Improving the effectiveness of RIS3 implementation: BRIDGES project case study[1]

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Abstract

The aim of the paper is to show the methodology for improving the effectiveness of RIS3 implementation, towards investments and better exploitation of research excellence. The methodology is dedicated to regions which face following challenges: 1) mismatches between RIS3 productive & RDI bases, 2) distance from & better exploitation of research excellence as a path to further specialisation, and 3) restricted resources towards RIS3, the combined result of which is shown in the weak impact of the RIS3 implementation. These challenges indicate that for some regions, the RIS3 context is not functioning as ideally planned, and the innovation performance is not what it should be.

Therefore, for such regions, we are implementing BRIDGES project (Bridging competence infrastructure gaps and speeding up growth and jobs delivery in regions) co-financed by Interreg Europe with following partners: (1) Regional partners: Kainuun Etu Oy (FI), Regional Council of Kainuu (FI), Lubelskie Voivodeship (PL), Helsinki-Uusimaa Regional Council (FI), Regional Development Agency of Western Macedonia (GR), Soca Valley Develoment Centre (SI), Pannon Business Network Association (HU); (2) Advisory partners: European Business and Innovation Centre of Burgos (ES), Centre for Research and Technology (GR), Stichting DLO (NL).

All regions share bio-economy among their RIS3 industries and are innovation followers, with the exception of Uusimaa region which is innovation leader. All of the innovation follower regions need to face path renewal and /or path creation; in all of these regions, the RIS3 is

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confronted with challenges of relatedness, embeddedness, and above all critical mass, and the regional economies need to improve their competitiveness. On the other hand, the innovation leader region, in spite of high productivity and competitiveness, is confronted with relevant slowed down growth, "pockets" with path renewal needs, considerable unexplored research excellence, and restricted public funding (including ESIF) towards RIS3 actions.

The methodology assumes to explore the potential of strategic, sustainable, partnerships, including interregional ones between the innovation advanced and innovation follower regions, leading, through innovation partnerships and associated policy responses, to improved relatedness, embeddedness and critical mass. In practice, to address the project challenges BRIDGES proposes, in parallel with interregional strategic partnerships and related funding tools (good practice theme 3) and research to business innovation partnerships (good practice theme 2), also to improve RIS3-related innovation infrastructures as Industry-led Centres of Competence (good practice theme 1), as a way to maintain in the long run the strategic partnerships & as a specialised embeddedness agent.

The tactical approach is to review the RIS3 in all regions and confirm challenges and needs, agree strategic objectives and select through the interregional policy learning and the good practice exchange, possible solutions that will meet the objectives.

The methodology implemented by the project will result in: 1) Six (6) territorial action plans that a) include RIS3 paths and investments and b) criteria for improving the delivery of the Structural and Investment Funds (ESIF); 2) improved criteria for the delivery of ESIF endorsed and taken into implementation.

Introduction

BRIDGES is an Interreg Europe (IE) project approved in February 2016 under the 1st call, Priority 1.a Improving innovation infrastructure policies. As all IE projects, it is implemented in two Phases, Phase 1: 1.4.2016 – 31.3.2019 called policy learning, and Phase 2: 1.4.2019 – 31.3.2012 called policy implementation. The project budget is €2,091,881. There are ten (10) partners, three (3) out of which are advisory bodies. The regional partners are: Kainuun Etu Oy (FI, Leader Partner – LP), Regional Council of Kainuu (FI), Lubelskie Voivodship (PL), Helsinki-Uusimaa Regional Council (FI), Regional Developemnt Agency of Western Macedonia

(GR), Socca Valley Development Centre (SI), Pannon Business Network Association (HU); the advisory partners are: European Business and Innovation Ventre of Burgos (ES), Centre for Research and Technology /Thessaly (GR), and Stichting DLO (NL).

Figure 1 BRIDGES partnership and regions

The overall objective of the BRIDGES (Bridging competence infrastructure gaps and speeding up growth and jobs delivery in regions) project is stated as *to improve RIS3 governance and upgrade RIS3 innovation infrastructures into industry-led centres of competence (ICC)*. BRIDGES wants to primarily break the vicious circle of regional lock ins, dominant in less advanced regions, and restricting the RIS3 impact. The focus of the project are knowledge asymmetries between innovation advanced and less advanced regions, addressing them through networked solutions. It also contributes to the uptake of commercially unexplored excellence results of the more advanced regions. Thus the RIS3 performance is improved in both types of regions.

Conceptual background

BRIDGES is conceived as a function, defined in the space of a regional innovation system, of knowledge spillovers (KS) relevant to three RIS3 implementation parametres, and leading to sustainable constructed regional advantage, in the form of 1) more effective RIS3 policies & investments and 2) improved innovation infrastructures.

The implementation of any RIS3 relies (and reinforces) the regional innovation system (RIS) in which it functions, adjusted to support smart specialisation policies[3]. BRIDGES project would not be possible without the extensive literature & insights on regional innovation systems, their institutions and interactions. Equally, it would not have been possible without the strong regional innovation policy and practice background & efforts of the regional authority partners. As already mentioned, practically only one of the partner regions can claim a more or less complete, networked & embedded regional innovation system, a real endogenous growth model, while the rest of the regions—for different reasons, are found more in the category of regionalised innovation systems[4], i.e. innovation systems requiring external resources for effective operation. In the case of BRIDGES project, the aspect of the regional innovation systems we address more, is their transformative capacity: more advanced regions have such capacity, less advanced regions 'exhibit a weak capacity to foster transformative change'[5]. The need for improved transformative capacity is now acknowledged in -at least some of- the less advanced regions[6], a fact further legitimasing the effort of this project.

[3] Helsinki –Uusimaa RIS3 2014-2020, "…Strengthening overall regional innovation systems.."

[4] This classification is from as Asheim (Asheim 1998), Cooke (Cooke 1998), for example:

Main type of regional innovation system	The location of knowledge organisations	Knowledge flow	Important stimulus for cooperation
Territorially embedded regional innovation network	Locally, however, few relevant knowledge organisations	Interactive	Geographical, social and cultural proximity
Regional networked innovation systems	Locally, a strengthening of (the cooperation with) knowledge organisations	Interactive	Planned, systemic networking
Regionalised national innovation systems	Mainly outside the region	More linear	Individuals with the same education and common experiences

Source: adapted from Asheim, Bjorn T and Isaksen, Arne (2002), Regional Innovation Systems: The Integration of Local 'Sticky' and Global 'Ubiquitous' Knowledge (2002). The Journal of Technology Transfer, Vol. 27, Issue 1, p. 77-86 2002. Available at SSRN: http://ssrn.com/abstract=1495495; page 11, Table 1:Some characteristics of three main types of regional innovation systems.

[5] Weber and Rohracher, 2012.

[6] For example, the renewed strategic document for Kainuun Etu (ETU25082016) emphasises change management among the required core competences of the organisation. Kainuun Etu is the regional development company of Kainuu region, innovation follower.

RIS3 is especially dealing with the tranfromation and renewal of regional economies, therefore the effectiveness of RIS3 implementation is hindered according to the existence and intensity of such challenges. BRIDGES project starts at this point: it addresses, selectively, three types of challenges (BRIDGES aims and scope), through the good practice transfer, which is understood as a knowledge spillovers process between regional innovation systems.

Knowledge spillovers have been defined (e.g. Ausdretch 1995, Ausdretch 2003), as positive externalities benefitting businesses once businesses appreciate and invest in them. The KS research which has been going on for many decades has 1) shifted the focus of knowledge spillovers from business to spatial units[7] and therefore "legitimised" the regional dimension, 2) acknowledges geographical proximity as an important KS factor, clearly the case of the innovation leader region, 3) stresses the importance that KS be in the form of information units (rather than tacit knowledge which weakens over distance), e.g. like the GP decsriptions, and 4) recognises structural[8] or third party mediation to businesses[9] as important towards better knowledge spillover results, for example regional policies and innovation infrastructures.

The knowledge spillover function in BRIDGES project, is the process of good practice (GP) exchange, analysis, and transfer from source to destination regions. It implies that GPs are knowledge externalities in relation to the destination region, and once transferred they reinforce the regional knowledge capital. However, the GPs transferred, are not technologies, and are not directly between businesses. Rather, they are policies that lead to better technology transfer (for example) through the mediation of regional policies & actors. In BRIDGES project, for example, GPs are units of information demonstrating 'what works' in relation to three RIS3 implementation parametres – i.e. the project GP themes[10]. We argue that good practice transfer is a knowledge spillover (KS) process. While at interregional level the GP analysis is between regional policy makers, at regional level, the GP analysis is between

[7] ibid, previous.

[8] Lucas (2001) and Lucas and Rossi-Hansberg (2002).

[9] Acs 2004 from the abstract "The intellectual breakthrough contributed by the new growth theory was the recognition that investments in knowledge and human capital endogenously generate economic growth through the spillover of knowledge. … Endogenous growth theory does not explain how or why spillovers occur. The missing link is the mechanism converting knowledge into economically relevant knowledge. This Paper develops a model that introduces a filter between knowledge and economic knowledge…".

[10] RIS3 industry led centres of competence, research to business innovation partnerships, and leveraging of innovation re-sources through multi-level partnerships

regional policy makers, businesses, and other stakeholders. It is a mediated process but it is a valid process in terms of KS.

Once the KS approach adopted, the project benefits from KS literature, insights, and tools. For example, KS literature helps us focus the GP description & target on, respectively, what is crucial, operational and accessible in the GP and on the RIS3 sub industries with the highest innovation absorptiveness capacity; also, the 2nd Phase of the project, dealing with implementation, monitoring and evaluation, can be facilitated in case we decide to apply the KS equation[11] to evaluate results.

RIS3 implementation, as a smooth & constructive process, is probably not a given for most regions, except maybe those that already have deep, long and succesful history in innovation-based growth. For the purposes of BRIDGES project, RIS3 implementation challenges are considered from the perspective of incomplete regional innovation systems combined with, in some cases of the partner regions, requirements for radical diversification of the regional economies, upscale renewal of the regional economies, through new (industry-based)[12] path setting. The purpose is to generate RIS3 investments capitalising on the good practice transfer methodologies, the accessibility to needed but not localised, knowledge resources, and the new interregional networks.

BRIDGES aims and scope

BRIDGES project is about challenges that regions face, deriving from the effectiveness of their RIS3 implementation. These challenges are summarised as 1) mismatches between RIS3 productive & RDI bases, 2) distance from & better exploitation of research excellence as a path to further specialisation, and 3) restricted resources towards RIS3, the combined result of which is shown in the weak impact of the RIS3 implementation. Issues 1 & 2, are very common in less advanced and/or peripheral regions[13], issue 3 is more relevant to innovation

[11] Jaffe 1989 equation which introduces the spatial dimension [GC] into the knowledge production function $I = \alpha IRD^{\beta_1} * UR^{\beta_2} * (UR * GC^{\beta_3}) * \varepsilon$ (2).

[12] Mathieu Doussineau, Smart Specialisation Platform (2016) Opportunities and challenges for RIS3 implementation – from design to implementation; Lyon 28.6.2016, page 17: "should not target sectors but areas of economic opportunity e.g. advanced materials for energy production application in harsh environment.

[13] For example, Jukka Teräs, Alexandre Dubois, Jens Sörvik and Martina Pertoldi (2015) Implementing Smart Specialisation in

leader regions, that have much less structural funds than the less advanced regions. The regional profile of the partnerhsip, is as follows:

BRIDGES regions key information				
Region	**Area**(km^2)	**Population**	**Income** (€/capita)	**Innovation performance** (2014 or 2015)
Kainuu, FI	22,687	75,415	25,754	Innovation follower
Lubelskie, PL	25,122	2,139,726	10,172	Modest innovator
Helsinki-Uusimaa	9,097	1,620,000	24,442	Innovation leader
Western Macedonia, GR	9,451	291,731	18,100	Modest innovator
Western Slovenia, SI	8,061	971,995	21,399	Moderate innovator
Western Transdanubia, HU	11,209	997,939	16,920[14]	Moderate innovator

The partnership is planned to bring together innovation advanced with less advanced regions, identify and activate win-win interactions between them in this way address issues 1, 2 and 3. A common reference across the partnership is that bio-based industries are part of the RIS3 of the regions.

Ideally, the shared RIS3 theme, together with the institutional, cognitive and technological proximities, alltogether facilitate[15] interregional exchanges in the direction of good practice exchange, identification of cooperation patterns and improvement of the RIS3 effectiveness in all partner regions. The partnership profile at the start of the status is summarised in Annex 1 (innovation performance details, state of play, strenghts and weaknesses according to the innovation Union Scoreboard and other reseach referenced), and as example, a more detialed references is made to one of the regions (Kainuu).

Sparsely Populated Areas; S3 Working Paper Series, No.10/2015, JRC Technical reports; page 9, Table 1: Synthesis of the theoretical and operational issues on S3 implementation in Sparesely Populated Areas (SPA).

[14] Data 2011, https://www.ksh.hu/docs/eng/xftp/idoszaki/qdpter/egdpter11.pdf, page 9

[15] BOSCHMA R. A. (2005) Proximity and innovation: a critical assessment, Regional Studies39, 61-74. ALSO: ARNOUD LAGENDIJK & ANNE LORENTZEN (2006): Proximity, Knowledge and Innovation in Peripheral Regions. On the Intersection between Geographical and Organizational Proximity. ALSO: Messen Petruzzelli (2008). … state of play, RON BOSCHMA (2013): Constructing Regional Advantage and Smart Specialization: Comparison of Two European Policy Concepts, Center for Innovation, Research and Competence in the Learning Economy (CIRCLE) Lund University, Sweden Urban and Regional research centre Utrecht (URU) Utrecht University, the Netherlands, Papers in Evolutionary Economic Geography # 13.22, http://econ.geog.uu.nl/peeg/peeg.html . "Cognitively related" means sharing a similar base of knowledge, although they may belong to different sectors. S3 argues that innovation can be induced simultaneously across multiple sectors by targeting the introduction of novelty based on this shared knowledge-base. Previous generations of RIS tended to support innovation processes and knowledge production and application more within individual sectors of the regional economy. Related variety also indicates that new domains more often emerge out of existing regional capabilities, even though occasional cathedrals in the desert can occur.

The impact of the project is through the Structural Funds of all the partner regions, since RIS3 is in focus. However, some partners do not have enough SF sources for financing RIS3 actions, and we are seeking combination of resources to leverage their effectiveness.

The outputs are as follows:

- Amount of ESIF mobilised across the partnership: €3,600,000
- Number of enterprises cooperating with research institutions (partners 1,2,3,5,6,7): target value of 230
- Number of research infrastructures / research institutions with cooperation agreements with businesses outside Uusimaa area (partner 4): target value of 5
- Number of ICC improved with revised structure, criteria for projects to promote, criteria and agreements for research2industry partnerships, accepted by the managing board of the innovation agency (involving partners 1,3,5,6,7): target value of 5
- Number of RIS3 bio-based investment projects implemented: target value of 6–8
- Number of RIS3 policies improved: target value of 5–6 schemes RIS3 paths criteria=Bioeconomy investment projects criteria, 6 schemes of innovation vouchers aligned with RIS3, the ESIF and/or more types national funding, 1–2 practical schemes of project cooperation based on interregional synergies.

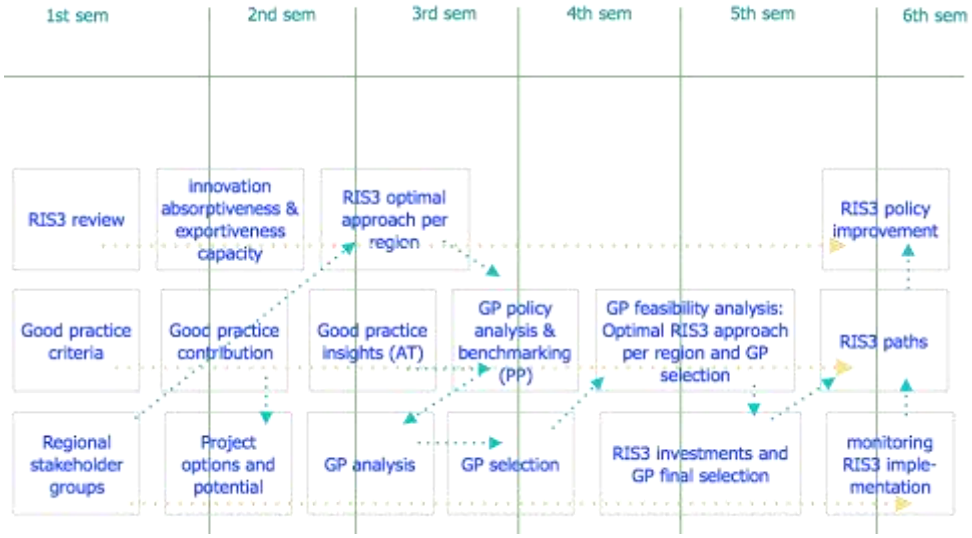
Methodology

BRIDGES is a complex project. It is complex because it strives to combine, into the same project plan, short-term results (investments) with long-term processes and institutional adjustments, in new types, 'paths' of policy interventions (these are our 'RIS3 paths'). Moreover, we focus on 'old style' innovation and knowledge transfer, more on transfer of codified knowledge, than learrning by doing (DUI). This approach is supported by research that 1) encourages systemic, even if deliberate approaches, in the effort to build constructed advantage[16] and 2) clarifies that for catching up regions and businesses, STI tarnsfers are

[16] European Commission, Directorate General for Research (2006), page 12: "Instead of market failure, the rationale for policy intervention is the reduction of interaction or connectivity deficits. A regional innovation systems approach, which is key to constructed advantage, sees such deficits as the core problem of innovation in the EU. … Therefore, it is an important question whether firms can take up this challenge of strengthening their knowledge bases by themselves. Evidence suggests that rarely on their own initiative do firms start co-operating with neighbouring firms or co-located knowledge creating and diffusing organisations. … Accordingly, while changing their behaviour to become more innovative is one option, another involves more planned and systemic approaches to innovation in a globalising knowledge economy. In this way, regional advantage

more benficial than DUI exercises[17]. We also took into account lock-ins of the innovation leader regions, especially in the form of unexplored research, and 'two-sided' technology transfer institutions as baseline reference for the RIS3 innovation infrastructures. In particular, in Finland, internationalisation of research needs to be improved and reinforced[18]. Uusimaa is the region in Finland with the most concentrated research infrastrucutres and in particular research on bio-based economy. With this background, representatives of relevant research infrstructures are included into the regional stakeholder group of the partner.

Figure 2 Organisation of the action plan



Through RIS3 sub-industries & their innovation capacity absorptiveness niches, we "reach" a better functioning of regional innovation system, capable of generating increasing returns and thereof path renewal; this is our constructed regional advantage aim. To reach these results, we strongly rely on and cultivate the involvement of the regional stakeholder groups, which are basically regional triple helices, but reflecting the industry-relevant institutions of the overall regional triple helix. As shown in Figure 2, the action plan has a three-component base: the state of play of the RIS3 strategies, the good practice exchange, and the regional stakeholder groups.

may be consciously and pro-actively constructed. This involves a new and more dynamic role for the public sector, for example universities, and the wider economic governance system, specifically in interaction with the private sector".

[17] Iacobucci 2012, part 2, page 5.

[18] Finland RIO country report 2015 https://rio.jrc.ec.europa.eu/en/country-analysis/Finland/country-report "Challenge description: … However, the degree of STI internationalisation in Finland is quite weak, affecting both public and private sectors. Finland shows moderate levels of international funding for R&D (17 % of GERD in 2014) although it has been growing (235 % increase in 2010–2014). … Policy Response: Finland is committed to addressing the weak internationalisation of its science base."

One of the challenges regions face—as already mentioned—is the mismatch between productive and knowledge bases. After review of the regions, we understood that this happens either because of radical restructuring of the economic base implying the knowledge base stopped to be relevant and also stopped to be renewed as the restructuring implied also the need for a new economic model, or due to historical weaknesses in connecting the productive base to knowledge, and therefore also to policy interventions seeking coherence between the two regional bases (i.e. two of the triple helix actors). Through the knowledge we have today about how regions can grow, our staretgy is not to try to "correct" the localised innovation system but to focus on the regionalised[19] one. We achieve this by introducing to the regions renewed, convincing paradigms which, ideally, will be mainstreamed into the regional policies. One part is about processes and another part is about resources (natural and knowledge). Processes are addressed through good practices. Resources are a different story because they cannot be "transfererd" in the way methodologies can be adopted. Conforming to the RIS3 literature, the RIS3 industries rely on localised resources. However, as part of the challenges 1 & 2 which are faced by the less advanced regions, the needed knowledge & knowledge transfer resources to implement their RIS3, are missing. So, *we connect advanced development tools (such as the project GPs) →to the most promising RIS3 sub-industries*, i.e. the part of the industries that have the highest innovation capacity absorption potential, whatever that might be, *→to knowledge & associated knowledge transfer resources (e.g. technology transfer offices of universities) that might not be located in the regions*—and which are part of the partnership, e.g. Uusimaa. In the process, Uusimaa (better developed region) also benefits. In fact, these are the two hypotheses of BRIDGES project: 1) less advanced regions can renew towards more advanced status, by adopting advanced processes & seeking required knowledge where it exists, provided absorptiveness capacity is ensured. 2) In addition, more advanced regions can benefit from new innovation partnerships, by diffusing their research & innovation solutions, leading to higher income and possible new fields of research.

Our approach is both, taking distance from & aligned with mainstream approaches; we take distance from the idea of linear, step-wise approach, i.e. from learning to farmework conditions (e.g. Nordregio 2016)[20] or learning as a unique priority since "regions needs to

[19] Asheim, Bjorn T and Isaksen, Arne (2002), page 11, Table 1:Some characteristics of three main types of regional innovation systems.

[20] Nordregio 2016, page 7: "The key to the innovativeness of regional and national economies lies in the existence of favourable framework conditions and well- functioning innovation systems".

catch up" (Tödtling 2005) [21] to perform. On the other hand, we are aligned with the recommendation that less advanced regions should be encorage to seek and access knowledge resources outside the region (Tödtling 2005). Thus, we argue that for less advanced regions to change, a more systemic approach is better, tackling learning, framework conditions and investments within the same concept. We will see whether this approach will work or not. If it works, it might be a tool to improve in the future for the benefit of 'catching up' regions.

The contents and findings of this process, once validated by the interregional and regional partnerships, are interpreted into the action plan. The validation process relates to "matching" bio-based research with a bio-based industry investment agenda[22] for each one of the less advanced regions, and through this process to establish a field of upscale, increasing returns for the regions.

The sections, steps and deliverables of this process are outlined in Table 1. We dedicate considerable resources to policy review and understanding the state of play (section 1b in Table 1). Step 4 Feasibilty analyses & RIS3 paths recommendations is a milestone of the project.

Table 1 Project activities and outputs

Key activities	Key outputs
1) Policy review	1a) RIS3 state of play brief reports, 1b) Trilateral online sessions to gain deeper insights (project partner, advisory partner, lead partner)
2) Regional maps	2a) Criteria for mapping innovation capacity absorptiveness potential and criteria for mapping the research transfer offices; 2b)RIS3 sub industries with highest innovation absorptiveness capacity; 2c) Technology transfer offices with confirmed record in bio-based industries (for the innovation leader region)
3) Good practices	3a) Thematic introduction: each member of the Advisory Team (AT) and the LP are creating brief introductory documents of each one of the GP themes, discussed during interregional project meetings. 3b) Good practice criteria; 3c) good practice contributions; 3d) Good practice capitalization: summary report, giving insights into the GPs contributed, their quality and if more contributions are needed.
4) Feasibility analyses and RIS3 paths recommendations	Taking into account the results from activities 1,2,3, 6, recommendations on policy agenda and concrete actions to be implemented
5) Action plans	
5.1 Action plan training	1 IPL session focusing on the action plan approach and the endorsement process

[21] Tödtling 2005, page 13: " In peripheral regions the key challenge is to strengthen and upgrade the regional economy by fostering "catching up learning". … Furthermore firms should be linked to external clusters and knowledge providers and to higher spatial innovation systems (national, European".

[22] Gianelle, C., & Kleibrink, A. (2015).

Table 1 Project activities and outputs	
Key activities	**Key outputs**
5.2 Action plan formulation and peer review	6 action plans and 1 external peer review
5.3 Action plan endorsement	6 endorsed action plans
5.4 Action plan implementation	6 or more development actions leading to RIS3 investments
5.5 Action plan monitoring	5.5a monitoring criteria, 5.5b 4 monitoring meetings (one on line), 5.5c 1 monitoring report
6) Policy learning and joint processing	
6.1) Coherent and comparable themes of both the regional and the interregional policy learning	List of themes and site visits with the participation of relevant regional stakeholder group members when relevant
6.2) Regional policy learning (PL), regional stakeholder groups	6 sessions in each region, aiming at localising the project process and maximising benefits
6.3)	6 semester-based summary reports with insights, and improvement hints if required
6.4) Interregional policy learning (IPL)	6 IPL sessions, focusing on learning and GP demonstration (site visits), GP analysis & exchange, benchmarking and GP selection, and mutual peer review of the selected GPs.
6.5) Capitalisation of the interregional policy learning	1 summary report with insights, delivered at the end of Phase 1
6.4) Interregional working groups (IWG) 1 and 2	6.3a IWG1: model a 'RIS3 industry-led centre of competence as innovation infrastructure', benchmark and transfer it to the regions. (addressed to innovation agencies) 6.3b IWG2 Based on 1,2,3,4,6.1 and 6.2 identify relevant research to business / excellence to innovation interregional partnerships, adopt them strategically and adopt the tools to promote them (addressed to regional policy makers) 6.3c Capitalisation reports with conclusions and insights from the proceedings of IWG1 and IWG2.

As mentioned previously, "Processes are addressed through good practices". We have three types of good practice themes in BRIDGES: 1) Industry-led centres of competence, as RIS3 implementation infrastructures, 2) Business innovation partnerships, and 3) Leveraging of funds and interregional partnerships (multilevel synergies), strategic research to business partnerships and the tools to support them. The three themes are opened up to some detail below. The good practice exchange and methodology have been anticipated to be both conceptually valid, accessible to the regions for transfer, and allow corrective space. This is summarised in Table 2, lines on 'Good practices' and 'Policy learning'.

Good practice themes

1.Industry-led centres of competence, as RIS3 implementation infrastructures: RIS3 implementation calls for innovation platforms. One relevant actor are business intermediaries that combine RIS3 industry competence with innovation management. These business ecosystems can be created for example in the bioeconomy cluster. Such centres of competence are found in more advanced regions, and many times they are part of Research &

HEI technology transfer offices. They function as research "outlets" and product development / improvement facilitators. In BRIDGES project, we seek to identify examples which are accessible to the innovation agencies or RIS3 implementation offices in the regions, so that they can be realistically adopted and which ensure, as part of their daily tasks, strategic cooperations with relevant research institutions. For example, such centres of competence can link the results of a centre of excellence and disseminate them to businesses. In BRIDGES project, the issue is a little more demanding, because in some cases of radical diversification of the regional economy, it might concern simultaneously knowledge transfer and knowledge absorptiveness capacity by local businesses. The centre of competence must be prepared, in such cases, to address both.

What we hope to end up with, as a more permanent result of the proejct are better functioning, regionalised innovation systems effectively networked, among others, through the technology transfer offices and the RIS3, industry-led inovation infrastructures.

2. Research 2 Business innovation partnerships: Knowledge transfer is essential in RIS3 implementation. The challenges of knowledge transfer are widely acknowledged. In BRIDGES project, we are seeking good practices demonstrating either (1) combination of knowledge transfer with increased knowledge absorptiveness capacity in the regions, and / or (2) knowledge transfer that generates and industrial agenda upscaling. Many times, the original research resources are not located in peripheral areas. Therefore, through the project, and the facilitation of the centres of competence (GP theme 1), it will be possible to embed such processes in the regions. We do not say "introduce" or "establish" because these are known options, more or less familiar to all regions. The issue is to make them into regular, systematic processes, serving directly RIS3 industries.

3. Leveraging of funds and interregional partnerships (multilevel synergies), strategic research to business partnerships and the tools to support them: The leveraging here concerns three aspects: 1) complementarities between productive RIS3 bases and related research requirements, i.e. sometimes it is not possible to replicate research in all regions while also advanced regions have research unused (here we are capitalising on insights from the H2020 WIDESPREAD/ TEAMING programme); 2) to identify funding tools and options to support such type of strategic interregional cooperation, and 3) given the restricted ESIF amounts for the advanced regions, to identify and propose for adoption the best options for combination of funds supporting innovation, e.g. national, ESIF, new EU tools etc.

State of play

BRIDGES project started officially on the 1.4.2016. As in all projects, there are good moments, delays, and difficulties. We are happy because to this stage at least, the methodology we have invested and investing in, seems to work. For example,

- the good practice approach, seems to work. However, we lag behind with good practice theme 2 contributions, and very limited good practice theme 1 contributions. The first GP capitalisation report is done, with good insights. We will discuss all this during our 2nd meeting, during early November 2016, in Burgos.
- the regional maps have proceeded in some regions and in some others not. However, the findings are very interesting. For example, we have identified in one case pockets of totally unexploited patents, one wonders why.
- the policy review has proven very important, and the on-going bilateral sessions between the regional partners, the advisory partner and the LP, prove very useful. In some cases, we find that—as often in case of less advanced regions—RIS3 is on sectors and not on industries. During our bilateral sessions, we discuss in-dept to "name" the industries and then the innovation potential. Some cases indicate that RIS3 = re-industrialisation = industrial policy needed, and after that, the issue of platforms (industry versus competences) enters into the picture. Entrepreneurial discovery appears, to this moment, either cross-industry options (Kainuu, Western Transdanubia) or higher quality products addressing more demanding markets (Lubelskie, Western Macedonia). However, these are very initial insights and we are far from definitive action plan concepts.
- the regional stakeholder groups have been formed in all the regions, and the first meeting shave been held in all of them, with more than one meeting in a few of them. In general, the meetings have been introductory. We expect the good practice discussion in the regions to start with the regional stakeholder group meetings in the second semester.

Annex 1 BRIDGES regions at the start of the project

BRIDGES regions state of play				
Key challenges: 1) mismatches between RIS3 productive & RDI bases, 2) distance from & better exploitation of research excellence as a path to further specialisation, and 3) restricted resources towards RIS3, the combined result of which is shown in the weak impact of the RIS3 implementation				
BRIDGES regions	Innovation performance	State of play	RIS3 priority	Key challenges at the start
Kainuu, FI	[23]Innovation follower	[24]Use funding criteria for higher-education institutions or R&D vouchers, to reinforce co-operation between companies, particularly start-ups, and universities. Performance in only two innovation dimensions has improved, in Open, excellent and attractive research systems and Intellectual assets. Performance in less than half of the indicators has improved. Particularly high growth is observed for License and patent revenues from abroad (16%) and Non-EU doctorate students (10%). Notable declines in performance are observed for Non-R&D innovation expenditures (-5.8%) and Innovative SMEs collaborating with others (-8.9%). Weakness: **Economic effects** Exports medium and high products.	Forest economy	1 and 2
Lubelskie, PL	[25] Moderate innovator	[26]Improve performance of research infrastructures. [27] High growth is observed for License and patent revenues from abroad (27%), and more moderate growth for Community designs (12%) and R&D expenditures in the business sector (12%). Fairly strong declines in performance are observed in Innovative SMEs collaborating with others and SMEs with marketing or organisational innovations. Strength: **Innovators** employment in fast growing firms in innovative sectors Weakness:**Innovators** SME product / process innovation; SME marketing / organisational innovation	Agrofood Bio-based Energy	1 and 2

[23] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report, page 33 & 34.

[24] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report, page 33 & 34.

[25] Innovation Union Scoreboard 2015, Country fiche PL

[26] Krzysztof Klincewicz Katarzyna Szkuta (2015): RIO COUNTRY REPORT 2015: Poland, European Commission JRC Science for Policy Report, page 33 & 34.

[27] Innovation Union Scoreboard 2015, Country fiche PL

BRIDGES regions state of play				
Key challenges: 1) mismatches between RIS3 productive & RDI bases, 2) distance from & better exploitation of research excellence as a path to further specialisation, and 3) restricted resources towards RIS3, the combined result of which is shown in the weak impact of the RIS3 implementation				
BRIDGES regions	Innovation performance	State of play	RIS3 priority	Key challenges at the start
Uusimaa, FI	[28]Innovation leader	[29]Use funding criteria for higher-education institutions or R&D vouchers, to reinforce co-operation between companies, particularly start-ups, and universities. [30]Performance in only two innovation dimensions has improved, in Open, excellent and attractive research systems and Intellectual assets. Performance in less than half of the indicators has improved. Particularly high growth is observed for License and patent revenues from abroad (16%) and Non-EU doctorate students (10%). Notable declines in performance are observed for Non-R&D innovation expenditures (-5.8%) and Innovative SMEs collaborating with others (-8.9%). Strength: **Economic effects** Licence and patent revenues from abroad; **Innovators** SMEs product / process innovations (GPt2) Weakness: **Economic effects** Exports medium and high the products. RIS3 implementation approach[31] (GPt 2), cross border macro regions [32] (GPt3), Bioeconomy research infrastructures (VTT, HY)	Cleantech	3
Western Macedonia, GR	[33] Moderate innovator	[34] Strong exports and investment are the keys to sustained recovery [35] Although performance in Intellectual assets is well	Agrofood	1 and 2

[28] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report, page 33 & 34.

[29] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report, page 33 & 34.

[30] Innovation Union Scoreboard 2015, Country fiche FI

[31] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report

[32] Nauwelaers, C., K. Maguire and G. Ajmone Marsan (2013), "The Case of Helsinki-Tallinn (Finland-Estonia) – Regions and Innovation: Collaborating Across Borders", OECD Regional Development Working Papers, 2013/19, OECD Publishing. http://dx.doi.org/10.1787/5k3xv0lrt1r6-en.

[33] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report, page 33 & 34.

[34] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report, page 33 & 34.

BRIDGES regions state of play				
Key challenges: 1) mismatches between RIS3 productive & RDI bases, 2) distance from & better exploitation of research excellence as a path to further specialisation, and 3) restricted resources towards RIS3, the combined result of which is shown in the weak impact of the RIS3 implementation				
BRIDGES regions	Innovation performance	State of play	RIS3 priority	Key challenges at the start
		below the EU average, this dimension has experienced strong growth (16%). Performance has been improving for most indicators. Highest growth is observed for Community designs (30%), Community trademarks (11%) and PCT patent applications in societal challenges (20%). Performance has declined strongly in Venture capital investments (-35%). Strength: SME marketing / organisational innovation. Weakness: **Innovators** SME product / process innovation; fast growingfirms; **Economic effects** Exports medium and high tech products		
Zahodna Slovenija SI	[36]Innovation follower	[37]Implement the government's unified innovation policy and monitor its progress. Improve collaborative links between major stakeholders of innovation policy. [38]The fastest growing dimension is Intellectual assets (11%), and for indicators, the highest growth is observed for Community trademarks (25%), License and patent revenues from abroad (16%), Community designs (15%) and Non- EU doctorate students (11%). A strong decline in performance is observed only in Non-R&D innovation expenditures (-12%). Weakness: **Innovators** SME product / process innovation; SME marketing / organisational innovation; employment in fast growing firms from innovative sctors	Forest economy Agrofood	1 and 2
G son-Sopr on	Moderate innovator	[39]High growth is observed for R&D expenditures in the business sector (11%), Community trademarks (10%) and License and patent revenue from abroad (9.2%). Notable declines in performance are observed in Sales share of new innovations (-4.1%) and SMEs with product or process innovations (-3.8%).	Furniture	1 and 2

[35] Innovation Union Scoreboard 2015, Country fiche EL (GR)

[36] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report, page 33 & 34.

[37] Kimmo Halme Veli-Pekka Saarnivaara Jessica Mitchell (2016) RIO COUNTRY REPORT 2015: Finland, European Commission JRC Science for Policy Report, page 33 & 34.

[38] Innovation Union Scoreboard 2015, Country fiche SI.

[39] Innovation Union Scoreboard 2015, Country fiche HU.

BRIDGES regions state of play				
Key challenges: 1) mismatches between RIS3 productive & RDI bases, 2) distance from & better exploitation of research excellence as a path to further specialisation, and 3) restricted resources towards RIS3, the combined result of which is shown in the weak impact of the RIS3 implementation				
BRIDGES regions	Innovation performance	State of play	RIS3 priority	Key challenges at the start
		Strength: **Innovators** SME marketing / organisational innovation; **Economic effects** Licence and patent revenues from abrod Weakness: **Innovators** SME product / process innovation; employment in fast growing firms; **Economic effects** Sales share of new innovations		

Advisory partners	**Focus of contribution**	**Country**
European Business and Innovation Centre of Burgos	Industry led centres of competence	ES
Centre for Research & Technology-Hellas / Institute for Research & Technology-Thessaly	RIS3 and bilateral innovation partnerships tools	GR
Stichting DLO, Alterra	RIS3 analysis and research to business approaches	NL

Example: Kainuu region[40] in more detail

Weaknesses

- Low levels of formal education and skills mismatches;
- Low levels of entrepreneurship; lack of SMEs willing to growth;
- Lack of capacity for innovation amongst entrepreneurs and SMEs;
- Lack of critical mass in business services for local SMEs;
- Declining of population, strong outmigration;
- Attitude to risk inhibiting risk based financing;
- Small internal market of Kainuu region and long distance from big markets in metropolitan areas.

Synopsis of the key issues of Kainuu region:

Assets	**Bottlenecks**
- *Proximity to Russia;* - *Forest and mineral resources – huge amount of natural resources as a large base for all fields of bio economy;* - *Nature based tourism attractions (lakes, hills, and wilderness areas);*	- *Low levels of formal education and skills mismatches;* - *Low levels of entrepreneurship; lack of SMEs willing to growth;* - *Lack of capacity for innovation amongst en-*

[40] Kainuu section in OECD publication 2016, forthcoming; Jouni Ponikkas, Regional Council of Kainuu.

- *Relatively good broadband connectivity inside the region as well as from region abroad;*
- *Niche specialisations in measurement technologies and transport manufacturing, data-center business and super computers, gaming industry, wood industry / constructing, bio fuels;*
- *Innovation in the delivery of health and education services;*
- *Linkages with Oulu, Joensuu and Kuopio as well as Helsinki area and abroad;*
- *Flexibility and adaptability in the provision of vocational education and training;*
- *Functioning and active support for entrepreneurs and small business;*
- *Strategic location of connectivity HUB (East/West and North South) in relation to Arctic connect cable and c-lion cross Baltic cable to Germany;*
- *High Availability of renewable energy production locally (wind and hydro power, bio energy);*
- *Real estate values, whilst not high growth are relatively stable and not subject to boom and bust, entry level costs for premises are highly attractive in comparison to metropolitan areas;*
- *A wide and varied education and research sector: secondary education, vocational training (Kainuu Vocational College), Kajaani University of Applied Sciences, Kajaani University Consortium as well as many research and development companies and networks.*

- *trepreneurs and SMEs;*
- *Fast broadband not covering the all of the region;*
- *Lack of critical mass in business services for local SMEs;*
- *Quality of local and secondary roads;*
- *Limited transport options for local communities in rural areas;*
- *Declining of population, strong outmigration*
- *Attitude to risk inhibiting risk based financing;*
- *Small internal market of Kainuu region and long distance from big markets in metropolitan areas.*

Growth opportunities

- *Linking digital services with natural resource based industries and tourism;*
- *Innovations linked to the bioeconomy;*
- *Use of technology to drive service delivery innovation;*
- *Mining developments, measurement technologies and transport manufacturing, data-center business and ecosystems, wood industry and constructing, bio fuels, gaming industry;*
- *Further development of e-services - on the back/related of/to existing IT infrastructure investment;*
- *Growth potential of nature based tourism activities in winter and summer;*
- *Industrial investments in bio economy, mining, data centers etc.*
- *Ability for co-operation and structural changes in public sector;*
- *Ageing and retiring of work force open job vacancies;*
- *Immigration.*

Risks

- *Dependency on public sector employment;*
- *Ageing and decline of the potential workforce;*
- *Low levels of school attainment and skills of young people;*
- *Lack of under graduate university education – causes outmigration of young people;*
- *Lower demand and prices for key commodities;*
- *Environmental and social license issues associated with forestry and mining;*
- *Stalling of traction to achieve critical mass on Bio-fuel and Data Centre orientated ecosystems;*

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