Agency for Territorial Development of the Emilia-Romagna Region (ASTER)

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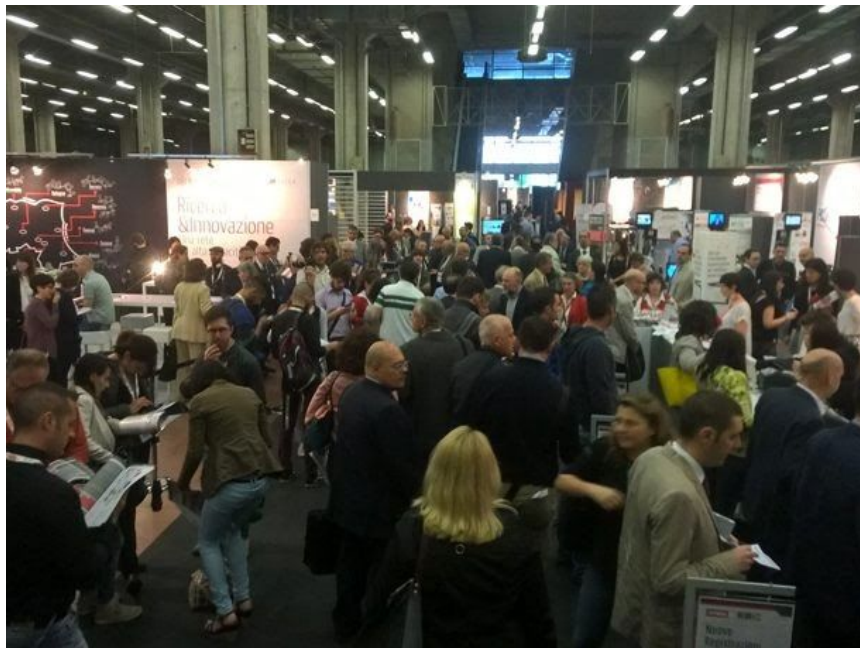
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Case description

ASTER – the Consortium for innovation and technology transfer of Emilia-Romagna Region – is composed by the Emilia-Romagna Regional Government, the six Universities and the National Research Centers located in the region, and the Regional Union of Chambers of Commerce, working in collaboration with regional Business Associations and Innovation Centers. ASTER works with enterprises, universities, research centers and institutions for the development of the innovation ecosystem of the territory.

Appointed by the Regional Department for Production Activities, ASTER was in charge of leading the regional Smart Specialization Strategy (S3) priority co-creation process in 2013-2014, while in 2018 it has led the regional S3 participatory evaluation process.

ASTER coordinates the Emilia Romagna High Technology Network, which represents the very heart of the regional R&I ecosystem. With its Industrial Research Laboratories and Innovation Centers, located in the Technopoles, the High Technology Network provides expertise, tools and resources for enterprises development. It is organized in six thematic platforms where enterprises and research centers gather around the most important industrial sectors identified by the Emilia-Romagna Smart Specialization Strategy(S3).

Context

ASTER represents a central actor within the Emilia-Romagna Research and Innovation policy framework. Emilia-Romagna is a region situated in the north of Italy, counting a total of 4 452.629 inhabitants on a territory of 22 452.78 square kilometers, divided into 9 provinces and 328 municipalities. Its administrative capital is Bologna.

On a national level, Emilia-Romagna stands as the second region in terms of expenditure in R&I in relation to the regional GDP (1.9%), with 8.4 out of 1000 employees working in the sector[1]. Historically, Emilia-Romagna has always distinguished itself as a territory where entrepreneurial and industrial development has thrived, going hand in hand with the construction of a solid, cohesive and inclusive society, rating as one of the regions with the highest quality of life and lower unemployment rates at the EU level.

Moreover, Emilia-Romagna hosts a relevant network of competences and infrastructures of a national and international caliber. Besides the remarkable number of Universities and Research Centers (34 in total), major research institutions and networks are based on its territory, namely: The European Centre for Medium-Range Weather Forecasts - HPC data center; the largest Italian computing center Cineca (one of the most important worldwide); the National Institute for Nuclear Physics; and the very first national Competence Centre for Industry 4.0, grouping 57 actors from University, research and industry.

Cooperative by nature

The Emilia-Romagna region is characterized by a well-rooted participative and cooperative culture, which results in a peculiar socio-economic ecosystem, where a specific attention is paid to the new waves of social innovation and social business. In the latest official report on "Regional economy", jointly drafted by the Emilia Romagna Region and the Regional Union of Enterprises, UnionCamere (December 2018)[2], a wide section was dedicated to the so–defined "not otherwise classifiable" and "not yet invented" emerging technologies as well as industry and business models. Here space was given to research results and main findings from AICCON Research Centre, operating within the Bologna University, and nationally recognized for its excellence in the "social innovation and social business" sector. Emilia-Romagna region has been hosting for 18 years the major annual event "Le Giornate di Bertinoro", dedicated to the "civil economy" and the social innovation ecosystems.

Civic participation in the creation of public value is a traditional feature of Emilia- Romagna's societal fabric, which counts 13 volunteers per 100 inhabitants and 27.000 non-profit enterprises (according to the Italian law taxonomy). In such a context, Emilia- Romagna is consistently investing in building up a quadruple helix **"model"** of co- creation for profit enterprises, public administration, research and knowledge centers and social economy actors.

Collaborative by law

Over the last decades some of the most innovative, enabling policy instruments in the Italian landscape have been designed and tested in Emilia-Romagna.

Through the Regional Law n. 14/2014 "Promoting investments in Emilia-Romagna Region**"**, the region designed a set of actions with the aim of gravitating towards a social innovation

and social impact approach in the three-year plan for economic activities, research and technological transfer, as well as the human resources and managerial training. The commitment to link the entire regional plan to the AGENDA 2030 and the SDGs has been progressively more and more clear in the regional policy papers.

In 2015, fifty organizations from the regional, institutional, economic and social ecosystem signed a regional Job Pact, where a new model for a regional, sustainable development was designed with the aim to enhance social cohesion while exploiting the strategic assets as outlined in the Smart Specialization Strategy. A new deal of public policies was envisaged, based on concertation procedure, transparency, openness and evaluation, as well as on institutional cooperation and dialogue with stakeholders and citizens. A specific focus in such a model is on the research and innovation network and the key role played by ASTER. Co-design and collaborative approaches driven by social innovation and social impact, mainly at the urban and territorial level, are also envisaged.

With the Regional Law n.18 /2016, "Consolidated Law for the promotion of legality and exploitation of responsible citizenship and economy", an integrated approach to the regional competitiveness is taken, working on the dimensions of economic, social and environmental sustainability.

On October 2018, the new regional Law on Participation to the Public Policies design was approved (L. n. 15/2018). The Law itself was the result of a participatory process carried out throughout the regional territory as well as an exchange with other Regions. A specific article deals with Participatory projects Quality Certification (Art. 17).

Finally, yet importantly, the collaborative approach is well implemented also at the city level. Not by chance, Bologna was the first Italian city to adopt and test the Regulation for the Commons Collaborative Governance (2012). Up to date, a total of 11 municipalities, located within the Emilia-Romagna territory, adopted their own Regulation.

A concerted entrepreneurial and innovation landscape

On its regional territory Emilia-Romagna counts on 405.000 enterprises, of which 12% are run by foreigners, 20% by women. Almost 90% of its total enterprises are composed by up to 5 employees, while only 0.3% counts 100 employees or more. Following the Smart Specialization Strategy classification, percentage shows that agro-alimentary and construction sectors are on top (22.7 % each), followed by cultural and creative industries (10.5%), mechatronic and motorist (9.1%) and highly intensive knowledge- based services (5.8%), and health and wellbeing industry (5.1%). Moreover, 5000 cooperatives are active in the region, employing 250.000 persons (14% of the total on the regional basis) and counting for over 40 billion in terms of revenue.

Emilia-Romagna set a clear regional strategy on innovation already in 2002 with the Regional Law no. 7/02 "Promotion of the Industrial Research, Technology Transfer and Innovation in the productive system of Emilia-Romagna". The region's strategy can be considered as an example of governance for the implementation of a "knowledge-based economy", focusing not only on actions to promote isolated excellence, but on a framework

of actions in order to create a "Regional Ecosystem of Innovation", for a widespread increase of the region's competitiveness.

The Emilia-Romagna region's Research and Innovation ecosystem is connected through the experience of the Regional High Technology Network, and of Clust-ER Associations, dialogue platforms that will be described more in depth in the following paragraphs.

Emilia-Romagna is also a member of the Smart Specialization Platform for Industrial Modernization (S3P-Industry), which aims to support EU regions committed to generating a pipeline of industrial investment projects following a bottom-up approach - implemented through interregional cooperation, cluster participation and industry involvement. In particular, Emilia-Romagna is a member of the Thematic Partnership "Social economy to foster Industrialization Partnership". The partnership intends to build bridges between S3 and Social Economy, with a view to foster a industrialization partnership.

Organization

Name of the Policy Lab: ASTER - Consortium for innovation and technology transfer of Emilia-Romagna Region

Contact person: Giorgio Moretti, Head o High Technology Network and Vertical Themes Unit

Webpage: www.aster.it

Country: Italy

Since 1985 ASTER – the Consortium for innovation and technology transfer of Emilia-Romagna Region – has shaped and defined pathways and tools for innovation, industrial research, technology transfer and for the improvement of high-quality skills and careers on innovation. ASTER's mission is to build the Regional Innovation System, by launching shared actions, projects and collaborations for the integrated innovation of Industry, Human Capital, Society and Territory, intervening on Growth and Competitiveness, Talent and Entrepreneurship, Cohesion and Participation. ASTER's activities and services target the main actors of the Emilia-Romagna research and innovation community, supporting strong collaboration between research and enterprises for a sustainable economic development of the regional territory while maintaining the focus on the social dimension of growth and wellbeing. In doing so, it has developed innovative instruments to support access to financial resources for innovation and the exploitation of intellectual property rights.

ASTER is shaped by a quite a unique governance, in relation to the national landscape. It is a Consortium of R&I systems operating in the regional territory, with a view to promote and coordinate the industrial research and to develop research and business joint strategies and actions. ASTER main shareholders are the Emilia-Romagna Regional Government (which holds the major stock amount, 30,470%), the six regional Universities (Bologna, Ferrara; Modena and Reggio-Emilia, Parma, Università Cattolica di Piacenza and a branch of Politecnico di Milano placed in Piacenza), the National Research Centers located in the region (e.g.: the National Research Council - CNR; the Italian National Agency for New Technologies, Energy and Sustainable Economic Development – ENEA; the National

Institute for Nuclear Physics – INFN), and the Regional Union of Chambers of Commerce, working in collaboration with regional Business Associations and Innovation Centers. ASTER collaborates with enterprises, universities, research centers and institutions for the development of the innovation ecosystem of the territory. ASTER's current Chief Executive Officer was directly appointed by the Regional Government through a Decree of the Regional Government, then deliberated by the Assembly of partners on 13 July 2017.

ASTER is also part of a number of public and private national, European and international networks, which is coherent with the consortium's capacity of making the most out of shared value, resources and networked intelligence. Among these, it is worth mentioning that ASTER, in collaboration with Hub Innovation Trentino – HIT- and Trentino Sviluppo S.p.A, co-manages the Climate-KIC's Start-Up Accelerator Program, aimed to increase knowledge on climate change and promote innovation in mitigation and adaptation, fostering cleantech business in Italy.

Processes and tools

Given the scope and complexity of the ASTER mission, the workforce results to be organized in a quite articulated human resources structure (Figure 1), where the operative units are classified according to the main areas of activities: Infrastructures;High Technology Network and vertical themes; Technopoles, territories, and territories' attractiveness; Enterprise Innovation; Startup; Europe and Internationalization; Finance and IPR; Competences for Innovation.
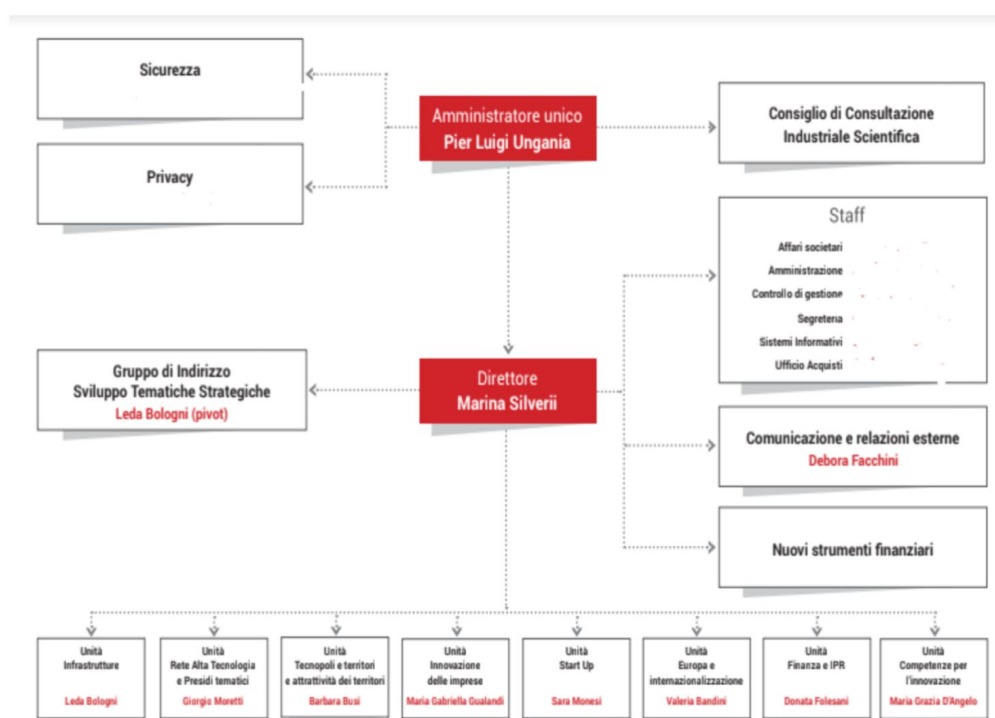

Figure 1 - ASTER'S organigramm

ASTER is an entity deeply rooted and connected within the regional economic and social fabric, and with multiple functions in relation the regional stakeholders' landscape, as shown by the its organigram. In this context, it is therefore difficult to outline and identify fixed set of tools, approaches and methods applied by ASTER to achieve its vision and to pursue its objective of shared governance and shared value.

In the following, are listed a couple of initiatives through which the ASTER reality contributes to co-create value for the regional territory: ASTER coordinates the Emilia- Romagna High Technology Network, which, through its Industrial Research Laboratories and Innovation Centers, located within the Technopoles, provides expertise, tools and resources for the development of enterprises. The Network of enterprises and research centers gathers around the six most important regional industrial sectors as identified in the Emilia-Romagna Smart Specialization Strategy - S3: Agrifood, Constructions; Energy and Environment; ICT and Design; Life science; Mechanic materials. The High Technology Network's governance evolved over time into "a new model, where enterprises and research centers gather around the most important industrial sectors identified by the Emilia-Romagna Smart Specialization Strategy - S3".

Such a governance model is at the very basis of the Clust-ER Associations: an additional platform created in 2018, as a result of the Smart Specialization co-creation process, also coordinated by ASTER.

Clust-ER is a space where communities of public and private bodies (research centers, businesses, training bodies) can "share ideas, skills, tools, and resources to support the competitiveness of the most important production systems in Emilia-Romagna." Clust- ER regional approach to competitiveness is linked to a holistic and integrated vision: "it is a competitiveness that no longer relies on the ability of individual research centers or businesses to operate on the global market, but more and more on the ability of the entire local system to be innovative and attractive" says Giorgio Moretti, Head of High Technology Network and Vertical Themes Unit. In Clust-ERs, research laboratories and centers for innovation, belonging to the High Technology Network, team up with the business system and the higher education system to make up the inter-disciplinary critical mass necessary to multiply opportunities and develop strategic projects with a high regional impact. Within Clust-ERs, laboratories and businesses work together according to the open innovation model to identify opportunities for partnerships and to add value to research results. The Associations encourage the development of shared projects and promote the participation of members in calls for tenders as well as national and international funding programmes.

The participatory construction of the S3 strategy in the Emilia-Romagna region

General description

The following is the description of a characterizing initiative that exemplifies the work processes and the methods and tools used by ASTER.

Name of the initiative: The participatory construction of the S3 strategy in the Emilia-Romagna Region

Website: http://fesr.regione.emilia-romagna.it/s3

Initiative domain: Research and Innovation policy

Duration: 2013-2014, with a review process in 2018

Governance

Conceived within the reformed Cohesion policy of the European Commission, a Smart Specialization Strategy is a place-based approach required by the Commission to identify strategic areas for intervention, based on both the analysis of the strengths and potential of the economy, and on an Entrepreneurial Discovery Process (EDP) with wide stakeholder involvement. As required by the European Commission, each S3 strategy should be designed around the following key principles:

- Smart specialization is a place-based approach, meaning that it builds on the assets and resources available to regions and Member States and on their specific socio-economic challenges in order to identify unique opportunities for development and growth
- To have a strategy means to make choices for investment. Member States and regions ought to support only a limited number of well-identified priorities for knowledge-based investments and/or clusters. Specialization means focusing on competitive strengths and realistic growth potentials supported by a critical mass of activity and entrepreneurial resources
- Setting priorities should not be a top-down, picking-the-winner process. It should be an inclusive process of stakeholders' involvement centered on "entrepreneurial discovery"
- The strategy should be outward-looking and embrace a broad view of innovation, supporting technological as well as practice-based and social innovation
- A sound monitoring and evaluation system should be included in a good strategy, together with a revision mechanism for updating the strategic choices.
  The Emilia Romagna Smart Specialization at a glance
  The responsible for the whole S3 construction process which led to the final Emilia-Romagna regional S3 strategy was the Head of Unit of Economic Development, Industrial Research and Technology Innovation Policies and the Industry and Trade General Directorate of the Emilia-Romagna region, Mr Silvano Bertini, whereas ASTER coordinated the two realization phases. However, the coordination of the process which led to the final Emilia-Romagna regional S3 strategy was supported, with a direct mandate from the Regional government, by ASTER.
  The two main phases of the S3 construction process that were conceived and designed based on co-creation – both coordinated by ASTER – were the priority setting (2013) and the middle-term review (2018).

Priorities were categorized following four criteria: two "vertical" priorities, referring to productive sectors requiring particular attention from research policies; and two "horizontal" ones, referring to innovative productive systems to meet societal challenges:

Priority A: Identifying areas (or systems) of interest for their current economic and social relevance (vertical)

Priority B: Identifying areas (or systems) of interest for a high growth potential (vertical)

Priority C: Guiding innovation towards divers for socio-economic change (sustainable development, knowledge society, healthy and active life) (horizontal)

Priority D: Innovation in services (horizontal)

For Priority A (Figure 2) and B(Figure 3), the following 5 priority productive sectors were identified, with a view to further guide or enable economic and social development. These five productive sectors were further broken down into 19 thematic orientations, which were additionally detailed into 53 regional technological trajectories (or technological priorities)[3].

Priority Name	Description
Providing healthy and safe food (agri-food)	Producing healthy and safe food products with minimised environmental impact and with enhanced ecosystem services, zero waste and adequate societal value. Sustainable agriculture, functional foods and nutraceuticals, sustainable and smart supply chain, technologies and machines for the agri-food industry, sustainable and innovative packaging.
Sustainable construction	New construction materials and building techniques for sustainable construction. Sustainable buildings, building redevelopment, smart buildings and cities, innovative technologies in building construction and redevelopment
Mechatronics and the motor industry	New technologies and materials for the motor industry and other productions. Automated systems, smart and sustainable manufacturing, robotics, intelligent transport systems

Figure 2 - Productive sectors of priority A

Priority Name	Description
Healthy living care services and products (Life Sciences)	New technologies and medical devices to improve patients care, diagnosis and treatment. New diagnostic methods for chronic and complex diseases. Regenerative medicine. Diagnostics and biomedical devices. Digital transformation for healthcare (e-health).
ICTs and new technologies for tourism, cultural and creative industries	Cross-sector innovation area: ICTs and new technologies for tourism, valorisation of the cultural heritage and creative industries. New technologies for the diagnosis, recovery, management and enhancement of cultural and environmental resources. Technologies and models for the co-creation of new experiential and cognitive experiences. Digital platforms and web services for tourism and cultural promotion. New technologies and digital contents for the communication of products and services

Figure 3 - Productive sectors of priority B

Based on those five identified productive sectors, methodological aspects were set, as follows:

A. Structural consolidation

B. Technology foresight

C. Entrepreneurial discovery and cross–sector fertilization

D. Participative and responsible Governance.

Process structuring and engagement

As for the participatory process, ASTER was in charge of setting and implementing it both in its priority setting phase (2013-14; point a) as well as in its revision and updating phase (2018; point b).

a) Priority setting – the co-creation process

Priority setting resulted from both a top-down action, dealing with general strategic objectives and bottom up approach, dealing with needs as emerging from regional stakeholders: enterprises, researchers and other actors form the innovation ecosystem.

The Emilia-Romagna region developed a first draft of the regional S3 strategy, identifying the macro areas of specialization as well as the policy tools priority, e.g. the five productive sectors as well as the two horizontal priorities (Priorities C and D). Under the lead of the production Activities Policy Department, in his capacity of ERDF - European Regional Development Fund- regional authority, the S3 draft was first discussed with all the regional policy departments and directorates, as well as with all the parties composing the so called Patto per il lavoro (an agreement signed between the region and all the regional actors4 with the aim of re-launching growth, development, employment and a new cohesion in the region).

The priority setting phase was characterized by the engagement of a relevant number of representatives from enterprises (diverse in terms of size and market sector), public and private research systems and other regional organizations from the innovation ecosystem. The work was organized into eight working groups, both "vertical" and "horizontal", as follows:

1. Agri-food
2. Sustainable construction
3. Mechatronics and the motor industry
4. Life sciences
5. Cultural and creative industries
6. Materials (horizontal)
7. Sustainable development (horizontal)
8. ICT (horizontal)

ASTER coordinated the work and discussion of the eight groups, for a total of 150 participants. The discussion was based on the technology foresight performed by ASTER for each of the previously identified priorities, with a view to shaping a common vision for each areas of interest. At the end of this phase, for each of the technological priorities, the specific priorities of relevance for the regional territories were identified, taking into consideration global trends, H2020 directions, Key Enabling Technologies as well economic and scientific context.

First phase: setting the boundaries

The first phase was dedicated to define the perimeter of interest for each group, approaching the smart specialization exercise not through a sector-based approach, but focusing on growth opportunities through a convergence of technological and market areas, combined in

new, and not traditional, ways. The discussion on such a horizon was aimed at recognizing themes with a certain degree of homogeneity, and sufficiently inclusive not to exclude a priori fields that could offer high potentiality for development (Figure 4).

Figure 4 - Industrial system Agrofood, as example. The first level describes the objectives; the second level the identified evolutionary technological trajectories in order to achieve the set objectives[5]

Second phase: asses the scenarios

The priorities, as identified by the working groups, were then discussed in terms of technical/scientific evolution, as well as of practical feasibility. As shown in the scheme below (Figure 5), the process flowed as follows: the horizontal working groups created their own documents which were circulated within the vertical working groups. Based on those documents each vertical working group decided to add a specific priority or to integrate some of them.
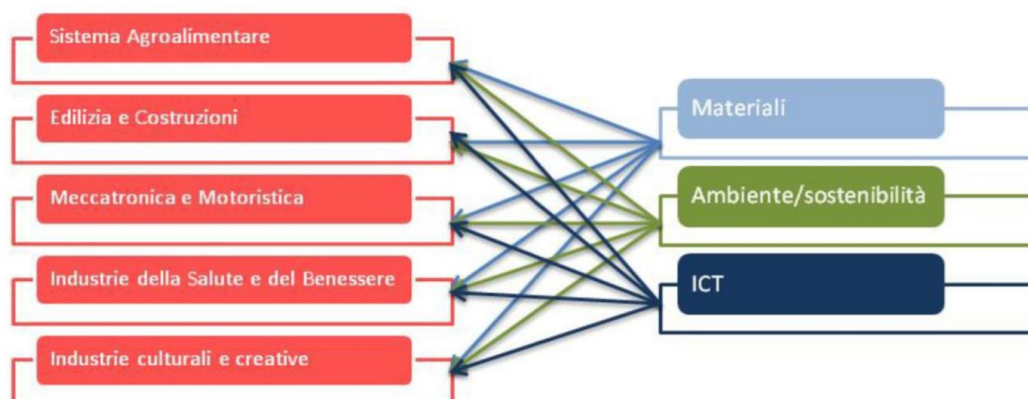

Figure 5 - Process of dialogue between horizontal and vertical working groups to identify specific priorities[6]

Third phase: open consultation

The S3 document in its draft version was presented and discussed in a public event (July 2013) and then made available for four weeks for an online consultation. Through the online consultation, structured into open questions, 105 contributions were collected, processed and integrated into the final document, which was published in January 2014. The drafting

process of the document in its different phases was performed by ASTER and resulted in a quite consistent annex to the official Emilia Romagna S3 Final document (300 pages).

The top-down/bottom-up process lasted four months; working groups worked for three months, and finally one month was dedicated to the open consultation.

The co-creation took place at different gradients. The Region and the institutional setting (including ASTER) set clear directions, defining clear boundaries in terms of macro areas of specialization as well as of policy tools priority. Within these boundaries, co-creation took place under the forms of ideation and policy design.

b) S3 Going iterative: revise implementation, redefine priorities

The participatory process was opened again four years later (2018) for assessing the implementation process, in line with the European Commission's requirements, and to redefine priorities, in view of a number of changes emerged in the ecosystem and in the technology scenario. Appointed by the Emilia-Romagna region, ASTER was again in charge of designing and managing a new participatory process to undertake the S3 review. Similar to the S3 co-creation phase in 2013, ASTER provided the involved stakeholder with a draft document to start with.

Thematic forums

Thematic forums were created to monitor the S3 vertical thematic priorities. Thematic forums were participated by representatives from regional Directorates and Departments for each specialization sector and were opened to stakeholders from the regional R&I ecosystem, with a view to evaluating the S3 implementation and putting forward to the Emilia-Romagna region some proposal or directions for its updating. Each participant of the thematic forums received well in advance two preparatory documents – the state of implementation of S3 prepared by ASTER, and the Clust-ER proposal for strategic objectives (see below). Seven thematic forums took place, from the 7th to the 17th of May 2018 and final results were presented on occasion of a R2B event in June 2018. All participants and those registered to the thematic forums were invited, during the following day, to submit written contribution and proposal for amendments to the discussed documents.

Clust-ERs work

The thematic forums, which counted up to 800 participants, worked in tight cooperation with Clust-ER Associations, communities of public and private bodies (research centers, businesses, and training bodies) that share ideas, skills, tools, and resources to support the competitiveness of the most important production systems in Emilia-Romagna. Born through the experience of the first S3 drafting process, Clust-ER are representing each of the S3 productive sector (S3 priorities A and B), plus the Inno Clust-ER (priority D), dedicated to Innovation in services. In addition to the six Clust-ER themes, an additional thematic forum was set as "Energy and sustainable development", originally identified as a driver within the Priority C of the S3.

Each Clust-ER was asked to read S3 thematic orientations and technological trajectories, based on the review document, as well as take into account the evolution of technological and market scenarios. Each Clust-ER worked referring to its specific value chains, with the opportunity, on a second stage, to open the door also to external actors.

For each value chain, Clust-ER was required to propose three strategic objectives, representing the priorities for regional interventions for the period 2018-20, i.e. the last programming period of the current EU funding framework. Each strategic objective was described with the following criteria:

- Technological relevance and regional strengths
- Impact on regional industry competitiveness
- Social impact
- Weaknesses and threats
- International dimension
- Proposal for means and tools for the objective to be achieved
  Participants to the Clust-ER included partners from the clusters together with regional stakeholders such as representatives from business and business associations, universities and research centers, training and education sector.
  It is interesting to notice that each Clust-ER had a specific working group on the topic of training and new competences required, with specific policy proposals. The work of Clust-ERs resulted in 72 strategic objectives' briefs, and 6 briefs focusing on training and learning. They were all organized in 7 working documents, one per each Forum. Synthesis and drafting of the final document for the S3 reviewing
  Contributions and proposals that emerged during the Thematic forums' works were elaborated by each Clust-ER, which accordingly modified the strategic objectives, to the final number of 71, at the end of the whole process. The final Thematic Forums event was held on 8 June 2018 at R2B event, where the results and the updated S3 strategy were officially presented.

Stakeholders landscape

In the case of Emilia-Romagna S3 participatory process, the Stakeholders landscape evolved through the process itself. In fact, from the first co-creation process "priority setting" to the second one "evaluation of implementation and redefinition of strategic priorities", the stakeholders identification process interestingly changed. While in the first process (2013) identification worked by type" of stakeholder (e.g. business, research) in the second process (2018) a thematic aggregation was already in place, institutionalized through the Clust-ERs Associations, which were formally set in 2017. The overall process was initiated by Emilia-Romagna region (top down) and managed in both its participatory phases by ASTER.

In the priority setting process, in addition to the Region and ASTER itself, key stakeholders involved were the Research and Innovation Laboratories from Regional High Technology network and the single enterprises representatives. The selection was not based on an open

call, but stakeholders were selected and grouped in working groups by ASTER according to the following criteria:

1. Competence (multidisciplinary approach) with a view for the working group to be able to adopt a multidisciplinary strategic vision, perform a proper market analysis and assess the state of art and future projections.

2. Experience (by type) with a view for the working group to be composed by both entrepreneurs and representatives' enterprises by sector as well as researchers, with experience of applied research. Representatives from regional agencies or other regional initiatives, where needed, were involved. Concerning the three horizontal working groups (ICT, X, X) only researchers were involved.

3. Process efficiency and game rules were clarified from the very beginning in order to collect a set of responsible and truly committed participants. Explicit conditions to join the working groups were stated as: the availability to participate in meetings close in time, to perform extra work to study and draft documents and to be collaborative. The number of involved stakeholders was limited, in order to assure the envisaged results to be achieved on time.

In the evaluation process, given the involvement of the Emilia-Romagna region and ASTER, an interesting change occurred in the stakeholder landscape. As a result of the S3 process, Clust-ERs were born, i.e. legal entities, with their own governance, made up of laboratories from the High Technology Network, enterprises and training institutions. The six regional Clust-ERs where formally the major stakeholders involved in the S3 revising process. Given the composition of the Clust-ERs, the stakeholders landscape, from priority setting to evaluation, changed quite much in terms of governance rather than in terms of nature of the actors involved.

Political influence (insights)

The entire S3 drafting process, as above described, originated from a clear and strong political commitment by the Emilia-Romagna region, on its capacity of European Regional Development Fund (ERDF) authority. Furthermore, the participatory nature of the process was a pre-requisite for the entire S3 governance, as required by the European Commission itself. Such a premise makes the case a peculiar, indeed interesting one, as the political influence is in there somehow "by nature"; yet, it is quite interesting to investigate how far, and in which terms, it was playing its role. In order to do so, in addition to the above-mentioned sources and features, insights from ASTER - in its capacity of leading agency of the S3 collaborative drafting process - were collected through the direct contribution of Giorgio Moretti, Responsible manager for the High Technology Network.

The role played by the political actor (Emilia-Romagna region) was clearly a prominent one in the very first phase: macro priorities were indeed set by the region, which then left the floor to the participative process, as designed and managed by ASTER, in order for the thematic priorities (under each macro area) to be identified by the R&I regional community.

Even though the region did not interfere with the participative process and its final output, the overall strong political commitment and the presence of the regional alderman to the productive activities in many of the key phases, definitely contributed to speed up and make the entire process as effective as it resulted to be.

In addition to the effectiveness of the process, the creation of the thematic Clust-ER associations, as described above, can also be considered as a major outcome of the S3 process, directly related to the strong political commitment. The region itself, in fact, explicitly built on the thematic aggregation exercise performed through the S3 process, promoting the creation of the ClustERs through a specific regional Call in 2015, as highlighted by Giorgio Moretti,

The political objective behind is the exploitation of the participative process itself, with a view to having multi- actors fora in place during the implementation as well as monitoring and assessment phases.

Given the S3 precise landscape, the regional ecosystem as a whole can be definitely considered the most appropriate one. This translated in a central role for ASTER, being by statute the deputy regional agency for managing such a process. Due to its long- lasting and continuative work with all the involved actors, in its capacity of regional hub for the entire R&I community, ASTER resulted to be the most appropriate facilitator for the S3 participative process, proving to be effectively able to manage the regional stakeholders' meeting and constructive interactions both on the priority settings as well as in the evaluation phases.

Cultural, behavioral, organizational (insights)

According to Giorgio Moretti, High Technology Network Manager of ASTER: "The S3 participatory process was empowered by a very well rooted regional culture of participation, dialogue and concertation procedure. I would say the process was successful thanks to the consuetudinary attitude for dialogue among politics, market and social players. In Emilia-Romagna we do have traditionally concertation procedure tables of any kind. Cooperation is definitely a cultural approach extremely spread throughout out territorial and cities ecosystems. I would say we worked well and the process was undoubtedly well managed, but this kind of background is essential to make it impactful".

Co-creation attitude resulted to be quite a personal one, therefore varying from participant to participant. A certain degree of co-creation attitude seemed to be present among both groups, policymakers as well as researchers and experts from the business sector, yet with some differences.

In particular, concerning the policy-maker group, such an attitude seems to be partially linked to the thematic working sector: more co-creation minded people from sectors as tourism or training, less from healthcare, budgeting, environment. From such a point of view, the process was quite an interesting one, involving representatives from a great variety of policy thematic sectors.

Concerning researchers and experts' groups, co-creation attitude was generally quite high, being in fact one of the selection criteria for the stakeholders to be invited to take part to the process.

Trust towards the institutions is definitely a keyword, being the Emilia-Romagna region the "owner" of the overall process. According to Moretti, trust was in place at the very beginning of the process, due to the role played over years by ASTER and the previous policies initiatives from Emilia-Romagna region. Nevertheless, trust seems to be a critical factor, when it comes to the implementation phase, since a certain degree of skepticism seemed to be in place on "how the results would have been concretelyimplemented by the policymakers". In the case of S3 drafting process, Moretti highlights that trust was an incremental factor, growing through the process itself. The evaluation and re-assessment phase played definitely a role in this direction.

Giorgio Moretti confirms that trust in the regional institution was a key issue for ensuring a genuine and committed stakeholders engagement with the S3 drafting process. In particular, the need for precise objectives to be set and a clear agreement on the usage of the process results were at the very core of process effectiveness.

Insights on the co-creation process

Based on the interview had with Giorgio Moretti, Responsible for the Emilia-Romagna High technology Network, and on the conducted research activities on the Emilia- Romagna S3 collaborative drafting process, remarkable insights to be shared seem to be the following:

- The co-creation designed process was quite a simple one compared to the complexity of the addressed issues. Yet, it resulted to be the appropriate one, given a series of contextual peculiar factors, i.e. the regional context both in terms of pre-existent collaborative policymaking as well as consolidated R&I stakeholders network and the well-recognized role of ASTER, as the policy Lab entitled to manage the co-creation process.
- The strong commitment by Emilia-Romagna region and its tight relation with ASTER and, through ASTER, with the High Technology Network and the Clust- ERs ensured that process was well aligned with both the policymakers and the stakeholders needs in terms of timeline, level of effort and engagement.
- The process was designed on a "learning by doing" approach, meaning that it was initially designed in its macro-phases but the specific activities were planned and designed in progress. This allowed ASTER to take into consideration feedback and emergent issues/opportunities and promptly readapt the process. According to Moretti, given the context, this was the best way to proceed and finally resulted to be successful.
- The process influenced the policymaking process on two different levels: policy content (as planned) and policy governance. As more in depth described in the case, ClustERs as permanent and institutionalized actors within the R&I regional ecosystem are in fact an outcome of the S3 drafting process. The composition of

ClustERs itself ensure a continuative dialogue while enforcing collaboration between regional actors beyond the analyzed initiative.

• Referring to the most relevant barriers, a distinction should be made among policymakers and researchers as well as enterprises representatives. On the policy-makers' side, a major barrier seems to be linked to the conflict among the managerial need for making strategic choice on one side and the "political" attitude to not choose for consensus sake. On the side of business – research relationship language itself results a major barrier, followed by priorities and objectives, at times divergent in scope and time. On the enterprise side, although a genuine will for collaborating is in place, a cultural barrier is still represented by a scarce propensity to open innovation and a persistent fear to open up dialogues with other enterprises.

[1] Istat, NoiItalia, http://noi-italia.istat.it/, data at 2016

[2] https://www.ucer.camcom.it/studi-ricerche/analisi/rapporto-economia-regionale/pdf/2015/2018-rapporto-economia-regionale.pdf

[3] These additional levels of detail are described in Annex 1 of the S3 "Individuazione orientamenti innovativi per la strategia regionale di Innovazione per la Smart Specialisation Strategy".
http://fesr.regione.emilia-romagna.it/s3/s3_allegato1.pdf/@@download/file/s3_allegato1.pdf
and2018update:https://fesr.regione.emilia-romagna.it/s3/s3_aggiornamento_set2018.pdf/@@download/file/S3_Aggiornamento_set2018%20(1).pdf

[4] Involved parties are: local institutions, universities, social parties, third sector forum, trade unions.

https://www.regione.emilia-romagna.it/patto-per-il-lavoro/firmatari

[5] S3 Annex 1 http://fesr.regione.emilia-romagna.it/s3/s3_allegato1.pdf/@@download/file/s3_allegato1.pdf

[6] S3 Annex 1 http://fesr.regione.emilia-romagna.it/s3/s3_allegato1.pdf/@@download/file/s3_allegato1.pdf