



Redefining the place-based approach; practice-based insights^{1,2}

STRUCTURE OF PAPER

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OVERVIEW

This article argues that the place-based approach, one of the smart specialisation concept pillars, requires re-interpretation to meet regional challenges relating, especially, to critical mass and innovation system potential. Such re-interpretation is facilitated by the systematic introduction, exploration, and integration of interregional complementarities into the RIS3 planning and delivery stages. These arguments reflect the experience and lessons learnt through ten (10) initiatives¹: four (4) Interreg projects (FRESH, SCIENCE LINK, BALTIC TRAM, BRIDGES³, two network experiences (Big Five⁴ and CapREx⁵), three (3) S3 industrial modernisation partnerships (ClusSport, Mining Industries, BERRY+)⁶, and one Industrial Transition pilot

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³ Interreg IV C FRESH project (https://www.interregeurope.eu/fileadmin/user_upload/events/Sofia/11_IVC_results.pdf and https://www.interregeurope.eu/fileadmin/user_upload/documents/Report_on_INTERREG_IVC_project_study.pdf).

Interreg Europe BRIDGES project "Bridging competence infrastructure gaps and speeding up growth and jobs delivery in regions" (<https://www.interregeurope.eu/bridges/>) and two Baltic Sea Region (BSR) projects,

Science Link approved 2011, (<https://www.science-link.eu>)

Baltic TRAM approved 2015, (https://www.baltic-tram.eu/about/index_eng.html).

⁴https://www.uudenmaanliitto.fi/files/24776/Big_five_Partnership.pdf and https://www.uudenmaanliitto.fi/tietopalvelut/julkaisut/big_five_partnership_-_analysis_of_the_regional_research_and_innovation_strategy_for_the_helsinki-uusimaa_region_and_its_cooperation_with_the_peer_regions.9057.xhtml.

⁵ CAPREX= Capital Regions Exchange <https://digitalesbb.de/2019/09/12/hauptstadtregionen-vernetzen-sich/>.

⁶ ClusSport, approved 2017, <http://s3platform.jrc.ec.europa.eu/sports>.

Mining industries, approved 2018, <https://s3platform.jrc.ec.europa.eu/mining-industry>

BERRY+ approved 2020, <https://s3platform.jrc.ec.europa.eu/berry>; <https://s3platform.jrc.ec.europa.eu/thematic-areas>.

project (based on the initiative announced in autumn 2017 by the EC, Enhanced Strategy for Economic Transformation) the ELMO⁷ project. These experiences span the period 2009 – to date (on going). We note that after 2016, there is a densification of initiatives. What is common to all of them is, on the one hand, the quest for improving the effectiveness of regional innovation systems & strategies either in relation to relevant forthcoming opportunities or challenged by regional barriers/gaps/or weaknesses and, on the other hand, to act together with peer regions. This led us to question and look deeper into the place-based concept as a location-bounded approach, the situations that would necessitate its re-interpretation and finally its transformation, and the currently available instruments.

RESEARCH APPROACH

Research question

Do interregional complementarities, identified and activated through interregional project and network initiatives, impact the way we understand and apply the place-based approach and the regional smart specialisation strategies (RIS3, S3)? And, if yes, what are the policy (RIS3) implications?

Data collection

Case-studies of ten (10) initiatives aiming at reinforcing the effectiveness of RIS3 through interregional networks and initiatives were analysed and compared. Comparison identified a shared space of insights and findings, applicable beyond the immediate boundaries of any of the initiatives considered individually. The motivation for conducting this study was based on two parameters: acknowledging untapped opportunities for regions located beyond regional boundaries and the barriers to access them.

Collection of evidence was done in two ways: by direct involvement in the planning, coordination, implementation, reporting and evaluation of the investigated initiatives, and by reviewing in depth reports and studies of these same initiatives.

FIELD INPUTS

The of ten (10) initiatives are summarised below from the perspective of interregional complementarities, results - including any regional policy impact, and implications for the place-based approach:

- FRESH: FRESH project objective was strengthening sustainable value creation in the partner regions. It aimed at improving partner regions' development plans and strengthening the uptake of eco-innovation tools within the regional innovation strategies. FRESH brought partner regions closer to the Environmental Technologies Action Plans (now transformed into the Eco Innovation Action Plan) and the Lead Markets Initiative (LMI 2007). One of the achievements of the FRESH project was the introduction of the RIS3 approach in two regions through the formulation of an eco-innovation component. Another achievement was modification of a regional public procurement

⁷ ELMO, approved 2018: ELMO is one of the twelve (12) industrial transition pilots that were selected following the EC calls on 29.9.2017 and 14.12.2017. ELMO represents the whole North-East Finland NUTS2 area 8.5.2019 - 7.5.2021, Budget 499 620 €, www.elmoenf.eu.

regulation, to include sustainable value creation (SVC) criteria (CEN 350 and 351).

- SCIENCE LINK: Science Link was a network of research facilities of photon and neutron sources, SME users, scientific institutes, universities and regional organisations serving as innovation intermediaries and service promoting units (industrial research units), across the Baltic Sea Region⁸. What is especially significant in Science Link is that it tested interregional governance structures on two levels: industrial research centres and scientific committee. These interactions were observed and assessed by a high-level group comprising regional authorities, with the intention to make linkages to regional policies. Science Link proved that interregional collaboration schemes are relevant, no matter how ambitious. However, continuity of activities and continuity of governance proved important factors, which could not be addressed through a 3 – year project.
- BALTIC TRAM: Baltic TRAM can be considered a follow up of the Science Link project. It encouraged structures (innovation intermediaries, Industrial Research Centres) to serve as interfaces between analytical research institutes and companies, by shared functionalities. The project experience re-confirmed the relevance of interregional complementarities introduced by the Science Link project, especially when it concerns large research infrastructures that cannot be easily replicated at regional or even national levels due to costs and density of demand. Interregional governance was taken a step further: it addressed national and regional innovation strategies. The relevance of an 'interregional RIS3 governance space' was confirmed, however it was not easily accepted by regional partners. RIS3-related outward-looking were then, still, relatively novel.
- BRIDGES: The overall objective of the BRIDGES project is to significantly improve partner regions' RIS3 implementation effectiveness & governance and the delivery of the structural funds. This is done by addressing mismatches between the knowledge and economic bases of the partner regions. The industry focus is bio-based economy, an industry common to partners' RIS3. BRIDGES investigated interregional complementarities in three ways: first by connecting regional innovation systems (Phase 1), then by investigating options of research-to-business solutions (Phase 2), and finally by applying value chain analysis for interregional collaboration potential aligned with regional initiatives (additional activities, "Phase 3"). In Phase 1, we identified that one reason regional innovation systems are underperforming was the lack of awareness of the whole range of relevant issues and, often, lack of absorptive capacity as well. In Phase 2, the results were very encouraging and confirmed the potential of building ad hoc as well as also longer-term collaborations. Based on these findings, two regions mainstreamed the option of opening their RIS3 to transregional collaborations. Phases 1 and 2 of the BRIDGES project confirmed that interregional complementarities can be catalysts for regional diversification and renewal. For example, it found that one way to achieve the latter, is by including extraterritorial inputs into the EDP (Entrepreneurial Discovery Process). It went a step further and discussed issues of win-win collaboration between innovation advanced with less advanced regions, as well as between innovation advanced regions. "Phase 3" is currently being implemented. It was planned to take a step further the insights that resulted from Phases 1 and 2. It is especially looking into the issue of win-win collaborations and how they can be visualised and interpreted into policy measures.
- The objective of the ELMO project is to increase the clustering and interactions among the seven (7) regions that comprise the North-East Finland area and: (1) to find and develop new procedures

⁸ SCIENCE LINK includes the large-scale RI in the fields of neutron and photon science (planned DESY, HZG, HZB, MAX-lab) in the Baltic Sea Region. They offer measurement opportunities, training and consultation. Universities (Lund and Hamburg) and chambers of commerce or their business development units (currently Dansk-Tysk Handelskammer (DK), Skane (S), Kainuun Etu (Fi), Tarptautinių mokslo ir technologijų plėtros programų agentūra (LT), Business Incubator Grodno (BY), Fundacja Inicjatyw Innowacyjnych (PL) act as regional contact points offering consultation and information.

to answer to the challenges posed by the industrial transition; (2) to recognise the best solutions based on smart specialisation; (3) to find new ways of collaborating by renewing ecosystems; modern clusters; advanced value chains. The first generation of industrial transition projects had a budget as well as expert support financed by DG GROW. The implementation was organised at interregional (2018) and at regional levels (2019-2020). The regional projects analysed the cluster and agglomeration structures in reference to the prioritised sectors⁹ metal refining and metal products (31% of the business turnover in the area), computers, electronic and optical devices (10%), further processing of wood (25%), food products and beverages (9%) and organised a cross-regional call of projects. The interregional level was financed by DG GROW who provided experts to analyse the overall context and propose an action plan for cross-regional consolidation¹⁰. An operational, 4-phase proposal was formulated¹¹; the approach adopted is a good foundation for extending the place-based approach through shared sectorial and cluster interests. A cross regional funding instrument is proposed. Governance issues are dealt with at decision making (regional authorities) and cluster (innovation intermediary) levels.

- BIG FIVE: The Helsinki Uusimaa region takes part in the “Big Five” Northern regions cooperation including five mid-size regions from Northern Europe: the Capital Region of Denmark (Copenhagen), the Hamburg City State, the Amsterdam Metropolitan Area, the Stockholm Region and the Helsinki-Uusimaa Region itself. The cooperation focuses on the exchange of practice and development in the areas of innovation, business and regional development. The aim is to share and upscale green solutions for a sustainable and green future among these five regions. It was established in 2018. The purpose is to initiate and establish strategic partnerships with other European regions. Startegic partnerships are identified on the base of the RIS3 Strategies of the participating regions, and comparisons between and among them. Ultimately, the “Big Five” partnership and network aim at tackling global challenges. The Big Five network brings together three innovation leader and two strong innovator regions¹². The RIS3 analysis of the partner areas reveals converging interests in Helath, Logistics and Transport, and Green Industries and circular economy. During the meeting that took place on 28.11.2018 in Helsinki, partner regions defined common objectives in four fomains: Green industry & circular economy; Logistics & urban transport; Health & Wellness; and Smart City. The approach to these four domains prioritises investing in two priorities: emerging market trends (opportunities) and addressing global challenges, and the interactions between the two. What is fascinating about this network is the interpretation of innovation performance similarities, into interregional complementarities and their further operationalisation into concrete initiatives. Governance arrangements and complementarity initiatives are foreseen for the future.
- CapREx: CapREx is a network of capital regions located in the Baltic Sea and Central Europe areas. The network comprises Brandenburg (DE), Central Bohemia (CZ), Lower Austria (AT), Helsinki-Uusima (FI) and Kiev (UKR), established on 11.9.2019. The network focuses on digitalisation and sustainable development issues. The range of exchange has a strong socio-economic and spatial dimension exchanging on how equitable growth can be spread to functional areas of capital regions. This issue in the centre of the recent evolutions in work practices, with tele work patterns becoming mainstream in many cases. Governance arrangements and complementarity initiatives are foreseen

⁹ Presentation to TEM 20.11.2018, East and North Finland in Industrial Transition.

¹⁰ EUROPEAN COMMISSION (2018). EOCIC - Regional assessment report EastNorth Finland – Final.

¹¹ Ibid. Above, pages 18-20.

¹² https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3048 .

for the future.

- BERRY+ S3: The BERRY+¹³ S3 industrial modernisation partnership was established on 17.11.2020, and is part of the Joint Research Centre's thematic platforms (<https://s3platform.jrc.ec.europa.eu/s3-thematic-platforms>). BERRY+ is aligned with RIS3 relating to bio-based and circular economy. Four value chains are prioritised: bio-based and recyclable textiles, forest-industry side-streams, regenerative cosmetics, and vegetable-based proteins. BERRY+ has two key objectives: to reach interregional investments & integrate partner regions' innovations into existing and / or emerging European Value Chains (EVC) and (2) to establish and register with the ECCP an interregional cluster as a way for constructing added value at regional and interregional levels in the long run. Value chains are critical for the pull and push effect and their access to European innovation markets. The cluster unit is understood as a new or improved functionality of already existing cluster management units in the regions. Clusters are, at regional level what value chains are at transregional level¹⁴. BERRY+ focused its first year of operation on six (6) issues: (1) baseline contributions (scoping documents, partnership management concept), (2) methodological contributions (value chain mapping methodology, methodology for activating value chains), (3) activation of value chains and initiative steps for identifying interregional complementarities and collaboration schemes, (4) identification of funding channels and effort to align and make operational EU with national and regional level options, (5) work on the concept of the interregional cluster management unit and the functionalities that are required, and (6) strengthen the BERRY+ partnership with committed partners. One result of this first year of operation, is that BERRY+ confirmed the need for methodological tools, the largely unexplored potential of interregional complementarities and the importance of decision makers' commitment in this direction i.e., it clarified the potential of interregional complementarities (collaboration domains) and the preconditions for its success (methodological tools, funding, and governance arrangements). During its first 16 months of operation, three strategic partnerships were shaped and are currently gradually proceeding to operationalisation and institutionalisation: (i) one on bio-based, recyclable textiles involving also the forest industry, between Finland (Helsinki-Uusimaa region, Kainuu region) and Italy (Friuli Venezia Giulia region), (ii) one between two S3 partnerships, BERRY+ & GO FOR COSMETICS, involving several regions on both sides, and (iii) one on the diversification of dairy industry side-streams (Finland & Greece). Starting from prioritised value chains, they are results of systematic, fact-finding meetings and insights, as well as explicit exchanges on funding mechanisms and implications for each one of the involved regions.
- ClusSport S3: The motivation for the ClusSport S3 was to consolidate and commercialise through interregional projects the sports sector research and innovation potential: "Analysis and scientific research in the sport sector are still occasional and sporadic, especially when it comes to its supply chain models, as the integrated process wherein raw materials are manufactured into final products, then delivered to customers via distribution, retail, or both. On the other hand, the sport sector has been most recently recognized as a large and fast-growing area of the European economy resilient to downturn-crisis and making an important contribution to growth and jobs (SPeA). In this sense the support provided by this call will offer the required technical assistance to the Sport domain and will intensify the learning, the connectivity as well as explore further synergies between the different European regions. The ultimate goal will be to facilitate the

¹³ <https://s3platform.jrc.ec.europa.eu/berry>; <https://s3platform.jrc.ec.europa.eu/thematic-areas>.

¹⁴ Rabellotti R. (2017). Clusters, Global Value Chains and Innovation Systems: How are they linked? Università di Pavia, Italy, 28th February 2017. <https://robertarabellotti.it/wp-content/uploads/2017/03/Lima-UNU-Merit-Rabellotti.pdf> .

De Marchi V., Giuliani E., Rabellotti R. (2010). Local innovation and global value chains in developing countries. UNIDO. RESEARCH, STATISTICS AND INDUSTRIAL POLICY BRANCH WORKING PAPER 5/2015.

commercialisation and scaling up of interregional innovation projects, to incentivise business opportunities throughout the entire spectrum of the sport industries and services"¹⁵. ClusSport is already one of the older S3 partnerships. In the context of the present paper, it is important because because in 2017, it links interregional complementarities with innovation scaling up projects at interregional level. There has been an initial strong intention towards interregional innovation investments. Mapping of regional excellences and association with potential investments has been a useful and operational exercise, currently being linked to new initiatives. Tools for focusing such potential investments beyond the capability & excellence level mapping of the partner areas would have been very useful. What we have learnt from the ClusSport partnership is the importance of having available methodological tools for identifying interregional complementarities.

- MINING INDUSTRIES S3: Mining industries S3 was set up to explore valorise mining industries across the EU and strengthen the potential of East and North Finland extractive industries and associated national level clusters. It has been building also on synergies with Baltic Sea Region Interreg programme and Interreg Europe projects. Mining regions has had a very strong head start, since the leading region had involved the OECD16 and development recommendations had been issued accordingly. The S3 partnership embraced these recommendations. Priority topics, confirmed during the kick off meeting, include: 1 Methodologies for focusing KET applications; 2 Mining value chains mapping and effective measures for interregional for value chain participation; 3 Populating the regional mining industry with more effective regional clustering, and support to the creation of new businesses and coherent education and support actions based on these efforts; 4 Models for combining funding and financing solutions for developing mining businesses; tools for promoting mining performing businesses¹⁷.

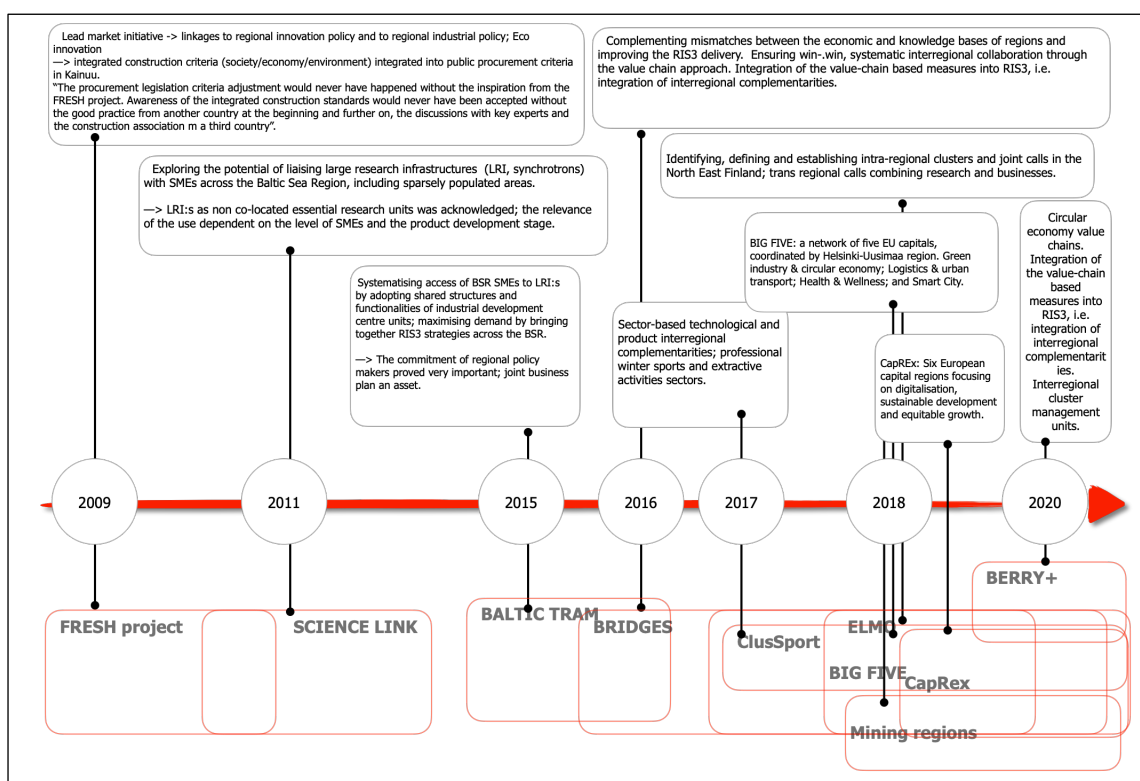
During the kick-off meeting, organised on 19.9.2019, in Brussels, two important questions were raised and discussed: 1 the potential of partners to co-finance future, needed supportive activities such as studies, meetings and so on; and 2 governance of the partnership was also on the agenda, including institutionalisation of the governance approach. One of the options proposed was creating a distinct, interregional legal entity. These two questions reveal how necessary baseline, preparatory, resources are for the setting up of interregional connectivity schemes and, in that sense, also how essential the legitimising & enabling involvement of regional policy decision makers is. The same is confirmed by the BERRY+ partnership.

¹⁵ Source: the ClusSport application, in which the Regional Council of Kainuu is partner.

¹⁶ OECD (2019). OECD Mining Regions and Cities Case Study; OUTOKUMPU and North Karelia, Finland. OECD Rural Policy Reviews.

¹⁷ Source: Mining Industries kick off meeting template and Kainuu contribution to the same event.

Figure 1 Ten initiatives liaising interregional complementarities to regional innovation strategies



The of ten (10) initiatives formed a foundation on which a path of understanding and insights evolved and are still evolving. Figure 1 map summarises this path. In Figure 1, overlaps between or among projects reflect time periods, but also indicate shared objectives (often by coincidence), joint methodological or conceptual insights. In some cases, such insights have led, step-by-step, to a next initiative.

- Overlaps between the FRESH and Science Link projects generated evidence that a regional innovation strategy must feed industrial strategy objectives (regional spearheads); to achieve this, it is highly probable that many regions need to access non-co-located research resources. It implies that localised institutions of a regional innovation system need to establish regular, updated, and anticipatory interactions with external, state of the art resources. Sometimes it is not possible to localise and replicate locally all needed research resources. This is the case of Large Research Infrastructures, an example of which are synchrotrons.
- Overlaps between the Baltic TRAM and BRIDGES project, regard innovation infrastructure gaps at regional level and their necessary alignment to both RIS3 and state of play innovation infrastructure concepts, supporting regional diversification and interregional networking with counter parts.
- Overlaps between the BRIDGES and ELMO project deal with the question of identifying intra- and inter-regional added value among a group of regions. Interregional complementarities result from evidence- and policy- based cluster- and agglomeration- approaches operationally linking the partner regions, and ensuring a higher critical mass, a reinforced "internal market" and, potentially, a more complete intra-regional innovation system.
- Overlaps between the BRIDGES project and the BERRY+ partnership, are of four types: (1) BERRY+ is implementing Action 2 of the BRIDGES project action plan of the Kainuu region. BERRY+ maintains the focus of bio-based industries and circular economy that is also the baseline of the

BRIDGES project; (2) interregional complementarities, as a way of delivering more effective RIS3 are dealt with from two perspectives: first, there is an effort to operationalise regions' biobased circular economy RIS3 objectives through the value chain approach and secondly, innovation intermediaries & their specialised regional and interregional rôle; (3) the outward looking dimension of RIS3 is tested, evaluated and policy impact actions are introduced; (4) effort to align interregional initiatives with regional, localised initiatives, to ensure added value and stronger embeddedness. At this stage, this is done by liaising value chain applications, to value chain analysis and identification of regional competitive advantage which can lead to re-shoring, in-shoring and near-shoring initiatives and associated policy making.

- Overlaps between BRIDGES, BERRY+, ClusSport and Mining regions are about implementing RIS3 objectives through interregional partnership projects, including the new tool, Interregional Innovation Investments (I3) and reinforcing the value chain approach.
- Overlaps between Big Five and CapREx: Conceptual outputs of both networks lead to a solid development concept whereby competitive sustainable development approaches are also including equitable diffusion paths to areas adjacent to metropolitan regions and, therefore, a way to structurally and predictably balance the (strong) centripetal forces of knowledge-based economies. Further, both networks plan to introduce governance options in the future.
- Overlaps between BRIDGES, Big Five, CapREx and BERRY¹⁸+ include considerations of aligning and benefitting from national level funding mechanisms, including Structural Funds, to support interregional complementarity activities.
- Overlaps between and among BRIDGES, BERRY+, BIG FIVE, CapREx, ClusSport, ELMO and Mining regions, confirm the relevance of a re-defined place-based approach, across various specialisation domains.

BACKGROUND

The place-based approach

The 'place-based approach' has become a summary term to mean regional and national development valorising localised capabilities to achieve knowledge-based growth and diversification. It is a key objective of the European Union's smart specialisation strategies (S3) approach ([Foray \(2015\)](#)).

Historically, the place-based approach is linked to the Endogenous growth theory introduced by Rommer in [1986](#) and [1990](#). It argued that regional growth is a direct result of internal processes, human resources & capabilities, through new technologies, efficient production and services; all leading to increased returns to scale. In Finland, one of early examples of the place-based approach is the Finnish Programme of Centres of Expertise (CoE), initiated in 1994 and closed in 2013. Sotarauta ([Sotarauta et al. 2020](#), page 9) reminds that CoE has been a regional policy initiative that 'attempted to shift the thinking away from weaknesses and towards the identification of regional strengths. ... The CoE was a prime example of a place-sensitive policy in which place-based local strategies met place-sensitive national coordination.'ⁱⁱⁱ In the EU, the place-based

¹⁸ Component III of the BERRY+ governance plan. For example, this issue was brought up and agreed at regional level, by one of the BERRY+ partners, Regional Council of Helsinki-Uusimaa, on 28.1.2022, during the RDI group meeting of the respective S3.

approach was adopted following Barca's report to the EC (Barca,2009) focusing on Cohesion Policy reform. The suggestion to adopt a place-based approach was motivated by the acknowledgement of the strong potential of existing resources in the EU as well as their under-utilisation and the resulting social exclusion thereof. These ideas became the focus of the reformed Cohesion Policy. Barca refined further (Barca et al. 2012:11) the place-based approach, looking deeper into what would be framing its feasibility. He recognises already in 2012, the importance of existing regional capabilities, and interactions between local and exogenous knowledge as essential for the design and delivery of regional policy. The Committee of the Regions 2019¹⁹ report reveals a crucial aspect of the place-based approach, it is a tailored and not a one-size fits all approach: because it is place sensitive, it promotes a respectively tailored policy approach vs a 'one size fits all' approach; "the specificity, complexity and interconnectedness of a territory are essential parts of an industrial development policy strategy. In this sense, place-based strategies are different to "top-down" policies – often identified as place-neutral policies in the World Bank's view– where central governments pursue a one-size-fits all solution to spur growth" (page 15).

In spite of these principles, implementation of the place-based approach is not without challenges. Iacobucci (Iacobucci 2012) is one of the early authors recognising challenges in the RIS3 design and delivery, especially in the case of peripheral regions and/or regions characterised by low or medium-tech economies. Such regions, it is argued need, at least at the start, lower their ambitions regarding the adoption of very advanced technologies. On the other hand, however, if regions lower their ambitions, how can they hope to be able to ever compete in any market, since what they produce is better and cheaper produced elsewhere by more advanced regions, and imported locally? This is the challenge of lock ins typical of the 'innovation non-frontier' regions^{20, iii}. Ultimately the question is: how less advanced regions can learn & scale up effectively? What does "effectively" mean in this case? It means that through the scaling up efforts & inputs to the supply side, regions reach a corresponding competitive advantage to scale up also their market placement.

The OECD (2020) paper on broad-based innovation policies links the scaling up efforts to technologically lagging regions' absorptive capacity, distinguishing between innovation advanced from innovation lagging regions: "Innovation in non-frontier regions relies more on imitation and adoption than the development of own innovations. The distinction can be captured by a dichotomy between production capabilities and technology capabilities. Production capabilities are the capabilities of a region in using a given capital-embodied technology, labour and set of the organisational methods (e.g. managerial skills) to produce output. Technological capabilities, in contrast, are those that generate and manage technological change"(page 2). It implies that innovation advanced regions are characterised by technology capabilities while the innovation lagging regions are characterised by production capabilities. While this is a realistic approach, advocating long-term, strategic interregional collaborations, we feel that it might not be always

¹⁹ EUROPEAN UNION, COMMITTEE OF THE REGIONS (2019). Implementing a place-based approach to EU industrial policy strategy. doi:10.2863/713416. Page 16.

²⁰ OECD (2020). Broad-based Innovation Policy for All Regions and Cities. OECD Regional Development Studies, OECD Publishing, Paris. Chapter 4 Chapter 4 Supporting innovations in all types of regions. <https://doi.org/10.1787/299731d2-en>. <https://www.oecd-ilibrary.org/sites/2246251c-en/index.html?itemId=/content/component/2246251c-en#chapter-d1e11888>.

reflecting the potential of both advanced and less advanced regions. 'Less advanced regions' is a metric; this does not imply that a region is a homogeneously less advanced space. For example, we have noticed that important knowledge resources might exist in less advanced regions without -for whatever reasons- being diffused to the regional economy. Should they not be taken into account? The same applies to innovation advanced regions. It is also important that innovation advanced regions embed edge technologies at regional market level, this is their renewal through specialisation dynamics. In conclusion, we feel that a critical issue for the innovation measures and initiatives of less advanced regions is methodological: how to organise and deploy policy measures so that improvement of & capitalisation on absorptive capacity are not sequential, but overlapping.

Iacobucci builds on three RIS3 framework principles: embeddedness, relatedness, and connectivity. Could these three principles be interlinked to lead to radical diversification? In any case, applying these principles implies both endogenous and exogenous interactions, especially in cases where regional capabilities are not sufficient for diversification and scaling up, i.e. consideration of interregional complementarities, while embeddedness and relatedness should be understood, both, as demand driven and supply bounded.

[Foray \(2015\)](#) acknowledges the place-based approach as one of the four key priority-setting characteristics of S3 next to related variety, revealed competitive advantage and entrepreneurial discovery. It is also acknowledged that the outward looking dimension of the RIS3 is not sufficiently considered, exogenous actors and factors have not been sufficiently integrated into the RIS3 process. [Sotarauta \(2020\)](#) distinguishes between the place-based and place-blind approach: "... the place-based approach relies more on locally embedded knowledge than the spatially blind approach, which aims to build on general patterns of societal and economic development" (p3). He also states that "there is a need for appropriate inclusive policies across a range of policy domains, reflecting the desired and aimed-for competitive advantage of regions" (ibid.).

Another challenge faced by many regions, is lack of critical mass. Critical mass, in relation to regional development, means "the mass necessary to have a basis for more and intensive cooperation, to better exploit the innovative potential, to sustainably defend its market position, etc. Critical mass is determined by the number of firms, the number of employees and other local conditions such as regional human capital, the presence of supporting services, and public research institutions" ([European Commission 2010](#):29). Researchers observe that for the place-based approach to be effective, the critical mass of regional capabilities is crucial ([Barca 2009](#), [Foray et al. 2012](#)). The place-based approach must effectively serve regional competitiveness and further construction of regional competitive advantage, which is revealed through the lens of a region's complement of industries and the competitive position of those industries in the national [or international] marketplace ([Hill et al., 2000](#)). The European Committee of the Regions ([2019](#)) explicitly links size to structure to capabilities: "Critical mass is a pre-requisite for regional

²¹ EUROPEAN UNION, COMMITTEE OF THE REGIONS (2019). Implementing a place-based approach to EU industrial policy strategy. doi:10.2863/713416.

Related: Asheim, B. (2012). The changing role of learning regions in the globalizing knowledge economy: A theoretical re-examination, *Regional Studies*, <http://dx.doi.org/10.1080/00343404.2011.60780>. Asheim, B. (1996). "Industrial districts as 'learning regions': A condition for prosperity", *European Planning Studies*, Vol. 4/4, pp. 379-400. Asheim, B. and M. Gertler (2009). The geography of innovation: Regional innovation systems, in *The Oxford Handbook of Innovation*, Oxford University

embeddedness and regional relatedness (p. 31). Critical mass is critical for building attractive and economically feasible processes (p. 58) in fields such as market size, capabilities of strong actors (p. 85), and skilled labour (p. 65) in new domains such as circular economy". Critical mass is also a precondition for a well-functioning innovation system (Leydesdorff et al., 2006) and the availability of high level knowledge (OECD, 2013^{iv}). (Foray et al. 2012) remarked the difficulty of achieving ideal conditions including that of achieving critical mass, "i.e. critical mass of all key actors in medium and small size regions" (p. 6), while the solution of replacing spatially critical mass by domain-specific interactions and interlinkages as part of Cohesion policy including S3 is proposed (p.14 and p.17 respectively). The suggestion to replace missing, local domain-specific interactions by linkages based on interregional complementarities, is aligned with and contributes to the strengthening of regional competitive advantage. This is coherent with the starting point of S3, as a sectorial concept. Only later it developed as a territory-based concept (McCann & Ortega-Argilés, 2013:3). Heimeriks & Balland (2016:562) acknowledge that different fields of knowledge have different characteristics requiring different approaches to smart specialisation. So the links between smart specialisation and industrial policy have been acknowledged and the sectorial approach is linked to the competitiveness of entire industries and value chains, i.e. to distributed production. It follows that exogenous inputs to RIS3 design and delivery could be sometimes be intrinsic need rather than conjectural.

Finally, to some researchers, the place -based approach is also an issue of ethos, of values, to ensure inclusiveness (Albalade et al. 2021, Beer et al. 2020 p. 6, Ross et al., 2019, Chase L. 2017), respect of the place, the city, and inclusion of local actors into the transformation process. In our experience, this perspective, while essential, it might require adjustments, maybe some re-interpretation. RIS3-based transformation, as indicated above, has an exogenous dimension. In such cases, the question might be more on the ethical aspects of interregional complementarities. Through the BRIDGES project, we acknowledged this dimension, not for its ethical but, rather, for its self-sustaining dynamics and tried to address it, by encouraging a better understanding of win-win collaborations between innovation advanced and less advanced regions. The results were not conclusive, more work is required.

In conclusion: the place-based approach is an inescapable precondition in terms of existing capabilities and natural endowments. Their interaction forms the competitive advantage of regions, related to specific industries. This potential is qualified by its relevance to current industry- and innovation- driven dominant or emerging market trends. Through innovation strategies, regions are expected to be capable of transforming themselves, i.e. in a bottom up way; and the ideal is that this happens in a cohesive and inclusive way. This requires ideal contexts, i.e. circumstances where regional capabilities, natural endowments, related variety, revealed competitive advantage and entrepreneurial discovery are all co-located and sufficiently present, in a sufficiently large economic space, to ensure self-transformative capacity. One question arising, is what is "sufficient" in this case, it needs to be better understood. There are very few ideal regions. More frequently, regions are non- ideal innovation contexts which, however, still need to transform their economies. In such cases, interregional complementarities, interactions & connectivities with exogenous actors, need to be activated and invested in. In some cases, regions' absorptive capacity and their current technological profile

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of regions (low, medium, high tech) will be important parametres impacting the range and type of interregional interactions.

Interregional complementarities

In the present conjecture, collaboration between and among regions appears essential. Researchers remark that "In the contemporary economy, what can decisively justify the inter-regional commitment is the availability of relational assets that are an essential condition for the development of territories. This happens because, in an era marked by globalisation, open innovation, brain circulation etc, factors triggering and feeding development are increasingly found "elsewhere" rather than within the internal network of relations that have traditionally been the main focus of regional studies²²". This is a framework. Ultimately, "Regions cooperate because the cost of non-cooperation is much higher than the cost of cooperation²³". Moreover, interregional complementarities are acknowledged as increasingly important in the design and delivery of smart specialisation strategies. This is a result of the limitations of any strictly localised place-based approach, but, also, of the "elsewhere" potential(-s) triggering development. It implies that interregional complementarities deal with regional contexts' gaps and challenges, exportable strengths, as well as with opportunities that are unknown yet but can be envisaged and explored. The latter liaises with the concept of entrepreneurial discovery, and more specifically, with one essential aspect for regional diversification, that of identifying innovative, economic activity niches unexplored yet ([Kirzner, 1997](#)).

Exploring interregional complementarities can be seen as a process involving several steps: (i) legitimacy of the approach, (ii) identification of relational assets, (iii) screening and acknowledgement of potential interlinkages based on these assets, (iv) availability of tools activating interlinkages, (v) activation of interlinkages, (vi) evaluation of impacts and improvements.

In our understanding, identification of interregional complementarities is in principle, relevant at two phases: policy planning and policy delivery.

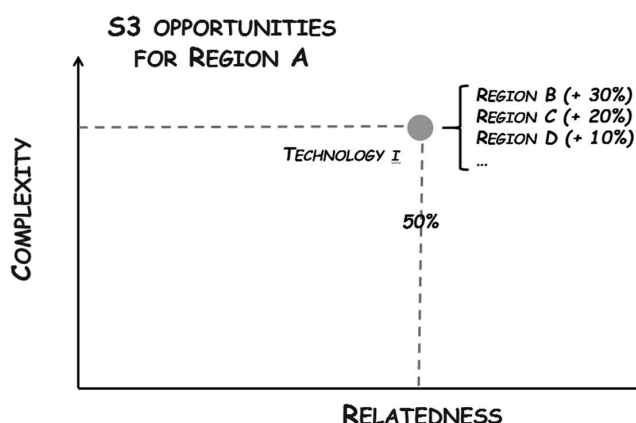
Tools for anticipating and identifying relational assets and associated interlinkages have not been widespread yet. Research indicates that a systematic, well-accepted and easy-to-apply method to identify relevant links (beyond the strategic level) between regions is still missing or weakly developed ([Iacobucci & Guzzini, 2016](#)) [Balland et al. \(2021\)](#) propose a method for this purpose. "In the RIS3 literature, there is yet little focus in S3 policy on the role of interregional linkages". In a study reviewing 292 NUTS-2 regions in Europe, it was found that "interregional linkages have a positive effect on the probability of regions to diversify, especially in peripheral regions. What matters is not being connected to other regions per se but being connected to regions that provide complementary capabilities. ...". An indicator for identifying and quantifying interregional technological complementarity *opportunities* has been proposed. The indicator is based on calculating

²² Nicola Bellini, Ulrich Hilpert (editors), (2013). The Impact of Inter-regional Networks; chapter in Europe's Changing Geography. Routledge 21.8.2013. p198-200.

²³ Ibid. above, p197.

technological relatedness and associated densities: "This indicator *aims at capturing the impact of co-inventor linkages with other regions that provide access to relevant capabilities that are missing in a region*, and which could increase its ability to diversify into a new technology. ... What matters is not being connected to other regions per se but being connected to regions that provide complementary capabilities". [p. 9 and Abstract]. Based on this indicator, a conceptualisation of what interregional complementarities, involving two or more regions, could be about is also proposed (Figure 2).

Figure 2 Diversification opportunities of a region through complementary interregional ties.



Source: [Balland et al. \(2021:1066\)](#).

We consider this methodology very important, a breakthrough, because, besides a well-defined, systematic approach, it goes beyond the usual approach of 'bridging gaps' arguments. On the contrary, it sheds light on how joint development can happen. It has found the way to match strengths, opportunities and jointly develop them. It points the way as to how interregional complementarities can work in very different regional contexts, advanced-to-advanced, advanced-to-less advanced, less advanced-to-less advanced. Our experience from the eight initiatives, and especially Science Link, Baltic TRAM, BRIDGES and BERRY+, indicates that one of the parameters involved in regions' openness towards interregional complementarities is about benefits for innovation leader regions, beyond economic transfers. What is the relevance of such complementarities to such regions' economic model? By considering the regional implications of the technological relatedness methodology, we understand that among the potential structural impacts would be further specialisation and reinforcement of economies of scope. This could be one input to consider when planning regional innovation strategy measures.

However, this methodology is not always easy to apply in all contexts and especially in less advanced regions, since available patents in some cases do not reflect actual potential. This has been observed also by the [OECD 2020, research](#) "Traditional innovation indicators are not adapted to capture innovation in non-frontier regions. They are focused on technological capacities and perform well in capturing the type of innovation activity taking place in frontier regions, but not in any others. Traditional innovation indicators include metrics such as R&D expenditures, number of patents, numbers of academic publications or number people with PhDs" (page 2). We feel that a proxy might be useful to be able to apply the methodology in all types of

regions. On the other hand, the concept of product space and density, is applicable across any regional context.

Tools for identifying interregional complementarities at policy delivery level, are not very widespread either. In our experience, there have been / are various Interreg project experiences which have been very useful. The problem is that as projects, they have an end date including the end of funding. We feel that institutionalisation of the most useful findings is needed, including funding options. Another tool are the various domain or industry-related platforms such as the BBI (Bio Based Industries), S3 initiatives, Vanguard initiative. We feel that, in addition to such initiatives, stronger methodological approaches would be very useful to have. Therefore, it might be good if regions adopt technology-based relational analyses, as a way to orient and focus their interregional complementarities efforts.

One problem is that often, the current enablers of interregional complementarities (identification methodologies and activation instruments including regional & interregional funding), are sometimes nominal, and not always operationally interconnected or, when they are, they are not on a comparable level of accessibility. For example, identification of an interregional opportunity does not automatically qualify for getting some means encouraging its realisation. That might be one of the reasons explaining under-activation of interregional complementarities. In response to this, many Interreg programmes since the 2014-2020 programming period have encouraged piloting such connectivities by making eligible activation costs of interlinkages. However, there has not been to-date & to our knowledge at least, mainstreaming, institutionalisation of at least the successful aspects. Admittedly, the strategic dimension has not been considered sufficiently.

Value chains

Value chains are modularised and distributed production models, considered as autonomous systems^{vi}. The BRIDGES and BERRY+ projects' interest in value chains is, primarily, investigating their potential as policy design and delivery decision making tools, relating to reshoring, in-shoring and near shoring decisions and consequently benefitting from interregional complementarities. This challenge has not been yet sufficiently addressed, even if it has been acknowledged (^{vii}).

Value chains were introduced by Michael Porter in 1985. The term refers to the full range of activities that firms engage in to bring a product from its conception to its end use and beyond. This includes design, production, marketing, distribution, and support to the final consumer. An important aspect of value chains is that they relate to segmented, forecasted demand^{viii}, i.e. there is a predictable 'pull factor' involved. This reduces the risk of development decisions for businesses and regions.

There is a difference between a value chain and a supply chain: a value chain refers to a "process in which a company adds value to its raw materials to produce products; a supply chain involves all parties in, fulfilling a customer request^x. It follows that value chains build & defend longer-term competitive advantage, ensuring the 'pull effect' as well, through complex and hard to imitate firm-level assets / capabilities. ([Brennan et al., 2015:8 x](#)).

Currently, value and supply chains are prioritised within the European Union, as they are understood to contribute to the autonomy of the EU industry^{xi}. The European Parliament's Research Service (EPRS^{xii}) investigated in more depth the potential impact of integrated value chains on regions' resilience and found that enhanced resilience will result from the re-definition of European or global value and supply chains through possible reshoring and inshoring of value-based segments. The European Council conclusions on the *EU industrial policy strategy* (European Council, 2019) emphasises the importance of strong European industrial value chains in a global context and of developing pan-European integrated industrial projects, encouraging Member States to incentivise national, regional and local efforts towards such purposes, including through mobilisation of Cohesion funds.

Regarding the term 'competitive advantage', we adopt the Hill et al. (2000) definition, emphasising that competitive advantage is about the competitive position of a region's complement of industries in the national or international market. This definition has helped focus our value chain approach as a decision-making tool, by proposing to connect and embed, in the context of a specific value chain, competitive advantage within and across regions. It also enables connecting RIS3 across regions. It implies that the place-based approach would be at the cross-roads of the unique characteristics and assets of each region underlining competitive advantages in respect to various industries (Sotarauta 2018:13^{xiii}), while tools for the growth of these unique characteristics could be localised or not through the distributed production models of value chains. Gupta (2015)^{xiv} relates competitive advantage to innovation strategies and policies, operationalised by firms through their potential for product differentiation and industry diversification, but he acknowledges that maintaining and enhancing competitive advantage might pose challenges to small and medium-sized regions, which might not have co-located the required resources for product differentiation and industry diversification. The relevance of value chains in S3 implementation is also emphasised in other works, e.g. EC value chains as carriers of industrial autonomy (EC, 2021)^{xv}, industrial integrators and tools to break fragmentations of industries and research across the EU (OECD 2013^{xvi}; Larosse 2016^{xvii}; Foray et al. 2019^{xviii}).

By adopting the value chain approach, regions have potential access to diversification concepts / paths for longer term, innovation-based growth, and investment of funds with reduced risks. [Radosevic et al. \(2018:39\)](#) specifies these opportunities as assisting larger companies to expand their supply chains with innovative SMEs across Europe and enhancing the innovation capabilities of SMEs, as preparatory steps towards establishing long-term supplier relationships with medium-sized or large enterprises (cf. integrators). These strategic partnerships would be co-operation in near market innovation projects in selected sectors/technology areas.

In this sense, interregional complementarities can become sufficiently relevant growth and innovation-inducing agents and the place-based approach shifts towards a functional rather administrative space. Researchers have also claimed that value chains tend to reduce complexity of localised economic systems and increase specialisation ([Radosevic, 2018](#)). However, for a region to reduce complexity might mean that it potentially closes the door to forthcoming opportunities. There is a considerable risk there. This risk will hinder interregional collaborations. Once again, the need to institutionalise, optimise and govern interregional complementarities is evident.

The enabling framework

Proactively turning to interregional complementarities as a way to complete imperfect regional innovation systems by collaborating with regions beyond regional programme areas, is currently one of the flagships of the on-going (2021-2027) Structural Funds²⁴ (SF) period. It has come a long way since earlier days (1999 – 2006 SF²⁵ articles 20 & 22, 2007-2013 SF article 21²⁶, 2014-2020 SF article 70²⁷). During these 22 years, the rôle attached to interregional complementarities evolved from a project-based resource to explore, to a strategic resource, a precondition for the Smart Specialisation Strategy:

- During the period SF 1999-2006 the ERDF was planned to contribute to financing cross-border, transnational and interregional cooperation as part of Interreg programme projects.
- During the 2007-2013 period, spending beyond the programme area is brought up, but only in NUTS3-adjacent areas or exceptionally, in NUTS 2-adjacent areas; Article 21: "Special conditions governing the location of operations: 1. In the context of cross-border cooperation and in duly justified cases, the ERDF may finance expenditure incurred in implementing operations or parts of operations up to a limit of 20 % of the amount of its contribution to the operational programme concerned in NUTS level 3 areas adjacent to the eligible areas for the programme referred to in Article 7(1) of Regulation (EC) No 1083/2006 or surrounded by such adjacent areas. In exceptional cases as agreed between the Commission and Member States, this flexibility may be extended to the NUTS level 2 areas in which the areas referred to in Article 7(1) of Regulation (EC) No 1083/2006 are located. *At project level, expenditure incurred by partners located outside the programme area as defined in the first sub- paragraph may be eligible, if the project would have difficulty in achieving its objectives without that partner's participation.*
- Significant steps are made in the SF 2014 – 2020: Article 70 of the Common Provisions Regulation (CPR) 2014-2020²⁸, encouraged national and regional authorities to "open the programming documents for transnational activities, foreseeing explicitly the possibility to invest outside the

²⁴ Regulation (EU) 2021/1058 - formally adopted by the European Union on 24 June 2021 - identifying the specific objectives and scope of support of the European Regional Development Fund (ERDF) and on the Cohesion Fund (CF) for the period between 2021 and 2027.

²⁵ COUNCIL REGULATION (EC) No 1260/1999 of 21 June 1999 laying down general provisions on the Structural Funds, L 161/1.

²⁶ Regulation (EC) No 1080/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 July 2006 on the European Regional Development Fund and repealing Regulation (EC) No 1783/1999.

²⁷ Regulation (EU) N°1304/2013 of the EP and of the Council of 17/12/2013- OJ L 347/470 of 20.12.2013.

²⁸ Regulation (EU) N°1304/2013 of the EP and of the Council of 17/12/2013- OJ L 347/470 of 20.12.2013. Relevant article:

Article 15(1)b(i): Partnership Agreements (PAs) are to contain arrangements, in line with the institutional framework of the Member States that ensure coordination between ESIF and other EU and national funding instruments and with the European Investment Bank (EIB).

Article 65(11) provides for a possibility of cumulating grants from different EU funding instruments (or from one or more ESI Fund through one or more programmes and other Union instruments) for the same beneficiary or the same project, provided that the same expenditure/cost item does not receive support also from another EU fund (from the same Fund under different programmes, from another Fund or from other Union instruments).

Article 67(5)b and 68(1)c allows for an alignment of cost models (scales of unit costs, lump sums and flat rates) for corresponding costs and similar types of operations and beneficiaries in Horizon 2020 and other EU programmes.

Article 70(2) stipulates a possibility of up to 15% of the support from the ERDF, Cohesion Fund and EMFF at the level of the priority (up to 5% of the support from the EAFRD at the level of the programme), and up to 3% of the budget of a ESF operational programme (Article 13(3) ESF) to be allocated to operations located outside the programme area.

programme area (Article 70(2) of CPR; up to 5% of their ERDF). The ESIF programme section dedicated to interregional and transnational actions (Article 96(3)d of CPR), provides for more than one Member State to allow the cooperation potential with other Member States to be fully exploited (e.g. through making use of macro-regional and sea-basin strategies²⁹; consider European territorial cooperation opportunities³⁰). In addition, the CPR encourages regions to envisage types of priorities, implementation and project selection methods that allow for combinations and synergies in the course of the ESIF programme implementation, e.g. permanently open submission of applications for funding to react timely to Horizon 2020 or other call/opportunity for combined funding / synergies. As far as we are aware, the opportunities provided by the CPR 2014-2020 provisions contained in articles 15(1)b(i), 65(11), 67(5)b, 68(1)c and 70(2), have not benefitted regions to a large scale, but more research would be needed to confirm this. Nevertheless, the existence of these provisions, and the considerable preparation and mobilisation activities that took place during the previous Structural Funds period (2014-2020) form a strong, relevant, and inspiring basis for continuing.

- During the present programming period of the Structural Funds (SF), provisions for supporting interregional innovation investments are not only a legitimate potential, but a condition (the 6th Actions to manage industrial transition and 7th Measures for international collaboration enabling conditions) of the thematic objective 1 (TO1) Strengthening research, technological development and innovation³¹ of the Structural Funds and the I3 instrument (Article 13). The I3 foresees support for Commercialisation and scaling up of innovation projects for the development of European value chains. Macro regional approaches³². "The macro-regions' geographical proximity creates opportunities by forming regional value chains that build on the respective strengths of the different parts of the region. Proximity can also enable close integration, which would give the macro-region greater critical mass and allow it to compete in global markets for skills and investment³³". Concrete initiatives already testing interregional innovation investments have already been organised³⁴. Voluntary transfer of up to 5% to other shared / directly / indirectly managed EU funds and policies³⁵ is also foreseen. This re-orientation was affected by two factors: (i) the necessity to take into account the effects of the [COVID-19 \(coronavirus\) pandemic](#) in the context of the [Recovery Plan for Europe](#)^{xix}. The revised draft law introduced (28.5.2020) amendments to the scope and specific objectives of the ERDF; and (ii) the renewed EU industrial strategy with focus on European industrial autonomy, and the emphasis on European value chains³⁶.

²⁹ http://ec.europa.eu/regional_policy/cooperate/cooperation/index_en.cfm, in: Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programme.

³⁰ http://ec.europa.eu/regional_policy/cooperate/macro_region_strategy/index_en.cfm, in: Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programme.

³¹ https://ec.europa.eu/regional_policy/en/policy/how/priorities/2014-2020/

³² <https://qosmartbsr.eu/news-posts/towards-s4-and-interregional-innovation-investments-in-the-baltic-sea-region/> .
https://www.alpine-space.eu/directuploads/news/pinna_s3-and-interregional-innovation-investment_2021_eusalp.pdf

³³ <https://www.bsssc.com/3rdcp> .

³⁴ EC, PILOT ACTION ON INTERREGIONAL INNOVATION CALL FOR EXPRESSION OF INTEREST FOR COVID -19 RESPONSE AND RECOVERY PARTNERSHIPS, https://ec.europa.eu/regional_policy/sources/tender/pdf/interregional_innovation/call.pdf .

³⁵ European Commission (2020). EU support for regional development in 2021-2027. <https://tem.fi/documents/1410877/10387910/Romanska+MFF+and+cohesion+policy+post+2020.pdf/2b77997e-42a9-41a0-92f5-b32f5140975e/Romanska+MFF+and+cohesion+policy+post+2020.pdf.pdf>

³⁶ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL,

CONCLUSIONS

The answers to the research questions, based on project and network initiatives planned and implemented during the period 2010-2021, is that interregional complementarities do indeed impact the place-based approach, advocating the definition of more comprehensive and well functioning regional innovation system and associated space, and therefore also implying adjustments of RIS3. The related findings are briefly discussed below.

Two key insights resulted from of ten (10) initiatives: it is clear that for many regions -if not for all, reinterpreting the place-based approach to include extraterritorial interactions, ensuring critical mass, a (more) comprehensive, dynamic, self-renewing regional innovation system, capturing “what is out there”, leading to a more effective RIS3, appears to be relevant. Secondly, this has been acknowledged for a while already, since it has been mainstreamed as an option (2014-2020 period) and a precondition (2021-2027 period) into the overarching EU policy framework, supporting regional connectivity at strategic level in the regions. The frequency, depth, and density of extraterritorial interactions define a space which extends the regional programme area, it transcends the place-based approach. Realising this approach at regional level will not follow automatically. The mechanisms defining such a space need to be better understood. Regional diversification studies have primarily focused on regional capabilities, but neglected the role of interregional linkages (Boschma, 2017³⁷; Whittle 2020³⁸). The same is true concerning literature on new path development that paid little to no attention to interregional links (Trippel et al., 2018³⁹).

A first finding regards regions’ variable motivations to seek solutions through interregional complementarities. Table 1 summarises them together with the associated objectives, addressed by each one of ten (10) initiatives.

Table 1 Motivations and objectives of interregional complementarities, based on the eight initiatives

| Motivation | Objective |
|---|---|
| 1 Closing gaps | Knowledge and technology transfer, case-by-case (FRESH, SCIENCE LINK, BALTIC TRAM, BRIDGES, CapREx, BERRY+) |
| 2 Innovation system improvement | Orchestrated exchanges among comparable innovation intermediaries (SCIENCE LINK, BALTIC TRAM, ELMO, BRIDGES, Big Five, CapREx, BERRY+, CLUSSPORT) |
| 3 Expanding knowledge and awareness for strategic decision-making | Advanced good practices to speed up strategic renewal (FRESH, SCIENCE LINK, BALTIC TRAM, ELMO, BRIDGES, Big Five, CapREx, BERRY+) |

THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A New Industrial Strategy for Europe. COM(2020) 102 final. Brussels, 10.3.2020.

³⁷ Ron Boschma (2017). Relatedness as driver of regional diversification: a research agenda. *Regional Studies* 2017, vol. 51, issue 3, 351-364. DOI: 10.1080/00343404.2016.1254767 .

³⁸ Adam Whittle (2020) Operationalizing the knowledge space: theory, methods and insights for Smart Specialisation, *Regional Studies, Regional Science*, 7:1, 27-34, DOI: 10.1080/21681376.2019.1703795.

³⁹ Trippel M., Grillitsch A., Isaksen (2018). Exogenous sources of regional industrial change: Attraction and absorption of non-local knowledge for new path development. *Progress in human geography* 42 (5), 687-705.

| Motivation | Objective |
|---|---|
| 4 Complementary technologies for excellence-based growth (edge research) | Joint development (technological complementarities); project-based collaborations (BRIDGES, ClusSport, Mining Regions, ELMO, Big Five, CapREx, BERRY+) |
| 5 Address joint development issues, joint development opportunities | Joint development; project-based collaborations (ClusSport, Mining Regions, ELMO, Big Five, CapREx, BERRY+) |
| 6 Specialisation, economies of scope ⁴⁰ 7 Diversification, economies of scale ⁴¹ | Value chain re-shoring & in-shoring, value chain near-shoring (BRIDGES and BERRY+) Identifying development niches, including and reinforcing EDP decision making (BRIDGES, BERRY+) |
| 8 Market development | Transregional clustering (ELMO, BERRY+, CLUSSPORT) |
| 9 Market access | Placement of innovative products, including re-localisations and interregional investments (BRIDGES) |

By considering the list of the mapped motivations in some depth, we note that

- The application domains of eight (8) out of nine (9) types of motivations [1,2,4,5,6,7,8,9] could have been anticipated had there been systematic efforts to identify interregional complementarities earlier. If this had been done as an independent activity during the RIS3 planning stage, or even during the RIS3 delivery stage, then the implementation would require only specification of pre-identified domains, probably leading to better accuracy and effectiveness of measures.
- Motivation type 3 and partially 7 (linkages to EDP -BRIDGES) indicate the importance of reaching out to new knowledge resources, some of which could be too new to be anticipated anteriorly. The example of the CEN 350 & 351 voluntary standard in construction that was adopted by Kainuu public procurement regulation (FRESH), was such an example. It implies that RIS3 (and not only RIS3) should anticipate options for state of the art, advanced inputs, to regional development decision making.
- The application domains of motivation types 6 and 7 introduce one more strategic issue, i.e., aligning interregional complementarities with RIS3 provisions and implementation, because they relate value chains to industrial policy, localised initiatives, and interregional expansion. This has been the focus of the value chain approach till now, in the BRIDGES project and BERRY+ initiative. BRIDGES project developed invested in value chain mapping in terms of participating technologies and then developed a simple methodology for linking the value chain maps to regional competitive advantage, as a proxy for identifying technological strengths to focusing re-shoring and in-shoring initiatives & associated regional policy making. This exercise is currently (December 2021) on going and results are expected by May 2022. In any case, value chain participation is a priority according

⁴⁰ Increasing economies of scope (<https://www.investopedia.com/ask/answers/042215/what-difference-between-economies-scope-and-economies-scale.asp>). The theory of an economy of scope states that the average total cost of a company's production decreases when there is an increasing variety of goods produced. *Economies of scope give a cost advantage to a company when it makes a complementary range of products while focusing on its core competencies.* Considered cumulatively, i.e. aggregate of economies of scope at regional level, leads to the related variety, technological relatedness, proximities theories. It also leads to reinforcing *product space*, a concept introduced by Hidalgo in 2007. Real-world examples of economies of scope can be seen in mergers and acquisitions (M&A), newly discovered uses of resource by-products, and when two producers agree to share the same factors of production.

⁴¹ An economy of scale (<https://www.investopedia.com/ask/answers/042215/what-difference-between-economies-scope-and-economies-scale.asp>), *is the cost advantage a company has with the increased output of a good or service, when production becomes more efficient.* In general, companies can achieve economies of scale by increasing production and lowering costs (decreasing marginal cost of production). This happens because costs are spread over a larger number of goods.

to EU's New industrial strategy⁴² and the need for industrial autonomy. European value chains appear, at this stage, as the backbone of industry. Prioritised, existing & emerging value chains should be identified at policy planning stage, and targeted measures should be included into the RIS3 operationalisation and associated measures.

A second finding regards the conditions of feasibility for successfully exploring interregional complementarities. The most essential condition is the commitment of regional policy makers. In our understanding, this depends, above all, on quantifiable evidence of the expected benefits resulting from interregional initiatives. To identify this, one should consider two parameters: (i) the methodologies by which interregional complementarities are identified and (ii) the expected benefits.

- (i) Methodologies for anticipating and identifying interregional complementarities are important because they should be a base, a mechanism for bilateral growth, i.e. they should go beyond mapping of excellences. It is through the ClusSpart S3 that this aspect has been initially revealed. Through the eight initiatives we have identified that there can be different perspectives: complementarities based on trade and potential economic exchanges, cluster coordination, value chains exploring technological relatedness and related competitive advantage. We consider all of them important because they can/do drive growth. Market access and placement of innovative products in markets are very important parameters, and they have been cited as priorities in various occasions by partners. Trade and economic exchanges are not new, they are as old as history, and they are on-going. But they often produce asymmetries which might turn into structural challenges for certain regions. We consider important that trade and innovation-based growth go hand-in-hand to ensure symmetrical results, win-win collaboration contexts. From this point of view, technological relatedness, together with value chain mapping and identification of competitive advantage appear to be very important starting points. Cluster collaborations can/should serve to explore technological relatedness-based complementarities.
- (ii) A potential collaboration becomes strategic when its anticipated impacts and range of interactions are provably significant in regard to a regional economy. Market aspects were referred to above. However, predictable and coherent supply side impacts are as important: the economic model of regions can be diverse, and it should be clear how interregional complementarities achieve such impacts. Motivation types 6 and 7 (Table 2) refer to this issue. For example, by exchanging with partner regions we found that for some regions, interregional complementarities will potentially contribute to further specialisation of related products & research results, contributing to economies of scope. We identified that this type of development impact can be relevant to advanced and less advanced regions. In other cases, interregional complementarities can contribute to radical diversifications and scaling up, and this can imply reinforced economies of scale, and this could be relevant to transition regions, which eventually will pave the path for scaled up regional specialisations. We also observed overlaps between specialisation and diversification impacts. Understanding linkages to regional economic development models, implies better alignment of interregional complementarities with regional development initiatives.

A third finding regards timing and method: when should we consider interregional complementarities to enhance the RIS3 potential? Our finding is that the best is to anticipate them at policy planning or revision

⁴²<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1593086905382&uri=CELEX%3A52020DC0102>

https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-...an-industrial-strategy_en#strengthening-eus-open-strategic-autonomy Page 4 of 11.

stage. The approach proposed by [Balland & Boschma 2019](#) discussed in the [Interregional complementarities](#) section provides a clear methodology, based on technological relatedness of technologies that are constitutive parts of patents related to specific domains⁴³. The concepts of product space & complexity ([Hidalgo et al. 2007](#) & [Hidalgo et al. 2009](#)) are applied to identify regional peaks and build interregional collaborations and programmes. The value chain mapping methodology developed through the BERRY+ and the Bridges Phase 3, is based on technology-based value chain analysis, matching to relevant regional strengths, and based on that to seek interregional complementarity based partnerships. Table 2, below, attempts to bring together the two approaches.

Table 2 Anticipating and identifying interregional complementarities

| Anticipating interregional complementarities | |
|---|--|
| Method | Path and application |
| Technological relatedness (Balland & Boschma 2019) | SECTOR SPECIFIC Technologies co-present in patents (statistical analysis) → Technology densities (based on the product space & complexity concepts (Hidalgo et al. 2007 & Hidalgo et al. 2009), identification of regional peaks → value chain offers (co-development & complementarity) |
| Value chain mapping (BERRY+ & BRIDGES) | SECTOR SPECIFIC Technology -based domain desegregation → Matching densities at regional level → regional peaks and valleys → value chain offers and alignment criteria with regional policy initiatives (re-shoring, in-shoring, near-shoring). |
| Comparison, benefits, barriers, ... | |
| <p>The initial motivation and intention of the two approaches is comparable. However,</p> <p>-- the former approach, based on patent analysis builds on the relatedness of innovation excellence, and thus links top regions, into complementary as well as joint development collaboration patterns. The challenge posed by this approach is that it is not considering pre-IPR registered innovations. Such innovations can be important in smaller, transition or less advanced regional contexts. As already proposed, a proxy for patents might be useful.</p> <p>-- the latter approach, is seeking competitive advantage. It does not deal exclusively with technology excellence, because of the awareness that in some regions this might simply not be present & still such regions will need to scale up and improve. To have a chance to link to value chains, knowing their competitive advantage whatever it is, and working on it, is essential. This approach results in complementarities-based collaboration rather than on joint development options.</p> <p>Conclusion: Strategically (RIS3 planning stage), applying the former methodology appears more relevant, with the reservation regarding patents. Applying the latter methodology might suit more policy delivery level and could be more inclusive to build on potential relatedness of less advanced or transition regions as well.</p> | |

A fourth finding regards funding. The experience from the three S3 partnerships revealed funding options requirements: baseline/coordination funding for anticipating, identifying, planning, analysing, specifying the domains of interventions and quantifying their results. When anticipating interregional complementarities, quantification of benefits should be included in the analysis, this is a feasibility guarantee needed by regional policy makers in view of dedicating funding resources. Policy measures and interregional collaboration concepts would be built according to these data. This would allow maximising their benefits at delivery stage, by concentrating on operations with the highest added value and would ensure alignment & synergy with regional initiatives. It also implies that funding provisions of interregional initiatives, dedicated to the extended regional innovation space, would / could be made at reduced risk. At the present, funding is one of the most challenging issues. In the Science Link, Baltic TRAM, BRIDGES and ELMO project 'transregional funding instruments' were available, but the funding came from extraterritorial resources (EU). At regional

⁴³ Balland & Boschma 2019 tested this methodology in the hydrogen sector across 219 EU regions.

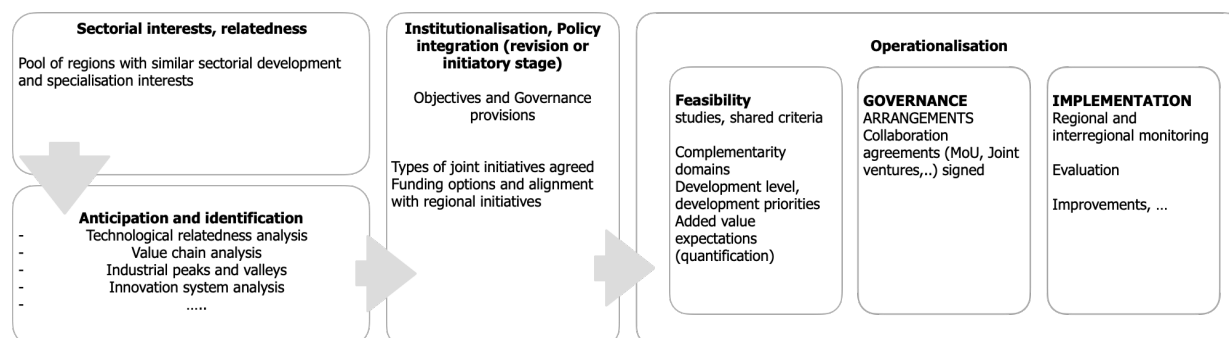
level, it has been very difficult to encourage programme area resources to be spent outside the administrative borders -for example for piloting new things, except in cases of project-specific knowledge or technology transfer, and even there have been considerable hesitations and delays. As a result, our efforts concentrated more on synchronised funding initiatives. However, at national level, we identified national level funding instruments among the BERRY+ partners: several member states give space to innovation-related interregional spending & interactions⁴⁴. These options have not been tested yet.

A fifth finding regards the necessity for interregional governance, schemes and the resources to implement it. As confirmed by several initiatives (Science Link, Baltic TRAM, ELMO, BERRY+, Mining Industries, Big Five, CapREx). Governance will shape an institutionalised extension of the regional 'programme area', forming a space of more intensive interactions. It would probably imply, inter alia, making use of a memorandum of understanding (MoU) or a joint venture agreement between and among concerned regions. This is not usual yet. However, through the S3 partnerships synergy-based MoU approach and the option provided by the I3 call (announced 23.11.2021) which includes joint ventures between partners as eligible to lead I3 initiatives, are paving the way forward.

Our final conclusion is that redefinition of the place-based approach as evidenced by interregional complementarities is highly relevant but will not happen automatically. An implementation roadmap is needed and its implementation would require that specific parameters need to be satisfied. We have identified four types of such parameters: legitimacy (overall enabling framework; EU & national), institutionalisation (integration into regional strategies, including the potential for governance arrangements), anticipation and identification (which ones are important complementarities to consider, what tools for identifying them), feasibility confirmation (financial, technological, economic, knowledge), operationalisation (governance arrangements, policy measures and individual interregional initiatives). Out of these four types of parameters, the first one is currently fully satisfied, the second one is nominally satisfied (RIS3 is required to allow space for interregional innovation initiatives), the third is currently developing and the remaining two are not yet sufficiently addressed as parts of a comprehensive whole. Figure 3 below is an attempt at synthesising these findings into a coherent process, that might be of some use to researchers and regional policy makers.

⁴⁴ BERRY+ working document "National funding options supporting interregional collaboration; network & innovation intermediary targeted EU calls" (2021). Joint work by Finland (Business Finland), Greece (General Secretariat for Research & Innovation), Poland. The document is evolving as national arrangements are modified.

Figure 3 Interregional complementarities impacting the place-based approach: synthesis of the lessons learnt from the eight initiatives



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ENDNOTES

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xix EUROPEAN SOURCES ONLINE: The European Commission was tasked by the European Council in March 2020 to set out a strategy for the longer-term socioeconomic recovery across the EU following the emergency caused by the virus outbreak. The mandate was further confirmed in April by EU leaders. While the virus affected all Member States, the impact and the potential for recovery looks very different. While every Member State was able to support its workers and companies as much as possible, not all could do this to the same extent. This has created the risk of an imbalanced recovery, an uneven playing field and widening disparities across the EU. It has also showed the need and value of an EU-wide response. The recovery plan includes an increase of the ceilings under the Multiannual Financial Framework (MFF) 2014-2020, a proposal for a new recovery instrument called Next Generation EU, embedded within revamped proposals for the Multiannual Financial Framework (MFF) 2021-2027. The European Commission also unveiled an adjusted Work Programme for 2020. <https://www.europeansources.info/record/europes-moment-repair-and-prepare-for-the-next-generation/> .

xx The OSKE programme created a network of 15 centres of expertise. The direct number of expected jobs by 2006 is 1.000 and ten project yearly will be operational, of which 3 with ERDF funding (10 % share) it corporate incubator activities and R&D operation of. The centres of expertise have focused on one to a maximum of three core technologies which they are developing.

xxi Page 24: ...Increasing growth equity by spreading knowledge spillovers.