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Article *in* MANAGEMENT DYNAMICS IN THE KNOWLEDGE ECONOMY · March 2017

DOI: 10.25019/MDKE/5.1.04

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Management Dynamics in the Knowledge Economy
Vol.5 (2017) no.1, pp.57-76; www.managementdynamics.ro
ISSN 2392-8042 (online)

Regional Entrepreneurship and Innovation Management: Actors, Helices and Consensus Space

Emanuela TODEVA
St. Mary's University
Waldegrave Road, Twickenham, TW1 4SX, London, United Kingdom
emanuela.todeva@stmarys.ac.uk

Panagiotis KETIKIDIS
University of Sheffield International Faculty, CITY College
Proxenou Koromila 24, 546 22, Thessaloniki, Greece
ketikidis@city.academic.gr

Abstract. *European Smart Specialization (S3) policies aim to mobilize innovation and entrepreneurial capabilities and to deliver job creation and economic growth through inter-regional cooperation. The foundation principles for this policy initiative are an entrepreneurial discovery process that aims to mobilize all stakeholders throughout all stages from conception to strategy implementation; government-led policy initiatives for selecting strategic investment priorities; and building triple helix consensus space for regional policy and strategy implementation. However, the key existing gap resides in a proper investigation of such a consensus space that would fulfill the S3 mission. In this context, this paper outlines the key developments in regional innovation and entrepreneurship that have emerged through the process of S3 development and implementation. The discussion starts with an overview of the challenges and barriers and policy response for building place-based consensus space. We look at critical questions that are addressed by national and regional authorities and the localized mobilization of entrepreneurial and innovation capabilities. Our analysis of the regional innovation and entrepreneurial systems focuses on individual actors within the triple helix model of university-industry and government and their interaction for building a consensus space. We conclude the paper with recommendations for enhanced facilitation and orchestration of inter-regional value chains.*

Keywords*: triple helix, consensus, smart specialization, regional innovation system, entrepreneurial discovery, strategy implementation.*

Introduction

Igniting economic growth through place-led strategy and energizing stakeholders at the regional level has been at the heart of the new European growth model based on regional smart specialization. The model was launched by the European Commission in 2013 as a pre-condition for support from the European Structural and Investment Funds, and is seen as

an "important concept for better and more targeted innovation policy" in Europe (European Commission, 2016, p.13). In response, EU member states were compelled to harness the *entrepreneurial discovery process* (EDP) by mobilizing their key stakeholders at the regional and national level, in order to identify strategic priority areas for future investment for growth (Foray & Goenanga, 2013).

European Smart Specialization policies aim to mobilize innovation and entrepreneurial capabilities and to deliver job creation and economic growth through inter-regional cooperation (Foray et al., 2009). The foundation principles for this policy initiative are an entrepreneurial discovery process (EDP) that aims to mobilize all stakeholders throughout all stages from conception to strategy implementation; government-led policy initiatives for selecting strategic investment priorities; and building triple helix consensus space for regional policy implementation.

The first outcome of this policy initiative is the large scale strategizing activities in Europe, that took place at the regional and national level since 2013 (S3 Platform, 2017). The Vanguard initiative for inter-regional collaboration among the most advanced regions in Europe has been leading the process with political commitment, public sector initiative, and active mobilization of research and innovation leaders, universities, businesses, professional and commercial associations and other boundary spanner organizations and individuals (Reid & Miedzinski, 2014).

Smart specialization strategies (S3) by the end of 2016 have been submitted by 18 member states and 164 European regions (S3 Platform, 2017). These strategies emerge because of the comprehensive mapping of innovation capabilities, entrepreneurial activities, SMEs support instruments, and open conversations with large local business players, employers, institutions, knowledge providers and knowledge brokers. Although a number of member states have opted out for a national S3, at the stage of implementation it becomes clearer that location and place-based initiative are more effective in mobilizing resources and stakeholders.

This paper outlines the key developments in regional innovation and entrepreneurship that have emerged through the process of S3 development and implementation. The discussion starts with an overview of the challenges, barriers and policy response for building place-based consensus space. We look at critical questions that are addressed by national and regional authorities and the localized mobilization of entrepreneurial and innovation capabilities. Our analysis of the regional innovation and entrepreneurial systems focuses on individual actors within the triple helix model of university-industry and government and their

interaction for building a consensus space. We conclude the paper with recommendations for enhanced facilitation and orchestration of inter-regional value chains.

Challenges for smart specialization and regional development in Europe

Although there is an emerging consensus among economic geographers that place-based strategies and policies for regional development offer a superior efficacy in mobilizing productive capabilities (compared with sectoral-based policies), the theory indicates clearly that in order to be successful such policies have to be complemented with an industrial component of technological diversification, and value chain integration (McCann & Ortega-Argilés, 2015, Todeva & Rakhmatullin, 2016). Strategic choices based on embeddedness, relatedness and connectivity cannot by themselves deliver positive outcomes and to drive change, unless the fundamental causes for underdevelopment are addressed – such as weaknesses in entrepreneurship and innovation capabilities, or variously market failures (i.e. sectoral, structural, transactional, technological, behavioral, related to resources and capabilities, related to risk and financial flows, related to externalities and also related to commercial and cultural perceptions integration) (McCann & Ortega-Argilés, 2015). Addressing these failures is a major concern for government intervention in a traditional sense of normative and regulatory action by the state.

In addition, there are a number of pre-requisites, while addressing regional and national contexts. The entrepreneurial discovery process (EDP), which is an essential step towards building smart specialization strategies, requires stakeholder mapping and engagement, as well as detailed knowledge of the key industry players, knowledge providers and innovation leaders at the regional level, which goes beyond the traditional role of government. Proactive public authorities are building effective triple helix constellations with universities, business enterprises, innovation actors, public institutions and associations - as a prerequisite for the selection of strategic priorities, development of partnerships, and implementation of S3 through regional and interregional cooperation at European level (Foray & Goenaga, 2013). The mapping exercises that have already taken place across European regions demonstrate the diversity and lack of consistency. Different categorizations of stakeholders and industry specialization are emerging through this mapping, where the triple helix model is often used as a guiding principle (Todeva, 2015; Danson & Todeva, 2016).

Mapping of regional capabilities within selected priority sectors and identifying the concentration and location of these capabilities within established and emergent European value chains (EVC) is a challenge for regional authorities. Mapping of stakeholders and capabilities and providing value chain intelligence is an essential building stone in the implementation of a number of EU policies, among which are: S3 policy, cluster policies (including building inter-cluster partnerships and cluster internationalization), SME support policy framework, technology policy (including the mobilization of key enabling technologies, or KETs), research and innovation policy, regional development policy, and inter-regional cooperation networks (Humphrey & Schmitz, 2002; Boaventura et al., 2016). The sections below address the specific development targets for each of these policy frameworks, defined to address major barriers to growth and integration of the single market.

Challenges for implementation of smart specialization strategies

The development process of S3 as a new growth strategy for Europe, represent an innovation in government. Public authorities are required to embrace three distinctive roles: as Public Administrators, Policy Makers, and Strategists - developing and implementing smart specialization and public investment strategies. As public administrators, regional and national authorities are required to perform their normative function of representing the public interest and governing the democratic processes that underpin the public sphere. As public policy agents, regional and national authorities are required to develop new policy framework conditions that create new incentives for entrepreneurship, innovation and collaboration (McCann & Ortega-Argilés, 2015; Morgan, 2015; Kroll, 2015; Ketels, 2016; Todeva & Rakhmatullin, 2016). As strategy development and implementation agents, public authorities are required to undertake a completely new set of initiatives, such as:

- driving the local entrepreneurial discovery process,
- assessment of localized strategic capabilities as comparative advantage of regions,
- formulating strategic sectoral priorities and activities for development and experimentation,
- identification and development of cross-sectoral, cross-regional and thematic activities,
- building triple helix coalitions with innovation performers, private sector commercial entities, technology entrepreneurs and other strategic organizations and resources, and
- building inter-regional coalitions across the public and the private sector.

The new strategic role of public administration officials requires not only a new set of strategic capabilities but also a continuous flow of business intelligence, enabling the government to select strategic priorities and to drive strategic partnerships and collaboration (Mazzucato, 2015). Strategic analysis of strengths, weaknesses, opportunities and threats (SWOT), or taking strategic investment decisions, engaging in strategic negotiations, and brokerage across European regions, does not have explicit procedures and blueprints to guarantee transparency, efficiency, or even legitimacy with no conflict of interests. The challenge for policy makers and public authorities is to select the right priority areas, where there is an existing concentration of capabilities and innovation potential, and where policy intervention can enhance the regional competitiveness. Statistical analysis rarely gives an insightful picture of regional capabilities. Mapping regional capabilities with firm-level data and using firm-level business intelligence by public authorities are fairly rare. In addition, strategies and risk taking are usually a prerogative of the private sector, where strategic choices and investment decisions are closely linked to performance targets. The new approach for a multi-stakeholder entrepreneurial discovery process requires a novel collaborative and risk-taking culture, adopted at the level of regional and national authorities, responsible for managing strategic capabilities, for policy intervention to enhance regional/national competitiveness, and for stirring economic growth (Foray & Goenaga, 2013).

In order to formulate smart specialization strategies, public authorities need to develop and communicate a vision – how their specialization can integrate with wider European value chains, and how it can connect to global markets. Value chain intelligence is currently emerging both at the level of firms and for monitoring internationalization and globalization. Smart specialization strategies and implementation process should be driven by facts as well as strategic vision, where the amalgamation of public and private interests has to be carefully orchestrated. Export-led growth is nothing new, and the policy instruments have a long history of the application. Value chain connectivity via exports, however, is a new area of internationalization and requires a profound understanding of the scope of positioning strategies at a firm level that can lead to endogenous growth (Todeva, 2015).

The challenges for public authorities are not simply to upgrade capacity. Capacity building programs upgrade skills and competencies that are related mainly to the first and mainstream role of government – as a normative institution and an efficient bureaucracy, coordinating public expenditure and the distribution of European structural and cohesion

funds. Government employees need to change their mindset and to embrace their second and third roles - as policy makers and strategy implementers. As policy makers, government officials need to design policy instruments that address specific strengths, weaknesses, opportunities and threats to the socio-economic and innovation systems under their jurisdiction. They are required to design evidence-based policies that create incentives in the right direction of stimulating of entrepreneurial behavior, or innovation and productivity enhancing investments – among others (Ketels, 2016). Policy makers are also required to develop monitoring and evaluation systems that capture and measure the impact of various policy instruments (Williams et al., 2013; Todeva & Danson, 2016).

The challenges for public authorities as strategy developers and implementers go even further into knowledge, insight, and granularity of engagement (Kroll, 2015). The granularity of intervention is very difficult to achieve if governments do not have detailed knowledge of the structural composition of their priority sectors, or comprehensive lists of innovation actors, leading entrepreneurs and powerful local stakeholders that are required for building a consensus space. The use of general statistical indicators and single case studies as examples and anecdotal evidence for the justification of selection choices and illustration of best practices are insufficient to provide overall transparency in the implementation process. Public authorities are becoming more dependent on business intelligence and intermediary organizations – to provide insights into the structural composition of prioritized sectors, and to facilitate the development and implementation of S3, or inter-regional and public-private sector partnerships.

The entrepreneurial discovery principle requires to obtain a comprehensive list of stakeholders, or actors in all modalities of the triple helix - innovative SMEs, leading technology firms, embedded multinational enterprises (MNEs), large industrial players or public sector organizations that act as attractors for investment, science and innovation (Foray et al., 2009). An essential part of the implementation of S3 is a multi-level mapping of concentrations of capabilities and linking capabilities with markets in Europe and abroad, or redesigning value chains. Matchmaking activities and orchestration of inter-regional industrial partnerships go well beyond the scope of the public administration and public policy remit for the government (Todeva & Rakhmatullin, 2016).

The engagement of national and regional authorities with 'Research and Innovation Strategies for Smart Specialization' (RIS3 strategies) resembles a triple helix in action, that builds upon political commitment, clear vision for the comparative advantage of the country / region (defined as strategic

priorities), mobilization of stakeholders and triple helix actors for innovation, experimentation and entrepreneurial discovery (Todeva & Danson, 2016).

The third role of government as orchestrators of the entrepreneurial discovery process cannot be understood using the classical public administration theories and models, and it goes beyond the entrepreneurial government thesis for risk taking and risk sharing government intervention (Mazzucato, 2015). It requires strategic leadership, which traditionally is a prerogative of the business sector, and cannot be performed without private sector leadership. The question and the challenge hence, is under what circumstances government, industry, and university can create a consensus space to enable them collectively to act in accord – towards the design and implementation of S3 for sustainable growth?

Challenges for building cluster partnerships and internationalization

Recent report from the European Secretariat for Cluster Analysis (ESCA) advocates that cluster organizations should provide additional services to their members, such as promotion of the cluster location and facilitating media visibility, support for the internationalization of cluster members, collaborative technology development, and technology transfer, matchmaking and networking with external partners (Kergel et al., 2014). All of these activities require advanced cluster intelligence and strategic capabilities at cluster management level. The challenges for cluster managers are: knowing the entire population of firms in the cluster, the strategic potential of member firms across different strategic value chain groups, and targeted promotion of groups of firms, rather than individual players. Promoting strategic value chain groups rather than individual firms brings a higher value added to clusters and avoids the well criticized 'cherry picking', enhancing collaborative advantage for businesses. Innovation dynamics at cluster lever requires that innovation outputs are promoted throughout the entire population of member firms, rather than for champions only, and the challenge for organized clusters is both – the collection and the distribution of information, advice, support and promotion services across the entire population of firms, enabling innovation to spur from core as well as periphery firms (Christensen et al., 2012).

Smart specialization priorities at the cluster and regional level require co-alignment of firm strategies and incentivizing the entire population of firms. A response to this challenge is the production of value chain intelligence with bespoke datasets of firms that capture details of the area of

product/technology specialization of each firm, and data analysis of existing concentrations of capabilities as well as new networking opportunities (Todeva & Rakhmatullin, 2016).

Creating complementarity and synergies among firms along established and emergent value chains is traditionally what large firms are able to achieve through strategic investments and interactions. SMEs and non-commercial entities do not have the capacity, or even the incentive to explore synergies, as they are focused on niche outputs and services. Clusters, however, recombine commercial and non-commercial actors, and as such, facilitate *embeddedness, relatedness and connectivity* in a particular location (Camagni and Capello, 2013; Rodríguez-Pose et al., 2014).

The most recent reports on cluster performance and benchmarking, provide insightful observations for specialized clusters, but are short in measuring the depth of clusters in terms scale and scope of diversification, or structural position and value chain participation. Monitoring long-term position and upgrade of firms and clusters require the use of more advanced cluster intelligence, based on comprehensive firm performance data (European Cluster Observatory, 2014a, b, c). The smart guide to cluster policy clearly indicates that linkages across related industries are critical for cluster growth, and mapping these linkages within specific location boundaries is essential to mobilizing cluster activities and building the necessary critical mass (Ketels, 2013; Izsak et al., 2016).

Most current cluster initiatives for inter-cluster collaboration and internationalization require extensive cluster intelligence through:
a) knowledge and insight in the underlying value chains within clusters, as well as how they connect to other related industry activities; and
b) detailed and exhaustive list of firms (including SMEs) that have capabilities in a particular specialized area.

Diverse cluster capabilities evolve over time through strategic choices made by individual firms. Government facilitation could create more market distortions rather than efficient inter-firm relationships. Government role, however, could provide positive externalities to a marketplace, generating additional connectivity and promoting a geographic location to investors, enabling small players to connect and integrate with large firms' value chains (Todeva & Rakhmatullin, 2016).

European strategic cluster partnerships and consortia as current regional policy initiatives are intrinsically dependent on value chain intelligence and triple helix consensus for effective coordination of collaboration across firms, regions, and sectors (Etzkowitz & Leydesdorff, 1998, Todeva &

Danson, 2016, EU Cluster Internationalization, EU Enterprise Europe Network). Each partnership embraces inter-sectoral business developments that cross and re-combine numerous value chains and requires consensus space at multiple levels. Each partnership, hence, needs to mobilize its stakeholders and to create a shared vision and commitment. Knowing how to accelerate the transformation of traditional value chains and to re-combine with emerging technologies and markets, requires significant oversight and value chain intelligence, as well as undertaking investment risk. Connectivity and integration across regions and fragmented capabilities require a significant strategic effort, supported with business intelligence and political commitment.

Challenges for SME support

The main orientation of the policy measures towards supporting SMEs is the development of business-friendly environment, providing financial support, encouraging cluster growth, integration of SMEs in clusters, and support for internationalization (EC Growth, 2016, EU Entrepreneurship and SME Support). All these measures require knowledge of individual SME capabilities in the first instance and adapting the policy instruments to accelerate existing entrepreneurial strengths. Mapping the capabilities of SMEs in clusters and regions, hence, is essential to providing support.

On the other side of the support, process is the SMEs that interact with other business stakeholders locally and internationally and position themselves in specific product and technology markets. Value chain intelligence brings vital knowledge of technological linkages that could be exploited for further product and service innovation. The supply of value chain services is an intrinsic component of all sectors of the economy (Todeva & Rakhmatullin, 2016).

A new emergent policy framework suggests that the best way to deliver support to SMEs is if they are organized in clusters (Ketels, 2013, Todeva, 2015). This approach is based on the assumption that clusters as meta-organizations are effective forms of organizing capabilities and coordinating support measures, as well as building trust between stakeholders (Boaventura et al., 2016). The matchmaking events organized at European level aim at building strategic partnerships, although the methodology of what is matched to whom is still unclear. There is clearly a need to translate the concept of GVC at a cluster, regional, or national level and to engage small firms in effective strategic innovation and upgrade (EU COSME Program).

Challenges for technology policies and the diffusion of key enabling technologies (KETs)

The Commission defines that the engine for growth in Europe is knowledge intensive sectors around key enabling technologies (KETs). The policy agenda for enhancing KETs is to support these emerging sectors and the 'technology bricks' that support them and to enable a wide range of product applications (COM, 2012: 341). The Commission has acknowledged that KETs feed into many different industrial value chains and sectors and provide value along the whole chains. The implementation of KETs technology and investment policy is envisaged through a number of policy tools such as the Commission's cluster policy and cohesion policy, both of which require inside knowledge of the industry as a key stakeholder (EC COM, 2012; EC COM, 2014; EC KET, 2016). Yet, firm-level data, is not widely available, including information on inter-firm connectivity within value chains. Mapping methodologies are often based on conceptual models, rather than real data. Encouraging regions and clusters to develop a comprehensive dataset of firms is a key enabler in this process towards 'Industrial Renaissance in Europe' (EC COM, 2014).

European policies for growth, such as industrial policy; innovation and competitiveness; key enabling technologies; industrial sustainability; or internationalization of firms, all raise challenges for more transparency in the allocation of public funds towards strengthening the concentration of capabilities in regions. Facilitated co-specialization and collaboration of firms across strategic value chain groups are expected to accelerate the optimization of resources as well as spillover effects from bridging (Todeva & Rakhmatullin, 2016).

Global value chains are at the intersection of numerous challenges for Europe 2020. Mapping of KET value chains and in general, the value chains of the core European industries is a critical activity enabling the measurement of the fragmentation and integration across European economies. The diversity in the distribution of KETs across EU member states is both a threat and an opportunity for such policy initiatives for growth. Seeking complementarity across the European technology space requires comprehensive technology maps, as well as how technology capabilities intersect firms, regions and member states.

Challenges for building of research and innovation systems and policy-enhanced research and innovation (R&I) performance

The implementation of European policies at the national and regional level are facing substantial challenges in terms of bringing together a new

constellation of actors, creating multi-lateral consensus spaces, and boosting multi-way communication among the regional development actors. Regional innovation systems as consensus spaces are observed to foster regional innovation and entrepreneurship. It is no longer an issue of policy compliance with national innovation systems, or tacit policy changes to foster regional research and innovation systems that fulfill regional needs (based on the key regional strengths). The key challenge at this level is to properly develop the consensus space between regional and national research and innovation actors, where all actors and processes co-create strategic advantage through political commitment, cluster partnership, triple helix and civil society interactions, and citizen participation. Some of the key challenges for regional research and innovation systems towards their transition to consensus spaces are:

- Firstly, research capitalization and iterative innovation channeling to regional and inter-regional innovation systems via the key capacity building delivered through the triple helix science. Open innovation is still posing challenges in a quasi-institutionalized regional innovation system where not all actors are clearly defined. This capitalization can lead to enhanced matchmaking with the market demand and active involvement of performance-led policymaking.
- Secondly, institutionalization and institutional development is still a pending task. Decentralization from national innovation systems to regional and inter-regional ones is, often, done at different paces and degrees leading to internal blockers and policy mismatch which affect the proper capacity building. In order to ensure a viable consensus space, institutions need to be robust in order to achieve long-term continuity. A mindset adjustment enhances the viability of the consensus space.
- Thirdly, another challenge in regional innovation systems resides in innovation scale-up and multiplication capacity fostered by proper policies. A properly working consensus space would enable such a scale-up; however, the main question would reside in who would drive this behavior (who is the orchestrator).
- Lastly, a regional research and innovation system driven consensus require a proper performance measurement framework that has the consensus space as a key internal validator. New indexes can be developed to capture the interaction of the new constellation of actors.

Challenges for inter-regional cooperation and networks

From its inception, the smart specialization strategy initiative was envisaged to enhance capabilities at the regional level. Although for small member states it makes sense to develop a smart specialization strategy at a national level, the implementation process requires active regional

authorities, pro-actively mobilizing local public and private sector actors and adopting a multi-stakeholder approach to policy and strategy implementation. The European Regional Development Fund (ERDF), one of the five funds of the European Union under European Structural and Investment Funds, has been leading in forging European Territorial Cooperation (ETC) with over 132 projects in four thematic areas: (1) Research & Innovation, (2) Information and Communication Technologies, (3) Competitiveness of SMEs and (4) Low Carbon Economy (including environment and resource efficiency) (EC ERDF, 2015, INTERREG). Although the INTERREG Program spells out clearly how smart specialization strategies are intertwined into project activities, the current thematic priorities are not synchronized with the emerging smart specialization platforms (EC ERDF, 2016). This is a challenge for regions to engage with different frameworks and tools – all aiming at enhancing inter-regional cooperation.

Leading example of effective inter-regional cooperation supported by political commitment at the regional level is the Vanguard initiative, whereby a large interregional consortium of over 30 regions follows a 4-step cooperation methodology of *learning – connecting – demonstration – commercialization* (Vanguard Initiative). The success of the vanguard initiative is partially due to its effective institutionalization of cooperation through specific task groups focused on policy influencing, financial instruments, communication, monitoring, and foresight. The entrepreneurial discovery process, however, takes place in the substantially different way across connected regions, generating different implementation models across member regions. It is recognized the need to develop a more standardized framework to guide the implementation phase.

Based on their cooperation initiatives, member regions of the Vanguard initiative are co-aligned behind a number of principles, which they have to recommend for a wider dissemination across the rest of Europe. Among these are:

- renewed cluster policy for reindustrialization of EU member states;
- fostering the emergence of new EU, global and cross-sectoral innovative value chains, driven by the smart specialization agenda;
- mobilizing a critical mass of entrepreneurial and innovation potential in each region;
- strategic pursuit of impact on business competitiveness, growth, economic transformation through internationalization, investment and innovation at EU level;
- developing and upscaling interregional and cross-cluster networks;
- implementing roadmaps for co-investment in European priority areas;

- multi-level governance aligning top-down and bottom-up processes;
- fostering SME's participation in EU collaborative projects and internationalization activities (Vanguard Initiative Policy Experts Workshop on Cluster Policy, 2014).

All of these principles represent challenges for the effective implementation of the suit of European policies that aim to mobilize effectively resources at the regional level through place-based strategies and investment programs. The final section of this paper looks at how all policy initiatives stumble at the 'how-to implement' question due to weaknesses in the triple helix models for mobilization of industry, university and government capacity, and the lacking consensus spaces in multi-stakeholder engagement.

Building the consensus space and who should drive the Triple Helix

The new model for entrepreneurial discovery and implementation practice (EDIP) (Figure 1) identifies four strategic responses to the challenges outlined above. This model depicts four distinctive implementation steps to support interregional collaboration strategies and the successful mobilization of interregional cooperation networks. This model refers to a new type of public authority intervention based on effective triple helix interactions between government, industry, and university. Triple helix governance involves a multistakeholder platform for strategic engagement, which goes beyond what some authors call 'entrepreneurial government', carrying the risk of developmental policies and investment decisions (Mazzucato, 2015). Triple helix governance mobilizes decision-making capacity across the public and the private sector, and puts the university and the education sector as a whole, at the heart of growth strategies – both as providers of skills and innovation outputs.

Triple helix governance rests upon pro-active governments, collaborative business and entrepreneurial universities that are capable collectively to translate policy objectives into investment strategies and to mobilize the knowledge providers for strategically co-aligned development projects. Business intelligence is an essential prerequisite enabling governments to engage in strategy development and implementation. Business intelligence and knowledge production for S3 support all four implementation steps and include:

- more detailed mapping of industries and regional capabilities (strategic value chain groups and innovation networks);

- dedicated communication platforms for inter-sectoral and cross-border stakeholder engagement that encompass industry-university and government (triple helix);
- elaborate business models across input and output markets (designing value chains and value-added flows); and
- matchmaking within and across value chains (Figure 1).

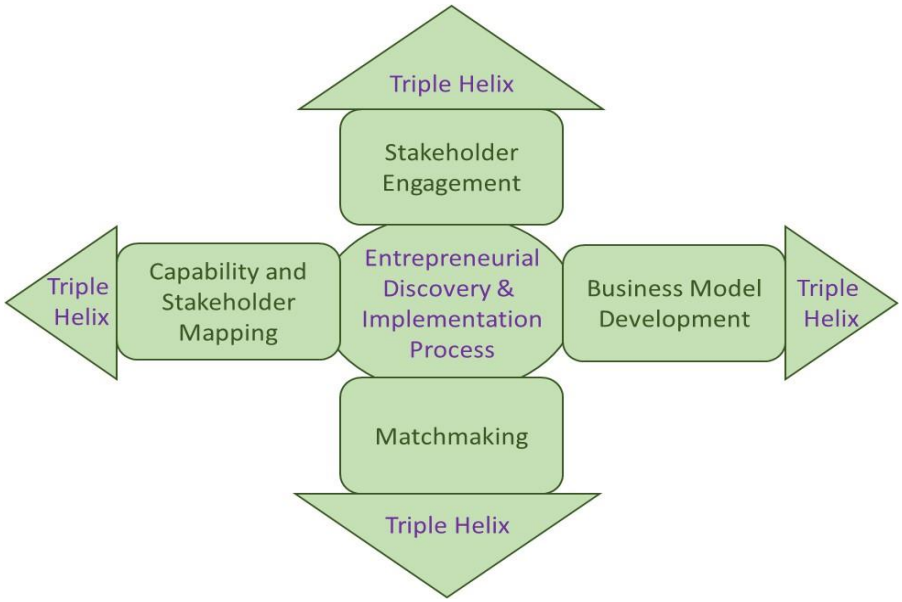

Figure 1. EDIP model for inter-regional cooperation

Each sphere of the Entrepreneurial Discovery and Implementation Process (EDIP) involves building complex triple helix constellations with governments, education providers, innovation actors and private sector organizations seeking new opportunities and complementarities. There are a number of promoted methodologies, but currently, there is no blueprint – how to orchestrate such complex interactions with long-term strategic impact.

Triple helix governance advocate for bridging across self-interest (through performance and efficiency) – public interest – creativity – sustainability – and value co-creation. This is translated by the new instruments and tools for interregional cooperation into a strategic agenda at the European level that follows a 4-stages approach: stage 1 - Mapping competencies and opportunities for cooperation; stage 2 - Industrial cooperation and design of projects; stage 3 - Business Plan and funding mix; stage 4 - Investment projects (S3 Platform). This approach requires that the regional authorities sharpen their strategic knowledge and skills for the effective facilitation of

inter-regional investment projects. Key prerequisites for the successful inter-regional thematic collaborations need some critical intelligence inputs – such as:
- knowledge of value chains in established and emerging industries;
- recognizing complementarities across regions based on more detailed mapping of regional capabilities;
- matchmaking of partners within and across complementary strategic value chain groups – to accelerate and scale up the development and commercialization of new products, services, and technologies.

All recommended approaches for triple helix governance and orchestration of inter-regional cooperation projects rest upon a *consensus space* that expands from intra-regional to inter-regional (Figure 2). Ultimate drivers behind such a consensus space are political commitment and citizen participation that support effective and institutionalized triple helix governance platform, which is transparent and open to public debate and contributions from the civil society. These prerequisites, however, are necessary, but not sufficient – to orchestrate economic growth through inter-regional value chains. Ultimately, it is the business leadership of the private sector that can take forward strategic objectives, and implement them into collaborative inter-regional agreements (Figure 2).

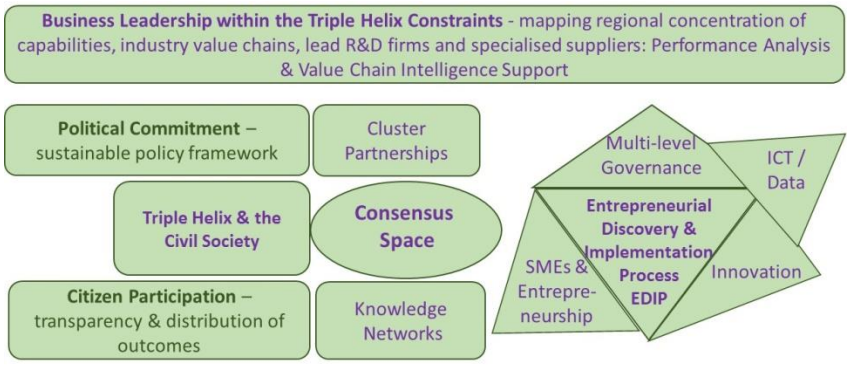

Figure 2. The complexity of building and orchestration of triple helix consensus space

The entrepreneurial discovery and implementation process are possible only through a recognizable consensus space and multi-level governance arrangements. It is distinctive from other regional and inter-regional constellations, previously formed – such as cluster partnerships and knowledge networks, as it aims to mobilize the triple helix actors at a new level of sharing and commitments. The multi-level governance form ensures that all active innovation actors – individual and collective, SMEs, entrepreneurs, scientist, or complementary service providers – are

represented, informed, engaged, and mobilized for the strengthening of the regional comparative advantage, as well as for inter-regional collaboration. The regional innovation system, and science and technology environment along with advanced ICT and data services should be employed to strengthen the regional ecosystem and to enable regional ecosystems to connect across borders.

Conclusions and recommendations

This paper outlines a 'how-to-do' approach for building and orchestration of a triple helix consensus space, which can be described as a strategic effort to develop regional entrepreneurial and innovation systems for accelerated growth. The approach includes the following elements:

1. developing entrepreneurial capacity in all triple helix actors – including regional authorities, universities and education providers;
2. Institutionalizing a Triple Helix and multi-level governance form;
3. Creating a consensus space within the triple helix governance form;
4. Enhancing the political commitments and citizen participation in the process of S3 policy implementation;
5. Mobilizing all pan-European forums and constellations – such as Knowledge networks and Cluster partnerships;
6. Negotiating business leadership for the selection and implementation of strategic priorities;
7. Mobilizing the population of SMEs, innovation actors, science and education establishments at a regional level;
8. Enhancing the innovation system characteristics and facilitating an open knowledge flow;
9. Strengthening the innovation infrastructure through the intensive use of ICT and data services.

Orchestrating GVCs is also known as governance, or mechanisms for coordination and control of the value-added flows and the value extraction process. Managing GVC requires in-depth knowledge of the technology drivers that create cross-sectoral connectivity and facilitate innovation and commercial links. As such, managing inter-regional value chains requires business leadership alongside active regional authorities and entrepreneurial innovation actors. Overall orchestrating value chain connectivity can focus independently on products, technologies, industry segments, or locations, exploring future scenarios, challenging established trajectories, and outlining new investment choices.

The new Smart Specialization platforms in Agro-food, Industrial modernization and Energy are among the first hubs for inter-regional

thematic partnerships, designed to facilitate connectivity and integration of European value chains, and translation of innovation outputs into revolutionary technologies for commercial application. Their success, however, is in the hands of the European regions and their ability to build and govern effective triple helix constellations.

References

Boaventura, J.M.G., Carnaúba, A.A.C., Todeva, E., Azevedo, A.C., and Armando, E. (2016). Governance structures and trust: a study of real estate networks. *Journal on Chain and Network Science*, 16(2), 157-170.

Camagni, R., and Capello, R. (2013). Regional Innovation Patterns and the EU Regional Policy Reform: Towards Smart Innovation Policies. *Growth and Change*, 44(2), 355–389.

Christensen, T., Lämmer-Gamp, T. and Köcker, G. (2012). Let's Make a Perfect Cluster Policy and Cluster Programme: Smart Recommendations for Policy Makers, ESCA, Berlin. Retrieved from http://www.cluster-analysis.org/downloads/Clusters_web_singlepage_06092012.pdf.

Cluster Policies - http://ec.europa.eu/DocsRoom/documents/16903/attachments/1/translations/en/renditions/native.

Danson, M., and Todeva, E. (2016). Government and governance of regional Triple Helix interactions. *Industry and Higher Education*, 30(1), 13-26.

EC ERDF (2015). INTERREG EUROPE 2014-2020, CCI 2014 TC 16 RFIR 001, Cooperation Programme Document Final, 6 May 2015. Retrieved from http://www.interregeurope.eu/fileadmin/user_upload/documents/Interreg_Europe_-_CP_final.pdf.

EC ERDF (2016). Interreg Europe, Programme Manual, 13 December 2016 (version 4), Retrieved from http://www.interregeurope.eu/fileadmin/user_upload/documents/Call_related_documents/Interreg_Europe_Programme_manual.pdf.

EC Growth (2016). *Internal Market, Industry, Entrepreneurship and* SMEs. Retrieved from http://ec.europa.eu/growth/index_en.

EC KET (2016). Key *Enabling* Technologies. Retrieved from https://ec.europa.eu/growth/industry/key-enabling-technologies_en.

Etzkowitz, H., and Leydesdorff, L. (1998). The endless transition: a 'Triple Helix' of university-industry-government relations. *Minerva*, 36(3), 203-208.

Etzkowitz, H., and Leydesdorff, L. (2000). The Dynamics of Innovation: from National Systems and "Mode 2" to a Triple Helix of University–Industry–Government Relations, *Research Policy*, 29(1), 109–123.

EU Cluster Internationalisation. Retrieved from http://ec.europa.eu/growth/smes/cluster/internationalisation/index_en.htm

EU COSME Programme for Small and Medium-Sized Enterprises. Retrieved from http://ec.europa.eu/growth/smes/cosme/index_en.htm

EU Enterprise Europe Network. Retrieved from http://een.ec.europa.eu/.

EU Entrepreneurship and SME Support. Retrieved from http://ec.europa.eu/growth/smes/access-to-markets/index_en.htm.
EU Key Enabling Technologies Observatory. Retrieved from https://ec.europa.eu/growth/tools-databases/ketsobservatory/about.
EU Regional Policy. Retrieved from http://ec.europa.eu/regional_policy/index_en.cfm.
EU Smart Specialisation Platform. Retrieved from http://s3platform.jrc.ec.europa.eu/home.
EU SME Access to market. Retrieved from http://ec.europa.eu/growth/smes/access-to-markets/index_en.htm.
EU SME Internationalisation Portal. Retrieved from https://ec.europa.eu/growth/tools-databases/smeip/.
European Cluster Collaboration Platform. Retrieved from http://www.clustercollaboration.eu/.
European Cluster Observatory. Retrieved from http://ec.europa.eu/growth/smes/cluster/observatory/about/index_en.htm.
European Cluster Observatory (2014a). Cross-sectoral Trends and Geographic Patterns in the Biopharmaceutical Industry: Report, European Commission, DG Enterprise and Industry.
European Cluster Observatory (2014b). Cross-sectoral Trends and Geographic Patterns in the Medical Devices Industry: Report, European Commission, DG Enterprise and Industry.
European Cluster Observatory (2014c). European Cluster Panorama 2014, Report, European Commission, DG Enterprise and Industry.
European Commission COM (2012). 341 Communication from The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions - 'A European Strategy for Key Enabling Technologies – A Bridge to Growth and Jobs', European Commission.
European Commission COM (2014). For a European Industrial Renaissance, Brussels 22 January 2014, COM (2014) 14 Final.
European Secretariat for Cluster Analysis (ESCA). Retrieved from www.cluster-analysis.org.
European Strategic Cluster Partnerships. Retrieved from http://www.clustercollaboration.eu/eu-cluster-partnerships.
Foray, D. (2009). Structuring a Policy Response to a "Grand Challenge", Ch. 11 in: Knowledge for Growth: Prospects for Science, Technology and Innovation, Selected Papers from Research Commissioner Janez Potočnik's Expert Group. Retrieved from http://ec.europa.eu/invest-in-research/pdf/download_en/selected_papers_en.pdf.
Foray, D., and Goenaga, X. (2013). *The goals of smart specialisation*. Luxembourg: Publications Office of the European Union.
Foray, D., David, P., and Hall, B. (2009) Smart Specialisation – The Concept, Knowledge Economists Policy Brief, No 9, June 2009. Retrieved from http://ec.europa.eu/invest-in-research/pdf/download_en/kfg_policy_brief_no9.pdf.
Foray, D., David, P., and Hall, B. (2009). Smart specialisation–the concept. *Knowledge economists policy brief*, 9(85), 100.

Gilley, L. (2015). Governing our Choices: 'Pro-environmental Behaviour' as a Practice of Government. *Environment and Planning C: Government and Policy*, 33, 272 – 299.

Humphrey, J., and Schmitz, H. (2002). How does insertion in global value chains affect upgrading in industrial clusters? *Regional studies*, 36(9), 1017-1027.

Inter-regional cooperation INTERREG. Retrieved from http://www.interregeurope.eu/discover-projects/.

Izsak, K., Ketels, C., and Köcker, G. (2016). Smart Guide to Cluster Policies, European Union, DG GROWTH.

Kergel, H., Köcker, G., and Nerger, M. (2014). New approaches to improve the performance of cluster management organisations in Europe, European Secretariat for Cluster Analysis (ESCA), Berlin.

Ketels, C. (2013). Cluster policy: A guide to the state of the debate. In P. Meusburger, J. Glückler, and M. e Meskioui (Eds.), *Knowledge and the Economy* (pp. 249-269). Dordrecht: Springer.

Ketels, C. (2016). Smart specialisation: opportunities and challenges for regional innovation policy. *Competitiveness Review*, 26(4), 476-478.

Kroll, H. (2015). Efforts to implement smart specialization in practice—leading unlike horses to the water. *European Planning Studies*, 23(10), 2079-2098.

Mazzucato, M. (2015). *The entrepreneurial state: Debunking public vs. private sector myths*. PublicAffairs.

McCann, P., and Ortega-Argilés, R. (2015). Smart Specialization, Regional Growth and Applications to European Union Cohesion Policy. *Regional Studies*, 49(8), 1291-1302.

McCann, P., and Ortega-Argilés, R. (2016). Smart specialisation, entrepreneurship and SMEs: issues and challenges for a results-oriented EU regional policy. *Small Business Economics*, 46(4), 537-552.

Morgan, K. (2015). Smart specialisation: Opportunities and challenges for regional innovation policy.

RECONFIRM Initiative for Regional Co-Operation Networks. Retrieved from https://ec.europa.eu/easme/en/tender/8029/regional-cooperation-networks-industrial-modernisation-reconfirm-initiative.

Reid, A., and Miedzinski, M. (2014). A smart specialisation platform for advanced manufacturing. Prepared at the request of the European Commission, Directorate General for Regional and Urban Policy.

Rodríguez-Pose, A., Cataldo, M., and Rainoldi, A. (2014). The Role of Government Institutions for Smart Specialisation and Regional Development, S3 Policy Brief Series, N° 04/2014.

S3 Platform (2017). *Smart Specialisation* Platform. Retrieved from http://s3platform.jrc.ec.europa.eu/.

Todeva, E. (2015). Market-driven clusters as prerequisites and consequences of smart specialisation. *Journal of the Knowledge Economy*, 6(2), 250-269.

Todeva, E., and Danson, M. (2016). Special Issue: Regional Dimensions of the Triple Helix Model: Setting the Context. *Industry and Higher Education*, 30(1), 5-11.

Todeva, E., and Rakhmatullin, R. (2016). Industry Global Value Chains, Connectivity and Regional Smart Specialisation in Europe. An Overview of Theoretical

Approaches and Mapping Methodologies (No. JRC102801). Joint Research Centre (Seville site).

Vanguard Initiative Policy Experts Workshop on Cluster Policy, Brussels, 20 October 2014, Retrieved from http://www.s3vanguardinitiative.eu/sites/default/files/docs/general/cluster_workshop_20oct2014_presentatie.pdf.

Vanguard Initiative, New Growth through Smart Specialisation. Retrieved from http://www.s3vanguardinitiative.eu/.

Williams, N., Vorley, T., and Ketikidis, P.H. (2013). Economic resilience and entrepreneurship: A case study of the Thessaloniki City Region. *Local Economy*, 1–17.

Received: March 20, 2017
Accepted: March 27, 2017