



## **BRIDGES project good practices capitalisation report & good practice transfer**

BRIDGES project 2<sup>nd</sup> – 4<sup>th</sup> semester deliverable.

December 2017

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## Contributions

1. GP theme 1 good practice collection, processing, analysis and communication with the partners: CERTH, PP9 and CEEI Burgos PP8;
2. GP theme 2 good practice collection, processing, analysis and communication with the partners: CERTH PP9.
3. GP theme 3 good practice collection, processing, analysis and communication with the partners: CEEI Burgos PP8, CERTH PP9.
4. Good practice capitalisation report: Alterra PP10, HURC PP4, CEEI Burgos PP8, CERTH PP9 and KE PP1.
5. GP contributions: All partners.
6. Four GPs come from three other Interreg Europe projects: STEINBEIS NETWORK (UpGradeSME (PGI00115)), SCALE UP DENMARK and PATENTS BANK (both from iEER (PGI 00111), and INTOA LEAN BUSINESS (ecoRIS3 (PGI 02229)). One GP (High Technology farming platform) reached us through the mediation of PP9 CERTH and the kind contribution of the Region of Central Macedonia, Greece. BRIDGES project thanks warmly the colleagues for sharing their GPs with us.

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## Introduction

The BRIDGES project aims at improving the effectiveness of RIS3 implementation in the partner regions, at making more “visible” the results of this policy ‘on the ground’. The project focus is on understanding better and remedying mismatches between the productive and knowledge bases (industry, research and methodological types of knowledge) of less advanced regions by linking them to knowledge institutions of more advanced regions and also by benefitting from the methodologies of the latter. The problematique that generated BRIDGES project is how RIS3 principles and theory can be applied to regions that are ‘structurally imperfect’ i.e. they may lack various types of resources (knowledge, business, market, infrastructures, attitudes...) or the resources they have, do not complement each other. Unavoidably such regions risk lagging behind, including in RIS3 implementation benefits.

The BRIDGES project good practices (GP) are planned to address three themes: Industry-led centres of competence as RIS3 innovation infrastructures (GP theme 1), Research-to-business innovation partnerships (GP theme 2) and Multilevel synergies (GP theme 3) including combination of funds and interregional innovation partnerships and joint initiatives beyond the end of the project<sup>1,2</sup>. encouraged as per Annex 1 Coordination and Synergies between ESI funds and other Union policies and instruments<sup>3</sup> thanks to the emphasis on linking cohesion to innovation actions. RIS3 implementation effectiveness, being in the centre of BRIDGES priorities, can benefit from the provisions of Annex 1. The three GP themes were identified<sup>4</sup> and prioritised by the project partners during the project preparation period as essential to the successful implementation of any regional innovation strategy. They deal with structures and functions of

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<sup>1</sup> Interregional partnerships beyond the context of territorial cooperation initiatives, are feasible in various ways. European territorial cooperation programmes, Horizon2020, EUREKA partnerships, national innovation programmes with interregional eligibility, and even *Article 70* of the 2014-2020 regulation of the structural funds.

<sup>2</sup> REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013, page 378.

<sup>3</sup> REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013, Annex 1, COORDINATION AND SYNERGIES BETWEEN ESI FUNDS AND OTHER UNION POLICIES AND INSTRUMENTS, 4.3 Horizon 2020 and other centrally managed Union programmes in the areas of research and innovation, page 415.

<sup>4</sup> The Global Competitiveness index 2017-2018 IMF, World economic outlook database, April 2017: 1st pillar institutions. 2nd pillar infrastructure, 3rd pillar Macroeconomic environment, 4th pillar Health and primary education, 5th pillar Higher education and training, 6th pillar Goods market efficiency, 7th pillar Labour market efficiency, 8th pillar Financial market development, 9th pillar Technological readiness, 10th pillar Market size, 11th pillar Business sophistication, 12th pillar innovation.

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innovation infrastructures, processes & methodologies promoting research-to-business rather than just business-to-research partnerships, and initiatives / solutions to overcome regional (or even simply conjectural) limitations. These considerations were taken into account also in the formulation of the regional innovation maps. The GP contributions, assessment (by the advisory team PP8 CEEI Burgos and PP9 CERTH), analysis (among all the partners) and eventually transfer, are supported by the discussion on the terms of reference of each one of the thematic objectives. During the 1st semester (9.2.2016 – 30.9.2016) the project partners worked on the conceptual and theoretical background of each one of the GP themes. Partners CEEI Burgos (PP8), Alterra PP10 – withdrew in November 2016, and Kainuun Etu (PP1) cooperated to formulate the background material for each one of the GP themes. This material is integrated into the GP summary reports for the most part or is part of the background references. According to the action plan of the project, the good practice collection and summary reports were planned for the end of the 2<sup>nd</sup> semester, i.e. 31.3.2017. However, the task proved more demanding than expected. The challenge has been that it was difficult to collect from within the partnership sufficiently strong GPs. We agreed an extension of the deadline to 15.9.2017, while we would stick to the time plan, by analysing and presenting the GPs that were collected till the 31st March 2017 during the 4<sup>th</sup> interregional policy learning session (IPL) in Helsinki, June 7<sup>th</sup> and 8<sup>th</sup> 2017.

## Executive summary

The BRIDGES project partners contributed 31 good practices (GP). Nine (9) GPs contribute to GP theme 1 Industry-led centres of competence, with various examples of innovation infrastructures and centres of competence (CC); fifteen (15) GPs contribute to GP theme 2 Research-to-business innovation partnerships, and nine (9) GPs contribute to GP theme 3 Multi-level synergies. Often, the thematic contributions are relevant for more than one theme, i.e. there are overlaps. For example, a GP discussing a centre of competence in terms of methodology as well as functions, might very well be contributing to both GP themes 1 and 2.

**Table 1 Summary of the BRIDGES project good practice contributions**

Good name	practice	PP	Brief description
European Business and Innovation Centre of Burgos (CEEI-Burgos)		8	Horizontal business and innovation centre located in Northern Spain within the framework of the European Business Network. Public – private partnership aiming at promoting entrepreneurship and innovation in its community, including bio-economy related sectors.
Centre of Expertise Bio based Economy		10	The Centre of Expertise Bio based Economy (COEBBE) is an initiative within the Bio based Delta, regional development strategy and network. COEBBE will connect education and business in South of the Netherlands. It will educate the next generation Bio based workers for the region. Next to that the initiative has been

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Good practice name	PP	Brief description
		taken to improve the regional knowledge infrastructure and it will contribute to apply and valorise knowledge to the regional Bio based innovation initiatives.
Synberc	8	The Synthetic Biology Engineering Research Centre is a multi-institution research centre focused on the synthetic biology. It is placed and led by The University of Berkeley, Emerville, California.
The Bio Economy Science Centre, Jülich (Nordrhein-Westfalen)	8	Science Centre located in Nordrhein-Westfalen (Germany). It is focused in the bio economy and its development in the scope of a considerable number of scientific branches
ETH – Zurich Competence Centre	8	ETH Zurich provides a gateway for industry and matches interested companies with research skills available at ETH Zurich being focused on creating and strengthening mutually beneficial relationships between ETH Zurich and corporations worldwide.
Helsinki Innovation Services Ltd	4	HIS is a technology transfer company owned by the University of Helsinki and it is responsible for the commercialization of the University owned intellectual property.
Competence centres	6	CCs were selected within a public invitation to tender for the development of competence centres in 2010–2013 in Slovenia
Kantola Industrial Estate and Woodpolis	2	Wooden sustainable construction components cluster and competence centre.
Centre for Measurement and Information Systems	2	CEMIS, is a joint research and education centre in the field of metrology (measurement science and technology). CEMIS combines the research of several educational and research institutions and the long-standing tradition of metrology research in the north of Finland. CEMIS produces new metrological and information systems expertise, focusing in fields that are relevant for the future. With the cooperation of several educational and research institutions CEMIS can offer a wide variety of expert knowledge in the field of metrology
Large research infrastructure	1	Methods and innovation infrastructures effectively facilitating regular benefits of material research measurements to SMEs.
New knowledge and business from research ideas - TEKES	1	Research to business national partnerships encouraged from the university and research side. Its essential part is that there is expected to be a consortium bringing together the research institutions with businesses (-es), a joint application for funding, and a joint plan for product commercialisation.
ZIM (ZENTRALEN INNOVATIONS)	1	Interregional innovation partnerships, for commercialisation of research; market oriented innovation projects between small and medium-sized enterprises; TEKES programme, national innovation funding.
Online precise irrigation scheduling / OpIris	9	OpIRIS is a knowledge-based system for online precise irrigation scheduling. It makes use of advanced results from previous FP projects on water and fertilizers productivity in fruit trees orchards and hydroponic productions in greenhouses.
Amsterdam Institute for Advanced Metropolitan Solutions (AMS)	10	The mission of the Amsterdam Economic Board is to sustainably enhance the prosperity and well-being of the Amsterdam Metropolitan Area (AMA). To achieve this, we work together with the business world, governmental agencies and knowledge institutes, focussing on collaboration, innovation and growth
Sustainable Urban Models Toolkit / SUMO Toolkit	9	The SUMO Toolkit is an instrument (search engine) that prepares current and future results to be transferred in a practical way and according to decision maker's needs.
Saffronomics	5	Saffron (Krokus) Cooperative of Kozani and Crocus Kozanis Products SA in close cooperation with Aristotle University of Thessaloniki (AUTH) and other Greek and European universities and research organizations joined the COST Action to address coordinated research on "Saffron-OMICS" for crop improvement, traceability, determination of authenticity, adulteration and origin to provide new insights that will lead a sound Saffron Bio-Economy.
STEINBEIS NETWORK	7	This a network of qualified organisations, specialising on core issues and complementary to each other, covering the range from basic business product idea, to technology transfer, to market access. The network structure works well as a result of the highly specialised professionals that commit to work in complementarity. <a href="#">The GP was identified in the Interreg Europe project UpGradeSME (PGI00115).</a>

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Good practice name	PP	Brief description
SCALE UP DENMARK	4	The Scale-up Denmark initiative is an accelerator program that targets the most promising national and international entrepreneurs within the business areas of the five regions smart specialisation strategies. It is a systematic approach to improve the innovation system in regional, national and international levels. The program consists of intensive development courses, professional discussions, mentoring, participation in relevant courses and workshops and access to expert knowledge and venture capital. One strong and interesting point is that implementation takes into consideration issues such as migration and balance between national and international innovative participations that in most cases are neglected. The holistic view of regional innovation lead is an excellent concept, often neglected. <a href="#">The GP was identified in the Interreg Europe project iEER (PGI00111).</a>
PATENTS BANK	4	The Patent Bank consists of a website ( <a href="http://www.bancodepatentes.gva.es">www.bancodepatentes.gva.es</a> ) and a whole set of activities, mainly technology transfer forums and brokerage events, to attract SMEs and to support research to business cooperation. The best practice is excellent for BRIDGES as it integrates many key elements to create an innovation-fostering environment at regional level. Important to keep looking at similar initiatives outside the region. Could be improved a lot if it were linked to active brokerage rather than dissemination events only. <a href="#">The GP was identified in the Interreg Europe project iEER (PGI00111).</a>
MITY	2	The good practice describes the research-to-business approach, differentiated according to the type of research services requested (basic measurements and new product development measurements), adopted and practiced by the bioresearch laboratory that is part of the measurement technology unit of the University of Oulu. The relevance to the bridges GP theme 2 is from 1) the differentiated approach in the provision of research services, and 2) the interdisciplinary competences (science x industry) of some of the lab staff.
Novel product in dairy and wineries using herbs	5	Related variety research based on compounds of herbs and application to wine and dairy industries for the improvement of the product health qualities. Strong experimental data from laboratories support the view that many components of the traditional Greek diet have the ability to modify the levels of intracellular "oxidoreducing active" iron and thereby inhibit the formation of active free radicals.
«DIOFARM» - PROMIXTURE OF FEED ADDITIVES: R2B & B2B collaboration between Dioscurides and Greek Honey "Attiki -Pittas"	5	Related variety research to business and business to business cooperation; the last three years Dioscurides Co established an exclusive cooperation with Attiki-Pittas S.A. for "DioFarm" use, a 100% natural premix of bee feed additives, to - Improve the natural immunity of the bee colony –to decrease infestation caused by Nosema and to-Increase the honey production (up to 20%).
INTO A LEAN BUSINESS	1	TEKES- funded project in the Business Department of the University of Turku, aiming at identifying cooperation's and possible spin offs between medium & large businesses and knowledge intensive start-ups. Ultimately the project aim is twofold: to populate the regional business ecosystem and to propose & productise a method proactively linking university research (early innovations especially) to medium and large corporations that have the resources to invest in them. <a href="#">The GP was identified in the Interreg Europe project ecoRIS3.</a>
Hellenic Photonics Cluster with applications in agro food sector	9	The photonics good practise proves that advanced technologies such as photonics can provide valuable solutions that re-shape the markets to sectors considered of low technology such as food production, creating products of high added value and differentiating the markets companies address to with their products. The involvement of businesses in the application schemes is encouraging as it promises sustainability.



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Good name	practice	PP	Brief description
AUTO-DIAGNOSTIC TOOL		9	The creation of an application to assess the technology and innovation readiness of agro food enterprises, came as an answer to the need for incorporating innovative schemes to the agricultural production in South-East Europe (SEE). Studies in many European regions showed that one of the reasons for slow innovation development by regional businesses is the overestimation of their capacity to absorb new technologies, methods and technics and their readiness status to exploit all available resources and innovate. Therefore, a good practice that allows a reliable assessment of innovation capabilities of regional businesses is very useful for the redesign, alignment and optimization of all relevant policies and activities related to RIS3 and beyond.
Innovation voucher		3	The aim of the voucher was to stimulate cooperation between business and science and to fund considerable part of costs related to R&D activity conducted by the science sector for business.
Innovation voucher		6	The Innovation voucher is a supporting mechanism that is mainly targeting small and medium enterprises.
CENTROPE_tt innovation voucher		7	The aim of the Centrope Innovation Scheme was to set up an international community of service providers for technology transfer and innovation. Acting as an agent for innovative businesses, the Centrope_tt scheme facilitated knowledge exchange and cooperation between businesses in the Central European region and expert R&D institutions from across the four regions from Hungary, Austria, Slovakia and the Czech Republic.
Innocsekk Plus		7	The GP is a voucher system that supports the innovation activities of the Hungarian SMEs, to enhance the demand side of the innovation services and the development of the regions competitiveness and economy based on innovation and R&D.
HURC RIS3 coordination		4	The GP presents the coordination model of RIS3 implementation developed by the Helsinki-Uusimaa Regional Council (HURC). It aims to double the innovation potential of regions through effective RIS3 delivery.
Targeted research		3	Target research is an activity in Regional Operational Programme of the Lubelskie Voivodship and it presents good practice in multi-level synergies between regional stakeholders as regional institution involved in the project management, enterprises and research institution as well.
High Technology farming platform, GR (on behalf of many regions)		9	The need for transfer of innovative methods and practices in daily routine of farms. Precision (high tech) farming is a wide spread concept meaning that the farmer is supported by technological means in production process especially in terms of decision making. Via high technology there is a great deal of information related to the production site and/or the product itself. The analysis of the information may lead to the use of tools for the achievement of bigger quantities and better qualities by lowering production cost and impact to the environment. <a href="#">The GP was identified in the S3 platform and contributed by the Region of Central Macedonia mediated by PP9 CERTH.</a>
Big data traceability		9	The agrifood sector, through the S3 Agrifood platform, supports the transition process to a new form of building networks and synergies between multi-actors by creating a suitable and inclusive ecosystem that will accompany innovation. The co-creation and interregional cooperation processes that are involved the thematic sub platform "Traceability and Big data" represent a great opportunity for all stakeholders.

The GPs are further analysed in terms of their contribution to the objectives of the project, i.e. the bridging of regional mismatches between the productive and research bases. For this purpose, the eight (8) types of technological connectivity ("bridges") also adopted in the innovation maps for better understanding the regional innovation systems of the partners, are also utilised for the GP analysis. The eight (8) types of technological connectivity considered in

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the BRIDGES project are: Type 1 Programme based, Type 2 Access to research services, Type 3 KET applications, Type 4 TRL improvement / certification, Type 5 Innovation management chain, Type 6 Constant renewal services, Type 7 Commercialisation of research, cross border, Type 8 Direct research to business cooperation.

The initially planned correspondences between GP themes and types of technological connectivity anticipated fewer types of technological connectivity (Table 2) than those finally indicated by the innovation maps and retained following internal project discussions (Table 3).

**Table 2 BRIDGES project, anticipated GP themes and types of technological connectivity**

Anticipated types of technological connectivity	Good practice themes		
	GP theme 1 Industry led centres of competence	GP theme 2 Research to business innovation partnerships	GP theme 3 Multi-level synergies
Type 1 Programme based (such as a centre of competence programme)	<b>x</b>		
Type 2 Access to research services		<b>x</b>	
Type 3 KET applications			<b>x</b>
Type 4 TRL improvement / certification		<b>x</b>	
Type 7 Commercialisation of research, cross border			<b>x</b>
Type 8 Direct research to business cooperation			<b>x</b>

Thus, we find that out of the 33 GPs, the distribution of contributions to the types of technological connectivity is as follows, including overlaps (Table 3):

**Table 3 BRIDGES project, GPs & retained types of technological connectivity**

Identified & retained types of technological connectivity	GPs	GPs promoting interregional innovation partner-ships	GPs created in an ETC project	GP themes and overlaps
Type 1 Programme based (such as a centre of competence programme)	12	1		GP theme 1; 9 GPs, 11 overlaps with GP theme 2
Type 2 Access to research services	26	2	2	

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Identified & retained types of technological connectivity	GPs	GPs promoting interregional innovation partner-ships	GPs created in an ETC project	GP themes and overlaps
Type 3 KET applications	1			GP theme 2, 15 GPs, 11 overlaps with GP theme 1 and 4 overlaps with GP theme 3
Type 4 TRL improvement / certification	3			
Type 5 Innovation management chain	15			
Type 6 Constant renewal services	4			
Type 7 Commercialisation of research, cross border	11	1		GP theme 3, 9 GPs, 10 overlaps with GP theme 2
Type 8 Direct research to business cooperation	4			

**Table 3** above allows some insights already: **1)** GP theme 1 and technological connectivity Types 1 and 2 are well integrated (as they should be), i.e. the CC approaches combine with functions; **2)** GP theme 1 and Type 1 types of technological connectivity, reveal a pattern for success / effectiveness: *the most effective GPs, the GPs that have the highest impact are those that are demand-led* (as for example the demand-led societal challenges in H2020) and research-based (i.e. advanced knowledge is involved). Advanced regions are benefitting from such approaches to literally renew their industries, through the set-up of regional, qualified, innovation support networks. This insight was confirmed in various policy learning sessions with the partners and requirements for tailoring such schemes in the CCs GP transfer are planned to be taken into account into the partners' action plans. *This research-based, demand-led approach with explicit provisions for concrete business applications is our first key finding;* **3)** Types 3, 4 and 6 are not strongly represented in our GP contributions. One interpretation might be that maybe, in spite of the RIS3 discussions and in spite of national and EU innovation funding programmes and preconditions e.g. the SME Instrument) have not yet grasped or sufficiently invested for the types of services that should be deployed regionally. *Our second key finding is that regions might need to be encouraged further to renew also their innovation services to meet demand (especially externally set demand);* **4)** Type 5 has many contributions, but they either come from the advanced regions or from other projects. Type 5 strengths correlate strongly with the innovation performance of regions & industries, thus, *if there could be an overall conclusion as to the types of GPs that should be promoted to the less advanced regions, it could be provisions for establishing regionalised (i.e. not necessarily or strictly localised) innovation management chain services – and this is our second key finding from the GP analysis;* **5)** The preceding recommendation could, however, come to a dead end since

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interregional innovation funding (upon demand, not upon competitive bids like H2020) is still far from being widely accepted. **6)** From the 10 GP contributions to Type 7 technological connectivity, only one is permanent and relying on national innovation funds. The other 6 are useful examples but they are ETC-project based, while EUREKA partnerships (e.g. GP contributions to Type 8 connectivity) are not explored so much, however, two GPs demonstrate that good innovation partnerships can happen also in less advanced regional contexts.

The good practice analysis and selection for transfer is done through two interregional working groups (IWGs). IWG1 deals with GP theme 1, coordinated by CEEI Burgos PP8, and IWG2 deals with GP themes 2 and 3, coordinated by CERTH PP9.

## Good practice discussion

### GP theme 1 Industry-led centres of competence as RIS3 innovation infrastructures

The objective of GP theme 1 is to collect, analyse and transfer good practices improving innovation infrastructures related to RIS3 implementation. The term adopted is *industry led centres of competence* -CC:s for short. CCs are explored from organisational, operational, tactical and competence points of view; these issues are first introduced through a thematic workshop (sem2), and then in the GPs contributed & site visits. As improvement of innovation infrastructure is the heart of the project, an interregional workgroup (IWG1) is dedicated accordingly, to this issue, ensuring deeper insights, GP analysis, selection and transfer among the partners.

### Background

The problem GP theme 1 discusses is through what types of structures and functions excellence will become accessible to the economy and to business applications.

An industry-led centre of competence (CCI) is a business intermediary dealing with industry-related growth and innovation priorities, set by an industry or a number of businesses under the said industry. Knowledge creation and knowledge transfer between academia and industry are their key characteristics. Thus, CCI:s are project –based activities<sup>5</sup> and maybe hosted in own

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<sup>5</sup>“Competence Centres are collaborative entities established and led by industry and resourced by highly-qualified researchers associated with research institutions who are empowered to undertake market focused strategic research for the benefit of industry”, <https://www.enterprise-ireland.com/en/research-innovation/companies/r-d-funding/competence-center-faqs> .

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premises of a partner organisation or in an innovation intermediary infrastructure. During the last 25 years the concept has received considerable attention, and there are interesting implementation approaches, for example through the Swedish Centres of Competence and the Finnish Programme of Centres of Expertise<sup>6</sup>.

In 2004, the EC set up the *European Union Scientific and Technical Research Committee* – CREST, with the purpose to work on recommendations for best approaches to innovation generation and diffusion.

In the 2008 document<sup>7</sup>, CREST indicates that "Competence Centres are public-private research Centres of excellence that connect industry to research performing organisations in a sophisticated way so as to increase the generation and availability of new, industrially relevant knowledge potential. Companies need to employ new technologies effectively to ensure a competitive advantage, to boost innovative potential, to reduce costs and to bring new products and services to the market"; while in terms of 'Industry-Led' it was concluded that Member States had established different forms of Competence Centres with a common intention that they all be Industry-Led in the sense that "their impact was to be felt directly through their impact on innovation and (economic) value creation". The list of key activities of Centres of Competence (CC), indicated in the CREST report, reveal that they are meant as levers of regional modernisation and renewal<sup>8</sup> for example "A very strong focus/ethos of generating and


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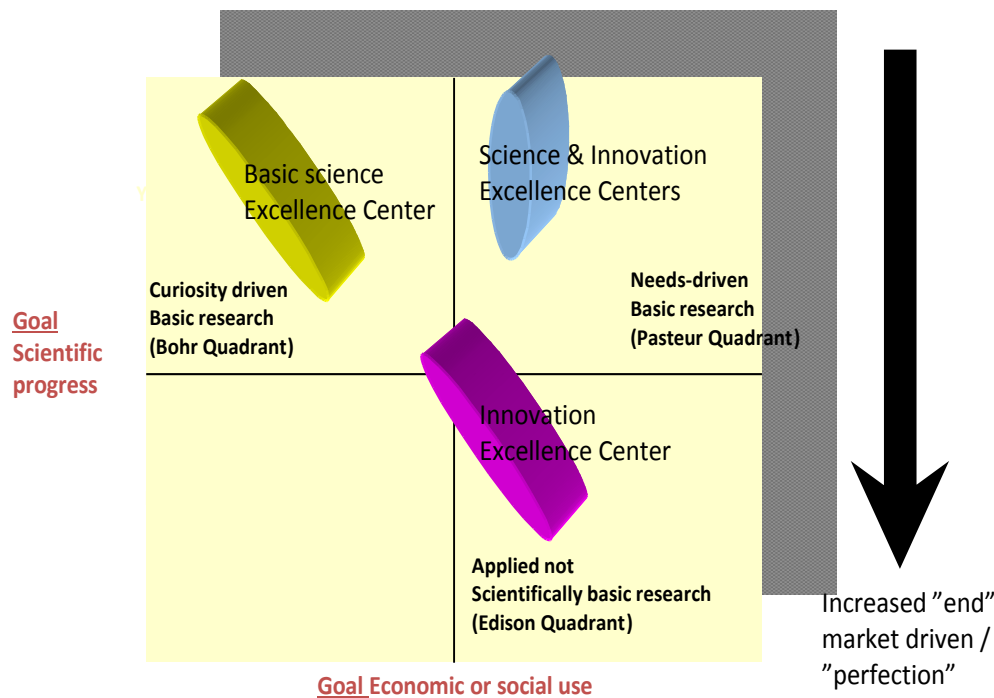
<sup>6</sup> Kaisa Lähteenmäki-Smith, 2003. Innovation through programming? The Finnish centres of expertise programme as an instrument of networking and knowledge building. Paper to be presented at the DRUID Summer Conference 2003 on CREATING, SHARING AND TRANSFERRING KNOWLEDGE. The role of Geography, Institutions and Organizations. Copenhagen June 12-14, 2003. "The Finnish Centres of Expertise programme been acknowledged as a successful instrument providing further support for innovation activity and regional industrial development, though it does seem questionable to argue that innovation could be promoted through programming. Innovation capacity can however be supported and fostered, and it is argued in this paper that public policy can address some of the most difficult obstacles to the promotion of innovative regional environments for growth and to support for the emergence of regionally based strategic partnerships. One of the main challenges here lies in promoting inter-regional linkages and networks in an environment that is prone to regionally specific co-operative solutions. If the promotion of expertise and the creation of networks is inherently regional, with the funding structures being equally so, how are inter-regional networks and organizational forms expected to flourish, and how can external support (in this case the national programme for the CoEs) have an impact in this regard?" (abstract, emphasis from the writer of the BRIDGES document). Available from: <https://www.researchgate.net/publication/228867861> Innovation through programming The finnish centres of expertise programme as an instrument of networking and knowledge building [accessed Apr 3, 2017].

<sup>7</sup> Final report to the CREST (European Union Scientific and Technical Research Committee) Working Group, 2008. Industry-Led Competence Centres – Aligning academic / public research with enterprise and industry needs, Open Method of Co-ordination (OMC) 3% Action Plan; page 11.

<sup>8</sup> CREST guidelines "3.1.3 Regional Innovation and the Role of the Technology Strategy Board: i) Technology areas with a clear, strategic focus on long-term sustainability in fields such as energy, health

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assisting industry in exploiting new knowledge as their primary objectives; A multidisciplinary research team covering the range of disciplines required to deliver on the problem focused research agenda; A research agenda which is directly relevant to the to the future needs of the industrial partners – more medium term market focused than technology driven, as witnessed by the clear commitment of the industry partners. 



**Figure 1 Positioning and the dynamic of Competence Centres**

(source: Donald Stokes, *Pasteur's Quadrant: Basic Science and Technological Innovation*, Washington DC: Brookings, 1997).

The recommendations of the CREST group relating to Industry – led Centres of Competence (CCI) were taken up by Horizon2020, (for example ERA projects, WIDESPREAD/TEAMING projects,...) and by some member states e.g. Austria (FFG 2014), Ireland ([Enterprise Ireland](#)), Netherlands, Sweden ([Vinnova 2013a](#) and [Vinnova 2013b](#)) and others; while the recommendations for more transnational cooperation ([Increasing the impact of national research programmes through transnational cooperation and opening](#) ) are reflected also in the

and transportation (including public transport and automotive)... ii) Strongly and visibly integrated sectoral or regional clusters, which would promote the technology profiles and associated R&D agendas expected to have a major impact on the long-term development of the respective sectors/regions. These could be delivered through competitions between technology programmes developed by the regions, tailored according to their specific needs, and identified on the basis of regional foresight studies. Relevant examples from other countries include: the Finnish Centres of Excellence programme in science, technology and innovation; the Swedish Competence Centres; and the German Inno-Regio Programme”.

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new regulation of the ESIF allowing options for transnational cooperation beyond the programme area and territorial cooperation projects<sup>9</sup>.

## Interpretation of the GP theme 1 concept for the purposes of the BRIDGES project

In the BRIDGES project, we first analysed the state of play in the regions based on the information provided in the innovation maps and the numerous online exchanges with the partners. We understood that the “function” of CCI:s needs to be supported by parallel activities usually found in innovation intermediary infrastructures (often called *innovation agencies*). I.e., it was necessary to relax the reference base of the GP to maximise its benefit to the regions (Figure 2). Thus, it was decided to seek GPs 1) corresponding to the CCI concept as stated in the CREST group report; and / or 2) innovation intermediary infrastructure functions supporting industrial specialisation and explicitly building on collaborative research. It was expected that CCIs would be hosted and integrated for the long run into individual innovation infrastructures, parts of the regional innovation environment, innovation agencies, regional development companies or even university-based technology transfer offices. Examples of centres of excellence, if connected to CCIs<sup>10</sup> were not excluded.

In this way, covering both functional and institutional issues, better integration (HÉRAUD, 2010) of the less advanced regions in terms of university/research-to-industry interactions both within and beyond the region, is achieved. Ideally, the action plan, through concrete projects, will end in internalising (through regular interactions) external knowledge resources and interactions with local businesses<sup>11</sup>.

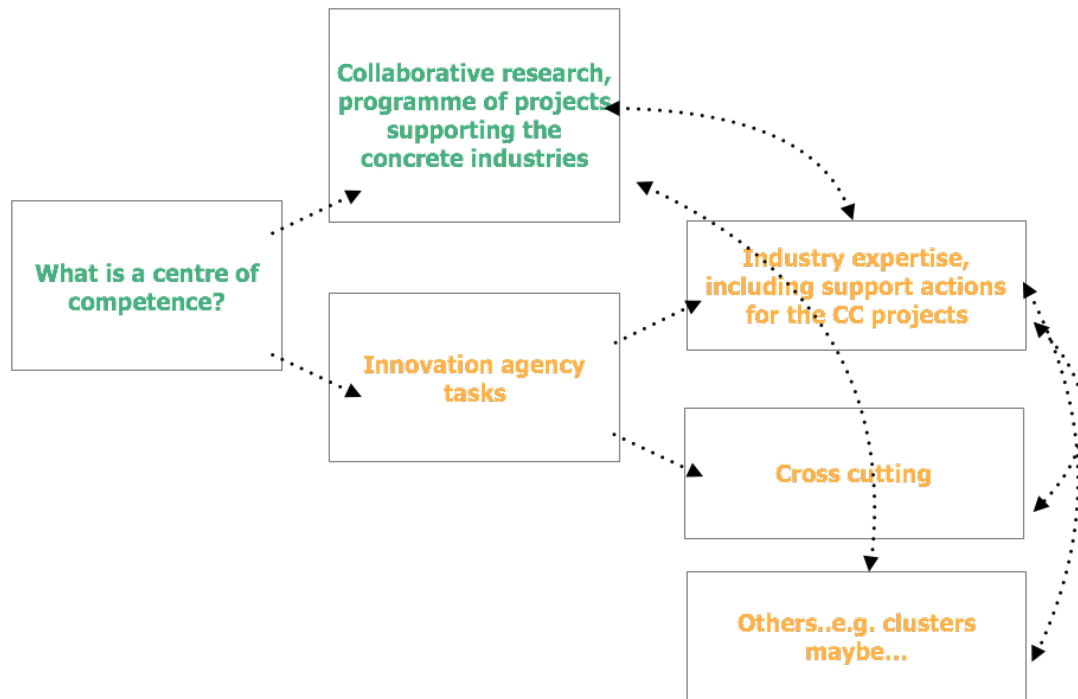
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<sup>9</sup>Article 70, REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013, page 378.

<sup>10</sup>2015: The Academy of Finland's Centres of Excellence (CoE) are the flagships of Finnish research. They are at the very cutting edge of science in, [www.aka.fi/en/research-and-science-policy/centres-of-excellence/](http://www.aka.fi/en/research-and-science-policy/centres-of-excellence/); Renewed Centre of Excellence Programme 2018–2025: The CoE programme for 2018–2025 is expected to include new research groups, new research themes and new openings embracing a high gain-high risk approach, <http://www.aka.fi/en/research-and-science-policy/centres-of-excellence/coe-events/info-renewed-centre-of-excellence-programme-20182025/>.

<sup>11</sup> Win-win arrangements between advanced and less advanced regions, based on the interests of both are required. Our approach builds on network theory, however, it stresses the regularity & depth of interactions (as both growth and pedagogic tool (DALUM 1992, p302) as a way to enhance integration through connectivity (Benneworth 2011).

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**Figure 2 The concept of the industry-led centre of competence interpreted for the BRIDGES GPs.**

Win-win arrangements between advanced and less advanced regions, based on the interests of both are required. The results of integration will be on growth (investments) for all regions, increasing the endogenous growth potential of the less advanced regions, i.e. internalisation of exogenous factors (Ascani 2012, Bilén 2007<sup>12</sup>), and diversification & increased commercialisation of research for the advanced regions.

## GP theme 1 contributions

1. European Business and Innovation Centre of Burgos (CEEI-Burgos), Spain, Contributing partner: PP8 CEEI-Burgos
2. Swiss Federal Institute of Technology (ETH – Zurich) Competence Centres, Switzerland, Contributing partner: PP8 CEEI-Burgos
3. The Bio-economy Science Centre (BioSC), Germany; Contributing partner: PP8 CEEI-Burgos
4. Synthetic Biology Engineering Research Centre (Synberc), USA; Contributing partner: PP8 CEEI-Burgos
5. Centre of Expertise Bio based Economy (COEBBE), The Netherlands; Contributing partner: PP10 Alterra (withdrew).

<sup>12</sup> BILEN 2007: Romer has endogenized Solow's exogenous technical progress accounting for a large proportion of growth process, and thus, technology has begun to be considered as the major source of income differences.



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6. Commercialisation services for research to business, Finland, Contributing partner: PP4 Helsinki-Uusimaa Regional Council
7. Competence centres, Slovenia; Contributing partner: PP6 Soča valley development centre.
8. Kantola Industrial Estate and Woodpolis, Finland; Contributing partner: PP2 Regional Council of Kainuu.
9. CEMIS (Centre for Measurement and Information Systems), Finland; Contributing partner: PP2 Regional Council of Kainuu.

**Table 4 Summary of GP theme 1 good practices**

GP name	GP theme 1 criteria match	BRIDGES relevance
European Business and Innovation Centre of Burgos (CEEI-Burgos)	Innovation agency; certified BIC (BICs are submitted to quality monitoring of its functions performance for an objective maintenance of the BIC brand.)	Its model or transferable possibilities are clearly structured, and it is implemented every year in new projects (...) regional, national and European.
Centre of Expertise Bio based Economy (COEBBE), The Netherlands.	Based on CCI projects; selection criteria are both industry and policy based, aiming at supporting the implementation of RIS3. not policy based, they are industry-based.  The CCI is part of a regional network involving innovation agencies, ensuring upstream and downstream transfer of knowledge to businesses	The CCI is operationally linked to the innovation agencies of the whole area (NUTS2). Very relevant in terms of structuring the cooperation between innovation agencies and
Synthetic Biology Engineering Research Centre (Synberc), USA	Based on CCI projects; selection criteria are not policy-based; they are industry-based. The results of the collaborative research (the results of CCIs) are valorised by the participating businesses.  Synberc is part of an integral program where a variety of fields are joined to develop scientific, technological and biological research, in order to encourage the implementation of the synthetic biology innovations, in the industry.  Finally, there is knowledge transfer from the research centres to the university students training brand-new engineers, in cooperation with other excellence centres and open source enterprises, are innovative methods which could allow us to be part of the biological world.	Involves large companies; however, a truly industry led CCI.  Relevant to BRIDGES regions universities and research units and how the two can be linked to channel research results into education and skills.
The Bio-economy Science Centre (BioSC),	Demand-led approach (societal challenges) project generation and involvement of businesses. The BioSC is	Very useful for innovation agencies to plan the focus of collaborative research, i.e. of

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GP name	GP theme 1 criteria match	BRIDGES relevance
Germany	<p>properly aligned with its RIS3 strategy and really focused on the sustainable bio economy. It is totally oriented to the market and the technology transfer for the bio economy promotion.</p> <p>It is provided with a noticeable public and private funding system with quantifiable economic contributions to the projects they develop.</p>	their strategic projects.
Swiss Federal Institute of Technology (ETH – Zurich) Competence Centres, Switzerland	Based on CCI projects; selection criteria are not policy based, they are industry-based. The results of the collaborative research (the results of CCIs) are valorised by the participating businesses.	Involves large companies; however, it is relevant also to smaller units.
Commercialization services for research to business, Finland (Helsinki Innovation Services)	<p>HIS provides one-stop-shop expert services for the commercialisation and business exploitation of research. This is very helpful for researchers and companies to bring research results to market efficiently and in time.</p> <p>However, they follow a distinguished method. It is after the research done and discovered when the researcher gets in touch with the entrepreneur, and not before. Here, the university looks for the entrepreneur directly, so Helsinki University and HIS are actively implicated in the RIS3 implementation, aspect that is not usual.</p> <p>Therefore, the special qualifications each one has, here are useful and totally applicable. Besides, the three parts, which take part, contribute in the same quantity in the growth of the project, helping not to waste money careless.</p>	<p>Very relevant as part of the structured cooperation of innovation agencies supporting RIS3 implementation. The methodology applied is very detailed; it is a totally transferable program, which joins special skills and knowledge with valued money.</p> <p>GP is relevant also to the partners that are involving university-linked technology transfer offices.</p>
Competence centres, Slovenia	CCs were selected within a public invitation to tender for the development of competence centres in 2010–2013 in Slovenia. True CCI, only funding challenges restrain updates of the services.	The types of collaborative research selected especially for bio economy, are very relevant to BRIDGES.
Kantola	Industry-led CCI in connection with wood processing industry that developed the only timber-building training factory in Finland that fulfils production requirements is part of Woodpolis and cooperates with several research and educational institutions,	<p>Very relevant for lagging regions because of the research –based but scale-down approach that “meets” lagging regions businesses. Knowledge is also</p> <p>. Prove show a top down</p>

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GP name	GP theme 1 criteria match	BRIDGES relevance
	including Kainuu Vocational College and Aalto University.	<p>approach (university &amp; research based) provided there is commitment from the businesses and a good plan can renew and upscale an industry.</p> <p>Kantola demonstrates also to GP theme 3 as it relies on multi-level synergies across various regions that provide expertise (including knowledge outside Finland).</p>
Centre for Measurement and Information Systems	<p>CEMIS, is a joint research and education centre in the field of metrology (measurement science and technology). CEMIS combines the research of several educational and research institutions and the long-standing tradition of metrology research in the north of Finland. CEMIS produces new metrological and information systems expertise, focusing in fields that are relevant for the future. With the cooperation of several educational and research institutions CEMIS can offer a wide variety of expert knowledge in the field of metrology</p>	<p>Transferable, but needs an international outlook from the beginning in order to ensure clients in the long run, supports a lot regional specialisation as it is so niche-focused.</p>

## GP theme 1 conclusions and recommendations

- Funding is a challenge to all CCIs & innovation agencies that assume knowledge intensive development tasks. The criteria for advanced knowledge transfer should be discussed in IWG:s 1 and 2 and some recommendations need to be made for the action plan, to take this aspect into account as well.
- The GPs are useful to innovation infrastructures as well as to university-linked technology transfer offices. A pattern emerges of linking innovation agencies to centres of competence and technology transfer offices through the research-to-business services and functions of the CCs.
- Certification of innovation agencies is recommended.
- Addressing societal challenges as a way for strategic development of research to business partnerships works.
- Linking CCIs to university (education) to speed up the uptake of new skills.
- Programme-based research to business partnerships through CCIs, leading to industrial renewal is recommended, GP Theme 2 Research –to-business innovation partnerships.

## Good practice theme 2 Research to business innovation partnerships

The purpose of GP theme 2 Research-to-industry partnerships is exploring types, paradigms and tools demonstrating the actual business & industry benefits from such cooperation schemes, the cooperation patterns and the steps involved. In terms of content, we wish to find out what kind of demand-led research solutions can be absorbed by RIS3 place-based entrepreneurial & business opportunities' discovery & exploitation (new/improved products), including flow of cooperation, & support for this process in the long run. This theme bridges Bio economy research-excellence with RIS3 place-based productive base; the approach will be modelled, practiced through new projects (the 'RIS3 paths'), & integrated into the CC operations.

### Background

The problem GP theme 2 discusses is strengthening the partner regions bio-based economies through research-to-business tools and initiatives and thus generating upscale, specialised growth. GP theme 2 proposes actions complementary to the well-known and -applied path of business-to-research cooperation, i.e. the problem-solving approaches that usually benefit (but are also generated by) medium and larger businesses. Success of GP theme 2 solutions and transfers would imply an overall strengthening and deeper specialisations of the partners' regional economies.

The creation of a Regional Bio-based economy is to be seen as transition. Drivers behind the bio economy are: the search for alternative resources for fossil fuels, the response to climate warming by reducing CO<sub>2</sub>, the industrial demand for new functionalities offered by bio based materials and chemicals and the consumer demand for bio based end-products that can compete with their fossil-based counterparts.

Bio-based economy will change the regional economy by providing promising sustainable opportunities for creating new added value within a region, using the regional characteristics (natural, economy, cultural). The objective is to discover the regional potential and to utilise it optimally. Biomass production, using waste and rest streams within existing and new industries and so creating new value chains and sustainable and competitive products will be key challenge. The creation of new value chains within or between regions is to be seen as a complex problem. New connections between biomass producers and processing industries should be made. Processors need specific volumes, qualities and supply on certain moments. Producers need to be prepared to deliver. Processors have technological problems; they are still actively searching for extracting the values, developing bio refinery techniques to optimally use all biomass components etc. There is not yet a large demand from the market, bio based

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products have to compete with fossil based products, which have actually lower production costs due to the oil prices. Environmental and climate benefits have not made manifest for most of the bio based products and regulations are not yet in favour for up scaling the bio based production.

Within RIS3 strategy regions should explore their potentials. Within the FP7 project BERST; the following criteria seem to be key for determining regions' bio based potential and associated deployment:

- Biomass resources – availability – what kind of biomass, volumes
- Biomass processors – what are the existing sectors that may process biomass to bio based products: food, feed, energy, chemical (bio based products), pulp and paper
- Infra: transportation possibilities, port, distances
- Education and research: presence of Universities and HEI; R&D activities, bio refinery facilities, campuses,
- Cluster management, triple helix cooperation<sup>13</sup>
- Policies and strategies; bio economy strategy, instruments and measures
- Regional profiling: internal and external. Regional profile internal: strategic decision making, focus and clear objectives, create communality, pride and connectedness, mobilize people along these lines, support infrastructure, new intermediates in triple helix, create dynamics and decide on direction. Regional profile external: underlines regional competitive advantages, has a marketing function, to attract attention of business, investments and funding.

Source: [Berst \(2015\)](#)

We also found three phases in lifecycle of the regional development of bio-based clusters

- Initial stage and take off: bio economy is put on the regional agenda, R&D activities take place, matchmaking between policymakers, entrepreneurs and scientists are enabled. The regional cluster-managing organisation is set-up. Activities are financed, mainly by public authorities.
- Drive to maturity: in this stage, the first competitive bio economy products are sold at the market. The bio-based ecosystem grows with the setup of new companies and the enlargement of the cluster infrastructure (with incubator, training centre etc.), and the bio-based ecosystem is able to attract both private and public funding.
- Stage of mature production: in this stage, the bio-based ecosystem is able to produce sustainable, competitive bio economy products on an extensive scale.

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<sup>13</sup>A cluster can be denoted as a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities (Oxford Research AS, 2008). The associated institutions might consist of R&D institutes, universities, policy makers and finance institutes. In the cluster, firms are supposed to be tied to other firms through formal exchanges (i.e. the input-output linkages) and through untraded interdependencies (Storper, 1995).

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No EU regions have reached a mature phase yet in bio based industries. Source: [Berst \(2015\)](#)

## Interpretation of the GP theme 2 concept for the purposes of the BRIDGES project

Good practice theme 2 Research-to-business partnerships addresses the innovation processes in which the innovation is developed and brought further in collaboration between research and businesses, to come to deployment of the regional bio-economies. There are three relevant sub-processes, focusing on networks, innovation and finance. All three sub processes are relevant for regional innovations; however, the third category is considered under GP theme 3. In the BRIDGES project, the types of GPs we sought could be summarised as follows:

The GP...

- Demonstrates multi actor innovation partnerships (i.e. involves research and businesses)
- Proposes systematic access to research models
- Proposes models of industrial modernisation
- Proposes direct research-to-business solutions
- Includes interregional innovation partnerships for individual businesses (e.g. interregional innovation vouchers)
- Addresses state of the art research service needs for industrial renewal such as KET applications and TRL assessments and certifications.
- ... and in general, strengthens and deepens research –to-business collaborations in the region.

## GP theme 2 contributions

1. Large research infrastructure services for SMEs, Finland; contributor: PP1 KE.
2. New knowledge and business from research ideas – TEKES, Finland; contributor PP1 KE.
3. Online precise irrigation scheduling / OpIris, Greece; contributor: PP9 CERTH.
4. Amsterdam Institute for Advanced Metropolitan Solutions (AMS), The Netherlands; contributor PP10 Alterra (withdrew).
5. Sustainable Urban Models Toolkit / SUMO Toolkit, Greece; contributor: PP9 CERTH.
6. Saffronomics, Greece; contributor: PP5 ANKO.
7. Steinbeis network, Germany; contributor: PP7 PBN. The GP was identified in the Interreg Europe project UpGradeSME (PGI00115).

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8. Scale-up Denmark; contributor PP4 UL. The GP was identified in the Interreg Europe project iEER (PGI00111).
9. Patents bank, Spain; contributor PP4 UL. The GP was identified in the Interreg Europe project iEER (PGI00111).
10. MITY, Finland; contributors PP2 RCK & PP1 KE.
11. Novel product in dairy and wineries using herbs, Greece; contributor PP5 ANKO.
12. «DIOFARM» - PROMIXTURE OF FEED ADDITIVES: R2B & B2B collaboration between Dioscurides and Greek Honey "Attiki -Pittas", Greece; contributor PP5 ANKO.
13. INTOA LEAN BUSINESS, Finland; contributor PP1 KE. The GP was identified in the Interreg Europe project ecoRIS3 (PGI 02229).
14. Hellenic Photonics Cluster with applications in the agro food sector, Greece; contributor PP9 CERTH.
15. Auto diagnostic tool, Greece; contributor PP9 CERTH.

**Table 5 Summary of GP theme 2 contributions**

GP name	GP theme 2 criteria match	BRIDGES relevance
Large research infrastructure services for SM	Proposes direct research-to-business solutions; Contributes to completing the innovation management chain  Ad hoc needs for advanced research services aiming at product improvement and / or product development.	Very relevant as a way to link non-geographical proximities as much as ensure KET ad Industry 4.0 applications. Links very well with GP theme 1 COEEB concept.
New knowledge and business from research ideas - TEKES	Research to business national partnerships encouraged from the university and research side. Its essential part is that there is expected to be a consortium bringing together the research institutions with businesses (-es), a joint application for funding, and a joint plan for product commercialisation.	Totally in focus of the research-to-business BRIDGES approach. It can be easily transferred by adopting the funding criteria and approach of any NOP, ROP, or regional development programme of this period 2014-2020.
Online precise irrigation scheduling /OPIRIS	Models of industrial modernisation  Smart farming tool; Joint product development competences with local knowledge units.	Relevant to regions with rural production, and especially Western Macedonia where precision farming is indicated in the RIS3.
Amsterdam Institute for Advanced Metropolitan Solutions (AMS)	The mission of the Amsterdam Economic Board is to sustainably enhance the prosperity and well-being of the Amsterdam Metropolitan Area (AMA). To achieve this result, we work together with the business world, governmental agencies and knowledge institutes, focussing on collaboration, innovation and growth	Policy is relevant, scale might be challenging for the BRIDGES regions.

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GP name	GP theme 2 criteria match	BRIDGES relevance
SUMO	The SUMO Toolkit is an instrument (search engine) that prepares current and future results of projects to be transferred in a practical way and according to decision maker's needs; it helps optimise sustainable development policies decision-making.	SUMO would be relevant if there were provisions about, for example technological connectivity, innovation chain management, then it would be able to help decision makers to understand more easily what their region is missing and in that sense, where to focus policy investments.
Saffronomics	"Saffronomics" project strengthens collaborative research on developing approaches defining the structural organization of saffron genome, DNA fingerprinting to protect the quality and improve the genetic, chemical fingerprinting, proteomics, transcriptomics and metabolomics of this crop.	Relevant to rural production, requires programme-based approach.
Steinbeis network	<p>Steinbeis is a global player in the sharing ("transfer") of entrepreneurial knowledge and technology. The Steinbeis Network currently encompasses roughly 1,000 Steinbeis Enterprises (SE).</p> <p>The main mission of this network is to foster effective and efficient cooperation between the world of science and academia on one hand, and trade and business on the other.</p> <p>The service portfolios of SE revolve around specific areas of expertise ranging from research and development, to consulting, expert reports, continuing professional development and training, and various fields of management. The Steinbeis system centres on a network of independently organized SE which offer specific, customer-oriented services. For the most part, these SE are based at research institutions, especially universities, where most are managed by professors on a part-time basis, although many are also managed by experts not working at such institutions.</p>	Excellent GP towards establishing a comprehensive regional (and beyond), exploring distributed knowledge bases, innovation management chain.



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GP name	GP theme 2 criteria match	BRIDGES relevance
Scale-up Denmark	<p>Accelerator programme targeting the most promising national and international entrepreneurs within the business areas of the five regions' smart specialisation strategies. It is a systematic approach to improve the innovation system in regional, national and international levels. The holistic view of regional innovation lead is an excellent concept, often neglected. <a href="#">The GP was identified in the Interreg Europe project iEER (PGI00111).</a></p> <p>Clear industrial modernisation potential.</p>	<p>Very relevant to BRIDGES regions, advanced and less advanced.</p> <p>The program consists of intensive development courses, professional discussions, mentoring, participation in relevant courses and workshops and access to expert knowledge and venture capital. One strong and interesting point is that implementation takes into consideration issues such as migration and balance between national and international innovative participations that in most cases are neglected.</p>
Patents bank	<p>The Patent Bank consists of a website (<a href="http://www.bancodepatentes.gva.es">www.bancodepatentes.gva.es</a>) and a whole set of activities, mainly technology transfer forums and brokerage events, to attract SMEs and to support research to business cooperation. <a href="#">The GP was identified in the Interreg Europe project iEER (PGI00111).</a></p>	<p>The best practice is excellent for BRIDGES as it integrates many key elements to create an innovation fostering environment at regional level. Important to keep looking at similar initiatives outside the region. Could be improved a lot if it were linked to active brokerage rather than dissemination events only.</p>
MITY	<p>The good practice describes the research-to-business approach, differentiated according to the type of research services requested (basic measurements and new product development measurements), adopted and practiced by the bio-research laboratory that is part of the measurement technology unit of the University of Oulu.</p>	<p>Transferable and relevant.</p> <p>The relevance to the bridges GP theme 2 comes from 1) the differentiated approach in the provision of research services, and 2) the interdisciplinary competences (science x industry) of some of the lab staff.</p>
Novel product in dairy and wineries using herbs.	<p>Related variety research based on compounds of herbs and application to wine and dairy industries for the improvement of the product health qualities. Strong experimental data from laboratories support the view that many components of the traditional Greek diet have the ability to modify the levels of intracellular "oxidoreducing active" iron and thereby inhibit the formation of active free radicals.</p>	<p>The project reveals regional strengths in both the research and business sectors.</p>
«DIOFARM» - PROMIXTURE OF FEED ADDITIVES: R2B & B2B collaboration	<p>Related variety research to business and business to business cooperation; the last three years Dioscurides Co established an exclusive cooperation with Attiki-Pittas S.A. for "DioFarm" use,</p>	<p>The project reveals regional strengths in both the research and business sectors and the potential for real state of play innovation</p>

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GP name	GP theme 2 criteria match	BRIDGES relevance
between Dioscurides and Greek Honey "Attiki -Pittas"	a 100% natural premix of bee feed additives, to - Improve the natural immunity of the bee colony –to decrease infestation caused by Nosema and to- Increase the honey production (up to 20%).	partnerships.
INTOA LEAN BUSINESS	TEKES- funded project in the Business Department of the University of Turku, aiming at identifying cooperation and possible spin offs between medium & large businesses and knowledge intensive start-ups. Ultimately the project aim is twofold: to populate the regional business ecosystem and to propose & productise a method proactively linking university research (early innovations especially) to medium and large corporations that have the resources to invest in them. <a href="#">The GP was identified in the Interreg Europe project ecoRIS3 (PGI 02229).</a>	The GP is contributing to an important issue of the regional innovation chain, namely the patterns of collaboration between medium and large businesses with knowledge intensive start-ups. In spite of the fact that the method is not fully productised yet, it has transferable characteristics in terms of 1) the activation of the larger businesses, and the 2) research teams that explore innovations as potential spin offs relevant to the larger businesses industries.
Hellenic Photonics Cluster with applications in the agro food sector	The photonics good practise proves that advanced technologies such as photonics can provide valuable solutions that re-shape the markets to sectors considered of low technology such as food production, creating products of high added value and differentiating the markets companies address to with their products. The involvement of businesses in the application schemes is encouraging as it promises sustainability.	Very relevant, one of the few GPs that address explicitly KET applications.
AUTO- DIAGNOSTIC TOOL	The creation of an application to assess the technology and innovation readiness of agro-food enterprises, came as an answer to the need for incorporating innovative schemes to the agricultural production in South-East Europe (SEE). The GP increases agro-food SMEs capacity to absorb new technologies, methods and technics and their readiness status to exploit all available resources and innovate. Thus, the GP allowing a reliable assessment of innovation capabilities of regional businesses is useful for the redesign, alignment and optimization of policies and activities related to RIS3 and beyond.	Very relevant, One of the few GPs that address TRL issues explicitly, and also relevant to all less advanced BRIDGES regions that have strong agro – food industries in their RIS3.

## GP theme 2 conclusions and recommendations

The GP theme 2 contributions...

- form a good, practically comprehensive base for good practice exchange and transfer among the BRIDGES project regions
- all GPs show strong specialisation potential
- all GPs are complementary to GP theme 1 through the access-to-research function
- three GPs lead to macro-regional & even international solutions, in the quest for access to research excellence and business competitiveness
- two GPs show clear industrial modernisation potential, i.e. dealing with renewal actions at industrial scale;
- all GPs show strong specialisation potential
- two GPs demonstrate the potential of how research excellence and performing businesses can collaborate even in less-advanced contexts. This confirms the project assumption that research-to-business partnerships are one possible and probable key for industrial renewal and RIS3 impact.

## Good practice theme 3 Multi-level synergies

### Background

GP theme 3 Multi-level synergies, refers mainly to two fields: GPs demonstrating combination of innovation resources e.g. beyond the structural & investment funds (ESIF) & combination of different levels of administration towards strengthening regional innovation systems.

GP theme 3 answers the question: what kind of tools regions have and use to overcome structural challenges such as mismatches between their economic and research bases? Are these tools utilised as ad hoc solutions or do they also lead to long-term networks and exchanges? Has the region developed a system of relational rather than geographic knowledge proximities<sup>14</sup>?

The multilevel synergies GP theme is about ways to activate & implement technological connectivity beyond regional administration. One type of multi-level partnerships are those recently promoted schemes of multi-level governance (=multilevel partnership) within the EU (CoR 2011)<sup>15</sup>.

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<sup>14</sup> See Note 6

<sup>15</sup> The Van den Brande Report, 2014. Multilevel Governance and Partnership, European Commission, Prepared at the request of the Commissioner for Regional and Urban Policy Johannes Hahn. Page 2: Article

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## Interpretation of the GP theme 3 concept for the purposes of the BRIDGES project

The GP discussion will take into account:

- What does the GP demonstrate in terms of multi-level synergies?
- Does it address and how mismatches between RIS3 productive & RDI bases?
- Does the GP encourage interregional solutions? And if so, is there any strategic quality towards network building, relational proximity...?
- National level of governance (institutions and actors across the national level; corresponding funding)
- Combination of funds at regional, national or interregional/international levels?
- How effective was / is the good practice? What ensured its effectiveness or what hindered, how accessible to the recipients to be pointed out?
- How widely has the GP been accepted / adapted in the region and, if not, why not?
- What are the results, short term and long term that they really brought?
- Lessons learnt from the good practice and ideas for improvement / differentiation / sustainability of the GP?

### GP theme 3 contributions

1. ZIM (ZENTRALEN INNOVATIONS PROGRAMMS MITTELSTAND), Germany & Finland; contributor: PP1 KE.
2. Voucher for Innovation, Poland; contributor: PP3 LuVo.
3. Innovation voucher, Slovenia; contributor: PP6 SVDC.
4. CENTROPE innovation voucher, Hungary; contributor: PP7 PBN
5. Innocsekk Plusz 2008 innovation voucher, Hungary; contributor: PP7 PBN
6. Targeted research - 1.2 action in the Regional Operational Programme of Lubelskie Voivodship, Poland; contributor: PP3 LuVo.
7. HURC RIS3 coordination, Finland; contributor: PP4 HURC.
8. High technology farming platform, Greece (on behalf of many regions); contributor: Region of Central Macedonia, GR (mediation PP9 CERTH).
9. Big data traceability, Greece (on behalf of many regions); contributor: PP9 CERTH.

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5 of Regulation 1303/2013 is a real breakthrough in this respect. Upon a proposal of the European Commission, for the first time the principle was introduced in the Common Provisions Regulation for the European Structural and Investment Funds. Moreover, also the partnership principle was strengthened. When in the previous programming period a partnership was organised 'where applicable', Member States are now obliged to organise a partnership at all stages of the programming and at all levels.

**Table 6 Summary of GP theme 3 contributions**

GP name	GP theme 3 criteria match	BRIDGES relevance	Funding source
ZIM	<p>Interregional innovation funding, based on national provisions / relevant also to GP theme 2.</p> <p>Industry-led and research actors eligible.</p>	Very relevant for promoting long term commercialisation of research across the partnership	National innovation funding
INNOVATION VOUCHER, PL	<p>It is addressing mismatches between the regional economic and knowledge base, leading to the use of national resources with interregional options/ relevant also to GP theme 2.</p> <p>The aim of the voucher was to stimulate cooperation between business and science and to fund considerable part of costs related to R&amp;D activity conducted by the science sector for business.</p> <p>Inspired two new programmes extending its scope – Support for a Big Voucher (national funding), Voucher for Innovation for SMEs (ERDF)</p> <p>Key success factors: (1) distance between research and business shortened (first experiences of R2B cooperation for beneficiaries), (2) interregional partnerships (better adjustment of research excellence to business needs), (3) micro and small enterprises engagement.</p>	Very relevant and can be linked to the interregional technological connectivity provisions that are prioritised in BRIDGES project.	ESIF 2014-2020
INNOVATION VOUCHER, SI	<p>It is addressing mismatches between the regional economic and knowledge base, leading to the use of national resources with interregional options/ relevant also to GP theme 2.</p> <p>The voucher support mechanism is not something new and it has been adopted in many regions. It is a simple tool that gives SMEs access to knowledge that is usually not available within a single business.</p>	<p>Very relevant for promoting long term ad hoc SMEs access to research services also outside regions provided the interregional service provision is approved.</p> <p>The focus of the voucher can be different and can be changed or adopted during time according to the identified needs. Innovation voucher was just one of those available in Slovenia. An important fact is also that the value for money is rather big but at the same time it is also not easy to measure a long-term</p>	ESIF 2007 - 2013

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GP name	GP theme 3 criteria match	BRIDGES relevance	Funding source
CENTROPE	<p>Interregional technological connectivity, interregional innovation funding/ relevant also to GP theme 2.</p> <p>The problem addressed is the limited interregional cooperation between SMEs and R&amp;D institutions in Central Europe.</p> <p>Acting as an agent for innovative businesses, the Centrope scheme facilitated knowledge exchange and cooperation between businesses in the Central European region and expert R&amp;D institutions from across the four regions from Hungary, Austria, Slovakia and the Czech Republic.</p> <p>The new version of the Centrope voucher should follow the following principles: better marketing; less administration (less &amp; shorter documentation, e-application system); quick &amp; smart system (shorter lifetime of one application-realization process); different types of vouchers (small &amp; larger amounts).</p>	<p>contribution to the national economy.</p> <p>Very relevant for promoting long term ad hoc SMEs access to research services that do not exist locally and / or for contributing to address some of the gaps in the regional innovation management chain.</p> <p>The system itself is transferable. However, the feasibility depends on the committed business support intermediaries and the available financial sources for the implementation.</p>	ETC <sup>16</sup>
INNOCSEKK PLUSZ	<p>It is addressing mismatches between the regional economic and knowledge base, leading to the use of national resources / relevant also to GP theme 2.</p> <p>The problem addressed is the limited national cooperation between SMEs and R&amp;D institutions and the weak regional innovation capacity in Hungary.</p> <p>The overall objective of the national voucher system was to support the innovation activities of the Hungarian SMEs, to enhance the demand side of the innovation services and the</p>	<p>The system itself is transferable. The key element of the transfer process is the cooperative, dynamic nature of the programme. Stimulating connection between SMEs and R&amp;D institutions, the scheme also introduces a change of mind-set and encourages export.</p> <p>Very relevant for promoting long term ad hoc SMEs access to research services also outside regions provided the interregional service provision is approved. It might be useful to</p>	National funds

<sup>16</sup> ETC = European Territorial Cooperation programme,s i.e. Interreg projects.

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GP name	GP theme 3 criteria match	BRIDGES relevance	Funding source
	<p>development of the regions competitiveness and economy based on innovation and R&amp;D.</p> <p>The GP aims the boosting of the know-how transfer and network-cooperation between SMEs and R&amp;D institutions.</p>	<p>discuss with the partner the administrative approach of the Finnish innovation voucher that is "light" in terms of administration</p>	
<p>INNOVATION VOUCHER, PL</p>	<p>It is addressing mismatches between the regional economic and knowledge base, leading to the use of national resources with interregional options/ relevant also to GP theme 2.</p> <p>The aim of the voucher was to stimulate cooperation between business and science and to fund considerable part of costs related to R&amp;D activity conducted by the science sector for business.</p> <p>Inspired two new programmes extending its scope – Support for a Big Voucher (national funding), Voucher for Innovation for SMEs (ERDF)</p> <p>Key success factors: (1) distance between research and business shortened (first experiences of R2B cooperation for beneficiaries), (2) interregional partnerships (better adjustment of research excellence to business needs), (3) micro and small enterprises engagement.</p>	<p>Very relevant and can be linked to the interregional technological connectivity provisions that are prioritised in BRIDGES project.</p>	<p>ESIF 2014-2020</p>
<p>HURC RIS3 COORDINATION</p>	<p>Multi-level synergies in terms of the different levels of RIS3 implementation in a coordinated way. The GP presents the coordination model of RIS3 implementation developed by the Helsinki-Uusimaa Regional Council (HURC). The aim is to double the innovation potential of regions through effective RIS3 delivery. The GP is tackling the challenges of an innovation ecosystem in which 1) business operates in small scale, 2) requires renewal and value chain development, 3) poses</p>	<p>Very relevant and transferable GP to support connectivity in terms of coherent regional innovation ecosystems but also at interregional level. "Access to funding" function can be linked to BRIDGES also for the mainstream function of keeping up contacts with research institutions after the end of the project (part of the action plan maybe).</p>	<p>ESIF 2014-2020 &amp; national funds</p>

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GP name	GP theme 3 criteria match	BRIDGES relevance	Funding source
	<p>unnecessary competition and patchy public and private support, and 4) knowledge (research) and business communities communicate weakly.</p> <p>The platform has 3 functions: <u>1) Co-ordination</u>, representing a miniature of innovation ecosystem. and a working group (WG) is organized; <u>2) Collaboration</u> (Helsinki smart site <a href="http://www.helsinkismart.fi">www.helsinkismart.fi</a>), targeting interested collaborators, investors and possible partners for the presented projects, and <u>3) Access to funding</u>. HURC has set up an EU service with 7 experts, supporting the region's actors' improved access to EU funding (H2020, Erasmus+, UIA, etc.).</p>		
<p>TARGETED RESEARCH, PL</p>	<p>Interregional technological connectivity and funding</p> <p>Support obtain projects for the development of new products/services, processes, or introducing significant improvements to existing products/services, processes. The support covered the costs of carrying out industrial research and experimental development.</p> <p>Key success factors: (1) distance between research and business shortened (first experiences of R2B cooperation for beneficiaries), (2) interregional partnerships (better adjustment of research excellence to business needs), (3) micro, small, medium and big enterprises engagement.</p>	<p>The interregional parameter is not functional yet.</p>	<p>ESIF, ROP 2014-2020 Lubelskie</p>
<p>High Technology farming platform, GR (on behalf of many regions)</p>	<p>The need for transfer of innovative methods and practices in daily routine of farms. Precision (high tech) farming is a wide spread concept meaning that the farmer is supported by technological means in</p>	<p>Multi-region, thematic innovation partnership: 1) The overall approach of the platform that applies comprehensive, advanced tools to traditional (rural) production; 2) The comprehensive approach that</p>	<p>S3 provisions, funding tools are not yet clear; possibilities for joint</p>



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GP name	GP theme 3 criteria match	BRIDGES relevance	Funding source
	production process especially in terms of decision making. Via high technology there is a great deal of information related to the production site and/or the product itself. The analysis of the information may lead to the use of tools for the achievement of bigger quantities and better qualities by lowering production cost and impact to the environment. <a href="#">Contribution by the Region of Central Macedonia, GR (mediation PP9 CERTH).</a>	brings together all sectors of a traditional industry; 3) The analytical way of stating the types of expertise needed; 4) The growth potential of interregional innovation partnerships which is a growing priority in the EU; 5) The potential for partnerships and joint development.	project development.
Big data traceability, GR (on behalf of many regions)	The Agrifood sector, through the S3 Agrifood platform, supports the transition process to a new form of building networks and synergies between multi-actors by creating a suitable and inclusive ecosystem that will accompany innovation. The co-creation and interregional cooperation processes that are involved the thematic sub platform "Traceability and Big data" represent a great opportunity for all stakeholders. <b>Implementation:</b> <a href="#">Step 1:</a> Identify emerging technologies for traceability and big data in the agro-food sector. <a href="#">Step 2:</a> Technologies supporting traceability and Big Data in the Agro-Food Sector. <a href="#">Step 3:</a> Defining main thematic areas. <a href="#">Step 4:</a> Identified regions with RIS3 priorities in Agri-Food, Big Data and Traceability. <a href="#">Step 5:</a> Involving relative stakeholders (industry, Research organisations, policy makers, innovation brokers, NGO)	Multi-region, thematic innovation partnership: The GP was selected as a result of explicit technological, productive and relational (policy, initiatives) proximities. In more detail: 1) Big data in the Agrifood sector, innovative approach; 2) The big data and associated open science issues are priorities in the EU and in a few of the BRIDGES regions; 3) The technological and systematic approach that can easily benefit Finnish development actions as well.	S3 provisions, funding tools are not yet clear; possibilities for joint project development.

### GP theme 3 conclusions and recommendations

- The most common of the multi-level synergy tools are innovation vouchers linking businesses to research services usually at national level. Thus, research-upon-demand needs and technological connectivity in terms of access of businesses to research services and associated funding is acknowledged actually in all six (6) regions (also in Finland there is

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innovation voucher, but it was too early to propose it as GP), through innovation vouchers. Interregional innovation vouchers exist as well, but are usually constrained by ETC project funding & timetable.

- Provisions for cross border internationalisation of research is addressed by one GP only (ZIM) to which we would like to draw the attention of the partners, as it has been characterised as GP also by Vinnova and by the USA. It involves national innovation funds and it is practically a permanent service.
- Multilevel synergies linked to the coordination and implementation of RIS3 is proposed by one partner, important strategic tool to promote technological connectivity.
- Multilevel synergies are policy tools are embedded in a number of ROPs 2014-2020, but not really utilised.
- Finally, we have received two GPs on multi-level synergies describing two S3 platform-concepts.

## Good practice analysis and transfer

The good practice selection is, after the innovation maps, the 2<sup>nd</sup> step towards defining the action plans of the regions. The action plan combines (1) the results of the innovation maps that show innovation strengths and weaknesses for each partner region, (2) the industry focus that is related to the RIS3 of the regions but which still partners define freely, (3) the good practice insights as discussed in the preceding GP theme sections, and (4) any other priorities of the partner regions including their political realities.

The good practice analysis and selection for transfer is done through two interregional working groups (IWGs). IWG1 deals with GP theme 1, coordinated by CEEI Burgos PP8, and IWG2 deals with GP themes 2 and 3, coordinated by CERTH PP9. The process takes place during semesters 1 to 4, through mentoring sessions between the respective advisory partners and the relevant regional partners. The IWG1 and IWG2 sessions occur during the Interregional Policy Learning events planned to take place during each semester. Good practices are expected to be discussed during the regional stakeholder group meetings, and be tailored to the action plan priorities adopted in each region.

In this section, the purpose is to close the GP discussion by referring to the GPs that partners have selected for transfer, and try to reach insights and dare express some conclusions regarding the partner preferences but also the GP profiles and sources. Briefly:

- Table 7 (Summary of the BRIDGES project good practice contributions) summarises the findings regarding GP selection for analysis and transfer per project partner;

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- Table 8 (Insights and conclusions from the GP selection) summarises insights and conclusions from the GP selection;
- Table 9 (Good practice selection and improvement of technological connectivity types.) summarises the targeted improvement of technological connectivity addressing mismatches between the respective, localised productive and knowledge bases of the partner regions, i.e. the raison d'être of the BRIDGES project, are summarised in Table 9.
- Table 10 (Numbered list of GPs in the Annex section) lists all the contributed GPs by number.

**Table 7 Summary of the GP selection**

Selected GPs	Partners						
	PP1	PP2	PP3	PP4	PP5	PP6	PP7
GP1 CEEI Burgos	X						
GP2 COEBBE	X (joint action plan)						
GP4 BioSC	X (joint action plan)						
GP 6 HIS				X			
GP 7 Competence Centres				X			
GP 8 Kantola						X	X
GP 10 Large research infrastructures				X			
GP 13 OPIRIS			X				
GP 21 HURC IR_E					X		
GP 23 Steinbeis network	X			X			
GP 25 Patents bank							
GP 30 Photonics cluster			X				
GP 31 Autodiagnostic tool			X		X		
GP 32 High technology farming platform	X (joint action plan)						
GP 33 Big data traceability	X (joint action plan)						

**Table 8 Insights and conclusions from the GP selection**

GP by number	GP insights typology					
	GPs selected for analysis	GP frequency of selection	GP theme & frequency of selection	PP contributors	PPs as GP owners	Synergy GPs
1	1	1	1	PP8	1	
2	1	1	1	PP10	1	
3						

GP by number	GP insights typology					
	GPs selected for analysis	GP frequency of selection	GP theme & frequency of selection	PP contributors	PPs as GP owners	Synergy GPs
4	1	1	1	PP8		1
5						
6	1	1	1	PP6	1	
7	1	1	1	PP8		1
8	1	2	2	PP2	1	
9						
10	1	1	1	PP1	1	
11						
12						
13	1	1	1	PP9	1	
14						
15						
16						
17						
18						
19						
20						
21	1	1	1	PP4	1	
22						
23	1	2	2	PP7		1
24						
25	1	1	1	PP4	1	
26						
27						
28						
29						
30	1	1	1	PP9	1	
31	1	2	2	PP9	1	
32	1	1	1	PP9		1
33	1	1	1	PP9	1	

**Table 9 Good practice selection and improvement of technological connectivity types.**

Types of technological connectivity	Relevant selected GPs (overlaps included)
Type 1 Programme based (such as a centre of competence programme)	6

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Types of technological connectivity	Relevant selected GPs (overlaps included)
Type 2 Access to research services	6
Type 3 KET applications	2
Type 4 TRL improvement / certification	
Type 5 Innovation management chain	1
Type 6 Constant renewal services	2
Type 7 Commercialisation of research, cross border	2
Type 8 Direct research to business cooperation	

## Insights ....

1. Total GP contributions: 33
2. GPs selected & analysed for transfer: 15
3. GP frequency of uptake: 3 GPs out of 14 GPs have been selected by more than 1 partner
4. GP theme frequency of uptake: GP theme 1 innovation infrastructures (green boxes in Table 8): 7 times; GP theme 2 research to business (purple boxes in Table 8): 5 times; GP theme 3 multi-level synergies (red boxes in Table 8): 6 times.
5. Strong overlaps GP theme 1 & 2 within the selected GPs: GP10 could be easily classified also under GP theme 1; GPs 2,3,4,6,7,8, are all also examples of GP theme 2.
6. Sources of the selected GPs:
  - a. out of the 15 selected GPs 11 come from project partners and 4 through project partners. In particular, out of the 15 selected good practices, 3 come from PP8 and 6 from PP9, i.e. the advisory partners that have the most access to advanced innovation solutions.
  - b. For the rest, it is the strongest MS/regions / partners/ projects that contributed the most preferred GPs.
7. Types of technological connectivity addressed through the GP selection: 6 (out of 8).
8. Number of regions benefitting from Types 1 and / or 2 adoption into their action plan: 5 out of 6.
9. Types of technological connectivity frequency and patterns of uptake: overwhelmingly, innovation infrastructures and access to research services come together, i.e. advocating the adoption of the CREST model for industry – led centres of competence, i.e. integrated approaches, combining excellence and competence initiatives.

## ... and as a base for further discussions, some first conclusions

The emphasis on selecting GPs from GP theme 1 and connectivity type 1 and / or GP theme closely related to GP theme 1 functions (items 7, 8 and 9 in the preceding list) confirms the relevance of the BRIDGES project focus on improving innovation infrastructures and addressing research-to-business approaches. Moreover, the intensity of the GP transfer and the on-going

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


























mentoring sessions (between GP adopters, owners and the advisory team) all indicate the need for on-demand interregional innovation funding options, i.e. innovation vouchers with interregional eligibility and respective support services on the ground appear to be important.

Regarding development partnerships, we realise that it is important to (1) bring together innovation leader regions with less advanced ones in view of policy planning and implementation aspects. To achieve this, win-win situations need to be identified and the tools for coming and staying together should also be defined; (2) involve excellence institutions as advisory partners, as they are contributing the most advanced types of case studies as GPs, resulting from e.g. FP7 and Horizon 2020 projects. Such involvement could be understood as part of knowledge exploitation actions, which is a very important part of all H2020 initiatives.

We recognise that synergies with similar / complementary initiatives and learning from the GPs of other projects are important and should be encouraged.

## Annex 1 Numbered list of GPs

**Table 10 Numbered list of GPs**

 1 PP8_CEEIBurgos_IR-E_Theme1_final.docx
 2 PP10_ GP theme 1 COEBBE.docx
 3 PP8_GP theme 1 Synberc.docx
 4 PP8_GP theme 1 Nordrhein_Westfalen.docx
 5 PP8_GP theme 1 ETH_Zurich.docx
 6 PP4_GP theme 1 HIS.docx
 7 PP6_GP theme 1 CompCentres.docx
 8 PP2_GP_Kantola_PP2_RCK_Theme 1.docx
 9 PP2_GP theme 1 CEMIS.doc
 10 PP1_LRI for SMEs_IR-E_Theme2_final.docx
 11 PP1_GP theme 2 Research-to-Business (TEKES).docx
 12 PP1_GP theme 3 ZIM (TEKES).docx
 13 PP9_GP Theme2 OpiRIS.docx
 14 PP10_GP theme 2 AMS.docx
 15 PP9_GP theme2 SumoToolKitl.docx
 16 PP5_GP theme 2Saffronomics.docx
 17 PP3_GP theme 3 Voucher_IR-E.docx
 18 PP6_GP theme 3 InnoVoucher.docx
 19 PP7_GPtheme3 CENTROPE.docx
 20 PP7_GP theme 3 Innocsekk Plus.docx
 21 PP4_GP theme 3 HURC_IR-E.docx
 22 PP3_ GP theme 3 Lubelskie Targeted Research.docx
 23 PP7_GP Theme2_Steinbeis Network.docx
 24 PP4_ GP theme 2Scale-up Denmark.docx
 25 PP4_GP theme2 patents bank.doc
 26 PP2 & PP1_GP theme 2 MITY.docx
 27 PP5_GP theme 2 Novel product in dairy and wineries using herbs.docx
 28 PP5_GP Theme2 Promixture of Feed Additives Dioscurides .docx
 29 PP1_GP theme 2 INTOA Lean business-17-9-2017.docx
 30 PP9_GP theme 2 PHOTONICS.docx
 31 PP9_GP theme2 AUTO-DIAGNOSTIC TOOL.docx
 32 PP9_GP theme 3 High Technology Farming Platform_RCM
 33 PP9_GP theme 3 BigData_Traceability

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## NOTES

### Note 1

Committee of the Regions (2011) Multilevel Governance - Definition: "The Committee of the Regions sees the principle of Multilevel Governance as based on coordinated action by the EU, the Member States and regional and local authorities according to the principles of subsidiarity and proportionality and in partnership, taking the form of operational and institutionalised cooperation in the drawing-up and implementation of the European Union's policies" (CdR 273-2011 fin).

### Note 2

NEOCLASSICAL ECONOMICS: Neoclassical theory operates on a few basic assumptions—mainly that economic decisions are always made rationally based on fully informed evaluations of utility. In other words, consumers compare goods and purchase the ones having the greatest utility, or highest personal value. The consumer's main goal, the theory states, is to maximize personal satisfaction. Likewise, the goal of companies is to maximise profits. When consumers and companies both achieve their goals, markets experience economic equilibrium.

### Note 3

OECD on Regional competitiveness: "The significance accorded by policymakers to the notion of competitiveness reflects the increasing emphasis on competitive advantage for national economies. Policy makers across the OECD stress that their countries must become more "competitive" if they are to maintain their economic position vis-à-vis other industrial or

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developing nations and respond to challenges such as perceived productivity gaps, competition for mobile investment, rapid adoption of new technology and electronic commerce. Increasingly, the concept of competitiveness is extended to the regional level. A competitive region is one that can attract and maintain successful firms and maintain or increase standards of living for the region's inhabitants. Skilled labour and investment gravitate away from "uncompetitive" regions towards more competitive ones.

#### **Note 4**

RESILIENCE: Ron Martin and Peter Sunley (2013) On the Notion of Regional Economic Resilience: Conceptualisation and Explanation, page 2 "...how regions react and recover from shocks".

#### **Note 5**

REGIONAL INNOVATION SYSTEMS Using regional systems of innovation as normative concepts, "... both overstates and at the same time underemphasises the roles regions play as policy-making and implementation spaces". Elvira Uyerra, Kieron Flanagan (2010) From Regional Systems of Innovation to Regions as Innovation Policy Spaces, Environ Plann C Gov Policy August 2010 vol. 28 no. 4 681-695, doi: 10.1068/c0961.

#### **Note 6**

PROXIMITIES Literature largely acknowledges that the existence of knowledge networks is, among many others, one of the significant factors of regional performance in so-called "knowledge-based economies"<sup>17</sup> "Meaningful (purposeful...) frequency of interactions accounts for the thickness & performance of a regional innovation system"<sup>18</sup>. Some regions have been proven to interact better than others, and the knowledge-based approach has integrated the values of cooperation and functional complementarities in the regions<sup>19</sup>. This can be

<sup>17</sup>Jerome Vicente Joan Crespo, Raphael Suire (2012) Regional Studies Association, Sustaining Regional Futures, Global Conference Sunday 24th June -Wednesday 27th June 2012, China National Convention Centre Beijing, China; pp105-106.

<sup>18</sup>Moulaert & Sekia (2003) Territorial Innovation Models: A Critical Survey, Regional Studies, Volume 37, Issue 3, 2003, pages 289-302.

<sup>19</sup>Owen-Smith & Powell (2004) Knowledge Networks as Channels and Conduits: The Effects of Spillovers in the Boston Biotechnology Community, Vol. 15, No. 1, January–February 2004, pp5–21, doi 10.1287/orsc.1030.0054; Holger Graf & Jens J. Krüger (2009) "The Performance of Gatekeepers in Innovator Networks," Jena Economic Research Papers 2009-058, Friedrich-Schiller-University Jena; Holger Graf & Jens Kruger (2011) "The Performance of Gatekeepers in Innovator Networks," Industry and Innovation, Taylor & Francis Journals, vol. 18(1), pages 69-88; Jeffrey S. Boggs and Norma M. Rantisi (2003) The 'relational turn' in economic geography, J Econ Geogr (2003) 3 (2): 109-116 doi:10.1093/jeg/3.2.109;



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summarised by the term 'integration of the relational approach into regional development'. Policies supporting regional networks, clusters, coherent triple helix (government, education and research, business activities) functions demonstrate this approach<sup>20</sup>. The relational approach becomes an independent variable in itself and can be understood to be applicable beyond physical proximities (Rutten 2016<sup>21</sup>) through 'conversations' as social spaces of knowledge creation based on the effort required to bridge distance and on the attractiveness of places for knowledge creation. In BRIDGES project we adopt exactly this approach, and for four (4) reasons: 1) Non-innovation leader BRIDGES regions face distance challenges from research centres required for their RIS3 implementation, and as a result they face mismatches between the RIS3 economic and knowledge & research base; 2) the 'conversation spaces' approach goes beyond the notion of regional resilience<sup>22</sup> understood as return (thanks to conditions of perfect competition<sup>23</sup>) to a state of equilibrium following exogenous shocks<sup>24</sup>; rather, it builds on Krugman's assumption<sup>25</sup> that increasing returns to scale (and hence imperfect competition), underlie development, and this is how regions evolve, how regional advantage is constructed; 3) it leads to functional rather than localised innovation ecosystems<sup>26</sup>, and 4) it proposes a dynamic (therefore evolutionary) approach to networking and cooperation, since 'conversation spaces' are based on relevance, "tacitly teaching" how to evolve, and go beyond static problem solving (e.g. a unique transfer of good practice).

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<sup>20</sup> *ibid.* above.

<sup>21</sup> Roel Rutten (2016) Beyond proximities: The socio-spatial dynamics of knowledge creation.

<sup>22</sup> RESILIENCE: Ron Martin and Peter Sunley, 2013. On the Notion of Regional Economic Resilience: Conceptualisation and Explanation, page 2 "...how regions react and recover from shocks".

<sup>23</sup> NEOCLASSICAL ECONOMICS: Neoclassical theory operates on a few basic assumptions—mainly that economic decisions are always made rationally based on fully informed evaluations of utility. In other words, consumers compare goods and purchase the ones having the greatest utility, or highest personal value. The consumer's main goal, the theory states, is to maximize personal satisfaction. Likewise, the goal of companies is to maximise profits. When consumers and companies both achieve their goals, markets experience economic equilibrium.

<sup>24</sup> Jerome Vicente Joan Crespo, Raphael Suire, 2012. Regional Studies Association, Sustaining Regional Futures, Global Conference Sunday 24th June -Wednesday 27th June 2012, China National Convention Centre Beijing, China; pp105-106.

<sup>25</sup> Paul Krugman, 1991. Increasing returns and economic geography, Massachusetts Institute of Technology.

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