize, which has called on research teams to develop innovative solutions to food waste and plastics. Five teams have been shortlisted under the SFI Food Challenge and 10 under the SFI Plastics Challenge. At the end of the 12-month programme two overall winners will be announced.

THEA and THEN South Africa (SATN) In October 2019, academics from Irish IOTs (THEA) and South African (SATN) UOTs, funding agency representatives, and other relevant stakeholders attended a Colloquium in Durban. The purpose of the Colloquium was to promote meaningful collaborative projects between Irish and South Africa participants. A group consisting of academics from Mangosuthu University of Technology (MUT), the University of Zululand (UZ), the Cape Peninsula University of Technology (CPUT), the Durban University of Technology (DUT), and TUS Midwest was formed under the sub-theme "Waste Management and the Circular Economy". Discussions thereafter focussed around identifying a project that would be innovative, locally relevant, highly and applied in nature. The framework emanating from the Colloquium was subsequently refined, and core research teams from each university were established. Cluster Initial Research themes as identified during the cluster meetings in South Africa on Valorisation of agri-industrial and municipal organic residues (2020-2024). Other Project Participants: University of Zululand; Cape Peninsula University of Technology; Mangosuthu University of Technology; University of Zululand; Durban University of Technology.

LIFE Institute members at TUS Midwest are founding members of the **Irish Bioeconomy Foundation** funded (€5Million ERDF). Our mission is to promote the conversion of Ireland's natural land & sea resources to high-value products for the development of a sustainable bioeconomy that is globally competitive and creates local development. We will do this by helping our members: to facilitate relations among innovative agribusiness, forestry, marine, energy and bioeconomy champions; generating synergies between different sustainable initiatives; enabling innovative projects to reach their next level; creating an integrated ecosystem of converging assets and ambitions. IBF is headquartered on the National Bioeconomy campus in Lisheen, Co. Tipperary (just 8 miles from Thurles). This 455-hectare property is a converted mining site and boasts an impressive infrastructure including roads, electrical substation, wind turbines, weighbridges, water, buildings. An ecosystem of converging assets and ambitions ecosystem of converging assets and ambitions.

Strategic Outlook for Research & Innovation Development and external funding

Our vision is to be industry's and society's partner of choice for the provision of innovative biotechnological and scientific solutions. Through our RUN-EU network we will become a gateway to technology in the food and biotechnology sectors, creating market-place advantage and added value for our research partners and stakeholders. We will respond to industry's challenges through the development of new processes and novel products from bio-resources.

This research group will actively search for EU-funding in area of food and biotechnology. Expertise and research interests in this area are of interest from the perspective of policy makers, funders as well as businesses and consumers. The green transition and sustainable food chain create a lot of funding opportunities that will be seized within this group.

The aim is to find complementary research areas that make the best use of the partner's expertise, around which funding will be sought, and joint research will be built. Exploration of opportunities, competencies and infrastructure within the research area has begun.

Likewise, the first joint project preparation and funding application for the EU's Horizon Europe program.

Aims 2021-2023:

Four to five project applications,

Researcher and student exchanges,

Joint facilities or research equipment to fulfil the needs in specific research areas

New opportunities for companies

New innovative openings in the area of food and biotechnology

RUN-EU RESEARCH AREA 3 CLUSTER GROUP

Research Area Cluster Name

Tourism

Research Area Cluster Lead

Dr Anthony Johnson, TUS Midlands (formerly AIT)

Short Description

The Tourism Research Area Cluster brings together RUN-EU members that are involved in the area of Research. On June 10, 2021 there was an inaugural exploratory meeting to identify common areas of research and interests between the partners.

Individual Institute Lead

IPL	Francisco Dias
TUS Midlands (formerly AIT)	Dr Anthony Johnston
HAMK	Menna Rantala
NHL STENDEN	Albert Postma
TUS Midwest (formerly LIT)	Liz Kennedy
IPCA	Maria Alexandra Pereira da Silva Maheiro

Aims and Objectives

The primary aims and objectives of the meeting were to identify common areas of research and interests. The topics that were identified and discussed were

- Strategic approaches to research- in light of COVID recovery. Impact on industry and perception of working in the industry needs to be researched and understood.
- Regional Development- impacts and opportunities and the role of tourism
- Further development of Research/Cohort Groups
- Joint Supervision of master's & PhD students (
- Festival/Destination Tourism
- Water Sports/Activities (ex. Kayaking in Finland)
- Creating Links/Strategy for Digital Tourism/ Visitor Exhibitions
- Religious linked Tourism
- Research into links between Digitisation, Digital Marketing and Skills required for this area
- Potential for the Digitisation of Tourism and Hospitality services
- Sustainable Management and development of Tourism
- Linking of Green movement with software engineering

Academic & Research Staff Profile to include details of:

- | | |
|---------------------------------|--|
| Primary Investigators (PIs) | Contributing Staff (Academic Staff) (CS) |
| Researchers (R) | Management (M) |
| Research Leads (Academic Staff) | Technical (T) |
| (RL) | Administration Staff (A) |

Name	Qualifications	T, A	specialisms (ISCED Type* PI, R, RL, CS, M, M, T, A)	Research Interests and related specialisms (ISCED Type* PI, R, RL, CS, M, M, T, A)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	Current Supervisory load (no. of PhDs) completion	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Jane Burns	MBA, MLIS, MPhil	CS		0111, 0220, 0610, 0912	1	0	0	3		ORCID https://orcid.org/0000-0001-8708-5083 H-Index -5 PRP- 15
Anthony Johnston	B.A. Hons, M.Litt. PhD	RL		1015, 0413,	0	3	1	1		ORCID https://orcid.org/0000-0003-3546-799X H-Index - 7 PRP- 4
Frances McGettigan	MSc	RL		1015	0	0	0	2		ORCID https://orcid.org/0000-0003-4297-8800 H-Index - 2 PRP- 3

Kelly Maguire	B.A. Hons, PhD	RL	1015	0	3	0	0	ORCID https://orcid.org/0000-0003-2636-8586 H-Index - 4 PRP- 12
Aisling Keenan	Ph.D.	RL	0414	0	1	0		ORCID https://orcid.org/0000-0002-6381-1447 H-Index - PRP- 15
Noëlle O'Connor	DBS, BBS, PG Cert, PG Dip, MBS, PhD	D	0011, 0031, 0110, 0114, 0220, 0310, 0410, 0413, 0414, 1013, 1015, 1041	0	0	0	6	ORCID https://orcid.org/0000-0002-4141-8142
Marie Taylor	PhD, MA, PGDE, BA	R	1015, 0222, 0220, 0114, 0314	2	0	0	0	ORCID https://orcid.org/0000-0003-4642-6915
Shane O'Sullivan	PhD	RL	0310; 0314; 0410	3	0	0	0	ORCID https://orcid.org/0000-0002-5342-4320
Liz Kennedy	MBS. BA	M	0220; 0410, 0414, 0110					ORCID https://orcid.org/0000-0003-4692-7453

Menna Rantala	MSc	CS	0819, 0520					https://www.linkedin.com/in/menna-rantala-b14768153/
Albert Postma	PhD, MSc							ORCID https://orcid.org/0000-0001-8426-297X H-Index - PRP- 64
Elena Cavagnaro	PhD, Masters							ORCID H-Index - 6 PRP-15
Erwin Losekoot	PhD (AUT), MBA (Edin), BA (Strath)	R, RL	0910; 1013; 1015	2	2	0	0	ORCID https://orcid.org/0000-0001-6077-3724 H-Index - 9 PRP- 16
Francisco Dias	PhD, MSc	PI	0313, 1015, 0310	7	0	0	8	ORCID https://orcid.org/0000-0002-5466-7420

Maria Alexandra Pereira da Silva Maheiro								ORCID
								H-Index
								PRP-

Supporting Faculty/School and Department(s)

NHL Stenden Hotel Management School, Academy of International Hospitality Research
TUS Midlands Development Unit/Department of Sport and Tourism/Applied Social
Sciences/Faculty of Business and Humanities
TUS Midwest Department of Hospitality, Tourism and Leisure Studies/Faculty of Business
and Hospitality
IPL School of Tourism and MAritima
HAMK
IPCA Higher school of management

Areas of Research Specialisation and – Specific ISCED Fields (ISCED-F 2014)

TUS Midlands

1013 Hotel, restaurants and catering
1014 Sports
1015 Travel, tourism and leisure
0413 Management and administration
0414 Marketing and advertising

TUS Midwest

0310 Social and behavioural sciences not further defined or elsewhere classified
0314 Sociology and cultural studies
0410 Business and administration not further defined or elsewhere classified
0413 Management and administration
0414 Marketing and advertising
1015 Travel, tourism and leisure

HAMK

0819 Agriculture not further defined or elsewhere classified
0520 Environment not further defined or elsewhere classified

NHL STENDEN

1013 Hotel, restaurants and catering
1015 Travel, tourism and leisure
0910 Hospitality and Healthcare research group with 5 Dutch hotel schools

IPL

0313 Social and behavioural sciences not further defined or elsewhere classified

1015 Travel, tourism and leisure

0310 Social and behavioural sciences not further defined or elsewhere classified

Alignment to the Horizon Europe research cluster and research and innovation programme

TUS Midwest

Project officer on the following Erasmus+ projects: EMwoSE, SocialB, NEF+, InTSEnSE and on Iceland, Liechtenstein, Norway Grants: FOLM

IPL

Most of the research projects in which I participate are aligned with the Horizon Europe research cluster in that they focus on the creation of systems for monitoring the social, economic and environmental impacts of tourism activity

Track Record over the last 5 years (summaries of the following)

- Completed research projects
- Graduated students at Masters and PhD level (incl. Title and details of supervisors)
- Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

TUS Midlands

Tony Johnston

- Burnett, M. & Johnston, T. (2020) Brexit anticipated economic shock on Ireland's planning for hospitality and tourism: resilience, volatility and exposure, *Tourism Review*
- Johnston, T. & Mandelartz, P. (eds.) (2016) *Thanatourism: Case Studies in Travel to the Dark Side*, London: Goodfellow.
- Johnston, T. (2015) 'Sustainable Tourism Development: Bridging the Academy-Practitioner Gap', in M. Redclift & D. Springett (Eds.), *The Routledge Handbook of Sustainable Development*, London: Routledge.
- Johnston, T. (2015) The Geographies of Thanatourism, *Geography* [The Journal of the Geographical Association].
 - This paper was awarded the *Geographical Association's Award for Excellence in Leading Geography* which I received in the University of Manchester, 2016.

Kelly Maguire

- Maguire, K., and McLoughlin (2022) Evidence Based Planning for Tourism and Event Industries. *Encyclopaedia of Tourism Management and Marketing*. (accepted).
- Maguire, K. and Wise, N. (2021) *A Research Agenda for Event Impacts*. United Kingdom: Edward Elgar Publishing.

- Maguire, K. (2021) 'The Environmental Impacts of Events'. In Maguire, K., and Wise, N. A Research Agenda for Events. United Kingdom: Edward Elgar Publishing.
- Maguire, K. (2021) 'Local Authority Planning, Sustainability and Event Governance'. In Maguire, K., and Wise, N. A Research Agenda for Events. United Kingdom: Edward Elgar Publishing.
- Maguire, K. (2020) An Examination of the Level of Local Authority Sustainable Planning for Event Management: A Case Study of Ireland. *Journal of Sustainable Tourism*.
- Maguire, K. (2020) Contextualization of a tool-kit to facilitate greater levels of sustainable planning for Event Management in Ireland. *Journal of Policy Research in Tourism, Leisure and Events*. (Pending).
- Maguire, K. and McLoughlin, E. (2020) Evidence based evaluation of planning for Sustainable Tourism and Events Industries: A comparative examination of Liverpool, Wales and Ireland. (Pending).
- Maguire, K. (2019) Examining the power role of Local Authorities in planning for socio-economic event impacts. *Local Economy*, Vol 34(7), pp. 657–679.
- Maguire, K., and McLoughlin, E. (2019) An evidence informed approach to planning for event management in Ireland: The European Tourism Indicator System as a tool to facilitate evidence informed planning for the Events Industry. *Journal of Place Management and Development*. pp. 1753-8335
- Maguire, K and Hanrahan, J. (2017) Assessing the Economic Impact of Event Management in Ireland: A Local Authority Perspective. *Event Management: An International Journal*, Vol 21(3). pp. 333-346
- Maguire, K & Hanrahan, J. (2016) Local Authority provision of Environmental Planning Guidelines for Event Management in Ireland. *European Journal of Tourism Research* Vol 12, pp.54-81.
- Maguire, K & Hanrahan, J. (2016) Local Authority planning provision for Event Management in Ireland: A Socio-Cultural Perspective. *Journal of Convention and Event Tourism* Vol 12(2) pp.129-158.
- Maguire, K & Hanrahan, J. (2016) Local Authority planning provision of Policies and Guidelines for Event Management: An Irish Perspective. *International Journal of Responsible Tourism* Vol 4(2), pp.73-102.
- Maguire, K., Hanrahan, J., & Boyd, S.W. (2016) Community Engagement in Drive Tourism: Case Study of the Wild Atlantic Way. *Journal of Heritage Tourism* pp. 1-17.

Frances McGettigan

- McGettigan, F. Rozenkiewicz, A (2013) Archaeotourism – The Past is Our Future? In R. Raj, K. Griffin, N.Morpeth, Eds. *Cultural Tourism*. U.K. CAB International Publication.
- McGettigan, F. Candon, F. and Griffin, C. (2011). The Role of a Religious Tourism Strategy for the West and North West of Ireland in furthering the development of tourism in the region. *Int. J. Business and Globalization*, Vol. 7, No. 1, 2011

- Griffin, C., McGettigan, F. and Candon, F. (2009). The Role of Lough Derg Penitential Site in the Development of a Spiritual Tourism Strategy for the West and North West Regions of Ireland. In A. Trono (Ed.), *Tourism, Religion & Culture: Regional Development through Meaningful Tourism Experiences* Lecce: Mario Congedo Publisher.

TUS Midwest

Dr. Noelle O'Connor

Graduated students at Masters and PhD level

Main supervisor

- 2014 Develop a City of Culture Social Media Marketing (SMM) Strategy;
- 2014 The economic impact of festivals and events during Limerick City of Culture 2014;
- 2014 Developing a best practice Social Media Marketing (SMM) model for rural tourism SMEs in the Peak District (UK);
- 2013 The use of social media as an innovative marketing tool within the Irish tourism and hospitality industry using Carton House as a case study
- 2012 The use of social media as an innovative marketing tool within the Irish tourism and hospitality industry.
- 2011 An evaluation of County Clare's current brand used in the promotion of its tourism product;
- 2011 assessment of the economic contribution of tourism to the Ballyhoura region.

Notable Research Outputs

PUBLICATIONS

- Boufford, C. and **O'Connor, N.** (2022). The recovery phase of tourism destinations impacted by terrorism - the role of strategic marketing plans, Emerald Handbook of Destination Recovery.
- O'Loan, A. and O'Connor, N. (2021). Rewards, Motivation and the Restaurant Industry: An Investigation into the impact of rewards on motivation and job satisfaction of Frontline Employees in the Restaurant Industry in Limerick City (Ireland), *Creating Hospitality Experiences: Authenticity in an emerging world of Hyper-Reality*, 29th Council for Hospitality Management Education (CHME) research, Learning and Teaching online conference, Sheffield Hallam University, UK.
- O'Connor, N. (2021). The incorporation of active learning strategies within travel and tourism education – An Irish case study, 4th International Scientific Conference - Restarting tourism, travel and hospitality: The day after, TOURMAN, International Hellenic University, Thessaloniki, Greece.
- Boufford, C. and O'Connor, N. (2021). The role that strategic marketing plans play in the recovery phase of destinations impacted by terrorism, 4th International Scientific Conference - Restarting tourism, travel and hospitality: The day after, TOURMAN, International Hellenic University, Thessaloniki, Greece.

- O’Loan, A. and O’Connor, N. (2021). An evaluation of employee rewards and motivation in Limerick City’s (Ireland) restaurant industry, 4th International Scientific Conference - Restarting tourism, travel and hospitality: The day after, TOURMAN, International Hellenic University, Thessaloniki, Greece.
- Brown, P. and O’Connor, N. (2021). Carbon-neutral tourism in County Clare (Ireland) – A stakeholder perspective, 4th International Scientific Conference - Restarting tourism, travel and hospitality: The day after, TOURMAN, International Hellenic University, Thessaloniki, Greece.
- Boufford, C. and O’Connor, N. (2021). Strategic marketing plans: An essential part of the recovery phase for tourism destinations impacted by terrorism, 8th Annual All-Ireland Conference of Undergraduate Research (AICUR 2021), University of Limerick.
- Boufford, C. and O’Connor, N. (2021). Strategic marketing plans: An essential part of the recovery phase for tourism destinations impacted by terrorism, Global Conference on Services and Retail Management (GLOSERV 2021), University of Naples Federico II, Italy and University of South Florida, USA.
- Costello, T. and **O’Connor, N.** (2021). Action! Normal Peoples relationship with the residents of Tubbercurry (Ireland), International Joint Conference on Hospitality and Tourism 2021 (IJCHT-21), Beyond Smart Tourism: Inspired by People, Balanced by Nature, and Driven by Technology, Universiti Teknologi MARA Cawangan Pulau Pinang, Malaysia.
- **O’Connor, N.** (2021). Putting Technological University of the Shannon (Limerick Institute of Technology)’s Compendium of Active Learning Strategies for Student Engagement into action – A Travel and Tourism Perspective, Celebrating Innovation, Opportunities and Inspirations in Learning and Teaching, University of Limerick, Mary Immaculate College and Technological University of the Shannon (Limerick Institute of Technology).
- **O’Connor, N.** (2021). Using active learning strategies on travel and tourism higher education programmes in Ireland. *Journal of Hospitality, Leisure, Sport and Tourism Education*, 29. DOI: 10.1016/j.jhlste.2021.100326.
- Brown, P. and **O’Connor, N.** (2021). An investigation into the attitudes of key tourism providers regarding ‘carbon neutral’ tourism in County Clare, Ireland, *Enlightening tourism – A Pathmaking Journal 11 (1)*: 136-170. DOI: 10.33776/et.v11i1.5151.
- Danaher, C., Maleney, D. and **O’Connor, N.** (2016). Supporting sporting women, *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 8(1).
- Kuznecovs, I. Maleney, D. and **O’Connor, N.** (2016). Business plan for Move360 Parkour and gymnastics-based classes, *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 8(1);
- O’Sullivan E. and O’Connor, N. (2016). A Research into the Use of Alcohol Sponsorship in Irish Sporting Events, *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 8(4): 267-279.

- Cantwell, L., O'Connor, N. and Barry, E. (2016). The impact on children's physical activity habits after a mass participation sports event, A Taste of Tourism - Niche Perspectives, The 12th Annual Irish Tourism and Hospitality Research Conference (THRIC), Limerick.
- McGrath, A. and O'Connor, N. (2016). Examining social media usage by SMEs in the services sector – A content analysis approach, A Taste of Tourism - Niche Perspectives, The 12th Annual Irish Tourism and Hospitality Research Conference (THRIC), Limerick.
- McInerney, S., O'Leary, S. O'Connor, N. (2016). A profile of attendees at festivals and events during the Limerick City of Culture: 'The Granny' as a case study, A Taste of Tourism - Niche Perspectives, The 12th Annual Irish Tourism and Hospitality Research Conference (THRIC), Limerick.
- Cantwell, L., O'Connor, N. and Barry, E. (2015). An evaluation of the Limerick City of Culture 2014 legacy for sport and physical activity, Shannon Airport Sports Tourism Summit, University of Limerick.
- Nash, E. and O'Connor, N. (2016). The Force Awakens! Film induced tourism in Ireland, Travel and Tourism Research Association (TTRA) Europe Chapter Conference – People, Process and Performance – Working Together Towards Tomorrow, Shannon.
- McGrath, A. and O'Connor, N. (2016). Examining Social Media Usage by SMEs in the services sector – a content analysis approach, Travel and Tourism Research Association (TTRA) Europe Chapter Conference – People, Process and Performance – Working Together Towards Tomorrow, Shannon.
- Madigan, C., Barry, E. and **O'Connor, N.** (2016). C&C Soccer Coaching Business Plan, *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 8(1).
- O'Sullivan, K. and **O'Connor, N.** (2016). The Saffron Club - A viable opportunity? *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 8(1).
- **O'Connor, N.**, Cowhey, A., S., O'Leary, S. (2016). Social media and the Irish tourism and hospitality industry: the customer experience, *e-Review of Tourism Research (eRTR)*, 13(3.4). ISSN: 19415842
- Purcell, P., O'Leary, S. and **O'Connor, N.** (2015). Can Ireland maintain its green image? *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 7(4).
- O'Connor, N. (2015). Film Tourism. In Cater, C., Garrod, B. and Low, T. (eds.) *The Encyclopaedia of Sustainable Tourism*. CABI, Oxford; 215-216.
- Thompson, S. and **O'Connor, N.** (2015). An analysis of online marketing of hotels in Limerick City and County in Ireland, *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 7(2); 83-95.
- Long, K., Barry, E. and **O'Connor, N.** (2015). *Forever Favours – A Wedding Favours company stationed in the West of Ireland*, *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 7(4);

- Nash, E. and **O'Connor, N.** (2015). To investigate the socio-cultural impacts of *The Gathering* in County Clare, *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 7(1); 60-74.
- Sherlock, J. and **N. O'Connor** (2015). Research into the impact of technology in the events industry, *Contemporary Issues in Hospitality Student Journal, Hotel and Tourism Management Institute (HTMi)*, 7(1); 88-102.
- O'Connor, N. and Johnston, T. (2015). Developing a best practice social media model for rural tourism SMES in the Peak district, U.K., Multidisciplinary in Business & Science, 4th M-Sphere Conference, Dubrovnik, Croatia.
- Cantwell, L., O'Connor, N. and Barry, E. (2015). The impact on children's physical activity habits after a mass participation sports event, Sport for All – The Ultimate Legacy, 24th The Association for International Sport for All (TAFISA) World Congress, Budapest, Hungary.
- McGrath, A. and O'Connor, N. (2015). Social Media Changing Business for the Better - A practical guide, 2nd European Conference on Social Media (ECSM), Porto, Portugal.
- McGrath, A. and O'Connor, N. (2015). Developing a Social Media Marketing Strategy for SMEs in Limerick City, What is the value of postgraduate research today? The Applicability of Postgraduate Research in Ireland, the Limerick Postgraduate Research Community (LPRC), Mary Immaculate College and University of Limerick;
- Cantwell, L., O'Connor, N. and Barry, E. (2015). An evaluation of the Limerick City of Culture 2014 legacy for sport and physical activity, Shannon Airport Sports Tourism Summit, University of Limerick.
- Cantwell, L., O'Connor, N. and Barry, E. (2015). The impact of children's physical activity habits after a mass participation sports event, Collaborative Sustainable Development – The Way Forward for Tourism, The 11th Annual Irish Tourism and Hospitality Research Conference (THRIC), Letterkenny Co, Donegal.
- McGrath, A. and O'Connor, N. (2015). Re-defining the role of the customer in social media marketing – a formula for success, Collaborative Sustainable Development – The Way Forward for Tourism, The 11th Annual Irish Tourism and Hospitality Research Conference, Letterkenny, Co, Donegal.
- McGrath, A. and O'Connor, N. (2015). Likes, Links and Retweets; a business guide to navigating the social media maze. European Conference on Social Media, Portugal.
- Nash, E. and O'Connor, N. (2015). To investigate the economic impact of the Irish film industry with particular emphasis on the tourism sector, Collaborative Sustainable Development – The Way Forward for Tourism, The 11th Annual Irish Tourism and Hospitality Research Conference (THRIC), Letterkenny Co, Donegal.

Marie Taylor

Completed research projects = 2

EMwoSE:

The EMwoSE project aims at increasing the employment of women from ethnic minorities, providing them with the knowledge and practical skills necessary for engaging in the social

enterprise world. This project is funded by the Erasmus+. Part of the project included the development of a Storytelling library of over 30 videos of interviews of female entrepreneur success stories. It also included the development of a State of the Art Report and learning resources for both women from ethnic minorities and the organisations that assist them in establishing or working in social enterprises.

InTSEnSE - Internationalising Trading for Social Enterprise Sustainability and Education

This project supported the development of innovative practices in education and training for individuals either seeking to expand their knowledge and expertise in relation to the internationalisation of social enterprise (SE), trading, or are already engaged in social enterprise organisations and wish to develop their capacity to trade their goods and services internationally to enhance their organisational sustainability. It included the development of an e-framework of factors that act as enablers and barriers; a report mapping the use of current support mechanisms available; the creation of infographic and video case study materials, used as examples to show the practices of social enterprises internationally and the production of materials used for formal and informal courses of education and training.

Publications

- Taylor, M. and Bradley-Davies, H. (2018) Primary Valuation, in Clarke, H.B. and Gearty, S. (eds.) *More Maps and Texts. Sources and the Historic Town Atlas*, Dublin: Royal Irish Academy
- Taylor, M. and Murphy, C. (2017) Communities-Doing It For Themselves?, *13th Annual Tourism and Hospitality Research in Ireland Conference*, Sligo Institute of Technology, Sligo
- Taylor, M. and Murphy, C. (2017) An Analysis of Community Based Heritage Tourism: A Resource for a Small Community in Rural County Clare, Ireland, *WASET*, Boston
- Bradley Davies, H. and M. Taylor, (2014) "'I am rich in all that I have lost' The Mount Saint Laurence Cemetery Project Limerick", in Geographical Society of Ireland, ed. *Conference of Irish Geographers*, University College Dublin
- Taylor, M. (2013) "Medieval Limerick" *North Munster Antiquarian Journal*, 53, p.123-134
- Bradley, H. and M. Taylor, (2011) "Fethard, County Tipperary 1200-2000" by Michael O'Donnell, reviewed in *Tipperary Historical Journal*, pp.151-153
- Bradley, H. and M. Taylor, (2009) "Feudalism and Feudal Society", *International Encyclopaedia of Human Geography*, p.98-105

Shane O'Sullivan

- **SEDETT (ERASMUS+, €37,145, 2016 - 2018)**: This strategic partnership supported the development of innovative practices in the education and training of individuals engaged in social enterprises.
- **INTSENSE (ERASMUS+, €36,275 2017-2019)**: This strategic partnership supported the development of innovative practices in education and training. It was targeted at individuals who were either seeking to expand their knowledge and expertise in

relation to the internationalisation of social enterprise.

- **SESBA (ERASMUS+, €54,053, 2016 – 2018):** the Social Enterprise Skills for Business Advisers project developed a training methodology and a consulting toolkit for business advisers, thereby expanding their competencies in order to provide tailored services to social entrepreneurs.
- **TEL12 (ERASMUS+, € 274,960, 2016- 2018):** This project developed, or further enhanced, the knowledge, skills and competences of staff within Local Action Groups (LAGs) and Local Development Companies (LDCs). A key output was the Certificate in LEADER Programme Management, a special purpose award accredited by LIT.
- **COFRAM (ERASMUS+, €274,960, 2016 – 2019):** The CO-FARM project aimed at developing a flexible training system based on case study research that provided rural entrepreneurs, rural landowners and farmers with skills and knowledge to implement initiatives of cooperation amongst farming entrepreneurs.

Publications

(2020) “Fostering Resilience in the Post COVID-19 Social Economy” Paper delivered to Multi-Disciplinary Innovation in a Pandemic (on line webinar organised by Cost Action: Multi-Disciplinary Innovation for Social Change).

(2019) “Strategies for Developing Innovative Tools and Resources for Social Enterprise Educators and Learners” Paper delivered to 7th EMES International Research Conference on Social Enterprise, Sheffield Hallam University, UK (Collaborative Paper with Sarah Evans).

(2019) “Factors affecting the sustainability of social enterprises operating internationally; a European perspective” Paper delivered to 7th EMES International Research Conference on Social Enterprise, Sheffield Hallam University, UK (Collaborative Paper with Sarah Evans).

O’Raw, Paul; & O’Sullivan, Shane, ‘Patrickswell Community Plan’, (Limerick City and County Council: 2020)

O’Raw, Paul; & O’Sullivan, Shane, ‘Askeaton Community Plan’, (Limerick City and County Council: 2020)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Fedamore Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Mitchelstown Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Milford Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Doon Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Donoughmore, Knockea & Roxborough Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Liscarroll Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Ahane, Castleconnell and Montpellier Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Kilmallock Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Charleville Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Bruff, Meanus and Grange Community Plan’, (Ballyhoura Development CLG: 2019)

O’Raw, Paul; O’Sullivan, Shane & Heenan, Niall, ‘Oola Community Plan’, (Ballyhoura Development CLG: 2019)

O’Sullivan, Shane & O’Keeffe, Brendan, ‘A Socio-Economic Profile of An Gaeltacht Uíbh Ráthaigh’ in Uíbh Ráthach Task Force: Report and Action Plan 2019 – 2022 (Udáras na Gaeltachta: 2019)

O’Sullivan, Shane & Bogue, Pat, An Evaluation of Collaborative and Co-operative Practices amongst Farming Entrepreneurs in Europe, (Limerick Institute of Technology: 2018).

O’Sullivan, Shane, ‘A Socio-Economic Profile of Pinewood Estate (Killarney Town)’, (Pinewood Residents Association, 2017)

O’Sullivan, Shane, Transnational Education in LEADER Implementation: Summary Report, (Limerick Institute of Technology: 2017)

Crowley, Caroline; O’Sullivan, Shane; and O’Keeffe, Brendan, An Evaluation of Kerry Social Farming Project, (Kerry Social Farming Project: 2017).

O’Sullivan, Shane & O’Keeffe, Brendan, A Socio-Economic Profile of An Gaeltacht Uíbh Ráthaigh, (Comhchoiste Ghaeltacht Uíbh Ráthaigh: 2017)

Crowley, Caroline; O'Sullivan, Shane & O'Keeffe, Brendan; Irish Uplands Socio-Economic Profile: A Report into Ireland's Inhabited and Farmed Upland Areas, (Irish Uplands Forum: 2016).

O'Sullivan, Shane; O'Keeffe, Brendan; & Creamer, Caroline; An Evaluation of the Charleville – Kilmallock REDZ Pilot Programme, (Innovate Limerick: 2016).

O'Sullivan, Shane; O'Keeffe, Brendan; & McCafferty, Des; A Socio-Economic Analysis of the Rathkeale RAPID Area, (Limerick County Council: 2012)

O'Sullivan, Shane, 2013. 'A Spatial Analysis of the Effects of Rural Restructuring on Migration Patterns in the Republic of Ireland 1990 – 2011: Fieldtrip Report'. GeoNews, Winter 2012 / Spring 2013, pp. 26 - 28

Liz Kennedy

Destination Management - Sustainable Tourism Management. (2 key projects)

- **Sustainable Tourism Indicators:** Project Manager of EPA funded project to devise & improve methods for the implementation of carrying capacity indicators at destination level and to facilitate government and tourism business managers in making more informed decisions, using Tipperary Lakeside – Lough Derg as the case study area. The DIT ACHIEV Model for Sustainable Tourism Management emerged from this work.
- **ACHIEVing Sustainable Tourism Management – Putting the DIT-ACHIEV Model into Practise.** Project Manager/Researcher - EPA/Fáilte Ireland funded project to implement the Model in 2 tourism locations: Killarney (an established tourism destination) & Carlingford (an emerging destination). Resulted in the development of a 'DIT-ACHIEV Model - Manual for Local Tourism Management' for use by tourism planners and communities.
- **Hospitality Management Skillnet (HMS):** Funded through Skillnets Ltd. An industry led competency based training initiative funded through Department of Enterprise, Trade and Employment, in partnership with the Irish Hospitality Institute (IHI). This involvement has been through application development, project direction, network management, certification, e-learning, training needs analysis, industry surveys, ROIs and independent evaluation across a range of sectors. In addition to HMS, I have worked with other government funded Skillnets including Refrigeration Skillnet, BiznetCork Skillnet, Ballyhoura Tourism Skillnet, IEI Skillnet & ITAA Skillnet.
- **PARNETOURISM (INTERREG IIIA):** Project Director of collaborative project with DIT and Trinity College, Carmarthen to identify and critically analyse tourism co-operatives, partnerships and networks in the Wexford, Carlow, Pembrokeshire and Carmarthenshire

regions of Ireland and Wales, by examining best practice in other industries, using qualitative and quantitative research methods and through extensive consultation with the industry.

- **Fifth Framework Programme (PF5): SMART-Up (2002-2004):** Project Co-ordination of Smart-Up, Europe's first on-line information, communication and learning platform for small- and medium sized hotel enterprises. Learning modules were developed in Capacity Management, Quality Management, Human Resource Management, E-commerce and Tourism Product Development. Partners included: University of Innsbruck, Austria; Universität St. Gallen, Switzerland; University of Surrey, UK; OHV Austrian Hotel Association and Siemens, Austria.
- **Celtic Knots: *Ferrying Towards Excellence (1997-2000)*.** Project Co-ordinator & training mentor. Funded through INTERREG IIA. Training on-board Irish Ferries, partnership between Dublin Institute of Technology and Coleg Menai, Wales
- **REDZ Projects for Laois County Council (2016-2018)**
Connect 2 Laois for Food: recruitment, facilitation, networking and mentoring of participants on food business development programme. Organised *Food Futures* Showcase event.
Inspire Rathdowney– recruitment, facilitation, networking and mentoring of participants on an enterprise development programme in conjunction with IT Carlow

Publications

- Kennedy-Burke, E (2013) *The Gathering 2013: Lessons to be learnt from previous Irish Government led Initiatives, An Tóstal*. Abstract for Tourism & Travel Research Association (TTRA), European Tourism Conference, Dublin, April 2013.
- Kevin Griffin, Sheila Flanagan, Elizabeth Kennedy Burke, Jane Fitzgerald, Maeve Morrissey, Spring 2012. *Toolkit Guide to the DIT-ACHIEV Model for Sustainable Tourism Planning*. Development of the DIT-ACHIEV Model has been endorsed by the EPA and Fáilte Ireland
- Jane Fitzgerald, Sheila Flanagan, Kevin Griffin, Maeve Morrissey, Elizabeth Kennedy-Burke, (2012), 'DIT-ACHIEV Model for Sustainable Tourism Management: Lessons Learned from Implementing a Holistic Model of Sustainable Tourism Indicators', Kenneth F. Hyde, Chris Ryan, Arch G. Woodside, in (ed.) *Field Guide to Case Study Research in Tourism, Hospitality & Leisure (Advances in Culture, Tourism & Hospitality Research, Volume 6)*, Emerald Group Publishing Ltd, pp. 387 – 408.
- Kennedy-Burke E., Griffin K., Bourke, S. and Flanagan, S. (2010) *The Dublin Institute of Technology Placement Experience Partnership Framework*. Dublin: DIT.
- Kennedy, Elizabeth (2001) 'Achievement and Challenge: Rio +10 in Ireland. Dublin, Sept 2000. Paper: 'Seasonal distribution of Irish tourism & implications for sustainability'. (Conference Proceedings)

- Kennedy E. and Deegan J. (2001) 'Seasonality in Irish Tourism 1973-1995'. Edited by Baum T. and Lundtorp, in Seasonality in Tourism. (Chapter in Book)
- Kennedy E. (1999) 'Seasonality in Irish Tourism 1973-95'. Tourism Economics, (Journal)

Impact

- podcast for Dublin City University's project from Passion to Action to foster social innovation and entrepreneurship at higher education level
- presentation to Global Women's Conference 2020 on EMwoSE project
- part of panel discussion at Social Innovation Through Knowledge Exchange Showcase
- numerous conference proceedings including to Tourism and Hospitality Research in Ireland Conference (THRIC), Conference of Irish Geographers, Irish Museums Association, Royal Irish Academy Seminar, The Group for the Study of Irish Historic Settlement and the American Society of Irish Medieval Studies, Death and Culture Conference, The Economic and Social History Society of Ireland,
- presentation to ICOMOS Ireland (International Council on Monuments and Sites) on Community and Heritage Tourism,
- Poster presentation to International Council on Monuments and Sites 18th International General Assembly, Scientific Symposium, Florence

Engagement:

- member of Department of Rural and Community Development's Network on Higher Education Institutes' in Social Enterprise
- member of Social Economy Research Network of Ireland
- part of panel discussion at Social Innovation Through Knowledge Exchange Showcase
- member of Kilfenora Timeline community heritage tourism initiative

HAMK

Research Unit – Hamk BIO <https://www.hamk.fi/research/hamk-bio/?lang=en>

Project Manager

Dates Employed Jul 2021 – Present

Hevoshäme - kestävä hevosturismi maakunta

Hevoshäme – home of the sustainable Equine Tourism (REACT EU)

<https://www.hamk.fi/projektit/hevoshame-kestavan-hevosturismi-maakunta>

Lecturer

Dates Employed Jul 2021 – Present

Working as a part-time lecturer for higher education students (equine business management)

<https://www.hamk.fi/amk-tutkinto/hevosalan-liiketoiminta-tradenomi-amk/>

Project Manager

Dates Employed Jan 2020 – Present

Employment Duration 1 yr 8 mos

Elämysten hevonen -yritysryhmähanke

Group and co-operation project for horse entrepreneurs (European Agricultural Fund for Rural Development EAFRD)

<https://www.hamk.fi/projektit/elamysten-hevonen/>

Project Manager

Dates Employed Aug 2019 – Jun 2021

Employment Duration 1 yr 11 mos

Kestävän hevosmatkailun tiekartta Kanta-Hämeessä

Sustainable Horse Tourism Roadmap in Kanta-Häme region (European Regional Development Fund ERDF)

www.hamk.fi/kestavahevosmatkailu

Project Manager

Dates Employed Jan 2017 – Sep 2019

Employment Duration 2 yrs 9 mos

Uudet hevoskasvattajat – koulutushanke

National training project for new horse breeders (European Agricultural Fund for Rural Development EAFRD)

www.hevoskasvattajat.fi/

Students of Hamk's Bachelor's Degree Programmes (Sustainable development, Equine business management, Agriculture) have participated in all of the above projects as trainees, student projects and theses.

IPL

Research projects

- Monitoring of the event "Carnival of Torres Vedras" (Goal: Evaluation of the social and economic impact of the Carnival de Torres Vedras through complementary methodologies to get information from three sources: publics, actors/producers of the event and tourism companies), from January 2013 to June 2015.
- Tower of Babel – Favourite Destinations Worldwide (Goal: Developing of a multilingual online survey to perform a cross-cultural and worldwide survey of destination brand-equity: awareness, brand image and loyalty), from January 2015 to December 2019.
- DB-Gnosis - Destination Branding Gnosis Software (Goal: Creation of a translation, processing and graphical presentation tool for qualitative data, capable of processing big-data / mega-data information), from February 2018 to December 2019.

- Monitoring System of Touristic Activity in the Central Region of Portugal (Goal: Creation/validation of a system of indicators for monitoring the tourist activity of the Central Region of Portugal), from January 2017 to December 2019.
- Study of the tourist experience and analysis of the effectiveness of tourism promotional videos using brain-computer interface devices (Goal: To carry out experimental studies of promotional videos, using electroencephalography data and eye tracking data), from June 2020 to October 2020.

Master theses:

- Master student: Srбуhi Musikyan
- Title: “The Influence of Creative Tourism on Sustainable Development of Tourism and Reduction of Seasonality – Case Study of Óbidos”
- Master course: Sustainable Tourism Development.
- Date: June 2016.

- Master student: Ricardo Pedras Ribeiro
- Title: “Sociocultural Relations as an enhancing factor of tourist experience – The case of the Medieval Market of Óbidos”
- Master course: Tourism and Environment
- Date: November 2016.

- Master student: Maksym Darmogray
- Title: “Touristic Development of the Municipality of Abrantes: Perspectives, proposals and applications”
- Master course: Marketing and Tourism Promotion,
- Date: November 2018
- Master student: Beatriz Dinis
- Title: “Proposal of redefining the concept ART&TUR - International Tourism Film Festival
- Master course: Tourism and Environment
- Date: November 2019.

- Master student: Ana Raquel Saraiva Hermínio
- Title: “Sustainable Tourism Planning, a strategic approach to the community-based tourism model - The case of Ferrel, Portugal”
- Master course: Tourism and Environment
- Date: December 2020

Notable Research Outputs:

- Cardoso, L.; Dias, F.; Araújo, A.; & Marques, M. I. (2019). A destination imagery processing model: Structural differences between dream and favourite destinations. *Annals of Tourism Research*, 74 (1), 81-94.
- Araújo, A.; Cardoso, L.; Araújo, N., & Dias, F. (2019). Understanding the role of destination imagery in mountain destination choice. Evidence from an exploratory research. *European Journal of Tourism Research*, 22, pp. 151-165.
- Cardoso, L., Araújo Vila, N., de Araújo, A.F., & Dias, F. (2020), "Food tourism destinations' imagery processing model", *British Food Journal*, Vol. 122 No. 6, pp. 1833-1847.
- Ribeiro, R.; Dias, F.; & Almeida, A. S. (2019). Fatores intensificadores da experiência turística: O caso do Mercado Medieval de Óbidos, Portugal. *Revista Portuguesa de Estudos Regionais*, No 53, pp. 35-54.
- Dias, F. (2016). A pathway for the new generation of tourism research - Proceedings of the EATSA Conference 2016. Peniche: Grácio Editora.
- Dias, F.; Ramos, D.; Martins, R.; & Oliveira, U. (2016). O Carnaval mais português de Portugal: Estudo de impacto económico e mediático do Carnaval de Torres Vedras. CITUR - CM de Torres Vedras
- Cardoso, L. & Dias, F. (2018). *La imagen y la Promoción de los Destinos Turísticos*. Thomson Reuters – Aranzadi, Barcelona.

Progress updates on current activities (Summaries of the following)

- Research projects
- Postgraduate Research Degrees (incl. Level, Title and Supervisors)
- Other notable activities

TUS Midlands

Visiting Professor

Professor Terry Stevens will join TUS Midlands as a visiting professor from September 2021 and will be involved with co-supervision of theses as a mentor and subject advisor. Professor Stevens is an example of the high calibre of staff who can be attracted to the Institute with the appropriate frameworks. He has over 350 published works on tourism and tourism-related subjects and has consulted for companies ranging from the United Nations World Tourism Organisation (UNWTO) to the United States Agency for International Development (US AID) and the World Bank.

- Over 350 published works on tourism and tourism-related subjects including 5 new books (and contributions to books in 2020, including:
 - *Wish You Were Here: the stories behind 50 of the world's great destinations*
 - *The Art and Science of Destination Management*
 - *Tourism Facing a Pandemic: from crisis to recovery*
 - *Tourism in Development: Reflective essays*

The Coker Economic Cluster: an analysis

TUS Midlands

Research projects

Shane O'Sullivan

I am currently compiling socio-economic profiles for Doneraile Co. Cork (a village with significant rural tourism potential) and Kilfinane Co. Limerick (Both locations are situated in the Ballyhoura Hills)

I am collaborating in the compilation of a community facilities plan for Dooradoyle, Mungret and Raheen in Limerick City.

Postgraduate Research Degrees

2 MA students in Community Development. I am in the principal supervisor.

"The distance to Travel: Pre development work as an agent of change for those who experience socio-economic disadvantage, marginalisation and exclusion"

"An Evaluation of Communities Creating Jobs".

Marie Taylor

Doctor of Philosophy (Tourism and Community Development)

Limerick Institute of Technology (TUS Midwest)

Title of Thesis: Community Based Heritage Tourism: An Analysis

Supervisors: Dr. Catriona Murphy LIT and Dr. Helene Bradley-Davies, MIC

Liz Kennedy

Masters of Business Studies (by Research on Tourism Policy)

University of Limerick

Title of Thesis: Seasonality in Irish Tourism (1972-1992)

Supervisors: Prof James Deegan, National Centre for Tourism Policy Studies, UL

b) Other notable activities

Part -time lecturer on LIT QQI Level , Special Purpose Award Certificate in Local Heritage Tour Guiding

- *Co-creator of the work placement model* (the Placement Experience Partnership (DIT-PEP) Framework as endorsed in Forfas Future Skills Needs
- *Co-creator of Sustainable Tourism Indicators model* & the resultant DIT-ACHIEV Model for Sustainable Tourism Management
- Project Manager of INSPIRE Rathdowney project in conjunction with IT Carlow and Laois County Council, funded through the Department's Rural Economic Development Zone (REDZ) fund.

- Through the REDZ funded *Connect 2 Laois for Food initiative* organized the highly successful *Food Futures* showcase of local produce event between buyers & suppliers which led to the Laois Food Sector Network.
- *Project manager* of highly recognised *competency model* for middle management in the Irish hospitality industry (Hospitality Management Competency Model) *and co-authored* winning proposal which resulted in Hospitality Management Skillnet winning the overall *Irish Institute of Training and Development (IITD) Award 2010 for Networks & Groups*.
- *Offered Fellowship of Irish Hospitality Institute* in recognition of contribution to the industry.
- Represented TU Dublin in NCURA's National Centre for University Research

HAMK

Equine Tourism in Kanta-Häme region

Many regional development needs have been identified around sustainable equestrian tourism even before the corona epidemic. To develop equine business and new products, it is necessary to strengthen innovation activities. In addition, the industry is in dire need of sparring and support in the development of customer-oriented marketing, service design, customer service and productization and sales. The rapidly changing operating environment has made digitalization and its utilization a key development target in equine companies. In the future, responsibility is a prerequisite for all activities, which must be able to communicate and make an attraction factor.

From the region's point of view, the pandemic has severely limited the realization of regionally and nationally significant equestrian events – equestrian sports, history, nature and culture. Normally, up to 150,000 visitors visit the region's equestrian events each year and their financial impact on the region is great. Corona carried forward the Kuninkuusravit in Forssa ("royal races" is an annual harness racing championship for finnhorse) to 2022, and almost 60,000 visitors are expected there. More than 12,000 people visit national and international horse events and riding competitions in Ypäjä every year.

The Roadmap for Sustainable Equine Tourism in Kanta-Häme project has drawn a clear picture of the current state of equestrian tourism in the area, for which concrete measures are now needed. New project, Horsehäme will be built from Kanta-Häme – a home of sustainable horse tourism, where equine tourism has an identified and visible role in promoting the green transition and growth of the regional equine ecosystem and industry. Supporting and strengthening the internationally unique equine complex in Kanta-Häme requires new and sustainable innovations such as equine tourism services and networks of actors.

Nature and rural tourism have good conditions and development conditions in the province, and it has been raised to a central position in the Regional Survival plan and the Häme Program. In addition to nature tourism, horse tourism and interest in horses have been growing in recent years. During the corona period, the horse has become a significant part of human well-being

and leisure. Like natural sites, encountering and working with a horse has been studied to be a significant source of health and well-being.

The main goal on projects is to develop sustainable and high-quality equestrian tourism services, and to support vibrant and diverse equestrian entrepreneurship in the province through the Hevoshäme (Horses of Häme) brand, which brings them together. Vibrant and renewable horse companies support regional employment, and in Kanta-Häme e.g. opportunities for university and secondary students studying tourism and the equine sector to settle and find employment in the area.

All the tasks of the project will have a significant impact on the implementation of equality. In the equine sector, they are already strongly embedded in the structure of the industry as a whole; a significant proportion of entrepreneurs in the equine sector are women. In terms of equality, the Equestrian activities in its various forms is easily accessible to everyone. hobbies and activities with horses with horses promotes both physical and mental well-being and public health.

The EU's Green Deal is playing a key role in the future development of environmental expertise in the equine industry and tourism. They provide much-needed opportunities for community nature and animal experiences and experiences; feed production and horse grazing maintain the diversity of nature and the environment and are carbon sinks. At the same time, the land used for fodder production remains in good condition. Horse manure is involved in the nutrient cycle, carbon sequestration and as a renewable energy source.

Right now is the right time to take advantage of the growth trend in the equine activities and tourism industries: the corona pandemic concretely changed people's use of travel and leisure by looking for services in the surrounding area, nature and the countryside. Equestrian activities have been one of the few activities during the coronary crisis, which, despite exceptional circumstances, has been able to continue almost normally and its demand continues to grow. Increasing co-operation with other nature and tourism actors, as well as strengthening the skills of entrepreneurs, will benefit all sectors. During the Roadmap for sustainable equine tourism in Kanta-Häme -project, an overall picture of the home of equine tourism has been formed, which helps to develop livelihoods and speed up the start of further measures. The ongoing crisis has highlighted long-standing problems in the growth of tourism, such as the demands of environmental responsibility, sustainability and climate change.

International tour operators have already started looking for destinations in Finland, and in various scenarios, the recovery of tourism in the Nordic countries and rural areas is predicted to be very rapid. The equine tourism theme has a unifying and unifying effect throughout the province, which is easy to highlight in a nationally and internationally interesting and multimedia way.

On top of a well-done groundwork and with the help of a clear road map, it is good to start building regionally significant and sustainable equine tourism and systematically pursue the provincial Hevoshäme brand. Otherwise, there is a danger that these opportunities will be seized with the rise of domestic tourism and the rapid recovery of the tourism sector in another region.

IPL

Research projects:

- Observatory of Sustainable Tourism of Center of Portugal Region (Goal: Developing a governance model for monitoring and planning of regional tourism development according to the criteria of INSTO (UNWTO network of sustainable tourism destinations). From July 2021 to December 2022.
- Olive4All - Olive Heritage for Sustainable Development: Raising Community Awareness of Living Heritage (Goal: this project aims to demonstrate that raising community awareness of olive heritage ('a living heritage') could be an asset for sustainable development. According to the committee the proposal is based on clearly defined objectives, a good conceptualisation of heritage and looks at both tangible and intangible heritage and brings a complex ecological approach to the research. The projects subject is suitable to the program and a clear and perfect fit in the aims and topics of the call: implicit role of cultural heritage in society; impact on public policies and social values. This project is seen as an ambitious and novel project by its approach to integrate complex methodologies and models by grounded theory, by the use of a transmedia storytelling device, by the use of the concept of living heritage. According to the committee the project will expand the existing state-of-art knowledge. The planned research follows a logical sequence in an interdisciplinary approach and therefore assessed positively. The three work packages are fully relevant and include all partners and the interaction between stakeholders is clearly set out which in the committee's view supports the eminent quality of this proposal). From June 2021 to May 2024.

External Collaborations

AIT (TUS Midlands)

Supervision collaborations

The following colleagues are involved in tourism PHD supervision as 2nd supervisors:

Supervisor	University
Professor Tom Collins	Emeritus Professor Maynooth
Dr Mona Friedrich	Max Plank Berlin
Dr Nuno Almeida	Leiria
Dr Ciarán O hÁnnracháin	LYIT/ CUA

PhD funding obtained from RUN-EU for 3 jointly supervised projects with Leiria

PhD funding obtained from Athlone Chamber of Commerce for jointly funded PhD with AIT

LIT (TUS Midwest)

- Geographical Society of Ireland (Treasurer 2015 – 2021; Ordinary Committee Member 2013 -2015; 2021 – Present)
- Management Committee Member and Training School Co-ordinator on COST Action: Multi-Disciplinary for Social Change (2019 – Present)
- Doon Social Farm advisory group (2018 – Present)
- Parish Habitats and Biodiversity AGRI-EIP (2021 – Present)
- Social Economy Research Network of Ireland (2019 – Present)
- Changing Ireland – board member (2021 – Present)
- Paul Partnership Research and Evaluation Committee (2021 – Present)

HAMK

- The development work and projects described above are implemented regionally in cooperation by Häme University of Applied Sciences (Hamk), Pilvenmäki racetrack in Forssa <https://www.pilvenmaki.fi/>
- The National Equine Competence Association – Hippolis <http://www.hippolis.fi/>
- and Natural Resources Institute LUKE <https://www.luke.fi/en/>
- Cooperation is also established with other tourism actors and projects in the region. All work will also be carried out for the benefit of the entire equestrian tourism sector in Finland

NHL STENDEN

- Founding member of the Hospitality & Healthcare Education Partnership with 5 Dutch university hotel schools (The Hague, NHL Stenden, Breda, Saxion, Maastricht).

IPL

All the above referred research projects (completed and current) are running in the framework of CITUR – Centre for Tourism Research, Development and Innovation (<https://citur-tourismresearch.com/en/centre-for-tourism-research-development-and-innovation/>), a RDI unit that integrate as full members around 200 researchers from 17 Portuguese high education institutions: 15 polytechnic institutes (IPLeiria, IPCA, IP Viana do Castelo, IP Bragança, IP Porto, IP Viseu, IP Guarda, IP Coimbra, IP Castelo Branco, IP Tomar, IP Santarém, IP Portalegre, ESHTe, IP Setúbal and IP Beja), and 2 universities (U. Algarve and U. Madeira).

Moreover, the project Olive4All – that according to the Assessment report JPICH Cultural Heritage, Identities & Perspectives: Responding to Changing Societies was assessed by an international jury as the best project (first place in the ranking) among other 69 projects – is running by a consortium that includes the University of Perpignan (France) and University of Thessaly (Greece).

Strategic Outlook for Research & Innovation Development and external funding

TUS Midwest

Research areas: Social Enterprise, Rural Development, Community Development, Tourism, Heritage, Sustainable Development Goals, Sustainability, Education.

Dr. Shane O’Sullivan

Utilising the research findings from the SEDETT and INTSENSE ERASMUS+ projects and develop a peer-reviewed paper on measuring the socio-economic impacts of rural community-owned co-operatives. This paper would be submitted to the Journal of Rural Studies (a prestigious international journal in rural development). A number of these social enterprises are orientated towards the tourism sector. I have commenced the process of applying for a Horizon Europe grant - HORIZON-CL6-2021-COMMUNITIES-01-01: Grasping rural diversity and strengthening evidence for tailored policies enhancing the contribution of rural communities to ecological, digital and social transitions. One component of this project proposal will be focusing on rural tourism.

Liz Kennedy

Currently developing a number of ERASMUS+ & other Proposals in the area of

- Digital Tourism Skills
- Lakes as Living Labs with a focus on tourism and rural/community development
- Social Enterprise

Vision that all work in LIT’s Development Unit is anchored around the UNs 17 SDGs

HAMK

The project applicant, Häme University of Applied Sciences, has strong multidisciplinary expertise in the implementation of national, international and regional projects financed from various funding sources. The HAMK Bio research unit includes education in rural industries, business, sustainable development, bio- and food technology, forestry, landscape design and horticulture, as well as applied research and regional development activities. Alongside HAMK, there is the Häme Vocational Institute, which offers secondary education. As sites for bioeconomy education

are traditional students in Mustiala, Forssa, Evo and Lepaa, with its headquarters at Hämeenlinna University Center.

HAMK is Finland's second largest educator in the field of natural resources, and the core of its profile is intelligent solutions for the circular and bioeconomy. HAMK has profiled its operations around the focus areas described above. Its research units (HAMK Edu, HAMK Bio, HAMK Tech and HAMK Smart) work together to develop related applied research and build regional business partnerships. HAMK is committed to developing the RUN Europe University, HAMK Design Factory and HAMK Enterprising University concept.

HAMK has long been responsible for the management and implementation of various development projects in the equine industry. In addition to the project partners, the project preparation has been carried out in co-operation with Hamk BIO and Hamk Smart research units as well as equine business management.

HAMK is currently strongly responsible for the development of tourism in the province through various tourism projects. mm. Western Lakeland, VIKKE-virtual cultural tourism, Digitrail ect

Of the projects currently being prepared, co-operation in various areas will be carried out, e.g. Orientation to nature and the opportunities for the green transition and Forssa region - with the Green Growth Horse Ecosystem projects.

HAMK is also part of the regional working group of the Evo Science National Park project, which is currently preparing a report in connection with the preparation of the science national park. The working group has been appointed by the University of Helsinki on behalf of the Ministry of the Environment. The work and proposals of the working group serve as material in the preparation of the government's proposal for the national park at the Ministry of the Environment.

IPL

The prestige of the CITUR as a whole and of CITUR Leiria in particular has been increasing year after year. In the first evaluation of the national agency for research FCT (<https://www.fct.pt/index.phtml.en>), that took place in 2014, CITUR obtained the global

evaluation of "Fair". Five years later, in the evaluation carried out in 2019, it obtained the evaluation of "Very Good". It is expected that in the next evaluation (probably to take place in 2024) CITUR will achieve the assessment of Excellent, as the projects that are currently being carried out and the research outputs that are published show a gradual and significant improvement. The gradual improvement of CITUR's assessment naturally translates into better prospects of evolution, both from the point of view of external sources of funding and from the point of view of the quality of the research, development and innovation projects it carries out.

RUN-EU RESEARCH AREA 4 CLUSTER GROUP

Research Area Cluster Name:

IoT and Cybersecurity

Research Area Cluster Lead:

Heinz Seyringer, University of Applied Sciences Vorarlberg

Short Description:

The Internet of Things (IoT) is very rapidly growing and it is expected to triple from the 8.74 billion devices in 2020 to more than 25.4 billion devices in 2030. The most critical point in IoT is however the security since many IoT devices lack the resources and calculation power to implement proper security protocols. The focus of this research area cluster is therefore the investigation of IoT technologies with a special focus on Cybersecurity on one hand but on the other hand also cybersecurity in a broader range with applications in digital factories, industry 4.0 settings, ICT and other domains.

Individual Institute Lead:

IPL	Nuno Costa, nuno.costa@ipleiria.pt
TUS Midlands (formerly AIT)	Brian Lee, blee@AIT.IE
HAMK	Joni Kukkamäki, joni.kukkamaki@hamk.fi
NHL STENDEN	Jeroen Pijpker, jeroen.pijpker@nhlstenden.com Joyce Kerstens, joyce.kerstens@nhlstenden.com Jurjen Jansen (i.V. Wouter Stol), jurjen.jansen@nhlstenden.com
TUS Midwest (formerly LIT)	Niall Corcoran, Niall.Corcoran@lit.ie
IPCA	Nuno Lopes, nlopes@ipca.pt
FHV	Martin Dobler, martin.dobler@fhv.at

Aims and Objectives

The aim of this research cluster is to use the complimentary research focuses of the RUN-EU partners to do research in the area of IoT and Cybersecurity and to develop secure IoT system solutions as well as cybersecurity solutions for the industry.

Topics of interest are:

- Twin green and digital transition
- Climate neutral, circular and digitised production
- A digitised, resource-efficient and resilient industry
- World leading data and computing technologies
- Digital and emerging technologies for competitiveness and fit for the green deal
- A human-centred and ethical development of digital and industrial technologies

Academic & Research Staff Profile to include details of:

Primary Investigators (PIs)

Researchers (R)

Research Leads (Academic Staff)

(RL)

Contributing Staff (Academic Staff) (CS)

Management (M)

Technical (T)

Administration Staff (A)

Name	Qualifications	Type* PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED Codes*)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	Completion supervised to	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Nuno Costa	PhD	R	061	1	2	0	12		0000-0002-2353-369X Scopus H-Index: 7 19
Brian Lee		PI	061						
Joni Kukkamäki		M	061	0	0	0	0		0000-0002-0962-2151 h-index: 3 11

Joyce Kerstens		PI	061					
Jurjen Jansen		PI	061					
Niall Corcoran	B. Eng. Industrial Engineering MSc Computing DBA (Doctor of Business Administration)	PI	061	4	0	0	2	https://orcid.org/0000-0002-9396-7485 H-index: 4 18
Nuno Lopes		PI	061	7	0	0	11	https://orcid.org/0000-0001-8897-5061 H-index: 9 34

Martin Dobler	Blockchain, (I)IoT, Distributed / Autonomous ICT Systems, Cybersecurity; Microsoft Certified Application Developer ITIL Certification	PI	061	3	0	0	5	https://orcid.org/0000-0002-9999-0686 H-index: - 20
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Supporting Faculty/School and Department(s)

- Polytechnic of Leiria (Portugal): Cybersecurity and Digital Forensics master programme (Mario Joao Goncalves Antunes)
- TUS Midwest, Ireland: applied network security (department of information technology)
- Häme University of Applied Sciences (Finland): Digital Solutions & Platforms – DISP (Joni Kukkamäki)
- Vorarlberg University of Applied Sciences (Austria): Data for SME (Martin Dobler)
- Polytechnic of Cavado and Ave (Portugal): information technology, communication
- TUS Midlands, Ireland: faculty of engineering & informatics (computer and software engineering)
- NHL Stenden University of Applied Sciences (The Netherlands): information technology, master computer vision & data science

Areas of Research Specialisation and – Specific ISCED Fields (ISCED-F 2014)

The research focus for all partners in the IoT and Cybersecurity subfield are within the ISCED field 061 (information and communication technologies) more specifically divided along the research topics of the most recent Horizon Europe calls, the research interests would be as described in the following section.

Alignment to the Horizon Europe research cluster and research and innovation programme

FHV	NHL	AIT	HAMK	LIT	IPCA	IPL	Cluster	Call
DF*	BI*							
•							7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
•							7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
•							7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
•					•	•	7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
•							7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
•							7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
•							7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
	•				•		7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
	•						7-Digital	Call - TWIN GREEN AND DIGITAL TRANSITION 2021
	•						7-Digital	Call - CLIMATE NEUTRAL, CIRCULAR AND DIGITISED PRODUCTION 2022
	•						7-Digital	Call - CLIMATE NEUTRAL, CIRCULAR AND DIGITISED PRODUCTION 2022
	•		•				7-Digital	Call - CLIMATE NEUTRAL, CIRCULAR AND DIGITISED PRODUCTION 2022
	•		•				7-Digital	Call - CLIMATE NEUTRAL, CIRCULAR AND DIGITISED PRODUCTION 2022
•							7-Digital	Call - A DIGITISED, RESOURCE-EFFICIENT AND RESILIENT INDUSTRY 2021
	•						7-Digital	Call - A DIGITISED, RESOURCE-EFFICIENT AND RESILIENT INDUSTRY 2021
	•						7-Digital	Call - A DIGITISED, RESOURCE-EFFICIENT AND RESILIENT INDUSTRY 2021
	•						7-Digital	Call - A DIGITISED, RESOURCE-EFFICIENT AND RESILIENT INDUSTRY 2021
	•						7-Digital	Call - A DIGITISED, RESOURCE-EFFICIENT AND RESILIENT INDUSTRY 2022
•							7-Digital	Call - WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2021
•					•		7-Digital	Call - WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2021
•					•	•	7-Digital	Call - WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2021
	•						7-Digital	Call - WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2021
	•						7-Digital	Call - WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2021
	•		•			•	7-Digital	Call - WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2022
	•						7-Digital	Call - WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2022
•			•				7-Digital	Call - Digital and emerging technologies for competitiveness and fit for the green d
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	•						7-Digital	Call - Digital and emerging technologies for competitiveness and fit for the green d
•							7-Digital	Call - A HUMAN-CENTRED AND ETHICAL DEVELOPMENT OF DIGITAL AND IN
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•			•			•	7-Digital	Call - A HUMAN-CENTRED AND ETHICAL DEVELOPMENT OF DIGITAL AND IN
•			•			•	7-Digital	Call - A HUMAN-CENTRED AND ETHICAL DEVELOPMENT OF DIGITAL AND IN
	•				•		7-Digital	Call - A HUMAN-CENTRED AND ETHICAL DEVELOPMENT OF DIGITAL AND IN

*DF...FHV Research Centre Digital Factory
 *BI...FHV Research Centre Business Informatics

The above table shows calls where participating RUN-EU partners were interested to submit joint proposals in the September calls. Due to holidays not all partners planned to go for these calls and therefore it was decided to plan for the Horizon Europe spring calls joint proposals.

Track Record over the last 5 years (summaries of the following)

- Completed research projects
- Graduated students at Masters and PhD level (incl. Title and details of supervisors)
- Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

Projects in this field include:

- CIDOP: Cloud based Information Systems for Distributed and Optimized Production
- COmBINE: Cloud-Based Production Framework
- Digital Energy Twin: digital twin for optimizing energy supply systems (incl. security)
- DuS - Digitalisation and security: state of the art security technology for industry
- Austrian Blockchain Centre: Blockchain and IT Security
- CityCircle: circular economy hubs in peripheral urban centres in central Europe
- DATA4DES: smart products and smart services
- Smart Government: Smart city, digital transformation, open government, intermunicipal exchange platform

Progress updates on current activities (Summaries of the following)

- Research projects
- Postgraduate Research Degrees (incl. Level, Title and Supervisors)
- Other notable activities

In the industrial cybersecurity domain it is investigated how artificial intelligence can be better used to detect anomalies in processes and therefore identify potential security breaches. With regard to IoT the investigations focus on one hand on the security aspects but on the other hand also on how energy consumption can be reduced to have more energy left for security related tasks which would also improve security of IoT devices.

External Collaborations

Swiss Federal Institute of Technology (ETH Zurich)
Athlone Institute of Technology, AIT (TUS Midlands)
Dublin Institute of Technology
Karnatak University

Strategic Outlook for Research & Innovation Development and external funding

Within the cluster IoT and Cybersecurity the contacts and research interests of the RUN-EU partners have been identified and the next step is to identify topics for joint proposals for the Horizon Europe Calls in spring. Beside this European based funding other funding lines for joint projects are investigated. One of the major alternatives to Horizon Europe is EUREKA, which allows also multinational proposals however the challenge there is that in each call different countries are participating and that significantly less topics are covered by EUREKA in comparison to Horizon Europe.

RUN-EU RESEARCH AREA 5 CLUSTER GROUP

Research Area Cluster Name:

Smart, Sustainable and Advanced Manufacturing

Research Area Cluster Lead:

Dr John Cosgrove, TUS Midwest (formerly LIT)

Short Description:

The Academy for Smart, Sustainable and Advanced Manufacturing incorporates a range of multi-disciplinary research institutes across the RUN-EU European University. The aim is to jointly address the development and application of intelligent systems, new products and innovative and sustainable processes to support regional enterprises, particularly SMEs.

Individual Institute Lead:

IPL	Dr Hugo Costelha, Coordinator Professor at Polytechnic of Leiria.
TUS Midlands (formerly AIT)	Dr Declan Devine, Director, Materials Research Institute
HAMK	Dr Jukka Pulkkinen, Director of HAMK Smart Research Unit
NHL STENDEN	Dr. Ing. Wilbert van den Eijnde, Associate Lector Smart Sustainable Manufacturing
TUS Midwest (formerly LIT)	Dr John Cosgrove, Head of Graduate Studies / Director of Smart Manufacturing
IPCA	Dr António Moreira, Associate Professor 2AI
FHV	Prof. (FH) DI Dr. Robert Merz, Leiter der Digital Factory Vorarlberg
SZE	Dr Hargitai Hajnalka, Associate Professor at Széchenyi István University

Aims and Objectives:

Objectives:

- Ensuring European Leadership & manufacturing excellence; generating new products and markets
- Mastering the digital transformation of manufacturing industry
- Achieving Circular and climate neutral manufacturing
- Creating attractive added-value manufacturing jobs

Specific Research Objectives:

- Research to support excellent, responsive and smart factories & supply chains
- Research to support Human-centred and human driven manufacturing innovation
- Research to support circular products & climate neutral manufacturing
- Research to support new integrated business, product-service and production approaches

Academic & Research Staff Profile to include details of:

- Primary Investigators (PIs)
- Researchers (R)
- Research Leads (Academic Staff) (RL)
- Contributing Staff (Academic Staff) (CS)
- Management (M)
- Technical (T)
- Administration Staff (A)

Name	Qualifications	Type * PI, R, RL, CS, M, T, A	Research Interests and related specialisms (ISCED)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Dr. John Cosgrove	D.Eng	PI	0613, 0713, 0714,	5	2	0	16	0000-0001-9003-7242
Frank Doyle	MEng	PI	0613, 0713, 0714,	7	0	0	3	0000-0002-2866-9510
Dr Paddy Walsh	PhD	RL	0715	2	1	0	3	0000-0002-0154-2384
Dr Joe Sullivan	PhD	PI	0613, 0714	2	2	0	0	0000-0003-0010-3715
Mike Winterburn	MSc	RL	0613, 0714	4	0	1	1	0000-0001-6327-8577
Dr Daragh Naughton	PhD	PI	0715, 0722	3	1	2	1	0000-0001-9510-8935
Niall Corcoran	PhD	RL	0613	3	0	0	0	0000-0002-9396-7485

John Jennings	MSc	RL	0613, 0715	1	0	0	2	0000-0002-6752-7902
Jacqueline Humphries	MSc	PI	0613, 0714	2	0	0	0	0000-0002-0110-064X
Dr Alan O'Donovan	PhD	PI	0715, 0722	2	0	0	0	0000-0002-7645-6675
Dr Liam Brown	PhD	PI	0720	1	0	1	1	0000-0002-9121-8114
Ciaran O'Loughlin	MEng	RL	0722	0	0	0	0	
Dr Séamus Ó Ciardhuáin	PhD	RL	0613,	0	0	2	1	0000-0002-3207-8668
Dr Jamie Meehan	PhD	M	0613, 0713, 0714,	1	0	0	0	0000-0001-6233-7619
Jarmo Havula	MSc	M	0613 071 0722 0732	2	0	0	2	0000-0002-1287-4165
Päivi Laaksonen	PhD	PI	0531 0711 0722		2	2		0000-0003-2029-5275
Jukka Pulkkinen	PhD	M	0613 0714	6	0	0	9	https://orcid.org/0000-0001-7237-1407
Heikki Ruohomaa	PhD	RL	0613 0710	1	0	0	4	0000-0002-4663-5349
Markus Sihvonen	PhD	RL	0613	3			5	
Francois Christophe	PhD	PI	0613 0714	0	0	0	1	0000-0002-4337-3291

Dr. António Moreira	PhD	PI	0613, 0713, 0714, 0914	5	1	0	1	0000-0002-2148- 9146
Dr. João Vilaça	PhD	PI	0613, 0713, 0714, 0914	4	4	3	12	0000-0002-4196- 5357
Dr. Daniel Miranda	PhD	PI	0613, 0713	1	1	0	0	0000-0001-8466- 2607
Dr. Vitor Carvalho	PhD	PI	0713, 0914	3	1	2	10	0000-0003-4658- 5844
Dr. Pedro Morais	PhD	PI	0613, 0914	1	0	0	0	0000-0002-1995- 7879
Dr. João Fonseca	PhD	R	0613, 0914	0	0	0	0	0000-0002-6642- 0601
Dr. José Brito	PhD	PI	0613, 0713, 0714,	3	0	0	4	0000-0002-4544- 4698
Dr. Nuno Dias	PhD	PI	0613, 0714, 0914	3	1	2	6	0000-0002-4196- 5357
Bruno Oliveira	MSc	R	0613, 0914					0000-0003-1616- 2234
Helena Torres	MSc	R	0613, 0914					0000-0001-8407- 3255
Ricardo Rodrigues	MSc	R	0613, 0713, 0714,					
Eduardo Pimentel	MSc	R	0613, 0713					
Dr. Robert Merz	PhD	RL	0613, 0713, 0714, 0715	5	2	0	15	
Dr. Ralph Hoch	PhD	RL	0613, 0713, 0714, 0715	3	0	0	6	

Dr. Sebastian Hegenbart	PhD	RL	0613	1	0	0	2	
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Supporting Faculty/School and Department(s)

<p>Electrical Engineering Department, School of Technology and Management, IPL School of Technology, HAMK Faculty of Engineering and Technology, FHV Faculty of Engineering and Informatics, AIT (TUS Midlands) School of Technology (EST), IPCA Faculty of Engineering and the Built Environment, TUS (LIT) Faculty of Mechanical Engineering, Informatics and Electrical Engineering (SZE) Faculty of Automotive Engineering (SZE) Faculty of Architecture, Civil Engineering and Transport Sciences</p> <p>ROBiTECH (Advanced Robotics and Smart Factories) Research Group, IPL. Digital Factory Vorarlberg (https://www.fhv.at/en/research/digital-factory-vorarlberg/) The Irish Digital Engineering & Advanced Manufacturing Cluster (IDEAM) (https://www.ideam.ie/) 2Ai Laboratory – Applied Artificial Intelligence Laboratory, IPCA (https://2ai.ipca.pt/) Materials Research Institute, AIT (TUS Midlands) (https://mri.ait.ie/) HAMK Smart Research Unit (https://www.hamk.fi/research/hamk-smart/?lang=en) Centre of Expertise in Computer Vision (NHL) (https://www.nhlstenden.com/en/research/professorships/computer-vision)</p>
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Areas of Research Specialisation and – Specific ISCED Fields (ISCED-F 2014)

<p>06 Information and Communication Technologies (ICTs)</p> <ul style="list-style-type: none"> • 061 Information and Communication Technologies (ICTs) <ul style="list-style-type: none"> ○ 0613 Software and applications development and analysis <p>07 Engineering, manufacturing and construction</p> <ul style="list-style-type: none"> • 071 Engineering and engineering trades <ul style="list-style-type: none"> ○ 0714 Electronics and automation ○ 0713 Electricity and energy ○ 0714 Electronics and automation ○ 0715 Mechanics and metal trades • 072 Manufacturing and processing

Alignment to the Horizon Europe research cluster and research and innovation programme

Alignment to the Horizon Europe research cluster and research and innovation programme

Digital Europe Programme (DEP)

- European Digital Innovation Hubs (EIDH)

Horizon Europe

- Twin-transition calls associated with the Made in Europe – call 2022
 - Area: “Advanced digital technologies for manufacturing
 - Area: Green, flexible and advanced manufacturing

Calls (see further list and links below)

2022-twin-transition-01-01: Rapid reconfigurable production process chains (IA);

2022-twin-transition-01-02: Products with complex functional surfaces (RIA);

2022-twin-transition-01-04: Excellence in distributed control and modular manufacturing (RIA);

2022-twin-transition-01-05: Intelligent workpiece handling in a full production line (RIA);

2022-twin-transition-01-06: ICT Innovation for Manufacturing Sustainability in SMEs (I4MS2) (IA);

2022-twin-transition-01-07: Digital tools to support the engineering of a Circular Economy (RIA);

Areas of focus

Research to support excellent, responsive and smart factories & supply chain

- Zero-defect and zero-downtime high precision manufacturing, including predictive quality & non-destructive inspection methods
- Manufacturing for miniaturisation and functional integration
- Scalable, reconfigurable & flexible first-time right manufacturing
- Artificial intelligence for productive, excellent, robust and agile manufacturing chains - Predictive manufacturing capabilities & logistics of the future
- Advanced manufacturing processes for smart and complex products
- Data highways and data spaces in support of smart factories in dynamic value networks

Research to support circular products & climate neutral manufacturing

- Ultra-efficient, low energy and carbon-neutral manufacturing
- De-manufacturing, re-manufacturing and recycling technologies for circular economy
- Manufacturing with new and substitute materials
- Virtual end-to-end life-cycle engineering and manufacturing from product to production lines, factories, and networks
- Digital platforms and data management for circular product and production-systems life-cycles

Research to support Human-centred and human driven manufacturing innovation

- Digital platforms and engineering tools supporting creativity and productivity of manufacturing development
- Improving human device interaction using augmented and virtual reality and digital twins.
- Human & technology complementarity and excellence in manufacturing

Research to support new integrated business, product-service and production approaches

- Manufacturing Innovation and change management
- Technology validation and migration paths towards industrial deployment of advanced manufacturing technologies by SMEs

Track Record over the last 5 years (summaries of the following)

- Completed research projects
- Graduated students at Masters and PhD level (incl. Title and details of supervisors)
- Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

Completed Research Projects

Skillsnet, Multi Party Framework of Training Providers Grant Number, (2017-2020, €99,550), LIT/TUS, Irish Medtech Skillsnet - T201703, Jacqueline Humphries, Industry Partners – National Consortium.

NextLevel, Energy Efficiency using Behavioural Change Programme, (2018, €20,000), LIT/TUS, NextLevel Skillnet, Jacqueline Humphries, Industry Partner - Johnson & Johnson Visioncare.

InCompany Learning, Feasibility Study, Validation of In-Company Learning, (2017-2018, €9,000), LIT/TUS, Enterprise Ireland - IP/2017/0687/Y, Jacqueline Humphries, Industry Partners – consortium.

InCASE, Intelligent Cognitive Assistant System, (2017, €876,141), LIT/TUS, Enterprise Ireland Innovation Partnership - IP/2017/0566, Jacqueline Humphries / Dr Daragh Naughton, Industry Partners - 2 (1 SME).

ICBE, Training Needs Provision, Upskilling programme : Electrical Technology, (2017-2018, €25,000), LIT/TUS, Irish Centre for Business Excellence, Jacqueline Humphries, Industry Partners – Business Association.

MD4PROD, Manufacturing Digitalisation for Production and Resource Optimisation, (2017, €165,000), LIT/TUS, European Research Platform (BEinCPPS/I4MS) – Open Call 1, Frank Doyle/John Cosgrove, Industry Partners - 2 (2 SMEs).

Deerpark, LED Street Lighting control survey (2017, €6,500), LIT/TUS, Enterprise Ireland Innovation Voucher Project, Frank Doyle, Industry Partners - 1 (1 SMEs).

Stokes Energy, Design of Grain Dryer controller (2017, €6,500), LIT/TUS, Enterprise Ireland Innovation Voucher Project, Frank Doyle, Industry Partners - 1 (1 SMEs).

Croom Precision, Identification of Production energy efficiency improvements (2018, €6,500), LIT/TUS, Enterprise Ireland Innovation Voucher Project, Frank Doyle, Industry Partners - 1 (1 SMEs).

ConunDrum, Design of Acoustic pickup system (2018, €6,500), LIT/TUS, Enterprise Ireland Innovation Voucher Project, Frank Doyle, Industry Partners - 1 (1 SMEs).

FH Wetlands, Analysis of benefit of woodchip pits for waste water filtration (2019, €6,500), LIT/TUS, Enterprise Ireland Innovation Voucher Project, Frank Doyle, Industry Partners - 1 (1 SMEs).

Taylor Minch Malt, Energy loss analysis on Barley Malting Plant (2019, €6,500), LIT/TUS, Enterprise Ireland Innovation Voucher Project, Frank Doyle, Industry Partners - 1 (1 SMEs).

Ethos, Analysis of energy capture options using vertical tidal water movement (2019, €6,500), LIT/TUS, Enterprise Ireland Innovation Voucher Project, Frank Doyle, Industry Partners - 1 (1 SMEs).

Grattan Software, Architecture design for Mobile Service Deployment (2020, €6,500), LIT/TUS, Enterprise Ireland Innovation Voucher Project, Frank Doyle, Industry Partners - 1 (1 SMEs).

Tadpole Energy Solutions, Measurement of Dissolved Oxygen levels in Domestic Heating System water. Collaboration with Tadpole Energy Solutions Ltd (2018, €9,000), LIT/TUS, Enterprise Ireland Innovation Partnership Feasibility Study, Frank Doyle, Industry Partners - 1 (1 SME).

CDK, Tech Start Up (2016-2018, €65,000), LIT/TUS, Enterprise Ireland - New Frontiers Phase 2/ Competitive Start Fund, Dr Daragh Naughton.

IS4PROD, Intelligent Systems for Production and Resource Optimisation (2016, €50,000), LIT/TUS, European Commission – I4MS, Dr John Cosgrove, Industry Partners – Consortia.

CPS4Prod, Cyber Physical Systems for Interactive Production Supports (2016, €11,700), LIT/TUS, Enterprise Ireland – Innovation Partnership feasibility study, Dr John Cosgrove, Industry Partners – 2 (1 SME).

TEMPO, Total Energy Management for Production Operations (2015-2018, €541,667), LIT/TUS, Enterprise Ireland Technology Centre / IERC, Dr John Cosgrove, Industry Partners – 9 (3 SMEs).

Maintenance4.0, Intelligent and Predictive Maintenance in Manufacturing Systems, (2018, €15,615), 2Ai-IPCA, ANI, Dr. António Moreira.

RoboPlast, Framework for robotic systems for automatic identification, collection and storage of injected polymeric parts based on computer vision, (2019, €59,962), 2Ai-IPCA (1 Industrial partner), ANI, Dr. João Vilaça.

SBEE, Smart Beekeeping, (2019, €149,023), 2Ai-IPCA (1 industrial partner), Dr. Luís Ferreira.

LernZwilling, Konzept für maschinelles Lernen und mixed Reality in Digitalen Zwillingen von Produktionsmaschinen (2018, € 380,570), FHV Digital Factory Vorarlberg, FFG 871386, Dr. Robert Merz, Industry Partners 2 (2 SMEs)

COMBINE, Cloud-Based Production Framework for Networked Small and Medium Enterprises, (2017, 597.160), FHV Digital Factory Vorarlberg, FFG 864798, Dr. Wilfried Lepuschitz, Industry Partners 4 (4 SMEs)

SDM, Smart Data Modeller (2017, € 179,900), FHV Digital Factory Vorarlberg, FFG 860946, Mag. Reinhard Mayr, Industry Partners 1 (1 SME)

Graduate Research Degrees Completed

Conor Foley, MEng, LIT, A Framework for the Secure Connectivity, Management and Control of Discrete Devices within Industrial Networks, 2020, Mike Winterburn - Supervisor.

Samuel Carvalho, MEng, LIT, Development of a Machine Learning Web Application for the Analysis of Energy Data at Machine Level, 2018, Dr. John Cosgrove – Supervisor.

Julio Rezende, MEng, LIT, Data stream analysis, management and integration of energy datasets and production operations on industrial sites, 2018, Dr. John Cosgrove – Supervisor.

Frank Doyle, MEng, LIT, The development of a Cyber Physical System for monitoring energy in production facilities, 2016, Dr. John Cosgrove – Supervisor.

Bart van den Broek, MEng, LIT, The reduction of auxiliary energy consumption at manufacturing processes, by means of influencing machine-operator behaviour through the use of factual and social feedback, 2016, Dr. John Cosgrove, Co-supervisor, Collaboration with Eindhoven TU.

Alan Curley, MEng, LIT, Analysis for optimisation of cycle and response times of industrial controllers in a high volume manufacturing environment. 2015, Dr. John Cosgrove – Supervisor.

Emma Mansbridge, MEng, LIT, A Statistical Analysis of Irish Maintenance Management Practices, 2014, Dr. John Cosgrove - Co-supervisor.

James Hogan, MEng, LIT, The Development of an Individualised Methodology for Maintenance Policy Selection, 2014, Dr. John Cosgrove - Co-supervisor.

Francisco Cantero, MEng, LIT, Structured development of embedded applications for remote sensor networks, 2011, Dr. John Cosgrove – Supervisor.

John McDonald, MEng, LIT, Design of an adaptive controller for direct coupling of a small scale wind turbine, 2009, Dr. John Cosgrove – Supervisor.

Stephen Lynch, MEng, LIT, Linux Based Virtual PLC for Distributed Automation, 2007, Dr. John Cosgrove – Supervisor.

Kevin Murphy, MEng, LIT, The Development of a Multiuser Distributed 3D Gaming Environment, 2005, Mike Winterburn - Supervisor.

Brendan Donnelly, MEng, LIT, Distributed Real Time Control Using the Controller Area Network, 2004, Dr. John Cosgrove - Supervisor.

Rachel O’Toole, MEng, LIT, The Application of OO Methodologies in Industrial Automation Programming, 2004, Dr. John Cosgrove – Supervisor.

Pat O’Callaghan, MEng, LIT, Three-Phase Power Quality Analyser with CAN Interface, 2004, Dr. John Cosgrove - Co-supervisor.

Ricardo Rodrigues, MEng, 2Ai-IPCA, “See through object detection system for robotic picking applications”, 2021, Dr. António Moreira – Supervisor.

Michelle Weber, MA, FHV, Evaluierung von Intrusion Detection Systemen und Visualisierungstools für dessen Ergebnisse im Rahmen einer digitalen Fabrik, 2020, DI Armin Simma

Oktay Bilgin, MA, FHV, Zentralisierte Aggregation von heterogenen Logdaten aus einem Industrieumfeld für Anomalie-basierte Intrusion Detection Systeme, 2020, Dr. Ralph Hoch.

Patrick Schedler, MA, FHV, Konzeption und Implementierung eines digitalen Zwillings des KUKA Leichtbauroboters iiwa, 2018, Dr. Robert Merz.

Kevin Petschulat, MA, FHV, Optimierung von Greifsituationen mittels maschinellem Lernen mit einem Franka Emika und Photoneo 3D Scanner, 2019, Dr. Robert Merz.

Dominik Schuster, MA, FHV, Realistische Simulation der dynamischen Roboterkinematik in 3D, 2019), Dr. Robert Merz.

Martin Bitschnau, MA, FHV, Retrofitting of Industrial Robots to a modern OPCUA Standard, 2019, Dr. Ralph Hoch.

Kelvin Sparr, MA, FHV, Verifikation und Validierung von Produktionsprozessen, 2021, Dr. Ralph Hoch.

Philipp Steurer, MA, FHV, Data Driven Energy Modelling of a Dynamic System, 2021, Dr. Ralph Hoch.

Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

See publication list below.

LIT/TUS - **66** peer-reviewed publications in conferences/journals have been recorded over the last 5 years, as detailed in appendix A. 16 Patents or Invention Disclosures have been registered by IDEAM PIs.

2Ai-IPCA - **243** peer-reviewed publications in conferences/journals have been recorded over the last **5** years in all 2Ai research areas. **7** Patents or Invention Disclosures.

Progress updates on current activities (Summaries of the following)

- Research projects
- Postgraduate Research Degrees (incl. Level, Title and Supervisors)
- Other notable activities

Research Projects Ongoing

Festim, Research study on predictive sports performance using AI unsupervised learning (2021, €8,950), LIT/TUS, Enterprise Ireland - Grant IP20210079Y, Jacqueline Humphries, Industry Partners – 1 (1 SME).

CROSS, Analog Device's Robotics Operational Safeguard System (2021, €149,904), LIT/TUS, Enterprise Ireland - Innovation Partnership ID: IP20200950, Jacqueline Humphries, Industry Partners – 1.

Glynn Diamonds, Feasibility and Modelling of Novel Poly-Crystalline Diamond Compact Bearings (2020, €25,000), LIT/TUS, Enterprise Ireland Innovation Partnership Feasibility Study (IP/2020/0921-Y), Dr. Alan O'Donovan, Industry Partners – 1 (1 SME).

PDC Bearings, Design, Modelling and Performance Testing of Bespoke PDC Bearings (2020, €227,000), LIT/TUS, Enterprise Ireland Innovation Partnership Grant (IP-2020-0958), Dr. Alan O'Donovan, Industry Partners – 1 (1 SME).

ADDC, Automatic design of digital circuits (2020, €220,000), LIT/TUS, Science Foundation Ireland - GRANT_NUMBER: 16/IA/4605, Dr. Joe Sullivan .

IDEAM, Irish Digital Engineering & Advanced Manufacturing Cluster (2020-2023, €497,520), Enterprise Ireland Regional Technology Cluster Fund (RTCF), Dr John Cosgrove, Industry Partners – Industry Consortia.

MEngDM, Masters of Engineering (By Research) in Digitalisation of Manufacturing (2019 – 2023, €465,000), Irish MedTech Association / MedTech Skillsnet – Tender, Dr John Cosgrove, Industry Partners – Industry Association.

InjectID 4.0, Automatic insertion of RFID systems in the plastic injection process, (2021, €332,793), 2Ai-IPCA (1 Industrial partner), ANI, Dr. João Vilaça.

iDT, Intelligent digital twin for hyper automation deployment in smart factories, (2020, €64,772), 2Ai-IPCA, FCT, Dr. António Moreira.

CyberSeCIP, CYBERSecurity SciEntific Competences and Innovation Potential, (2020, €47,117), 2Ai-IPCA, ANI, Dr. Nuno Lopes

TECH, Technology, Environment, and Health (2020, €94.127,78), 2Ai-IPCA, ANI, Dr. Joaquim Silva.

CIDOP, Cloud Based Information systems for Distributed and Optimized Production, (2018, € 632,366), FHV Digital Factory Vorarlberg, FFG 866833, Dr. Robert Merz

DET, Digital Energy Twin – Optimized Operation and Design of Industrial Energy Systems, (2019, € 2,597,053), FHV, Jürgen Fluch, Klima- und Energiefonds - FFG 873599, Industrial Partners – 6 (4 SMEs)

digiTic, Intelligente Prozesskühlung durch Vernetzung der Energiepotentiale und modellbasierte Optimierung, (2020, € 80,900), FHV Digital Factory Vorarlberg, Markus Hager, FFG 883069, Industrial Partners 1 (1 SME)

Postgraduate Research Degrees - Ongoing

Aidan Keogh , MEng, TUS/LIT, Development of near real-time monitoring of Cyanoacrylate monomer synthesis by a distributed control system. 2021 Dr. John Cosgrove, Supervisor.

Alan Harrington , MEng, TUS/LIT, Development of a E-Kanban Application to schedule weekly Build Plans in the Injection Molding Department at Alcon. 2021 Dr. John Cosgrove, Supervisor.

Andre Martin , PhD, TUS/AIT, Agile System Integration for Industry 4.0. 2024, Dr. John Cosgrove, Co-supervisor

Barry Fitzgerald , PhD, TUS/LIT, Reliability Prediction of NAND Flash Memory Using Machine Learning 2021 Joe Sullivan, Supervisor

Bernard Murray , MEng, TUS/LIT, Implementation of an IIoT Factory 4.0 technology improvement project at Collins Aerospace 2020 Frank Doyle, Supervisor

Ciaran Knowles , MEng, TUS/LIT, Design of an Integrated System to provide Automated Data Analytics for a Medical Devices Production Line 2021 Dr. John Cosgrove, Supervisor

Daniel Machado Fontana , TUS/LIT, MEng, Digitalisation Research Project in Raynaers Ltd, 2022, Frank Doyle, Supervisor

David Byrne , MEng, TUS/LIT, Exploring the educational use of augmented reality and storytelling for differentiated reading instruction for primary school learners. 2022 Mike Winterburn, Supervisor, Derbhilla DePaor, co-supervisor

Dr Eithne Lynch , MEng, TUS/LIT, Digitalisation Research Project in Boston Scientific 2022 Dr. Patrick Walsh, Supervisor

Eamonn O’Dea , MEng, TUS/LIT, Digitalisation Project in Lufthansa Technics 2020 Frank Doyle, Supervisor

Evan Quinn, MEng, TUS/LIT, Real-time Mixed Martial Arts Fight Analysis Using Deep Learning, 2022, Niall Corcoran, Supervisor

Frank Walsh , MEng, TUS/LIT, Development of an Edge Computational Device for Integrated Data Analysis and Visualisation on Precision Engineering Machines, 2020, John Jennings, Supervisor

Gabor Gyurko, MEng, TUS/LIT, Digitalisation Project in EI Electronics, 2022, Dr. John Cosgrove, Supervisor

Gerry Cronin , MEng, TUS/LIT, Digitalisation Research Project in Stryker, 2022, Frank Doyle, Supervisor

Hugh Cashel , MEng, TUS/LIT, Investigating the benefits of an Integrated Manufacturing Process Management for a Medical Devices Company, 2021, Frank Doyle, Supervisor

James Drew , MEng, TUS/LIT, Development of an adaptable and affordable ASI & Robotic application for small craft bakeries, 2023, Frank Doyle, Supervisor

James Ryan , PhD, Electronic Log-off/Tag-off for regulated medical devices industries, TUS/LIT, 2023, Dr Paddy Walsh, Supervisor

Jason Daly , MEng, TUS/LIT, Characterisation of Thermal Stratification in Thermal Energy Storage Tanks, 2021, Alan O’Donovan, Supervisor.

Jenna Barry , MEng, TUS/LIT, Investigating the use of Virtual Communities of Practice in Enterprise Social Networks for Supporting Postgraduate Research Students, 2022, Niall Corcoran, Supervisor

Kelly O’Brien , MEng, TUS/LIT, The Application of Artificial Intelligence to Hearing Aid Technology, 2020, Daragh Naughton, Supervisor

Kiran Gowreddy, MEng, TUS/LIT, Assisting medical diagnosis through Fog computing and Artificial Intelligence, 2022, Mike Winterburn, Supervisor,

Kirestin Saeed , MEng, TUS/LIT, A Methodology for Assessment of Deep Decarbonisation Pathways for Manufacturing Industries in Ireland. 2023, Dr. John Cosgrove, Supervisor

Luke Sutherland , MEng, TUS/LIT, Influence of a physical constraint combined with uphill quenching on residual stresses in 7000 series aluminium alloys. 2020 (University of Limerick) Alan O'Donovan, Co-Supervisor.

Mark Barry, MEng, TUS/LIT, The Design, Build & Automation of a Combustion Chemical Vapour Deposition Machine, 2021, Dr Daragh Naughton, Supervisor

McKinley Magale, MEng, TUS/LIT, An Automated Diagnostic System Using Deep-Learning to Diagnose Motion-related Diseases 2023 Niall Corcoran, Supervisor

Michael Connolly, PhD, Artificial intelligence and its role in speech recognition, 2023, Dr Daragh Naughton, Supervisor

Nathan Dunne , MEng, TUS/LIT, Communication and signalling methods for industry 4.0 IT systems Jacqueline Humphries, Supervisor

Paddy Kenneally , MEng, TUS/LIT, Digitalisation Project in Stryker 2020 John Jennings, Supervisor

Patrick Ruane , PhD, TUS/LIT, Combining Simulation, DOE and ANOVA as a tool to Predict the Performance of an Automated Production Line, 2023, Dr Paddy Walsh, Supervisor, Dr. John Cosgrove, Co-supervisor

Rob Geary , MEng, TUS/LIT, Digitalisation Research Project in Zimmer Biomet, 2022, Dr. John Cosgrove, Supervisor.

Rory O'Sullivan , MEng, TUS/LIT, To investigate how the use of synchronous condensers can provide grid stability as a solution to the increased penetration of solar PV installations in Ireland. 2023, Dr. John Cosgrove, Supervisor.

Sai Ranjan , MEng, TUS/LIT, Artificial Intelligence Biometric Authentication Framework for Protecting User Data and Authenticating Services and Mobile Applications, 2022, Mike Winterburn, Supervisor, Carol Rainsford, co-supervisor

Samuel Carvalho, PhD, Automatic Design of Signal Processing Entities Using Grammatical Evolution, TUS/LIT, 2023, Dr. Joe Sullivan, Supervisor

Seamus Lloyd , MEng, TUS/LIT, Digitalisation Research Project in Cook Medical 2022 Dr. Joe Sullivan, Supervisor.

Sean Russell , MEng, TUS/LIT, Digitalisation Project in Stryker, 2020, Dr. Patrick Walsh, Supervisor

Shauna Leahy, MEng, TUS/LIT, Artificial Intelligence in the use of Sign Language to interface with systems, Jacqueline Humphries, Supervisor

Sorcha Bennett , PhD, Proof of concept of a NAND Flash Tester, TUS/LIT, 2021, Dr. Joe Sullivan, Supervisor.

Subadra O'Sullivan , MEng, TUS/LIT, Fog computing latency and security compliance, 2022, Mike Winterburn, Supervisor, Carol Rainsford, co-supervisor

Tofiqul Islam , MEng, TUS/LIT, High efficiency hybrid micro-electricity generation by renewable energy sources. 2024, Frank Doyle, Supervisor, Dr John Cosgrove, Co-Supervisor,

João Ferreira, TinyML System for Predictive Motor Anomaly, Supervisor: António Moreira Claudino Costa, Wireless in-ear monitoring device for covid19, Supervisor: António Moreira Luís Martins, ADAPTATIVE ELECTROSTATIC ADHESION GRIPPER FOR TEXTILE MATERIALS, Supervisor: António Moreira

Sérgio Pereira, Easily adaptable system for inserting RFID tags during plastic injection (2021).
Supervisor: João L. Vilaça and Pedro Morais

Tiago Barros, A new design of a inserting RFID tags system for plastic injection (2021).
Supervisor: João L. Vilaça

Eduardo Pimentel, Printable piezoresistive materials based on natural polymers for medical device applications, Supervisors: Daniel Miranda and Senentxu Lanceros-Mendez

External Collaborations

Factoryxchange EDIH (Irish National candidate) - TUS is a lead partner in the proposed European Digital Innovation Hub (EDIH) with IMR, ICHEC, INSIGHT, KPMG and DIH-NI. The EDIH proposal – FactoryxChange – will lead the national development of Advanced Digital Skills, Artificial Intelligence, High-Performance Computing and Cyber-security for Industry and in particular SMEs.

IEA IETS – TUS/LIT, Dr John Cosgrove is a member of the Executive Committee - International Energy Agency (IEA) Technology Collaboration Programme on Industrial Energy-Related Technologies and Systems (IETS). Key Projects include:

- IEA IETS Annex XVIII (2020 -): Digitalization, Artificial Intelligence and Related Technologies for Energy Efficiency and GHG Emissions Reduction in Industry.
- IEA IETS Annex XVI (2018 – 2020) -Energy Efficiency in SMEs. (Collaboration and joint publications with Linköping University, Sweden, Fraunhofer Institute, Germany; Norsk Energi, Norway, Power Industry Research Institute, Japan; University of Technology Sydney, Ricera Sistema Energetico (RSE) Spa, Italy; Universidad de la Costa, Colombia; University of Gävle, Sweden & Chalmers University of Technology, Sweden.

IDEAM has existing research collaborations with leading Research Centres in Ireland, including:

- IMR – Irish Manufacturing Research Centre
- PMTC – Pharmaceutical Manufacturing Technology Centre
- CONFIRM – Smart Manufacturing SFI Centre
- LERO – SFI Research Centre for Software
- ICHEC - SFI Research Centre for High Performance Computing
- INSIGHT - SFI Research Centre for Data Analytics
- IERC - Technology centre for Integrated Energy Systems Research

LASI - Associate Laboratory of Intelligent Systems composed by 13 R&D units that go from Barcelos, Braga and Guimarães to Porto, Aveiro, Coimbra, and Lisbon. LASI's Impact Areas: (1) Innovative and Sustainable Industries; (2) Smart And Sustainable Cities; (3) People's Well-being and Health; (4) Human-Centred and Highly Connected Society; (5) Intelligent System for Public Administration

ATTRACT DIH - ATTRACT DIH intends to integrate the European Network of Digital Innovation Hubs in order to facilitate access to skills and experimentation infrastructures that do not exist in Portugal and, equally important, to facilitate the export of skills and services available in the consortium of this initiative, at European level. This initiative intends to also as a proactive

driver of the innovation ecosystem, supporting and interconnecting its target audiences, users and technological recipients, whether SMEs, start-ups, or public administration entities.

FHV - Digital Factory Vorarlberg:

- Has established a spin-off in April 2021 with AIT – Austrian Institute of Technology (biggest research center in Austria outside of universities).
- Part of the national DIH West Digital Innovation Hub
- Cooperating with several Universities in 2 Training Clusters for Industry (Q-nnect, Smart Factories) which are partly funded by FFG

Strategic Outlook for Research & Innovation Development and external funding

Priorities for joint development

1. AI, Data and Robotics for Industry optimisation (including production and services) (AI, Data and Robotics Partnership) (IA)
2. ICT Innovation for Manufacturing Sustainability in SMEs (I4MS2) (Made in Europe Partnership) (IA)
3. Optimised Industrial Systems and Lines through digitalisation (IA)
4. Rapid reconfigurable production process chains (Made in Europe Partnership) (IA)

Targeted Calls in Horizon Europe

Deadline: 30 March 2022

- [ICT Innovation for Manufacturing Sustainability in SMEs \(I4MS2\) \(Made in Europe Partnership\) \(IA\)](#)
- [Excellence in distributed control and modular manufacturing \(Made in Europe Partnership\) \(RIA\)](#)
- [Rapid reconfigurable production process chains \(Made in Europe Partnership\) \(IA\)](#)
- [Intelligent work piece handling in a full production line \(Made in Europe Partnership\) \(RIA\)](#)
- [Digital tools to support the engineering of a Circular Economy \(Made in Europe Partnership\) \(RIA\)](#)
- [Leveraging standardisation in Digital Technologies \(CSA\)](#)
- [Products with complex functional surfaces \(Made in Europe Partnership\) \(RIA\)](#)
- [Functional multi-material components and structures \(RIA\)](#)
- [Demonstrate the use of Digital Logbook for buildings \(IA\)](#)
- [Optimised Industrial Systems and Lines through digitalisation \(IA\)](#)
- [Circular and low emission value chains through digitalisation \(Processes4Planet Partnership\) \(RIA\)](#)

Deadline: 05 April 2022

- [AI, Data and Robotics for Industry optimisation \(including production and services\) \(AI, Data and Robotics Partnership\) \(IA\)](#)
- [Increased robotics capabilities demonstrated in key sectors \(AI, Data and Robotics Partnership\) \(IA\)](#)
- [Pushing the limit of physical intelligence and performance \(RIA\) \(Robotics\)](#)

- [eXtended Reality Learning - Engage and Interact \(IA\)](#)
- [eXtended Reality Technologies \(RIA\)](#)
- [Open source for cloud-based services \(RIA\)](#)
- [Ultra low energy and secure networks \(RIA\)](#)
- [Cognitive Cloud: AI-enabled computing continuum from Cloud to Edge \(RIA\)](#)
- [Programming tools for decentralised intelligence and swarms \(RIA\)](#)

Deadline: 20 April 2022

- [Conditions for the successful development of skills matched to needs](#)
- [Developing and piloting training on the practice of open and responsible research and innovation](#)

Deadline: 28 April 2022

- [Towards creating an integrated manufacturing value chain in Europe: from machinery development to plant and site integrated design \(Batteries Partnership\)](#)

RUN-EU RESEARCH AREA 6 CLUSTER GROUP

Research Area Cluster Name

Climate Change – Circular Economy & Decarbonisation

Research Area Cluster Lead

Petra Szakonyi (SZE)
Teresa Cristina Pereira Eugénio (IPL)

Short Description

Climate Change- Circular Economy & decarbonisation working group mission is to support the priorities of EU green deal. Our aims are:

- to make transport sustainable for all (reduce emission of cars and vans, improve sustainable transport infrastructure and services)
- energy efficient renovation of buildings,
- renovate buildings for greener lifestyles,
- greater use of renewable energy,
- raising awareness for green technology and lifestyles.

New technologies and innovations have to be able to ensure mobility and housing needs of world's growing population in a greener way. Working group of Climate Change- Circular Economy & Decarbonisation enhances the co-operation between RUN expertise's on this specific area. This working group is an important part of established European Innovation Hub in Climate Change- Circular Economy & Decarbonisation which is one of the planned Hub's in RUN-EU.

In this first phase Climate Change- Circular Economy & Decarbonisation working group consists of six RUN-EU partners: TUS Midlands (formerly AIT), HAMK, IPL, TUS Midwest (formerly LIT), NHL Stenden and SZE. Expertise and facilities within this group allow interesting openings, knowledge transfer and innovative co-operation with companies and other stakeholders across Europe.

Individual Institute Lead

IPL	Teresa Eugénio
TUS Midlands (formerly AIT)	Margaret Brennan Fournet
HAMK	Iivari Kunttu; Jari Hyväluoma; Kaisa Kontu; Päivi Laaksonen
NHL STENDEN	Welmoed van der Velde; Matthias Olthaar; Aleid Brouwer; Jan Jager; Rudy Folkersma; Herbert Koelman; Marcel Crul
TUS Midwest (formerly LIT)	Seamus Hoyne
IPCA	Daniel Miranda; Ricardo Simoes

FHV	Dr. Jens Schumacher
SZE	Rajmund Kuti, Dávid Bozsaky

Aims and Objectives:

Within WP5, RUN-EU, using a Challenge-based approach, has create European future-looking RDI teams of researchers to address societal challenges in a multi-disciplinary approach thus delivering innovative solutions adaptable to different regions in Europe.

This Climate Change- Circular Economy & decarbonisation research area group will focus on the operationalisation of the RDI activities in climate, energy and mobility areas with particular relevance to energy, buildings, transport and circular economy within Horizon Europe Pillar 2 cluster.

Through strong collaboration among Partners, Regional Innovation Clusters and European Innovation Hubs we aim to increase and embed sustainable Inter-regional research and innovation projects across the RUN-EU alliance during the three years of the project and into the future.

We aim as part of the overall WP 5 aim to deliver:

- increased international collaborative RDI activities within among RUN-EU members, thus strengthening the current individual and joint RDI capabilities;
- create joint future-looking international RDI teams addressing real challenges identified in the climate, energy and mobility within Horizon Europe Pillar 2 cluster related to major societal challenges;
- ensure that technological and social breakthroughs are transformed into viable products and activities with real commercial and societal potential, built upon partnerships with industry and governments
- improved the links between climate, energy and mobility teaching, research and innovation, by engaging teachers and research staff.

Main aim of this group is to establish joint and flexible RUN research group in the area of Climate Change- Circular Economy & decarbonisation. Research group is tightly linked to other research groups.

Objectives

- Capture funding opportunities
 - a. Horizon Europe, Interreg, Erasmus+ and capacity building, Infra etc.
- Develop innovation-based projects with industry / government / social partners
- Promote inter-university international RDI working teams
 - b. Short term mobility program to bring together multidisciplinary and international teams working with industry / government
- Ensure fluent communication among all partners

Academic & Research Staff Profile to include details of:

- Primary Investigators (PIs)
- Contributing Staff (Academic Staff) (CS)
- Researchers (R)
- Management (M)
- Research Leads (Academic Staff)
- Technical (T)
- (RL)
- Administration Staff (A)

Name (TUS Midwest)	Qualifications	Type* PI, R, RL, CS, M, T, A	Research Interests and related specialisms (IS)	Current Supervisory load (no. of Masters)	Current Supervisory load (no. of PhDs)	No. of PhD Students supervised to completion	No. of Research Masters Students supervised to completion	ORCID, H-index, and No. of Peer-reviewed publications
Seamus Hoyne	B.Eng M.Eng MSc	PI	713	2			3	ORCID: 0000-0002-0076-6052 H-index: PP:
Dr. Shane O' Sullivan	PhD	PI	713	3				ORCID: H-index: PP:
Dr Darren Barry	PhD		520					ORCID: 0000-0003-1787-2772 H-index: PP:
Dr Amey Tilak	PhD		521					ORCID 0000-0002-7364-9383
Padraic O'Reilly	Masters		713					ORCID 0000-0003-0158-3802
Nuno Martinho	PhD	PI	712 and 716	4	1	0	5	ORCHID: H-index: PP: 0000-0002-4684-8766, H-index: 3,PP:4

Helder Santos	PhD	PI	712 and 716	5	0	0	33	ORCHID: 0000-0001-6686-7991 H-index: 7 PP: 16
Luís Serrano	PhD	PI	712 and 716	6	1	0	14	ORCHID: 0000-0003-2864-7597 H-index:5 PP:14
João Pereira	PhD	PI	712 and 716	3	0	0	9	ORCHID: 0000-0002-8300-3340 H-index: 1 PP:14
Prof. Dr. Markus Preißinger	PhD							ORCHID: H-index: PP:
Prof. (FH) Dr.-Ing. Jens Schumacher	PhD							ORCHID: H-index: PP:
DI Dr. Ronald Mihala	PhD							ORCHID: H-index: PP:
Dr. Peter Kepplinger	PhD							ORCHID: H-index: PP:
Dr. Stefan Arzbacher								ORCHID: H-index: PP:
Iivari Kunttu	PhD (Tech), PhD(Econ), M.A. (Educ)	PI	0611, 0613, 0521,	8	1	0	12	ORCHID: https://orcid.org/0000-0002-7460-6422), H-index: 18 PP: 65
Päivi Laaksonen	PhD	PI	0531, 0722	2	0	2	6	0000-0003-2029-5275, h-index 23,

								No of papers 56
Jari Hyväluoma	PhD	PI	0521	0	0	0	2	0000-0003-1113-439X, h-index 20, No of papers 53
Kaisa Kontu	PhD	PI	0713, 0732, 0731	1	-	-	3	ORCID: https://orcid.org/0000-0003-3782-3732 h-index: 6 No of papers: 16
Jiirvi Kunttu	PhD (Tech), PhD(Econ), M.A. (Educ)	PI	0611, 0613, 0521,	8	1	0	12	ORCHID: (https://orcid.org/0000-0002-7460-6422), H-index: 18 PP: 65
Daniel Miranda	PhD	R	0533, 0713	1	1	0	1	ORCHID: 0000-0001-8466-2607 H-index: 10 PP: 24
Ricardo Simoes	PhD	RL	0722	2	2	11	33	ORCHID: 0000-0002-3097-8849 H-index: 21 PP: 204
João Sampaio	PhD		0214	5	0	1	25	ORCHID: 0000-0003-2741-7351 H-index: 2 PP: 20
Daniel Miranda	PhD	R	0533, 0713	1	1	0	1	ORCHID: 0000-0001-8466-2607 H-index: 10

								PP: 24
Dr. Rajmund Kuti	PhD	PI	0613,0714	2	3,5	6	6	ORCHID: H-index: PP:
Dr. Dávid Bozsaky	PhD	PI	0731,0732	2	0,5	0		ORCHID: H-index: PP:
Dr. Emese Makó	PhD	PI	0716,0731	2	1	1		ORCHID: H-index: PP:
Dr. Balázs Horváth	PhD	PI	0716,0731	2	0,3	1		ORCHID: H-index: PP:

Supporting Faculty/School and Department(s)

TUS Midwest, Sustainable Regional and Business Development Research/ Rural and Sustainable Development (CRSD); Sustainable Regional and Business Development Research/ CEEDD
 IPL, Marine and Environmental Science Centre (MARE)
 TUS Midlands, Faculty of Business Informatics, Faculty of Engineering
 HAMK,
 IPCA, 2Ai - Applied Artificial Intelligence Laboratory
 SZE, Faculty of Architecture, Civil engineering and Transportation Engineering
 SZE, Department of Mechatronics and Machine Design, Fire protection and Safety Technology Group

Areas of Research Specialisation and – Specific ISCED Fields (ISCED-F 2014)

0521 Environmental sciences
 0611 Computer use
 0612 Database and network design and administration
 0613 Software and applications development and analysis
 0711 Chemical engineering and processes
 0712 Environmental protection technology
 0713 Electricity and energy
 0714 Electronics and automation
 0715 Mechanics and metal trades

0716 Motor vehicles, ships and aircraft
0722 Materials (glass, paper, plastic and wood)
0731 Architecture and town planning
0732 Building and civil engineering

Alignment to the Horizon Europe research cluster and research and innovation programme

Climate Change- Circular Economy & decarbonisation research area aligns strongly to Horizon Europe pillar II cluster 5 (Climate, Energy and Mobility). This clusters aims to fight climate change by better understanding its causes, evolution, risks, impacts and opportunities, and by making the energy and transport sectors more climate and environment-friendly, more efficient and competitive, smarter, safer and more resilient. The expected impacts of this cluster are contained in the Horizon Europe strategic plan.

Areas of intervention

- climate science and solutions
- energy supply
- energy systems and grids
- buildings and industrial facilities in energy transition
- communities and cities
- industrial competitiveness in transport
- clean, safe and accessible transport and mobility
- smart mobility
- energy storage

Connection to RUN European Innovation Hub in Climate, Energy and Mobility may align also to Horizon Europe pillar II (European Innovation Systems). Interconnected Innovation Ecosystem destination encourages proposals to contribute to one or more EU priorities and challenges, including climate action, green deal, and digital transformation

Track Record over the last 5 years (summaries of the following)

- Completed research projects
- Graduated students at Masters and PhD level (incl. Title and details of supervisors)
- Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

YEAR	FUNDING AGENCY	PROJECT/SPECIALISATION AREA
2018-2022	Erasmus +	Construction Blueprint
2018-2021	Erasmus +	BIMzeED
2018-2019	Erasmus +	CoFARM

2021-2024	Erasmus +	BUSGoCircular
2020-2023	H2020	BUSLeague
2018-2021	INTERREG	CConnects
2018-2021	Erasmus +	FARCURA
2021-2023	Erasmus +	GUPP
2020-2023	H2020	HP4All
2017-2020	EASME	Managenergy
2021-2024	H2020	REMARKABLE
2019-2021	H2020	SPEEDIER
2019-2022	H2020	Superhomes2030
2019-2022	INTERREG	Triple-C
2016 – 2018	Project n.º SOE1/P1/F0370, Interreg V-B Sudoe [institutional coordination]	Project “ICT4Silver - ICT Key Enabling Technologies to meet the needs of Silver Economy in the SUDOE area”
2016 – 2019	POCI-01-0247- FEDER-017620 [institutional coordination]	Project “SAM – Smart Active Mould”
2016 – 2019	POCI-01-0247- FEDER-018011 [institutional coordination]	Project “ActiveRest”
2016 – 2019	POCI-01-0247- FEDER-017930 [institutional coordination]	Project “Ecobond”

Graduated Students at Masters and PhD level				
Name	Dept.	Level	Title	Supervisors
Mr Padraig O'Brien.	Built Environment	M.Eng	An Analysis of Skill Needs and Training Requirements of Construction Workers in the context of low energy buildings,	Seamus Hoyne
Mr Geoff Hunter	Electrical and Electronic Eng	MSc	Creation of a dynamic interactive model of residential energy consumption	Seamus Hoyne, Dr Liam Noonan
Wenwen Fang,	Chemical Engineering (Prev. Organiz.)	DSc	Nanocellulose for bio-inspired nanocomposites - surface modification with recombinant proteins	Päivi Laaksonen
Alessandra Griffo	Chemical Engineering (Prev. Organiz.)	DSc	On the Nanoscale Interactions and the Self-Assembly of Recombinant Proteins and Hybrid Nanostructures: an AFM Study	Markus Linder, Päivi Laaksonen
Yujiao Dong	Chemical Engineering (Prev. Organiz.)	MSc	Characterization and drug delivery of AaltoCell™ microcrystalline cellulose	Päivi Laaksonen, Wenwen Fang, Heli Paukkonen
Woojae Lim	Chemical Engineering (Prev. Organiz.)	MSc	Deposition of indigo thin films by Langmuir-Schaefer technique	Päivi Laaksonen, Griffo, Alessandra
Tia Lohtander	Chemical Engineering (Prev. Organiz.)	MSc	Sustainable dyeing of cellulosic materials with willow bark extract	Päivi Laaksonen, Suvi Arvola
Karri Mannermaa	Chemical Engineering	MSc	Friction of micropatterned elastomer surface	Päivi Laaksonen, Katri Kuorinka

	(Prev. Organiz.)		lubricated with fusion protein		
Hedar Al-Terke	Chemical Engineering (Prev. Organiz.)	MSc	Study of hydrophobin behaviour at air-water interface	Päivi Laaksonen, Arja Paananen	
Evelina Bäck	Chemical Engineering (Prev. Organiz.)	MSc	A superporous hydrogel: Production development and material characterization	Päivi Laaksonen, Mikael Eriksson	
Flora Hajdu	Engineering Science	PhD	Numerical examination of nonlinear systems with special regard to automotive and mechatronic applications	Dr. Rajmund Kuti Dr. Győző Molnárka	
Krisztina Takács	Military Engineering Science	PhD	Development opportunities for water supply, with a focus on a microbiological water rating	Dr. Rajmund Kuti	
Nikolett Fecser	Engineering Science	PhD	Investigation of water supply systems and rotodynamic pumps in the point of view of malfunction reasons	Dr. Rajmund Kuti	
Rudolf Krecht	Engineering Science	MSc	Research Boat for Disaster Prevention and for Post-Disaster Recovery Assistance	Dr. Rajmund Kuti	
Máté György Polgár	Engineering Science	MSc	Development of cavitation water cleaner appliance with the help of numerical hydrodynamics method	Dr. Rajmund Kuti	

Gellért Gohér	Engineering Science	MSc	Implementation of the controlling of auxiliary elements of Integrated fire safety system	Dr. Rajmund Kuti	
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Notable Research Outputs

TUS Midlands

Dr Margaret Brennan Fournet ORCID ID 0000-0002-9811-1715

Prof Neil Rowan ORCID ID 0000-0003-1228-3733

Dr Sinead Mellett ORCID ID 0000-0002-3498-981X

Dr Mark Lynch ORCID ID 0000-0002-8476-4854

FHV

Micro-computed tomography of growth and decomposition of clathrate hydrates. Dissertation, Stefan Arzbacher, 2020.

P. Kepplinger, B. Fässler, G. Huber, M.A.S.T Ireshika, K. Rheinberger, M. Preißinger, Autonomes Demand Side Management verteilter Energiespeicher, e&i Elektrotechnik und Informationstechnik, pp. 1-7, Springer. December 2019

S. Arzbacher, N. Rahmatian, A. Ostermann, T.M. Gasser, T. Lerting, J. Petrasch, Co-Deposition of Gas Hydrates by Pressurized Thermal Evaporation, Physical Chemistry Chemical Physics, February 2020

Autonomous Demand Side Management of Domestic Hot Water Heaters, Dissertation, Peter Kepplinger, 2018

Autonomous Optimization of Repurposed Electric Vehicle Batteries for Grid Balancing, Dissertation, Bernhard Fässler, 2018

Schumacher, J., Suzic, B., & Dobler, M. User-centred innovation design in cities. Collaborative business models. (2018) Special Issue. ICE/IEEE ITMC 2018. Stuttgart 17.06. - 20.06.18. 2018 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC)

Suzic, B., Ulmer, A., & Schumacher, J. (2020, June). Complementarities and synergies of quadruple helix innovation design in smart city development. In 2020 Smart City Symposium Prague (SCSP) (pp. 1-7). IEEE.

Schumacher, J., Suzic, B., & Dobler, M. User-centred innovation design in cities. Collaborative business models. (2018) Special Issue. ICE/IEEE ITMC 2018. Stuttgart 17.06. - 20.06.18. 2018 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC)

Suzic, B., Ulmer, A., & Schumacher, J. (2020, June). Complementarities and synergies of quadruple helix innovation design in smart city development. In 2020 Smart City Symposium Prague (SCSP) (pp. 1-7). IEEE.

Schumacher, J., Suzic, B., & Dobler, M. User-centred innovation design in cities. Collaborative business models. (2018) Special Issue. ICE/IEEE ITMC 2018. Stuttgart 17.06. - 20.06.18. 2018 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC)

Suzic, B., Ulmer, A., & Schumacher, J. (2020, June). Complementarities and synergies of quadruple helix innovation design in smart city development. In 2020 Smart City Symposium Prague (SCSP) (pp. 1-7). IEEE.

SZE

Shmls, Maysam; Bozsaky Dávid; Horváth Tamás: Literature review on steel fibre, silica fume and fly ash: improving methods for recycled and multiple recycled aggregate concretes. In: ACTA TECHNICA JAURINENSIS 14:1 pp. 60-79. 20 p. (2020)

Bozsaky Dávid; Horváth Tamás: Durisol - Construction with woodcrete. Győr, Hungary: Universitas-Győr Nonprofit Kft. (2019), 106 p.

Bozsaky Dávid: Thermodynamic Processes in nanostructured Thermocoatings, In: Serrat, Carles; Casa, Joan Ramon; Gilbert, Vicente Current Topics and Trends on Durability of Building Materials and Components : Proceedings of the XV edition of the International Conference on Durability of Building Materials and Components (DBMC 2020)

Horváth Tamás: Energetic analysis of complex modernizations of educational buildings. In: Mirosław, J Skibniewski; Hajdu Miklós (editors): Creative Construction Conference 2018 Proceedings. Budapest, Hungary: Diamond Congress Ltd., (2018) pp. 883-890. 8 p.

Bozsaky Dávid: Nature-Based Thermal Insulation Materials From Renewable Resources – A State-Of-The-Art Review, SLOVAK JOURNAL OF CIVIL ENGINEERING, Vol. 27, No. 1, 2019. pp. 52-59.

Rajmund Kuti, Géza Zólyomi, Orsolya K Kegyes-Brassai: Assessing the impact of positive pressure ventilation on the building fire – a case study, INTERNATIONAL JOURNAL OF GEOMATE 2018: (48) pp. 16-21.

Horváth Péter, Hajdu Flóra, Kuti Rajmund: Investigation of Swings Caused by Sudden Wind Loads During Operation of an Aerial Ladder, FME TRANSACTIONS 2020: (48) pp. 351-356.

Hajdu, Flóra ; Kuti, Rajmund: Development of a simulation model for analyzing vibrations of a double cabin fire truck and their effects on firefighters, INTERNATIONAL ADVANCED RESEARCH JOURNAL IN SCIENCE ENGINEERING AND TECHNOLOGY 6 : 5 pp. 74-79. , 6 p. (2019)

Hajdu, Flóra ; Kuti, Rajmund: Modelling and Sensitivity Study of a Firefighting System, HIDRAULICA 2019 : 4 pp. 38-44. , 7 p. (2019)

Hajdu, Flóra ; Molnárka, Győző ; Kuti, Rajmund: One-at-a-Time Sensitivity Study of a Nonlinear Fire Truck Suspension Model, FME TRANSACTIONS 48 : 1 pp. 90-95. , 8 p. (2019)

IPL

Gomes, S.F., Jorge, S. and Eugénio, T.P. (2020), "Teaching sustainable development in business sciences degrees: evidence from Portugal", Sustainability Accounting, Management and Policy Journal, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/SAMPJ-10-2019-0365>

Rodrigues, S., Almeida, P. & Almeida, N. (2020). Mapping, Managing, and Crafting Sustainable Business Strategies for the Circular Economy, PA: IGI Global.

Fernandes, E. & Valente, M. (2018). When Is Green Too Rosy? Evidence from a Laboratory Market Experiment on Green Goods and Externalities. Games 2018, 9(3), 70. <https://doi.org/10.3390/g9030070>.

Fernandes, E. & Valente, M. (2018). When Is Green Too Rosy? Evidence from a Laboratory Market Experiment on Green Goods and Externalities. Games 2018, 9(3), 70. <https://doi.org/10.3390/g9030070>.

Eugénio, T. Morais, A. & Lourenço, I., (2013) Sustainability strategies of the company TimorL: extending the applicability of legitimacy theory, Management of Environmental Quality – An International Journal, 24 (5), p. 570-582.

H. Santos, N. Pires, D. Caseiro, J. Morgado, J. F. Pereira, and N. Martinho, Experimental Study of an Evaporator Heat Exchanger for a Rankine Cycle Vehicle Waste Heat Recovery System, Journal of Clean Energy Technologies vol. 4, no. 5, pp. 362-366, (2016)

Andrade, F., Moita, A.S., Nikulin, A., Moreira, A.L.N., Santos, H. (2019). Experimental investigation on heat transfer and pressure drop of internal flow in corrugated tubes. International Journal of Heat and Mass Transfer, 140, 940-955.

Martinho, N A. G; Silva, Manuel C. G.; Lopes, A.G. Evaluation of errors on the CFD computation of air flow and heat transfer around the human body. Building and Environment. Vol. 58, Pages 58-69 (2012).

<http://dx.doi.org/10.1016/j.buildenv.2012.06.018>

TUS Midwest

"Superhomes 2.0 - Best Practice Guide for ASHP Retrofit" Hoyne, S; Hunter, G; O' Reilly, P; O' Shea, M; April 2020

"Superhomes 2.0 - Optimisation of Air Source Heat Pump Applications in NZEB Residential Retrofits" Hoyne, S. IEA Task 26 Heat Pump Conference, London, September 2017

"Evaluation of the Space Heating Calculations within the Irish Dwelling Energy Assessment Procedure Using Sensor Measurements from Residential Homes" Hunter, W. G; Hoyne, S; Noonan, L. March 2017 Energy Procedia 111:181-194

"Creation of an improved residential space heating calculation model for the Irish energy performance assessment tool" Hunter, W. G; Hoyne, S; Noonan, L. June 2015. ECEEE Energy Efficiency Summer School, Toulon, France

O'Sullivan, S. & Evans S. (2019) Strategies for Developing Innovative Tools and Resources for Social Enterprise Educators and Learners' Paper delivered to 7th EMES International Research Conference on Social Enterprise, Sheffield Hallam University, UK 24 – 27 June.

HAMK

O Tahvonen, M Airaksinen - Land use policy, 2018. Low-density housing in sustainable urban planning—Scaling down to private gardens by using the green infrastructure concept

O.Koskela, C.Dempers, M.Kymäläinen,

J.Nummela. 2021. Simulating a Biorefinery Ecosystem to Manage and Motivate Sustainable Regional Nutrient Circulation. Technology Innovation Management Review.

D. Huynh, S. Nguyen-Ky. 2020. Engaging Building Automation Data Visualisation Using Building Information Modelling and Progressive Web Application. Open Engineering. (<https://doi.org/10.1515/eng-2020-0054>)

T. Lohtander, S. Arola, P. Laaksonen. 2019. Biomordanting willow bark dye on cellulosic materials. Coloration Technology (<https://doi.org/10.1111/cote.12442>)

Z. Ma, J. Havula, F. Wald, K. Cabova. 2020. Temperature analysis of steel structures protected by intumescent paint with steel claddings in fire. Fire and Materials. (<https://doi.org/10.1002/fam.2890>)

IPCA

Mendes-Felipe, C. , Barbosa, J.C., Gonçalves, R., Miranda, D., Costa, C.M., Vilas-Vilela, J.L., Lanceros-Mendez, S. (2021). Lithium bis(trifluoromethanesulfonyl)imide blended in polyurethane acrylate photocurable solid polymer electrolytes for lithium-ion batteries. Journal of Energy Chemistry. DOI: <https://doi.org/10.1016/j.jechem.2021.01.030>

Dios, J. R., Gonzalo, B., Tubio, C. R., Cardoso, J., Gonçalves, S., Miranda, D., Correia, V., Viana, J.C., Costa, P. and Lanceros-Méndez, S. (2020). Functional Piezoresistive Polymer-Composites Based on Polycarbonate and Polylactic Acid for Deformation Sensing Applications. Macromolecular Materials and Engineering. DOI: <https://doi.org/10.1002/mame.202000379>

Miranda, D., Goren, A., Costa, C.M., Silva M.M., Almeida, A.M., Lanceros-Méndez, S., Theoretical simulation of the optimal relation between active material, binder and conductive additive for lithium-ion battery cathodes, Energy, Energy Journal. (2019) DOI: <https://doi.org/10.1016/j.energy.2019.01.122>

D.Miranda, R.Gonçalves, A.M.Almeida, M.M.Silva, J.M.Meseguer-Dueñas, J.L. GomezRibelles, S.Lanceros-Méndez, C.M.Costa, Solid polymer electrolytes based on lithium bis(trifluoromethanesulfonyl)imide/poly(vinylidene fluoride-co-hexafluoropropylene) for safer rechargeable lithium-ion batteries, Sustainable Materials and Technologies Journal (2019), In press. DOI: <https://doi.org/10.1016/j.susmat.2019.e00104>

Miranda D., Almeida A.M., Lanceros-Mendez S., Costa C.M., Effect of the active material type and battery geometry on the thermal behavior of lithium-ion batteries, Energy Journal (2019), Vol. 185, 1250-1262 (2019). DOI: <https://doi.org/10.1016/j.energy.2019.07.099>

The quest for a sustainable product: An environmental study of tyre recyclates. Materials and Design 52 (2013) 196-206, DOI 10.1016/j.matdes.2013.05.051

Integrating environmental and economic life cycle analysis in product development: a material selection case study, International Journal of Life Cycle Assessment 18 (2013) 1734-1746

Improving the environmental performance of bedding products by using life cycle assessment at the design stage, Journal of Cleaner Production 52 (2013) 155-164

Development of a continuous method to produce autoreactive and ecological monocomponent adhesives; Proceedings of the Fifth International Symposium on Green

Chemistry, Sustainable Development and Circular Economy, Skiathos, Greece, 30 Sept to Oct 3 2018. Editors Kungolos, A. & Schramm, K.W.; Grafima Publ; pp. 123-130; ISBN 978-618-5271-61-9

"Projeto Bysteel - Circular Design" in Foro de Innovación Do-cente 2019., in: 8º Encuentro BID de Enseñanza y Diseño, Madrid, 20 a 22 de nov 2019

NHL Stenden

Brouwer, A. E. (2020). Ari-Veikko ANTTIROIKO, Wellness City, Health and Well-Being in Urban Economic Development, Palgrave Pivot, Cham 2018. European Spatial Research and Policy, 27(1), 291-292.

Oster, S., Brouwer, A., & van Leeuwen, E. (2020). Diversity as the key to success? Urban and rural employment dynamics in the Netherlands. Regional Studies, 54(9), 1187-1199. <https://doi.org/10.1080/00343404.2019.1699652>

Brouwer, A., & Delfmann, H. (2019). 'Grey entrepreneurship': a qualitative study toward understanding the motivation to and the effects on wellbeing of after later life entrepreneurship. In M. Backman, C. Karlsson, & O. Kekesi (Eds.), Handbook of Research on Entrepreneurship and Aging (pp. 246-268). Edward Elgar Publishing.

Brouwer, A., & Kohl, T. (2020). Trade Blocs. In A. Kobayashi (Ed.), International Encyclopedia of Human Geography (2 ed., pp. 335-339). Elsevier. <https://doi.org/10.1016/B978-0-08-102295-5.10141-6>

Progress updates on current activities (Summaries of the following)

- Research projects
- Postgraduate Research Degrees (incl. Level, Title and Supervisors)
- Other notable activities

Research Projects

FUNDING AGENCY	PROJECT
Erasmus +	REBOUND - Fostering Resilience in Rural Communities
Erasmus +	Social Farming for the Elderly
Erasmus +	Knowledge Bridge (Submitted Proposal)
Horizon Europe	HumanTech (Submitted Proposal)
Erasmus +	AgriNext (Submitted Proposal)
Erasmus +	LakeLab (Submitted Proposal)
EU regional funding	Center of competence for bio-based raw materials
EU regional funding	Green Smart Services in Developing Circular Economy SMEs
Council of Strategic Research / Academy of Finland	Bio-based Dyes and Pigments for Colour Palette (BioColour)
Ministry of Agriculture and Forestry, Finland	Soil processes as a basis for targeting carbon sequestration measures in mineral agricultural soils
Ministry of Agriculture and Forestry, Finland	Precise biomass information for agricultural carbon budget calculations by combining satellite and field data with ecosystem modelling
NORTE-01-0145-FEDER-000045 (Portugal 2020, FEDER), 2020-2023	Project “SmartHealth – Inteligência Artificial para Cuidados de Saúde Personalizados ao Longo da Vida”
POCI-01-0247-FEDER-047195	InjectID4.0 .: Automatic insertion of RFID systems in the plastic injection process

Postgraduate Research Degrees

Name	Thesis Title	Department	Level	Supervisor	Co-Supervisor
Jade Foynes	Mapping Social Enterprise in the Mid West Region	Dept of Applied Social Sciences	M A	Seamus Hoyne	Dr Marie Taylor
MS Catherine O'Halloran	An examination into the efficacy of Limerick City Builds model, a	Dept of Applied Social Sciences	M A	Seamus Hoyne	Dr Marie Taylor

	trauma informed, gender specific approach to training.				
Tia Lohtander	Functionalization of cellulosic materials using natural colourants	Chemical Engineering, Aalto University	PhD	Monika Österberg	Suri Arola, Päivi Laaksone n
Juha Jordan	Long-term durability of natural colourants	Chemical Engineering, Aalto University	PhD	Prof. Jaana Vapaavuori	Dr. Päivi Laaksone n
Carlos Nuno Barbosa	Polymer and Composites Science and Engineering, University of Minho	PhD	Integration of Engineering, Manufacturing and Economic Issues in Design against Impact of Polymer Automotive Components		Simo es, R.
Paulo R. Valentim Francisco	Mechanical Engineering, Instituto Superior Técnico	PhD	Analysis and Design of a Functional Material for Combined Heat Transfer and Stiffness - Application to the Injection Molding Industry		Simo es, R.
Susana Fernandes	Design, University of Aveiro	PhD	Design interior de veículo elétrico urbano: Interfaces com o condutor senior		Simo es, R.
Carlos Diogo	PhD program in Leaders for	PhD	Wearable Technology		Simo es, R.

Alves da Costa Gonçalves	Technical Industries, University of Minho		Impact: study through the development of a soft-orthotic device		
Irene Carvalho	PhD program in Leaders for Technical Industries, Instituto Superior Técnico	PhD	A Manifold City Car: A Concept for an Urban Car Calling for Flexibility in Car Occupancy According to Users' Needs		Simoes, R.
Fernandes, S.	Universidade de Aveiro, Aveiro	PhD	Design interior de veículo elétrico urbano: interfaces com o condutor sénior		Sampaio, J., J. Esteves & Simões, R.
Machado, A.	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	Food Quality & Safety (FQ&S): Desenvolvimento de um dispositivo de controlo de qualidade de produtos alimentares		Sampaio, J. & D. Matos
Baganha, A.	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	A Produção de louça preta portuguesa — Desenvolvimento de Produtos que promovam a relação entre as raízes artesanais e o design		Sampaio, J.
Gomes, O.	Universidade de Aveiro, Aveiro	MSc	Estimulação Olfativa: Perturbação do		Sampaio, J. & J. Oliveira

			Espectro do Autismo		
Marques, D.	Universidade de Aveiro, Aveiro	MSc	Desenho de uma vending machine de botijas de gás		Sampaio, J. & M. Mendonça
Carvalho, R.	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	Sistema para mapeamento e navegação da uretra através de múltiplos sensores		Vilaça, J.L. & Miranda, D.
Martins, J.	Incorporation of Circularity Indicators in the Product Development Process	University of Minho, Guimarães, Portugal	PhD	Simoès, R.	
Macedo, C.	Artillery Training Projectile in Polymeric Materials com Materiais Poliméricos	University of Minho, Guimarães, Portugal	PhD	Simoès, R.	
Pimentel, E.	Printable piezoresistive materials based on natural polymers for medical device applications	University of Minho, Guimarães, Portugal & Instituto Politécnico do Cávado e do Ave, Barcelos	PhD	Miranda, D. & Lanceros-Mendez, S.	
Teixeira, J.	Enhancing the comprehension of an atom with the use of VR for 9th grade students	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	Oliveira, E.	Miranda, D.

Carvalho,L.	Redesign e indústria: Projeto aplicado à Almas Design S.A.	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	D. Matos & Sampaio, J.	
Rodrigues,J.	Privado vs público no trabalho: proposta de um assento cápsula que permite a privacidade do utilizador de escritório	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	M. Terroso & Sampaio, J.	
Meneses, J.	Abrigos para fumadores em contexto das smart cities: Prevenção à exposição involuntária ao fumo do tabaco.	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	Sampaio, J.	
Nunes, J.	Inserção de cinzeiros interativos nas smart cities para o controlo da poluição causada pelas pontas de cigarro.	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	Sampaio, J.	
Silva,O.	O transporte de prancha de surf: proposta de produto de proteção e acomodação de pranchas de surf em trânsito aéreos.	Instituto Politécnico do Cávado e do Ave, Barcelos	MSc	Sampaio, J.	

Other notable activities-(see selected external collaborations below)

Members of the Institute are also members of Institutional and National bodies and committees supporting research and innovation development within LIT and beyond.

These include-

- TUS Midlands, Executive Management Team,
- TUS Midlands, Equality, Diversity and Inclusion Steering Committee,
- TUS Midlands, Learning Enhancement Steering Committee,
- TUS Midlands, Empower Eco Innovation Hub Steering Committee,
- Empower Eco CLG member,
- Athlone Co-Working Hub CLG Member,
- Athlone Chamber of Commerce Board Member (Elect),
- CELLS Research Group Steering Committee,
- TUS Midwest, Research Ethics Committee,
- TUS Midwest, Research and Postgraduate Matters Committee,
- TUS Midwest, Academic Council
- TU Research working group,
- British Biotechnological Research Council Research Evaluator,
- Regional University Network European University management committee,
- TUS Midwest, Executive Management Team,
- Irish Bioeconomy Foundation Board,
- Members of the research representative group for the TU International panel visit,
- TUS Midwest, Safety Advisory Committee
- Limerick Chamber of Commerce,
- European Commission Research and Innovation Evaluator,
- Technological Higher Education Association Research Development and Innovation and Enterprise steering group,
- Technological Higher Education Association Knowledge Transfer Innovation and Enterprise steering group RDIE group,
- Limerick Institute of Technology Equality, Diversity and Inclusion steering committee,
- National Open Research Forum Steering group,
- National Research Integrity,
- Technology Transfer Office
- Irish Bioeconomy Foundation Technical group
- Shannon Applied Biotechnology Steering Group

RUN Climate Change- Circular Economy & decarbonisation research group will actively search for EU-funding in area of climate, energy and mobility. Expertise and research interests in this area are of interest from the perspective of policy makers, funders as well as businesses and consumers.

The aim is to find complementary research areas that make the best use of the partner's expertise, around which funding will be sought, and joint research will be built. Exploration of opportunities, competencies and infrastructure within the research area has begun.

Aims 2021-2023:

- 2 project applications in Horizon Europe and/or Erasmus+,
- Research and student exchanges within this topic,
- Joint facilities or research equipment to fulfil the needs in specific research areas
- New opportunities for companies (involve them to projects min.:2)
- New innovative openings in research area

RUN-EU RESEARCH AREA 7 CLUSTER GROUP

Research Area Cluster Name

Education and Social Sciences

Research Area Cluster Lead

Dr. J. Metselaar, NHL Stenden University

Short Description:

The horizon Europe research program is committed to the implementation of educational and social science research activities that will contribute to a comprehensive European strategy for societal improvements and ensuring inclusiveness and equity across all levels of our citizenship. Specifically, the RUN-EU education and social science research cluster will support these ideals and engage in multidisciplinary research and innovation activities that deliver inclusive growth and reforms in line with the European Pillar of Social Rights and the EU's policies on smart, inclusive and sustainable growth.

Our research activities will assess the role of cultural, legal educational and creative sectors and the social economy in delivering social and economic transformations and increased social inclusion.

Individual Institute Lead

IPL	Isabel Dias
TUS Midlands (formerly AIT)	Jeffrey Buckley
HAMK	Jaana-Maija Koivisto; Liisa Postareff; Juulia Lahdenperä
NHL STENDEN	Joana Duarte; Robert Coelen; Migchiel van Diggelen; Deike Schulz; Jacqueline Rietveld
TUS Midwest (formerly LIT)	Lisa O'Rourke Scott
IPCA	Sónia Monteiro; Vitor Carvalho
FHV	Fabian Rebitzer
SZE	Melinda Krankovits; Nárcisz Kulcsár

Aims and Objectives

Our research activities will assess the role of cultural, legal educational and creative sectors and the social economy in delivering social and economic transformations and increased social inclusion. We will be involved in the analysis of social and organizational resources through the design of quantitative and qualitative social research within specific target groups and demographics. These studies will report on, social inequality, poverty and homelessness, age, identity, diversity and inclusion, social capital, health and care management, social work, cultural management research, legal, education, psycho-social aspects of work and organizational development.

We will pursue collaborative research with communities in the areas of Critical Youth Work, Community Development and Education & Training. This activity will drive strategies for inclusive education, training and lifelong learning for high value-added skills, which can facilitate social mobility and economic growth. Gender equality and other social categories, such as disability, sexual orientation and ethnicity, in all social, political, economic and cultural domains will also be a focus.

We will provide a voice for those who are not heard and enrich the body of academic knowledge informing social and community practitioners from a variety of disciplines. With this in mind, we will engage in collaborative efforts with organisations supporting those who are vulnerable through graduate research projects, media appearances, conference and workshop presentations, publications, community research events and research and innovation projects. Our objective is to establish new academic standards within the subject, address social questions, and facilitate and advance social discourse and development.

We will investigate early childhood studies and the ways in which young children develop and what is most essential when it comes to their education and parenting. This will involve applied research on a variety of subjects related to educational theory highlighting all the various forms of early child development without necessarily labelling children's behaviour. Our research skills in pedagogy will help teachers and (training) schools in our regions to transform their traditional classroom into a personalised learning environment centred around the subject pedagogy. We will explore novel and innovative digital solutions in pedagogy producing research-based data on the use of digitalisation in higher education, vocational education, and working life. Our activities aim to develop and study the use of new technologies in education and to assess the development of competence and learning experience through a diverse use of research methods. In all projects, particular emphasis is placed on learning analytics. Moreover, we can analyse the gained experiences during the COVID-19 pandemic period in order to develop including e-learning strategies for HE. We will also address lifelong learning or 'lifelong development' on the same and develop programs of research to ensure that professionals can continue to learn and develop including career guidance; university-business collaboration and the development of future skills and work-based learning. We will nurture multi-linguism and linguistic research and embrace the ever-increasing language diversity and internationalism which now epitomize our regions and Europe as a whole.

Academic & Research Staff Profile to include details of:

Primary Investigators (PIs)	Contributing Staff (Academic Staff) (CS)
Researchers (R)	Management (M)
Research Leads (Academic Staff)	Technical (T)
(RL)	Administration Staff (A)

To be completed after preparation of joint R&D projects for calls.

Name	Qualifications	Type * PI, R, RL, CS, M,	Research Interests and related specialisms (ISCED)	Current Supervisory load (no. of Masters)	Current Supervisory	No. of PhD Students supervised to	No. of Research Masters Students supervised to	ORCID, H-index, and No. of Peer-reviewed publications
Isabel Dias								
Jeffrey Buckley								
Jaana-Maija Koivisto								
Liisa Postareff								
Juulia Lahdenperä								
Robert Coelen;								
Joana Duarte								
Migchiel van Diggelen								
Deike Schulz								

Jacqueline Rietveld								
Lisa O'Rourke Scott	PhD	PI		7			2	https://orcid.org/0000-0003-2242-6531
Sónia Monteiro	PhD	PI						https://orcid.org/0000-0003-2149-4962
Vitor Carvalho	PhD	PI						https://orcid.org/0000-0003-4658-5844
Fabian Rebitzer								
Melinda Krankovits								
Nárcisz Kulcsár								

Supporting Faculty/School and Department(s)

IPL:

- Interdisciplinary Centre of Social Sciences (CICS.NOVA)- The unit of CICS.NOVA at Leiria has developed its activity since 2002. It is committed to advancing research in diverse areas of the social sciences, particularly on social trajectories, intercultural mediation, migration, tourism and identities.
- IJP-Leiria- Since 2018, the Polytechnic of Leiria has a research pole of the Portuguese Institute for Legal Research (IJP-Leiria) which is a multidisciplinary R&D Unit founded to develop research, training and service provision in legal area.
- Centre for Studies in Education and Innovation- (CI&DEI)- It is the strategic objective of the Center to reinforce the proposed research lines with a comprehensive focus on the great contemporary debates of education in terms of pedagogical innovation, education for equity and inclusion, academic success and promotion of citizenship in a lifelong learning context.

TUS Midwest:

- Social Sciences ConneXions- The aim and vision of Social Sciences ConneXions is to promote social inclusion, provide a voice for those who are not heard, and enrich the body of academic knowledge informing social and community practitioners from a variety of disciplines.
- Genders & Sexualities Research Group (GSRG)- The Genders and Sexualities Research Group investigates a broad range of topics related to the ways in which genders and sexualities impact on people in contemporary society.
- ASCEND- The purpose of this group is primarily to look at research areas important to individuals accessing social care services and involve them in data generation.
- Engage- The objective of this research group is to pursue collaborative research with communities in the areas of Critical Youth Work, Community Development and Education & Training.

TUS Midlands:

- Technology Education Research Group (TERG)- Technology and Engineering Research Group Areas of research expertise centre around the use of technology in education and the use of educational design research methodologies to develop innovative solutions in educational settings.
- Faculty of Business & Hospitality, Organisational Change- Primary research interests focus on workplace spirituality, personal values and person-organisation fit, comparative HRM, self-transformation, and qualitative research methods.
- Entrepreneurship Academy MIRC- Research Areas include:- Strategic Knowledge Management and Competitive Advantage, Change Management impact on Talent and Knowledge Management, New horizons in Work Based Learning and Heutagogy, Action Learning – Entrepreneurship and Entrepreneurial Mindsets, Reflective Practice and Entrepreneurial Skills Development, Growth & Sustainability of SMEs – Professional Development.
- Faculty of Business & Hospitality- Digital Marketing- Primary area of research includes consumer and employee technology adoption and usage with a particular focus on social media, eWOM and Digital Marketing. Experience in SEM analysis using PLS-SEM (Smart-PLS).
- Faculty of Science & Health, Parenting & Family Studies - Parenting, family, social inequality and social change; qualitative research methodologies, design and data analysis; co-production of knowledge and models of best practice through research inquiry.

HAMK:

- Learning, Teaching and Wellbeing- Learning and wellbeing of higher education students; higher education teachers' wellbeing and pedagogical development of teachers and educational institutions.

- Professional Development and Lifelong Learning-learning and development at work and development of expertise; career guidance; university-business collaboration and the development of future skills; work-based learning.
- Sustainable agroforestry in Africa by modern education research area focuses on work in Africa. Joint education, research and innovative actions towards new entrepreneurship is enhanced within this group.
- Education Systems- characteristics of education systems in higher and vocational education; comparative research of education systems; teacher education preparing teachers to teach in vocational and higher education; effectiveness of teacher education.
- Digital Solutions in Pedagogy produces research-based data on the use of digitalisation in higher education, vocational education, and working life. In the future, technology will play an increasingly important role in teaching and education activities.

IPCA:

- Research Centre on Accounting and Taxation (CICF)- CICF develops applied research in the areas of accounting and taxation, being organized in 4 core areas: (1) Public Accounting, (2) Accounting and Social Responsibility, (3) Financial and management accounting and (4) Taxation.
- Research group in Marketing- Marketing, Consumer Behaviour, Digital Marketing
- 2Ai - Applied Artificial Intelligence Laboratory- Digital Lexicography. Construction of resources for lexicographers in their work on creating dictionaries and terminologies. Digital Preservation, and Digital Lexicography. Re-treading of public-domain dictionaries for the creation of public and free lexical resources.
- Research Group in eGovernment in the Management School – this research group develops research in collaboration with the Research Center in Political Science (CICP) of the University of Minho; it develops research on topics like electronic public procurement; public purchase; platform of public purchase; green public procurement; transparency; best practices; indicators; policy decision and implementation.

NHL Stenden:

- Academy of Primary and Secondary Education, Researchgroup Vital Education: Professorship Vital Subject Pedagogy, Professorship Vocational Pedagogy, Professorship Early Childhood Studies, Professorship Multilingualism and Literacy, Professorship Internationalisation of Higher Education, Professorship Organizations and Social Media.

SZE:

- Doctoral School of Regional- and Business Administration Sciences, University of Győr; Department of Mathematics and Computational Culture, Creativity & University (SZE) Sciences, University of Győr; Eötvös Loránd University Faculty of Education and Psychology- The research area is the mass Higher Education (HE), focused on dropout, student's motivation and student's satisfaction.
- Department of Telecommunications, Department of Informatics- virtual and augmented reality in higher education, e-health, training and assisted technologies.

FHV:

- Department of Business and Management-The Faculty of Economics is an organisational unit and competence centre of FH Vorarlberg.
- The Faculty of Health and Social Work is an organisational unit and competence centre of FH Vorarlberg. The responsibilities of the faculty include teaching for the generally oriented bachelor's programme on social work, the bachelor's programme on health and nursing care, and the master's programme on social work. The faculty also actively contributes to the further development of social work as a subject and profession by participating in various national and international networks and collaborations, as well as by working closely with social organisations in Vorarlberg.
- Department of Business Informatics- Smart Products and Smart Services, together with networking, form a central core topic of digitization.
- Research Group Empirical Social Sciences

To be completed after preparation of joint R&D projects for calls.

Areas of Research Specialisation and – Specific ISCED Fields (ISCED-F 2014)

To be completed after preparation of joint R&D projects for calls.

Alignment to the Horizon Europe research cluster and research and innovation programme

Pillar 2 research cluster of the horizon Europe program: Culture, Creativity & Inclusive Society; Digital Industry & Space; Health.

Track Record over the last 5 years (summaries of the following)

- Completed research projects
- Graduated students at Masters and PhD level (incl. Title and details of supervisors)
- Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

To be completed after preparation of joint R&D projects for calls.

Progress updates on current activities (Summaries of the following)

- Research projects
- Postgraduate Research Degrees (incl. Level, Title and Supervisors)
- Other notable activities

To be completed after preparation of joint R&D projects for calls.

External Collaborations

To be completed after preparation of joint R&D projects for calls.

Strategic Outlook for Research & Innovation Development and external funding

Starting meetings

Presentation of the researchers main interests and discussion of possible synergies.

Internal calls for R&D project Ideas

Education and Social Sciences organises a small event for presentations to present project ideas related to the Education and Social Sciences research Area. These ideas can have different maturity levels. Ideas that are well consolidated and just need a consortium for a specific call or ideas that aim to solve an important problem in the area and need to be worked on to become a possible research project.

Planned steps are to gather ideas, dissemination and presentation of the ideas with the RUN-EU Education and Social Sciences members. Furthermore to gather expressions of interest and share with the idea proponent and to start bilateral meetings to prepare R&D projects for calls.

Expected outcomes:

- Increased knowledge about the research activities of members
- Identification of possible fields of common interest
- Identifications of national and Horizon Europe calls for joint proposals.
- Dissemination of collaboration in conferences
- Programme Committees
- Joint conferences
- Dissemination of joint special issues in research journals
- Dissemination of joint supervision of Masters/PhD theses
- Dissemination of Horizon Europe R&D Calls
- Dissemination of national R&D calls
- Dissemination of possible collaboration on ongoing R&D projects

RUN-EU RESEARCH AREA 8 CLUSTER GROUP

Research Area Cluster Name

Health and Wellbeing

Research Area Cluster Lead

IPCA (João Vilaça, Director of 2Ai Laboratory Director of Technology Department, Polytechnic Institute of Cavado and Ave) and NHL Stenden University (Janneke Metselaar, Professor Child and Youth Care).

Short Description

<p>Our mission in research cluster Health & Wellbeing is to contribute to the creation of knowledge and innovative programs promoting the improvement in the quality of life across human beings, including research on motor behaviour, physical activity and healthy lifestyle, education and training and Individual and community health, health promotion and care, biomarkers and clinical engineering, nutrition and food for health innovation.</p> <p>We will within this research cluster address the identified needs defined with pillar 2 health research cluster of the horizon Europe program. Our aim is to develop interdisciplinary projects and themes which support the wellbeing of our citizens in addition to developing community engagement project ideas which support our local community's and the development of their people and economy. The outcomes will be ideas which can be transformed into projects and programmes delivered by RUN-EU's health research cluster.</p>

Individual Institute Lead

IPL	Maria Guarino and Sónia Pereira
TUS Midlands (formerly AIT)	Don Faller
HAMK	Merja Sareela and Kimmo Vänni
NHL STENDEN	Job van 't Veer, Gea van Dijk, Nynke Boonstra and Jacqueline Rietveld
TUS Midwest (formerly LIT)	Frank Houghton and Jennifer Stritch
IPCA	João Vilaça
FHV	Michael Himmer
SZE	György Wersenyi

Aims and Objectives

<p>Our aim is to develop interdisciplinary projects and themes which support the wellbeing of our citizens in addition to developing community engagement project ideas which support our local community's and the development of their people and economy. The outcomes will be ideas which can be transformed into projects and programmes delivered by RUN-EU's health research cluster.</p>
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Kimmo Vänni								
Job van 't Veer								
Gea van Dijk								
Nynke Boonstra								
Jacqueline Rietveld								
Frank Houghton	PhD	PI	0310	2	2	1		100+ publications ORCID 0000-0002-7599-5255
Jennifer Moran Stritch	MSW, CT	PI	0923, 0921, 0031, 0310, 0314, 0910	4		1	3	
Dr. João Vilaça	PhD	PI	0914, 0915, 0919, 0921, 0922, 0999	10	6	5	10	ORCID 0000-0002-4196-5357 H-index:1599 publications
Michael Himmer								

György Wersenyi								
Dr. Vitor Carvalho	PhD	PI	0914, 0915, 0919, 0921, 0922, 0999					0000-0003-4658-5844 H-index: 15 14 publications
Dr. António Moreira	PhD	PI	0914, 0915, 0919, 0921, 0922, 0999	5	1	0	1	0000-0002-2148-9146 H-index: 5 24 publications
Dr. Pedro Morais	PhD	PI	0914, 0915, 0919, 0921, 0922, 0999	5	0	0	1	0000-0002-1995-7879 H-index: 11 50 publications
Dr. Nuno Dias	PhD	PI	0914, 0915, 0919, 0921, 0922, 0999					0000-0002-0498-4612 H-index: 11 62 publications
Dr. Joaquim Gonçalves	PhD	PI	0914, 0915, 0919, 0921, 0922, 0999					0000-0003-2219-1816 H-index: 11 43 publications

Supporting Faculty/School and Department(s)

IPL

- The Life Quality Research Centre (CIEQV)- The mission of CIEQV is to contribute to the creation of knowledge and innovative programs promoting the improvement in the quality of life across human beings, mainly through research on Motor behavior,

Physical Activity and healthy lifestyle, Education and training and Individual and community health.

- Center for Innovative Care and Health Technology-(ciTechCare)

TUS Midwest:

- Loss and Grief Research Group - The aim is to support and encourage creative social sciences research in the areas of grief and loss across the lifespan in Ireland and internationally.
- Health, Education & Social Research Group (HEALR) - HEALR is one of three research groups that replaced the more generically oriented Irish Centre for Research in Applied Social Studies (ICRASS), which was established in LIT in 2006. These three research groups, the Loss & Grief Research Group, the Genders & Sexualities Research Group & the HEALR Research Group, developed a more specialised focus to reflect the growth of interest, specialisation and expertise in these topic areas.
- Health & Wellness Community - The LIT Health & Wellness Community group is a cross-disciplinary Community of Practice led by LIT's Department of Social Science, Department of Sport and Finance, Department of Applied Science and Department of Flexible Learning which collaborates with all discipline areas of LIT including the Department of Food and Tourism, the School of Art and Design and the Faculty of Applied Science, Engineering and IT.

TUS Midlands:

- Nursing and Healthcare research: has an interdisciplinary focus with many students working across disciplines with supervisors from other research institutes such as software and materials.
- Biosciences Research Institute- AIT has developed enhanced infrastructure and supervisory expertise in the fields of enzymatic kinetic resolution and stereoselective synthesis, structure-activity relationship evaluation, and surface recognition on the synthetic side, and this has complemented analytical activities in encapsulation and phase solubility, ultra-trace analysis and formulation development.
- SHE Research Group- The SHE Research Group aims to bridge the gender data gap in sport, health and exercise science research.

HAMK:

- Multisensory Environments and Assistive Technology-Solutions
- Smart Solution for Wellbeing.

IPCA:

- 2Ai - Applied Artificial Intelligence Laboratory- Health, Artificial Intelligence, Computer-assisted diagnosis, Smart minimally-invasive interventions, Personalized medicine.

NHL Stenden:

- Academie of Social Studies and Academie of Health Care: Talma Professorship of Living, Well-being and Old-age Care, Professorship Child and Youth Care, Professorship Small n-designs, Professorship Healthcare & Innovation in Psychiatry, Professorship Nursing

Leadership and Identity, Professorship Social Quality, Professorship Digital Innovation in Healthcare and Welfare, Professorship Resilience.

SZE:

- Department of Telecommunications - Medical image classification based on fuzzy signatures and fuzzy interpolation based decisions.

FHV:

- The Faculty of Health and Social Work is an organisational unit and competence center of FH Vorarlberg. The faculty works closely with the research centre for social and economic sciences of FH Vorarlberg.
- Research Group Empirical Social Sciences

Areas of Research Specialisation and – Specific ISCED Fields (ISCED-F 2014)

0111 Education science
0211 Audiovisual techniques
0310 Social and behavioural sciences not further defined or elsewhere classified
0313 Psychology
0319 Social and behavioural sciences
0619 ICT
0910 Health not further defined or elsewhere classified
0911 Dental studies
0912 Medicine
0913 Nursing and midwifery
0914 Medical diagnostic and treatment technology
0915 Therapy and rehabilitation
0919 Health not elsewhere classified
0921 Care of the elderly and of disabled adults
0922 Child care and youth services
0923 Social work and counselling
0988 Health and welfare
0999 Health and welfare not elsewhere defined
1022 Occupational health and safety

Alignment to the Horizon Europe research cluster and research and innovation programme

Pillar 2 research cluster of the horizon Europe program: Health.

Track Record over the last 5 years (summaries of the following)

- Completed research projects
- Graduated students at Masters and PhD level (incl. Title and details of supervisors)
- Notable Research Outputs (Publications, impacts, stakeholder/public engagement)

IPL

- Completed research projects:

<https://citechcare.ipleiria.pt/projects/>
https://www.cieqv.pt/research/#cieqv_projects

- Graduated students at Masters and PhD level:

<https://citechcare.ipleiria.pt/people/research-fellows/>

- Notable Research Outputs:

<https://citechcare.ipleiria.pt/productivity/>
https://www.cieqv.pt/research/#cieqv_publications

IPCA

- Completed research projects:

SmartOrthosis: Personalized cranial intelligent orthosis for deformational plagiocephaly
(Period: 2017-2019, Total funding: 142.785,46€)

- Graduated students at Masters and PhD level:

PhD Theses:

João Gomes-Fonseca, “Surgical Navigation System for Percutaneous Renal Access: electromagnetic guidance and imaging working together” (2021), Supervisors: Estevão Lima (University of Minho) and João L. Vilaça (2Ai-IPCA)

Pedro Morais, “Automated image-based planning of left atrial interventions” (2019), Supervisors: João M. R. S. Tavares (University of Porto), Jan D’hooge (KU Leuven), João L. Vilaça (2Ai-IPCA)

Sandro Queirós, “Real-time segmentation and tracking of 3D transesophageal echocardiographic images to improve transcatheter aortic valve implantation” (2018), Supervisors: Jaime C. Fonseca (University of Minho), Jan D’hooge (KU Leuven), João L. Vilaça (2Ai-IPCA)

Master theses:

Simão Valente, “Handheld ultrasound guidance for percutaneous nephrolithotomy” (2021), Supervisors: João L. Vilaça (2Ai-IPCA) and Pedro Morais (2Ai-IPCA)

Rui Carvalho, “Sistema para mapeamento e navegação da uretra através de múltiplos sensores” (2021), Supervisors: João L. Vilaça (2Ai-IPCA) and Daniel Miranda (2Ai-IPCA)

- Notable Research Outputs

- Finalist of the KUKA Innovation Award 2019
- Winner of ESPR Young Investigator START – UP Award 2019.
- Hiraoka, A., Symons, R., Bogaert, J.A., Morais, P., Van De Bruaene, A., Budts, W., Bogaert, J. (2021). Assessment of long-term cardiac adaptation in adult patients with

type II atrial septal defect : A cardiovascular magnetic resonance (CMR) study. European Radiology, 31(4), 1905-1914. DOI: <https://doi.org/10.1007/s00330-020-07364-w>.

- Nelles, D., Lambers, M., Schafigh, M., Morais, P., Schueler, R., Vij, V., Tiyerili, V., Weber, M., Schrickel, J.W., Nickenig, G., Hammerstingl, C., Sedaghat, A. (2021). Clinical outcomes and thrombus resolution in patients with solid left atrial appendage thrombi: results of a single-center real-world registry. Clinical Research in Cardiology, 110(1), 72-83. DOI: <https://doi.org/10.1007/s00392-020-01651-8>.
- Morais, P., Fan, Y., Queirós, S., D'hooge, J., Lee, A. P.W., Vilaça, J. L. (2021). Feasibility and Accuracy of Automated Three-Dimensional Echocardiographic Analysis of Left Atrial Appendage for Transcatheter Closure. Journal of the American Society of Echocardiography. DOI: <https://doi.org/10.1016/j.echo.2021.08.023>.
- Torres, H.R., Morais, P., Fritz, A., Oliveira, B., Veloso, F., Fonseca, J.C. and Vilaça J.L.. (2020). Anthropometric Landmark Detection in 3D Head Surfaces using a Deep Learning Approach. IEEE J. Biomed. Heal. Informatics. DOI:<https://doi.org/10.1109/JBHI.2020.3035888>
- Dios, J. R., Gonzalo, B., Tubio, C. R., Cardoso, J., Gonçalves, S., Miranda, D., Correia, V., Viana, J.C., Costa, P. and Lanceros-Méndez, S. (2020). Functional Piezoresistive Polymer-Composites Based on Polycarbonate and Polylactic Acid for Deformation Sensing Applications. Macromolecular Materials and Engineering. DOI: <https://doi.org/10.1002/mame.202000379>
- Pereira, M. F., Prahm, C., Kolbenschlag, J., Oliveira, E. and Rodrigues, N. F. (2020). Application of AR and VR in hand rehabilitation: A systematic review, Journal of Biomedical Informatics. DOI: <https://doi.org/10.1016/j.jbi.2020.103584>
- Correia, B., Dias, N., Costa, P., and Pêgo, J. M. (2020). Validation of a Wireless Bluetooth Photoplethysmography Sensor Used on the Earlobe for Monitoring Heart Rate Variability Features during a Stress-Inducing Mental Task in Healthy Individuals. Sensors. DOI: <https://doi.org/10.3390/s20143905>
- Silva, E., Aguiar, J., Reis, L.P., Sá J. O., Gonçalves, J. and Carvalho, V. (2020). Stress among Portuguese Medical Students: the EuStress Solution. Journal of Medical Systems. DOI: <https://doi.org/10.1007/s10916-019-1520-1>
- Martins, T., Carvalho, V., and Soares, F. (2020). Physioland—A serious game for physical rehabilitation of patients with neurological diseases. Entertainment Computing. DOI: <https://doi.org/10.1016/j.entcom.2020.100356>
- Oliveira, A., Silva, E., Aguiar, J., Faria, B., Reis, L., Cardoso, H., Gonçalves, J., Sá, J., Carvalho and V. Marques, H. (2020). Biometrics and quality of life of lymphoma patients: A longitudinal mixed-model approach. Expert Systems. DOI: <https://doi.org/10.1111/exsy.12640>
- Torres, H. R. , Queirós, S., Morais, P., Oliveira, B., Gomes-Fonseca, J., Mota, P., Lima, E., D'hooge, J., Fonseca, J.C. and Vilaça, J.L. (2020). Kidney Segmentation in Three-Dimensional Ultrasound Images using a Fast Phase-based Approach. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. DOI: <https://doi.org/10.1109/TUFFC.2020.3039334>
- Duque, D., Dias, N. and Vilaça, J.L. (2020). Editorial Comment : Special Issue on Serious Games for Health. IEEE Transactions on Games. DOI: <https://doi.org/10.1109/TG.2020.3042425>

- Carvalho R, Dias N, Cerqueira JJ. Brain-machine interface of upper limb recovery in stroke patients rehabilitation: A systematic review, *Physiotherapy Research International* (2019) DOI: <https://doi.org/10.1002/pri.1764>
- Gomes-Fonseca J, Queirós S, Morais P, Pinho ACM, Fonseca JC, Correia-Pinto J, Lima E, Vilaça JL. Surface-based registration between CT and US for image-guided percutaneous renal access—a feasibility study, *Medical physics*. (2019) DOI: <https://doi.org/10.1002/mp.13369>
- B Daiana Santos, Celia S Moreira, Estela Vilhena, Emilia Carvalho & M Graca Pereira, Validation of the HPV Impact Profile (HIP) in Portuguese Women with Human Papilloma Virus, *Current Medical Research and Opinion*. (2019) DOI: 10.1080/03007995.2019.1575193
- Queirós S, Morais P, Fehske W, Papachristidis A, Voigt JU, Fonseca JC, D’hooge J, Vilaça JL, Assessment of aortic valve tract dynamics using automatic tracking of 3D transesophageal echocardiographic images. *The international journal of cardiovascular imaging* (2019) DOI: <https://doi.org/10.1007/s10554-019-01532-w>
- Morais P, Vilaça JL, Queirós S, Meester P, Budts W, Tavares J, D’hooge J. Semi-Automatic Estimation of Device Size for Left Atrial Appendage Occlusion in 3D TEE images. *IEEE transactions on ultrasonics, ferroelectrics, and frequency control* (2019) DOI: <https://doi.org/10.1109/TUFFC.2019.2903886>
- Fonte C., Silva I., Vilhena E., M. Keyes CL. The Portuguese Adaptation of the Mental Health Continuum-Short Form for Adult Population *Community Mental Health Journal* (2019). <https://doi.org/10.1007/s10597-019-00484-8>
- Gomes-Fonseca, J., Veloso, F., Queirós, S., Morais, P., Pinho, A. C., Fonseca, J. C., Correia-Pinto, J., Lima, E., Vilaça, J. L. (2019). Assessment of electromagnetic tracking systems in a surgical environment using ultrasonography and ureteroscopy instruments for percutaneous renal access. *Medical physics*, in press. DOI: <https://doi.org/10.1002/mp.13879>
- Pedras, S., Vilhena, E., Carvalho, R., & Pereira, M. G. (2019). Quality of Life Following a Lower Limb Amputation in Diabetic Patients: A Longitudinal and Multicenter Study. *Psychiatry*, 1–11. doi: <https://doi.org/10.1080/00332747.2019.1672438>
- Oliveira B, Queirós S, Morais P, Torres HR, Gomes-Fonseca J, Fonseca JC, Vilaça JL, A novel multi-atlas strategy with dense motion reconstruction for abdominal and thoracic multi-organ segmentation from computed tomography. *Medical Image Analysis* (2018). DOI: <https://doi.org/10.1016/j.media.2018.02.001>
- Queirós S., Morais P., Dubois C., Voigt J-U, Fehske W, Kuhn A, Achenbach T, Fonseca JC, Vilaça JL, D’hooge J, Validation of a Novel Software Tool for Automatic Aortic Annular Sizing in Three-Dimensional Transesophageal Echocardiographic Images, *Journal of the American Society of Echocardiography* (2018). DOI: <https://doi.org/10.1016/j.echo.2018.01.007>
- Morais P, Vilaça JL, Queirós S, Marchi A, Bourier F, Deisenhofer I, D’hooge J, Tavares J.M.R.S., Automated segmentation of the atrial region and fossa ovalis towards computer-aided planning of inter-atrial wall interventions, *Computer Methods and Programs in Biomedicine*, (2018). DOI: <https://doi.org/10.1016/j.cmpb.2018.04.014>
- Queiros S, Morais P, Barbosa D, Fonseca JC, Vilaça JL, D’hooge J, MITT: Medical Image Tracking Toolbox, *IEEE Transactions on Medical Imaging* (2018). DOI: <https://doi.org/10.1109/TMI.2018.2840820>

- Morais SNA, Fonseca J, Rodrigues P, Carvalho N, Cordeiro A, Torres J, Vilaça JL, Lima E, V09 – Ureterscopy-assisted percutaneous kidney access with a novel navigation system using electromagnetic guidance: An updated clinical series, *European Urology Supplements*, Volume 17:4, 2018. DOI: [https://doi.org/10.1016/S1569-9056\(18\)32522-3](https://doi.org/10.1016/S1569-9056(18)32522-3)
- Morais P., Queirós S., Meester PD, Budts W., Vilaça JL., Tavares JMRS, D’hooge J., Fast Segmentation of the Left Atrial Appendage in 3D Transesophageal Echocardiographic Images. *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, in press. DOI: <https://doi.org/10.1109/TUFFC.2018.2872816>
- Costa R, Bastos T, Probst M, Seabra M, Vilhena E, Corredeira R. Sleep quality in patients with schizophrenia: The relevance of physical activity. *Mental Health and Physical Activity* (2018). DOI: <https://doi.org/10.1016/j.mhpa.2018.04.004>
- Costa R, Bastos T, Probst M, Seabra A, Abreu S, Vilhena E, Rosenbaum S, Ward PB, Corredeira R., Association of lifestyle-related factors and psychological factors on quality of life in people with schizophrenia. *Psychiatry Research* (2018). DOI: <https://doi.org/10.1016/j.psychres.2018.06.022>
- Pedras S, Vilhena E, Carvalho R, Pereira MG. Psychosocial adjustment to a lower limb amputation ten months after surgery. *Rehabilitation Psychology* (2018). DOI: <https://doi.org/10.1037/rep0000189>
- Torres HR, Queirós S, Morais P, Oliveira B, Fonseca JC, Vilaça JL, Kidney Segmentation in Ultrasound, Magnetic Resonance and Computed Tomography Images: A Systematic Review. *Computer Methods and Programs in Biomedicine* (2018). DOI: <https://doi.org/10.1016/j.cmpb.2018.01.014>
- Pais-Ribeiro J, Silva AM, Vilhena E, Moreira I, Santos E, Mendonça D. The hospital anxiety and depression scale, in patients with multiple sclerosis. *Neuropsychiatric Disease and Treatment* (2018). DOI: <https://doi.org/10.2147/NDT.S184260>
- Pereira, J. Machado, V. Carvalho, F. Soares and D. Matos , Mechatronic System for the Promotion of Physical Activity in People with Motor Limitations , *International Journal of Mechatronics and Applied Mechanics* (2018) DOI: https://doi.org/10.1007/978-3-319-96358-7_9
- Morais P, Vilaça JL, Queirós S, Bourier F., Tavares JMRS, D’hooge J., A competitive strategy for multi-structure segmentation based on deformable models. *Medical Image Analysis*, Vol. 42, 102- 116 (2017) DOI: <http://10.1016/j.media.2017.07.007>
- Morais P, Tavares JMRS, Queirós S, Veloso F, D’hooge J, Vilaça JL, Development of a patient-specific atrial phantom model for planning and training of inter-atrial interventions. *Medical Physics*, Vol. 44, 5638–5649 (2017) DOI: <http://10.1002/mp.12559>
- Morais P, Queirós S, Heyde B, Engvall J, D’hooge J, Vilaça JL, Fully automatic left ventricular myocardial strain estimation in tagged Magnetic Resonance Imaging. *Physics in Medicine & Biology*, Vol. 62, 6899- 6919 (2017) DOI: <https://doi.org/10.1088/1361-6560/aa7dc2>
- Lima E., Rodrigues PL, Mota P, Carvalho N, Dias E, Correia-Pinto J, Autorino R, Vilaça JL, Ureterscopy-assisted Percutaneous Kidney Access Made Easy: First Clinical Experience with a Novel Navigation System Using Electromagnetic Guidance (IDEAL Stage 1), *European Urology*, Vol. 72, Issue 4, 610–616 (2017) DOI: <http://dx.doi.org/10.1016/j.eururo.2017.03.011>
- Queirós S., Vilaça JL, Morais P, Fonseca JC, D’hooge J., Barbosa D, Fast multimodal left ventricle tracking using localized anatomically constrained affine optical flow,

International Journal for Numerical Methods in Biomedical Engineering, Vol. 33, Issue 11, e2871 (2017) DOI: <http://dx.doi.org/10.1002/cnm.2871>

- Gomes-Fonseca J, Vilaça JL, Henriques-Coelho T, Direito-Santos B, A.C.M. Pinho, Fonseca JC, Correia-Pinto J., A new methodology for assessment of pectus excavatum correction after bar removal in Nuss procedure: preliminary study, Journal of Pediatric Surgery, Volume 52, Issue 7, 1089 – 1097 (2017) DOI: <http://dx.doi.org/10.1016/j.jpedsurg.2016.12.029>
- Queirós S., Dubois C, Morais P, Adriaenssens T., Fonseca J, Vilaça JL, D’hooge J, Automatic 3D aortic annulus sizing by computed tomography in the planning of transcatheter aortic valve implantation. Journal of Cardiovascular Computed Tomography, Volume 11, Issue 1, pp. 25 – 32 (2017) DOI: <http://dx.doi.org/10.1016/j.jcct.2016.12.004>
- Queirós S, Papachristidis A, Morais P, Theodoropoulos KC, Fonseca JC, Monaghan MJ, Vilaça JL, D’hooge J, Fully automatic 3D-TEE segmentation for the planning of Transcatheter Aortic Valve Implantation, IEEE Transactions on Biomedical Engineering, Vol. 64, Issue 8, 1711 – 1720 (2017) DOI: <http://dx.doi.org/10.1109/TBME.2016.2617401>
- Morais P, Vilaça JL, D’hooge J, Tavares JMRS, Novel solutions applied in transseptal puncture: a systematic review, Journal of Medical Devices, Vol. 11, Issue 1, 010801-010801-14 (2017) DOI: <http://dx.doi.org/10.1115/1.4035374>
- Pinho, Francisco; Cerqueira, João; Correia, José; Sousa, Nuno; Dias, Nuno, myBrain: a novel EEG embedded system for epilepsy monitoring, Journal of Medical Engineering and Technology (2017) DOI: <http://dx.doi.org/10.1080/03091902.2017.1382585>

SZE:

- Completed research project: “Sound of Vision” - developing assistive technologies for the visually impaired. H2020 research project (2015-2018), cordis.europa.eu/project/id/643636
- Notable Research Outputs:
S. Spagnol et al, “Current use and future perspectives of spatial audio technologies in electronic travel aids” Wireless Communications and Mobile Computing, 2018.

Progress updates on current activities (Summaries of the following)

- Research projects
- Postgraduate Research Degrees (incl. Level, Title and Supervisors)
- Other notable activities

IPL:

- Completed research projects:

<https://citechcare.ipleiria.pt/projects/>

https://www.cieqv.pt/research/#cieqv_projects

- Graduated students at Masters and PhD level:

<https://citechcare.ipleiria.pt/people/research-fellows/>

- Notable Research Outputs:

(<https://citechcare.ipleiria.pt/productivity/>
https://www.cieqv.pt/research/#cieqv_publications)

IPCA:

- Research projects:
 - SonoAoVolante2.0 (2018-2022, Total Funding: 944.309,64€)
 - SmartHealth – Artificial Intelligence for Lifelong Personalized Patient Care (2020-2023, Total Funding: 989.407,36€€)
 - Tech – Technology, Environment and Health (2020-2023, Total Funding: 36.507,30€)
 - HowMi (How Am I?) - Home Wearables and Monitors Integrated (2020-2021, Total Funding: 119.121,03€)
 - GreenHealth - Digital and biological asset-based strategies to improve well-being and promote green health (2020-2023, Total Funding: 38.708,86€)
 - OncoNavigator – Intelligent System for Personalized Navigation and Mapping of Oncological Interventions (2020-2023, Total Funding: 588.112,91€)
 - SAFHE – Safe Health Elderly Monitoring (2020-2023, Total Funding: 207.308,08€).

SZE:

- Research project: ongoing project on the use of AR/VR scenarios and devices in telemedicine, telerehabilitation and telediagnosics
- Other notable activities: R&D activities in the Digital Development Center at the university focusing on the health effects of radio frequency radiation in the GHz spectrum (5G)

External Collaborations

IPCA:

- Carl Gustav Faculty of Medicine, Technische Universitat Dresden
- Laboratory for Cardiac Imaging and 3D Printing, Li Ka Shing Institute of Health Science, Faculty of Medicine, The Chinese University of Hong Kong.

SZE:

- Holon Institute of Technology (HIT), Tel-Aviv, Israel
- University of Pécs, Hungary
- Semmelweis Medical University, Budapest, Hungary
- Universität Nürnberg/Erlangen, Germany

Strategic Outlook for Research & Innovation Development and external funding

Starting meetings

Presentation of the researchers main interests and discussion of possible synergies.

Internal calls for R&D project Ideas -IDEASLAB

Health & Wellbeing IdeaLAB is a small and specialized event with a set of oral presentations to present project ideas related to the Health & Wellbeing research Area. These ideas can have different maturity levels. Ideas that are well consolidated and just need a consortium for a specific call or ideas that aim to solve an important problem in the area and need to be worked on to become a possible research project.

Planned steps are to gather ideas, dissemination and presentation of the ideas with the RUN-EU Health & Wellbeing Research Area members. Furthermore to gather expressions of interest and share with the idea proponent and to start bilateral meetings to prepare R&D projects for calls.

IdeaLAB team will organise updating meetings with the idea's proponents.

Expected outcomes:

- Increased knowledge about the research activities of members of the Health and Wellbeing Research Area members
- Identification of possible fields of common interest
- Identifications of national and Horizon Europe calls for joint proposals.
- Dissemination of collaboration in conferences
- Programme Committees
- Joint conferences
- Dissemination of joint special issues in research journals
- Dissemination of joint supervision of Masters/PhD theses
- Dissemination of Horizon Europe R&D Calls
- Dissemination of national R&D calls
- Dissemination of possible collaboration on ongoing R&D projects

Conclusions

During our WP5 meetings in 2020 and 2021 eight research areas of complimentary research expertise were identified which form the basis for eight indicative future looking research cluster areas of expertise across the consortium which are detailed above. The areas are; **Research Area 1:** Creative Art, Design and Materials Thinking; **Research Area 2:** Food & Biotechnology; **Research Area 3:** Tourism; **Research Area 4:** IOT & Cybersecurity; **Research Area 5:** Smart, Sustainable and Advanced Manufacturing; **Research Area 6:** Climate Change – Circular Economy & Decarbonisation; **Research Area 7:** Education & Social Sciences and **Research Area 8:** Health & Wellbeing. Our plan is aimed to ensure a high level of enhanced, sustainable research cooperation across all levels of the organisation and across different areas of research activity that will build on our complementary strengths where research students and staff are empowered to implement our vision and exceed our goals. This ambition is mirrored in our consortium long-term strategy, by virtue of its immersive inter-regional approach which utilises a ‘quintuple helix’ innovation model. This involves interactions among five key elements of society: academia, industry, government, culture, and the environment. This will ensure the establishment of research links and structures which will facilitate the creation of a true multi-locational university campus embedded in our RUN-EU regions in collaboration will all relevant stakeholders. These research teams are dynamic and will evolve, according to the research projects and new societal challenges as they emerge, as our project progresses and ultimately become our RUN-EU research innovation hubs which will serve our stakeholders and our regions long into the future.



Figure 3 RUN-EU 8 future-looking joint RUN-EU RDI teams indicative research areas

