



DELIVERABLE T1.2.3

Regional Action Plan
for Emilia-Romagna

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Introduction

The aim of this action plan document is to present an elaborated set of proposed innovation support actions for each of the project partner regions to ensure a sustainable transfer of InnoPeer AVM project results into the regional innovation ecosystems of Central European partner countries.

The action plan is based on former project activities and results, such as the of local framework conditions, mapping of relevant key stakeholders and analysis of strengths and weaknesses in the relevant knowledge dimensions (technologies, human resource/organisation, business model development) that were performed for each partner region and summarized in a joint benchmarking study in earlier project phases.

Further inputs for action planning result from local pilot actions that are implemented within the frame of the project for testing the multi-level InnoPeer AVM training curriculum in order to enable Central European SMEs to become part of transnational advanced manufacturing value chains.

The Action Plan itself is structured into three analytical steps: development of regional visions which describe the pursued picture of the future situation in the relevant field in a mid- to long-term perspective, the elaboration and concrete description of recommended innovation support actions to transfer and mainstream InnoPeer AVM results at the level of the partner region's innovation ecosystem in a short-term perspective and finally the presentation of conclusions from the partner region's point of view about innovation policy actions that are needed for a sustainable transfer of the InnoPeer AVM results at the transnational Central European level.

Along the action planning process all project partners undergo a peer review process which is organised in mutual feedback loops among partner organisations that join similar development goals and/or experience in the implementation of local innovation policies to support the qualification of local enterprises in the relevant knowledge dimensions that are addressed by the InnoPeer AVM project. Following this mutual exchange of experience, the final versions of the Action Plans will be developed for each partner region.

Inputs from Regional Action Plans of all Central European partner regions will finally feed into a transnational Central European Roadmap that will recommend joint innovation policy action in order to improve the qualification of SMEs in the AVM-related knowledge dimensions (technologies, human resource/organisation, business model development) in order to raise their involvement in transnational innovative value chains.

Overview of the InnoPeer AVM actionplanning and poadmapping process





1. Main regional challenges and development needs

Note: Please revisit your regional stakeholder mapping, SWOT analysis and the benchmarking study to identify the most urgent demand for action in order to improve SME capacities regarding the relevant knowledge dimensions. Prioritize the development needs and indicate below approx. 3 main “Main challenges” that need to be tackled by improving AVM-related qualification programmes and innovation support measures in your region.

For each of these “Main Challenges” please describe briefly the deficit that has to be overcome and specify the main target groups that need to be addressed in this context. This will be the basis for the local support actions for improving AVM-related SME qualification and support SME participating in AVM-related value chains to be described in your action plan.

Each “Challenge” should consist of one bold headline describing the visionary goal you want to reach at local level and one or two explaining paragraphs.

- Reference sources: InnoPeer AVM stakeholder mapping, regional SWOT analysis, benchmarking study
- Length of this section: approx. 1 to 1,5 pages

Main Challenge #1: A LOW LEVEL OF DIGITALIZATION AT FIRM AND VALUE CHAIN LEVEL

In Italy the investments in the so-called ‘Industry 4.0’ technologies have increased during the last two years, pushed by the ‘Industry 4.0 National Plan’ promoted by the Ministry for the Economic Development for the period 2017-2020 (Istat, *Rapporto Competitività 2018*, 2018).

However, the propensity to the ‘digitalization’ of the corporate production system and of its interaction with the corresponding value chain remains low. That is particularly true for the Italian SMEs, who employ a low percentage of people with a strong digital alphabetization (Istat, *Rapporto Competitività 2018*, 2018).

Also, the firms of Emilia-Romagna have leveraged the support offered by the investment policy of the Ministry, but a diffused and strategic application of digital technologies in their productions is still to be achieved.

Consequently, there is the risk that the technological investments recently performed have a limited impact and that they are not systemically exploited.

So, there is the need of improving the awareness of the strategic importance of the digitalization of the production system and the knowledge of which digital solutions can be implemented for strengthening and modernizing the production processes of a single firm and of an entire value chain. The awareness and knowledge that the firms have to acquire has to be oriented to imagine and plan in a straight forward way implementation solutions.

This need was already recognized by the ‘Smart Specialization strategy’ defined by the Emilia-Romagna Region in 2012, especially for the mechatronics and automotive sectors (Regione Emilia-Romagna, *RIS 3*, 2012). These regional compartments are traditionally innovative and well positioned within international value chains that nowadays have been revolutionized right from digitalization. The regional firms have therefore the necessity to master the digitalization of the production system both as a product to sell and as a process to implement in their own factories.

In order to increase the awareness of the centrality of Industry 4.0 for the present and future competitiveness, different regional actors have periodically organized events and initiatives. Until now, the promoters have been both public and private - starting from the innovation agency of the Emilia-Romagna Region (ASTER), passing through the local industrial associations (especially Confindustria and the Chambers of Commerce) and arriving to private and public actors committed to research and technology transfer (like consulting companies, innovation centres and universities). Yet, reaching the local SMEs and presenting the issues connected to Industry 4.0 in a way the SMEs find them in line with their everyday problems and capacities is still far to be accomplished. It is for this reason that the SMEs constantly ask for examples of



concrete applications. Moreover, there is the necessity to offer also a customized information service able to accompany the SMEs to have in the early stage of their digitalization journey an overview of Industry 4.0 more tailored on their specificities in order to help them to make decisions more informed.

Main Challenge #2: DIGITAL HR MANAGEMENT AND THE HR ANALYTICS OPPORTUNITY

The digital transformation introduced by the paradigm of Industry 4.0 has a revolutionary impact on the production processes and therefore on the work habits of the employees of a company. The same role of some functions gets under question and, overall, there is the necessity of new skills and of a new organization of the human resources. In this sense, the recent report on the Italian competitiveness written by the Italian National Institute of Statistics (Istat, *Rapporto Competitività 2018, 2018*) highlights the low level of digital skills within the standard Italian manufacturing firm. Moreover, the organization and management of the human resources are still based on old schemes.

That is particularly true for the SMEs, which have fewer employees and the organization of their functions is looser. Yet, also within the big and medium companies this transformation requires complex processes and a high commitment at all the corporate levels.

Overall, the organization and management of the human resources, their work processes and their skills are a crucial step in the transition of the Italian companies: within a small firm this issue is fundamental to make it grow in dimension; for a medium company how to organize the HR is a prerequisite to their participation to international value chains; in a big company this topic is at the crossroad of their future flexibility and innovativeness within more and more blended sectors.

That characterizes also the firms of Emilia-Romagna, where, during the recent financial and economic crisis, the gap between small and medium, highly internationalized enterprises and other firms much more dependent on the national demand has grown. That determines a regional industrial system with different dynamisms.

The functions in charge of the organization and management of the human resources are thus called to adopt a new mind-set and an array of new competences as well, supported by digital advanced tools, in order to fully exploit all the opportunities promised by the change that is underway. In this sense, they should learn how to support the constant and quick organizational changes that their firms need in order to adapt to the request of the markets. In this regard, the data that can be collected about how the staff works can become pivotal information to improve the corporate capacities, to change the production processes, to improve the corporate culture and behaviours aligning them with the core values of the company. That opens also problems at the same time, which concern the staff's privacy and the rules and agreements connected to the work contracts.

Main Challenge #3: A LACK OF STRATEGIC THINKING ABOUT DIGITAL TRANSFORMATION

According to the analysis of the Italian National Institute of Statistics, digitalization has not become yet a central issue in the strategies of the majority of the Italian firms - and that is particularly true for the Italian SMEs (Istat, *Rapporto Competitività 2018, 2018*).

If the Italian Industry 4.0 National Plan pushed the firms to invest in technologies able to support the digital transformation, rarely their management was able to define a new strategy to leverage all their structural potential impact and to found the corporate business on the new assets.

So, directly connected to the Main Challenge #1 which focuses on promoting the understanding of the I 4.0 technologies and their implementation, in Italy and in Emilia-Romagna there is also the necessity of helping the managers of the companies - especially those of the SMEs - to develop and implement strategies and action plan really able to design the business in an innovative and competitive way and to organize their organizations accordingly. Moreover, the digital transformation as strategic issue is strictly interconnected to the economic and environmental sustainability that a firm can have. On the hand, the digital



transformation can open development opportunities at the level of the processes and of the market - with consequent advantages in terms of costs and revenues. On the other, the digital transformation can clear the way to the implementation of environmentally sustainable solutions that can give to a firm an economic added value and the possibility to reposition itself in new greener supply chains.

In Emilia-Romagna the digital transformation of their firms can be particularly strategic for 3 traditional local compartments: the mechanical & automation industry, the ceramic production and the agro-food sector. All these clusters are addressees of the policy support defined by the Emilia-Romagna Region in its 'Smart Specialization Strategy' (Regione Emilia-Romagna, *RIS 3*, 2012).



2. Visions

Note: Please use the visions to depict a pursued future situation with regard to the qualification of SMEs in AVM-relevant key dimensions and their participation in transnational innovative value chains. To define a starting point for future development, regional innovation strategies should be addressed (RIS3) The timeline for these visions to be realized should cover the mid-term perspective, at least 3+ years. In order to boost the impact of InnoPeer AVM action plans and strategy roadmap as a strategic input for regional planning, it is recommended to make reference to the ongoing strategic process for defining “RIS 2030 goals” in your region.

Each Vision should consist of one bold headline describing the visionary goal you want to reach at local level and one or two explaining paragraphs.

- Reference sources: Regional innovation strategies, ongoing RIS 2030 strategy process
- Length of this section: approx. 1 to 1,5 pages

Vision #1: DIGITAL PRODUCTIONS

On the basis of the ‘Main Challenge #1’ previously identified, one of the strategic objectives that the industrial systems of Emilia-Romagna have to pursue in the next 5 years is to transform their firms in ‘digital organizations’. Both the single firms and the local value chains have to learn how to identify the digital technologies that are useful for their production processes and their products and how to implement them strategically in their production systems. So, the future ‘digital firm’ of Emilia-Romagna has to be able to:

- integrate through digital technologies its all production factors and its production plants and processes with international value chains (i.e. clients and suppliers);
- make their production systems reliable and secured;
- collect, analyse and exploit heterogeneous data to make the production flexible, effective and efficient.

Given the industrial productions that represent the backbone of the regional economic system of Emilia-Romagna (i.e. mechatronic productions), the most promising technologies for the regional SMEs are those concerning connectivity, human-machine collaboration and COBOT, simulation and virtual commissioning (until to arrive to have a digital twin), condition monitoring, predictive maintenance, intelligent sensors and retrofitting of existing machines.

Above all, it is the data themselves and their interpretation the most powerful technology that can help the regional companies to improve their efficiency and effectiveness.

This objective has already been promoted by the ‘Smart Specialization Strategy’ of Emilia-Romagna Region specifically for the local mechatronics and automotive sectors, trying to promote the development of technical solutions that can be smart, adaptive and secure (Regione Emilia-Romagna, RIS 3, 2012).

Vision #2: DIGITAL HR

Two main issues have to be faced in an interrelated way by the firms of Emilia-Romagna:

- the HR analytics (i.e. the data-driven human resource management);
- the change management, strictly connected to the expected revolution in the organization of the corporate work habits.

These two topics are at the crossroad of the transformation asked to the regional companies. During the next 3-5 years, the manufacturing firms of Emilia-Romagna have to re-think how they work, the skills exploited and the day-to-day organization of their human resources. The objective should be having a flexible organization to promptly answer the production requests coming from the market, to generate and



exploit a various array of data to improve process and products, and to provide their employees a creative and friendly work environment to stimulate their innovativeness and commitment.

Thus, it is fundamental to try to apply the use of HR analytics in order to better understand the weaknesses and strengths of the human resources and of their working habits. That is a new precondition to tune as more precisely as possible the initiatives to be built to help the staff to grow.

The Emilia-Romagna Region in its ‘Smart Specialization Strategy’ has tried to promote also this change by foreseeing the development of human-centred solutions for the mechatronics and automotive sector and of diffused ICT and creative skills within the regional territory (Regione Emilia-Romagna, *RIS 3*, 2012).

Vision #3: DATA-BASED FIRMS

Independently from which sector they belong to, in the next 3-5 years the manufacturing firms of Emilia-Romagna have to transform themselves: they have to modernize and expand their business models on the basis of the data they can collect at every level (e.g. production, management, market) and to connect themselves in more and more integrated international value chains.

To do so, they will have to learn how to:

- introduce technologies for using production data by integrating them with the data present on the CRM systems;
- exploit IoT solutions (connectivity, simulation and virtual commissioning, condition monitoring, predictive maintenance, intelligent sensors);
- experiment new models of commercialization, especially those based on e-commerce;
- implement new forms of communication based on digital technologies and adapt especially for firms active in B2B sectors.

This objective has already been promoted by the ‘Smart Specialization Strategy’ of Emilia-Romagna Region specifically for the local mechatronics and automotive sectors, trying to promote the development of technical solutions that can be smart, adaptive and secure (Regione Emilia-Romagna, *RIS 3*, 2012).



3. Proposed actions to address the regional challenges

Note: The idea of an “Action” is that this will be concrete innovation support activity that could be immediately implemented in your region within the existing innovation policies and framework conditions. Actions should address the local challenges (section 1) and should be oriented towards the visionary goals that have been defined for your region previously (section 2).

Actions should be elaborated as the description of a concrete project that could be immediately discussed and implemented in cooperation with local RIS actors. Depending on the scope of the local actions you propose, you are asked to develop 1-3 actions within this Regional Action Plan. In case of more than one proposed action, single actions should address different actors (RIS stakeholders, like innovation agencies, funding institutions, educational institutes, but also your own organisation) and reach out for different target groups.

- Reference sources: Section 1 and 2 in this document, results and learnings from InnoPeer AVM pilot actions, inputs from ongoing RIS 2030 strategy process in your region
- Length of this section: approx.. 1 page per action

Guiding questions:

- What is the goal of the proposed activities?
- Who will be involved: Which concrete target groups, public business support organisations, further stakeholders and innovation actors, etc.)
- How will actions be organised? Define implementation phases and steps
- Proposed timeframe
- Potential impacts and how these could be assessed
- Required resources / budget needed
- Sustainability considerations – how could the actions be mainstreamed and/or transferred

Action #1: PRODUCTION DIGITALIZATION 101 AND OPEN INNOVATION

Given the low level of awareness there is among the regional companies (especially SMEs) concerning the strategic role of digitalization for industrial production system, we think it is necessary to help the regional industrial compartments to develop a diffused knowledge of the digital technical solutions implied by Industry 4.0 and of their potential impact on their processes and products.

For this purpose, education is crucial and we think that the following educational initiatives can be strategic in order to reach a wide part of the regional SMEs and to give them the possibility to receive a blended training (theory + practice):

- The development of an on-line training course focusing on 3 main topics:
 - The impact of digitalization in a firm;
 - The patterns of technical solutions that can be implemented by a manufacturing firm;
 - The changes a firm has to carry out in terms of processes, skills and partnerships.
- The development of training labs:
 - Experiential events where firms can have practical demonstrations of Industry 4.0 solutions.

Both the initiatives have to address the personnel that have different roles within a firm (e.g. CEO, managers, technicians) as all the corporate functions are called to collaborate to implement the new I 4.0 technologies as core assets.

The activation of educational initiatives should require 9 months to be developed and the main steps of this process is:

- Definition of contents and format;



- Development of the teaching materials/training experiences;
- Promotional campaign (e.g. workshops, social media, use cases' presentations, ambassadors, company visits);
- Launch.

Obviously, in order to develop both the initiatives it is necessary to involve an array of Industry 4.0 experts coming from different kinds of organizations (e.g. research, industry, consulting) to offer all the expertise and perspectives required by such a multi-dimension change. Also, the collaboration with the local industrial associations would be crucial to the promotion of the educational initiatives.

The second initiative we think it can be useful to help the firms (especially the SMEs) to become real digital organizations is the definition of networking platform - inspired by the open innovation paradigm -, where they can meet a wide range of potential partners (e.g. research groups, start-ups, consultants, other companies) which innovating with. The platform has to aim at establishing collaborations at different levels - geographically (local, national, transnational) and functionally speaking.

Also this initiative implies an implementation plan similar to the previous one, but longer (circa 12 months):

- Definition of contents and format (interaction model for open innovation);
- Definition of the rules concerning the actors' interactions and the exploitation of the results;
- Development of an expert database to be used to develop the networks of actors;
- Promotional campaign (e.g. workshops, social media, use cases' presentations, ambassadors, company visits);
- Launch.

Action #2: DIGITAL HR TRAINING AND NETWORKING

We think that also in this case a training initiative is crucial to help the firms of Emilia-Romagna to grow in terms of competences and tools to be used to properly organize and manage their human resources. The training courses should focus on providing participants theoretical knowledge and practical competences and tools as well that are necessary to the organization and management of digital work.

In our opinion the two main topics to address are:

- the HR analytics (i.e. the data-driven human resource management) - therefore it is necessary to help all the corporate staff who is in charge of organizing and coordinating human resources in building HR management systems based on the collection and interpretation of more precise data and information;
- the change management, strictly connected to the expected revolution in the organization of the corporate work habits.

Secondly, it is fundamental to support the firms in accessing the best practices and to have an adequate mentorship in order to implement the change as more effectively and efficiently as possible. Therefore, we think it would be useful to implement a pilot project directed to define a network of service providers in the realm of HR management and change management at disposal of the regional manufacturing companies.

Finally, we believe it would be useful to define a model of a digital HR management dashboard to be used as demonstrator in the training activities and as a support tool to help the firms to think about their own necessities and specificity in HR organization and management.

Multinational medium- and large-enterprises are the first kinds of target firms to be involved, but the challenge is to direct these activities also to those SMEs that are in the middle of or are willing to face the digital transformation.



In order to set up these initiatives, it is fundamental the involvement of HR service providers and of the industrial associations to gather the necessary competences and to face the issue at systemic level.

The activation of educational initiatives should require 9 months to be developed and the main steps of this process is:

- Definition of contents and format;
- Development of the teaching materials/training experiences;
- Promotional campaign;
- Launch.

On the other hand, the networking activity should require 12 months to be set up and the main steps of this process is:

- Definition of contents and format;
- Development of the co-design materials;
- Definition of networking and collaboration patterns;
- Promotional campaign;
- Activation.

Action #3: DIGITAL TRANSFORMATION TRAINING AND CO-DESIGN

We think it is absolutely necessary to help the managers of the regional manufacturing firms to update their management skills and instruments in order to define innovative business models and strategies able to compete at international level and to interact with international value chains.

For this purpose, we think it is useful to set up both a training and a networking support initiative.

The training initiative should be interrelated with that to be set up focusing on the technical solutions made available by Industry 4.0 and should aim at teaching how to exploit them as strategic business assets. On the other hand, we think it is necessary to help the networking and design activities of the regional enterprises directed to:

- Define a strategic path to digital transformation;
- Scout start-ups active in the digital sector, especially on IoT, AR-VR and digital twin;
- Implement the proper activities necessary to make the strategic path and the collaboration with start-ups, research organizations, public administrations and regulatory institutions a reality.

The abovementioned initiatives should require 12 months to be set up and the main steps of this process is:

- Definition of contents and format;
- Development of the teaching and co-design materials;
- Definition of networking and collaboration patterns;
- Promotional campaign (e.g. workshops, social media, use cases' presentations, ambassadors, company visits);
- Launch.

In doing so, the collaborations with different actors are central to develop the network of expertise and experiences necessary to create an open innovation environment.



Finally, given the fact that the automotive industry traditionally plays a central role in the economy of Emilia-Romagna and considering that this sector has been experiencing a disruptive transformation at international level, the present plan proposes to start to develop the networking support initiative focusing on this industrial specialization. More in details, the networking support initiative here foreseen can help the local automotive companies in developing new business models and opportunities related to autonomous driving and smart mobility, collaborating among them and with actors traditionally external to the automotive industry. In this sense, the definition of new business initiatives related to these emerging technical solutions require the redefinition of rules, infrastructures and behaviours apart from the technical aspects themselves. Moreover, the impact of new mobility solutions that can be introduced is not simply technical and economic but also social - that is, it implies multiple changes in the way a social community lives its everyday life. Thus, the automotive companies that want to embark themselves in these new undertakings have to collaborate with actors such as companies and research groups specialized in other technical realms like ICTs, public administrations managing cities and public transports or regulatory institutions committed to define proper regulations able to safeguard the final users and favouring entrepreneurial experimentation at the same time. In Emilia-Romagna experiments of this kind have been under implementation within the urban area of Modena ([MASA](#)) and the networking support service can implement useful synergies.



4. Inputs for the InnoPeer AVm Strategy Roadmap

Note: When developing your “Actions” in section 3, please also keep in mind the intended transnational Central European dimension of the strategic results of InnoPeer AVM which will be reflected in project activity A.T1.4 (Development of a Strategy Roadmap on AVM-related capacity building and build-up of AVM value chains in Central Europe).

In this section of the Action Plan you are asked to give input from the partner region’s perspective concerning potential strategic measures to support the project goals at the transnational Central European level. Proposed measures will address a wider geographical scope for successful implementation and will probably need more preparation and substantial innovation policy changes compared to the Regional Actions proposed in section 3.

Section 4 inputs from all Regional Action Plans will be an important reference and further aggregated to a Central European level for the elaboration of the InnoPeer AVM Strategy Roadmap in follow-up project activities..

- Reference sources: former sections of this Action Plan document
- Length of this section: Headline + 1 explanation per suggested Roadmap input

Input for Central European Strategy Roadmap #1: NETWORKING PROGRAMMES FOR INTERNATIONAL VALUE CHAINS

All the proposed initiatives directed to promote digital industrial productions, the growth of corporate working communities organized and managed on a data-driven basis and the digital transformation of the business strategies of the firms within the territory of Emilia-Romagna cannot be limited to a national context.

International value chains are more and more crucial in the global production system and the European firms need to position themselves in the more strategic - and therefore more profitable - positions of these value chains.

Therefore, thinking about the firms and the actors cited above (e.g. industrial associations, research centres, start-ups) we think it is strategic to foresee to implement the measures proposed not only at local/national level but also at a transnational one - setting up transnational collaboration programmes within the initiatives described to which the more promising firms can access while they participate to the initiatives carried out at local level.