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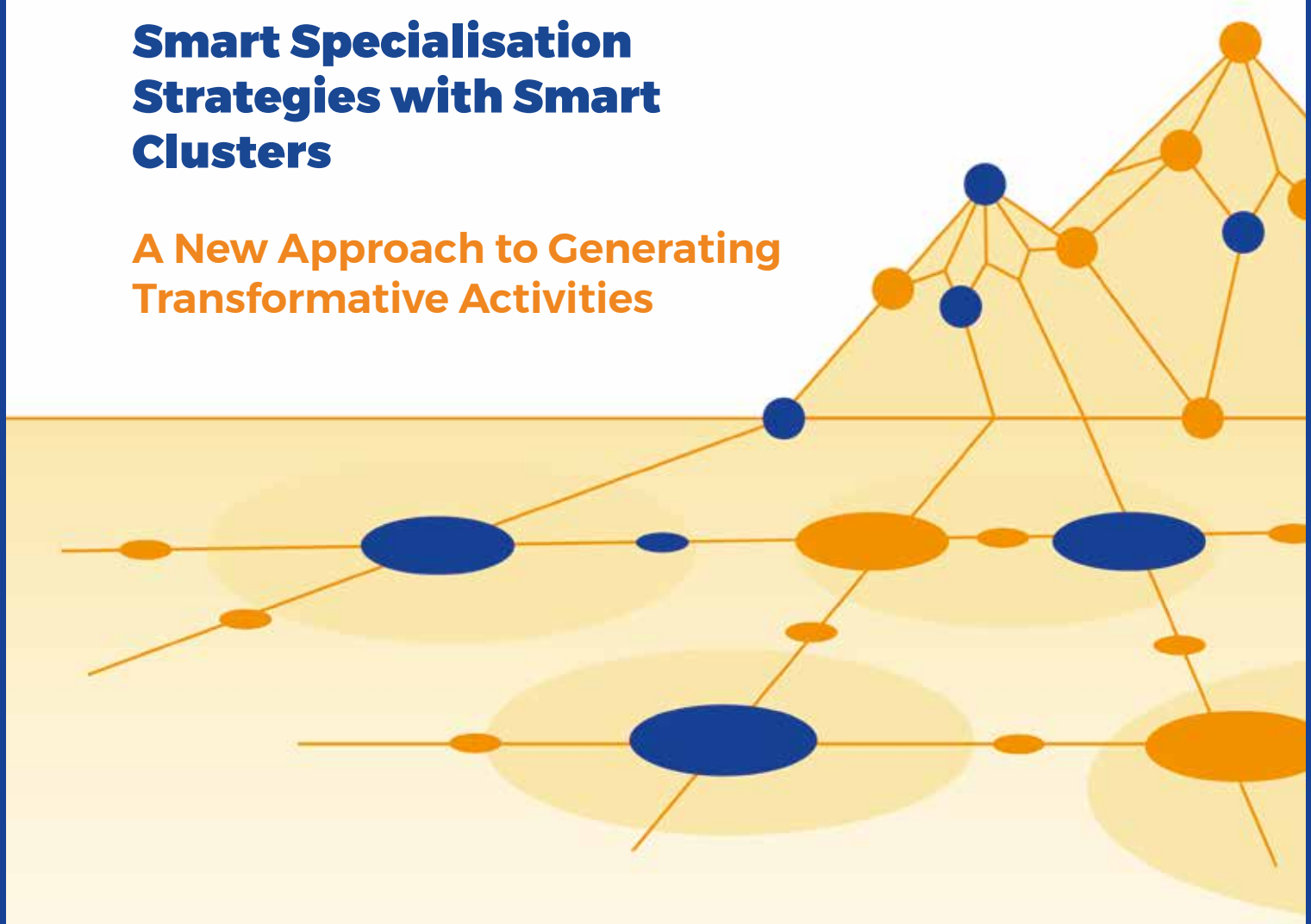
European Regional Development Fund

EUROPEAN UNION

Smart Specialisation Strategies with Smart Clusters

A New Approach to Generating Transformative Activities



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RIGHTS

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The development of the S3-Innovation Model presented in this book has benefitted from the scientific work on the interplay between clusters and S3 conducted at the School of Engineering and Architecture of Fribourg, HES-SO - University of Applied Sciences and Arts Western Switzerland in collaboration with the Ecole Polytechnique Fédérale de Lausanne (EPFL) and other project partners. In particular, parts of the texts of this book are based on the following working papers and publications:

Foray, D., Keller, M., Bersier, J. and Meier zu Köcker, G. (2018). *Transformative Activities for Smart Specialisation: Considerations on a Workshop Methodology*. Working paper EPFL / HES-SO HEIA-FR / ClusterAgentur. Download: https://hesso.tind.io/record/2759.

Keller, M., Reingruber, I., Dermastia, M., Bersier, J. and Meier zu Köcker, G. (2018). *Smart Specialisation Strategies (S3) and Clusters – An Innovation Model for Transformative Activities*. Working Paper HES-SO//FR HEIA FR / Business Upper Austria / Anteja / ClusterAgentur Baden-Württemberg. Download: https://hesso.tind.io//record/2860/.

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DISCLAIMER

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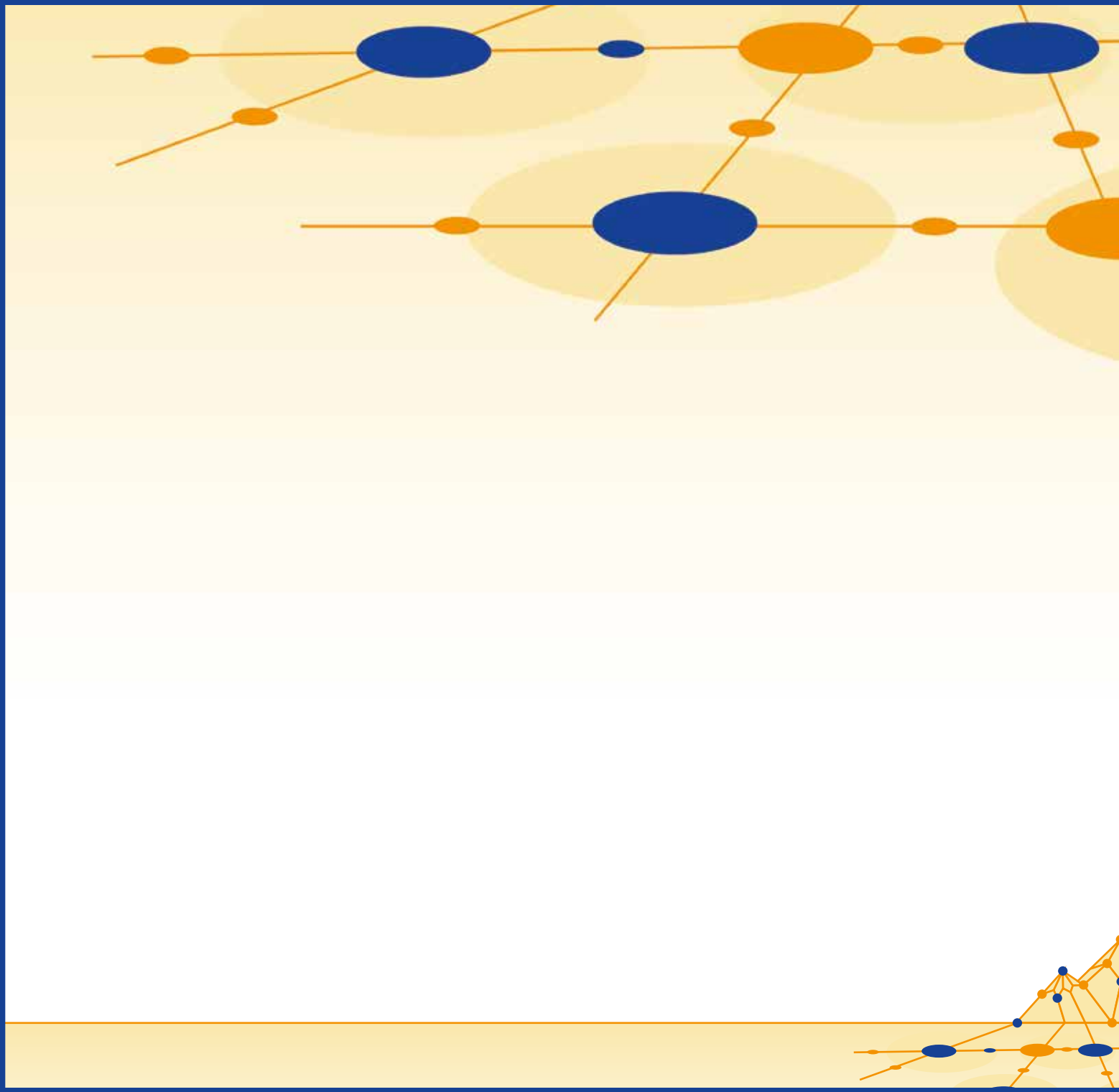
HIGHLIGHTS

Boxes like this highlight definitions and key messages

ACTION LINES OF THE S3-INNOVATION MODEL

At the top left of the pages dedicated to the Action Plan of the S3-Innovation Model, you will find an illustration indicating with an asterisk the action line you are currently reading (Base of Evidence, Identification, Development, Implementation, Monitoring). In the example on the left, the grey symbol indicates you are reading about tools and methodologies belonging to the **Base of Evidence** of the S3-Innovation Model



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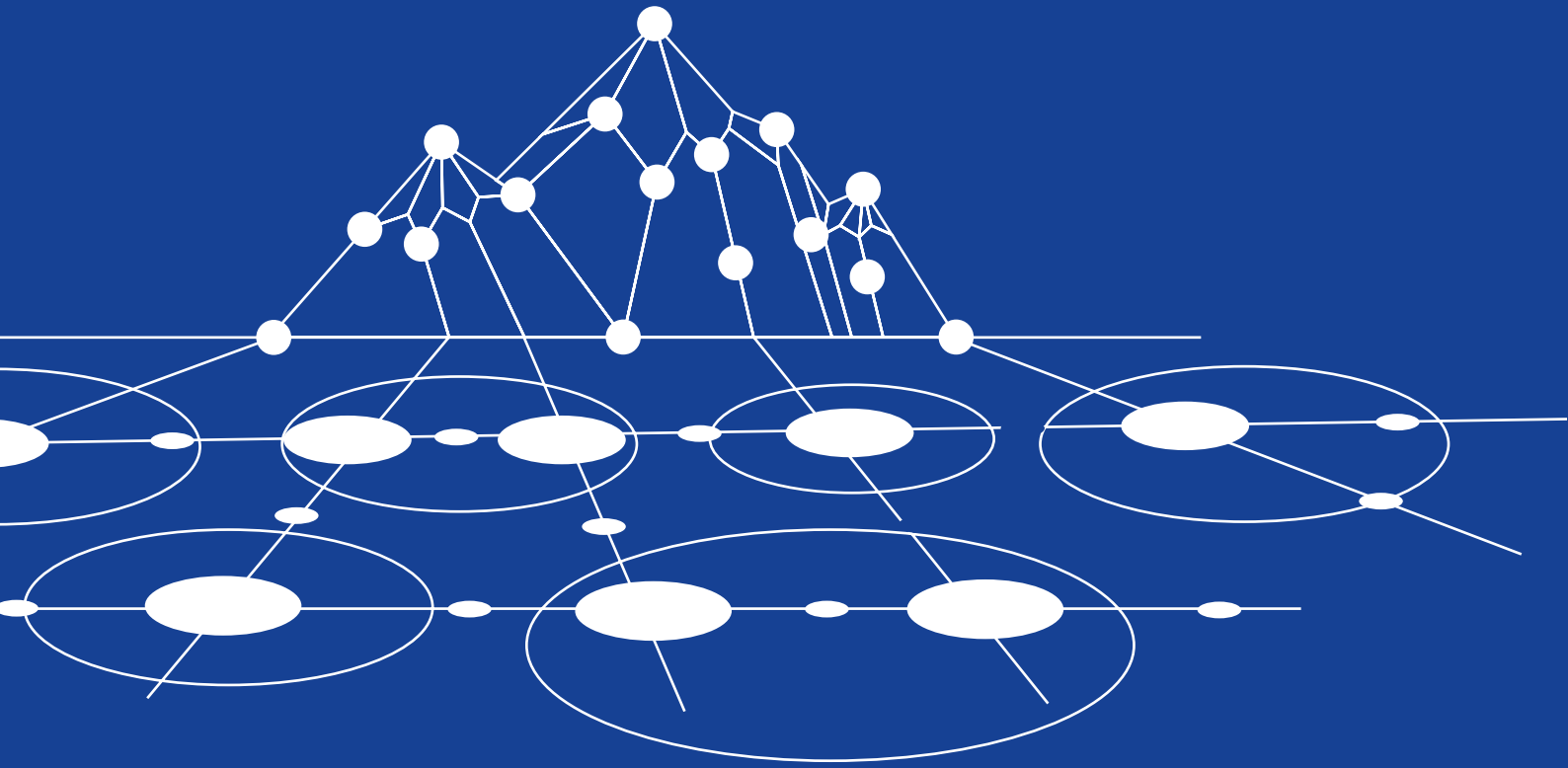


PREFACES

The Value of the New Focus on Transformative Activities in S3

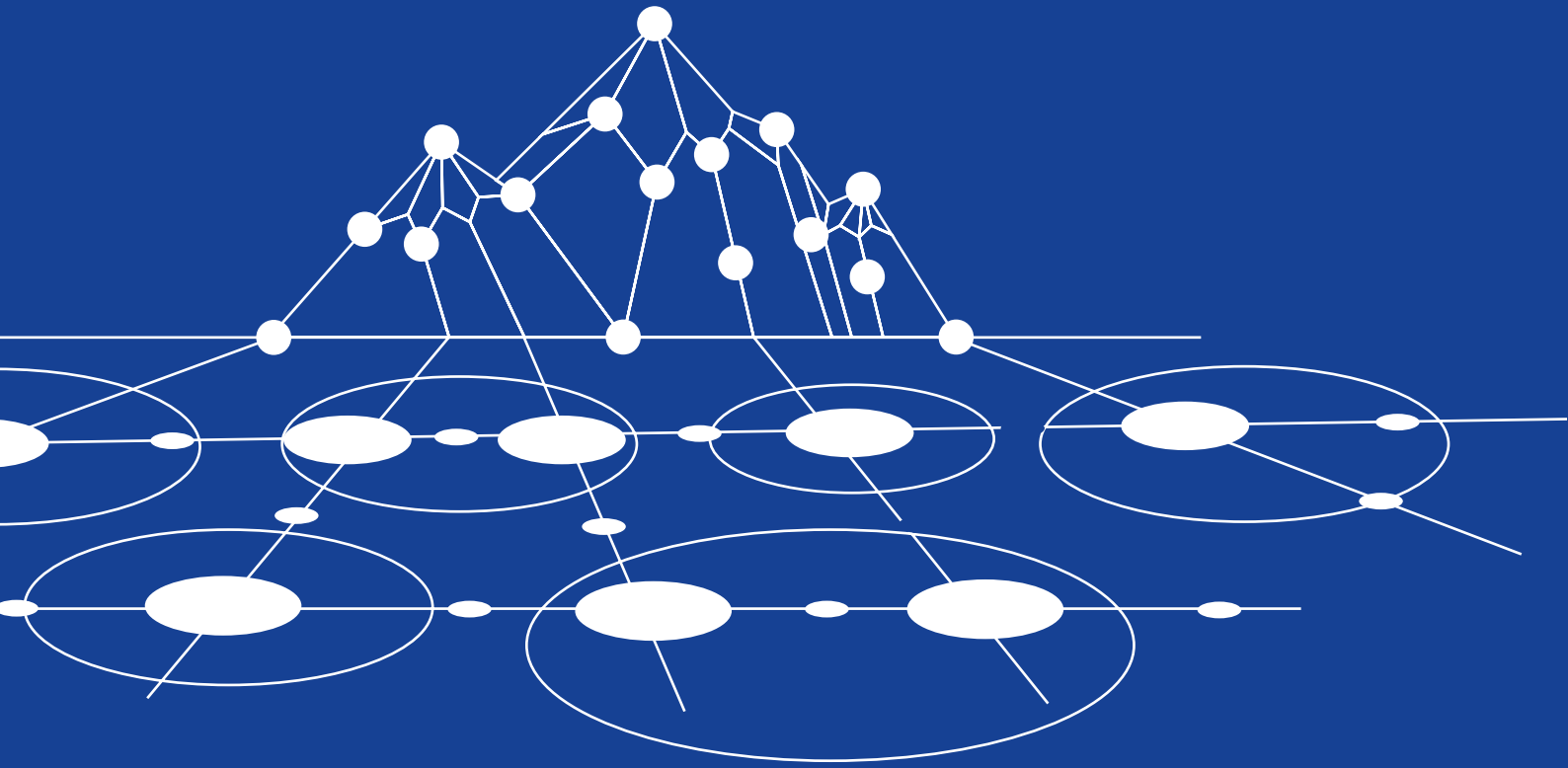
Smart Specialisation Strategies are an innovative policy idea made in the EU, which has been very rapidly translated into implementation within the framework of European regional policies. So rapidly indeed, that it does not come as a surprise if we note that putting the concepts into practice went along with a series of implementation challenges. In this perspective, the S3-4AlpClusters project, which I have now convoyed as chair of the Advisory Board for more than two years, has been extremely instrumental in investigating specific challenges and providing new approaches for S3 implementation. Based on fruitful peer discussions, experimentation, applied fieldwork and solid paralleling scientific research, it arrived at a powerful representation of the S3 process as a series of concepts and tools to address the identified challenges: The S3-Innovation Model. Its core idea, and main contribution to both the theory and practice of S3, is a new focus on the concept of transformative activities. It indeed acknowledges S3 as a process aimed at transforming the economic structures of a region or any other geographical unit through the identification and development of transformative activities. In all cases of Smart Specialisation, the starting point is an existing structure, the transitional path is the formation and development of a transformative activity and the objective is a structural change. To focus this process, in practice, on real transformative activities is far from trivial, however. A common challenge in S3 is to avoid defining priorities too broadly and concentrating excessively on already existing regional specialisations, rather than on new opportunities for cross-sectoral combinations and real transformation. The S3-4AlpClusters project can be credited with providing an important contribution to answering this challenge. With the S3-Innovation Model, the S3-4AlpClusters project introduces a simple, yet efficient and powerful process to ensure a continuous focus on transformative activities in S3, combined with an innovative consideration of the interplay between S3 and clusters and cross-regional cooperation.

Dominic Foray,
Professor, Chair of Economics and Management of Innovation, EPFL

The Genesis of the S3-Innovation Model

In 2005, in order to intensify the collaboration between the School of Engineering and Architecture of Fribourg (HES-SO//FR HEIA-FR) and the regional plastics companies, I created the Swiss Plastics Cluster with the support of a few local partners. Its implementation was strongly based on concepts from authors such as Michael Porter, Örjan Sölvell and Christian Ketels. I also benefited from the work carried out by Prof. Philippe Gugler and his team (Xavier Tinguely and Michael Keller) at the Center for Competitiveness of the University of Fribourg, with whom a long-term collaboration has been established. The formation of the Building Innovation Cluster and IT Valley followed soon thereafter and in 2009 I created the Pôle Scientifique et Technologique du canton de Fribourg (PST-FR) as a regional cluster development initiative. Its main contribution was to finance the implementation of 36 collaborative projects within clusters, promoting relations between the academic and socio-economic worlds. In 2016, the PST-FR was transformed into a direct cluster support entity, Innosquare, and the Cluster Food & Nutrition was added to the portfolio. At the time, the clusters were financed at 80% by the Canton of Fribourg and it became urgent to find additional sources of funding to enable autonomy in the long run. I became interested in the concepts of smart specialisation strategies (S3) and wondered how they could contribute to intensify innovation within clusters. After several discussions with Prof. Dominique Foray from the Ecole Polytechnique Fédérale de Lausanne (EPFL), one of the fathers of S3, I came up with the idea of setting up the Interreg project S3-4AlpClusters to develop new concepts that would allow clusters to develop new value chains – an idea that we started to concretise under the label of "transformative activities" within the project duration. More than two years after the start of the project, its main output, the S3-Innovation Model for the generation of transformative activities, is now presented in this synthesis document.

Jacques Bersier,
Lead Partner S3-4AlpClusters, Deputy Director HES-SO//FR HEIA-FR



INTRODUCTION

On June 1, 1283, the King of the Romans, Rudolf of Habsburg, signed a treaty with his sons at the castle of Stein, on an island in the river Rhine, on the present-day border between the Swiss canton of Aargau and the German state of Baden-Württemberg. The treaty, known as the Rheinfelder Hausordnung, set down the future order of succession of the House of Habsburg.

This led to the House's gradual departure from their territories around the eponymous castle of Habsburg, in the present-day Swiss canton of Aargau, towards the recently conquered duchy of Austria, where Vienna became the centre of a reign that would soon control large parts of Europe and only come to an end with the last ruler of the Austro-Hungarian Empire, Charles I of Austria, in 1918. Charles died in exile on Madeira in 1922 and his heart was entombed in the abbey church of Muri, a stone's throw from the castle that gave its name to his family. In an interesting twist of fate, the Habsburgs' journey from the castle of Habsburg back to the abbey of Muri, both within 100 kilometres linear distance of the School of Engineering and Architecture of Fribourg, led them to control, at some point in time, territories in every single region participating today in the S3-4AlpClusters project.

More than 700 years later, we reunite these regions as Lead Partner of a renewed cross-regional endeavour. As suggested by the somewhat enigmatic acronym S3-4AlpClusters, the project puts the interplay between smart specialisation strategies (S3) and clusters at the core of a conceptual and practical examination of innovation across the Alpine Space. How to make use of clusters and cross-regional synergies (shades of Habsburg...) to overcome challenges in S3 implementation? How to use S3 to spark innovation within clusters and help businesses tap into new value chains, new transformative activities? This publication presents the project's response to these considerations:

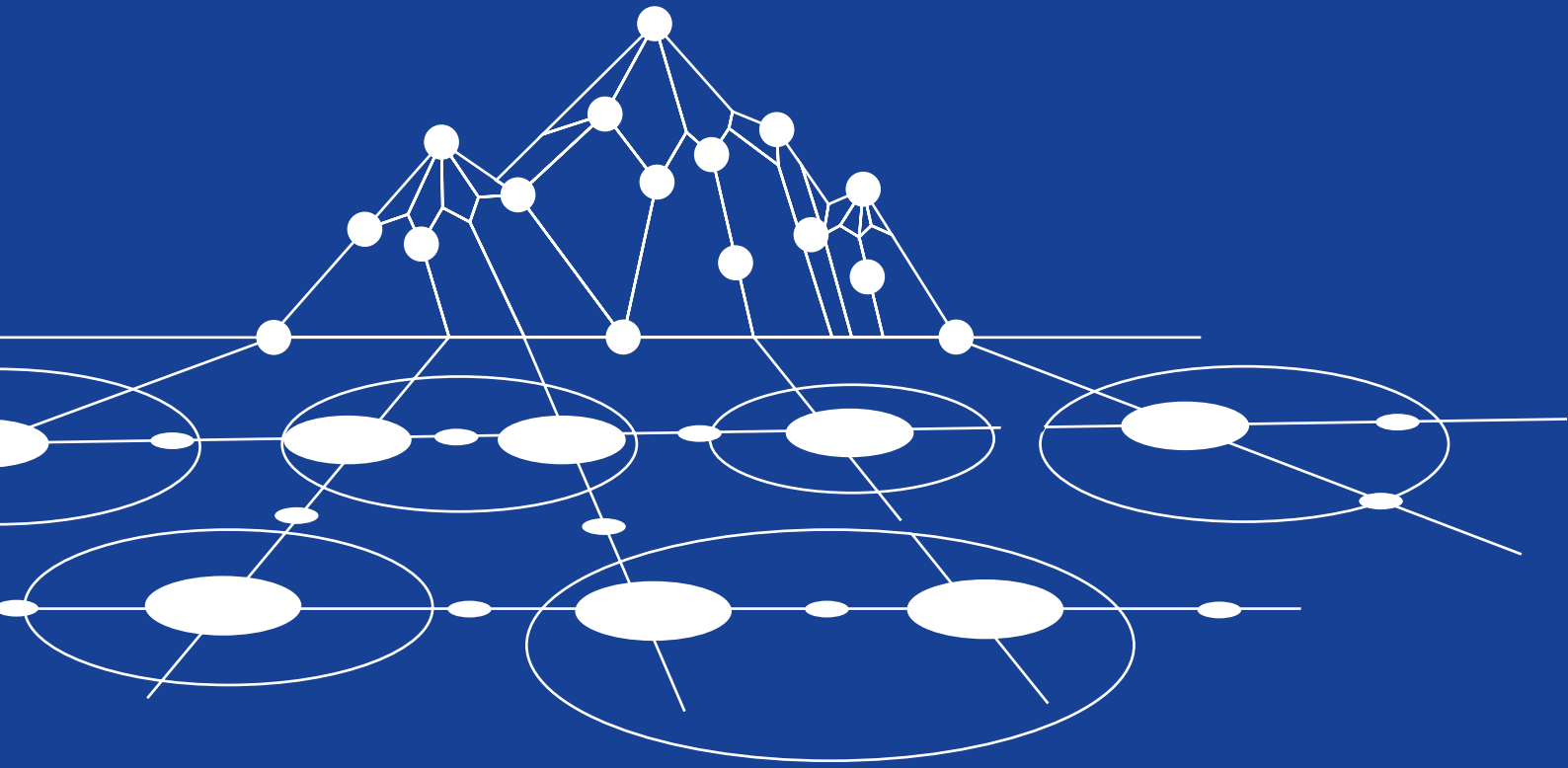
the S3-Innovation Model introduces a systematic process to generate transformative activities. It offers a set of tools for cluster initiatives and regions to explore opportunities for transformation and to develop actions to create critical mass in innovative new domains. The first part of the publication introduces the model by carving out a novel focus on the idea of transformative activities and by presenting its conceptual framework and overall structure. The second part presents an action plan consisting of practical tools to put the model into practice in five action lines, and shares the experience made with the model's implementation across the participating regions. To conclude, a third part briefly recalls the activities of the project's lifetime.

A dedicated website makes available relevant resources and training tools for all the action lines of the S3-Innovation Model.

DISCOVER THE S3-INNOVATION MODEL AND ITS TOOLS!

After 30 months of fruitful collaboration with our stakeholders and our marvelous project team, and the positive experiences made with the S3-Innovation Model across the partner regions, we now hand over the developed tools and methodologies to a larger public. I hope our contributions will prove useful for clusters to engage in innovative transformative activities across regional borders in the future. And I trust they will convince the decision-makers who follow in Rudolf of Habsburg's footsteps as policy shapers in the Alpine Space to endorse the new focus on transformative activities, to actively involve clusters as levers for regional economic development and to further support the cross-regional cooperation so crucial for future S3 in our macroregion.

Michael Keller
Lead Partner S3-4AlpClusters,
Research Fellow HES-SO//FR HEIA-FR



THE S3-INNOVATION MODEL • A MODEL TO GENERATE TRANSFORMATIVE ACTIVITIES

Transformative Activities for Regional Development • An Introduction to the S3-Innovation Model

Michael Keller and Jacques Bersier

In the context of regional economic development there is an increasing interest to identify industrial transformation processes that lead to the emergence of new value chains and related industries. Such processes can provide competitive advantage for regions if they are timely identified and properly supported and represent huge potentials for regions to develop and ultimately to create jobs in innovative new fields. In its communicationon "Strengthening Innovation in Europe's Regions", the European Commission highlights that globalisation requires regions to tackle the transformation of existing economic structures, inter alia by designing smart specialisation strategies (S3) and cluster policies (European Commission, 2017).

The idea of **transformative activities** has been inherent in the concept of S3 since the latter was first formalised in 2009 by Foray et al. as a result of the reflections of the Knowledge for Growth Expert Group, established by the European Commissioner for Science and Research Janez Potocnik. With its favorable assimilation into European regional development and innovation policy, the S3 concept has since become a standard tune on the keyboards of European

policymakers and transformed nations and regions within the European Union into a downright playground for experiments with its implementation. Apprenticeship between theory and practice, achievements and challenges – it is this manifold recent experience that really put the spotlight on the primordial role transformative activities can play in the practical implementation of S3.

Let us imagine an alpine region with strong traditional resources in the tourism and hospitality sector. Its higher education and research ecosystem might have developed significant capacities in information and communication technologies, paralleled by a dynamic cluster of ICT start-ups building up entrepreneurial resources in the field. An analysis of recent developments in consumer behavior of tourists and the technological trends in digitisation might reveal significant opportunities to transform both the ICT ecosystem and the tourism industry in the region. In an effort to seize these opportunities, it would seem interesting for the region to valorise the combination of existing structures and formulate a strategy to specialise in the development of digital services for tourism. To reach that goal, the strategy needs to address the development of concrete actions - R&D projects, networking activities or development of critical skills for and between the actors that have the innovation capacities to contribute to the development of digital services for tourism.

What this simple example shows is that the implementation of S3 requires more than the definition of broad priority areas. In its effort for smart specialisation the region needs to identify and develop a transformative activity.

The transformative activity in question would neither be the tourism sector nor the ICT sector as such, but the collection of innovation capacities from groups of companies, suppliers and research partners associated with these existing sectors and the concrete actions they need to undertake to specialise in digital services for tourism.

new focus on transformative activities. With its cross-regional partnership and its expertise in cluster initiatives, regional networks and cluster policy, the project provided an innovative perspective on the challenges involved in S3 implementation. The studied experiences reveal that implementation is indeed far from trivial. The systematic identification of transformative

Transformative Activities are a collection of innovation capacities and actions of a group of actors derived from an innovative combination of existing structures, targeting related areas and having the potential to significantly transform existing industries

Figure 1: Definition of Transformative Activities
Source: Keller et al., 2018, based on Foray et al., 2018

Since its start in 2016, the S3-4AlpClusters project has been actively involved in studying and leveraging S3 implementation in eleven participating regions of the Alpine Space and has contributed to promote a

activities is a complex exercise requiring dedicated processes and tools. While the development of transformative activities could significantly benefit from joint efforts across regional borders, cross-regional cooperation based

on complementary needs is critically missing from the given framework conditions. The active involvement of regions and cluster initiatives in the project also confirmed a lack of experience among regions to fully make use of the interplay between S3 and clusters.

The 30 month of project activities were characterised by fruitful interactions with a broad range of practitioners, cluster managers, policymakers and academics. While the concept of transformative activities has been more solidly grounded and is now recurrently referred to in the academic literature (see e.g. Foray et al. 2018, Foray 2018), the project's main aim was to contribute to the practical implementation of S3: to bring smart industrial transition to the regions of the Alpine Space, to its clusters, to its businesses and jobs. With its final output, the **S3-Innovation Model**, it introduces a systematic process for the identification and development of transformative activities, based on the involvement of cluster initiatives and interregional cooperation. The process is equipped with a set of tools, laid out in an action plan to put the model into practice. It is hoped that the experience from the Alpine Space will prove useful and inspiring for regional development and innovation policy at a wider level and to firmly establish the focus on transformative activities in practical implementation of S3 through clusters.

Smart Specialisation Strategies and Clusters • Conceptual Framework

Michael Keller and Jacques Bersier

The challenge at the heart of the smart specialisation strategies (S3) approach is the need for regions to use their limited resources effectively to become and remain competitive in the global economy. Regions need to achieve differentiation by specialising on a limited number of prioritised economic activities to take advantage of knowledge spillovers and economies of scale and scope. Successful differentiation is contingent on exploiting existing related variety. Regions should aim at tapping into opportunities for transformation to meet structural challenges by combining their existing capacities into unique innovative activities (smart specialisation) (see Foray et al, 2012, p. 18 and p.28). Article 2(3) of the Common Provisions Regulation for the European Structural and Investment Funds (EU, 2013) defines S3 as intended "to build competitive advantage by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments in a coherent manner."

Smart Specialisation Strategies (S3) play a crucial role in European regional development and innovation policy. The European Commission encourages the design of S3 as part of its "Regional Policy contributing to smart growth in Europe 2020" (see EC, 2010). Moreover, S3 are of fundamental importance for the thematic objective of "strengthening research,

technological development and innovation" within the common strategic framework of the European structural and investment funds (ESI Funds) (EU, 2013, p.69). As an ex ante conditionality for funds of the European Regional Development Fund (ERDF) in the 2014-2020 programming period (see EU, 2013, p. 165), they have become a common policy lever at national and regional levels within the European Union. The S3 approach is notably promoted through the Smart Specialisation Platform of the Commission (see website: http://s3platform.jrc.ec.europa.eu/). While concrete implementation agendas for S3 strongly depend on regional and thematic contexts, some recognised basic principles guide the overall S3 process. Foray and Goenaga (2013) note that "new options" for diversified regional systems and "emergence and early growth of new activities, which are potentially rich in innovation and spillovers" should basically be enabled through the generation of "critical mass, critical networks [and] critical clusters" (p.9). Coffano and Foray (2014) emphasise the importance of an entrepreneurial discovery process for the identification and development of priorities for specialisation. The bottom-up character of the approach is crucial. As noted by Foray and Goenaga (2013), "Entrepreneurs [...] are in the best position to discover the domains of R&D and innovation in which a region is likely to excel given its existing capabilities and productive assets" (p.5). The term entrepreneurs is understood in a very broad sense and includes actors such as innovative firms, research leaders from academia, representatives of the regional innovation system or specialists from tech-transfer with knowledge of the scientific and technological domains covered in the region (see Foray et al., 2012,

p.17). Cooperative leadership should underpin the complete process of identifying and developing S3. Public-private partnerships are recognised as vital elements of a real collective endeavour, which adds policymakers and actors from society in a broad sense to the above-mentioned set of entrepreneurs to complete the quadruple helix (see Foray et al., 2012, p.17). In addition, any effort to achieve specialisation with restricted resources needs to address the challenge of creating critical mass in the identified areas: "Smart specialisation involves making choices, leading to priority setting and channelling resources towards investments with a potentially higher impact on the regional economy" (Foray et al., 2012, p. 114). In this process of creating critical mass, connectivity is decisive. Cross-sectoral links are key drivers of specialised technological diversification. It has to be noted, that such links in related variety are not limited by regional boarders. Cross-regional cooperation is a decisive element in the endeavour to create critical mass in the presence of economies of scale and scope and notably indivisibilities in infrastructures and other assets. To quote Foray et al. (2012), "match what you have with what the rest of the world has!" (p.17). As mentioned above, opportunities for transformation are critical in the S3 framework. Regional competitive advantage is created when opportunities for transformation are exploited by regions to combine their existing capacities into unique innovative activities (see Foray et al, 2012, p. 18 and p.28). As an ultimate goal, these activities in new domains of opportunities should translate into structural transformation within the economy in an "accumulative process that links the present and future strengths of a regional economy in a particular domain of

activity and knowledge" (Foray and Goenaga, 2013, p.6). The outcome of such a systematic combination of existing capacities on the one hand and opportunities for structural transformations on the other is best summarised through the concept of transformative activities. They can be understood as a collection of innovation capacities and actions of a group of actors derived from an innovative combination of existing structures, targeting related areas and having the potential to significantly transform existing industries (see Foray, 2018 and Foray et al., 2018). In a nutshell, S3 are regional strategies aiming at transforming the economic structures of a region through the identification and development of transformative activities, based on a reflection about existing capacities on the one hand and opportunities for change on the other (see fig.2).

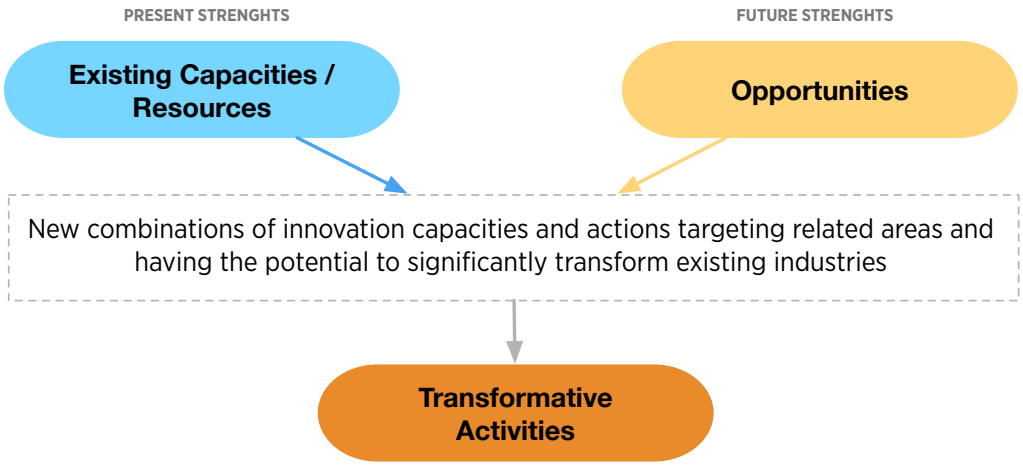


Figure 2: Transformative Activities for Smart Specialisation
Source: Keller et al., 2018

A good example of what a focus on real transformative activities means in practice is provided by Foray (2017), documenting the experience from a workshop organised within the S3-4AlpClusters project (Milan, 30.05.2017). Existing policies in Lombardy currently support "a bunch of great start-ups [...] inventing new high-tech products and services with strong application potentials in the agrifood sector (p.98)."

Instead of prioritising a high-tech sector as such, the idea of S3 suggests to seek opportunities for transformation at cross-sectoral intersections in a policy "aiming at supporting the development of a real transformative activity which would likely drive structural changes – not only in the high tech but in the huge agrifood sector (p.98)." In the case of Lombardy, a stringent transformative activity should focus on high-tech innovations in agriculture and integrate a collection of concrete actions to "support the absorption and adoption of new knowledge and technologies offered by start-ups" (Foray, 2018, p.13).

The S3-4AlpClusters project approaches the conceptual framework of S3 through an innovative focus on its interplay with the concept of clusters and cluster initiatives. Clusters are understood as groups of companies, mainly SMEs, and other actors (government, research and academic community, institutions for cooperation, financial institutions) co-locating within a geographic area, cooperating around a specialised niche, and establishing close linkage and working alliances to improve their competitiveness. A cluster initiative is the organised effort aiming at fostering the development of the

cluster either by strengthening the potential of cluster actors or shaping relationships between them. They can be compared to regional networks and are usually organised by a cluster management.

(see figure 3). As a "geographical proximategroupofinterconnected companies and associated institutions in a particular field, linked by commonalities and externalities" (Porter, 2011, p.215), clusters are of apparent interest in the development

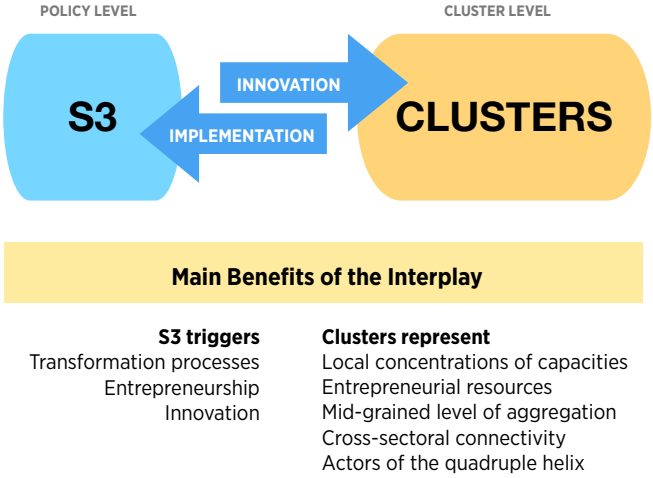


Figure 3: The Interplay between S3 and Clusters
Source: Jacques Bersier and Michael Keller, 2018.

The interplay between S3 and clusters implies a two-way relationship with reciprocal benefits between the two concepts

and implementation process of S3. The reliance on regional capacities in S3 emphasises the importance of existing local

resource concentrations. Cross-sectoral connectivity, inherent in the cluster concept, is a crucial determinant for the creation of critical mass for transformative activities (see Foray et al., 2012).

Moreover, clusters typically reunite the actors of the quadruple helix, crucial for cooperative leadership in an entrepreneurial discovery process. Strongly paralleling the definition of clusters, Foray (2015) concludes that preference in the process of developing and implementing S3 should be given to a "mid-grained level of aggregation – the level at which activities group together a certain number of firms and partners that collectively explore and discover a new pathway to transformation" (p.3). Finally, clusters are not limited to borders, but often stretched over several regions, which facilitates the cross-regional cooperation often beneficial for creating critical mass in transformative activities. These considerations emphasise that cluster initiatives, as an organised form of the cluster concept, are ideal tools to use in the process of developing and implementing S3.

At the same time, clusters are also recognised as typical beneficiaries and direct recipients of S3-enhanced innovation. Indeed, "generating a vibrant innovative cluster" is considered "a logical outcome" of S3 (Foray, 2015, p.59). The whole process of establishing and collectively exploring new areas of opportunity, "will possibly form the basis for [new] local resource concentration" (Foray, 2015, p.15). 2015, p.15). This perspective stresses the potential represented by S3 to spark entrepreneurship, spillovers and innovation at the cluster level (see Foray, 2015, p.59).

In this perspective, clusters are vehicles transmitting S3-enhanced innovation processes to the business level, ultimately contributing to establish new value chains and create jobs in innovative new fields. Translated to the policy level, this means that cluster policies benefit from being driven by S3 (see Foray, 2015, p.59), a view confirmed inter alia by Ketels (2013) stressing that in relation to S3, cluster policy becomes fully relevant at a later stage. In other words, meaningfully integrating clusters in the process of developing and implementing S3 opens up vast new perspectives for clusters in regional development policy.

Smart Specialisation Strategies and Clusters in Practice • Challenges and Call for Action

Michael Keller, Jacques Bersier, Mateja Dermastia and Gerd Meier zu Köcker

The interplay between S3 and clusters represents a huge potential for practical implementation of S3. In a nutshell, the involvement of clusters into S3 helps to identify entrepreneurial resources and areas of strategic potential. Located at an intermediate level between individual firms and broad sectors, clusters typically reflect strong partnerships, vibrant communities and relevant connections between related businesses, suppliers and associated institutions.

Clusters embrace all relevant actors of the innovation process and provide important information about needs, opportunities and ongoing transformations – all essential elements of S3. In addition, clusters are not limited to any border, but often stretched over several regions where they can facilitate the implementation of actions through interregional cooperation. In short, clusters are ideal vehicles to transmit S3-enhanced transformation processes to the business level and to give S3 real impact in terms of innovation within enterprises, new value chains and jobs in innovative new fields with high growth potential.

All 11 regions of the Alpine Space participating in the S3-4AlpClusters project set up

cluster initiatives and developed Smart Specialisation Strategies. The project activities have allowed to gather and analyse extensive experience of real-world S3 development and implementation with clusters during the last two years.

A StressTest report on the role of clusters in the implementation process of S3 was produced for each participating region based on an online survey of the regional stakeholders, consisting inter alia of regional clusters and policymakers concerned with regional development and innovation policy (Meier zu Köcker and Dermastia, 2017.

In addition, a thorough synergy analysis of regional S3 documents resulted in a report on strategic Alpine Space topics for interregional cooperation (Meier zu Köcker et al., 2017. Innovation processes within cluster initiatives from all 11 regions were analysed and resulted in a Good Practice Report collecting best practices of services provided by cluster initiatives in the Alpine Space (Antonioni et al., 2018. The analytical process was paralleled by strong interactions in several series of workshops with all regional stakeholders, including cluster managers, enterprises, SMEs, policymakers and academia.

While the overall results of the project activities confirmed the interplay between clusters and S3 to be fully relevant, its potential to trigger real transformation processes remains insufficiently exploited. The extent to which the assumed transmission of S3 to the real-world enterprise level proves to be fruitful in practice appears to be quite unbalanced. The investigations revealed, backed

by other studies from non-Alpine Space regions, that the scope of priority areas defined in S3 tends to be very broad and driven by a focus on existing specialisation, rather than opportunities for real transformation. If priorities are defined too broadly, connections, synergies, and spillovers will hardly happen and critical mass will not emerge. As an additional result, many regions tend to end up with similar broad priority areas and the intended diversification across regions is hampered (see Meier zu Köcker, Dermastia and Keller, 2017).

The practical experience with S3 development in the regions of the Alpine Space demonstrates that the identification of real transformative activities is far from trivial and requires appropriate processes and tools (see also Coffano and Foray, 2014). In a context of innumerable potential combinations of existing capacities and diffuse hopes of bonanza behind any new trend, the identification of transformative activities requires a solid base of evidence to guide the entrepreneurial discovery process. Sticking to broad priority areas, regions systematically neglect to focus on such transformative activities in their S3 documents (see Meier zu Köcker, Dermastia and Keller, 2017).

At the same time, the focus on related broad priority areas across Alpine Space regions represents an untapped potential and common ground to jointly tackle Alpine Space related challenges (ranging from issues such as economic globalisation over demographic change to energy) through the development of cross-regional transformative activities. Regrettably, the analysis conducted within the

S3-4AlpClusters project revealed a quasi-total absence of cross-regional cooperation to exploit such synergy potentials within the Alpine Space. Indeed, the business environments and framework conditions for cross-regional cooperation tend to be weak, poorly aligned between regions and completely lacking focus on need-based cooperation (see Meier zu Köcker and Dermastia, 2017 and Meier zu Köcker, Dermastia and Keller, 2017).

A need-based approach to cross-regional cooperation would be vital for a second reason. Many Alpine regions are too small to implement transformative activities into structural transformation on their own. Tapping into external capacities and bundling regional competences would allow them to generate necessary critical mass, especially for resources confronted with economies of scope, scale and indivisibilities. Transformative activities are often composed of innovation capacities at the intersection between different existing traditional industries. Regions lacking a strong and broad industrial base crucially depend on need-based cooperation to succeed in gaining sufficient critical mass to implement a significant number of transformative activities (see Meier zu Köcker, Dermastia and Keller, 2017).

Finally, the real-world experience with cluster initiatives during the project duration and the results from the StressTest analysis, provide strong evidence on how clusters are currently being used as a tool in the implementation of regional S3. While the involvement of clusters in the development of S3 varies from region to region, the results confirm that, overall, clusters are well-acknowledged tools in

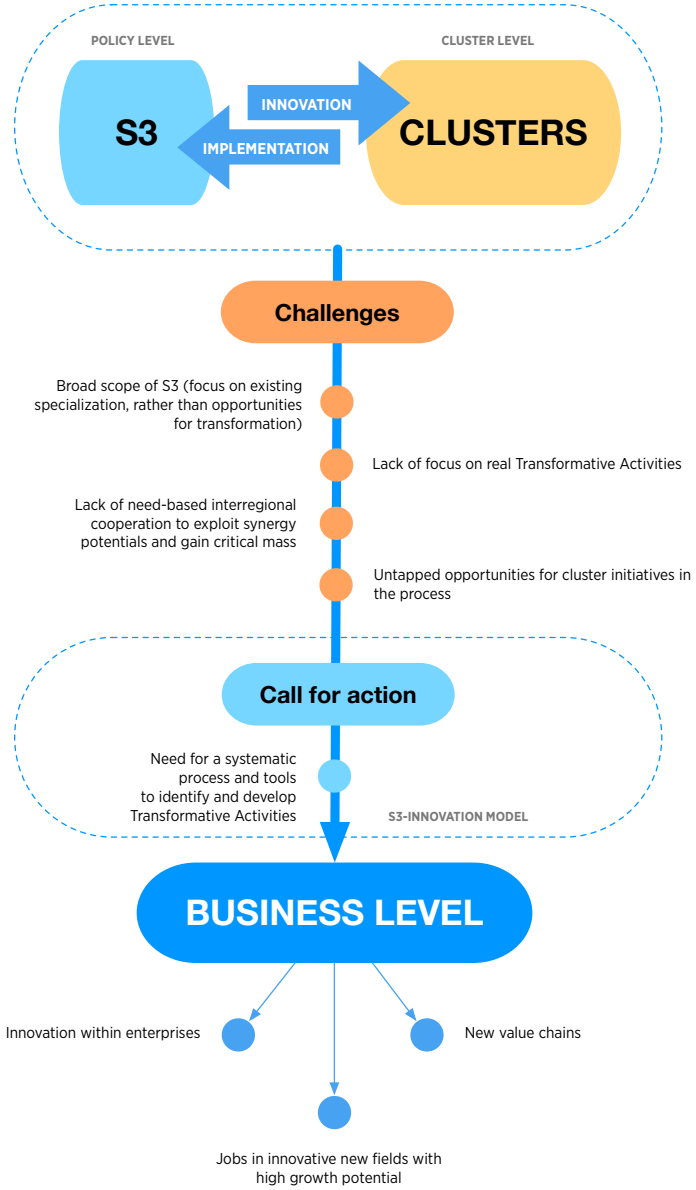


Figure 4: Challenges and Call for Action
Source: Jacques Bersier and Michael Keller, 2018.

the context of S3 and that cluster-based regional development policy yields good results. However, ways and extent to which clusters are involved in the development and implementation of S3 vary significantly between the studied regions and reveal untapped opportunities for cluster initiatives in the process (see Meier zu Köcker and Dermastia, 2017). Moreover, clusters are crucially lacking tools for need-based interregional cooperation, which would enable them to contribute critical mass to transformative activities through connectivity and cross-sectoral links. The lessons learned from the S3-4AlpClusters project reveal clear challenges in current development and implementation of S3 in the Alpine Space (see figure 4).

The systematic identification and development of transformative activities is a complex exercise requiring new tools to support the entrepreneurial discovery and action development process. The development of concrete actions is in many cases hampered by the lack of critical mass. Cross-regional cooperation based on complementary needs is critically missing from the given framework conditions. Given the huge potential of cross-regional cooperation and cluster- based processes, these challenges represent a clear call for action to enhance practical implementation of S3. Regions and cluster initiatives need to be equipped with a systematic process and tools for the identification and development of transformative activities to boost the impact of S3 on enterprises, new value chains and job growth in innovative new fields across the Alpine Space and beyond. The **S3-Innovation Model**, presented in the next section, addresses this challenge.

The S3-Innovation Model

Michael Keller and Jacques Bersier

The **S3-Innovation Model** aims at enhancing smart industrial transition by making use of the interplay between clusters and S3 and facilitating interregional cooperation for the practical implementation of Smart Specialisation Strategies. Recent experiences show that the identification and development of transformative activities - i.e. the innovation capacities and actions that have the potential to lead to structural change - remain a significant challenge in the implementation of S3. The S3-Innovation Model introduces a systematic process to overcome this challenge. It offers a set of tools for cluster initiatives and regions to explore capacities and opportunities for transformation and to develop actions to create critical mass in innovative new fields. The involvement of cluster initiatives in the process is beneficial, since they embrace relevant actors of the innovation process and provide important information about needs, opportunities and ongoing transformations.

The approach of the S3-Innovation Model is a timely and highly innovative contribution because it addresses main stumbling blocks in current S3 implementation through its three main objectives that directly target identified challenges. It focuses on the identification and development of transformative activities, facilitates need-based cross-regional cooperation and involves clusters along the entire process (figure 5). The fundamental questions of S3 development and

Objectives of the S3-Innovation Model

- Focus on the identification and development of Transformative Activities
- Facilitation of need-based cross-regional cooperation
- Involvement of clusters along the entire process

Figure 5: Objectives of the S3-Innovation Model
Source: Keller et al., 2018.

implementation are consolidated in the S3-Innovation Model into a systematic process leading from the successful identification to the implementation of transformative activities: Faced by global competition, regions need to distinguish themselves (diversification) in order to create competitive advantage.

Limited resources compel them to specialise on a limited number of prioritised innovative activities, which should meet structural challenges and translate into structural transformation. Thus, the overall goal of smart specialization strategies (S3) can be modelled as the successful regional or cross-regional implementation of transformative activities, understood as a collection of related innovation capacities and actions with sufficient critical mass to lead to a structural transformation within the economy and the creation of new value chains and jobs in innovative new fields.

To reach this goal, transformative activities need to be identified in an entrepreneurial discovery process based on a solid base of evidence and developed into concrete actions whose implementation generates the necessary critical mass for structural transformation

in the region. Generating critical mass presupposes to exploit cross-sectoral links (connectivity) and cross-regional cooperation. In order to evaluate the outcome of the process, the development of transformative activities has to be monitored. The whole process should be a collective endeavor including all relevant actors of the innovation process. From identification to monitoring of transformative activities, cluster initiatives can play a decisive role.

They are located at a level of granularity between individual firms and broad sectors, reunite actors of the quadruple helix, reflect connectivity and are predestined to benefit directly from S3-enhanced innovation processes. The S3-Innovation Model describes the process sketched out above in a systematic way consisting of five action lines and providing dedicated tools at each step (fig.6).

The tools, as well as the experience with their implementation in pilot clusters across the Alpine Space within the S3-4AlpClusters project, are presented in further detail in the action plan of this book. This introductory chapter concludes with a brief overview of the basic structure of the model. The process starts with the generation of a **base of evidence** based on qualitative and quantitative analytics. Solid information on existing capacities, clusters, entrepreneurial resources and opportunities for transformation is crucial to guide the subsequent entrepreneurial discovery process for the identification of transformative activities. For this action line, the S3-Innovation Model promotes two main tools: ***S3-Synergy Diamonds*** are an innovative methodology representing existing priority areas and capacities in a way that facilitates the identification of transformative activities and

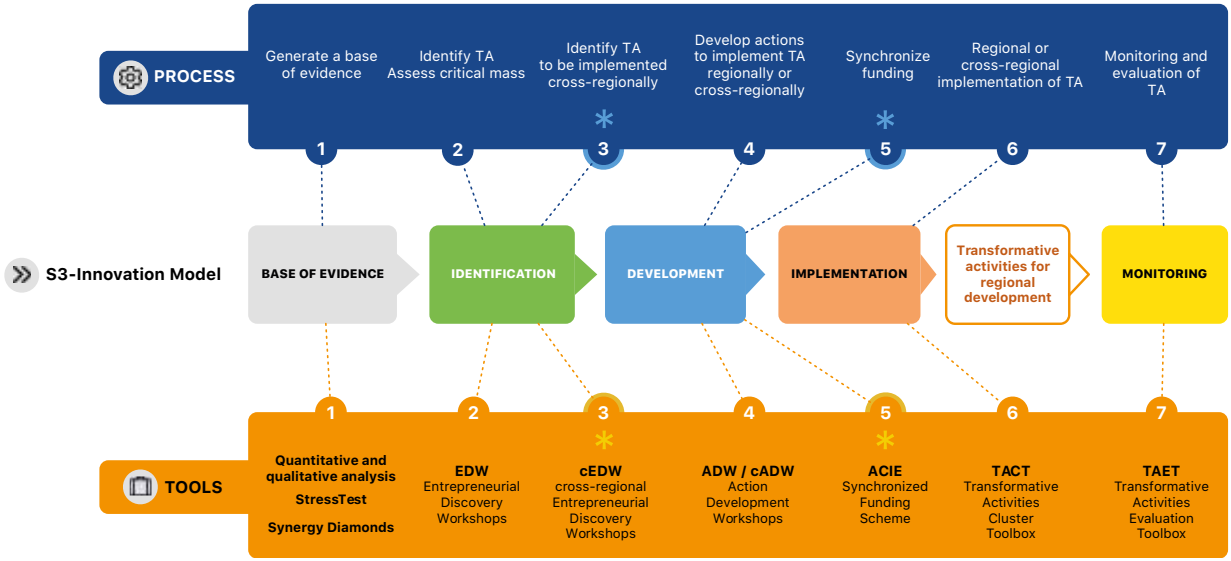


Figure 6: The S3-Innovation Model and its action lines
Source: S3-4AlpClusters, 2018.

TAKE A TOUR THROUGH THE COMPLETE PROCESS IN THE VIDEO ON OUR YOUTUBE CHANNEL

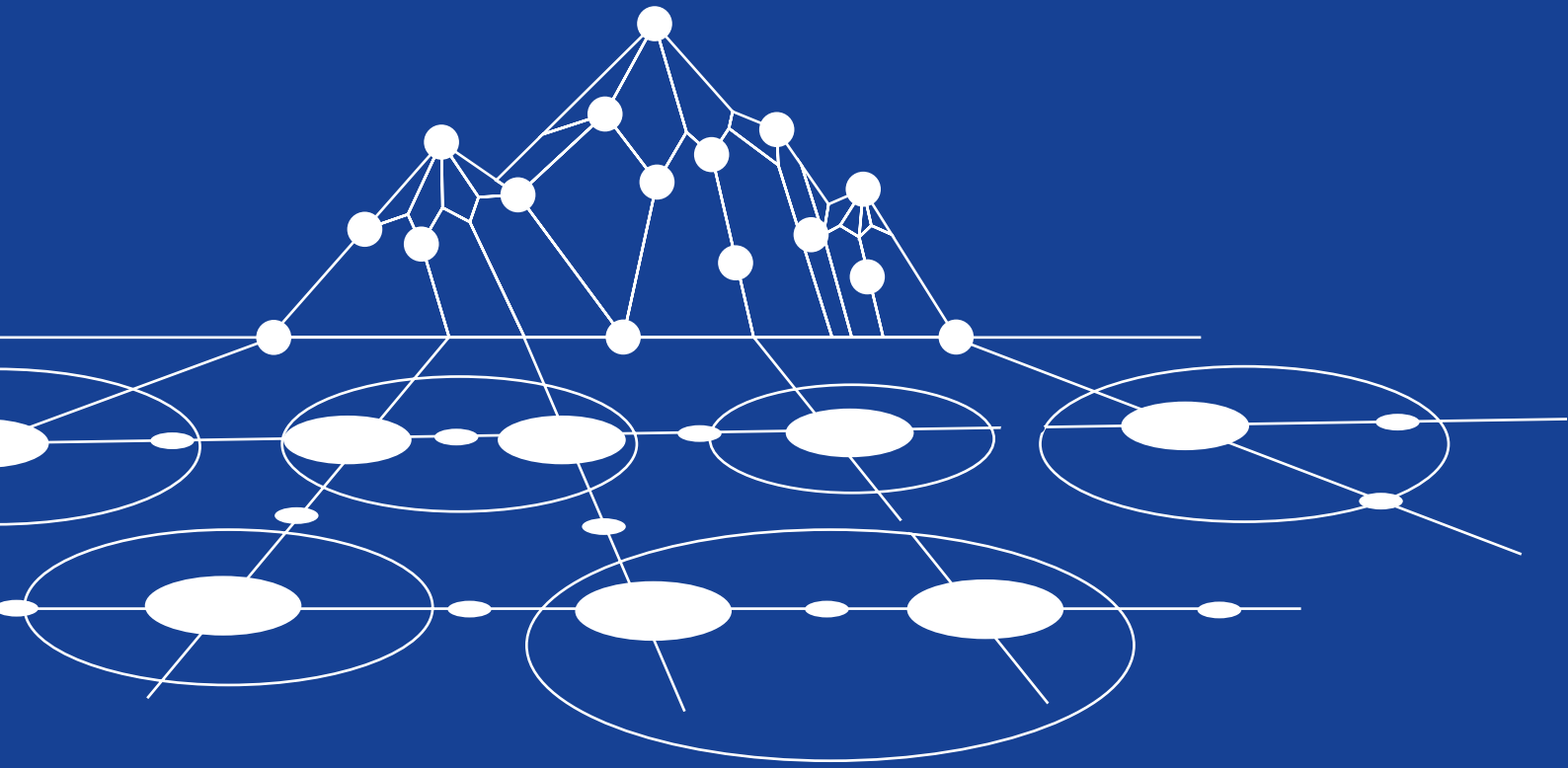
capturesopportunitiesfor need-based interregional cooperation.

In addition, a ***StressTest*** methodology helps to systematically analyze the role of clusters in current implementation of regional strategies. The generated evidence is used as an input for the next action line of the process. **Identification** of transformative activities means to define the aspired structural transformationandtoidentifytheset of innovation capacities necessary to reach it, based on a reflection about combinations of existing capacities on the one hand and

opportunities represented by new technologies and challenges that can support and drive the process of structural transformation on the other. The S3-Innovation Model provides a methodology to organise this entrepreneurial discovery endeavor in an ***Entrepreneurial Discovery Workshops (EDW)***. The **identification** of transformative activities requires an assessment of the existing critical mass in the targeted fields. This notably allows detecting and specifying needs for cross-regional cooperation.

If critical mass is missing regionally, Entrepreneurial Discovery Workshops can be repeated cross-regionally (***cEDW***) with a methodology that allows to identify complementary competences and needs from multiple regions and transformative activities that can be developed through need-based cooperation partnerships. The third action line of the process aims at developing the identified ideas for transformative activities into concrete actions. **Development** means to complete the identified set of innovation capacities with the actions necessary to enhance structural transformation in a region – in particular through gaining critical mass. ***Action Development Workshops (ADW)*** propose a methodology to involve the stakeholders in working on concrete actions - such as R&D projects, networking activities, cooperation schemes or development of critical skills – necessary to gain critical mass for the development of new value chains and jobs. If the identified transformative activity includes multiple regions, the process will be continued cross-regionally (***cADW***). In addition, the S3-Innovation Model specifically supports cross-regional action development with a proposal for an ***Alpine Cluster Innovation Express (ACIE)***, an interregional cooperation scheme

that aims at synchronising existing funds from several regions who intend to support the development of the same transformative activities. Further down the process, the S3-Innovation Model supports the implementation of the developed actions in a fourth action line. **Implementation** means the execution of the developed actions, resulting in gain of critical mass in the defined set of innovation capacities, ultimately aiming at enabling the aspired structural transformation. Since both the identified transformative activities and the concrete developed actions are unknown ex ante and can take a multitude of different forms and concretisations, the S3-Innovation Model proposes a generic ***Transformative Activity Cluster Toolbox (TACT)*** at this stage of the process. The toolbox consists of a broad set of best practices of cluster services in support of different kinds of potential implementation actions, covering transversal fields such as education, technology, growth, research or collaboration. In its final action line, the S3-Innovation Model includes a methodology contributing to the evaluation and **monitoring** of the whole process. The ***Transformative Activity Evaluation Toolbox (TAET)***, specifically addresses the roles and contributions of cluster initiatives in the different action lines of the S3-Innovation Model. It provides a general framework that supports a formative evaluation during the implementation of the S3-Innovation Model and facilitates necessary adaptations and learning throughout the process.



ACTION PLAN • PUTTING THE MODEL INTO PRACTICE

Base of Evidence

Mateja Dermastia, Gerd Meier zu Köcker and Michael Keller

The first action line of the S3-Innovation model contains the tools for the generation of a solid base of evidence, necessary to guide the entrepreneurial discovery process to identify transformative activities. This includes **quantitative and qualitative data**, a **StressTest** to analyse the current role of cluster initiatives in the implementation of regional strategies and **S3 Synergy Diamonds**, a tool to represent existing regional strengths and facilitate the identification of transformative activities.

Quantitative and Qualitative analysis

Qualitative and quantitative analysis of the region and its position in comparison to other regions is a crucial starting point for the S3-Innovation Model. It supports the establishment of a common view of the region for all stakeholders involved in the process and contributes to the identification of existing strengths (capacities and resources) and the determination of a focus for the process. The process of identification and development of transformative activities should be an evidence-based exercise. This includes both quantitative data on economic structures, innovation capacities and transformation opportunities as well as more qualitative knowledge about the available entrepreneurial activities and resources in the pre-determined fields. It is recommendable to involve a specialist of the regional

economy in the process to prepare the necessary quantitative data. A useful base of evidence would draw on both international benchmarking and regional analysis and include the following elements, if available:

- General international benchmarking (comparing the whole region to competitors): Regional performance indicators, Industrial focus, Competitiveness data, Location Quality, Innovative capacities

- Regional analysis: Employment per sector / industry, Sectoral location quotients (LQ), Sectoral productivity data, Sectoral exportation data, Sectoral innovation data, Regional cluster portfolio

The development of a base of evidence should be complemented with an analysis of entrepreneurial resources involving more detailed, qualitative and contextual information that is not necessarily reflected in quantitative data and might require gathering the expertise and knowledge of regional actors. This might include information about:

- Particular dynamisms of regional firms
- Presence of a "champion" in the region (a large company with specific R&D specialisation or specialised research institutes in a regional technical university)
- International linkages of regional players with global "champions"
- Proliferation of start-ups, specific Value Chains, Incubators etc.
- Outstanding public-private R&D partnerships

A dedicated training tool is available to learn more about the

generation and use of qualitative and quantitative data for the base of evidence (see Download section, p. 134 of this book).

StressTest

Most regions in Europe involved cluster initiatives as a tool to develop and implement their Smart Specialisation Strategies (S3). Implementing S3 through cluster initiatives is understood to be a promising approach in order to gain sustainable and inclusive growth while generating critical mass of economically viable activities.

It is obvious that the interplay between S3 and clusters might create significant synergies. However, not much knowledge and experience exist on how this interplay works in practice and how to combine both approaches in the best way.

To better understand this interplay and to provide a reliable base of evidence on the extent to which regional approaches conducive to implement S3 or other regional strategies through cluster initiatives provide the desired impact, the S3-Innovation Model contains a dedicated StressTest Tool. The original idea emerged in 2012 when the idea of regional innovation strategies moved higher on the political agenda and cluster policies were a popular instrument in this context. The approach examines the role of cluster initiatives in the design and implementation of S3, including the regional support schemes for cluster initiatives. It provides insights on the coordination and alignment of S3 at the regional and national level. It also considers questions about the ability of cluster initiatives to implement new innovation models, further develop regional transformative activities and to operate as

requested in the given regional development strategies. The StressTest approach is based upon six dimensions of policy design and implementation as shown in figure 7. Although regions are different in many respects, there are six similar key dimensions, which are similar for all policy making and implementation processes. The StressTest provides detailed information about the status quo of development and implementation of S3 through clusters by benchmarking regional approaches based on 31 indicators according to the six dimensions of policy making.

The StressTest is intended for regional policy makers or related entities being in charge with the development and implementation of S3 or related regional strategy. It actively involves the following target groups that are mainly involved in the S3 development and implementation processes:

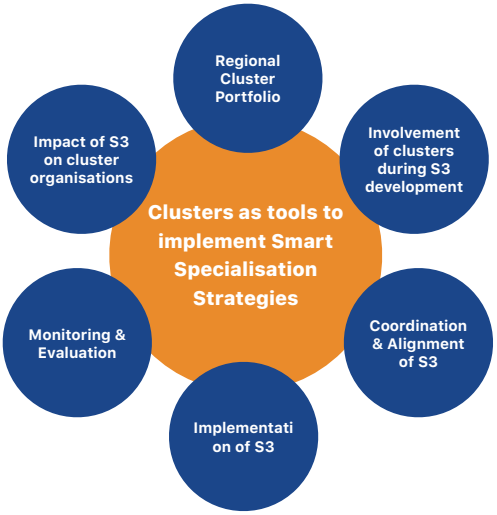


Figure 7: Dimensions of policy-making and implementation process in connection with S3
Source: Meier zu Köcker and Dermastia, 2017.

- Regional policy makers in charge of the development and implementation of S3
- Cluster managers (and similar positions)
- Other stakeholders such as representatives from regional development agencies, regional councils or other entities closely involved in the development and implementation of S3.

These target groups are involved in the StressTest by participating in a single survey based on about 25 questions.

Within the lifetime of the S3-4AlpClusters project, the StressTest tool has been implemented in all participating regions. The results could be benchmarked to a total of over 30 regions and nations all across Europe, as illustrated in figure 8. The complete results of the analysis are available in a synthesis report. It ilustrates strengths and weaknesses of the regional approaches and provides recommendations for improving actions (see Download section, p. 134 of this book).

Figure 8: Regions / countries that implemented the StressTest Tool between 2015 - 2018
Source: www.s3-stresstest.net.

The key findings are summarised below:

1. The 11 Partner Regions applied different approaches on how to develop their S3. There is no "golden standard" since regions are individuals. It has to be acknowledged that regions need sufficient flexibility in this regard in order to consider S3 as a strategic approach to economic development and not just as an ex-ante conditionality to receive ERDF.
2. The StressTest exercises provided good evidence that a cluster-based approach to develop and implement S3 can offer added value for the regions. However, the S3 approach has to be consequently designed and implemented.

3. The interplay between cluster initiatives and S3 matters. For this purpose, strategies of cluster initiatives should be in line with respective S3 in order to assure that cluster initiatives can provide tailor-made support for implementing S3.

4. The implementation of S3 is of highest relevance. It has to be supported with a proper spectrum of policy instruments for tailor-made support and sufficient public investments.

5. If cluster initiatives play a dedicated role in the implementation of S3, they have to be properly enabled to fulfil their role. This contains, among others, sufficient capacities within cluster organisations, a critical mass of cluster participants and a broad spectrum of activities implemented by the cluster management.

6. The S3 approach shifts cluster policy towards cluster-based regional development policy. This leads to the consequence that less emphasis should be placed on just funding cluster initiatives, and more on taking measures that enable cluster initiatives to become a tool for regional development.

7. Aligning S3 and related policy instruments among neighbouring regions is still a challenge. The insights gained at the macro-regional level so far indicates that much more work is needed to overcome the obstacles that arise from the local context of S3 and the absence of alignment. The challenge remains to understand the potential of the market and the mechanisms required to facilitate linkages among Alpine Space actors for purposes of initiating transformative actions through cross-regional cooperation. Smaller regions in particular need to improve

framework conditions for cross-regional activities in order to reach a critical mass in terms of companies and public investments. Existing funding schemes like INTERREG or Horizon 2020 are not an appropriate option.

8. Since S3 is a new approach, appropriate monitoring and evaluation approaches are missing. More attention shall be directed towards development and implementation approaches in a cross-regional and international exchange of experiences.

Regions and actors interested in performing a StressTest as part of a base of evidence for the S3-Innovation Model will find more information in a dedicated training tool (see Download section, p. 134 of this book).

S3-Synergy Diamonds

Besides good quantitative and qualitative data and an analysis of the current role of cluster initiatives in regional strategies (StressTest) the S3-Innovation Model also contains a dedicated tool to focus the entrepreneurial discovery process and represent existing regional capacities in a way that facilitates the identification of transformative activities and captures opportunities for need-based interregional cooperation: S3-Synergy Diamonds. Experience in the past has shown, that focus was often missing in the process of S3 development. Before engaging in an entrepreneurial discovery process to identify transformative activities, it is therefore important to narrow down the relevant "search field" in order to achieve tangible results relevant for the region or for cross-regional cooperation. Pre-determining the covered fields is a crucial step to

prevent strategic priorities from being designed too broadly and allow for the identification of real transformative activities (see

and guide such evidence-based discussions on transformative activities and areas of specialisation in the regional and cross-regional

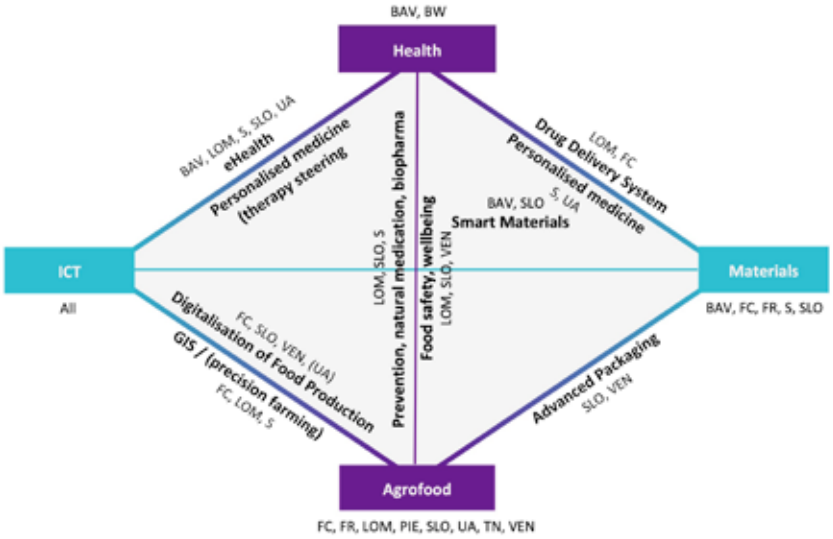


Figure 9: S3 Synergy Diamond with four selected Priority Areas and commonly identified Transformative Activities (Note: BAV: Bavaria, BW: Baden-Württemberg, FC: Franche-Comté, FR: Canton of Fribourg, LOM: Lombardy, PIE: Piedmont, S: Salzburg, SLO: Slovenia, TN: Trentino, UA: Upper Austria, VEN: Veneto)

Source: Meier zu Köcker et al., 2017.

Foray et al., 2018). The S3-Synergy Diamond has been proven as a promising tool to facilitate

context. The approach is based on the assumption that transformative activities mainly emerge between

existing priority areas as a result of increasing industrial convergence. In a first step, regional actors or cross-regional expert teams identify priority areas of particular relevance for a region or for a cross-regional approach. This can be based on an analysis of existing S3 documents. The regional priority areas are then depicted as the cornerstones of the diamonds. While the number of such priority areas is unlimited in principle, it should be noted that due to limited resources in terms of innovation actors and public investment regions should not focus on too many priority areas. Four priority areas, as depicted in figure 9, proved to be an appropriate number in the experience of most regions participating in the S3-4AlpClusters project. Potential new combinations between priority areas form the axes of the diamond and thus illustrate where relevant transformative activities can emerge from. It is the objective of the next action line of the S3-Innovation Model to further explore these combinations in an entrepreneurial discovery process (see next section: Identification of Transformative Activities). The diamonds also disclose complementarities between regions with similar priority areas (Bavaria, Baden-Württemberg, Slovenia, Franche-Comté, Salzburg and Lombardy in the example) and thus contribute to facilitate need-based cross-regional cooperation in a cross-regional process of identification, development and implementation of transformative activities. Within the lifetime of the S3-4AlpClusters project, S3-Synergy Diamonds have been used for the identification of regional and cross-regional transformative activities in all participating regions. Four specific S3-Synergy Diamonds have been produced as a generic base of evidence with relevance for the complete Alpine Space. These diamonds target opportunities for transformative activities related

to major challenges for the alpine macro-region, as outlined in the EU Strategy for the Alpine Region (EUSALP, see https://www.alpine-region.eu):

1. Economic globalisation that requires the alpine region to distinguish itself as competitive and innovative by developing a "knowledge and information" society
2. Demographic trends characterised particularly by the combined effects of ageing and new migration models
3. Climate / energy change and its foreseeable effects on the environment, biodiversity and on the living conditions of its inhabitants
4. The specific geographical position in Europe as a transit region and as an area with unique geographical and natural features, which will set the frame for all future developments, notably with respect to mobility.

These S3-Synergy Diamonds are available in a report on "Strategic Alpine Space Areas for Cross-regional Cooperation" Meier zu Köcker et al., 2017).

Regions and actors interested in designing and implementing the S3-Synergy Diamond approach will find practical information in a training tool (see Download section, p. 134 of this book).

"Bundle existing competencies and capacities across the disciplines to better identify potentials for development and for interregional cooperation", says Christian Salletmaier, responsible for the regional S3-strategy and head of unit Regional Development and EU-Regional Policy in the Government Office of the Land (region) of Salzburg.

"One of the goals of Salzburg's S3-strategy is building critical mass in the focus themes to increase visibility on national and international level.

This will not only raise the quality but also widen and improve the interfaces to local business and society. With the StressTest and the synergy, diamond the project has developed new approaches towards mapping the regional players and their competencies and thus has opened innovative ways of taking stock of existing capacities and of detecting new opportunities.

Christian Salletmaier

For the implementation of the regional S3-strategy the synergy diamond exercise shed new light onto the challenges and opportunities of the branches and sectors that were addressed. Potentials, complementarities and synergies were detected for the building and construction sector that, for example, led to new thematic approaches.

One of the key areas of the region that needs impulses for its development is the Life-Sciences sector. Looking at it from different angles opened new, so far undetected potentials

for research institutions and companies. It turned out in both cases that digitalisation was key for their development – which in turn helps to strengthen the ICT research basis of the Salzburg region."

Interview with Christian Salletmaier
Head of Unit Regional Development and EU-Regional Policy in the Government Office of the Land Salzburg, conducted by ***Simone Weiss****, ITG Salzburg.*

Simone Weiss

Identification of Transformative Activities

Michael Keller, Dominique Foray and Gerd Meier zu Köcker

The second action line of the S3-Innovation Model concerns the identification of transformative activities in an entrepreneurial discovery process. **Entrepreneurial Discovery Workshops (EDW)** are a dedicated tool to reflect existing regional capacities and opportunities represented by new technologies and challenges that can support and drive the process of structural transformation. This includes an assessment of existing critical mass and detecting and specifying needs for cross-regional cooperation. **Cross-regional Entrepreneurial Discovery Workshops (cEDW)** allow to identify complementary competences and needs from several regions and to identify transformative activities that can be developed cross-regionally.

Regional and Cross-regional Entrepreneurial Discovery Workshops (EDW/ cEDW)

The identification of transformative activities for a region should be the result of a bottom-up approach – an entrepreneurial discovery process. The bottom up approach engages the quadruple helix and involves stakeholders from policy, research & education, civil society and entrepreneurs. It considers the economic structure and performance as well as entrepreneurial activities present in the region.

The identification of transformative activities in all participating regions was at the core of the first phase of the S3-4AlpClusters project. To this end, a series of

12 regional and cross-regional Entrepreneurial Discovery Workshops (EDW) was launched under the lead of Dominique Foray (EPFL), Gerd Meier zu Köcker (VDI/VDE GmbH) and Michael Keller (HES-SO//FR HEIA-FR). A dedicated training tool is available online (see Download section, p. 134 of this book), summarises the EDW methodology and gives valuable insights on how to tackle its organisation.

In a nutshell, the Entrepreneurial Discovery Workshop (EDW) is an instrument to identify transformative activities and select those with the highest immediacy and potential to turn into emerging industries in the future.

The main input for the workshop is the previously generated base of evidence. Quantitative and qualitative data and the StressTest results on the current role of clusters in regional strategies should provide a solid information background. Existing strategic priority areas should be represented in a regional S3 Synergy Diamond to define the thematic scope of the workshop.

Based on this input, it is now the aim of the EDW to identify transformative activities based on new combinations between existing capacities on the one hand and opportunities represented by new technologies and challenges that can support and drive the process of structural transformation on the other. As such, the methodology of the EDW is directly based on the conceptual framework defining transformative activities (see figure 2).

The workshop should involve participants reflecting the relevant regional innovation capacities and entrepreneurial resources, as well as knowledge and expertise on relevant opportunities in the regional ecoomy. A fruitful S3-dialogue should certainly include the following actors, from which a dozen of experts can be invited as active participants in the workshops:

- Academics, notably experts on the regional economy
- Policymakers in charge of S3 and funding schemes
- Representatives of clusters with a comprehensive knowledge of the regional cluster-ecosystem
- Representatives of the regional innovation system
- Experts of tech-transfer with extensive knowledge of the scientific and technological domains covered in the region
- Representatives of key actors from regional companies
- Representatives of concerned citisen groups

A key factor in enabling transformative activities to unleash their potential is critical mass. Only if sufficient capacities and resources are bundled, transformative activities can scale and sustainable structural change be achieved. Regions, especially smaller ones, might lack the necessary critical mass to develop a transformative activitiy on their own. Therefore, cross-regional cooperation can be a crucial leverage to accelerate the creation of critical mass. Even if a region is well positioned and equipped to develop a transformative activity, it can benefit from cross-regional cooperation with peer partner regions to jointly enhance the leading position e.g. by focusing on common R&D. Regions should therefore be encouraged to engage

in cross-regional Entrepreneurial Discovery Workshop (cEDW) to identify and prioritise options for common transformative activities. The training tool specifically addresses this cross-regional option (see Download section, p. 134 of this book).

EXAMPLES FROM THE PROJECT: EDW

In the Swiss canton of Fribourg, an EDW was conducted with regional cluster initiatives (Swiss Plastics Cluster, Cluster Food and Nutrition, Building Innovation Cluster), research institutions (such as the Plastics Innovation Competence Center of the School of Engineering and Architecture), enterprises and policymakers using an S3-synergy diamond reflecting strong existing capacities in the fields of materials, food and nutrition and the construction sector.

A systematic discussion of opportunities for structural transformation, offered to these traditional strongholds by the trend towards a circular bio-economy, led to the identification of a specific transformative activity to prioritise in the regional development strategy: the transformative activity should draw on and build up related innovation capacities necessary to **develop bio-based inputs for the plastics industry**.

Michael Keller

In another instance, a transformative activity was identified in a cross-regional effort. Based on the regional EDWs in Bavaria, Franche-Comté, Slovenia and Upper Austria a potential was identified for cross-regional cooperation between the priority areas of manufacturing and new materials, and more particularly in new technological fields that may arise in combination of the respective priority areas.

The cross-regional effort drew on complementarities in regional strengths (lightweight materials / Bavaria, lightweight technology / Upper Austria, circular-economy (materials circle, e.g. cascade use

of materials/waste) / Upper Austria, second materials technology / Slovenia) and shared challenges and opportunities in lightweight materials, clean-technologies, bio-based composites and wood materials linked to the circular economy.

Specifically, the entrepreneurial discovery process led to the identification of particular innovation capacities for the **design, production and recycling of fibre composites for new lightweight materials** as a transformative activity to be further developed cross-regionally based on complementary capacities and needs.

Michael Keller
Research Fellow HES-SO//FR
HEIA-FR

EXPERIENCE: EDW CANTON OF FRIBOURG

Smart Specialisation Strategies (S3) aim to support innovation by encouraging regions to adopt tailor-made development models based on their strengths, constraints and resulting opportunities.

They allow to define strategic priorities and develop new value chains adapted to current and future technological developments. These strategies are often included in a national or regional strategic policy framework for research and innovation (R&I).

Olivier Curty

In Switzerland, and more particularly in the Canton of Fribourg, it is the promotion of regional innovation systems (RIS) within the framework of the Nouvelle Politique Régionale (NPR, French for New Regional Policy) that comes closest to this.

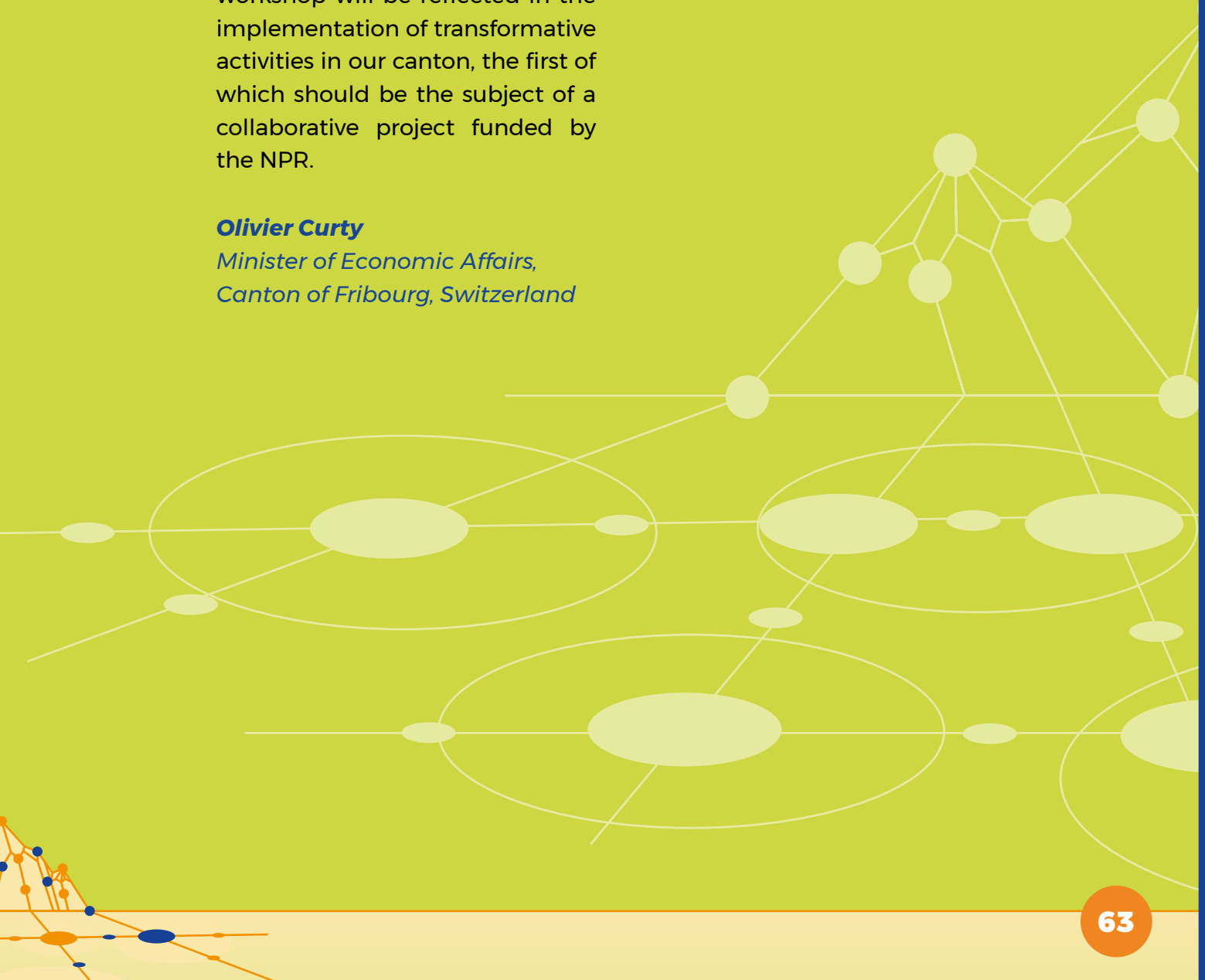
It is within this same framework that we set up a regional cluster development policy in 2009, and it is in this context that the S3-4AlpClusters project was born.

Based on quantitative and qualitative analyses conducted by Prof. Philippe Gugler of the University of Fribourg, we were able to perform an entrepreneurial discovery workshop (EDW) to identify transformative activities related to the bio-economy, one of the development priorities in our canton.

The workshop benefitted from the attendance of representatives from various departments of the State of Fribourg, the University and University of Applied Sciences, research centres, clusters and

the economy. The results of the workshop will be reflected in the implementation of transformative activities in our canton, the first of which should be the subject of a collaborative project funded by the NPR.

Olivier Curty
Minister of Economic Affairs,
Canton of Fribourg, Switzerland



Development of Transformative Activities

Iris Reingruber, Mateja Dermastia, Gerd Meier zu Köcker and Michael Keller

The third action line of the S3-Innovation Model intends to load up the identified transformative activities with concrete actions. **Action Development Workshops (ADW)** allow working out concrete action plans - such as R&D projects, networking, cooperation schemes or development of critical skills – in order to gain critical mass for the identified transformative activities, both regionally and cross-regionally (**cADW**). The S3-Innovation Model specifically supports cross-regional action development through a proposal for a cross-regional scheme to support the development of transformative activities in the Alpine Space, the **Alpine Cluster Innovation Express** (**ACIE**).

Regional and Cross-regional Action Development Workshops (ADW/cADW)

Regional or cross-regional Action Development Workshops (ADW/cADW) follow up on the findings of the Entrepreneurial Discovery Workshops (EDW). The workshops are a crucial tool to define concrete actions for further development of transformative activities towards smart transition of existing industries or emerging ones.

The Action Development Workshops (ADW) allow working out concrete actions – such as R&D projects, networking, cooperation schemes or development of critical skills – in order to gain critical mass for the identified transformative

activities, both regionally and cross-regionally.

The cross-regional Action Development Workshops (cADW) place emphasis on developing cross-regional actions to create critical mass for further development of transformative activities requiring access to extra-regional capacities.

Ideally ADW/cADW result in a kind of action plan or roadmap on how to enlarge the group of actors, how to support and keep it moving towards smart transition in the region. Such actions should target the regional but also national or international level (e. g. national or international branding to present potential competitive advantage of a region in a dedicated transformative activity) and consider upcoming technology and market trends.

The character and methodology of the ADW / cADW implemented within the S3-4AlpClusters lifetime differed from case to case and significantly depended on the regional demand. In all cases however, the main input were previously identified transformative activities.

Overall, 30 cluster initiatives from the 11 participating regions were involved in this pilot experience. A synthesis report summarises the results. The most important lessons for a successful implementation of the ADW / cADW tool are presented below:

- The workshops need to be focused on specific innovation capacities previously identified in an entrepreneurial discovery process (see section above: Identification of Transformative Activities).

- Practice has shown that a limited group of experts, representing the priority areas and related transformative activities shall be involved. These experts have to cover technological, market, societal and regulatory aspects related to the different Transformative Activities, since they all impact the future development accordingly. Cluster managers are mandatory experts to be involved.
- In order to create an optimal process and a fruitful working atmosphere it is important to establish a common base of knowledge and understanding on the focused transformative activities among the participants in advance.
- Therefore, the participating regions shall prepare a short overview on the regions' current activities, specific know-how, new developments and problems in the respective transformative activity.
- In general the participants shall, in an open and inspiring setting, discuss processes, activities, collaboration schemes, roles and coordination practices, designed to promote the development of the selected transformative activities further.
- Although the region remains the key driver to implement corresponding actions, the actions shall address the regional (what shall be done on regional level), national (what can be done on national level that benefits the region?) as well as international level.
- The agendas of ADW/cADW shall not only be driven by a technological perspective but also by market, society and framework condition perspectives.

A dedicated training tool provides guidance on how to implement the development of transformative activities in regional and cross-regional Action Development Workshops (see Download section, p. 134 of this book).

As we have seen above, the EDW in the Swiss canton of Fribourg identified the development of **bio-based inputs for the plastics industry** as a transformative activity to prioritise in the regional development strategy.

In the subsequent ADW, the key actors met to work on concrete actions to further develop the transformative activity in the canton of Fribourg.

An action plan was drafted to mount collaborative R&D projects, networking activities and development of critical skills between the clusters, research institutions and regional and extra-regional enterprises, e.g. to use waste-streams from the local food industry for protein-based barrier film packaging. Figure 12 summarises this process.In the case of the cross-regional effort between Upper Austria, Bavaria, Franche-Comté and Slovenia, potential for joint development of a transformative activity has been identified for the **design, production and recycling of fibre composites for new lightweight materials.**

Michael Keller

In order to prepare the development of concrete actions for this transformative activity the participating regions established in advance a brief documentation that was shared among the regions to establish an overview on the involved clusters and further stakeholders, current activities and initiatives, specific know-how, new developments, specific problems and challenges.

The concerned cluster initiatives then met for an cADW to elaborate a joint action plan. The process consisted of 4 interactive rounds (round 1: identification of challenges and competences; round 2: matching challenges and solutions and prioritisation; round 3: action development phase; round 4: drafting of action plan including next steps).

At each step, participants were asked to document their contributions and ideas. The inputs were discussed after each round in a fruitful working atmosphere where ease of interaction was created.

The cross-regional experience resulted in an action plan focusing on education efforts for mind-set change, training on company level and mapping of available technical solutions (see figure 13).

Michael Keller
Research Fellow HES-SO//FR
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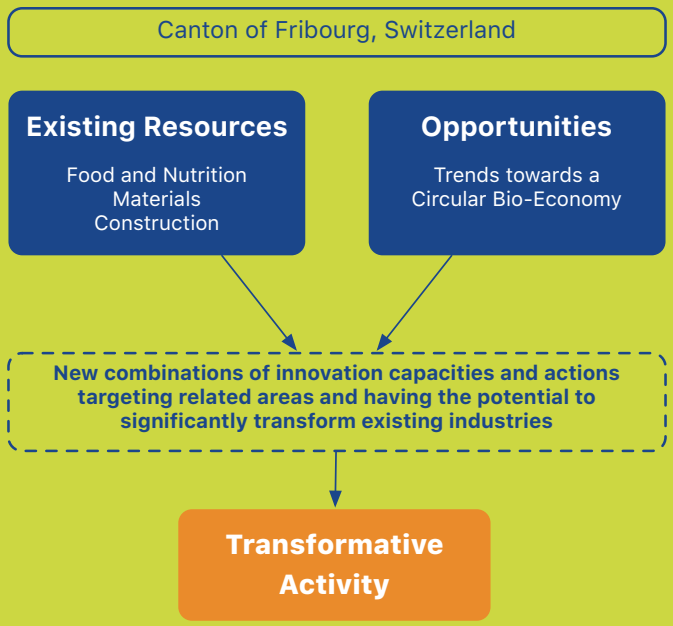


Figure 12 : Example of a Transformative Activity – Canton of Fribourg
Source : Keller, et al., (2018).

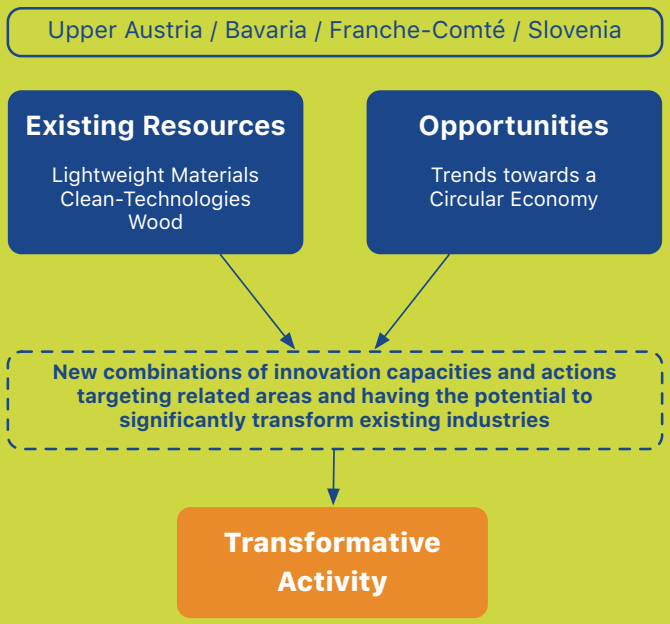


Figure 13 : Example of a Transformative Activity – Upper Austria / Bavaria / Franche-Comté / Slovenia
Source: Keller, et al., (2018).

EXPERIENCE: CADW VENETO-UPPER AUSTRIA

In Venice at the "Palazzo della Regione" on September the 17th and the 18th the Veneto and Austrian representatives of the S3-4AlpClusters organized a cross Action Development Workshop (cADW) to allow Austrian and Veneto cluster managers to discuss, select and possibly start some joint initiatives on safety, quality and traceability of the smart agri-food system.

At the meeting, Dr Cynthia Secchieri was present as Cluster Manager of Ribes Nest, a network of companies that develop projects on health and smart nutrition. Dr Secchieri declared that Ribes Nest is actively interested in S3-4-Alpclusters, especially for its possible impact on transnational collaboration in food and agri-food sectors as foreseen through the implementation of cADW events.

Cinzia Secchieri

The RibesNest Manager explained that their companies are active in food supplements, dairy products, cannery, agri-food, environment, biomass energy, biomedical, bio & nanotechnologies, cosmetics, diagnostics, pharmaceutical and services.

The cluster focuses their projects on sustainable agriculture, health and well-being, innovation, traceability, quality and safety, exploitation of by-products, outstanding food productions.

Ribes Nest met Upper Austrian clusters to deepen their mutual knowledge and to discuss how new technologies can improve the agri-food sector. In that occasion Dr Secchieri had the chance to

exchange ideas and experiences on the pre-identified topic, food safety, quality and traceability along the value chain, which is very much in line with the Ribes Nest priorities.

The results of the discussions between Upper Austrian clusters and RibesNest took to the identification of possible fields of cooperation such as the creation of an app for food education, the development of packaging made of new materials and sensors to monitor product traceability and actions to raise awareness in the agri-food sector about digitalization and Industry 4.0.

Dr Secchieri concluded that RibesNest companies are particularly concerned in settling a close link to Austrian food clusters in the nutraceutical sector, and she sees this meeting as the first step of new, fruitful cooperation.

*Experience of Dr **Cinzia Secchieri**, Cluster Manager of Ribes Nest, summarized by: **Maria Sole D'Orazio**, Veneto Innovazione.*

Maria Sole D'Orazio

Alpine Cluster Innovation Express (ACIE)

Alpine regions' smart specialisation strategies were adopted to strengthen the innovation capacity and the competitiveness of the regions. The S3-4AlpCluster project revealed that alpine regions did not sufficiently align their S3 with their neighboring regions. Instruments and measures of S3 mainly support excellence in already existing local assets.

Measures and instruments which are focused on cross-regional synergies and value chains were found to be crucially lacking (see Meier zu Köcker et al., 2017). The development of transformative activities, i.e. the development of concrete actions necessary to foster transformation processes, is highly dependent on sufficient critical mass of innovation actors as well as investments in innovation. Such critical mass could often benefit from increased cross-regional cooperation among regions by bundling related innovation actors. But currently, the framework conditions for cross-regional cooperation within the Alpine Space tend to be weak and poorly aligned between regions.

Cross-sectoral transformation processes depend on critical mass of actors and investments in innovation, which would significantly benefit from better cross-regional cooperation. Analysis and recent experience show that multi-national governance structures for focused cooperation in S3-implementation are critically missing (Dermastia, forthcoming).

There are several programmes, like Horizon 2020 or INTERREG, that

support actors from alpine regions in cross-regional cooperation. Concerning all these programmes however, regions in the Alpine Space typically lack the necessary possibilities to influence the programme designs and scopes. There is no modality currently in place where a group of alpine regions can decide to support specific transformative activities between common priority areas across regions.

To overcome this obstacle, the S3-Innovation Model includes a proposal for a synchronized funding scheme, the Alpine Cluster Innovation Express (ACIE), to facilitate cross-regional cooperation and development of transformative activities. This would allow alpine regions to tap into external capacities and bundle regional competences to generate the necessary critical mass for transformative activities across the Alpine Space. The full proposal, as well as a draft ACIE Call are available online (see Download section, p. 134 of this book).

In a nutshell, ACIE is a common funding scheme approach implemented by several regions aiming to support the development of the same transformative activities.

Facilitating collaboration across-regions helps to gain critical mass to develop transformative activities by demand-driven collaboration across regions. Focus is placed on cross-border learning, competence development and innovation creation. Bundling different competencies from cluster actors from participating regions provides good framework conditions for cross-regional innovations. To allow for need-based collaboration

and focus on transformative activities addressing common opportunities related to major challenges for the alpine macro-region, as outlined in the EU Strategy for the Alpine Region (EUSALP), the ACIE proposal addresses transformative activities identified based on the specific S3-Synergy Diamonds (see section on S3-Synergy Diamonds above).

ACIE calls are funded by already existing regional programmes whose calls are synchronized accordingly. It is designed to support collaborative projects among several partners, all of whom apply according to their "home" funding role. The ACIE scheme has the significant advantage that funding does not cross any borders nor do any regional funding rules need to be changed. Due to the fact that already existing programmes are involved, the ACIE scheme does not require additional money. By synchronizing existing programs, the calls that are directed at similar targets allow for an increase in the critical mass and a bundling of complementary regional competences.

Thus, the policy targets can be reached faster and more efficiently than if different regions would each try to succeed separately. The focus of specific ACIE calls is placed on further developing transformative activities, which are of high priority for all the participating regions. ACIE applications are evaluated based on the selection criteria set forth in specific ACIE calls along with criteria from regional/national funding organisations.

EXPERIENCE: UPPER AUSTRIA'S PARTICIPATION IN THE CADW

Business Upper Austria's cluster and network initiatives are the centers of excellence for cross-company collaboration in Upper Austria - and beyond. Currently more than 2,000 partners are working together successfully.

"Although Upper Austria has a long tradition in design and implementation of regional research and innovation strategies on the one side and on the other side in creation and management of clusters the potential of the interplay between S3 and clusters has not been fully explored.

Christian Altmann

The findings in the project show very well where to start for improvement. It is the necessity to bundle competences on macro regional level and to focus cross-regionally on transformative activities towards smart new industries and business models (transformation) in order to face upcoming challenges. Therefor we have to consider already in the design of S3 strategies the complementary competences of neighbour regions and consequently we have to support the implementation of cross-regional actions on cluster and company level.

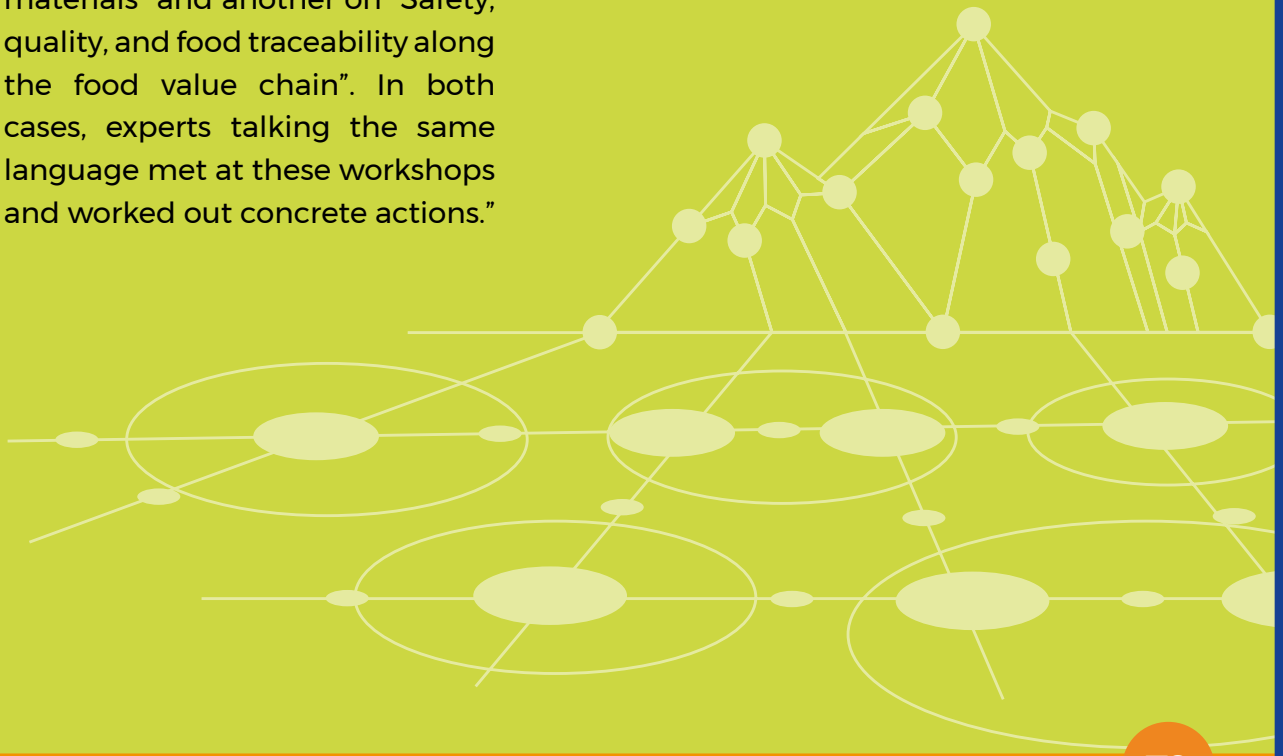
Once transformative activities have been identified, the cADW with mandatory involvement of cluster managers has proven as applicable service to elaborate concrete common actions to be implemented.

At this point of the S3-Innovation Model, the advantage of this systematic process became fully visible. Because the thematic focus of the cADW is in line with

European, national and regional strategies, considers cross-regional knowledge and capacities and reacts to future trends.

Business Upper Austria has been engaged with six clusters and competence centers in two cADWs. One focussed on “Design, production and recycling of fibre composites for new lightweight materials” and another on “Safety, quality, and food traceability along the food value chain”. In both cases, experts talking the same language met at these workshops and worked out concrete actions.”

Christian Altmann
Head of Clusterland department for cluster and networks at Business Upper Austria – OÖ Wirtschaftsagentur Ltd.



EXPERIENCE: CADW IN LJUBLJANA

The overall aim of the cross-regional Action Development Workshop (cADW) in Ljubljana (July 12-13 2018) was to define concrete actions for the further development of the transformative activity on the "Production and Recycling of Fibre Composites". Transformative activities can be understood as a number of innovation related activities, having the potential to significantly transform existing industries – in our case, emphasising the importance of the whole value chain in the industry of fibre composites, i.e. from production to recycling, has the potential to transform this industry. Thus the cADW targets the developing of cross-regional actions to create necessary critical mass. The two key prerequisites for a successful process of transforming industries or certain branches, are 1) an open and bottom-up discussion of the relevant stakeholders to identify the needs of the respective industries and 2) a suitable and attractive framework for implementing concrete actions. At the above-mentioned workshop in Ljubljana, representatives of BayFOR, Cluster Environment (Bavaria), BizUp Cluster CleanTech (aUpper Austria), Wood K Plus –Wood Competence Center (Upper Austria), the Slovenian Ministry of Development and European Cohesion Policy and the Slovenian SRIPs on "Factories of the Future" and "Circular Economy" as well as the Technology Park Ljubljana exchanged ideas together with Solvenian industrial representatives (for example the ski manufacturer ELAN). The committee was supported and advised by the German top cluster MAI Carbon. The aim of the workshop was to define common

Denny Schüppel

goals and to derive initial measures. In addition, a network of SMEs in the three participating regions was promoted. Defined actions: With the big sales markets in Asia and the US, the local European market in neighbouring regions is quite saturated, so the focus should shift on the potentials on joint innovations and development. Furthermore, it was identified to support education and training on a company level but also in the early stages, e.g. in high schools, to promote design, production and recycling of fibre composites for new lightweight materials. Connected manufacturing enables synergies between industries, supports the SME landscape, creates and sustains employment, creates growth and supports SMEs in global competition. This is why a cross-regional cooperation is needed – which should be supported by the government, creating incentives for innovation, e.g. through funding programmes for RDI, with low access barriers and a bureaucracy that target the highest possible outcome. An advanced knowledge base on the possibilities of the innovative capacities in e.g. the Alpine Space macroregion is needed as well. The cADW in Ljubljana was a good first step to bring together relevant actors supporting the journey of transforming the industry of fibre composites.

Denny Schüppel
Head of project and knowledge management MAI Carbon | Carbon Composites e. V.

Philip Pfaller
Bayerische Forschungsallianz (BayFOR) GmbH

Philip Pfaller

Implementation of Transformative Activities

Luca Mion, Silvio Antonioni and Michael Keller

The S3-Innovation Model supports implementation of the developed actions through cluster initiatives in a fourth action line with a Transformative Activity Cluster Toolbox (TACT). Since both the identified transformative activities and the concrete developed actions are unknown ex ante, TACT consists of a broad set of best practices of cluster services covering transversal fields such as education, technology, growth, research or collaboration.

Tranformative Activity Cluster Toolbox (TACT)

The Transformative Activity Cluster Toolbox is composed of two main inputs:

Based on the work carried out for a Good Practice Report (Antonioni et al., 2018), 23 best practices of cluster services currently offered by cluster initiatives from the Alpine Space have been selected to be included in the Transformative Activity Cluster Toolbox (TACT) of the S3-Innovation Model. The survey targeted 10 regions and 33 related Cluster Initiatives, resulting in 76 collected descriptions of cluster services, of which 23 were selected on the basis of their completeness, soundness and

uniqueness. The best practices were categorised into five fields of services: Education, Innovation, Collaboration, Networking and Growth (categorisation based on Sölvell, et al., 2003). A description of the 23 best practices is available online (see Download section, p. 134 of this book).

Based on the 23 selected best practices, a series of workshops with cluster managers was organised in all participating regions to develop ideas for innovative new services to further support the implementation of transformative activities. 14 new cluster services have been selected to be added to the TACT.

A concise overview of these new services is given below. A detailed description is available online (see Download section, p. 134 of this book).

Legend of categories

- **EDUCATION** The Education services are referred to such activities that lead to acquisition of knowledge and skills in the related industry-entrepreneurial area. Those services can be provided by experts such as experts, professors, researcher or consultants.

- **INNOVATION** The Innovation are referred to such activities that are at the support of the development of more-effective product, processes, services, technologies or business models. The activities can be referred also at IP protection, R&D support, strategies development and many others.

- **GROWTH** The growth activities are related to the ones that aims at helps cluster members to develop new products or services

offered, to reduce barriers to entry in certain markets, to increase the knowledge and the added value of their product or services.

COLLABORATION The Collaboration services refer to the activities that aim at increasing partnership, mainly among the cluster members, to share the 'know how' among individuals in order to create and sustain a competitive advantage.

NETWORKING The Networking services are referred to such activities that support businesspeople and entrepreneurs to the formation of business relationships and to recognize and create business opportunities, to share information and to seek potential partners for joint ventures.

New cluster services

Networking throughout thematic groups and projects workshops/labs
Lombardy

Integrated service to encourage the development of intra and interregional partnerships for new projects in the emerging sectors. The service is composed by three main elements:

- dynamic mapping of the skills of the cluster's associates and needs.
- Organisation of operational and intercluster thematic workshops focused on emerging industries. The aim of the workshops is to identify innovative projects / ideas for innovative processes or products.
- testing of ideas through project support (scouting of funding).

- **"International Officers": Job Position and Periodic Events for Interregional Cross-Cluster Management Cooperation**
  Bavaria

Recruitment by the cluster of an "international officer" in charge of managing contacts with other cluster managers at trans-regional level and organizing periodic networking meetings to facilitate the development of trans-regional services.

- **Synergies for internationalization**
  Bavaria

Forecasting of a supporting figure for the internationalization of the cluster that allows its members to exploit the already existing financing tools and funding programs, and that cooperates with the regional key-actors.

- **Cross-Industrial Sector Event for Joint Commercialization Processes**
  Bavaria

Ad hoc events in which representatives of clusters from different sectors and from different countries present their projects, research results, prototypes with the aim of achieving a joint commercialization process.

- **Intellectual Property Management for SMEs**
  Autonomous Province of Trento

Improvement of the management of intellectual property by SMEs, through a training phase on IP management followed by an operational one to provide a support service in the valorisation process, followed by a subsequent monitoring. Service provided free of charge to cluster SMEs and

as payment service to other key players (e.g. large industries).

Fast Track to Employment
Slovenia

Program for the development of joint research activities between companies and research bodies. Young researchers, following a rotation scheme, do working periods in the companies. The companies indicate the required profiles (paying the salary of the researchers), the intra-cluster competence centres (in phase of definition) prepares the calls and the faculties select the most suitable students.

Transformer Maturity Model
Upper Austria · Salzburg

Elaboration of a model/tool to assist start-ups and existing small companies in the transformation to specialised entrepreneurs in the medical sector. The key elements on which to intervene (missing skills, necessary technologies, certifications, etc.) will be identified and adequate services implemented. Service offered by the cluster.

BANK OF TRAINING – Large firms experience in innovation management for SMEs
Slovenia

Mentoring activities realized by managers of large innovative companies and dedicated to SMEs, in particular family-owned, with the aim of developing managerial skills, especially in the R&D sector. Total duration: 12 months, with short and regular meetings.

Tourism Services Clinic
Slovenia

Realization of a “tourism services

clinic", a platform supported by the Slovenian Tourism and Hospitality Chamber, through which the companies participating in the cluster can take advantage of specialized services provided by experts with different profiles, with the ultimate goal of developing new tourism services and improve existing ones.

- **"Rüttelstrecke" / "test track" for project ideas, prototypes, concepts, business models, problems**
  Upper Austria · Salzburg

Testing of new project ideas, services, business models or prototypes and having them analysed by a reflection group. The reflection group is composed of external experts of different levels (cluster, R&D, administration, users...). The service is offered directly by the cluster that wants to test the idea / new service.

- **Regional Cluster desk**
  Veneto

A regional centralised and coordinated desk to offer the following service: collect the innovation and educational needs; knowledge sharing with clusters experienced manager that to act as mentor/trainer I specific sectors; merge similar training needs in order to offer joint educational package; encourage the cross-cooperation of clusters with matching competences.

- **The Career Platform – KPZ**
  Slovenia

Creation of a free digital platform dedicated to the development of workers' new skills. The platform is be dedicated to companies, but built together with HR key players, such as universities and representatives of the education system. Main objective is foresee

the skills required by the labour market in the future and adapt individual career plans and educational programs.

Think Tank of innovation
Veneto

Development of innovative ideas for future research or education projects. Students, previously trained, work, under the tutorship of professionals from Industry and Academy, to define project ideas in a specific field. An international evaluation board select the winning proposals which will be considered for submission to the next upcoming calls of a specific funding programme.

Cluster Ambassador Program
Veneto

Develop a program to plan and implement a structured strategy for clusters' internationalisation, aiming to identify the core competences and the matching needs of the clusters, to explore the promising synergies and to organise well focused initiatives to allow the cluster and its member to develop projects or business opportunities.

Intellectual Property Management for SMES

The project S3-4AlpClusters intends to explore how Regional Smart Specialization Strategies (S3) can be used to spark entrepreneurship, foster innovation processes and support interregional cooperation within and between Clusters.

Drawing on the conclusion that such objectives can be reached by exploiting S3 at Cluster level, a Cluster Workshop was organised to design and develop a set of specific Cluster services aiming at fostering innovation within the Cluster actors.

Silvio Antonioni

One of the proposed new innovative service is the "Intellectual Property Management for SMEs" to support businesses, especially SMEs, to access and use intellectual property rights more effectively. The service aims at supporting Cluster managers in:

1. systematically evaluate how and to what extent companies use intellectual property protection tools;
2. introducing specific improvement actions at Cluster level.

The report describes the methodology developed and the pilot test results conducted with the collaboration of three regional Clusters.

Questionnaire. HIT developed a questionnaire with the purpose of investigating and evaluating the culture and the business processes in use, with reference to the generation and the strategic use of intellectual property. The questionnaire was submitted as a survey to a limited number of companies in order

to test the methodology, with the objective to provide useful information to the Cluster Managers for the introduction of specific improvement actions. The survey consisted of 50 questions grouped in 5 main sets of questions, companies could fill in the questionnaire via an online form in about 20 minutes. Five indicators were defined related to the main sets:

1. knowledge;
2. propensity to innovation;
3. binding ip-innovation process;
4. legal-economic procedure;
5. impact of ipr in the past.

HIT has identified the following three Clusters for the pilot testing:

- Polo Meccatronica
- Progetto Manifattura
- Habitech

For each of the Clusters listed above, the related Cluster Manager selected about 10 companies, for a total of 30 companies, of which he provided with the contact details. HIT provided the necessary support for completing the questionnaire.

Analysis. A two-level dashboard was provided to each Cluster Manager, with a synthesis at Cluster level and a synthesis of the single company. This allowed identifying intervention to be made at Cluster level and potential additional actions at company level. At company level, a radar diagram (Fig. 14) indicated the score obtained for each of the 5 indicators, together with qualitative comments. At Cluster level, the radar diagram is obtained by aggregating the data obtained by the individual companies.

Luca Mion

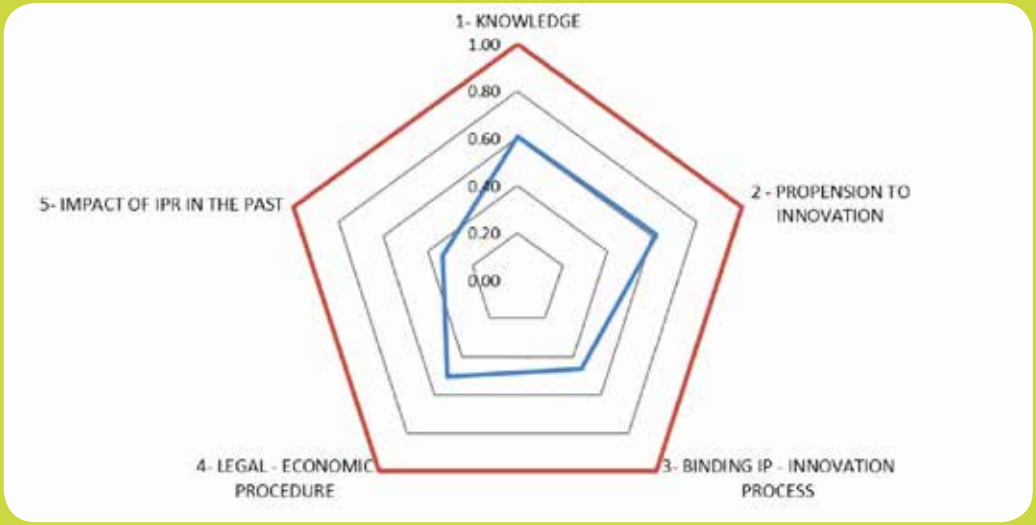


Figure 14: example of radar diagram result

Actions. For each Clusters and each company, the strengths and weaknesses were highlighted and the improvement actions identified. The Cluster Manager could compare the companies interviewed, position them with respect to the Cluster result and give insights on the weakest points. At Cluster level, the Cluster Manager was provided with the action to be taken for each of the main sets starting, as an example, from the training to the advance IPR management.

Validation and improvements. The activity achieved the goals, almost all the targeted companies was analysed and all three Cluster Organisation were actively involved. For certain sectors (such as Construction, Consulting and Services), the impact of IP in the common practice is relatively

limited, or at least perceived as such. This suggests the opportunity for a more intense information activity upstream, which allows to effectively communicate the advantages of approaching the world of industrial property as a whole and, specifically, to participate, also as part of a Cluster, to the actions promoted in this area. Helpful will be to present the questionnaire in a more "catchy" way, highlighting the benefits, such as the visibility that the company could achieve, and trying to leverage with the regional, national and European funding opportunities.

Conclusion. This report describes the methodology developed and the pilot test results for the "Intellectual Property Management for SMEs" service conducted with the collaboration of three regional Clusters. The service analyse IPR readiness level of the Cluster Organisation and the Cluster Members. The methodology process suggest to the Cluster Manager the action to be taken in order that its Cluster Members could enhance their skills in relation to intellectual property strategies in order to grow and gain access to new technologies, new partnerships, capabilities and markets, and knowledge for the further development of local transformative activities. The developed service supports to the transformative activities for enabling the continuous transformation of the Cluster Organisation, its participating actors and promote the region structural change, which constitutes the base for the designing of the smart specialisation strategy.

Silvio Antonioni
HIT - Hub Innovazione Trentino

Luca Mion
HIT - Hub Innovazione Trentino

Thematic Groups and Projects – Workshops / Labs

With the collaboration between the Lombard cluster for Smart Cities and Communities and Lombardy Region, a new service has been tested, consisting of three basic elements: mutual knowledge of the actors, sharing of solutions, concreteness. The idea was to promote cooperative and participatory work activities between quadruple helix actors, from different clusters. The project has seen the participation of the Cluster Life Science and the Cluster for Technologies and Life Environments. Through a previous path of entrepreneurial discovery, a specific theme has arisen: the management of fragile and chronic patients, in mountain areas, through technological systems and solutions. The challenge was difficult: to respond to the needs of doctors and patients in wider context of public health reform (that is still running in Lombardy) and in a complex territorial context. Innovation had to dialogue with the needs of patients and the evolving organisation of the Lombard health care system. In the center of the entire project was a single tool recognised by all participants as essential: networking. In order to find innovative solutions, the exclusive participation in the working groups (laboratories) only of representatives coming from the world of business or from the healthcare system, could not be enough: the chosen topic, extremely delicate and linked to the social-health issues, has proven to be an excellent "battlefield" given the complexity

Luca Ferraris

of all the stakeholders needs and the variety of the solutions available at this moment. In formulating technological solutions, for telemedicine and teleconsulting, it has been important to have social workers, family doctors, providers of social and health services, public administration, all of them sited in the same working tables. Knowledge must come from the sharing of experiences, in work meetings where all needs must emerge, looking for new angles, in order to find the right union between technological and social innovation. It is therefore easier with networking, the strengthening of a cooperative culture between actors and sectors that nowadays still speak very little to each other but that can generate new innovative solutions putting the people at the center, not seen as just a client. Networking, broadened, not reduced to mere commercial relations alone, is an activity where common trust and harmony is essential. Each meetings must be based on collaborative relationships and on stable collaboration culture. The added value that each actor involved has recognised, during networking activities, has been the capacities of this tool to give the opportunities to people to face and grasp the nuances that allow innovation to be on a human scale and consistent with the needs of people too. The networking service, carried out through real laboratories, must be a constant working method in the clusters experience and should be supported by effective abilities in groups animation and team building from which all the experiences have high possibilities to give positive results.

Luca Ferraris
Cluster Manager of "Technologies for Smart Cities & Communities Lombardy Cluster"

Think Tank of Innovation

On November 6th, 2018 the Department of Engineering and Management (DTG) of Padova University organised the Think Tank RAIDMAP-RAw IDeas for Materials in cooperation with S3-4AlpClusters at Vicenza. It is a pilot action consisting of an innovative training format developed by the University of Padova. It involves companies, especially SMEs from regional clusters and PhD and Master engineering students from the Universities of Padova and Trento. During a very tough day of work, together they are supposed to develop innovative ideas for future research or education initiatives. The RAIDMAP Think Tank, this year was organized in an extensive collaboration among the University of Padova, Veneto Innovazione, Fondazione Studi Universitari di Vicenza, Regione del Veneto, Hub Innovazione Trentino, HES-SO Fribourg and some manufacturing companies and regional innovation networks. SINFONET, the Veneto Green Cluster managed by Prof. Bonollo, participated in the THINK TANK as Pilot cluster since its first edition. Prof. Bonollo explained that participants were divided into two groups according to two areas of interventions: development of high performances and high sustainability metallic and non-metallic components and innovative processes for treatment and reuse of industrial waste.Prof. Bonollo pointed out that activities focused on the exploration and raw materials resource assessment, the mining in challenging environments, the increased resource efficiency

Franco Bonollo

in mineral and metallurgical processes, the recycling and materials chain optimisation for end-of-life products, the substitution of critical and toxic materials in products and for optimised performance, the design of products and services for the circular economy. In the end, the participating working groups developed five new project ideas to be further deepened and transformed into concrete action involving clusters' companies, University departments and students. The Think Tank happened to be also a successful format to improve the interaction between clusters and the regional Smart Specialisation Strategy. It also revealed to be an effective tool for the need for services for clusters as it can create new ideas that can be later developed in further actions. Prof. Bonollo told that, with the aim of sharing the development of innovative ideas for future research or education projects, companies could also collect creative ideas from brilliant students. Companies also found the Think Tank a recruitment tool and a way to enhance the connection with the University. On the other side, students could work in practical cases, with company professionals and be also involved in the implementation phase. As an example, students from Padova and Trento worked together with tutors from universities and different regional clusters to define new project ideas that had been evaluated by the S3-4Alpclusters board for future European research and technology calls.

Franco Bonollo
Department of Engineering and Management and President of the Engineering School, University of Padova.

Monitoring

Simone Weiß, Renate Handler, Gerd Meier zu Köcker and Mateja Dermastia

As a fifth action line, the S3-Innovation Model includes a **Transformative Activity Evaluation Toolbox (TAET)**, which proposes a methodology for monitoring the process, measures, cluster services and policy interventions connected with the model.

Tranformative Activities Evaluation Toolbox (TAET)

With the TA Evaluation Toolbox (TAET), the S3-Innovation Model includes a methodology contributing to the evaluation and monitoring of the process. The aim of the TAET is to demonstrate the role and contributions of cluster

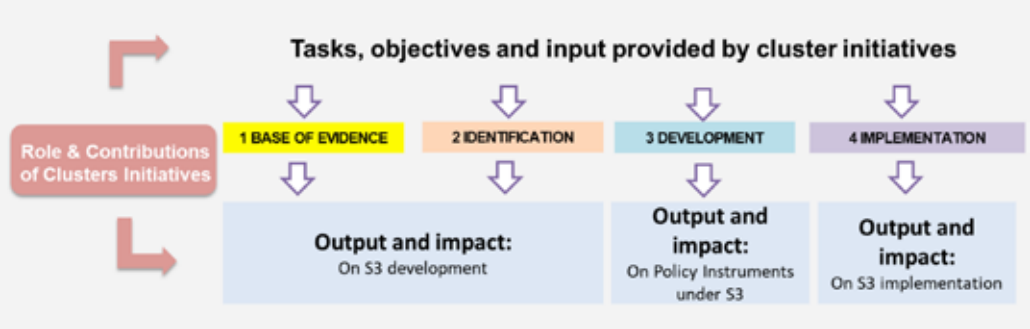


Figure 15: Scope of the TAET: Role and contributions of cluster initiatives

initiatives in the S3-Innovation Model and to raise awareness for the linkages between the two parallel processes on cluster and policy level. It furthermore increases the visibility of cluster activities that support regional development and structural transition processes.

The TAET provides a general framework that supports a **formative evaluation** during the implementation of the S3-Innovation Model and facilitates necessary adaptations and learning throughout the process (Figure 1). For each action line, it proposes feasible elements for monitoring and evaluation efforts related to clusters and emphasises the visibility of the cluster activities.

The S3-Innovation Model proposes a case-based policy model that corresponds to a generic process of S3-implementation. Therefore, the application of the TAET is not limited to the S3-Innovation Model but can be extended to S3-Models in general. As it raises awareness for the contributions of cluster initiatives in the implementation of regional development policy, it also offers guidance for the next generation of S3.

Elements of the TAET

The TAET offers guidelines for a formative evaluation focusing on the interplay between cluster initiatives and policy level. It consists of an assessment table with a comprehensive list of instruments that support the implementation of the S3-Innovation Model in each action line.

Besides the tools included in the S3-Innovation Model, additional

Ex-post Evaluation of outcomes and impacts of the S3-Innovation Model • The S3-Innovation Model proposes a generic process to identify and develop transformative activities that support structural transformation on regional level. Its implementation needs to be adapted according to the regional circumstances and challenges.

Therefore, evaluation efforts to assess the results of the Innovation Model can only be defined in line with the individual case. A distinction can be made between results at a) outcome-level (effects on actors involved in the process) and b) impact level (effects on regional level). An analysis should consider external influences as well as respective time-lags until actual results are observable.

Figure 16: Ex-post Evaluation of outcomes and impacts of the S3-Innovation Model

instruments are proposed. For each of these instruments, possible contributions of cluster initiatives are described. The table facilitates a thorough assessment that comprises a qualitative review as well as a quantitative assessment of the intensity of the cluster initiatives' involvement.

Based on the quantitative assessment of each instrument applied in the process a composite indicator for each action line can be calculated.

It is proposed to summarise the overall results for the entire process in a dashboard.

This overview displays a snap-shot of how clusters are used as a tool in implementing the S3-Innovation Model. It also serves to identify areas to further strengthen the interplay of S3 and clusters.

Considerations on how to use the TAET

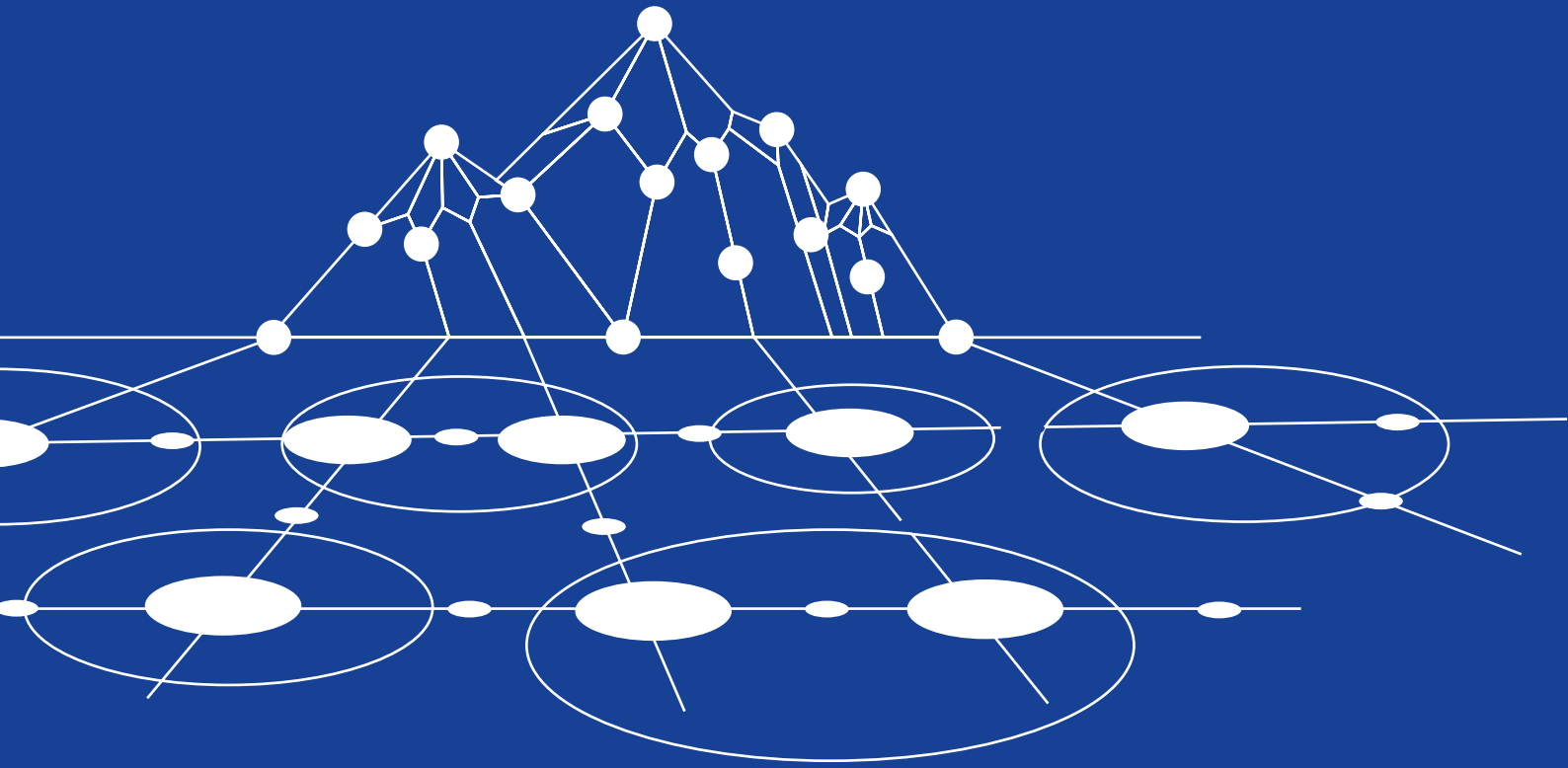
- Consulting the TAET when planning the implementation of the S3-Innovation Model can support the identification of useful instruments and provides information on how clusters can best be involved in the process.

- It supports a continuous reflection throughout the process whether the potential of cluster contributions has been satisfactorily exploited. As an ex-post assessment it gives an overview about the current state of the interplay between policy and cluster level.

- The assessment is best done as a dialogue involving both policy and cluster level. In a joint reflection, framework conditions, success factors and barriers that influence the interplay can be considered and possibilities for further improvement can be identified.

The TAET was developed by ITG Salzburg, convelop, Poly4emi and CABW and can be downloaded from the project website (see Download section, p. 134 of this book).

A Training Tool provides guidance on how to implement the TA Evaluation Toolbox and can be downloaded from the project website (see Download section, p. 134 of this book)



S3-4ALPCLUSTERS

The S3-4AlpClusters Project

Jacques Bersier

How to accelerate innovation processes within clusters? How to increase the impact of smart specialisation (S3) strategies?

These are the central questions that the "S3-4AlpClusters" project, launched by Innosquare Clusters, affiliated with the School of Engineering and Architecture of Fribourg (HES-SO//FR HEIA-FR), intended to answer within the framework of the Interreg VB Alpine Space programme.

The project united 15 partners from 11 alpine regions (Baden-Württemberg, Bavaria, Espace Mittelland, Franche-Comté, Upper Austria, Lombardy, Piedmont, Autonomous Province of Trento, Salzburg, Slovenia, Veneto) for 30 months. It consisted in strengthening the effects of regional economic policies on businesses by selecting and prioritising promising new value chains through an entrepreneurial discovery process in each of the participating regions.

The project was structured into three phases: the first, under the joint leadership of ClusterAgentur Baden-Württemberg, Poly4EmI, Ljubljana and ITG Salzburg, aimed to determine how to help regions to better implement their S3; the second, under the leadership of Hub Innovazione Trentino (HIT), Innosquare Clusters and ITG Salzburg, defined an innovation model at cluster level; the third, under the leadership of Biz. Up and Proplast, tested new services in pilot clusters to better impact businesses and facilitate interregional cooperation.

The project is based on the assumption of a two-way relationship between the concepts of clusters and S3. The objective of S3 is to stimulate a collective discovery of new opportunities and to establish a structural transformation that forms the basis for a new local concentration of resources. S3 not only provide development and transformation potential for existing clusters, but also opportunities for emerging clusters. They can serve to spark entrepreneurship within clusters, accelerate innovation processes and strengthen promising new value chains. The project demonstrated that clusters are essential tools in the implementation of S3.

A series of Entrepreneurial Discovery Workshops (EDW) was launched with the aim of developing new ideas for smart specialisation with representatives of the regional business and innovation ecosystem. The EDWs were defined on the basis of the combination of regional strengths and existing entrepreneurial resources and opportunities generated by relevant technological developments and innovations.

Particular interest was given to identifying synergies and complementarities between the strategies of the different regions (cEDW). To this end, the project analysed in detail the S3 of the participating regions and identified strategic priorities, mentioned in the strategies of several regions, representing a great potential for interregional collaboration and strong opportunities for the creation of new value chains (transformative activities). The results of this analysis were summarised by four “S3-Synergy

Diamonds" corresponding to four EUSALP challenges, representing in the four corners the main strategic priorities and on the axes the potential transformative activities identified in the regional strategies.

These potential transformative activities were analysed in the framework of workshops (ADW/cADW) where cluster representatives participated, at regional or cross-regional level in order to further develop new transformative activities.

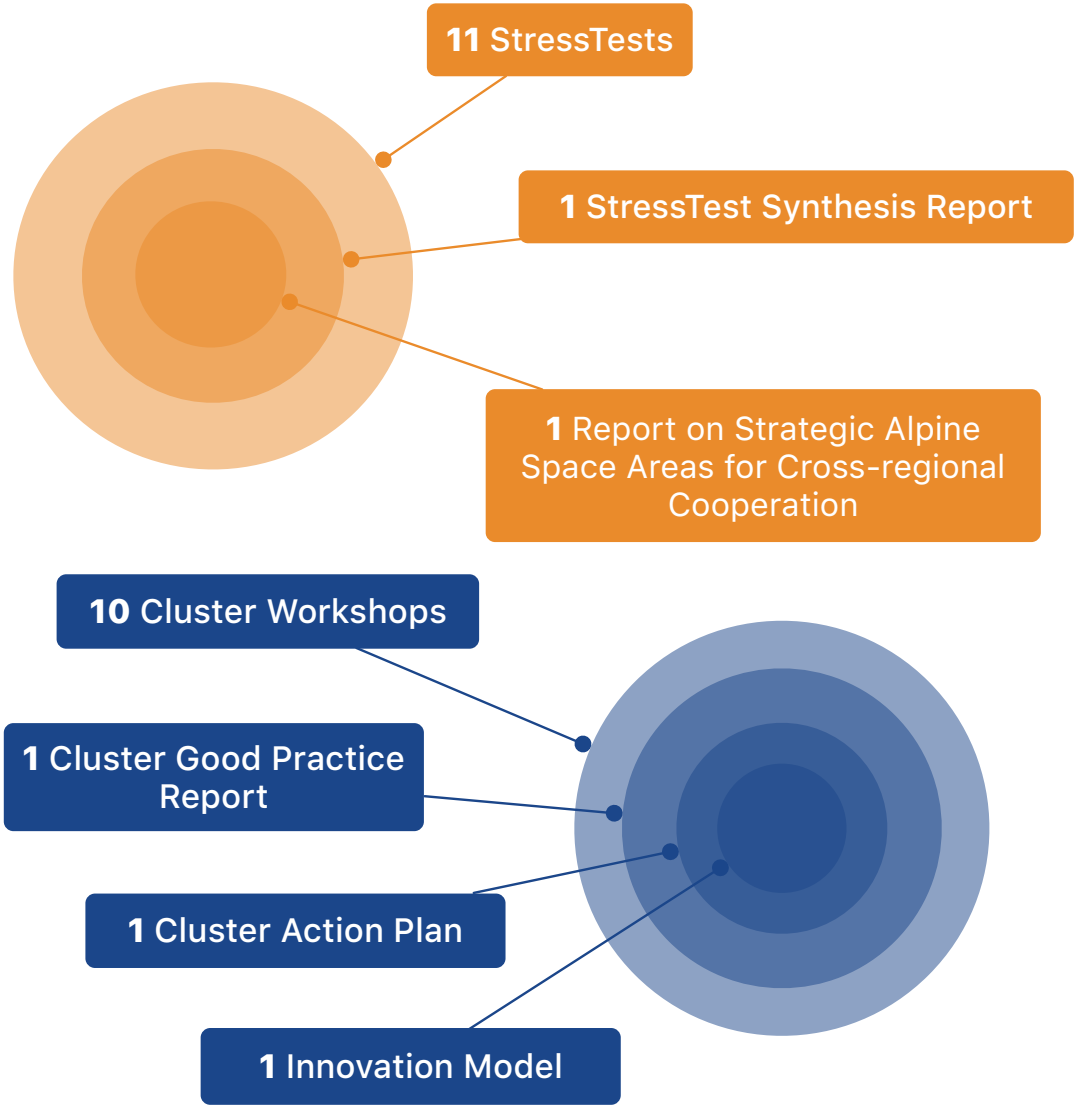
The experience with the development of transformative activities at cross-regional level demonstrated the need for cross-regional synchronisation of calls and funding mechanisms (ACIE).

In parallel, some new services have been tested by pilot clusters as a tool to support the implementation of transformative activities and recommendations on their implementation have been made (TACT).

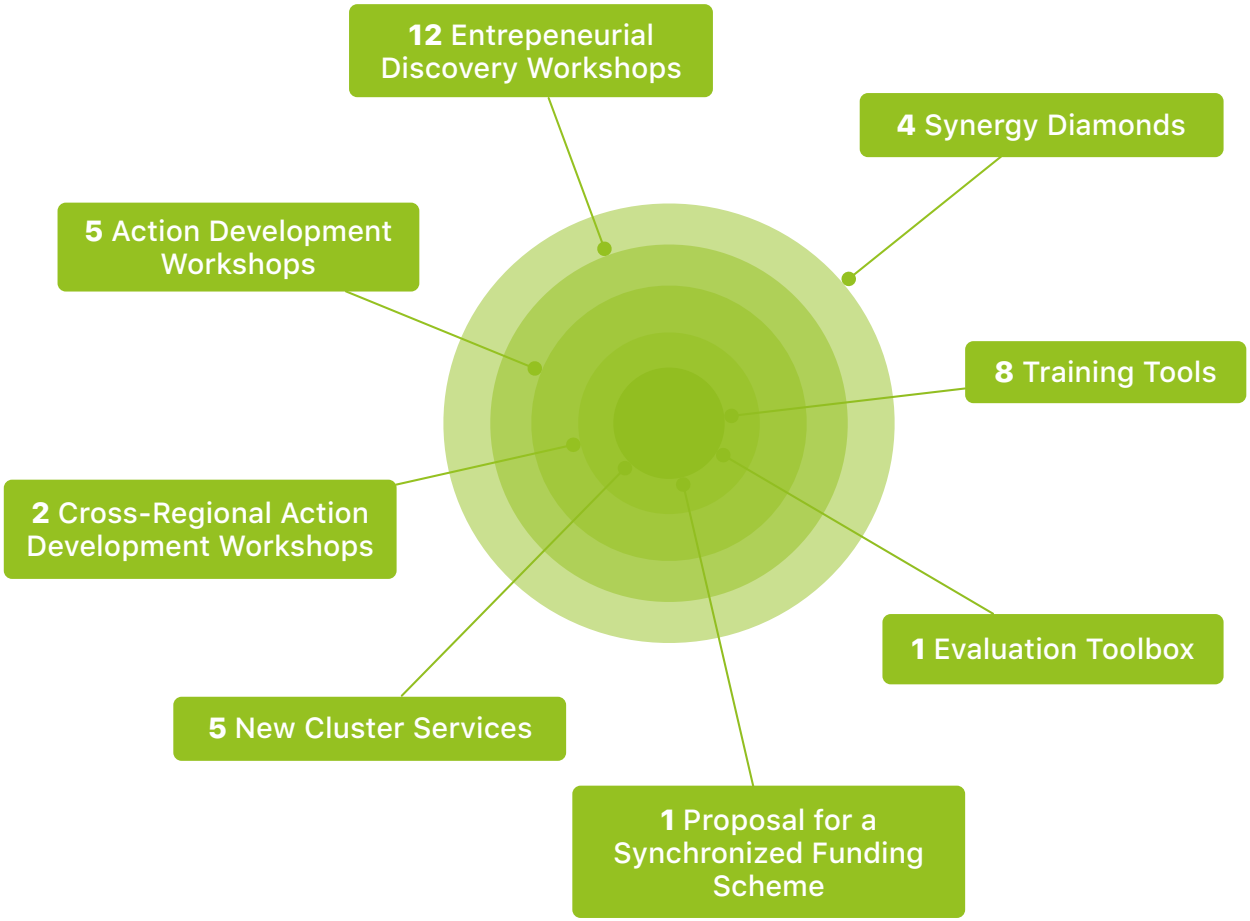
The S3-Innovation Model and its tools, as presented in this publication, provide a very concrete response to the regional authorities in charge of implementing their S3.

The Project in Numbers

Development of the S3-Innovation Model



Implementation with Pilot Clusters Across the Alpine Space



Synergy diamonds consist in a tool designed to inform and to increase awareness of the Smart Specialisation Strategy opportunities within a given economical ecosystem.

Though Franche-Comté is a small territory, there is a high development potential that can be empowered through S3. However, as in many other territories, a first difficulty is to make actors be aware of the S3 concepts and to trigger then the emergence of synergic connexions between these local actors, toward an innovation product intended to address a new worldwide emerging market.

Laurent Larger

Once identified and once involved in a single S3 project, these local actors are forming a team gathering a unique set of fruitful joint expertise necessary for the targeted innovation, which expertise was already available initially within the region but which has become then synchronised toward the same goal of a transformative activity of a high economic impact.

Beyond the tool itself, S3 needs a structure and an organised framework which can allow for the construction of a consortium around a project toward a transformative activity.

As focused in the development of the S3-4AlpClusters interreg project, clusters are foreseen as the privileged organisation which can potentially carry this well-structured and connected framework. This framework indeed needs to promote the connexion between the S3 actors or players, which are typically the traditional

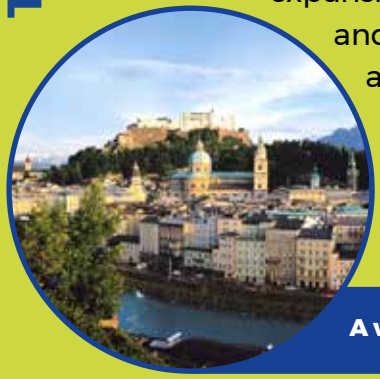
stakeholders of the well-known triple or even quadruple helix model. In the particular case of the Franche-Comté Region, an academic research institute in the field of Engineering and Physical Sciences, FEMTO-ST, actually played the role of a kind of micro-cluster. This role resulted in the involvement of the institute, together with several of its spin-off companies, into five different S3 projects.

The FEMTO-ST institute thus actually played the role of a central node in a network comprising industries (many of them being spin-offs), academic research groups (most of them from FEMTO-ST), and the regional government with which the institute has developed strong links through the additional support of high impact research projects successfully granted at the national or international level. The involvement of FEMTO-ST in the project S3-4AlpClusters came as a strong strategic support in this role as a "micro-cluster", gathering several spin-off companies, and providing a fertile spirit for innovation involving highly specialised scientific and technological know-how to be uniquely combined toward a transformative activity.

Laurent Larger
University of Franche-Comté,
FEMTO-ST Institute

It is precisely the smallness of Salzburg's structures that requires a high degree of networking and cooperation both internally and externally, in order to attain critical sizes, capacities and competences as well as creating an unmistakably distinctive profile for this region, focusing on the principle of further consolidating the strengths.

The active participation of ITG in the S3-4AlpClusters project can be seen as a crucial and important aspect for strengthening Salzburg's international orientation and expansion of coordination and cooperation activities.



A view of Salzburg

The added value of the project for the implementation of S3 in the Salzburg region can be summarised as follows:

- The project calls for an in-depth and comprehensive analysis of the different aspects and levels of the S3 topics in the course of a continuous dialogue with science and industry
- The logic behind the S3 as well as the Synergy Diamonds help the Salzburg region to create a distinctive profile as well as bundle existing competencies and capacities interdisciplinarily to better identify development potentials
- The tools and methodologies developed within the project help the region to identify competence gaps and explore ways to bridge / close them via similar processes in partner regions, thus opening up new cooperation potentials

- The exchange of best practices between regions of different sises and approaches with regards to RTI policies and cluster systems encourages mutual learning
- Within the context of this project specific tools and methodologies are developed and tested which will be adopted and implemented in the cluster activities | RTI policy | regional development strategy of the Salzburg region

***Region of Salzburg**, Smart Stories for the S3 Platform, summarized by:* **Simone Weiss**, *ITG Salzburg*

Simone Weiss

Perspective of a Policymaker

Smart specialisation is a platform for concentrating development investments in areas where Slovenia has the critical mass of knowledge, capacities and competences and where there is innovation potential for placing Slovenia within global markets and thus enhancing its recognisability.

The pivotal contribution of S4 lies in (i) clear focus on investment priorities; (ii) design of a comprehensive, consistent, sustainable and tailored national development policy; (iii) creation of a corporate innovation ecosystem bringing together the relevant stakeholders, especially via setting up and operation of Strategic Research and Innovation Partnerships (SRIPs), and (iv) promotion of accelerated, deep and joint development and marketing internationalisation that guarantees the necessary critical mass, and facilitates positioning within global value chains.

Gorazd Jenko

Crucial importance of S4 for Slovenia is two-fold: (i) the strategy pushes us to rethink and transform our development paradigm and allows Slovenian economy to get on a par with world's most productive economies, which can only be achieved through collaboration, i.e. intertwining (investment and intellectual) potentials, sharing risks, creating a state-of-the-art innovation (S4) ecosystem, designing a comprehensive and focused innovation policy, and (ii) strategy will act as the enabling condition in the next multi-annual financial

framework - S4 will be the precondition allowing the country to access the resources needed for the goal 'Smart Europe' intended for investment in RDI, digitalisation, entrepreneurship, education and training. Here we have to add the importance of internationalisation for Slovenia with Alpine Space being - both at the policy and stakeholder level – one of the most important and desirable geographical areas.

The S3-4AlpClusters project brings together partners from 7 countries or 11 regions of the Alpine Space to develop an "S3-innovation model" offering a set of dedicated tools and a methodology that allows the EU regions and Member States to better involve regional clusters in the development and implementation of Smart Specialisation Startegies - S3 on the one hand, and, on the other, supports the clusters in making full use of these tools and methodologies to upgrade their operation, improve cluster-based cooperation and enhance innovation capacities of cluster members, especially SMEs.

Government Office for Development and European Cohesion Policy, the coordinator of S4 preparation and implementation, finds participation in the S3-4AlpClusters project, which features an S3-Innovation Model allowing fast identification of development opportunities, and supporting collaboration or integration of countries/regions, clusters and other entities in joint development projects, of crucial importance.

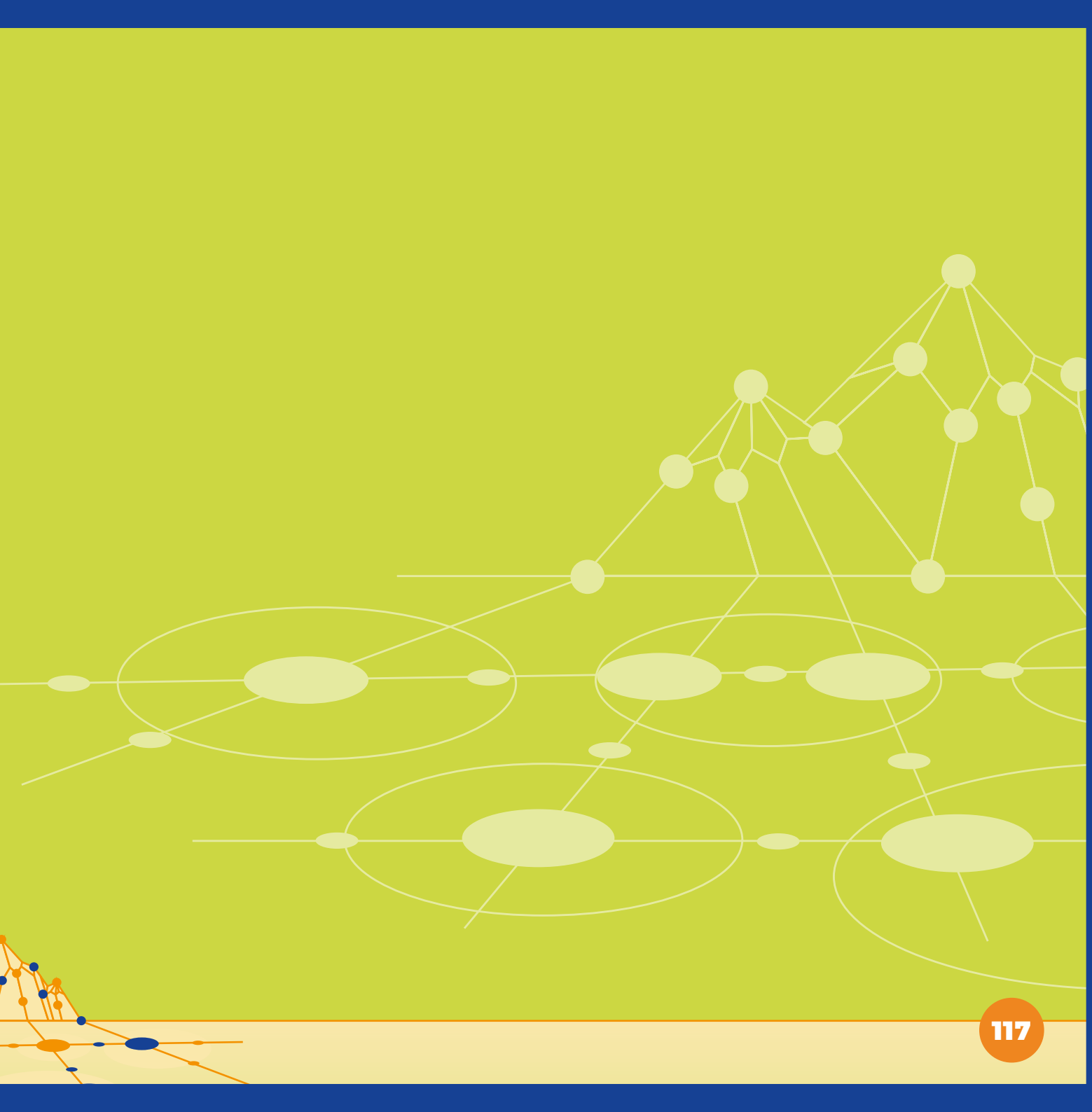
Development and market internationalisation and integration in international value chains along with human

resources development and skills upgrade to face future challenges and demands are a must in today's business world, which especially holds true for small, development and innovation-oriented economies like Slovenian. It goes without saying that the cause and the effects in this relation are strongly intertwined.

All developed tools of the S3-Innovation Model are important in this context: valuable lessons were learned in the process of co-creating the innovation model along with its tools, while SRIPs (and similar clusters from partner regions) applied and tested the tools and processes to see how well they worked.

Both the workshops, the national one which aimed at stress-testing and shaping transformative activities by using synergy diamonds, and the 2018 international workshop which gathered Slovenian SRIPs and clusters from partner regions of Upper Austria and Bavaria (cADW on Circular Economy & Lightweight – Transformative Activities in Design, Production and Recycling of Fiber Composites) showed that the S3-Innovation Model can be easily translated into action on the ground, useful in practice and attractive for both policy makers and stakeholders or users – clusters and SRIPs in the case of Slovenia. We plan to use the entire model, to the greatest extent possible, in the process of upgrading the existing S4, which is set to take place in 2019.

Gorazd Jenko
Government Office for Development and European Cohesion Policy



The View of a Cluster Manager

The implementation of Slovenia's Smart Specialisation Strategy (S4) is reflected in the establishment and operation of Strategic Research and Innovation Partnerships, including the Strategic Research and Innovation Partnership – Networks for the Transition into a Circular Economy (SRIP – Circular Economy). The objective of SRIP – Circular Economy (eco system, cluster) is (i) to establish a sustainable public-private partnership between economic entities (micro, small, medium-sised and large enterprises), knowledge institutions (faculties, institutes), various trade and other associations and the non-governmental sector in cooperation with the state which supports the operation of SRIP; and (ii) to establish value chains and enhance the competitiveness of the Slovenian economy by developing high-tech products and services in the global market. It is important to recognise the necessity of transforming the economy from linear to circular systems by closing material flows, enhancing energy efficiency, minimising the use of resources, prolonging the use of products, and enhancing zero-waste production. Thus, Slovenia as a region and the Slovenian economy are included in global innovation flows supporting the creation of new jobs of higher value added.

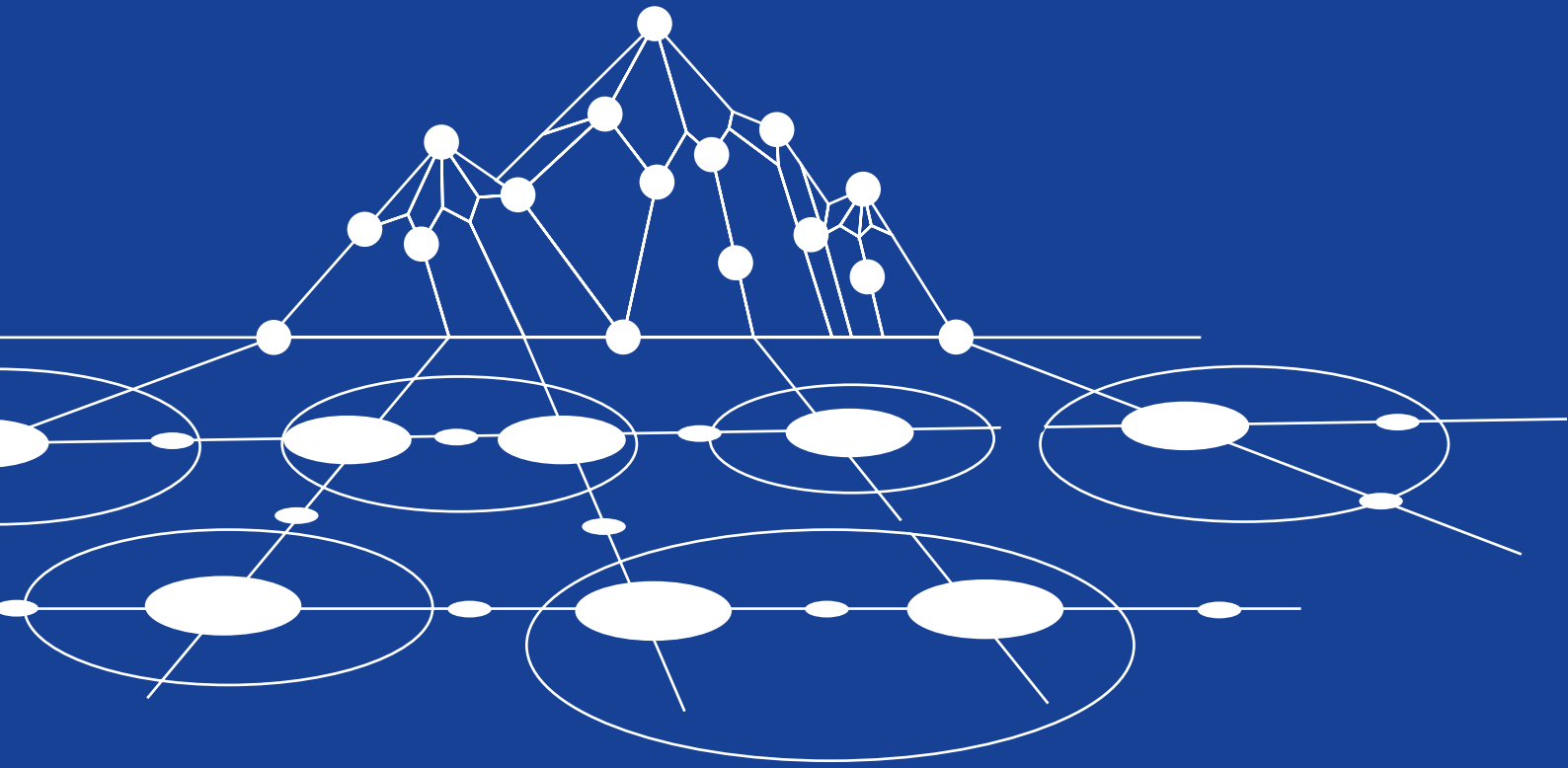
Obtaining new knowledge and experiences is essential in enhancing SRIP operational efficiency. Thus, the international workshop S3-4AlpClusters Pilot TestNS2: cADW on Circular Economy, which focused on the Design, production and recycling of fibre composites, established the platform for innovative topics and partner/

interregional cooperation. Getting acquainted with an innovative methodological approach, i.e. the S3-synergy diamonds, which enables connecting the S4 with a cluster, indicated how the new methodology can prove useful for SRIP – Circular Economy, in terms of establishing:

- new (circular) business models within the cluster/SRIP – Circular Economy, which support enhancing the productivity and competitiveness of the economy
- (interregional) value chains, joint project cooperation and entry into the global market
- interregional partnership and economic integration and cooperation, in particular within the Alpine macro-region

At the international workshop, we met with project partners and we continue to stay in touch with individual partners; for example, we are working with Upper Austria to find a way to establish project cooperation in the field of plastic in circular economy. We are also trying to establish cooperation with a partner from Baden Württemberg in the field of fibrous composites. Taking into account the results of the international workshop, SRIP – Circular Economy has also started to communicate with Green Tech Cluster Styria GmbH from Graz, with which we are entering into a more serious long-term cooperation starting in 2019.

Dr. Dragica Marinič
SRIP coordinator – Circular economy



CONCLUSIONS AND ACKNOWLEDGEMENTS

Conclusions

Smart Specialisation Strategies (S3) are a common policy lever at regional level within the EU. They aim at supporting regions in achieving structural change in order to generate the innovation and growth needed to harness globalisation. However, recent experiences show that the identification and development of transformative activities - i.e. the innovation capacities and actions that have the potential to lead to this structural change - remain a significant challenge in the practical implementation of S3. S3-4AlpClusters tackled the two identified roots of this challenge. Firstly, we identified a lack of experience among regions on how to use clusters to implement S3. Secondly, real transformative activities could often be developed more successfully in a joint effort across regional borders. The identified challenges were addressed through the elaboration of a systematic process for the identification, development and implementation of transformative activities with cluster initiatives: the S3-Innovation Model. Over the last two years, the tools of the model have been applied and tested within 11 regions and 30 pilot clusters across the Alpine Space.

The S3-Innovation Model consists of five action lines: the generation of a base of evidence, the identification, the development and the implementation of transformative activities, and finally the evaluation of the process. Each action line includes tools to involve clusters in the process and to facilitate cross-regional cooperation. Quantitative and qualitative analysis, StressTests and S3-Synergy-Diamonds are used as an innovative way to depict existing capacities and detect opportunities for structural transformation, both within and across regions. Regional and cross-regional Entrepreneurial Discovery Workshops (EDW / cEDW) build on this base of evidence in order to identify transformative activities. Next, Action Development Workshops (ADW / cADW) allow working out concrete actions - such as R&D projects, networking or development of critical skills – in order to gain critical mass for the identified transformative activities. Particular focus is put on facilitating the cross-regional development of actions, with the proposal for a synchronized funding scheme across regions (Alpine Cluster Innovation Express – ACIE). The implementation of actions is supported by a collection of best practices of cluster services covering transversal fields such as education, technology, growth, research or collaboration (Cluster

Toolbox TACT). Finally, the S3-Innovation model also includes a methodology for evaluation and monitoring of the process (Evaluation Toolbox TAET).

After 30 months of inspiring collaboration within the project partnership and its stakeholders, the tools and methodologies of the S3-Innovation Model are now made available to a large public. Based on our first positive experiences with the model and its tools, we conclude this book with three recommendations we suggest to consider in future policy designs for S3-implementation:

- The focus of S3-implementation should shift from existing broad priority areas to new transformative activities.
- Cluster initiatives should be used as levers for regional economic development and take over active roles in a systematic process to identify and develop transformative activities.
- Cross-regional cooperation in the identification, development and implementation of transformative activities should be further supported by cross-regional synchronized funding schemes

Indeed, it is only by putting the individual tools developed in the project into the context of a systematic process with a strong focus on transformative activities - the S3-Innovation model - and by making them the levers for cross-regional cooperation and a systematic involvement of cluster initiatives in regional economic development, that they become fully relevant for smart transformation processes leading to innovation within businesses, new value chains and jobs in innovative new areas. As such, the S3-Innovation Model and its tools provide a very concrete response to the challenges faced by regional authorities in charge of implementing S3, and offer a practical approach for clusters to actively participate in the process and to engage in innovative transformative activities across regional borders in the future.

Jacques Bersier, Michael Keller
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Foray (EPFL), from whom we learned a lot, and with whom, together with Gerd Meier zu Köcker, we travelled the regions of the Alpine Space from Besançon to Trento and Linz to Milan to get the identification, development and implementation of new transformative activities started. We are also grateful to Dominqiue Foray's colleagues on the project's Advisory Board and to Christian Altmann (Head of Clusterland Business Upper Austria) in particular for his support with the moderation of the final events.

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Appendix: Downloads

Main Resources

1. All the project reports referred to in the book can be downloaded from the S3-Innovation Model Website: https://bit.ly/2E8FzuJ.
2. Videos with additional information are available on the YouTube Channel: https://bit.ly/2BQst5f.
3. All the Training Tools of the different action lines of the S3-Innovation Model are available online: https://www.alpine-space.eu/projects/s3-4alpclusters/en/project-results/downloads/training-tools.

FOR A QUICK ACCESS TO THE LINKS ABOVE, YOU CAN ALSO EASILY USE THESE QR CODES

1. DISCOVER THE S3-INNOVATION MODEL AND ITS TOOLS!

2. DISCOVER OUR OFFICIAL YOUTUBE CHANNEL

3. DOWNLOAD THE TRAINING TOOLS

Process and Tools of the S3-Innovation Model

Base of Evidence

The Training Tools

- Training Tool: Quantitative and Qualitative Analysis: https://bit.ly/2Er8n3a.
- Training Tool: StressTest: https://bit.ly/2GZ2WKm.
- Training Tool: S3-Synergy Diamonds: https://bit.ly/2GG1qNV.

More Information

- Meier zu Köcker, G., Dermastia, M. and Keller, M. (2017). Strategic Alpine Space Areas for Cross-regional Cooperation. Interreg Alpine Space – S3-4AlpClusters. Download: https://bit.ly/2SmvRKC.
- Meier zu Köcker, G. and Dermastia, M. (2017). StressTesting Regional Approaches Conducive to Implement S3 through Clusters. Interreg Alpine Space – S3-4AlpClusters. Download: https://bit.ly/2VemyxZ.

Identification of Transformative Activities

The Training Tool

- Training Tool: Regional and Cross-regional Entrepreneurial Discovery Workshops (EDW / cEDW): https://bit.ly/2GEWd97.

More Information

- Foray, D., Keller, M., Bersier, J. and Meier zu Köcker, G. (2018). Transformative Activities for Smart Specialisation: Considerations on a Workshop Methodology. Working Paper EPFL, HES-SO//FR HEIA-FR, ClusterAgentur. Fulltext available: https://hesso.tind.io//record/2759?ln=en.

Development of Transformative Activities

The Training Tools

- Training Tool: Regional and Cross-regional Action Development Workshops (ADW / cADW): https://bit.ly/2SpT7HG.
- Training Tool: Synchronized Funding Scheme (ACIE): https://bit.ly/2BJwA2X.

More Information

- Meier zu Köcker, G., Dermastia, M., Keller, M. and Bersier, J. (2018). Alpine Cluster Innovation Express (ACIE) - Proposal for a Cross-regional Scheme to Support the Development of Transformative Activities in the Alpine Space. Download: https://bit.ly/2GHFXEy.

Implementation of Transformative Activities

The Cluster Toolbox (TACT)

- TACT - 23 Best Practices from the Alpine Space: https://bit.ly/2E4BqrS.
- TACT - 14 New Cluster Services: https://bit.ly/2ILhiAP.

The Training Tool

- Training Tool: Transformative Activity Cluster Toolbox (TACT): https://bit.ly/2TdV4v3.

More Information

- Antonioni, S., Mion, L., Keller, M. and Bersier, J. (2018). Good Practice Report. Interreg Alpine Space – S3-4AlpClusters. Download: https://bit.ly/2GF45aG.
- Antonioni, S., Mion, L. and Keller, M. (2018). Regional Approaches to Implement S3 through Clusters - Cluster Workshop Synopsis Report. Interreg Alpine Space – S3-4AlpClusters. Download: https://bit.ly/2VcTx5X.

Monitoring

The Evaluation Toolbox (TAET)

- Toolbox to evaluate the process: https://bit.ly/2tAyAGg.

The Training Tool

- Training Tool: Evaluation Toolbox (TAET): https://bit.ly/2U3D7fT.

More Information

- Handler, R., Weiss, S., Gruber, M., Dermastia, M. and Meier zu Köcker, G. (2019). Evaluation of the interplay between S3 and Clusters - Evaluation Toolbox. Interreg Alpine Space – S3-4AlpClusters. Download: https://bit.ly/2tAyAGg.

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