

Success factors of H2020 widening instruments in Slovakia: lessons learnt and future outlook

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ERAdiate

Enhancing Research and Innovation dimensions of the University of Žilina in intelligent transport systems

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1) EXECUTIVE SUMMARY

This workshop discussed whether Widening Actions improves the research and innovation potential of Slovakia and other Widening Countries. From the presented cases, four main factors describing a successful implementation of the covered Widening Actions were identified alongside suggestions for improvement.

Research excellence and brain gain: Widening Actions raise the (international) visibility of beneficiaries by creating a local community connected to and benefiting from talents across Europe (and beyond). Yet, the conditions with which talents are retained should be revised to be made more competitive.

Training (and job) opportunities: building an excellent research capacity creates an ecosystem where (local) researchers and innovators can benefit from. A dynamic environment that is translated both in training opportunities, as well as job opportunities. Yet, trainings should also target administrations coordinating Widening Actions in order to keep the information flowing to the benefit of the research community. Here the role of the NCPs appears critical in ensuring ambitious aims.

Business, infrastructure and funding opportunities: contacts with industry and other stakeholders are stimulated which increases the potential impact on regional development. However, the transition between funding schemes is challenging, yet critical for a local dynamic to survive. For instance, alignment between Widening Actions and other EU funding schemes should be improved, the main one being ESIF. Also, complementary funding at national level or commitment at the institutional level is a must to lower the uncertainty at the level of the individuals and institutions driving the process.

Structural change: the role of the institutional context should also be emphasized. Strong support by institutions, and their “readiness” to adjust to a transition that is an “*evolution and not a revolution*” is critical to reach the objective set by granted Widening Action. For example, by an adjustment in terms of autonomy to the Widening team, and adjustment of the institutional strategy to fully integrate the objectives of the Widening Action.

2) SUMMARY OF THE WORKSHOP

A) RATIONALE AND MAIN OBJECTIVES

Although the European Union provides funding opportunities through widening Actions¹, the involvement of the Slovak research community to Horizon 2020 remains rather limited when comparing to other widening countries²³.

Yet, excellent cases from the Slovak Research and Innovation (R&I) community as well as other Widening countries in Widening Actions are compelling and should be used as good practices to inspire the national research community and any other researchers in Widening countries.

With this background in mind, the objective of the Workshop was to:

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

² (European Commission, 2018) Research & Innovation performance and Horizon 2020 country participation for Slovakia. http://ec.europa.eu/research/horizon2020/pdf/country-performance/sk_research_and_innovation_performance.pdf#zoom=125&pagemode=none

Preliminary position of the Ministry of Education, Science, Research and Sport of the Slovak Republic on the design of the 9th

EU Framework Programme for Research and Innovation

https://www.era.gv.at/object/document/2871/attach/Slovakia_FP9_FINAL.pdf

(EC JRC, 2017) JRC: RIO Country Report 2016: Slovakia

<https://rio.jrc.ec.europa.eu/en/country-analysis/Slovakia/country-report>

³ Also see presentation by Daniel Straka

- Present successful Widening Actions implementations from Slovakia and neighboring countries (Slovenia, Croatia).
- Bring together Slovak and other widening participants to share their experience, challenges, and success factors from their involvement in various H2020 widening instruments (ERA Chairs, Twinning, Teaming, COST).
- Highlight main success factors and related challenges from H2020 Widening actions in Slovakia and comparable countries.

The Agenda⁴ was designed to address these objectives. Interventions⁵ were selected to explain the different Widening Actions (Milan Dado, Mickael Pero), provide an overview of current status of Slovak involvement (Daniel Straka), and share positive widening experiences in Slovakia and neighboring countries (Peter Hostak for Teaming, Zuzana Lisonova and Tatiana Kovacikova for ERA Chairs, Tomislav Vuletic and Michael Burnard for COST Actions). A general presentation of several widening Actions by the Widening NCP from Cyprus as one of the most successful country in Widening actions was given (Constantina Makri).

The input given by the presentations was complemented by additional written testimonies coming from the experience of speakers implementing Widening Actions. These inputs were added to the results obtained from the fruitful discussion that took place during the day.

These several sources of information enabled us to draw preliminary lessons learned regarding success factors that are relevant to Widening Actions.

B) LESSONS LEARNT: EXECUTIVE SUMMARY

This Workshop managed to showcase good examples of Widening Actions, explain the context in which they take place, and provide common learnings from their experience.

Before proceeding, some words of caution regarding the results of this workshop: The evidence gathered is limited to the ones presented during the Workshop which consists in qualitative information collected before and during the Workshop. In addition, one must keep in mind the context in which the widening instrument is utilized as there is “no universal recipe for success”.

Keeping these limitations in mind, **four factors** were identified by the Workshop to describe a successful implementation of the covered Widening Actions are the following:

- **Research excellence and brain gain**
- **Training (and job) opportunities**
- **Business, infrastructure and funding opportunities**
- **Structural change**

Each topic will be illustrated by the collected testimonies and comments harvested during the day.

Research excellence and brain gain

The fundamental starting point for addressing the consolidation and development of an activity in a given territory related to a Widening Action is research excellence. This is mentioned by all Widening Actions, as providing the opportunity to learn hands-on from their peers.

⁴ see agenda in annex

⁵ All presentations are available here: <http://www.erachair.uniza.sk/event/success-factors-of-h2020-widening-instruments-in-slovakia-lessons-learnt-and-future-outlook/>

Local research excellence was suggested to be translated by the ability to connect with other leading research communities in Europe and beyond. This connection comes down to social connections where researchers act as the link between institutions.

For example, this is illustrated by COST Action networks being “(...) *great sources of talented researchers, project partners, and keep you informed about the latest development in the field*” (MB⁶); or by Teaming case where “*the cooperation with academic partners helped to increase the number of publications in peer reviewed journals (...)*” (PH).

Yet, this could improve as the mobility between Widening Action staff in their local university appears limited, and it would be suggested to allow top researchers to dedicate some time to transfer their knowledge to faculties and therefore the local research community.

Research excellence also occurs beyond academia, where connections were also established with other types of actors like in the Teaming case “FunGlass” where its research excellence was improved by “*pursuing opportunities to establish partnership with regional and EU glass industries and international networking*” (PH)

This can also be reflected within the structure of the organization involved in the Widening Action such as in Teaming case where “*the Centre greatly benefit[ed] from the fact that leading scientists from advanced partners of the project consortium are members of the most important governance body of the Centre (i.e. of the Scientific Board)*” (PH)

A clear advantage seems not only to access and create new cooperation channels between scientists across Europe, but also to be able to physically attract, and retain talented researchers. It appears that having the capacity to build a critical mass of researchers on a given topic is a necessary condition for success and the continuity of the project.

This is observed with the Teaming / COST related InnoRenew Centre of Excellence where “(...) *we have succeeded in bringing high-quality employees to Slovenia (25 foreign employees so far out of 52), and have been able to retain high performing Slovenians who may have otherwise left the country*” (MB)

Similarly, ERA Chair/ERAdiate managed to “(...) *attract top foreign researchers (...) to help unlocking and strengthening the research potential in given field*” (TK). And the other way around, to “(...) *to increase international competitiveness (...) by supporting a local research community in getting more involved in the European research projects and networks*” (TK)

The Teaming case also described the international attractiveness of the project to “*strengthen its already established Slovak scientific base*” (PH). Yet, “*the goal is to get the ability to retain the best and most perspective people for further development of the Centre because dependence on government funding will be gradually decreasing*” (PH).

Yet, it was mentioned by several Widening Actions that “*unless the H2020 cost eligibility conditions get revised, remuneration packages will remain the main obstacle in attracting highly qualified job candidates*” (PH), especially for the ones coming from abroad.

Training (and job) opportunities

Maintain expertise in a territory and invest in local skills was highlighted as another critical condition for success.

Widening Actions are also an efficient way to maintain and develop an existing capacity. The example of the Teaming case is revealing as his “(...) *Centre [FunGlass] is the only research unit (...) dealing with the needs of local and regional glass industry*” (PH).

⁶ Quotes come from the testimonies in the next section, while Acronym in parenthesis represents the author.

This is aligned with the Smart Specialization strategy concept that builds capacity by “(...) *tap[ing] into a local know-how in development of the competitive advantage of the region by training skilled research personnel (...)*” (PH).

Ultimately, impactful training means career opportunities, which is also one aspect supported by widening instruments. And for those wishing to build “add on” consortium, to easily screen researchers for future collaborations.

For example, COST Actions prove themselves useful as a “matching” instrument. The InnoRenew CoE identified resources within their COST networks that “(...) *helped us develop and validate ideas for new projects, specific areas of research, and many provided letters of support for our proposal (...)* Eventually, we were able to hire some of the best of them” (MB)

Researchers are the most visible target benefiting from Widening Actions, and they usually are the ones most acquainted with such schemes. However, it was highlighted that administrators managing Widening Actions should also benefit from training to efficiently implement the related coordination tasks.

For example, the Workshop participants suggested to further expand mentoring schemes proposed to local administrators. In addition, it was perceived that the communication and collaboration between National Contact Points (NCPs) and national ministries should be facilitated and further supported by the relevant European Institutions.

NCPs training role – for example as a service provider - was mentioned as good practice to support applicants in the application process, for instance to pre-screen proposals before submission, how to build a business plan, handle Intellectual Property Rights, ensure continuity and sustainability of the funding etc. The presentation by C. Makri was very illustrative in this respect.

Business, infrastructure and funding opportunities

The need for innovation is a European priority, and the impact on the market can also be expected from institutions benefiting from a widening Action.

They are in the front seat to bridge the R&I activities with business opportunities at local, national and European scale. Evidence from the day suggests the achievement of “(...) *collaboration agreements with businesses, innovation and technology transfer activities that ultimately translate into intellectual property, new products or services*” (PH)

The Teaming project was a good case showing how to tap into regional opportunities and connect to industry as they did “*cooperate with the main producers of Slovakia and Czech Republic (...)* and established advisory bodies which consist in highly recognized scientists and representatives of the - glass- industry” (PH)

Another sector highlighted during the day concerns the field of research instrumentation with equipment companies suggesting the win-win relationship that can be established between researcher and the private sector.

This was observed with the ARBRE-MOBIEU COST Action where “(...) *win win partnerships that will allow to define and develop together future instrumentation that genuinely meets the needs of the (...) communities*”, and “*I was in direct contact with the companies that develop research instrumentations – from small start-ups to established corporations. Experimental scientists, especially in widening countries, do need more interactions with such companies*” (TV).

Finally, given the EU vision with respect to Research Infrastructures (ESFRI⁷ roadmap), the Widening Actions could also have an impact on the “*construction of a new distributed (...) European infrastructure,*

⁷ <https://www.esfri.eu/roadmap-2018>

aiming to facilitate the transnational access to instrumentation and expertise for a wide user community” (TV)

It was often mentioned that being involved in a widening Action allowed a better knowledge of the overall mechanism of the EU funding, and therefore may result in being more competitive to apply successfully to regional, national or European projects.

COST is here a key highlight as powerful networking instrument. For example, the InnoRenew Centre of Excellence case emerged from the visit of a similar model in Czech Republic during a COST event *“after seeing their new facilities – and attending a COST workshop there – the director (...) and I passed the long drive home planning our future centre” (MB)*

Also, COST Action participants support initiatives coming from the network as *“Actions were sources of new ideas, support from colleagues (old and new), and opportunity to raise awareness and means to develop our living lab” (MB)*

Widening Actions can also serve the purpose to enhance the reputation at home, hence attract national funding which was experienced by a COST Action where *“a nationally funded project (200k euros for 4 years) was awarded with collaborators from central Europe (i.e. Visegrad fund)” (TV)*. Another example by the Twinning was *“participation of the partners in new H2020 and other projects (e.g. SFERA III, INSHIP etc.) as well as plans to continue the summer schools beyond the end of the project.” (NJ)*

Yet, what was clear is the necessary role played by the national authorities to back initiatives, may they concern Widening Actions or else, which seems to be lacking in many countries today. Cyprus case presented by NCP C. Makri was again revealing as such initiatives receive a formal financial commitment at the national level to support, for example, teaming projects. And also, at the institutional level, by a commitment from the rector.

Another complementary dimension regards the complementary nature of the widening instruments. Several interventions described the value of the interconnections between instruments.

It was emphasized for example that *“there are often gaps in [national] research funding mechanisms that may be filled in with COST Support” (TV)*. The flexibility of COST Action is seen as a very good tool to keep the momentum between funding cycles or in times of uncertainty. Also, COST Actions are generally perceived as flexible instruments allowing to support other follow up involvements in larger Widening Actions.

However, more emphasis should be put in the connections between Widening Actions and other funding schemes. Although highlighted in the EC portal⁸, the synergy with European Structural and Investment Fund (ESIF) was not seen as efficient, for instance by the misalignment of calls between H2020 and structural funds.

Structural change

Institutions in Europe and in widening countries are not necessarily prepared to engage in projects at the European level. Yet, implementing Widening Actions imply structural changes and call for clear targets and setting Key Performance Indicators⁹.

Yet, some adjustments appear necessary to generate socio-economic impact. Such change, mentioned by one ERA Chair will *“contribute to regional innovation strategies that will then strengthen economic growth and employment (...)” (TS)*

⁸ <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/spreading-excellence-and-widening-participation>

⁹ Interesting proposals for indicators have been provided from the ERAiate project: A readiness index could be used to identify a set of basic support to be implemented before the start of the widening project including English competence, current degree of internationalization (including mobility) of researchers and institutions etc.

Indeed, *“enhancing funding amounts is most welcome, but it should be based on organizational/political/structural changes and development of substantially new funding instruments and agencies that are well educated in the way the business of science should be done. Otherwise, we’ll end up with a cargo-cult¹⁰ research infrastructure”* (TS).

Funding and organization model at the institutional level is therefore critical for the successful implementation of widening instruments.

Strategic alignment between the instrument objectives and the institutional objectives was highlighted for some presented cases as a missing link that must be addressed: *“bottom up initiatives (...) need to be complemented with by a top down strategic management with a clear vision and strong commitment of the institution”* (TK) And it takes all involved actors to make a change, from top down leadership support to bottom up engagement.

Still, in the case of ERAdiate, *“some incremental changes have been achieved (...), but at structural level, no substantial changes have been deployed”* despite the deliverable of the project which aims to *“transfer the knowledge, experience and exploit the results of the project [ERAdiate] into the [UNIZA] internal environment (...)”* (TK).

This calls for an institutional vision, where applying to a widening instrument should be accompanied by a long-term strategy on skill assessment (i.e. what are we missing?), and especially involving local actors. Yet, the aversion to change may be understood, therefore Widening Actions such as ERA Chair *“should be presented more as an ‘evolution’ (than a revolution) of the status quo to engage local actors.”* (TK).

However, solutions do exist as in the twinning or teaming case, where the autonomy provided to the Head of Department in charge of the project was critical with the *“opportunity to choose their collaborators and build their research teams.”*, and in parallel, establishing *“an administrative unit to relieve the members of the research staff from administrative burdens (...)”* (TH).

This other point was much discussed, implying that supporting an independent / flexible structure and set up a project office would certainly help to address the objectives initially set; and provide expertise and required skills going beyond the scientific sphere such as legal advisors able to understand regulation at the European and National scale, which represents a great challenge to Widening countries.

C) CONCLUSION

This workshop is an opportunity to provide input to Horizon Europe with regards to hands on experience on implementing Widening Actions in Slovakia and other Widening countries. The main conclusions are as follows.

First, enhancing research excellence in Widening countries through Widening Actions is confirmed as being needed and useful. It allows to raise the (international) visibility by creating a local community connecting with and benefiting from talents across Europe (and beyond). Yet, the conditions with which talents are retained should be revised to be made more competitive.

Second, building an excellent research capacity indeed creates an ecosystem where (local) researchers and innovators can benefit from. A dynamic environment that is translated both in training opportunities, as well as job opportunities. Yet, trainings should also target administrations coordinating Widening Actions, in order to keep the information flowing to the benefit of the research community. Here the role of the NCPs appears critical in ensuring ambitious aims.

¹⁰ https://en.wikipedia.org/wiki/Surely_You%27re_Joking,_Mr._Feynman The closing chapter, "Cargo Cult Science," is adapted from the address that Feynman gave during the 1974 commencement exercises at the California Institute of Technology.

Third, and further to the ecosystem stimulated by Widening Actions, contacts with industry and other stakeholder are taking place which increase the potential impact on regional development. However, the transition between funding schemes is challenging, yet critical for a local dynamic to survive. For instance, alignment between Widening Actions and other EU funding schemes should be improved, the main one being ESIF. Also, complementary funding at national level or commitment at the institutional level is a must to lower the uncertainty at the level of the individuals and institutions driving the process.

Finally, the importance of the institutional context should also be emphasized. Strong support by institutions, and their “readiness” to adjust to a transition that is an “*evolution and not a revolution*” (TK) is critical to reach the objective set by granted Widening Action. For example, by an adjustment in terms of autonomy to the Widening team, and adjustment of the institutional strategy to fully integrate the objectives of the Widening Action.

3) FULL WIDENING INSTRUMENTS' TESTIMONIES

The organisers of the event were able to select relevant cases of different widening instruments, and in some cases their complementarity available to the R&I communities.

A) TEAMING

I) CENTRE FOR FUNCTIONAL AND SURFACE FUNCTIONALIZED GLASS (FUNGLASS) BY PETER HOSTAK¹¹

(1) Why did you engage in this instrument?

The reason, why FunGlass was established, is to create an internationally recognized Centre of excellence of research in the field of glass-based functional materials. The Centre is the only research unit in the Slovak Republic dealing with the innovation R&I activities related to the needs of local and regional glass industry. Key activities of the Centre include training and applied research to tap into a local know-how in development of the competitive advantage of the region by training skilled research personnel and by pursuing opportunities to establish partnership with regional and EU glass industries and international networking. The Centre has engaged into the Widening action because it would like:

- to increase research excellence of the Centre in the glass research as a result of the widening action,
- to enhance the reputation, attractiveness and networking channels of the Centre,
- to improve capability to compete successfully for national and EU competitive research funding,
- to increase potential impact of the widening action within the Centre based on future publications in peer reviewed journals, collaboration agreements with businesses, innovation and technology transfer activities that ultimately translate into intellectual property, new products or services.

Benefits will also occur to the Centre from the more intensive research, creativity and the development of new approaches, and increased mobility of qualified scientists (especially with regard to partner institutions).

(2) What did you achieve until now? How the instrument allowed you to achieve your objective(s)? Who were the key players behind your success?

During May 2019, the project will reach month 27 of 84 months of its duration. Key achievements so far relate to: (i) recruitment, (ii) development and implementation of training programs for researchers, (iii) increased emphasis on scientific excellence, and (iv) structural change.

Staff recruitment

Initially the Centre has focused on strengthening its personnel capacities, which increased by 61% in the course of the first two years of the project. The Centre operates with 44 employees, of whom 34 are researchers and 10 provide project and administrative support. The research staff of the Centre meet demanding professional criteria and exhibit high level of theoretical knowledge as well as potential to independently carry out advanced scientific experiments. The Centre provides its researchers with excellent opportunities for professional development, which have allowed the Centre to attract researchers from Belgium, India, Iran, Spain, Egypt, China, Belarus, Germany and even Mexico and thus strengthen its already established "Slovak" scientific base. Recruitment of research personnel is

¹¹ Peter Hostak; Alexander Dubcek University of Trencin – FunGlass; peter.hostak@tnuni.sk.

Note: Centre for Functional and Surface Functionalized Glass (acronym FunGlass) was established in January 2018 as the Centre of excellence in the framework of Horizon 2020 project – Spreading the excellence and widening participation (H2020-WIDESPREAD-2016-2017/H2020-WIDESPREAD-01-2016-2017-Teaming Phase 2; project number 739566).

carried out on a competitive international basis, regardless of nationality or gender, with the aim to select the best applicants with respect to position requirements.

Training programmes

The Centre implements in cooperation with consortium partners the network-wide training activities which include long-term residence program (12 months) at partner institutions and secondments at industrial partners. It aims to provide researchers with opportunity to gain experience and know-how from a foreign scientific environment, with emphasis on developing competencies in the operation of advanced research infrastructure facilities and obtaining experience in implementation of international research projects.

Scientific excellence

The Centre has already registered the higher number of scientific outputs published in peer-reviewed international journals and the conference proceedings. Subsequently, a number of applications for research grant funding have been prepared and submitted. As a result of intensive publicity campaign conducted in professional periodicals, professional organizations (such as ICG) websites, and at international conferences, the Centre is already widely recognized by the international glass community. The Centre also noticed a significant increase of interest in collaboration with national and international industrial partners. This has been reflected in opening of informal collaboration and signed contracts with Slovak industrial partners and preparation of new contracts with international industrial partners.

Structural change

The academic senate of the Trenčín University approved the establishment of the Centre in the organization structure of university in compliance with the ambition of the project to upgrade the existing Centre of excellence for ceramics, glass and silicate materials to internationally recognized Centre for Functional and Surface Functionalized Glass. Establishment of research departments structured in a way that reflects the research topics defined by project partners in the Scientific Board and provides the Head of Department with the opportunity to choose their collaborators and build their research teams. Establishment of an administrative unit to relieve the members of the research staff from administrative burdens and provide maximum support with administrative tasks, including support with the preparation and implementation of projects, procurement of supplies and services.

(3) Who were the key players behind your success?

The key factor of the Centre's success is that the Centre is created in cooperation with the project partners' institutions and their leading experts in glass science and technology in Europe, prof. Bernardo (University of Padova, Italy), prof. Boccaccini (FAU Erlangen-Nürnberg, Germany), prof. Durán (CSIC Madrid, Spain), and prof. Wondraczek (FSU Jena, Germany). All of them are members of the Scientific Board who meet regularly and they actively discuss main topics with the Centre Director and Management. The cooperation with academic partners help to increase the number of publications in peer reviewed journals and help to train the Centre's research staff during long-term trainings at the partners.

Another key factor is that the Centre is situated in Trenčín, Slovakia, in a region with high concentration of glass industry ("Euro-region of Glass"), which allows the Centre to cooperate with the main producers in Slovakia and the Czech Republic. It is important that the Centre established advisory bodies (Industrial Board and International Advisory Board), which consist of highly recognized scientists and representatives of glass industry, who can also contribute to main topics discussed globally.

(4) What are the main lessons from your experience?

The Centre has learned that only investments in human capital via long-term trainings at partners and suitable research infrastructure capital can increase the Centre's ability to compete for national and

European funding and enhance its commercial activities. This is possible due to the expansion of the research staff and its overall quality, as well as new know-how obtained as result of cooperation with the project partners. In the long run, the Centre is looking at integrating the new personnel into existing local R&D funding schemes. The goal is to get the ability to retain the best and most perspective people for further development of the Centre because dependence on government funding will be gradually decreasing. There are two very specific observations that we would like to share with regard to our experience with the Teaming instrument:

- Teaming call conditions include mandate to implement mechanisms that provide the Centre of Excellence with the autonomy in the decision making – we would like to confirm that as per our experience this mandate is extremely important and shall be upheld.
In addition, we would like to point out that the Centre greatly benefits from the fact that leading scientists from advanced partners of the project consortium are members of the most important governance body of the Centre (i.e. of the Scientific Board) – such an arrangement facilitates their involvement in the strategic decision-making and support in implementation of key strategic initiatives of the Centre.
- The H2020 rules impose restrictions on pay rates that prevent institutions from Widening countries to compete for talents in the European or global labour market.
Explanation: The budget for the project has been prepared in consistence with the H2020 Annotated Model Grant Agreement provision as per which basic remuneration should be limited to payments for the employee's normal work and participation in projects — up to what is the beneficiary's usual remuneration practice for national projects (Annotation 1.1.1. to the Chapter 3, Article 6.2.A.1). Even though the Centre's compensation rates are highly competitive at the national level, they turn to be rather unattractive when compared to the remuneration of competent researchers that is usual in advanced countries of EU. Unless the H2020 cost eligibility conditions get revised, remuneration packages will remain the main obstacle in attracting highly qualified job candidates.

(5) Why is your case relevant for other European countries, in particular widening countries?

Widening should aim at the creation of new Centres of excellence in low performing Member States and regions. The Centres that are technologically backward have a potentiality for generating growth more rapid by using Widening action. Widening action helps utilizing potential due to the extension and new know-how obtained by the teaming with leading institutions of glass research in EU involved as project partners, and increase of quality of research staff through the training activities and international cooperation. The skilled and trained researchers increase the ability of the Centre to participate in new projects with academic as well as industrial partners. This makes it possible to build up a top-level, self-sustaining Centre of Excellence and develop it in both human and research infrastructure terms.

B) TWINNING

- I) HORIZON 2020 TWINNING (H2020-TWINN-2015) PROJECT: NESTER¹²
(NETWORKING FOR EXCELLENCE IN SOLAR THERMAL ENERGY RESEARCH) BY
NICOLAS JARRAUD¹³

(1) Summary of your widening case

¹² NESTER project website: <http://nester.cyi.ac.cy/>
NESTER/CySTEM conference: <https://csp2018.cyi.ac.cy/>

¹³ Nicolas Jarraud, Assistant Vice-President for Institute Affairs (international.relations@cyi.ac.cy)
Principal investigator: Prof. Costas N. Papanicolas, head of the Cyl Energy Division and President of Cyl.

Having established itself as a reliable research partner in the field of Solar Thermal Energy research through its participation in previous H2020 consortia (e.g. the STAGE-STE project), the Cyprus Institute had established strong partnerships with the European leaders in this field of research, namely CIEMAT-PSA in Spain, CNRS-PROMES in France, ENEA in Italy, and RWTH-Aachen in Germany. Cyl decided it was time to lead its own consortium, and the TWINNING instrument was an ideal tool, because it enables the advanced partners to mentor the submitting institution in their field of expertise, and the consortium is small and manageable.

This project was completed in December 2018 and achieved all of its objectives, namely:

- Enhanced capabilities and status of Cyl in the field of Solar Thermal Energy
- Enhanced positioning of Cyprus as an important player in applied scientific research at the interface of the European and Middle East/North Africa regions.

A number of activities enabled this success, notably training, mentoring and knowledge transfer from the advance partners, exchange of scientists, as well as seminars, training schools and networking events with European and EMME partners, complemented by a major outreach drive. The project ended with a major international conference on the decarbonization of the energy sector, which was also linked to our ERA-Chair project (CySTEM). The sustainability of the cooperation is evidenced by the participation of the partners in new H2020 and other projects (e.g. SFERA III, INSHIP etc.) as well as plans to continue the summer schools beyond the end of the project.

The flexibility of the TWINNING instrument, as well as the broad range of eligible funding categories, and most importantly the commitment of the consortium partners, were key factors in the success of this project.

(2) What are the (three) main lessons from your experience?

- It is always better to establish a consortium with partners with whom we have existing cooperation
- Beyond scientific excellence, the best way to establish an institution as a regional hub, and to expand regional networks, is to provide valuable extension services, such as the NESTER schools
- TWINNING provides an excellent environment for piloting consortium leadership by Widening country institutions

(3) Why is your case relevant for other European countries, in particular widening countries?

TWINNING is an ideal tool to bridge the scientific and technology gap between widening countries and more advanced partners.

C) ERA CHAIR

I) ENHANCING RESEARCH AND INNOVATION DIMENSIONS OF THE UNIVERSITY OF ŽILINA IN INTELLIGENT TRANSPORT SYSTEMS (ERADIATE) BY TATIANA KOVACIKOVA¹⁴

(1) Why did you engage in this instrument?

The ERA Chair project “Enhancing Research and InnovAtion dimensions of the University of Žilina in intelligent transport systems” (ERAdiate) has the overarching objective to unlock and strengthen the

¹⁴ Prof. Tatiana Kovacikova; ERA Chair Holder, University of Žilina, Slovakia, FP7 pilot ERA Chair project, tatiana.kovacikova@uniza.sk

research potential and promote excellence of the University of Žilina (UNIZA) as well as the Žilina convergence region in the field of Intelligent Transport Systems (ITS).

ERA Chair projects are funded by the European Commission to raise the research potential of an institution within a specific area. The University of Žilina acquired this project in 2014 under the 7th Framework programme. At that time, 111 institutions submitted a proposal to get the grant, and only 11 of them received it. ERAdiatE is funded for 5 years and the University of Žilina chose the area of Intelligent Transport Systems since it has a very long tradition in transport, telecommunications and information technologies. Practically 6 out of 7 faculties at UNIZA are to some extent devoted to transport and its different aspects. ITS was a priority in the UNIZA strategy until 2020. Even if the strategy has no specific action plan, the submission of the ERA Chair project and its implementation are in line with the general strategy.

The aim of the ERAdiatE project is to attract top foreign researchers to UNIZA and to help unlocking and strengthening its research potential in ITS and to increase international competitiveness of UNIZA by supporting a local research community in getting more involved in the European research projects and networks. The second aim of this project is to stimulate structural changes at the institutional level and to contribute to regional innovation strategies that will then strengthen economic growth and employment in the Žilina region.

(2) How the instrument allowed you to achieve your objective(s)?

Thanks to the ERA Chair instrument UNIZA was able to attract a small group of international researchers on ITS, working together with young local researchers. This team is known as the ERAdiatE team, which in a few years has gained local and international visibility becoming a reference for UNIZA participation in ITS-related projects, particularly H2020 projects. A key strength is the ERAdiatE interdisciplinary collaboration integrating different scientific and cultural backgrounds as well as diverse research approaches. This diversity, strong commitment and a developed international research network is a clear added value to UNIZA.

The ERAdiatE team acquired several international R&I projects. Among them, the H2020 R&I Action MoTiV (Mobility and Time Value) should be mentioned as a success story since it is the only H2020 R&I Action coordinated by the Slovak university.

In the second aim, i.e. stimulating structural changes at the institutional level, we have been less successful. Some incremental changes have been achieved, such as translation of some administrative documents to English, but at a structural level, no substantial changes have been deployed despite the fact that the entire ERAdiatE Deliverable D6.1 Procedural model for the ERAdiatE spill-over effect was devoted to a procedural model for the ERAdiatE spill-over effect defining individual steps, actors and competences to transfer the knowledge, experience and exploit the results of the ERAdiatE project into the UNIZA internal environment and into external environment. If wider structural changes were applied, the success achieved at a small scale by the ERAdiatE team could have more easily spread across the whole institution and the key regional stakeholders, thus fully allowing to achieve the objective of unlocking the local R&I potential in ITS. At a regional level, a strategic partnership with the city of Bratislava and the city of Žilina has been recently established thanks to the SUMI (Sustainable Urban Mobility Indicator) project¹⁵. Thanks to it the both cities are now open to collaborate with ERAdiatE on R&I projects proposals.

(3) Who were the key players behind your success?

The ERAdiatE team members, supported by the project coordinators. In specific activities, local researchers contributed to successful achievements. A broader and more systematic participation and

¹⁵ <https://www.rupprecht-consult.eu/project/sumi.html>

adoption of the ERAiate approach could have resulted in an increased success of the whole institution (individual Faculties and Departments). Some seeds have been spread and perhaps they will lead to significant positive mid- or long- term impacts, which are however difficult to quantify today.

(4) What are the (three) main lessons from your experience?

1. Unlocking excellent and research potential should start from the foundations: investing in skills development and training to obtain a critical mass of skilled researchers
2. Bottom-up initiatives should be strongly encouraged and supported. However, these need to be complemented by a top-down strategic management with a clear vision and strong commitment of the institution.
3. An ERA Chair team, made of international researchers with proposals of structural changes to increase an institution competitiveness, can be perceived as a 'revolution' by the local actors. This would prevent sharing the vision and collaborating towards a common goal. Therefore, the ERA Chair nature should be presented more as an 'evolution' of the status quo to engage local actors.

(5) Why is your case relevant for other European countries, in particular widening countries?

The case of the ERAiate team is relevant for other European countries, in particular these sharing the same socio-cultural background (e.g. Czech Republic, Poland, Hungary). Indeed, these countries share a similar progress on the implementation of ERA priorities¹⁶ and also similar constraints. This is well summarized in the last ERA Progress Report on Slovakia, from 2018¹⁷:

"Slovakia's scores were generally below the ERA average (Cluster 3) in a large group of priorities, made up of Priority 1 (More effective national research systems); Priority 2a (Transnational cooperation); Priority 2b (Make optimal use of public investments in research infrastructures); Priority 3 (An open labour market for researchers); Priority 5a (Knowledge transfer) and Priority 5b (Open access). Slovakia made notable progress on Priority 2b, but otherwise did not close notable ground to catch up to the Member States overall in these priorities".

These areas are also the ones in which the ERAiate team invested efforts and, at a small scale, succeeded (e.g. transnational cooperation, open labour market for researchers, more effective management of R&I).

The interim evaluation of ERA Chair projects¹⁸, carried out in 2017, also highlighted common challenges for these projects to fully achieve their objectives:

"A lesson regarding the relevance of the ERA Chairs and Twinning projects is that the coordinating institutes are concerned with how to ensure research funding in the application process. Moreover, the Chair holders at the early stage of the implementation process are concerned about the sustainability of the projects, and they believe that the future of the projects after the grant's completion is unsure.

¹⁶ https://ec.europa.eu/info/publications/era-progress-report-2018_en

¹⁷ http://slord.sk/buxus/docs///SK-Country_profile_2019-ok.pdf

¹⁸ Interim evaluation of Twinning and ERA Chairs in Horizon 2020.
https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/interim_evaluation_of_twinning_and_era_chairs_2007_3.pdf

A lesson regarding the efficiency of the ERA Chairs projects is that factors external to the projects influence their cost-effectiveness. This concerns barriers posed by national bureaucracy e.g. when recruiting foreign researchers to the research teams”.

To these challenges the ERA-diate experience does not provide a solution. Indeed, these aspects that significantly affect the implementation and impact of ERA Chairs projects should be addressed and solved at the national and European policy level. Such solutions should be then embedded in the updated definition of the instrument implementation, monitoring and assessment.

D) COST ACTIONS AS SPRINGBOARDS

I) INNORENEW CENTRE OF EXCELLENCE BY MICHAEL BURNARD¹⁹

(1) Summary of your widening case

The teaming project resulted in the creation of a new research centre, the InnoRenew CoE²⁰. We learned that our second stage proposal was successful in November 2016, established the new institute in February 2017, and the project began in April 2017²¹. Now, after just over 2 years, the InnoRenew employs 52 people, we are part of 3 new H2020 projects, several industrial projects, and many nationally funded projects. We have succeeded in bringing high-quality employees to Slovenia (25 foreign employees so far), and have been able to retain high performing Slovenian’s who may have otherwise left the country. We continue to attract international interest, as we frequently host researchers from abroad. As we have grown, we have retained our focus on results and publish our work in open access, keeping an archive of our work on our website²² and on Zenodo.com²³.

The concept and inspiration for the InnoRenew CoE came after a visit to a new research centre in Telč, Czech Republic. After seeing their new facilities – and attending a COST workshop there – the director of the InnoRenew CoE (assoc. prof. Andreja Kutnar, PhD) and I passed the long drive home planning our future centre. We had the concept, the drive to find a way to realise it, and the will to see it through. We soon discovered the Teaming call, found our advanced partner (Fraunhofer WKI, Germany), built a consortium, and eventually were successful with our first phase proposal. At this point, COST Action FP1303 was underway, and COST Action FP1407 starting off strong. Both Actions were sources of new ideas, support from colleagues (old and new), an opportunity to raise awareness, and means to develop our living lab. Action participants helped us develop and validate ideas for new projects, specific areas of research, and many provided letters of support for our proposal. Events for both COST Actions allowed us to meet many new researchers and build relationships with others. Eventually, we were able to hire some of the best of them, and continue to cooperate with many others in new projects. COST Actions CA16226 and CA16114 came after and have allowed us to continue to share our work, meet new colleagues, and join new projects.

(2) What are the (three) main lessons from your experience?

Three of the main lessons learned so far, are that networks are important, demonstrating and sharing your successes leads to future opportunities, and opportunities abound, but you have to work for them. Networks are great sources for talented researchers, project partners, and keep you informed about the latest developments in your field. Taking advantage of opportunities to share your successes, in the

¹⁹ Dr. Michael Burnard, PhD; deputy director Innorenew CoE, Izola, Slovenia (Deputy director); University of Primorska, Koper, Slovenia (Assist. Prof.); H2020-Widespread-2-Teaming (InnoRenew CoE project, Grant # 739574); COST Actions: FP1303, FP1407, CA16226, CA16114; mike.burnard@innorenew.eu

²⁰ <https://innorenew.eu>

²¹ <https://cordis.europa.eu/project/rcn/208417/factsheet/en>

²² <https://innorenew.eu/results>

²³ <https://zenodo.org/communities/innorenew/>

media, at conferences, etc. truly helps open more doors and improves your chances for future success. Many opportunities are already out there and while it does take commitment and significant effort to be successful there is no other way to succeed than to try.

(3) Why is your case relevant for other European countries, in particular widening countries?

Our particular case is relevant because our new institute is truly international, and we collaborate with researchers and companies around the world. We are based in Slovenia – a widening country – and try to bring excellence to Slovenia, as well as share the excellence already in the country. The same opportunities that existed for us are there or others in widening countries. The funding and specific calls for widening countries gives researchers in these countries an incredible chance to demonstrate their excellence, to prove their value in their home countries, and become partners in international consortia.

II) MULTIFACETED GAINS FROM COST ACTION INVOLVEMENT BY TOMISLAV VULETIC²⁴

(1) Summary of your widening case

COST actions are primarily networking instruments (a.k.a. CSA – Coordination and support actions), one of the oldest “instruments” of European science. COST actions are formed bottom-up, by self-organized, Europe-wide groups of scientists who have a common interest in a given research field. The budget is then provided to cover networking activities that include organization of scientific meetings, training events, costs of STSM: short-term scientific missions to institutions abroad (aimed primarily at Early Career Investigators and technical scientists), provision of bursaries to attend international meetings.

The ARBRE-MOBIEU COST²⁵ Action (launched in 2014 by Patrick England (Paris) and Thomas Jowitt (Manchester)) that I’ve joined was distinguished by additional emphasis on contact with instrument developers (at the level of concept or prototype), allowing to set-up win-win partnerships that will allow to define and develop together future instrumentation that genuinely meets the needs of the broad biomedical and life sciences communities. In relation to this, the network also placed a special emphasis on the construction of a new distributed molecular-scale biophysics European infrastructure, aiming to facilitate the transnational access to instrumentation and expertise for a wide user community, in particular from Inclusiveness Target Countries.

Croatia was represented by dr. Nadica Ivosevic DeNardis from the neighboring Ruđer Bošković Institute in Zagreb. We participated in all the mechanisms of the Action:

- Training event that we organize regularly, International School of Biophysics²⁶ featured also a workshop that was ARBRE-MOBIEU supported training event, where students and lecturers (network members) were funded (15 k€).
- Nadica met the partners with whom she tackled regionally relevant environmental issues through Visegrad fund project²⁷, “Algal cell biophysical properties as markers for environmental stress in aquatic systems” (30k€/1 yr). There were four partner institutions, beside Nadica and RBI also Czech Technical University in Prague, dr. J. Sepitka; Faculty of Science and Informatics, Uni Szeged, dr. B. Gyurcsik; Faculty of Natural Sciences, Uni Trnava, A. Marcek Chorvatova.
- from project Nadica and me have developed a nationally funded project (200k€/4 yrs) with collaborators from C.Europe.

²⁴ Tomislav Vuletic, assistant director, Institute of physics, Zagreb, Croatia; tvuletic@ifs.hr
Widening instrument: COST Action CA15126 ARBRE-MOBIEU

²⁵ <https://arbre-mobieiu.eu/>

²⁶ <http://school.ifs.hr/>

²⁷ <https://arbre-mobieiu.eu/success-story-from-arbre-mobieiu-networking-to-regional-research-cooperation-with-visegrad-grant/>

- The Plenary meeting²⁸ of the Action was held in Zagreb, organized by Nadica and me. The largest meeting insofar, almost 200 participants, with ~40 from Zagreb – local community in biophysics was very interested. We had to raise 30+ k€ from sponsors and COST to cover for the large meeting.
- a post-doc I've sent through STSM (2 weeks) to National Chemical Institute in Ljubljana performed key experiments for our recent publication²⁹. She is now a tenure-track researcher at Uni Zagreb Biotech Dept.

The above listed activities, when viewed through funds gained/used seem minor in comparison to ERCs, ITNs, FET Open projects that consist the top level EU-funded science. However, what may be noted is that while national/public funding for science mostly manages to provide research staff salaries and infrastructure (also through EU Structural and Investment Funds), the minor extras are not well covered – and the necessity of these can not be emphasized too much.

In other words: enhancing funding amounts is most welcome, but it should be based on organizational/political/structural changes and development of substantially new funding instruments and agencies that are well educated in the way the business of science should be done. Otherwise, we'll end up with a cargo-cult³⁰ research infrastructure.

(2) What are the (three) main lessons from your experience?

Organizational and funding levels in ITC vary and are still not stable. Often there are gaps in research funding mechanisms that may be filled by COST support.

With this in regard, COST is an opportunity to bring world-class science to a theater near you.

Important component of the Action, I participated in, was direct contact with the companies that develop research instrumentations – from small start-ups to established corporations. Experimental scientists, especially in the widening countries, do need more interaction with such companies.

(3) Why is your case relevant for other European countries, in particular widening countries?

COST Actions give priority to widening countries (a.k.a. Inclusiveness Target Countries) when hosts for the meetings, support for short term scientific missions and support of early career researchers is considered and evaluated.

Judging from, e.g. the facts that COST meetings are mostly organized in those countries, that STSM researchers mostly go from those countries to EU core countries, and from my experience in organizing the School of biophysics, the gaps in national funding due to organizational issues (not simply due to a relative shortage of funds) are present in other widening countries.

4) ACKNOWLEDGEMENT

We are very grateful to Giuseppe Lugano, Yannick Cornet, Katalin Alfoldi and Ursula Castro for their contribution to framing the report, and the speakers for their valuable feedback.

²⁸ <https://arbre-mobieu.eu/zagreb-2019-home/>

²⁹ <https://pubs.rsc.org/is/content/articlelanding/2019/ob/c9ob00488b#ldivAbstract>

³⁰ https://en.wikipedia.org/wiki/Surely_You%27re_Joking,_Mr._Feynman! The closing chapter, "Cargo Cult Science," is adapted from the address that Feynman gave during the 1974 commencement exercises at the California Institute of Technology.

5) LIST OF PARTICIPANTS

Name and surname	Organization	Country
Mickael Pero	COST Association	Belgium
Zuzana Lisonova	Comenius University in Bratislava	Slovakia
Samia Ait Zaoucheová	University of Žilina, ERAdiante project	Slovakia
Jana Velecka	University of Žilina, ERAdiante project	Slovakia
Ladislav Janoušek	University of Žilina	Slovakia
Livia Krištofova	University of Žilina	Slovakia
Tomislav Vuletic	Institute of physics, Zagreb	Croatia
Alena Mičicová	University of Žilina	Slovakia
Martin Hudák	University of Žilina, ERAdiante project	Slovakia
Tatiana Kovacicikova	University of Žilina, ERAdiante project	Slovakia
Isabelle Guimaraes	University of Žilina /UFF	Brazil
Martina Antošová	Univerzita Komenského v Bratislave Jesseniova lekárska fakulta v Martine	Slovakia
Maros Smondrk	KTEBI, FEIT, University of Žilina	Slovakia
Lenka Kalusova	University of Žilina, Faculty of Humanities	Slovakia
Jozef Turok	Technical University in Zvolen and Ministry of Agriculture and Rural Development	Slovakia
Giuseppe Lugano	University of Žilina, ERAdiante project	Slovakia
Štefan Luby	Slovak Academy of Sciences	Slovakia
Iveta Rusinová	Ministerstvo školstva, vedy, výskumu a športu	Slovakia
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Peter Pocta	University of Žilina	Slovakia
Tibor Petrov	University of Žilina, ERAdiante project	Slovakia
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Vladimír Benedik	KKM FBI, University of Žilina	Slovakia
Zdenek Dvorak	University of Žilina	Slovakia
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Miroslav Císar	University of Žilina, ERAdiate project	Serbia
Vladimír Bulej	University of Žilina, ERAdiate project	Slovakia

6) AGENDA



**Success factors of H2020
widening instruments in Slovakia:
lessons learnt and future outlook**

Jointly organised by:





20 May 2019
University of Žilina
New canteen (Nová menza)
Ul. Vysokoškolákov 26
010 01 Žilina
Slovakia

Registration: bit.ly/H2020widening

Programme

- 9.45** Registration and welcome coffee
- 10.15** Opening by **Pavol Rafajdus**, Vice-rector for Science and Research, University of Žilina, Slovakia
- 10.30** Keynotes:
- Widening instruments – A springboard to FP R&I projects, **Milan Dado**, ERAdiate Project Coordinator, COST CNC and CSO member
 - COST – Building bridges of excellence, **Mickael Pero**, Science Officer, COST Association
 - 45 years of Slovak participation in European Framework Programs, **Daniel Straka**, Executive Director of the Slovak Organization for Research and Development Activities (SOVVA)
- 11.30** Coffee break
- 12.00** Widening presentations:
- Teaming, **Peter Hošťák**, FunGlass project, University of Trenčín, Slovakia
 - ERA Chairs:
 - **Zuzana Lisoňová**, New Laboratory for Advanced Materials (LAM), Comenius University, Bratislava, Slovakia
 - **Tatiana Kováčiková**, ERA Chair Holder, ERAdiate, University of Žilina, Slovakia
 - COST:
 - **Tomislav Vuletic**, COST Action CA15126, Institute of Physics, Croatia
 - **Michael Burnard**, COST Action FP1407, University of Primorska, Slovenia
 - Widening instruments – Cypriot success stories, **Constantina Makri**, H2020 NCP for Cyprus for 'Spreading Excellence and Widening Participation'
- 13.15** Lunch break
- 14.15** Panel discussion among Widening speakers (Moderator: **Tatiana Kováčiková**, ERAdiate)
- 15.45** Closing



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