



SPREADING EXCELLENCE
AND WIDENNING PARTICIPATION
SUCCESS STORIES

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2021

Dear Readers,

I am very pleased to present this selection of success stories from the Spreading Excellence and Widening Participation Programme (SEWP) under Horizon 2020.

The NCP_WIDE.NET project has prepared for you this Guide consisting of **15 interesting case studies on Widening projects** implemented within Teaming for Excellence (Phase 2), Twinning, and ERA-Chair. The projects are performed by Centres of Excellence (CoE) - Coordinators from various Widening countries¹ with different advanced partners so that you can have a wide overview of their impact throughout European Research Area.

With a final SEWP calls **more than a billion Euro of EC funding has been awarded to participants across the EU and Associated countries**. Where more than a half of funding has been received by entities in Widening countries with a goal to fill in the gap between research and innovation in countries lagging behind the rest of Europe in terms of scientific output by investing in selected knowledge institutions, enhancing research excellence, creating new CoE or creating space for international cooperation for researches. There have been more than 400 projects financed with participants from 43 countries. It would take a much bigger publication than this to cover all the research and new knowledge created by this European research programme. We have, however, tried to include a selection of exciting and innovative projects to give you a good overall picture. Detailed statistics are as well a part of our Guide so you can have a deeper look.

What makes a Widening project a success story? The question from the very beginning was a fundamental yet quite difficult starting point for us. First of all the foreseen impacts and outputs of the SEWP were determining for the analysis². Second element was the role of the CoE considered as a structure where RTD is performed of world standard, in terms of measurable scientific production (including training) and/or technological innovation³. Therefore, while selecting cases and indicating them as success stories we considered following aspects the projects should integrate.

- **Impact** on Centre of Excellence acting as Coordinator and its eco-system as well as other stakeholders including advanced partners, relying in planned/reached outputs of improvement of research performance, enhancement of Impact Factor, long-lasting network of collaboration, applications to industry, intersectoral collaboration, improved critical mass of researchers or number of planned/ generated spin-off companies.
- **Sustainability** as a key element providing long-lasting added value for the CoE. Sustainability is of particular importance in regard to the Teaming for Excellence (Phase 2) as well as ERA Chair. The assessment of the sustainability was in particular targeted towards following points what is beyond the project, are there new grants, new units, research groups, laboratory, PhD programmes?



Katarzyna Walczyk-Matuszyk
Coordinator of the project
NCP_WIDE.NET

¹ <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/spreading-excellence-and-widening-participation>

² Ibidem

³ NCP_WIDE.NET Benchmarking Report, p. 6.

- **Structural** change refers to SEWP instruments that should act as flagships in the national/ regional research and innovation eco-systems. Crucial but complicated matter. In this dimension our analysis was focused on the changes at the institutional level such as e.g. new research strategy or in the regional eco-system including interaction with the environment.
- **Additional funding triggered** – how the projects managed to use the potential given by SEWP grants to acquire more funding coming from European and national sources. Next to the grants we tried to find cases with interesting and diversified financial portfolios.
- **Lessons learnt** was our question to Coordinators, what could they stress as success factors and what should be avoided by them in the proposal preparation or implementation phase.
- **Public attention** last but not least issues related to the improvement of visibility as e.g. attraction of new partners or communication strategy were relevant.

Certainly, there might be many other elements which could have been taken into consideration while selecting the case studies presented in the Guide. In particular cases these were **National Contact Points** (NCPs) from Coordinators' and Partners' countries who jointly with CoE Staff were preparing the stories and collecting materials. And we did the best job we could.

Before enjoying the Guide I would like to ask you to dedicate a minute for learning on the the **NCP_WIDE.NET project** financed as well under SEWP in Horizon 2020.

The goal of our project is to create a transnational network of National Contact Points (NCPs) for Spreading Excellence and Widening Participation under Horizon 2020 in order to facilitate transnational co-operation between NCPs, with a view to identifying and sharing good practices and raising the general standards of support to programme applicants. Special attention is given to help less experienced NCPs which are requiring the know-how accumulated in other countries and access to wiring resources in the network, through mentoring visits, a learning platform for transnational activities of the Spreading Excellence and Widening Participation NCPs, and to create a network of NCPs exploiting the synergies of distributed knowledge, collective development and trainings.

We deliver expertise, organise events, webinars and share all the news related to the Spreading Excellence and Widening Participation under Horizon 2020, a form of network support that will continue in Horizon Europe. Visit us at www.ncpwidenet.eu. You can find us also on Twitter and LinkedIn.

I would like to thank a lot the National Contact Points as well as Coordinators and Partners of the presented success stories who contributed to the Guide. And I wish our Readers a fruitful and inspiring journey through the presented Widening cases!

Sincerely yours,

Katarzyna Walczyk-Matuszyk
NCP_WIDE.NET Coordinator



ENHANCING RESEARCH IN AGEING AT THE UNIVERSITY OF COIMBRA

In Coimbra and in the Centro Region of Portugal, science and technology hugely contribute to socioeconomic development. This contribution stems from tackling the many societal challenges associated with population ageing (>22% citizens are aged over 65 in the Centro Region). The University of Coimbra (UC) provides excellent facilities in biomedical research, and offers advanced teaching, health care and innovation in Ageing, Neuroscience, and Vision. To advance these successful outcomes, further investment is crucial to improve the quality of the relevant fundamental science to world leading standards. ERA@UC has contributed to this mission by appointing an internationally recognised scientific leader with proven expertise in management, leadership and research excellence in ageing, building on his considerable knowledge of human stem cells.

The ERA@UC project began in November 2016, following two rounds of selection for the ERA Chair. Lino Ferreira, a former ERC grantee, with a very strong track record in biomaterials and stem cell-based therapeutics, was selected.

Dr. Ferreira has expanded and strengthened important research partnerships with other research groups both inside and outside UC. He has started up 3 collaborative projects with research groups in the Faculty of Medicine at UC to enhance the institution's research programme in ageing.

The ERA Chair project helped to enhance international collaboration with renowned scientists in the area of ageing, and launched other exciting new partnerships with leading international research centres.

Supporting the training of a new generation of

researchers is one of the objectives of ERA@UC. Researchers are deeply involved in the creation and coordination of teaching modules of several PhD and MSc programmes such as the MIT-Portugal PhD programme, the Ageing and Chronic Diseases PhD programme, the Cardiovascular Sciences PhD programme, and the Biomedical Engineering MSc programme.

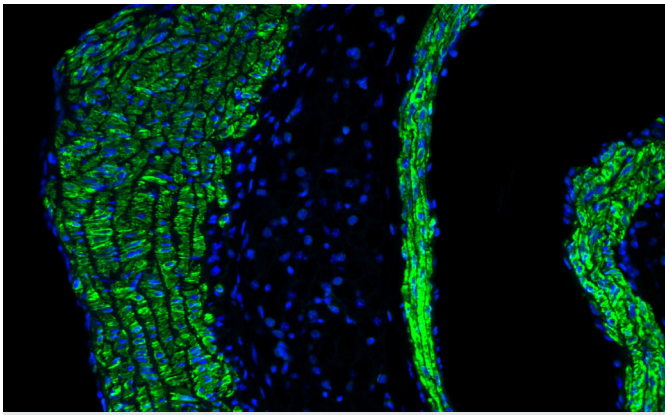


Dr. João Malva,
coordinator of the ERA
Chair project ERA@UC.
Project Collection

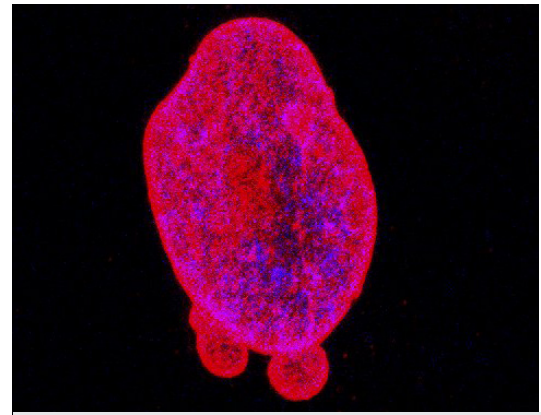
How important is international collaboration in science? Is it one of the main goals of your project?

I believe that international collaborations are very important to build competitive scientific programmes. During the ERA@UC project, several international collaborations were initiated with laboratories at Newcastle University (UK) and Mayo Clinic (USA) in the area of ageing that were fundamental to reach some of the project goals. These international collaborations were important for exchange of technical-scientific expertise but also to give visibility of our work.

ERA@UC is expanding a vital critical mass of researchers. A senior researcher has been recently hired for the area of Regenerative Medicine, thereby building on the research excellence already



Immunofluorescence staining of alpha smooth muscle actin (green) in aortic arch from Progeria mouse (accelerated aged disease mouse). Alpha smooth muscle actin is specific to detect smooth muscle cells. Nuclei from all cells are blue using DAPI stain. Project Collection



Immunofluorescence of progeria (accelerated aged disease) fibroblasts nucleus showing the expression of Lamin A/C proteins (red). The nucleus is blue using DAPI stain. Lamin plays an important role in nuclear assembly, chromatin organization, nuclear membrane and telomere dynamics. When cells get old, their nuclei lose their original shape, becoming more prominent as they reach senescence. Project Collection

in the institution. Basic research is critical for both innovation and for the transfer of important findings to maximise impact and to address key societal challenges, such as Ageing.

Which measures would help your organisation to increase participation in EU Framework Programmes for research and innovation (H2020 or Horizon Europe)?

I believe that the existence of dedicated project offices is an important measure of the increase in the participation of institutions in EU framework programmes. These project offices can help researchers to apply in a more efficient way. Another important measure is the level of national funding to support the competitiveness of the teams before applying to international funds. It is critical that the competitiveness of the teams should be maintained by national funds and the most competitive ones apply for international funds.

ERA@UC is successfully tackling this through its involvement in clinical trials, which enrol patients who have experienced an ischemic stroke. This vital work is being undertaken with the collaboration of two of the most important hospitals of the Centre region of Portugal (University Hospital of Coimbra

and the rehabilitation hospital Rovisco Pais). Dr. Ferreira is also cooperating closely with industry, in particular with the biotech spinoff MATER which he founded in 2009. This private nanotechnology company focuses on the development of materials and surfaces with antimicrobial properties for industrial applications.

What next? The University of Coimbra has launched a very ambitious innovative research programme in Ageing. The aim is to become a world class knowledge centre in this field. In the aftermath of the successful bid for the ERA Chair, the University secured 15.9 M € for a Teaming project (MIA-Portugal) and a Twinning (PhasAGE), also for Ageing. This will allow UC to continue to develop its research potential, thus contributing to improving the health and well-being of an ageing population. It will enlarge its existing scientific excellence and innovation to create new business opportunities. The ERA-Chair team have been deeply involved in both fund raising and in launching this initiative, showing that the creation of ERA Chairs has a real advantages for scientific institutions both regionally and nationally. These considerable achievements have helped to unlock Coimbra's research potential and attract new research funding, propelling the development of excellent and cutting edge science.

Since the ERA@UC programme described here was founded, the ERA-Chair holder has been

able to attract considerable scientific and funding resources (4.7M€) for the development of other projects as listed below.

- H2020-MSCA-IF-2016 “Therapy for regeneration of Heart Muscle based on targeted delivery of exosomes” (160k euros)
- H2020-MSCA-ITN-2017 “New nanomaterials for neural stem cells drug delivery” (715k euros)
- PTDC/BTM-SAL/29229/2017 “Aging Model - An iPSC-derived vascular model of Progeria to identify mediators for smooth muscle loss” (238k euros),
- PTDC/EQU-EQU/29414/2017 “LightBRARY - A light-activated nanoparticle library for the delivery of RNA-based therapies” (238k euros),
- PTDC/NAN-MAT/28060/2017 “BrainEdition - Remotely controlling gene edition in neural stem cells” (240k euros),
- PTDC/BTM-SAL/29919/2017 “Exo-Heart - Cardiac protection and regeneration mediated by systemic administration of targeted exosomes” (237k euros)
- Portugal2020 project “AdvancedCoating: Advanced coatings for biomedical devices” (Ref: 023696). Collaboration with the company Matera (478k euros)
- 2014-2020 INTERREG VB Atlantic Area - An Atlantic innovation platform on diagnosis and treatment of neurological diseases and aging (1.32 M euros)

- H2020-MSCA-IF-2019, “LIGHTTEST-Light-responsive Graphene-based interfaces for Electrical Stimulation” (159k euros),
- H2020-WIDESPREAD-TWINN 2019 - 952266 - “RESETageing” (900k euros)

From your experience, do you think that the concept of “innovation” is embedded in the universities and research organisations of your country?

Yes, I strongly believe that the concept of “innovation” nowadays is firmly embedded in the universities and research organisations in Portugal. In the last 10 years, the number of spin offs and technology –based projects has increased significantly. I have students that contact me to enrol in a PhD to start a company at the end of the programme. This paradigm did not exist a few years back.

The launch of the ERA Chair project took place in a well-publicised event at the University of Coimbra and was widely broadcast by the Portuguese media (TV and press). The award and the launch of the Teaming and Twinning projects also received great visibility nationally and regionally. At the same time, members of the ERA Chair team participated in Training Activities and different public outreach events at national and European levels (including researcher’s night, and local science outreach initiatives).

FACTS AND FIGURES	
Project Name	Enhancing Research in Ageing at the University of Coimbra
Project Acronym	ERAatUC
Project ID	669088
Project contact	Dr. Joao Malva, jomalva@fmed.uc.pt
Coordinator	Universidade de Coimbra (Portugal)
All Participants in Project	-
Start Day – End Day	01/07/2015 – 30/06/2020
Instrument Funding	ERA-Chair
Call for Proposal	H2020-WIDESPREAD-2014-2
Project Website	http://mia-portugal.org/index.php/era-chair
EC Financial Contribution / Overall budget	€ 2 486 165 / € 2 762 405
Project Keywords	Biomaterial composition, geometry and bioactive compound delivery
Area	Age-related diseases

TWINNING FOR A SUSTAINABLE, PROACTIVE RESEARCH PARTNERSHIP IN DISTRIBUTED ENERGY SYSTEMS PLANNING, AND MODELLING

In 2009, Poland had the highest rate of energy production from coal of all EU member states. This has made Poland the third largest coal-based polluter in Europe and one of the worst countries for exposing the public to harmful pollution. Meanwhile Poland has experienced an increase in domestic electricity demand twice as high as the EU average. Of all EU member states, Poland most urgently needs to convert to renewable energy supply and distribution. While the Polish research community provides a wide range of expertise in many of the technologies needed for renewable energy conversion, it lacks critical research capacity in modelling, planning, integrating, and managing large-scale renewable energy systems in a flexible and effective manner.

The SuPREME partnership has substantially improved the scientific and technical capacities of the Instytut Maszyn Przeplywowych Im. Roberta Szwalskiego Polskiej Akademii Nauk (IMP PAN) and the KEZO Research Centre. It also provided the basis for a long lasting cooperation to create research excellence in delivering European smart energy systems. This initiative has created a Joint Development Strategy for KEZO beyond the SuPREME project lifetime, aiming to widen the European research in renewable and smart energy systems.

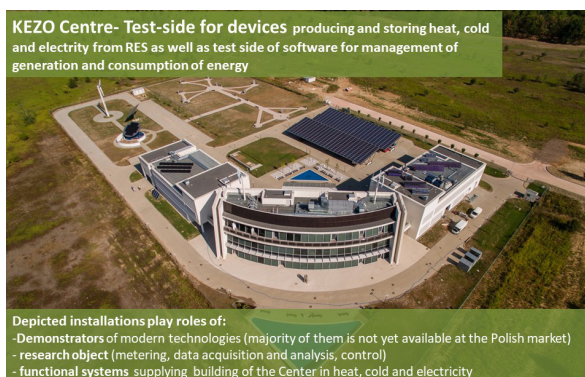
The Twinning Project allowed us to build stronger collaborations with our supporting countries and partner institutions. We have benefited from an

effective knowledge transfer from our twinning partners. With their longer experience and stronger scientific capacity they have taught us how to boost our scientific performance. We have learnt how to be more efficient, how to address problems in innovative ways, and how to deliver better results.



Dr. Ewa Domke, coordinator of the twinning project SuPREME. Project Collection.

KEZO is making steady progress in implementing structural, organizational, managerial and financial reforms. It is also undertaking a fundamental reform of the Centre's research agenda. SuPREME partners have also greatly helped to achieve the institutional strengthening of the Centre. The Centre has improved its research



career development programme (e.g. appropriate work plans; and application of performance evaluation) and it has been granted financial and administrative autonomy (receiving a dedicated budget for the first time).

The EU13 innovates, but probably not enough compared to other European countries. What, in your view, are the main obstacles?

There are many reasons for the under-performance of the EU-13 in the European innovation area. There are problems associated with general socioeconomic characteristics; with lack of excellence, quality, and competition; limited experience; inadequately functioning networks; and other obstacles. The level of economic development of a country – as measured by the GDP – is likely to affect the amount of funding allocated to science. R&D expenditures determine to a large extent the numbers and capabilities of R&D researchers, and the availability and quality of the necessary research infrastructure. So, the capacity of a country to be innovative is closely connected to gross national expenditure on R&D, and to the number of trained and available research and development (R&D) personnel. The prerequisites for successful innovation performance – access to equipment, high-level research competences, established international contacts, familiarity with networking processes, etc. – are less commonly found in the EU13 compared to other European countries.

To keep doing research at the highest level it is essential to secure a continuous stream of funding. To this end we are designing a strategy for becoming more effective in applying to and for diversifying funding sources and schemes (applying individually or as part of consortia to H2020, INTERREG, EEA and Norway Grants, structural, national, and industrial funds).

Increased awareness of SuPREME activities and project results has directly and indirectly provided many benefits. For example, by helping to increase research and innovation funding, through networking with new research and business partners, and strengthening research capacity.

Several additional research projects in the field of smart energy systems have been funded during or after the completion of SuPREME. These include 2xCOSME, 3xINTERREG, one project in framework of the national strategic R&D programme, two investment projects from the Ministry of Science and Higher Education, and several commissioned projects funded by industrial partners.

What would be your main recommendation for both researchers and for the EC concerning overcoming the lack of success of your country in FPs?

In Poland there are increasing numbers of FP coordinators and partners, research networks are growing, and the excellence of research is improving. Yet it is still difficult to catch up with EU15. There is still a gap in increasing the competition for funding and in promoting excellent research. Lack of networking with research key players, and lack of professional support structures at research institutions to support research applications hinder Polish participation in EU-funded research programmes. Widening the existing participant networks is a priority. And various initiatives could be taken to enable researchers more effectively to compete on a global scale, as or example: assessing the barriers encountered by newcomers, organising discussion fora to convey useful knowledge and share best practices for successfully applying to FPs; supporting researchers in planning activities to fostering trans-European cooperation; and encouraging international activity.

All in all, the SuPREME project has attracted additional 1.4 M € of funds. Rather than focusing exclusively on the widening circle of scientists working in the field of smart energy systems, we have also tried to involve people for whom energy management – and hence our project – is relevant. For example, we have organised local workshops with commercial companies and with municipalities. We have also established contacts with the team of another EU-funded research project which is working on closely related topics. Our final workshop was the initial meeting of a new

network called 'Friends of KEZO' which connects a range of stakeholders in the energy sector. We have also found it worthwhile to add research gains

from existing meetings and conferences, and to collaborate with others to amplify and improve our research capabilities.

How important is international collaboration in science? Is this one of the main goals of your project?

Successful modern research collaboration increasingly includes scientists based in different countries. This is partially driven by the need to engage in interdisciplinary science. Such collaboration improves access to innovative approaches to problem solving and helps to acquire additional expertise. It is also a great way to establish a worldwide network of colleagues with a variety of backgrounds—scientific, cultural, or otherwise. The H2020 TWINNING action is meant to support internationalisation in science in the Widening countries. It is one of the main goals in the SuPREME project. The activities undertaken jointly with the partners from Aalborg University (Denmark), University of Twente (the Netherlands), and the European Sustainable Energy Innovation Alliance (Austria) offered rich experience to scientists from IMP PAN. International research collaboration continues to expand and is also being established overseas. Additionally, sharing our research progress with international collaborators, with whom

we build up a personal relationship, can be very rewarding both at a professional and personal levels. In addition to pursuing quality research, non-tangible benefits include the development of a wide perspective and learning about different cultural aspects of the institutions and nations of the partnerships. Throughout this process we have made professional and personal friends for life. We have also learnt from the experience in this project that developing trust, collegiality, and a sense of fairness and accountability form the essential basis of any successful research collaboration. Extra funding for establishing international collaboration is always welcome, but it can also be said that present-day electronic communication has made joint research across national borders viable and often highly successful. Nevertheless, nothing can beat face-to-face discussions, especially at an early stage of a joint project, to overcome mundane obstacles such as language barriers and cultural differences. This applies both to the workplace and to social settings.

FACTS AND FIGURES	
Project Name	Twinning for a Sustainable, Proactive Research partnership in distributed Energy systems planning, Modelling and management
Project Acronym	SuPREME
Project ID	692197
Project contact	Ewa Domke; edomke@imp.gda.pl
Coordinator	Instytut Maszyn Przepływowych Im. Roberta Szwalskiego Polskiej Akademii Nauk - IMP PAN (Poland)
All Participants in Project	1. Aalborg Universitet (Denmark) 2. Universiteit Twente (Netherlands) 3. European Sustainable Energy Innovation Alliance - Eseea, Verein Fur Forderung Der Europaieschen Innovation Fur Erneuerbare Energien (Austria)
Start Day – End Day	01/11/2015 – 31/10/2018
Instrument Funding	Twinning
Call for Proposal	H2020-TWINN-2015
Project Website	www.h2020-supreme.eu
EC Financial Contribution / Overall budget	€ 1 047 551,25 / € 1 047 551,25
Project Keywords	Smart energy systems, energy management, energy system integration
Area	Applied sciences, mechanical engineering, power and energy systems

CREATION OF THE “KNOWLEDGE – EMPOWERED ENTREPRENEURSHIP NETWORK” TO POSITION KAUNAS UNIVERSITY OF TECHNOLOGY AT THE FOREFRONT OF EU RESEARCH IN ENTREPRENEURSHIP AND INNOVATION

KEEN implements measures focusing on entrepreneurship and innovation research competence development, research collaboration, engagement with stakeholders, and support of entrepreneurial initiatives, all imbued with relevant academic knowledge. Compared with existing entrepreneurship and innovation initiatives, the unique aspect of KEEN is to focus on building a collaborative network of stakeholders – a form of entrepreneurship and innovation ecosystem – with a particular focus on engaging wider society.

The expected impacts of KEEN are the following:

1. Improving the scientific excellence and innovation capacity of KTU in entrepreneurship research, notably in topics targeting entrepreneurship, where the level of innovation is low;
2. Developing international networks in the field of entrepreneurship research, and fostering open and inclusive entrepreneurship linkages;
3. Enhancing the capacities of KTU to exploit, disseminate and communicate the results of its research on entrepreneurship. The particular aims are to contribute to Lithuania's S3 priorities, to increase technology transfer

from KTU, and to develop internationally the spread of entrepreneurial knowledge;

4. Raising the international academic profile of KTU in entrepreneurship research, and especially attracting more talented international researchers, and increasing more competitive funding;
5. Enhancing academic knowledge-enabled entrepreneurship support that can be applied and fitted to other EU countries.

KEEN seeks to enhance the knowledge and skills of researchers, to widen research collaboration with stakeholders, and to support entrepreneurial initiatives with relevant academic knowledge. KTU has acted in several ways to facilitate the rise of



Prof. dr. Asta Pundzienė, professor at KTU School of Business and Management, KEEN Project Chief Researcher. Author: Justina Šuminaitė

entrepreneurial research aimed at enabling faculty in the KTU School of Economics and Business to integrate relevant expert working groups, committees and networks. These initiatives have helped KTU researchers strengthen the impact of their research for society and to increase their influence over entrepreneurship policy and key players.

Which are the motives that drove your decision to participate in SEWP calls?

We found that SEWP was well-adjusted to the needs of Kaunas University of Technology research and innovation capacity building. On an operational level EU13 Universities generally lack the capacity to attract international researchers associated with the ERA-CHAIR programme, as well as the learning by doing research excellence and innovation derived from engaging in TWINNING networks. Our next step is TEAMING – building contemporary research and innovation institutions designed to be well networked into EU and world-wide networks.

The sustainability and growth of the project outputs and the effectiveness of research take place through the operation of the KEEN network. This network will maintain most of the activities launched during the KEEN project. To finance the network the consortium plans to apply for further research grants, and to use the network for disseminating and communicating project results. KEEN stakeholders are identifying, mapping, and targeting KTU and partner university training needs in the context of KTU and partner university specialisms. The results will be used by the partner universities to plan the training schedules for forthcoming KTU training secondments. Cranfield University, UK, focusing on 'Impact on Education and Training', has designed a training map and has conducted two successful workshops for researchers from partner institutions. The University of St.Gallen, Switzerland, organises annual events such as its Winter School, Top Scholar Seminars, GSERM Summer Schools, as well as a research paper

clinic. These events seek research excellence. The University of Wuppertal, Germany, which will be hosting KTU in 2020-2021, will focus on 'Impacts on Business and Society' by providing training on ecosystem development, incubation and acceleration, and collaborative research with start-ups and firms.

What are some of the recommendations from your experience for increasing the impact of projects?

The impact and sustainability of results are a focal objective of the project. Impacts should be pursued across all types of stakeholders of the project. This should begin with partners, researchers that advance their research and innovation competence, start-ups and mature businesses, wider society, e.g. introducing entrepreneurship to students and teachers. We came up with three recommendations that work for us:

- Tailored and constant wide-ranging communication with project partners, direct beneficiaries (researchers) and the wider society – start-ups, businesses, general education;*
- Early engagement of different types of stakeholders of the project;*
- Enjoying the whole experience of the project as part of everyday professional living.*

To jointly create value with an external audience, the KEEN consortium has organised and held its first KEEN Forum. This brought together academics and representatives from businesses for training sessions, round table discussions, and a panel session. This has upgraded entrepreneurship education and different support measures. The KEEN consortium strongly believes that the KEEN Forum, with several events concentrating on academia, business and the general public, will serve as a powerful tool and a flagship practice for the enhancement of entrepreneurial research throughout and following the project.



From left to right Dr Ieva Anužienė, KEEN junior project researcher at KTU, Prof. dr. Asta Pundzienė, professor at KTU School of Business and Management, KEEN Project Chief Researcher, Dr Richard Adams, Reader in Entrepreneurship, Cranfield University, Bettany Center for Entrepreneurship, KEEN coordinator and researcher, Prof Christine Volkmann, Chair of Entrepreneurship and Economic Development & UNESCO-Chair of Entrepreneurship and Intercultural Management at the Schumpeter School of Business and Economics at University of Wuppertal, KEEN coordinator and researcher, Julian Bafera, Chair of Entrepreneurship and Economic Development & UNESCO-Chair of Entrepreneurship and Intercultural Management Schumpeter School of Business and Economics, KEEN coordinator, Michael Hudecheck, Research Associate at St Gallen University, KEEN coordinator, Dr David Lindeman, Director, CITRIS Health Initiative. Project Collection.

From the very beginning, the KEEN network has provided opportunities for more international collaboration. The Consortium has built and strengthened internal and external relationships. The KEEN specific track at the G-Forum 2019 Conference in Vienna was an example of this. This important annual event is organised by FGF - the leading scientific association for Entrepreneurship and Innovation - and attracts entrepreneurs and researchers from all over the world. KEEN held a separate panel session during this event.

The aim of the panel was to present changing trends of research in entrepreneurship networks in the context of digital transformation, and to identify major gaps and directions for future research. The discussion was based around the following topics:

- Micro-foundations of digital entrepreneurship;
- Digital business models;

- Digital social entrepreneurship;
- Multi-sided platforms;
- Dynamics of digital entrepreneurship networks.

Three abstracts for the 2019 G-forum conference were presented by the KEEN academic team.

The general objective of KEEN is to support and to advance the excellence of entrepreneurship research in KTU and in the other consortium members. KEEN is improving KTU's capabilities in EU grant proposal writing, while offering an opportunity for the consortium to establish a successful research grant application strategy for the coming years. The activities of KEEN partners are embedded in a highly competitive setting embracing different actors competing for external funding for their research and innovation activities. This offers a rich pool of potential collaborators both within science and industry

What are your main recommendation for both researchers and the EC concerning the lack of success of your country in FPs?

There are internal and external factors that make EU13 less successful in FPs. The internal factors relate to the country specific situation, and the external factors are shaped by the degree of cooperation between the European Commission and the participating country.

Recommendations related with external factors:

- *Reviewing SEWP Teaming schemes and cancelling the requirement to attach national support letters during the first phase of the application. More promising proposals would come if national support letters are required only during the second phase;*
- *Encouraging NCPs to serve as professional FPs project managers with KPIs based on, e.g. the numbers of proposals submitted and proving successful from the respective country.*

Recommendations related with internal factors:

- *National HEI performance assessment frameworks should encourage international cooperation and networking, including active participation in FPs;*
- *NCPs should act as a real extension of EC with supportive engagement throughout the value-chain of participation in FPs – programme preparation, information, consultation, follow-up, submission and resubmission, sharing of best practices, and changing national regulatory frameworks if needed;*
- *Universities should adopt different monetary and non-monetary (assessment, recognition, etc) means to enable participation of researchers in FPs.*

including start-ups and SMEs. The KEEN consortium has submitted a proposal for the Marie Skłodowska-Curie Actions Research and Innovation Staff Exchange (RISE), Call: H2020-MSCA-RISE-2019.

KEEN seeks to ensure effective societal outreach. Dissemination and communication are designed to increase the prominence of KEEN for selected communities and target groups at both European and national levels. Several actions have been taken to promote KEEN through online channels. The KEEN team applied online marketing tools to promote its project events and results. This included a range of marketing channels:

- KEEN website www.keenetwork.com
- Facebook page
- Twitter page
- LinkedIn
- ResearchGate
- Catalogue of EU entrepreneurship education and training programmes

Furthermore, a new database has been developed with identified education programmes in entrepreneurship, entrepreneurship research groups, university-hosted start-up incubators, and university-hosted fab labs. A catalogue of EU entrepreneurship vocational training and higher education programmes was created as an online directory to help anyone interested in entrepreneurial education to locate all the available programmes in their EU country. In addition, KEEN researchers are developing a book “Artificiality and Sustainability in Entrepreneurship” to share the outcomes and best practices in entrepreneurship research and education.

The KEEN project is also highlighted through media articles. For example, EURESEARCH, the Swiss guide to European research and innovation has published an article about the KEEN project, addressing KTU’s growing potential in becoming a future start-up hub.

Internet access:

https://www.euresearch.ch/fileadmin/redacteur/Success_Stories/Success_Story_KEEN_Nov_2019_V1.pdf

Another article about KEEN has been published in SwissCore. CH-EU Success story: Empowering the MIT of the Baltics, elaborates on KEEN project

support to the Kaunas University of Technology in becoming an entrepreneurial R&I excellence hub.

Internet access:

<https://www.swisscore.org/Pages/Detail.aspx?CrmlId=%7b3940D176-4159-EA11-80D9-005056B7191C%7d&ContentType=scArticle>

FACTS AND FIGURES	
Project Name	Creation of the “Knowledge –empowered entrepreneurship network” to position Kaunas University of technology at the forefront of EU research in entrepreneurship and innovation.
Project Acronym	KEEN
Project ID	810329
Project contact	Dr. Asta Pundzienė asta.pundziene@ktu.lt
Coordinator	Kaunas University of Technology (Lithuania)
All Participants in Project	1. Cranfield University (United Kingdom) 2. Universität Wuppertal (Germany) 3. Universität St. Gallen (Switzerland)
Start Day – End Day	01/09/2018 – 31/08/2021
Instrument Funding	Twinning
Call for Proposal	H2020-WIDESPREAD-05-2017-Twinning
Project Website	http://www.keenetwork.com/
EC Financial Contribution / Overall budget	€ 991 868,75 / € 991 868,75
Project Keywords	Public engagement, entrepreneurship, socially-relevant research, citizen science, policy development, knowledge transfer
Area	Entrepreneurship

BALTIC BIOMATERIALS CENTRE OF EXCELLENCE

The ageing population of the EU increases attention on healthcare and places a heavy burden on society in terms of costs and loss of quality of life. One significant feature of contemporary clinical cases relates to musculoskeletal disabilities. Surgical implants based on new technologies offer opportunities to lower costs and improve performance. Scientific research of biomaterials is undertaken through a range of new techniques, such as the development of new biocompatible materials, additive manufacturing, and improved drug and biomolecule delivery. Consequently research excellence is spread between different organizations specialising in different steps of implant development. This results in lack of collaboration, coordination, fragmentation of funding, and duplication of research projects and delivery.

What is/was your role with regard to FP7/H2020 projects?

I could never have imagined myself as a project coordinator for a project of such a scale. Now, I have the experience of being a coordinator I can say for sure that it is easier to be a partner rather than coordinator. Coordinators have many more responsibilities. As a coordinator you have to be responsible for and confident about your team. For those who are willing to practice their project coordination skills, I suggest starting with EraNet projects as they are very similarly structured and enjoy an international dimension. I am looking forward to a fruitful and successful 2nd phase of the Teaming project.

Research excellence in Latvia is generally low and Latvia is currently performing well below EU-average. Yet there is considerable potential in improving delivery, upgrading the existing collaboration between institutes, international collaboration, and creating better alignment with RIS3

(Smart Specialisation Strategy). The establishment of a Centre of Excellence provides an opportunity to combine expertise and infrastructure, to create critical mass and research excellence in specific fields, and to improve collaboration between different fields of research.



Prof. Dr. Sc. Ing. Janis Locs, coordinator of the teaming project BBCE. Author: Elina Karaseva.

To obtain critical mass in R&D, cooperation between industry and research organisations is encouraged, leading to technology transfer and the delivery of new products in the market. The main objective of BBCE is to establish a joint Baltic Biomaterials Centre of Excellence for advanced biomaterials development. This will be based on long-term strategic cooperation between AO--Forschungsinstitut Davos, Switzerland (ARI) and Friedrich-Alexander-Universitaet Erlangen Nuremberg, Germany (FAU) on the one hand, and Rigas Tehniska Universitate (RTU), the Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre (RBIDC), Latvijas Organiskas Sintezes Instituts (LIOS), Rigas Stradina Universitate (RSU) and Riga Stradins University Institute of Stomatology (RSU IS) on the other.

How important is international collaboration in science? Is this one of the main goals of your project?

International collaboration in science plays a very significant role, and is an important feature of our project. Combining know-how to cover half of the project's goals, with the other half from partners fulfils the project's goals and reflects a common story in science. International collaboration promotes the elimination of prejudices and the coexistence of high and different levels of competences. It also contributes to knowledge learning for everyone involved. All of this improves researcher relations and connects their cultural richness.

Establishing the Centre of Excellence will hugely encourage the recruitment and retaining of world-class researchers and will attract funding, thereby ensuring the sustainability of this important endeavour.

The project aims to increase levels of research excellence and innovation, as well as to advance biomaterial development for medical applications. The latter will focus on the following activities:

- transferring innovations in medical devices to patients through industry and/or other international research partners;
- establishing a full cycle for biomaterial development from material science to clinics;
- ensuring continuous upgrading of BBCE staff knowledge in biomaterials development, testing and transference to clinics;
- strengthening collaboration with centres of excellence and establishing a dedicated high profile centre on medical devices.

BBCE will combine existing expertise and infrastructure to create a critical mass of research excellence in the development of biomaterials for bone regeneration, and to seek solutions for creative biomedical applications.

The project was selected for Teaming Phase 2,

starting in January 2020. In October 2018, Latvian Ministers addressed additional funding for BBCE's 2nd phase. Besides an EU financial contribution, the project raised additional private and public co-financing, totalling 15M EUR. These funds will be used for training, improving scientific competence and modernizing research infrastructure. This will help to foster excellence in the research and development of new biomaterials for bone regeneration, facial, oral and maxillofacial surgery, orthopaedics, and more.

The expected impacts of BBCE through Teaming Phase 2 will result in fruitful cooperation between the BBCE core partners in Latvia and industry (including SMEs). This will bring high performance products onto the market, increase scientific excellence, and elevate the impact factor of peer-reviewed publications and the Hirsch index in the field of biomaterials. The concentration of a "critical mass" of high level scientists and/or technology developers will ensure career progress to provide highly-qualified staff at BBCE core partners, increasing the skills to work in a multinational and interdisciplinary environment, and enhancing capabilities to meet future career demands in an efficient and innovative way.

The socio-economic impact of BBCE on national economy will be around 70M EUR over 20 years. The knowledge generated by BBCE is expected to increase technology transfer and to contribute to the development of an innovative biomaterials industry and should amplify research excellence both in Latvia and in the EU.

The project team has developed a communication strategy, which foresees dissemination and exploitation via numerous activities. Since Teaming Phase 1, the project has been present on both social and traditional media. In addition, most of its activities are reported in the project's home page and social media accounts.

BBCE received high levels of publicity during Phase 1. In 2017 the project coordinator participated in the 28th Annual Conference of the European Society of Biomaterials (ESB2017) presenting "Establishment of Baltic Biomaterials Centre of Excellence". The RTU Rudolfs Cimdins Riga Biomaterials Innovations and Development

Centre participated in the annual science communication event “European Researchers Night”. On 29th of September 2018, some 232 school students and their teachers from 6 schools in Latvia were guided through the mysterious world of science in their laboratories.

In 2019 BBCE Teaming Phase 2 was presented in the Conference “Towards Horizon Europe Implementation in Latvia”. In January 2020, the President of Latvia, Egils Levits, delivered a welcome speech during the official BBCE opening ceremony.

Since Phase 1, the project has been also widely publicised via National Shadow days, Latvian national TV, radio , workshops, and numerous seminars.

A centre of excellence should be expected to have research collaboration with a number of good quality EU research institutions. Which factors facilitate international collaboration and what factors hamper it?

From project writing and implementation point of view, everyone should take into account: the possibility that some staff will come and go within partner organisation for various internal reasons. For the project team this means building new relationships, and taking time to appreciate the competencies of all newly appointed personnel. This process can be a hampering factor. The extended time frame for the project in phase two to three years from the initial two were not enough, but the new seven-year period for project implementation is a very valuable facilitative factor.

FACTS AND FIGURES	
Project Name	Baltic Biomaterials Centre of Excellence
Project Acronym	BBCE
Project ID	857287
Project contact	Dr. Jānis Ločs, janis.locs@rtu.lv
Coordinator	Riga Technical University, Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre (Latvia)
All Participants in Project	1. Latvijas Organiskās Sintēzes Instituts (Latvia) 2. Rīgas Stradiņa Universitāte (Latvia) 3. Ao-Forschungsinstitut Davos (Switzerland) 4. Rīgas Stradiņa Universitātes Stomatoloģijas Instituts (Latvia) 5. Friedrich-Alexander-Universität Erlangen Nuernberg (Germany)
Start Day – End Day	01/01/2020 – 31/12/2026
Instrument Funding	Teaming
Call for Proposal	H2020-WIDESPREAD-01-2018-2019 - Teaming Phase 2
Project Website	https://bbcentre.eu/
EC Financial Contribution / Overall budget	€ 14 999 869,50 / € 30 000 000
Project Keywords	Biomaterials, medical devices, bone regeneration
Area	Personalized solutions for bone regeneration



EXCELLING LABUST IN MARINE ROBOTICS

The Laboratory for Underwater Systems and Technologies (LABUST) at the University of Zagreb Faculty of Electrical and Engineering (UNIZG-FER) in Croatia has successfully become a regional leader in marine robotics. LABUST has developed the required technologies, people, infrastructure, and experience in field experiments. LABUST lacked the research excellence fully to exploit and to develop its research capacity to become compatible with internationally leading institutions in the area of marine robotics. The goal of the EXCELLABUST project was to close networking gaps between LABUST and internationally leading counterparts at the EU level. This was achieved by significantly strengthening marine robotics research within LABUST (an integral part of UNIZG-FER involved with marine robotics).

What were the main success factors of your proposal?

The main success factors of the EXCELLABUST project were key impact indicators, which clearly defined project objectives and enabled successful monitoring progress, the workings of the laboratory and the project team. Additionally, the emphasis was put on widening scientific excellence at all levels – building up a network of scientific and expert communities, industry and the general public (through staff exchanges, expert visits); providing training for the laboratory employees (on-site and innovation management training); promoting the laboratory, and increasing its visibility.

Through staff exchanges, expert visits, on-site training and innovation management, the EXCELLABUST project has substantially improved LABUST's marine robotics scientific excellence and innovation capacity, and raised staff research profiles. There have been 5 staff ex-

changes, 27 expert visits, tutorials and management training schemes, 45 conferences and industrial events, 7 on-site training workshops, 20 open-door events, and 3 summer schools. All of these were either organised or attended by LABUST members. Consequently EXCELLABUST has transferred S&T knowledge, from internationally-leading partners to its researchers through staff exchanges and expert visits. It has also instigated hands-on S&T experience (on-site training), and knowledge on innovation management to its partner research institutions (innovation management training).

This impact is also measured through the number of publications and participation in national and EU level research and innovation programmes. During EXCELLABUST, LABUST has enjoyed a 70 % increase in the number of citations, reached 5 new collaboration agreements with industries and research institutions, and has collaborated in 43 joint proposal submissions with international partners.



*Prof. Dr. Nikola Mišković,
coordinator of the twinning
project EXCELLABUST.
Project Collection*

What lessons can be derived from this experience in the preparation of a proposal to SEWP?

Clear project objectives and activities delineated at the project proposal stage helped specify desired results and built the pillars for successful implementation of the project.

The Marine Robotics Database was established to help connect marine robotics end-users with the academic community, industry, government, and researchers. The database is a platform where stakeholders can connect with each other, share news, and find out more about various products and services.

By organizing wide networking, knowledge and experience transfer events, EXCELLABUST has increased LABUST's scientific involvement and visibility.

EXCELLABUST has also strengthened LABUST's links to the marine robotics industry through the organisation of three research-industry "EMRA" workshops (Workshop on EU-funded projects in marine robotics and applications) in 2016, 2017 and 2018. EXCELLABUST has also strengthened LABUST's links with maritime robotics end-

users in the areas of marine biology, marine archaeology, oceanography, maritime security (navies, coast guards, search and rescue units) by organizing three summer schools ("Breaking the Surface – BTS") focussing on the application of maritime robotics.

During the course of EXCELLABUST, LABUST developed two innovative products and created two spin-off companies (H2O Robotics and MARS).

LABUST primarily focuses on conducting scientific research. Through this project, LABUST has increased its research and development capacities, and its presence in the field of maritime robotics and related applications. It has also upgraded its participation in national and EU level research and innovation programmes.

Overall, LABUST has applied to 43 scientific research project proposals for both national and international grants, almost half of which were accepted. LABUST now has the experience and knowledge needed to continue applying for and receiving grants.

LABUST members have also signed seven collaboration agreements with businesses around Europe, securing future cooperation, and have established two new innovative products and spin-off companies. This allows for further work with these products and companies, while



Excellabust Project Team. Project Collection

providing the necessary experience to create similar arrangements in the coming years.

Because of its experience and the good practice gained during the EXCELLABUST project via expert visits, innovation management training and staff participation, LABUST has contributed to the laboratory's own research and innovation capacities. It has also strengthened the whole of the University of Zagreb's Faculty of Electrical Engineering's capacities by helping establish its Research Support Centre. This Centre generates research, works on projects and international research cooperation, and deals with issues of intellectual property and technology transfer. EXCELLABUST activities have also contributed to the rise of Centre staff knowledge, thus improving the quality of research activity and research productivity at UNIZG-FER.

Through EXCELLABUST the LABUST team has set a precedent at UNIZG-FER by opening its first spin-off company, H2O Robotics, followed by another spin-off, MARS. LABUST will encourage the establishment of other spin-offs and start-ups at UNIZG FER and hence contribute to the economic development of Croatia and the region.

Through EXCELLABUST project activities, LABUST members have participated in several innovation management courses (how to write applications for funding, how to implement projects etc.) which have increased the quality of its research grant applications.

Through extended networks and the strengthening of the institutional and personal capacities through EXCELLABUST, 16 projects have been granted, of which four were national and fourteen international in scope. On the national level, the project team secured funding from the most competitive national grant schemes (such as European Regional Development Fund and Croatian Science Foundation). On the international level, the research excellence developed through the project EXCELLABUST, contributed to successful collaboration within the H2020, as well as other European and international grant and funding schemes such as FLAG-ERA, ERASMUS + and the Interreg

Med Programme.

By attending and organising broad networking events for the marine robotics industry and marine robotics end-users, LABUST has signed 7 collaboration agreements with businesses from Croatia (Brodarski Institute; MARS (UNIZG-FER spinoff); H2O Robotics (UNIZG-FER spinoff)), Norway (Kongsberg; SAAB), Italy (Heron Robots) and Turkey (INNOVASUB).

What can we expect next with the project?

One of the outcomes of the project was founding of a spin-off H2O-Robotics. Agreements on cooperation with different companies and institutes increase opportunities for future partnerships. Access to additional funding through public tenders was also enabled

EXCELLABUST's high profile and visual identity has been deployed in all of its internal and external dissemination activities. This has contributed to the project's status within the scientific community and the general public.

The project also has created a website (excellabust.fer.hr) where all information about the project, its activities and results are provided, giving all target groups a locale to find everything they want to learn about the project. Social media links are also provided on the website, providing another way to reach target audiences and to stay up-to-date with dissemination.

This dissemination conducted by EXCELLABUST helped LABUST to become more visible in the worlds of science, academy, research and industry, as well as among the general public, students, potential future students, and employees.

With its general-public-oriented activities, such as open-door events, attendance at science and university fairs, media appearances, LABUST has greatly contributed to the popularization of science, specifically in robotics and maritime

robotics, focussing the public's attention on the benefits of advancing science with the help of the EU and national funds.

LABUST also reached out to the industrial community as its target group by participating at industrial exhibitions (fairs) with the purpose of partnering to access funding opportunities. The purpose is to enhance LABUST innovation potential in sustainable business plans and knowledge-based products and services. One

of the most important channels is dissemination through EMRA workshops geared to industrial stakeholders. End-users, such as environmental organizations, marine biologists, archaeologists, oceanographers, navies, search and rescue, etc. are reached through Breaking the Surface summer schools for maritime robotics and their applications. All of these target groups were included in the dissemination strategy involving the Marine robotics database, developed during the project.

FACTS AND FIGURES	
Project Name	Excelling LABUST in marine robotics
Project Acronym	EXCELLABUST
Project ID	691980
Project contact	Prof. Dr. Nikola, Miškovićnikola.miskovic@fer.hr
Coordinator	University of Zagreb, Faculty of Electrical Engineering and Computing (UNIZG-FER) (Croatia)
All Participants in Project	1. The Institute of Studies on Intelligent Systems for Automation (CNR-ISSIA), Consiglio Nazionale delle Ricerche (CNR) (Italy) 2. The Computer Vision and Robotics Research Group (VICOROB), University of Girona (Spain) 3. Mobile&Marine Robotics Research Centre (MMRRC), University of Limerick (Ireland)
Start Day – End Day	01/01/2016 – 31/12/2018
Instrument Funding	Twinning
Call for Proposal	H2020-TWINN-2015
Project Website	http://excellabust.fer.hr/
EC Financial Contribution / Overall budget	€ 1 014 551 / € 1 014 551
Project Keywords	Marine robotics, underwater robotics, scientific research, scientific excellence
Area	Marine robotics



CENTRE OF EXCELLENCE FOR ADVANCED TECHNOLOGIES IN SUSTAINABLE AGRICULTURE AND FOOD SECURITY

The ANTARES BioSense Centre of Excellence (CoE) is bravely changing the face of agriculture today. It is doing so by building strong and mutually beneficial bridges with European research and innovation communities, and helping to secure enough safe and adequate food for a growing world population.

One of the CoE's goals is to incorporate all relevant scientific knowledge and efforts into a unique integrated system for monitoring agriculture. This system will provide necessary data sets and create breakthroughs in the agrifood sector, not only in terms of increased efficiency, reduced pollution and monetary savings, but also in the way that farming is perceived and performed. The purpose here is to show that agriculture is acceptable as a career choice for younger generations of farmers.

Real-time data from agricultural fields are combined with satellite images generating useful, custom-tailored information for farmers, extension services, companies, government and policy makers. For strengthening this work ANTARES has already established a collaboration with the European Space Agency, making BioSense Institute the only Sentinel Data Hub in an associated country.

All of these connections are geared towards achieving several correlated goals: sustainable agriculture, social well-being, and economic growth.

The BioSense accelerator, as the bridge between entrepreneurship and science, supports local start-up networks by providing science based advice, as well as business and technology support, to innovative AgTech entrepreneurs. Boosting entrepreneurial skills provides a highly potent remedy for economic growth and – through high-quality job creation – economic development. The ANTARES project is strengthening our human resources and research infrastructure which will unleash the CoE's scientific capacity. The human resources plan involves:

- (i) Hiring high quality senior research leaders;
- (ii) providing young researchers with an opportunity to freely develop their ideas and pursue science to the fullest;
- (iii) establishing productive and valuable partnerships with Wageningen University and Research-WUR (both European leaders in agricultural research); and
- (iv) improving the research capacity of the Business Development Department, promoting a creative and innovative science-business environment into the overall culture of the Institute.



*Prof. Dr. Vesna Bengin,
coordinator of the teaming
project ANTARES. Private
Collection*



ANTARES Project Coordinator, Prof. Dr. Vesna Bengin, BioSense Institute and Ms. Zeljka Dukic, Widening NCP Serbia. Private Collection.

All of this will reinforce the R&D excellence of CoE, and expand its field of research with new technologies and state-of-the-art equipment. Thus, the new CoE will become the scientific lighthouse both in the region and throughout Europe.

This increased competitiveness of the Institute at the European level will also be accomplished through a formalised regional initiative (BioSense Regional), aiming to support research and scientific synergies between excellent groups and CoEs in the region. All of this effort will enable it to jointly create new step-change solutions, promote scientific advances, and collectively to seek opportunities for competitive funding.

The scientific impact of ANTARES will be achieved by boosting the human strengths and material resources of the new CoE across a number of carefully selected research fields. The CoE will also boost knowledge transfer, and enable cross fertilization and joint research between junior and senior researchers of the ANTARES partnering institutions (Wageningen University Research WUR from the Netherlands, and the Ministry of Education, Science and Technological Development of the Republic of Serbia).

To maximize the impact of its research via the ANTARES project, the CoE established the first Digital Farm in Serbia.

The digital platform AgroSense enables farmers to monitor crop conditions and plan activities using mobile phones or computers, based on data collected from satellites, drones, robots, different sensors, and meteorological stations. More than 15,000 users registered in Serbia indicate that

CoE is on the right track for delivering the benefits of digital agriculture to the real-life farming sector.

The BioSense Institute has achieved excellent results in terms of income diversification and self-sustainability. In 2019, 20 % of the Institute's income came from established national research funding, while 70 % was provided from various

What were the main success factors of your proposal?

ANTARES aims to evolve the BioSense Institute into a strong and sustainable European Centre of Excellence. In our research, we explore scientific and technological frontiers across the IT field, and we strive to deliver step-change digital solutions to the European farming sector, stimulate entrepreneurship, growth and employment at the regional level, and secure enough safe food for a growing global population. Such demand-driven and transdisciplinary approaches to research helps to develop material science, micro and nano electronics, robotics, artificial intelligence, biosystem research and much more associated research. The outcome is a common goal, namely, improving the overall efficiency of agriculture. This is one of the high profile successes of BioSense. Furthermore, we take pride in transferring our research results directly into practice. Our Digital Farm aims at delivering highly novel IT technologies to the agri-food sector, while the BioSense Accelerator strives to promote the local IT sector towards developing its own AgTech products.

international research projects, including H2020, and 10 % was drawn from direct contracts with third parties.

One of the strengths of the Institute is a dedicated Business Development Department (BDD), which maintains strong ties with the private sector and the wider network of European partners. All their advice and experience is incorporated into the research strategy of the Institute. This generates competitive proposals for funding and stimulates direct research contracts. BDD also provides a

broad spectrum of capacity building activities to BioSense researchers (training schemes, one-to-one consultations, access to networks etc.).

The enormous success of the CoE has resulted in:

- upgrading researchers' competencies with respect to innovation and commercial awareness, through regular tailor-made training schemes, and individual consultation directly linked with performance monitoring;
- further expanding the existing collaboration with the private sector by providing solutions that respond to particular needs identified through constant interaction with regional market leaders in agrifood sector;
- diversifying and extending the income base of the Institute, through increasing value added for potential customers (through its BioSense Accelerator, Digital Farm, and Shared Research Facility).

Investment in research infrastructure comes via national funding to ANTARES. This includes the construction of a brand new custom-made building to house the CoE at the campus of the University of Novi Sad (estimated to cost some 7 M €). It also supports the purchase and installation of state-of-the-art research equipment (also estimated to be around 7 M €). It is expected that the entire national investment in research infrastructure will be completed in the first five years of ANTARES to foster the rapid development of the new CoE.

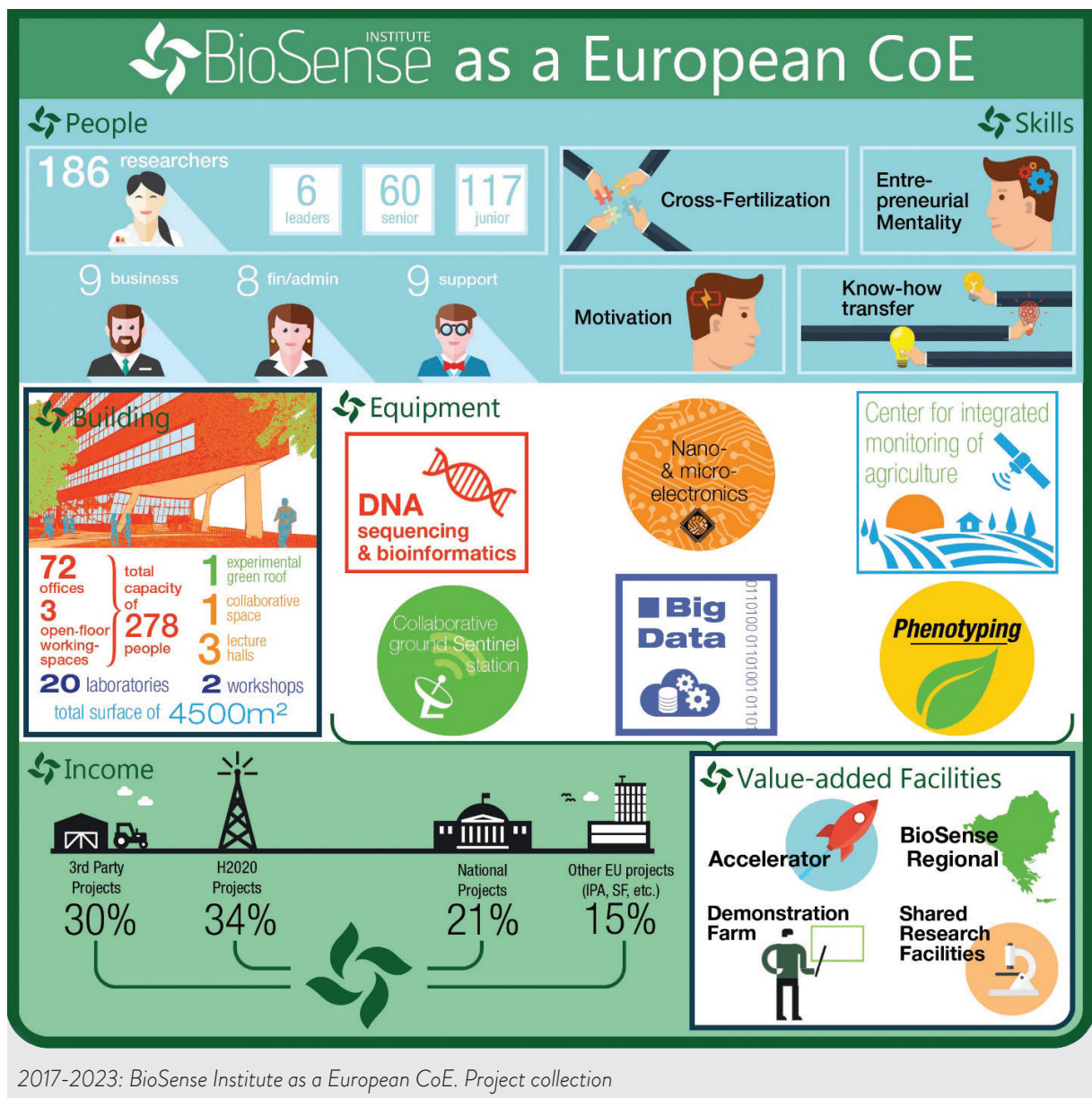
The impressive building that will house the BioSense Institute will be the first of its kind in Serbia, complete with an anti-vibrational component dedicated to nano-electronic sensor laboratories. The building has been designed to accommodate the specificities of CoE's research, learning from the best examples of similar science establishments across Europe and the US.

A thorough and cautious analysis of the Institute's future income stream has been made within the project. This takes into account the increase of Institute's capacity achieved through ANTARES. This analysis forecasts that the Institute can expand its annual income from 4M € in 2017 to 11M € in 2023. The Institute's wide-ranging financial strategy has yielded a well-balanced portfolio of incomes which should ensure financial sustainability.

The assessment shows a healthy balance between international projects (34 % H2020, 15 % other), and other sources of income (21 % national and 30% third party) which is achievable throughout the ANTARES programme. The current CoE financial performances justify this promising forecast. The CoE has already developed an exciting collaboration with key players in the Serbian agrifood sector. This has resulted in many direct research contracts for BioSense, and has demonstrated CoE's ability to provide solutions to industry's needs. The CoE sales strategy has been developed in collaboration with the Business Development Manager of ANTARES advanced partner WUR to cover the entire lifecycle of customer acquisition (leads → prospects → customers).

How do you think the project will impact the economy of the region/country?

Apart from boosting excellent science, ANTARES invests significant efforts to ensure that our research results do not remain bounded by the walls of our laboratories. To integrate our scientific findings into society and to add to our influence, we have created the First Digital Farm in Serbia (see adjacent text), as an innovative facility aiming to support the digital transformation of agriculture in our country as well as in the whole region. Digital Farm provides farmers with hands-on learning opportunities and showcases how different AgTech solutions can be implemented in real-world settings. Through the BioSense accelerator, ANTARES responds to the needs of the local IT startup networks, by providing both business and scientific support to AgriFoodTech entrepreneurs in the region. ANTARES is deeply involved in creating a supportive and advanced environment for science and innovation in Serbia. To that end, our staff have joined forces with policy makers to draft new national legislation that supports our research community to become competitive on a global scale. We have been directly involved in drafting a new national Law on science and research, a Law on science funding, as well as Laws dealing with IP and R&D income tax.



Through this framework the CoE has estimated and incorporated into its income projections the efforts needed to transform exploratory leads into paying customers. Empirical evidence from WUR shows that the conversion rate in the case of research services to industry is 100 leads → 20 prospects → 1 customer. Therefore, CoE employs a well-established sales methodology to achieve this conversion rate.

According to projections presented in its Business Plan, after the ANTARES project ends in 2024, the CoE will continue to be able to fully fund all of its researchers, maintain its new building, generate adequate reserves to cover depreciation, and make further investments. This demonstrates the ability

of the new CoE to sustain excellence beyond.

The golden rule of the CoE is: effective communication, better science. Thanks to the specifically designed Plan for the Exploitation and Dissemination of Results (PEDR) with tailor-made dissemination activities that suit the specific target groups, all scientific breakthroughs are comprehensively communicated.

Proving the effectiveness of PEDR, in the last reporting period (June 2018- August 2019), CoE had:

- 10 campaigns
- More than 300 media entries in 60 media outlets, including Euronews

- More than 30 000 visits to the CoE's website
- Around 2000 followers on social media
- 3000 views on the YouTube channel
- Attendance at over 70 international events
- 6 000 000 audience reached
- Around 600 visits to The First Digital Farm

BioSense has put significant efforts into engaging the communities of innovative start-ups, SMEs, farmers, investors and other stakeholders. It has achieved this through the establishment of PA4ALL (the first European Living Lab dedicated to Precision Agriculture) and via the implementation of numerous EU-funded acceleration projects such as FP7, FRACTALS and H2020 KATANA, and now PARSEC accelerator, agROBOfood, and others. Through this process, we have gained enormously valuable scientific knowledge.

What can we expect next with the project?

We look forward to the completion of new BioSense facilities which will provide research conditions unprecedented in the region. We also strive to increase the impact of our research world-wide, by expanding our collaboration with global players such as FAO, EBRD, World Bank, and UNICEF. At BioSense, we believe in a future where decisions are made based on scientific information, and where science changes the world for the better.

The CoE will strive to reach its goals: to become a European leader in agriculture and ICT research; to maximize its innovation potential; and to act as an innovation-booster for the entire regional and European ecosystem.

FACTS AND FIGURES	
Project Name	Centre of Excellence for Advanced Technologies in Sustainable Agriculture and Food Security
Project Acronym	ANTARES
Project ID	739570
Project contact	Prof. Dr. Vesna Crnojevic-Bengin, vesna.bengin@gmail.com
Coordinator	Biosense Institute - Research And Development Institute For Information Technologies In Biosystems (Serbia)
All Participants in Project	1. Stichting Wageningen Research (Netherlands) 2. Ministarstvo Prosvete, Nauke I Tehnoloskog Razvoja (Serbia)
Start Day – End Day	01/03/2017 – 29/02/2024
Instrument Funding	Teaming
Call for Proposal	H2020-WIDESPREAD-01-2016-2017-TeamingPhase2
Project Website	http://biosens.rs
EC Financial Contribution / Overall budget	€ 14 003 473,75 / € 28 000 000
Project Keywords	Advanced ICT Technologies, Sustainable Agriculture, Food Security, Agrifood, ICT
Area	ICT Technologies



EDUCATION ECONOMICS NETWORK

The objective of the EdEN Twinning project was to stimulate and enhance the cooperation in education economics between three top ranked research institutes in EU-15 countries and a promising new group in a Widening Country - Hungary. This proved to be a great success. More than two dozens of researchers and assistants were engaged in the project contributing to scientific papers or receiving essential training for future research. During the project, researchers were working on 15 scientific papers, thereby greatly improving the research performance of the coordination institution. Nine were published in peer-reviewed international journals by 2019. Over a dozen researchers and assistants from Hungary participated in training sessions with internationally recognised partners. The consortium organised several joint scientific workshops creating a critical mass of researchers, and strengthening future collaboration.

The partners of the EdEN network have planned several additional projects to establish a larger network of education-economists.



Team leaders of the EdEN project. Project Collection

EdEN members have jointly organised two international workshops addressing efficiency in education, and two workshops and a conference covering education-economics in Budapest, Leuven and Milan. EdEN also hosted two summer schools for PhD students interested in education-economics.



Prof. Dr. Dániel Horn, coordinator of the twinning project EdEN. Project Collection

How important is international collaboration in science? Is it one of the main goals of your project?

It is essential. No researcher, no research institute can work/operate successfully without a wide network of international partners. The EdEN project has succeeded in establishing such a network

One of the objectives of the project was to ensure the sustainability and the strengthening of the collaboration network, namely through joint research grants application. And this has been clearly achieved. A new Twinning proposal was submitted with a new Widening Country lead-partner. Members of the consortium took a leading role in a larger Horizon 2020 RIA proposal and have submitted several additional research proposals to expand the network of education-economists. Two CELSA (Central Europe Leuven Strategic Alliance) grants have been prepared and



EdEN workshop in Milan. Project Collection

several proposals for national research funding agencies were submitted. Essentially we have succeeded in establishing long term collaboration between institutions in and beyond Hungary.

Which measures would help your organisation to increase participation in EU Framework Programmes for research and innovation (H2020 or the next Framework Programme Horizon Europe)?

One of the main issues during any H2020 project between the Widening partner and the non-Widening institutions is the differences in the cost of person-months. The monthly fees available for the Widening partner were significantly lower than those of the Advanced partners, for undertaking the same job. While the discrepancies between the initial wages of the Advanced and the Widening partners are acknowledged they should be addressed by the Widening country governments. The differences between the person-months within the same project should be addressed by the EC.

What are some of the recommendations, from your experience, to increase the impact of projects?

Each project, but especially a Twinning project, should be a continuous network building. The impact of such projects is maximised only if the future of the network is ensured during the project.

Members of the Centre for Economic and Regional Studies (CERS) are now more research oriented and increasingly involved in education economics. New PhDs have been accepted into the research group, and several are collaborating with the partner universities. Researchers have widened not only their research network but also their international mindset. Furthermore the EdEN seminars series (with many international guest speakers) contributed greatly to create an international atmosphere in the department. PhD Students also benefited from the project through short visits to the partnering institutions. CERS organised a successful international workshop on Efficiency in Education. CERS also organised

summer schools which were open to a wider public and created visibility for the research group. 15 working papers of the project were published on the project website as well as in the working paper series of the participating institutions. All were presented at international conferences

and subsequently turned into publications in international peer reviewed journals. All working papers contain a one page publicly accessible summary to facilitate communication to a wider audience, including the general printed media.

FACTS AND FIGURES	
Project Name	Education Economics Network
Project Acronym	EdEN
Project ID	691676
Project contact	Magyar Tudomanyos Akademia Kozgazdasag- Es Regionalis Tudomanyi Kutatokozpont (Hungary)
Coordinator	Dr. Daniel Horn, horn.daniel@krtk.mta.hu
All Participants in Project	1. Katholieke Universiteit Leuven (Belgium) 2. Universiteit Maastricht (Netherlands) 3. Politecnico Di Milano (Italy)
Start Day – End Day	01/01/2016 – 31/12/2018
Instrument Funding	Twinning
Call for Proposal	H2020-TWINN-2015
Project Website	www.edenproject.eu
EC Financial Contribution / Overall budget	€ 681 437,50 / € 681 437,50
Project Keywords	Economics of education, equity, efficiency, quantitative methods
Area	Economics

ERA CHAIR IN SYNTHETIC BIOLOGY

The SynBioTEC ERA Chair, together with other teams at the University of Tartu Institute of Technology (TUIT), has established the multidisciplinary Estonian Centre of Synthetic Biology (ECSB). The aim of the ERA Chair and its recruited team of researchers is to merge the competences of existing research groups on molecular biology and material science to foster excellent research for the development of industrially relevant designer cells, focusing on cell factories for industrial biotechnology.

The ERA Chair has been successful in introducing a more applied approach to synthetic biology research at the ECSB. Several intra-institutional collaboration projects have been initiated between existing groups (including yeast signaling, materials science and robotics, and drug delivery) and the ERA Chair that promotes a more applied side to the research. This kind of multi-disciplinary research, which combines computational analysis, bioprocesses, yeast and novel material technologies, is definitely leading to enhanced impact, both, scientifically and industrially.

An important initiative which also enjoys great societal and economic impact was the establishment of the first international undergraduate and graduate programmes in synthetic biology. This is the first English-language undergraduate programme in science in the history of the University of Tartu. We are pleased to report that it has already attracted students from over 20 different countries. The main aim was to create innovative curricula for every educational level that focuses on the research needs of synthetic biology. The programme places special emphasis on combining molecular biology and engineering disciplines for training specialists for industries promoting synthetic

biology. According to surveys that record future visions of CEOs for Pharma and Biotech companies, combining these two disciplines is vital for training the future labour force. The combination of these two disciplines enables the design of cell factories and other types of synthetic cells and organisms based on the principles of rational engineering and the classical design-build-test-learn-cycle.

We have also initiated a PhD programme in close collaboration with our industrial partners. This programme foresees that students will also be introduced to societal and ethical issues: the opportunities for technical and management training will also be explored. Instead of adopting the traditional training of molecular biologists that usually includes years of lab work for academic research projects, we intend to introduce more specialised training courses that are required by industry. The ECSB is committed to designing study programmes and courses that include both practical training and a hands-on approach in bioreactor operation, process scale-up, optimisation and downstream processing.

The SynBioTEC ERA Chair has managed to extend a number of long-term global partnerships. Collaboration with biotechnology research groups in Brazil (Federal University of Vicosa and Unicamp) has been established to characterise and optimise new promising fungal strains for biochemical production. Collaboration



*Dr. Petri-Jaan Lahtvee,
coordinator of the ERA
Chair project SynBioTEC.
Private Collection.*

with the Chalmers University of Technology, Sweden, is taking place over computational aspects to support cellular design. Together with Imperial College London, we are developing the new synthetic biology toolboxes for non-conventional yeast strains. In collaboration with the NNF Centre for Biosustainability, Denmark, we applied for an H2020-widespread Teaming call project.

What are some of the positive aspects highlighted?

Within the ERA Chair in Synthetic Biology project, we have established The Estonian Centre for Synthetic Biology (ECSB) that aims to become a Baltic hub and world-renowned centre of scientific excellence and technology development in biosustainability research. Directly linked to that, we have created new international study programmes for Bachelor (Science and Technology) and Masters students (Bioengineering). Also, we have established the Wood Chemistry and Bioprocessing Core Facility for servicing Estonian industry-based and academic research in the field, and created an early-stage incubator for biotechnology startups (Startmeup.ee). Recently, we have received a second ERA Chair project, which will develop a specific novel direction under the umbrella of biosustainability – how to convert waste gases (CO₂ and CO) into value-added products.

These activities have enabled us to become a member of several European research collaboration networks, and an important industrial partner for a number of local but also world-leading industrial companies, including the Estonian company Graanul Invest AS and their BBI JU flagship project Sweetwood.

Although our project was not funded, our collaboration with NNF CfB continues to find alternative ways to establish these plans.

The objective of the Institute of Technology at the University of Tartu is to maintain the ERA Chair team at the completion of the project. Therefore, the ECSB Research and Innovation Strategy

has been established, focusing on ensuring the long term future of the Centre. The strategy organises the potential funding opportunities for the ERA Chair team; possible future research specialisations and topics; collaborative networks with academia, the industry as well as national and international stakeholders; training and networking needs; and strong relations vis-a-vis the rest of the university and its R&D support structures.

What can we expect next with the project?

We aim to continue with the scientific excellence and the development of innovative solutions in biosustainability, but also to expand our capabilities further on by bridging the gap and taking innovative solutions from the lab and bringing them to commercial scale.

Therefore, in addition to the establishment of the Wood Chemistry and Bioprocessing Core Facility, which provides services to analyse the composition of various local renewable substrates and develop processes for their commercial use, we aim to expand the platform to cover the whole biotechnology value chain from substrate to final product, and importantly, to enlarge the process to industrial levels. In this approach, we are collaborating with institutions like VTT in Finland and Novo Nordisk Foundation Centre for Biosustainability in Denmark to create a regionally important network of research centres for the development of biosustainable technologies.

We are also planning to expand the network of strategic industrial partners, with whom we are relying on for technology commercialisation. Between us we hope to translate the knowledge created in the biosustainability field into practical applications so as to reduce the carbon footprint in Estonia and the entire Nordic region.

To fully serve regional industry with a variety of biosustainable alternatives, we are planning to complement the ECSB with two additional



International research group of SynBioTEC enjoying team-building activities. Private Collection.

research fields: (i) utilization of local substrate (including a non-edible biomass, algae/seaweed, industrial waste, and syngas platform); and (ii) a separation unit for microbial product purification.

The ECSB, while founded and based at the Institute of Technology, is currently acting as an umbrella organisation for a consortium of synthetic biology labs in Estonia. Its more ambitious aim is to develop a research and technology development centre of its own.

The ERA Chair programme in synthetic biology has been a central driving force behind the vision and strategic planning of the ECSB. During the first year of the Chair appointment, a considerable networking and fundraising effort was undertaken. A research group was formed and collaboration with other labs within the ECSB was established to stimulate research with a focus on synthetic biology and sustainable bio-production.

The overall concept of ECSB was developed, based on 7 main pillars designed to achieve our long-term scientific vision:

- A dedicated Research Centre for a consortium of research labs.
- Broad Foundry: a multiplex core facility for wood processing and biotechnology services.
- A pilot production facility with 400 L scale bioreactors for pre-industrial process optimisation.
- A production facility for the Icosagen Cell Factory to provide a direct link between research, education and industry.
- An educational unit comprising undergraduate, Master's, and PhD

programmes in synthetic biology

- An investment company for ensuring early-stage venture funding for spin-off commercialization technologies developed at the ECSB.
- A start-up incubator to provide access to lab space and support services in order to mitigate the risks of founding a synthetic biology company.

The ERA Chair in Synthetic Biology has been successful in raising additional research funding.

The ERA Chair received a Personal Investigation Grant from the Estonian Research Council for the period 2017-2020 (4 years) in total amounting to 200k EUR. The funding was provided to develop energy efficient cell factory platform strains for yeast by systematically analyzing the protein turnover in yeast under various environmental conditions, and by applying deep-learning algorithms to detect the underlying principles behind higher turnover for individual proteins and in meeting environmental requirements.

1.1M EUR was received from the EU Structural Funds schemes. In addition, funds from the Teaming Phase 1 were obtained for developing the business and long-term continuity plan for the ECSB.

In collaboration with the UV Amsterdam, University of Stuttgart, University of Heidelberg and Chr. Hansen AS, the ERA Chair is participating in an ERA CoBioTech project YogurtDesign, where co-culture modelling technologies are being developed (total funding 1.1M EUR).

An industrial collaboration project with the Centre of Food and Fermentation Technologies focussing on the development of Next Generation Probiotics has attracted funding of 1.2M EUR from the Estonian Research Council and Archimedes programme.

The Estonian Research Council in collaboration with three Estonian ministries (Economics, Agriculture and Environment) is funding a project to find the bioeconomic solutions for Estonia. This project with a total budget of 1.5M EUR includes

partners from the three largest universities in Estonia. The SynBioTEC ERA Chair is leading a sub-group dealing with synthetic biology and biotechnology solutions in bioeconomy.

Triggered by the spirit of the ERA Chair project, the paradigm shift of focus for all of the core research groups forming the ECSB from primarily basic research to applied synthetic biology, was the central theme in designing the strategy for the Centre of Excellence in Molecular Cell Technologies. The grant application received the highest evaluation scores, and obtained funding of 5.4M EUR for 6 research groups.

How do you think the project will impact the economy of the region/country?

Biotechnology is identified in the European Union as one of the key enabling technologies promoting biosustainability. Developments in Synthetic and Systems Biology play an essential role in this process and therefore impact our economy significantly. Estonia and the whole Nordic region have a high potential for adapting innovative sustainable technologies, which also create new economically beneficial markets.

In this process, our ERA Chair project and ECSB are functioning as a regional hub developing, promoting, and introducing novel sustainable (bio)technology solutions to stakeholders. We have already established strong relations with several local and world-leading industrial partners (Chr. Hansen AS, Lanzatech Inc.) and will continue this connectivity in the future. As one of our goals is to speed up the technology transition to commercialization, we expect to make a significant impact on the regional economy within the next decade. We strongly believe that a carbon-neutral economy can be reached in the foreseeable future, and, together with our partners, we keep working towards making this goal a reality.

The visibility of the Estonian Centre for Synthetic Biology (ECSB) at international

level has been significantly improved through collaboration with the Novo Nordisk Foundation Centre for Biosustainability (CFB). This liaison helps to attract both regional and global industrial partners via the well-established CFB network.

At the national level, the ECSB has been introduced to the public via several communication channels. Scientists from the ECSB took part in:

- (i) the largest opinion festival in the Baltic states, introducing synthetic biology to the wider public (>20,000 participants, <http://www.arvamusfestival.ee/en/>);
- (ii) the events of the annual Researcher's Night Festival (2016-2018) (<http://www.teadlasteoo.ee/>),
- (iii) Science Café events on synthetic biology, which were organized in 5 different cities in Estonia;
- (iv) locally organized TEDx talks on synthetic biology;
- (v) presentations at various industrial union meetings;
- (vi) visits to more than 20 companies in Estonia and abroad;
- (vii) introducing synthetic biology and the ECSB at various scientific conferences globally,
- (viii) introducing synthetic biology and various bioprocess in a number of bioeconomy related event across Estonia.

We have also highlighted synthetic biology through invited lectures and articles and interviews in the major Estonian newspapers (incl. "Sirp", "Postimees", "Tööstusest") and portals ("Research in Estonia").

The SynBioTEC ERA Chair was one of the co-organisers of the first biotechnology-related bio-hackathon event in Estonia called Bioinnovation Days 2018. The event brought together 98 entrepreneurial minds from 8 different countries to develop and pitch novel ideas (see more at www.bioinnovationdays.ee). As the event in 2018 was such a success, the follow-up event took place a year later.

A great publicity campaign was launched to promote the first iGEM team from Estonia formed on the basis of our international

student programme in synthetic biology. iGEM (Genetically Engineered Machines), held by MIT, is the largest international competition of student projects in designing synthetic biological systems. Besides the experimental scientific part of the project, it introduces societal debates and awareness raising on the various risks and

benefits of synthetic biology. More than 300 teams take part in this competition every year: the first Estonian team was purely an initiative of the ERA Chair project. The publicity and public engagement campaign for the team gained attention on national TV and in press releases.

FACTS AND FIGURES	
Project Name	ERA Chair position in Synthetic Biology at University of Tartu Institute of Technology
Project Acronym	SynBioTEC
Project ID	668997
Project contact	Dr. Mart Loog mart.loog@ut.ee
Coordinator	University of Tartu (Estonia)
All Participants in Project	-
Start Day – End Day	01/07/2015 / 30/06/2020
Instrument Funding	ERA-Chair
Call for Proposal	H2020-WIDESPREAD-2014-2
Project Website	erasynbio.ut.ee
EC Financial Contribution / Overall budget	€ 2 393 438 / € 2 659 375
Project Keywords	Synthetic biology, systems biology, biosustainability, cell factories
Area	Synthetic biology



ARMENIA CENTER FOR TRANSLATIONAL RESEARCH ON CHRONIC NEURODEGENERATIVE DISORDERS: A NEUROSCIENCE INITIATIVE ON MAINTAINING HEALTHY BRAIN AGEING

COBRAIN is a high-quality and high-impact coordination and support action, which fully implements a comprehensive strategy through collaboration between the Yerevan State Medical University (YSMU) in Armenia, the Eberhard Karls University of Tübingen, Germany (EKUT), the Ruhr University Bochum, Germany (RUB) and the University of Lund, Sweden (ULUND). The project is designed to enhance the research and innovation capacity of YSMU. This will be achieved by strengthening the field of neuroscience with special emphasis on neuroprotective cell-based and drug therapies of brain disorders. In particular COBRAIN expects to achieve the following outcomes:

- Creating a high profile Centre of Excellence for brain research.
- Building expertise in the field of neuroprotective cell-based and drug therapies.
- Generating cutting-edge research activities through joint research projects.
- Providing an attractive research portfolio for YSMU.
- Training a competitive generation of researchers with advanced capacities.
- Producing excellence in brain research in 5 years' time which will induce "chain reaction" in national neuroscience research.
- Tripling the number of research staff with permanent research positions.
- Shifting the institutional orientation from 90%/10% to 60%/40% education/research ratio.
- Expanding collaboration and joint intellectual property with the Institute of Organic Chemistry and the Buniatian Institute of Biochemistry of the National Academy of Sciences of the Republic of Armenia.
- Cooperating with medicine producers and importers through workshops with and getting funding by industrial partners, and potentially leading to the commercialization of intellectual property.
- Increasing the number of research projects by YSMU researchers geared to product commercialization.
- Strengthening the innovative research capacity of YSMU in neuroscience.
- Translating promising compounds or biologics into effective drugs.



Prof. Dr. Konstantin Yenkeyan, coordinator of the twinning project COBRAIN. Private Collection.

- Placing research publications in top 10% of the journals of the targeted field.
- Increasing the publications in high impact factor journals from 10 per year to 100 per year in 5 years.
- Increasing the placing of research articles into the journal impact levels from 6 to 15.
- Establishing a higher position of YSMU in the Times Higher Education ranking system.

How important is international collaboration in science? Is it one of the main goals of your project?

International collaboration in science plays a crucial role. Researchers' international mobility and cooperation are the main prerequisites for impact rich research. Universities need to give research a more central role and promote international cooperation through establishing scientific relations with leading foreign medical centres and universities, in order to be able to fully participate in the global knowledge economy and benefit from their international reputation.

The collaboration with EKUT, RUB and ULUND is expected to result in ambitious research projects and new project proposals with a good potential of high impact factor publications to provide sustainability to the project.

In the context of the project we will publish two manuals: "Neuroscience and stem cell research methodologies", and "Research culture and complementary skills for researchers". These will serve as teaching materials for the forthcoming generations of young researchers.

At the end of the project we expect to launch a scholarship programme for researchers with high-level KPIs. Through this programme, the Brain Research Excellence Centre (BREC) will adopt means for attracting successful researchers and continuing their research as their primary career path. More local and international PhD students will be recruited.

Among its long-term scientific objectives YSMU strives to establish for studying the prevention of

chronic brain disorders, and maintaining healthy ageing of the brain throughout lifespan. COBRAIN is the crucial starting point to achieve research excellence and sustain national competitiveness in brain research.

BREC will be a country-wide centre for pre-clinical trials for cell-based therapies and drug therapies of degenerative brain disorders. Its aim is to create a multinational research and development resource for collaborative work on: discovery, translation, testing-validating and developing of novel therapies for chronic brain disorders.

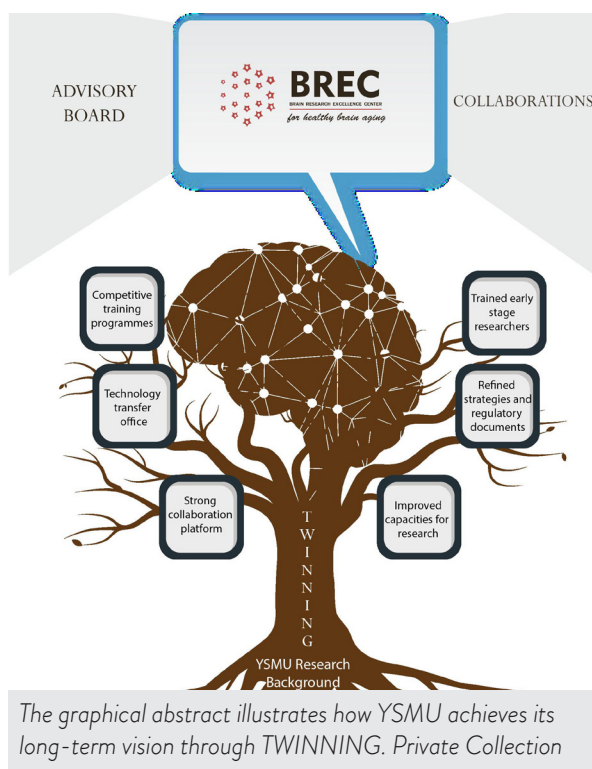
What were the main success factors of your proposal?

The success of our proposal was achieved particularly through the targeted selection of high quality partners. The concept of the proposal is strong and addresses a timely research topic. Another very important value of the proposal is the strong commitment of the Coordinator and the dedicated team.

In addition to ambitious research projects and many new project proposals for Horizon Europe calls, we expect to receive additional support from the Government as well as from YSMU by improving the existing laboratory equipment and infrastructure to the required research needs and standards created through the collaboration with EKUT and ULUND.

COBRAIN involves the organization of mid-term conferences for patients with brain disorders (Alzheimer, Parkinson, autism) and their caregivers to ensure that the project results reach the principal stakeholders, namely, the lay public. Besides social media channels we will implement dissemination through the involvement of local and international media in order to improve visibility at national and international levels.

The main goals and specific objectives, the activities and achievements of the project will be shared through the COBRAIN website (cobrainarmenia.org). The website is constantly updated to inform all stakeholders and wider public about the project achievements. These stakeholders are: a) COBRAIN Consortium; b) other local research



Which are the motives that drove your decision to participate in SEWP calls?

YSMU is a well-structured organisation with a clear and well-articulated mission. Its policy promotes research objectives and there is a well-established research culture and ethos, as well as relevant mechanisms for validating research outcomes. However, research performance is low, output and impact of research on the international level are limited, and involvement of staff and students in research is insufficient. Researchers have restricted opportunities to prove and validate their innovative concepts due to limitations of methodologies and instrumentation. Our motive to participate in SEWP calls is to establish stronger relations with leading universities and build research and innovation capacities in YSMU.

organizations; c) international research institutes from medical fields; d) patients; and e) caregivers. It involves an interactive platform for promoting a dialogue among project participants, researchers, patients, etc. The website is promoted through YSMU and partner websites, social and mass media channels, and blog posts about relevant topics in

relevant fields.

At the end of COBRAIN the website will continue via the Brain Research Excellence Centre website with proper acknowledgement of COBRAIN's major achievements. This will highlight the role of the COBRAIN project as the basis for creating BREC research centre.

FACTS AND FIGURES	
Project Name	Armenia Center for Translational Research on Chronic Neurodegenerative Disorders: A Neuroscience Initiative on Maintaining Healthy Brain Ageing
Project Acronym	COBRAIN
Project ID	857600
Project contact	Dr. Konstantin Yenkoyan; konstantin.yenkoyan@yahoo.com
Coordinator	Yerevan State Medical University after Mkhitar Heratsi (YSMU) (Armenia)
All Participants in Project	1. Eberhard Karls University of Tübingen (EKUT) (Germany) 2. Ruhr University Bochum (RUB) (Germany) 3. Lund University (ULUND) (Sweden)
Start Day – End Day	01/10/2019 - 30/09/2022
Instrument Funding	TWINNING
Call for Proposal	H2020-WIDESPREAD-2018-03
Project Website	cobrainarmenia.org
EC Financial Contribution / Overall budget	€ 799 508,75 / € 799 508, 75
Project Keywords	Neuroscience, neurobiology, brain disorder
Area	Research on Chronic Neurodegenerative Disorders



KIOS RESEARCH AND INNOVATION CENTRE OF EXCELLENCE

The KIOS Research and Innovation Centre of Excellence is the largest research centre in Cyprus in the area of Information and Communication Technologies (ICT). It specialises on the monitoring, control and security of critical infrastructures, including power and energy systems, water networks, transportation networks, telecommunication networks, and emergency management and response.

The Centre was established in 2008 as a research unit at the University of Cyprus and was upgraded to a European Research Centre of Excellence in 2017 through the EU's strategic Horizon 2020 programme "Spreading Excellence and Widening Participation – Teaming". The project is a teaming effort between the University of Cyprus and Imperial College London as the advanced partner. The vision of the Centre is to provide an inspiring environment for conducting excellent, cutting-edge research at a global scale, producing new knowledge, and generating advanced engineering and management tools that can be applied to solve timely and real-life problems in critical infrastructure systems. This is achieved as follows:

- By recruiting a critical mass of highly qualified and well-trained researchers. Currently, the Centre employs more than 150 people.
- By developing cyber-physical Testbeds for monitoring, control and security of critical infrastructure systems
- By developing specialised training courses and advanced programmes, including a new MSc programme in Intelligent Critical Infrastructure Systems. This is jointly designed and taught by faculty at the University of Cyprus and Imperial College London.
- By creating the KIOS Innovation Hub, which promotes collaboration, innovation and

technology transfer between industry, academia and research organisations in high-tech areas of global importance.

- By developing a framework for open knowledge to support and encourage dissemination through open access, open data, and reproducible research.



Prof. Dr. Marios Polycarpou, coordinator of the teaming project KIOS CoE. Project Collection

Please elaborate on the main factors that contributed to the success of your proposal.

There are several contributing factors related to the high impact potential of the project, including: (i) the societal impact, in terms of improving the research culture through its planned activities, during this project and beyond, and improving quality of life through its research output; (ii) the economic impact in terms of job creation and new opportunities for young highly-motivated people; and (iii) the technical impact, in terms of the development of new knowledge in key technological areas. Of course, a key ingredient is also the high growth potential of the research and innovation areas and the strong support – the Cyprus government, the University of Cyprus and Imperial College London strongly support this effort by committing significant financial resources for the implementation of the project.



The KIOS Research and Innovation Center of Excellence Team. Project Collection

The expected impacts of the KIOS CoE are:

- To establish KIOS as a vibrant and internationally recognised research and innovation centre that brings together a multidisciplinary team working on cutting-edge research topics in the area of ICT.
- To significantly improve the research and innovation performance of Cyprus by engaging other organisations in research and innovation activities, through the KIOS Innovation Hub.
- To increase the capabilities of the Centre to attract competitive funding and to attract talented researchers from all over the world through training, industrial networks (KIOS Innovation Hub), and cutting edge facilities provided by the KIOS CoE Testbeds.
- To leverage Imperial's established world-class capabilities in technology transfer, IP, commercialisation and industry partnering.
- To achieve long-term sustainability, the KIOS CoE will maintain a well-diversified portfolio of income generation, beyond the lifetime of the project. The Teaming project has facilitated the initiation of the KIOS Innovation Hub, which instigated agreements between the KIOS CoE and several industrial partners for research and innovation projects that are funded by the industrial partners. Moreover, KIOS will continue to secure further competitive funding from various national, EU and international funding programmes in research and innovation.

How do you think the Project will impact the economy of the Country/Region?

The Teaming programme provides a unique opportunity to establish a sustainable centre of excellence, which can stimulate the growth of a regional industrial ecosystem. The Centre is making significant contributions to the promotion of a knowledge-based economy in Cyprus, bringing new employment opportunities in high-tech areas as well as new ideas for economic growth in Cyprus through the design of new products and services.

The project has enabled the creation of new employment opportunities for young talented people who are working to produce new knowledge and tools that can be applied to solve timely and real-life problems.

The Centre also collaborates closely with industry so the research and technology developed can bring tangible benefits to society, the environment and the economy (e.g. reduction in greenhouse gas emission; increased productivity and new value added products & services).

At an institutional level, the KIOS CoE has been the driving force in establishing a new type of position – Research Faculty – designed for researchers interested in long-term career options in research and innovation. Already, the first four Research Faculty members have been recruited by the KIOS Centre of Excellence. These were the first such positions at any university in Cyprus. This is an important development in terms of providing suitable progression paths for senior and expert researchers.

Another novel outcome is the launch of a new MSc in the Intelligent Critical Infrastructure Systems programme, which was designed and is

being taught in collaboration with Imperial College London. The programme focuses on the training of graduate students in highly innovative methods, tools, and technologies for the monitoring, control, management, and security of critical infrastructure systems. This was the first such programme at the University of Cyprus, which was developed in collaboration with Imperial College London.

What lessons can be derived from your experience in preparing a proposal to SEWP?

One important lesson from experience in preparing the Teaming Phase 2 proposal is the importance of having a clear vision on where you want the Centre of Excellence to be in the future. This vision was instrumental in helping us to construct a viable project proposal. However, even more important is the need good chemistry among the team members.

The KIOS Innovation Hub has been setup to engage and manage the Centre's collaboration with industry, as well as to implement technology transfer and entrepreneurship of the ideas created at the KIOS Centre of Excellence. Moreover, following the Teaming project the Centre has secured several EU competitive funding projects from the EU and coordinates several projects with

industry in Cyprus.

The Centre has active cooperation with a large pool of national and international potential collaborators to form strong and multidisciplinary consortia. The outcome has been an increased participation in Horizon 2020 projects, and in particular Innovation Actions. Some of the KIOS CoE industrial partners have been given the opportunity for the first time to participate in large Horizon 2020 project proposals through their cooperation with KIOS.

The KIOS CoE project has a well-defined strategy and implementation plan for communication and dissemination targeting a number of audiences. Several measures are employed which are tailored specifically for the targeted audiences. Media publicity is utilised extensively to engage the public; special high profile events and conferences are organised to engage industry collaborators; scientific publications and the KIOS CoE Open Access Repository are enabling wider dissemination and exploitation of the Centre's research and innovation results. Activities designed to raise the international profile of the Centre are wide ranging and include scientific dissemination at international conferences, participation in strategic networks and clusters, as well as the promotion of the Centre to high profile dignitaries and officials, including royalty at Buckingham Palace!

FACTS AND FIGURES	
Project Name	KIOS Research and Innovation Centre of Excellence
Project Acronym	KIOS CoE
Project ID	739551
Project contact	Prof. Marios Polycarpou; mpolycar@ucy.ac.cy
Coordinator	University of Cyprus (Cyprus)
All Participants in Project	Imperial College of London (United Kingdom)
Start Day – End Day	01/03/2017 – 29/02/2024
Instrument Funding	Teaming
Call for Proposal	H2020-WIDESPREAD-01-2016-2017-TeamingPhase2
Project Website	http://www.kios.ucy.ac.cy/index.php
EC Financial Contribution / Overall budget	€ 15 000 000 / € 40 000 000
Project Keywords	Intelligent Systems and Networks; Critical Infrastructure Systems; Computational Intelligence; Fault Diagnosis.
Area	Information and Communication Technologies, Monitoring and Control, Cyber-Physical Security, Intelligent Networked Systems, Machine Learning



STRENGTHENING THE SFAX UNIVERSITY EXPERTISE FOR DIAGNOSIS AND MANAGEMENT OF EPILEPTIC ENCEPHALOPATHIES

Developmental Epileptic Encephalopathies (DEE) represent a group of severe epileptic diseases with early onset that lead to progressive cerebral dysfunction. The genetic causes are prominent. New molecular technologies have made it easier to diagnose and initiate treatment earlier leading to better patient outcomes. The SEED project will help the Sfax University (SU) in Tunisia to establish a collaboration (Twinning) with two internationally leading European institutions in DEE diagnosis, Aix-Marseille University in France and University of Antwerp in Belgium, to build research excellence and innovation in DEE clinical and genetic diagnostics. The aim is for SU to build long lasting research networks, to close knowledge gaps and to integrate into international programmes via training and staff exchanges.

This project has considerable value for Tunisians, for the communities, for the beneficiary parties, and for stakeholders.

Stakeholders include medical professionals, researchers and their scientific communities, epidemiologists, medical educators, clinical trialists, insurance payers, regulatory agencies and policy makers, patient families, non-governmental organizations (NGOs), advocacy groups, and medical reporters.

Expected impacts are:

- To improve the skills and technical capacities of Tunisian doctors, researchers, and health professional on the diagnosis of DEE.
- To increase the research excellence of the

coordinating institutions in the field of DEE.

- To enhance the reputation, attractiveness and networking channels of the coordinating institutions.

SU will become a designated “specialized epilepsy centre” as determined by the International League Against Epilepsy (ILAE).



Prof. Dr. Chahnez Charfi Triki, coordinator of the twinning project SEED. Project Collection.

What are some of the positive aspects highlighted?

Some of the positive aspects of SEED are:

- *Improving clinical diagnostics.*
- *Improving EEG techniques and interpretation.*
- *Enhancing the quality of DEE phenotyping.*
- *Increasing technical and molecular capacity.*
- *Improving interpretation of the results of NGS.*
- *Enhancing high throughput data management.*
- *Increasing knowledge transfer and ensure the sustainability of the project.*



SEED project members. Project Collection

This will enable it to receive fellowships and researchers from the Middle East and North Africa (MENA) region for training.

SEED project funding will provide access to scientific excellence at international levels for next generation sequencing domain, based on the expertise of SEED team on the EE NGS.

The combination of the specialised knowledge of the institutions involved, the training and technological factors will all contribute to introduce successful structural change at SU successfully.

What can we expect next with the project?

The project aims at stepping up and stimulating the scientific excellence and innovation capacity of SU thanks to the collaboration with Aix Marseille University (AMU) and Anvers University (UA), as well as the scientific quality of the involved EU partners through the implementation of training and capacity building activities.

The structural change will:

- Increase the number of publications with high impact factors (from 0 to 4).
- Increase the number of new generation sequencing experts. This will allow SU to develop its gene panel and to deploy the skills acquired in other genetic diseases (e.g. neuromuscular diseases, leukodystrophy),

How do you think the project will impact the economy of the region/country?

SEED seeks to reduce the costs of Developmental Epileptic Encephalopathies (DEE) diagnosis in three components:

Cost of time lost to patient/family: This is the time between electro-clinical diagnosis for DEE syndromes and the genetic diagnosis before the use of Next Generation Sequencing (NGS) was very long (15 years in one of Sfax University (SU) patient who died before the diagnosis was complete). With the availability of DEE panel testing, the genetic diagnosis can be obtained within months after birth.

Extra cost: Early clinical and genetic diagnostic of DEE helps to evaluate the recurrence risk; guiding medication management and avoiding aggravation with inappropriate drugs which would result in extra costs.

Monetary cost: Overall the cost of the etiological evaluation for epilepsy was significantly higher compared to cost of DEE panel testing. Indeed, the cost of current epilepsy gene panels ranges from 1 500 to 6 000 dollars compared to 19 000 dollars spent on diagnostic tests other than NGS.

and subsequently to improve their level of technological maturity (from 4 to 9)

- Train additional skills that will enhance

scientific results and impacts.

- Build databases.
- Increase the number of conferences organised, and extend participation in a greater number of international conferences.
- Write Horizon Europe projects, in particular Marie-Curie actions, aimed at supporting young researchers, and collaborative health

projects. The purpose here is to achieve one of the KPIs: participating at least in one collaborative health project before the end of SEED.

- Provide training in collaboration with the “National Agency for the Promotion of Scientific Research”.

FACTS AND FIGURES	
Project Name	Strengthening the sfax university expertise for diagnosis and management of epileptic encephalopathies
Project Acronym	SEED
Project ID	856592
Project contact	Prof. Chahnez Charfi Triki, chahnezct@gmail.com
Coordinator	Sfax University (Tunisia)
All Participants in Project	1. Université D'aix Marseille (France) 2. Universiteit Antwerpen (Belgium)
Start Day – End Day	01/10/2019 - 30/09/2022
Instrument Funding	TWINNING
Call for Proposal	H2020-WIDESPREAD-2018-03
Project Website	http://seedtwinning.com/
EC Financial Contribution / Overall budget	€ 799 916,25 / € 799 916,25
Project Keywords	Epilepsy, epileptic encephalopathies, eeg, electroclinical syndromes, genetic epilepsy, ngs, bioinformatics
Area	Epileptic Encephalopathy



CENTRE FOR FUNCTIONAL AND SURFACE FUNCTIONALISED GLASS

Mid-way through the Horizon 2020 project funded from the Teaming call the FunGlass has already succeeded to increase Slovakia's research and innovation capacity and is beginning to be recognized nationally and internationally as a Centre of Excellence on glass research. The main accomplishments of the project thus relate to:

- Investments into recruitment and research exchanges that provide Centre with critical mass of researchers and allow exemplary collaboration with advanced partners of the project. To this end the Centre has established four new research departments (each mentored by advanced partner) and thus tripled its personal capacity by recruiting researchers and doctoral students from around the world (14 countries representing four continents). FunGlass researchers accelerate their professional growth via training stays with advance partners in Jena, Erlangen, Padua and Madrid by being exposed to the best practices in operating research infrastructure. These stays also serve as "launching pads" for collaboration on joint research publications and proposals for competitive grants.

- Enhanced research excellence is evidenced by considerable increase of scientific publications in cited journals and conference proceedings. The scientific programme of the new Centre is regularly scrutinised not only by its Scientific Board (advanced partners) but also by International Advisory Board (accomplished scientists outside of EU) and Industrial Board (leading national as well as European glass producers). This allows Centre to identify on continuous basis cutting-edge R&I activities, with advanced partners taking lead in selected areas.

- Intensive world-class training activities for PhD students include access to 1-year internships with FunGlass partners at their home site under the supervision of world leading scientists, short-term training internships (up to 3 months) at

various research institutions in EU, visiting scientists programme with on-site workshops, semi-annual off-site three-day FunGlass school with complementary skills training as well as English competence programme focusing on academic writing skills.

- Excellent financial

and resource management – implementation of the management system for advanced research facilities of the Centre and creation of a dedicated administrative unit are two factors that allowed Centre to successfully manage its transformation/ exponential personal growth and at the same time pursue new opportunities that triggered approximately €13 million of additional funding since the kick-off of the project.

The Centre currently operates with healthy operating surpluses and has already secured funding to fully finance its expanding operations in the horizon of next three years. It has also secured more than €10 million of funding for major investments into its advanced research facilities. The Centre also succeeded to integrate new staff into existing local R&D funding programmes. Starting 2021, the Centre's management will actively pursue opportunities to secure new major funding. By 2023, the Centre is expected to achieve level of scientific excellence that will be matched by only a few other institutes in the Central European region. The Centre should be transformed into a competitive and qualified



*Prof. Dušan Galusek,
coordinator of the teaming
project FunGlass.
Project Collection.*



FunGlass Scientific Board (from left): prof. Alicia Durán (CSIC Madrid), prof. Dušan Galusek (TNUAD – FunGlass director), prof. Aldo R. Boccaccini (FAU Erlangen), prof. Lothar Wondraczek (FSU Jena), prof. Enrico Bernardo (UNIPD Padua)

candidate for funding under the following schemes: Marie Skłodowska-Curie Actions (in particular Innovative Training Networks programme), European Research Council grants, and other Horizon Europe calls. In an effort to build up a top-level, self-sustainable European research institution with diversified funding portfolio the Centre focuses on following key factors: research topics (quality and prospective value of Centre's research agenda), cooperation with industry (development of bilateral relationships – research grant partnerships, contractual research, buyer-seller relationship), and joint research efforts with advanced Teaming partners (in particular submission of joint grant proposals).

Representatives of the Center at various forums (workshops, presentations of best practices...) openly share FunGlass experience with the implementation of structural changes that have wider implications with respect to the objectives of the EU's efforts to spread research excellence and widen participation across low-performing regions. In particular:

- Decision making autonomy of the Centre is combined with active engagement of advanced partners: The main decision-making and supervisory body of the Centre is Scientific Board into which each advanced partner of the project appoints one representative. Decision-making powers of the members of the Scientific Board and their active engagement have proved to be crucial factors in enabling the transfer of their know-how, in particular in the Centre's scientific agenda, building its personal capacity (recruitment) and enhancing its doctoral programme (PhD

topics and curriculum).

- Advisory boards contributions: active communication with advisory board members brings in new perspective in development of research agenda and industrial partnerships via established International Advisory Board (six leading non-EU based researchers in the field nominated by Scientific Board) and Industrial Board (representatives of major glass producers in the region).
- Brain drain reversal: Research institutions in Central and Eastern Europe have been adversely affected by a brain drain that has been triggered as a side effect of the transformation processes that began after the fall of Communism and continues to this day. Soon after the launch of the project, the regional talent resources proved to be insufficient and the FunGlass team had to learn how to face the challenges of global talent competition. To this end, it was necessary to emulate the proven talent management strategies used by the leading European research institutions (especially in terms of adapting to the influx of talent from abroad) and thus reverse the brain drain into a brain gain.

The enhanced professional and qualified personal capacities of the Center developed through the implementation of the H2020 project FunGlass helped to secure additional funding from competitive national grants in the scheme of European Regional Development Fund (ERDF) and other national scientific agencies. Over the past 3 years the Centre has submitted almost 40 projects in international and national calls out of which 18 were successful, triggering more than €13 million of additional funding.

Among the most significant success belongs 3 projects funded from the ERDF national scheme. The implementation of projects concerns the procurement of advanced research infrastructure, which should be promptly fully utilised thanks to the recently increased personnel capacity of the Centre. The amount allocated for infrastructure investments reaches €10 million while a further €2 million is allocated to finance the personal capacities and operations (consumables, travel).

From the financial perspective the FunGlass business plan was outperformed in terms of additional funding triggered from the national grants. Currently, the main challenge turns out to be the ambition to successfully implement

approved projects and to fully utilize secured financial resources (in terms of research infrastructure procurement as well as recruitment of new researchers/doctoral students). This, in turn, will further enhance the FunGlass's efforts to become an internationally recognized Centre of excellence.

The Centre strives to boost public understanding of science and technology and increased appreciation of collaboration schemes in the context of European research landscape. To this

end, the efforts of the Centre has been recently recognized at the following prime-time annual awards extensively covered by national media in Slovakia: Scientist of the Year 2019 (president of Slovakia Ms. Caputova presented prof. Galusek with the „Personality of International Cooperation“ award), Science and Technology Awards 2019 (Ministry of Education recognized FunGlass as “Scientific team of the year”), Crystal Wing 2017 (prof. Galusek has been one of the three short-listed nominees in the field of Science).

FACTS AND FIGURES	
Project Name	Centre for Functional and Surface Functionalised Glass
Project Acronym	FunGlass
Project ID	739566
Project contact	Dušan Galusek, prof., DSc. dusan.galusek@tnuni.sk
Coordinator	Alexander Dubček University of Trenčín (Slovakia)
All Participants in Project	1. Friedrich-Alexander Universität Erlangen-Nürnberg (Germany) 2. Friedrich-Schiller-Universität Jena (Germany) 3. Consejo Superior de Investigaciones Científicas (Spain) 4. Università degli Studi di Padova (Italy)
Start Day – End Day	01/03/2017 – 29/02/2024
Instrument Funding	Teaming
Call for Proposal	WIDESPREAD-01-2016-2017 - Teaming Phase 2
Project Website	www.funglass.eu
EC Financial Contribution / Overall budget	€ 15.000.000 / € 25.525.854
Project Keywords	Functional glass, surface functionalisation, centre of excellence, training, industrial collaboration, self-sustainability, academic autonomy
Area	Materials science (glass and ceramics, biomaterials, glass processing, functional glass, coatings)



RENEWABLE MATERIALS AND HEALTHY ENVIRONMENTS RESEARCH AND INNOVATION CENTRE OF EXCELLENCE

As a H2020 Widespread Teaming project, the InnoRenew Centre of Excellence (CoE) will lead the development of a new research institute in Slovenia – the InnoRenew CoE. Its research topics will focus on the use of wood in buildings, improving sustainable construction, supporting the wood-value chain, and providing healthy living and working environments for all building users.

The InnoRenew CoE, along with its partners, will provide new knowledge and solutions to support sustainable construction worldwide for the benefit of society, environment, and economy. By so doing, the project will increase the innovation capacity and the scientific competitiveness of Slovenia.

The InnoRenew CoE performs both fundamental and applied research and seeks to solve problems with direct value for society. The institute will increase the RDI capacity of all of its project partners, the forest sector companies, and Slovenia in general. It will also increase the quality of research through better access to research funding and upgrading scientific equipment, operated by its diverse staff with researchers and collaborators from around the globe.

Economic impacts. The InnoRenew CoE already works closely with industry by helping them to implement new technologies and knowledge, and to pursue innovation in a systematic way. Partnering with companies in Slovenia and abroad ensures the CoE's scientific work takes into account practical applications. We believe this type of partnership will change the culture in industry, turning it more

willing and ready to adopt research and innovation practices. Ultimately, it will lead to improve resource utilisation in the sector, reduced environmental impacts, and to enhance economic prosperity across the value chain.

Societal Impacts. The various scientific and economic benefits of the Centre's research will lead to broader gains for society. Enhancing the wood value chain will lead to increased use of renewable materials and products. This in turn generates environmental benefits and supports rural communities.



*Dr. Andreja Kutnar,
coordinator of the teaming
project InnoRenew CoE.
Private Collection*

Which are the motives that drove your decision to participate in SEWP calls?

We wanted to take the opportunity to elevate Slovenian research to the level of Europe's highest performing countries, and to produce science that makes meaningful contributions to sustainable construction. The grant also gave us a chance to improve the innovation and research capacity of Slovenian companies by partnering with them to transfer research results translating them into products and services for society.

In another hand, close cooperation with universities, as well as primary and secondary schools will lead to improved education on sustainability. This, in combination with high quality communication for and with the general public will lead to increased acceptance of renewable materials in construction.

By working with policy makers, the CoE expects to support sustainable development goals and lead to healthier, more sustainable buildings for all.

Over time, the planned societal and economic impacts will transform Slovenia's ailing forest sector and will boost regional and eventually global forest sectors. This includes expanded access to research, best practices, the ability to regain national market share, and eventually to enter foreign markets with new and improved products. With these benefits, the InnoRenew CoE expects industry and policy makers to further support research and to provide continued funding (through research contracts, grants, and other mechanisms). This will maintain a sustainable research infrastructure for Slovenia's forest sector, headed by the InnoRenew CoE.

How do you think the project will impact the economy of the region/country?

The most direct and immediate effect are the 70 new jobs planned at the InnoRenew CoE (both research and support). The organisation will also invest in new equipment and in a building which will also strongly contribute to the local and regional economy.

Beyond these immediate impacts, the focus on transferable knowledge will increase the profitability for partner companies through new product development, process improvements, and innovation support. The effect will multiply throughout the value chain leading to new job creation at all levels.

With the complementary funding the InnoRenew CoE could acquire a unique collection of top of the range research equipment that has made it a destination for visiting researchers from as far away as New Zealand. During the first phase of the Widening project, the partners founded the Living



The new InnoRenew CoE building. Project Collection

Laboratory InnoRenew – a structured innovation and cooperation network of participants (companies, research institutes, members of the public, and government organisations). In Phase 2 of the project, the Living Lab InnoRenew was established as formal part of the new research centre, and it has continued to grow. The Slovenian Ministry of Education, Science, and Sport is providing infrastructural funds up to 30 M Euros. The InnoRenew CoE is successfully engaging with the wider public. On the social media front, the InnoRenew CoE project currently has 1124 followers on its twitter account (@

What lessons can be derived from this experience in the preparation of a proposal to SEWP?

There are many lessons to be learnt from the application (and implementation) phases of the InnoRenew CoE project. Perhaps the two most critical lessons from the preparation phase are that having a strong national and international network of partners to support the process and join the proposal is critical, and that doing as much planning as possible with the national authorities responsible for complementary funding prior to submission is absolutely vital. In addition to the support provided during the application phase, our national and international networks have proven to be essential in supporting our early work, in partnering with us on new applications, and in helping us to find the right talent.

If further negotiations and pre-planning had been possible for obtaining the complementary funding, it would have saved some time in implementing some of the project's most challenging administrative tasks.

InnoRenewCoE), 1454 likes on Facebook (<https://www.facebook.com/InnoRenew/>), and 495 members in its LinkedIn group. 420 news items have been published about the InnoRenew CoE in national and international outlets. The Living Lab InnoRenew has hosted several meetings, provided training sessions on innovation, and has built a strong industrial and research following for the InnoRenew CoE. The living lab currently has 115 members from 28 countries.

The InnoRenew CoE has been very active at international conferences, including the World Conference on Timber Engineering in Seoul, South Korea in 2018, several COST conferences, the Society of Wood Science and Technology 2019 Convention in Yosemite, California. In addition, the InnoRenew CoE has organised its own international conference in 2019 and will host Society of Wood Science and Technology annual

convention in Portorož, Slovenia during 2020.

This highly successful international collaboration is evident in overall scientific output – about 73% of scientific papers are published with co-authors from outside Slovenia. The Centre's success has brought many notable visitors to see and support its development. ERC President Prof. Jean Pierre Bourguignon, Brent Hartley, the US Ambassador to Slovenia, Klaus Reidel, the German Ambassador to Slovenia, have all visited the institute in the last 3 years.

In 2019, the InnoRenew CoE established a new open-access, peer-reviewed scientific journal, "Interdisciplinary Perspectives on the Built Environment". The Journal has begun publishing high-quality interdisciplinary scientific articles related to sustainable and healthy buildings.

FACTS AND FIGURES	
Project Name	Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence
Project Acronym	InnoRenew CoE
Project ID	739574
Project contact	Prof. Dr. Andreja Kutnar; andreja.kutnar@upr.si
Coordinator	University of Primorska (Slovenia)
All Participants in Project	1. Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V. (Germany) 2. Univerza V Mariboru (Slovenia) 3. Javni Zavod Republike Slovenije Za Varstvo Kulturne Dediscine (Slovenia) 4. Zavod Za Gradbenistvo Slovenije (Slovenia) 5. Institut Za Celulozo In Papir (Slovenia) 6. Zavod E-Oblak Poslovne In Raziskovalne Dejavnosti (Slovenia) 7. Nacionalni Institut Za Javno Zdravje (Slovenia) 8. Regionalna Razvojna Agencija - Ljubljanske Urbane Regije Zavod (Slovenia) 9. Innorenew CoE Center Odlicnosti Za Raziskave In Inovacije Na Podroczju Obnovljivih Materialov In Zdravega Bivanjskega Okolja (Slovenia)
Start Day – End Day	01/04/2017 – 30/09/2023
Instrument Funding	Teaming
Call for Proposal	H2020-WIDESPREAD-01-2016-2017-TeamingPhase2
Project Website	http://innorenew.eu
EC Financial Contribution / Overall budget	€ 14 996 025 / € 44 988 075
Project Keywords	Renewable materials, building materials, built environment, human well-being
Area	Interdisciplinary research spanning material science, sustainability, human health, construction, cultural heritage, business and management, computing, and design and architecture.

THE VIRTUAL CENTRE FOR INTEGRATION OF INNOVATIVE SYNTHESIS AND PROCESSING METHODS FOR SUSTAINABLE ADVANCED MATERIALS OPERATING UNDER EXTREME CONDITIONS

The main objective of the SUPERMAT twinning project is to create a virtual centre of excellence to boost the research profile of the National Research & Development Institute for Non-Ferrous and Rare Metals (IMNR) in Romania.

How do you think the project will impact the economy of the region/country?

In 2017, financing was provided for a project coordinated by the IMNR in the STAR programme, funded by the Romanian Space Agency and two ERANET projects. Along with other major projects in progress, SUPERMAT reinforces IMNR's desire to become a centre of excellence at the regional, national and European levels in the field of non-ferrous and rare-metal materials engineering: covering metals, alloys, composites and hybrids. IMNR intends to expand and strengthen the partnership and collaborative relationships with the national and European scientific community, it is currently coordinator of the virtual centre SUPERMAT, member of MHTC Măgurele and ROHEALTH clusters, and of European technology platforms NANOFUTURES, NANOMEDICINE, RAW MATERIALS.

The main goal of the project will be achieved by increasing the knowledge and innovation potential for sustainable advanced materials operating under extreme conditions.

The development of these materials opens new opportunities to enhance the competitiveness of regional and national SMEs in the machinery and equipment sectors. The concept of the virtual centre SUPERMAT has relied on three developments. One is the achievement of significant improvements of the scientific capacity of IMNR in novel nano/micro structured materials under extreme conditions. A second is the application of many innovative actions and of boosting entrepreneurship. The third reflects the speeding up of technology transfer and services offered by IMNR across Europe.

The proposed support activities have fostered progress in these fields by improving existing modelling and simulation tools for ab-initio design of novel multi-materials for extreme



Dr. Radu Robert Piticescu, coordinator of the twinning project SUPERMAT. Private Collection.



Second meeting of SUPERMAT project at Bucharest, 2018. Project Collection

environments; by selecting case study tested materials with high application potential in energy equipment and machinery; by proposing best available technologies for selected materials; and by characterizing certification procedures for future standardisation. The sustainability and continuity of the virtual centre SUPERMAT will be ensured by proposing joint collaborative research projects for the European Research and Innovation Framework Programme and National projects calls, and through involvement in the strategy of EIT Nanofutures and Critical Raw Materials. SUPERMAT has already started a service plan and an alliance as an international centre of excellence. Its focus rests on industry needs, in particular industries that operate under extreme conditions (such as high temperature, and high pressure).

Companies such as Dacia-Renault, ENSA, HONEYWELL, DIAD GROUP, and HIPERBARIC have been identified, and fruitful discussions are taking place, concentrating on particular innovation needs.

We have created innovation initiatives (innovation vouchers and “a la carte” solutions) and transferred them towards key industries identified and clustered around particular applications. These industries are not only associated with the Coordinator (IMNR-Romania), but also with the partners involved, being identified in the framework of their Regional Smart Specialization Strategy (RIS3).

What are some of the positive aspects highlighted?

Among the positive aspects are the training activities and secondments for young scientists conducted in the field of materials for extreme conditions, and the summer schools with the participation of specialists from the consortium partner institutions. The outputs have been disseminated in prestigious international conferences (such as the E-MRS Spring and Fall Meeting), 15 papers have been published, along with a book chapter in a high profile European publishing house. The scientific prestige of senior researchers has increased by cooperating in editorial committees of outstanding journals, and by participating as members in the two key COST actions.

The service plan prepared by the interlinked centre of excellence that constitutes the SUPERMAT consortium is designed to ensure that the project will last beyond its programmed 3 years.

In this regard, the consortium sought to improve the research infrastructure, thereby reinforcing the specialized innovation services associated with the coordinating institution.

Some innovation products and materials production (high entropy alloys and advanced

What were the main success factors of your proposal?

SUPERMAT was a flagship project that ensured the growth of IMNR competitiveness and its transition to a higher science/technology level. It enabled IMNR to become a centre of excellence in the field of materials science and engineering.

The IMNR was recommended to lead this project because of its connection with the Centre for the Study and Intensification of Metallurgical Processes at High Temperatures and Pressures – HighPTMET. This was realized through a structural funds project and launched at the end of 2013.

Moreover, IMNR has “contributed to the fulfilment of a strategic area of research within the intelligent specialization strategy, operating at national and regional levels,” explains Dr Radu Robert Piticescu, the coordinator of the SUPERMAT project.

In addition to the specialisms and the unique infrastructure on which the institute is based, the strength of the IMNR lies in the continuous open collaboration through partnerships with outstanding RD&I European Centres.



*SUPERMAT laboratory at IMNR, Bucharest.
Project Collection.*

- Common education programmes and specific staff training have been started, and were conducted by the academic members of the twinning project.

The main structural change that SUPERMAT fostered was the concept of a transnational competence Centre aligned with regional smart specialization strategies.

The completed innovation strategy is expected to have a significant impact in the regional network of innovation in all the participating countries/regions of SUPERMAT.

Moreover, all the regions taking part in SUPERMAT, led by Castilla y Leon region (Spain), successfully developed a thematic area of advanced materials for industry under the S3 platform, <https://s3platform.jrc.ec.europa.eu/thematic-areas>.

SUPERMAT has also ensured new funds to support its activity through:

- Participation and activities of the COST action (CRM_EXTREME);
- Providing key services to industry, ensuring knowledge flow, know-how transfer, and constant financial support from industry.

coatings) have started. Their patent is under submission and discussions with the target industry are underway.

The follow-up of the SUPERMAT project is being performed at four levels:

- Members of the project, including the coordinator, have been integrated into a COST action (CRM_EXTREME) where key co-proposers form the core of the project SUPERMAT. This COST action discusses the role of critical raw materials in the industry under extreme conditions.
- An international centre of excellence was established in 2018, aligned with regional smart specialization strategies.
- A common plan for undertaking projects under the umbrella of H2020 and M-ERANET was established.

- Through common communication activities (active participation of SUPERMAT in the EU-Materials Research Society meetings). SUPERMAT has established a communication strategy led by the University of Burgos along with industry sectors. The strategic communication plan involves highly specialized workshops with industry to examine various innovation needs on new materials, and accreditation procedures with the main standardization bodies (such as ISO, AENOR, ARNOR).

FACTS AND FIGURES	
Project Name	The VIRTUAL Centre for Integration of INNOVATIVE synthesis and Processing methods for SUSTAINABLE advanced Materials operating under Extreme Conditions
Project Acronym	SUPERMAT
Project ID	692216
Project contact	Dr. Radu Robert Piticescu; rpiticescu@imnr.ro
Coordinator	National Research & Development Institute for Non-Ferrous and Rare Metals - I.M.N.R. (Romania)
All Participants in Project	1. Italian National Agency for New Technologies, energy and Sustainable Economic Development (Italy) 2. University of Burgos – Excellence International Center in Critical Raw Materials for Industrial Technologies – ICCRAM (Spain) 3. Laboratory for Technologies in New Energies and Nanotechnologies Liteh (France) 4. KTH Royal Institute of Technology (Sweden) 5. University of Strathclyde – centre for Precision Manufacturing (United Kingdom)
Start Day – End Day	01/01/2016 – 31/12/2018
Instrument Funding	TWINNING
Call for Proposal	H2020-TWINN-2015
Project Website	http://www.imnr.ro/supermat/
EC Financial Contribution / Overall budget	€ 996 000 / € 996 000
Project Keywords	Nano/micro structured materials, multimaterials for extreme environments, energy equipment and machinery, training for young researchers
Area	Critical raw materials



THREE DIMENSIONAL BREAST CANCER MODELS FOR X-RAY IMAGING RESEARCH - MAXIMA

The development of realistic three-dimensional computational and physical models of breast tumours with irregular shapes has long been urgently needed. Scientists from biomedical engineering at the Technical University of Varna (Bulgaria) are active in this area, both in modelling and in the simulation of computational breast phantoms, as well in x-ray breast imaging techniques. To advance their research aims and thus to raise the profile of the researchers and S&T capacity of their host organisation, collaboration with top research institutions from complementary areas of expertise is vital. The network of the three MaXIMA twinning project partners has sought to:

- increase the research excellence of the host organisation,
- integrate the results of the whole research programme,
- facilitate progress beyond the possibilities arising from particular projects,
- advance the research activities of all partners, through mutually fruitful collaboration.

Specific objectives of the MaXIMA project are:

- To promote the close cooperation and twinning actions for upgrading and boosting research potential in the fields of modelling and simulations dedicated to x-ray breast imaging.
- To increase local research capacity through interactions with highly qualified scientists and technicians.
- To disseminate the results of the project to the wider scientific community.
- To create a platform for shared resources. This extends to: databases of clinical and computer

modelled breast tumour data, as well as mammographic x-ray imaging systems; software applications and clinical systems; and standardized approaches to be used for comparative evaluation and data exchange. The goal here was to agree on a coordinated strategy of research in this field and avoid duplication of work.



Prof. Kristina Bliznakova, coordinator of the twinning project MaXIMA. Project Collection.

Which are the secrets to success with project proposals?

A well written project proposal with innovative, clear, realistic and achievable objectives. An interdisciplinary project team should be led by internationally recognized scientists. All participants should demonstrate high scientific credentials and provide complementary expertise within the consortium. The project will have a higher chance of success, if its planned results are market oriented and have high social value.

A major drive of the MaXIMA Project was to establish the basis for future long-term sustainable collaborative research, training and development actions including joint European and national



The MaXIMA research team during experimental training at the European Synchrotron Radiation Facility in Grenoble, France. Project Collection.

funded research projects. The partners presented a new project to the EC aimed at reinforcing the current state of research in the field of breast cancer X-ray diagnosis at the host institution country. This project has been extended to embrace new collaborations with European and US partners, active in this specific field.

What would be your main recommendation for both researchers and EC concerning the lack of success of your country in FPs?

One approach is to attract excellent scientists to Bulgaria, and to provide excellent conditions for them to establish and lead their own teams. For example, throughout a Marie Skłodowska-Curie Action Individual Fellowship, we are planning to attract an excellent young scientist from abroad, and to initiate successful collaboration. Another way forward is to increase research collaboration with leading groups in Europe, and encourage joint scientific visits. Following the project completion, the MaXIMA group plans to continue its training by obtaining expertise from collaborators. We also apply regularly for funding from different sources. Although the funding bar is set very high, we never give up.

The MaXIMA project contributed to:

- Enhancing the science and technology capacity of the host institution - by the completion of planned training activities

through research and personalised projects, research staff were able to accumulate a significant amount of academic and scientific output in journal papers, conference participation, chapters in books, workshops and others.

- Enhancing management and organizational skills - the many events organised within the framework of this project resulted in more frequent organisation of training schools, scientific seminars and workshops. All of this improved the effective planning of future collaboration, led to more organised research, and resulted in more effective and timely high quality and original publications.
- Impact on the region - this action has established one of the few research groups of biomedical engineers in Bulgaria by strengthening their research excellence in biomedical engineering research and education. The project research group from Varna has really become a team of excellence in the field of modelling and simulations for x-ray imaging techniques.
- Impact on the scientific community - the interaction between the research groups enormously contributed to the development of innovative and clinically relevant computational models of breast tumours with irregular shapes, dedicated for both simulated and experimental trials. These provided a viable alternative to extremely costly and lengthy clinical trials.

A database with breast lesions, and 3D printed versions of computational breasts models with integrated breast lesions are now being used in students' training programmes and for other educational purposes. Another success was the creation of a methodology for fabricating physical phantoms used for the design and manufacturing of the first physical breast phantom dedicated to phase-contrast x-ray imaging.

The successful completion of the MaXIMA project triggered new EU grants. The project coordinator was awarded the 1st prize in Marie Skłodowska-Curie Action (MSCA) 2017 awards in category "Contribution to a better society" for further research in this field (<https://ec.europa.eu/programmes/horizon2020/en/news/marie-sklodowska-curie-actions-msca-2017-prizes-winners-announced>). This is a direct result of fine collaboration amongst the partners. This grant boosted both the research capability and the Europe-wide scientific integration of the host institution's researchers. As indicated and approved in the MaXIMA programme, a new H2020 project was devised by all partners within the duration of the 36-month project. This reinforces productive mutual scientific links for female breast cancer diagnosis research.

During the MaXIMA Project life cycle, the activities of team members' were comprehensively publicised through TV and other media in the host

country (Bulgaria). Furthermore, the project was selected to show the benefits from EU investments by participating in the #investEU campaign.

How beneficial for your participation in FP7/H2020 projects do you consider services provided by the National Contact Points (NCPs)?

The services provided by the National Contact Points are very helpful. For the TWINNING project, I consulted the NCPs several times. I did the same when applying for ITN and RISE proposals. NCPs also provide useful information by means of power point presentations, as well as providing me with regular information about upcoming new calls and other relevant events. For instance, NCPs alerted us very early for the upcoming RISE call, for which we intent to apply.

The MaXIMA project's website contains a detailed list of all activities, undertaken during the three-year action period (<http://maxima-tuv.eu/project-media/>). A large number of international conferences, seminars, and training schools, were organised within the project's lifetime. In 2017, the project team was awarded research beam time recognition at the European Synchrotron Radiation Facility (ESRF, Grenoble, France) for conducting excellent research in breast imaging.

FACTS AND FIGURES	
Project Name	Three dimensional breast cancer models for X-ray imaging research - MaXIMA
Project Acronym	MaXIMA
Project ID	692097
Project contact	Prof. Kristina Bliznakova, kristina.bliznakova@tu-varna.bg
Coordinator	Technical University of Varna (Bulgaria)
All Participants in Project	1. Katholieke University of Leuven (Belgium) 2. University of Naples – Federico II (Italy)
Start Day – End Day	01/01/2016 – 31/12/2018
Instrument Funding	Twinning
Call for Proposal	H2020-TWINN-2015
Project Website	http://maxima-tuv.eu/
EC Financial Contribution / Overall budget	€ 998 050 / € 998 050
Project Keywords	Advancement in x-ray breast imaging research, advancement in modelling tumours with irregular shapes, advancement in use of 3D printing for physical phantoms
Area	Life Sciences

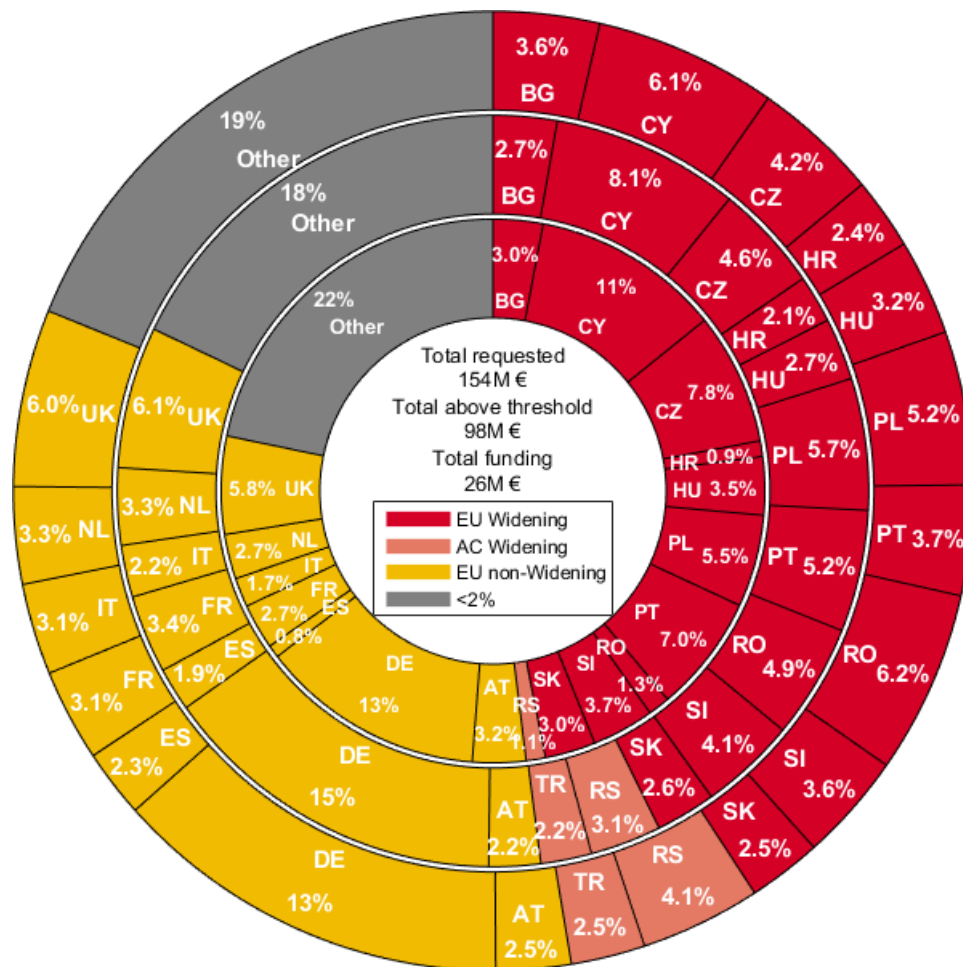
ANALYSIS AND STATISTICAL RATES OF SPREADING EXCELLENCE AND WIDENING PARTICIPATION (SEWP) CALLS

Kaspars Kalnins

Latvian NCP for Spreading Excellence and Widening Participation

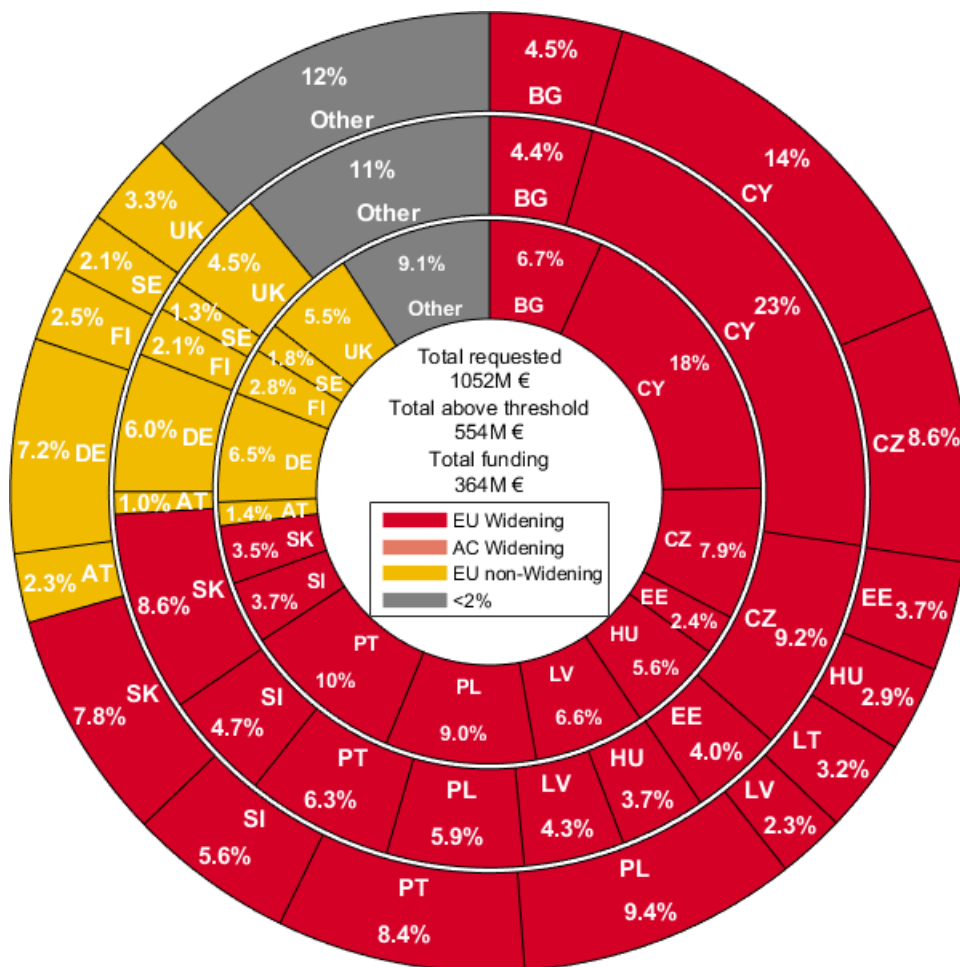
More than a billion euro of EC funding has been awarded to participants across the EU and associated countries, where more than half of the funding has been received by research institutions in widening countries to serve as a springboard to boost their innovation potential. Besides funding intensive Teaming, Twinning and ERA Chair calls, 260 thousand Euro have been allocated to COST actions serving as building blocks for the development of research capacities.

A graphical statistical analysis of Spreading Excellence and Widening Participation along with a dedicated analysis tool was provided by NCP_WIDE.NET (<https://www.ncpwidenet.eu/statistics/>). Its objective is to provide all stakeholders with an interactive tool to analyse Teaming, Twinning and ERA Chair calls in the most concise and comparative manner. With a single click by country icon (or selection from the country list), the relevant country is highlighted with its regional perspective on project/funding/coordination success and networking.



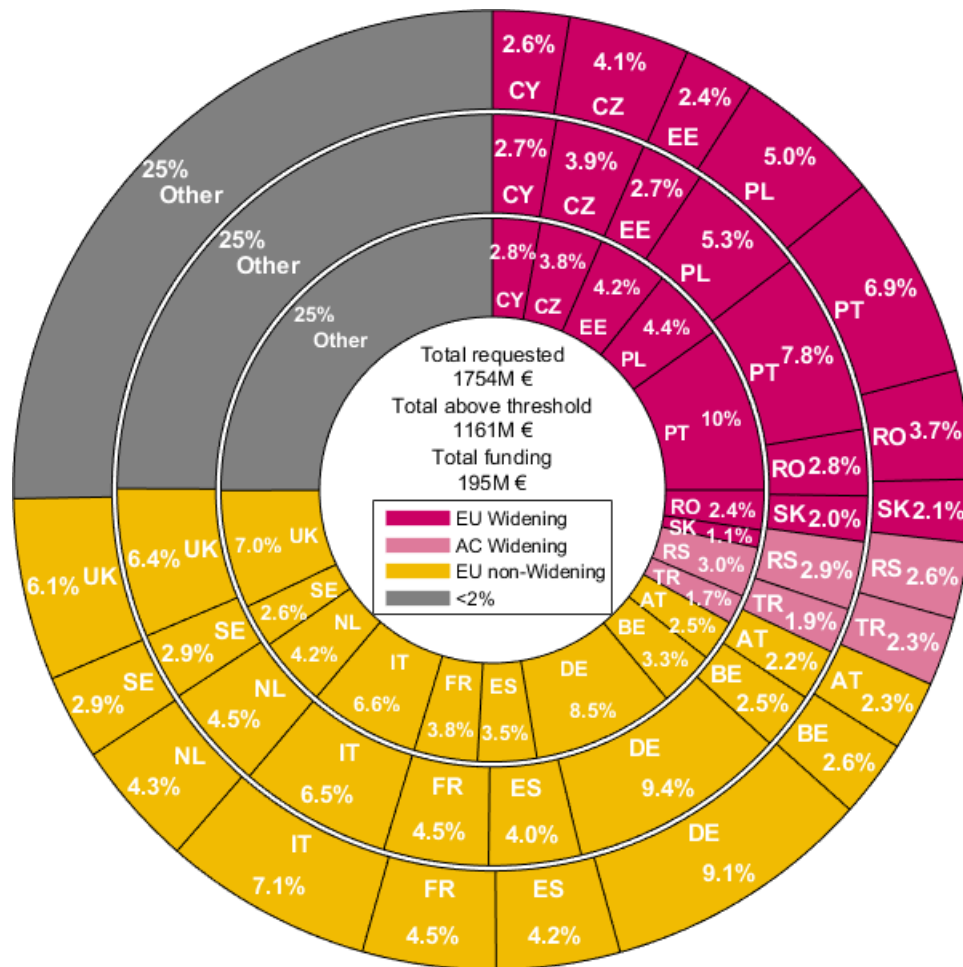
Teaming (phase 1)
money wise summary
doughnut.

Teaming (phase 1). This highly competitive call had a 16.4% overall success rate out of 373 submitted proposals. This is a 1:6 success rate. The EC awarded 61 Teaming (phase 1) projects with seed funding for the preparation of more fully developed and ambitious phase 2 projects. The triple doughnut diagram shows in the outer ring the amount requested by each participating country in their proposal submitting phase. The second ring lists the amounts for the proposals which were deemed of sufficient quality for funding. The inner circle reveals the funding actually allocated to the short listed participants along with cumulative amount per country. Individual country has its share indicated by acronym and percentage from a total budgeted for proposals/above threshold and granted if it's above 2% threshold, while those countries with a total activity below 2% threshold are piled in Other group. Both Cyprus (CY) and Germany (DE) are highlighted as most active nations in Teaming (phase 1) preparation.



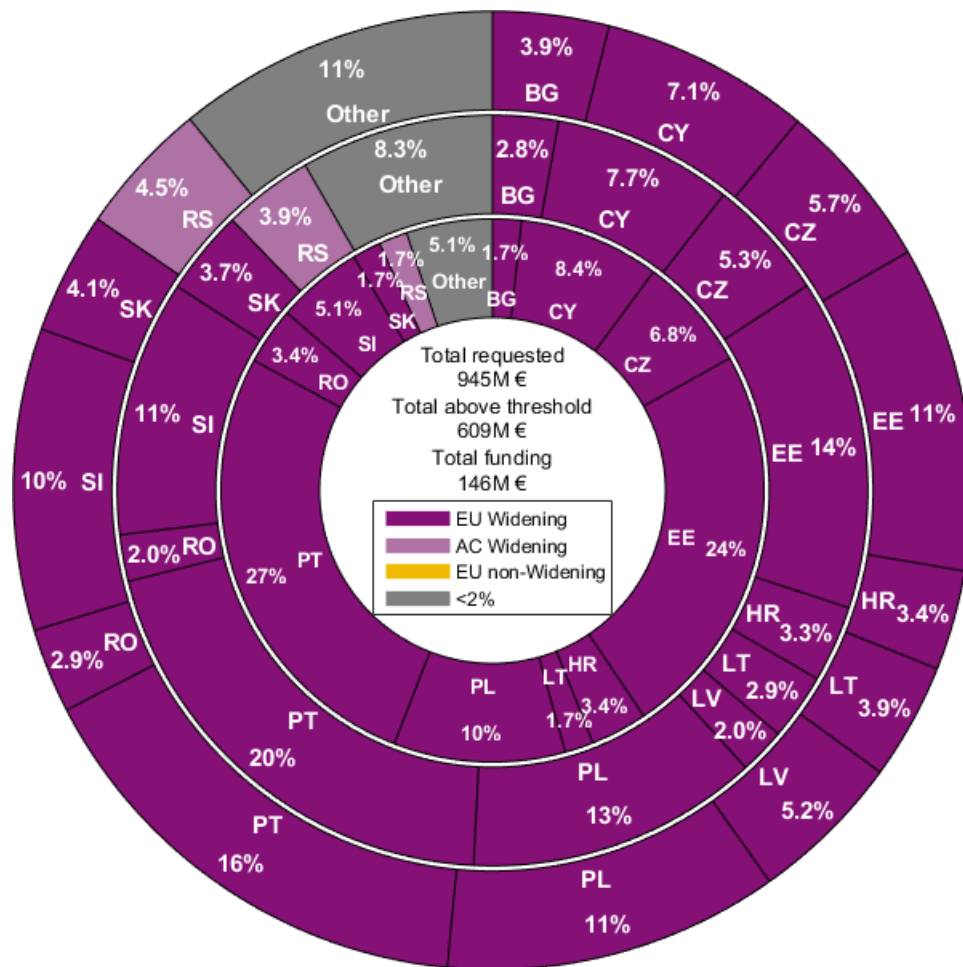
Teaming (phase 2)
funding summary
doughnut.

Teaming (phase 2). Here the success rate for the call from both EC and national authorities was 34.2% out of 73 submitted proposals. This is a 1 : 3 ratio. Only ten out of fifteen widening countries secured project funding while Cyprus with a focused national funding policy secured impressive 18%. A number of lessons can be drawn here including the success of national policies from Teaming within Horizon 2020 as being critical for aiming towards Horizon Europe.



*Twinning funding
summary doughnut.*

Twinning. This is the most competitive of all Spreading Excellence and Widening Participation calls with 11% success rate out 1.916 submitted proposals. This is a success rate of almost 1 : 9. Each out of fifteen widening countries secured project funding. Portugal achieved almost forty funded projects, twice as many as the next highest country. This shows a true open science policy in action, and successfully promotes EC science policies.



ERA Chair funding
summary doughnut.

ERA Chair. This is the only scheme in Spreading Excellence and Widening Participation calls with an individual beneficiary. It should be noted that all ERA Chair call projects are designed to be geared to individual beneficiaries and are hence applicable for ESIF refinancing according to relevant national legislation in the various widening countries. The competition is very high with a 15% overall success rate out of 392 submitted proposals. This is a success rate of 1 : 7 ratio. Twelve out of fifteen widening countries secured project funding. Portugal and Estonia secured more than a half of the funding budgeted for institutional changes. Both are in the spotlight for decisions over national policy advisers for forthcoming multiannual financial frameworks.



This publication presents a selection of 15 of the most successful projects from Spreading Excellence and Widening Participation Programme. They have provided with excellent research and new infrastructures, knowledge, and solutions that will allow to tackle some of the biggest societal challenges that we face today. Furthermore, by linking up the best European scientists in their respective fields, these projects are allowing to create new research networks that will last after the end of the projects, helping to reduce disparities in research and innovation performance, fragmentation and the duplication of effort in European research. All of them contribute to reinforce the European Research Area and National and Regional research initiatives. The NCP_WIDE.NET consortium is grateful to the coordinators of the featured projects for their invaluable assistance in the production of this publication.



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