



4 Motors for the European Industry 4.0

Concept note

*Proposal submitted within the EC Call for the expression of interest
“Towards European Strategic Cluster Partnerships for Smart
Specialisation Investments”*

Date of closure extended to March 31, 2017

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Content

Summary.....	3
A. <i>Ambition</i>.....	4
1. Main objectives of the partnership:.....	4
2. Area of partnership.....	6
3. Background of the partnership.....	6
3.1. <u>Involved regions</u>	6
3.2. <u>4 Motors and Associates background</u>	10
3.3. <u>Consortium</u>	13
B. <i>4 Motors 4 Industry of the Future: Project and Partnership</i>	20
1. Project organisation	20
2. Activities of the partnership.....	21
3. Toolbox of the partnership for common projects.....	22
4. Governance	23
C. <i>Annexes</i>	24
1. Consortium partners in figures.....	25
2. Examples of Past and running Projects involving 4M regions.....	32
3. Letters of Support.....	34



Summary

This strategic partnership initiative is proposed within the call for expression of interest of the European Commission aiming at developing European Strategic Cluster Partnerships for Smart Specialisation Investments. **This partnership focuses on thematic areas from the S3 Platform Industrial Modernisation.**

The **Four Motors for Europe** is a cooperation founded in 1988 that gathers four European regions: Auvergne-Rhône-Alpes, Baden-Württemberg, Catalonia and Lombardy. Together, the Four Motors have 36 million inhabitants and represent 6.78% of the European GDP (1.249 billion Euros). The cooperation involves other regions (“associates”) with a similar profile, namely, Flanders (Belgium), Wales (UK), Malopolska (Poland) and, more recently, Quebec (Canada).

Under the 4M Chair of Auvergne Rhône-Alpes Region, the event “Industrie 2020 First” was held on June 15th 2016 in Lyon and gathered more than 600 participants. At this occasion the working group “**4 Motors 4 Industry of Future**” was created bringing together clusters, innovation agencies, experts, and technical centers. Since the start of this working group, workshop sessions have been organised to set up an Action Plan to promote coordination actions in the field of Industry 4.0., **with strong supports of the Regions**: Regional Authorities have a key role to play not only to support inter-regional collaboration, but also as Managing authorities of ESIF **in the framework of S3 strategies** as well as leaders/participants to S3 Platforms including the S3 Platform for Industrial Modernisation.

A partnership of relevant clusters and other organisations from the 4 Motors Regions and the associated region of Flanders has been set up: Plastipolis, Viameca, Minalogic (Auvergne Rhône-Alpes), AFIL (Lombardy), microTEC Südwest, Bwcon (Baden-Württemberg), Eurecat, CEP, Clúster Digital de Catalunya (Catalonia), Flanders Make (Flanders).

This ‘core group’ of Regions have been **enlarged to others territories already collaborating with the 4M4IoF regions, North-West (Romania) and Centro (Portugal), with 2 clusters (Cluj IT and Pool-Net) bringing added-value to the existing consortium.** This initiative stems in the belief that the cooperation model developed by the initial members of the partnership can be extended, with the purpose of creating new synergies among the members. A spill-over effect is expected where less developed regions benefit from the experience of the more developed ones, while the later find new sources of innovation and platforms for cooperation.

The **challenges of Industry 4.0** are among **the top Smart specialization primary domains of each 4 motors Regions as well as for North-West Romania and Centro Portugal** and have been identified as the most relevant for profiling this interregional strategic cluster partnership. Among these challenges, **Smart Manufacturing** has been selected as a common interest scope for developing coordination but also joint initiatives and projects.

With the purpose to foster and strengthen this joint vision and dynamics of inter-regional cooperation, the clusters and organizations involved in this initiative are pleased to submit an expression of interest for developing a European Strategic Cluster Partnership for Smart Specialisation Investments to increase European industry competitiveness. It will support the implementation and synergies of the research and innovation strategies of the associated regions.

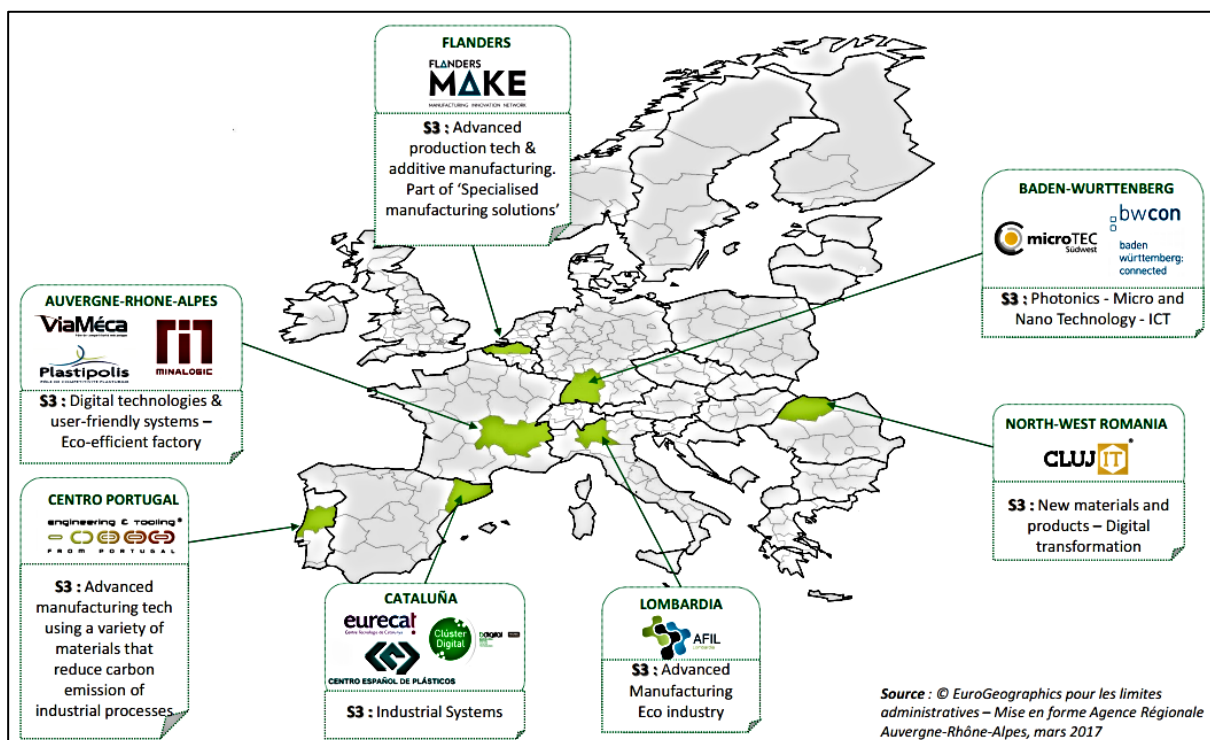
Letters of supports for this strategic partnership and its scope have been obtained from the regional authorities (Auvergne Rhône Alpes, Lombardy, Baden Württemberg) and from regional development agencies (Catalonia, Centro Portugal, North West Romania). These letters have been joined in Annex 3 in this Concept Note.

A. Ambition

1. Main objectives of the partnership:

The goal of this initiative is to set up a **partnership between leading industrial regions in Europe toward Industry 4.0** and to develop a joint concrete action plan through a long-term strategy for enhancing and supporting the transition of regional manufacturing companies including SMEs toward the implementation of Industry 4.0 era, and to potentially think to longer term perspectives towards a “**Next Generation Advanced Manufacturing**”. The aim is to strengthen the industry participation and to develop the European interregional collaboration for the RIS3 implementation.

The partnership as illustrated below, shows a relevant convergence of the RIS3 priorities of the participating regions with good similarities and complementarities on Smart Manufacturing topics that will help the implementation of the smart specialisation strategies.



The main objectives identified have been declined in 2 levels as:

Strategic objectives

- To **learn from each other**, exploit **synergies**,
- To create the framework for strategy-setting and **road mapping**,
- To initiate, facilitate and develop **interregional collaborations** between the different Regions, including clusters, industries and academics,
- To promote **new growth opportunities** for companies and regional industries in new European value-chains,
- To trigger cross regional **partnerships between regional infrastructures and platforms**,

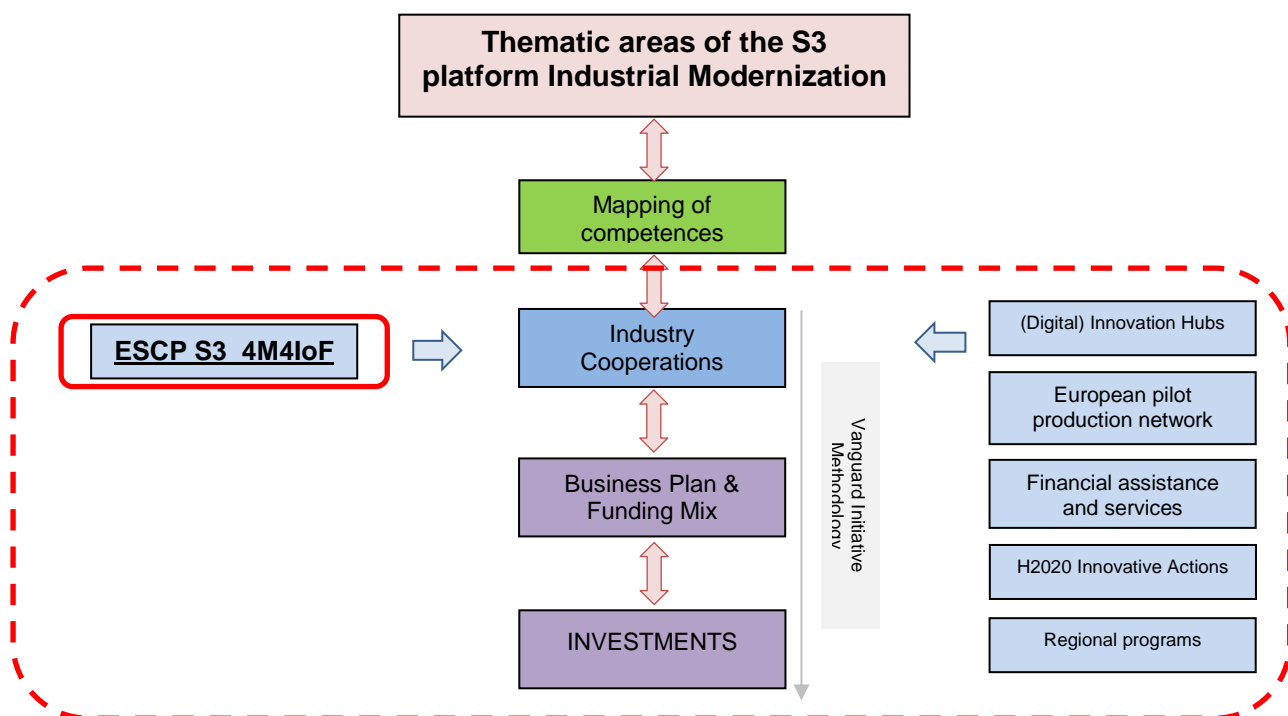


- To develop a **coordinated funding mix** including regional, national and Europeans instruments,
- To generate a pipeline of investments and increase the capacity of investments and co-investments.

Operational objectives

- To initiate demonstration and **pilot projects**, and develop **joint investments**,
- To prepare and present **joint technology & business cooperation projects** through common coordinated or activities, exploiting the complementarities of partners from the different regions
- To support the partnering process through organization of matchmaking activities among partners and their **SMEs**, develop inter regional networks, facilitate the access to infrastructures, technology centers and digital innovation hubs from other regions
- To investigate **innovative business concepts**,
- To set up **joint training actions** for new industrial job profiles, and transregional learning factories initiatives.

Please find below the position of our initiative with the S3 Platform Industrial Modernization thematic areas, where the partnership will connect particularly with the **Efficient and Sustainable Manufacturing (ESM)**, **High performance Production through 3D printing**, **Production performance monitoring system** and **Incorporation of SMEs to the Industry 4.0**.





2. Area of partnership

Based on extensive discussions between the partners, the initiative of the “4 Motors for the European Industry 4.0” aims to develop a strategic joint roadmap and projects in key and specific areas of the Industry of the future on **Smart Manufacturing**, including:

- Production upscaling of **new materials** in (e.g. composites)
- Industrialization of **innovative processes** such as:
 - Additive manufacturing
 - Nano-manufacturing upscaling
- **Smart product design and production:**
 - Hybrid processes (printing, molding, stamping, laser, technologies surface chemical and mechanical functioning....)
 - Processes combination & hybridization on new processing
 - Advanced, collaborative and mobile robotics
 - High Performance Computing
 - Smart, flexible and distributed maintenance
 - Human Machine Interface (Virtual Reality /Augmented Reality)
- **Enabling technologies for “4.0” machines and processes:**
 - Cyber-physical production system (Sensors, data acquisition, analysis)
 - Industrial analytics and BigData
 - Machine Learning, Artificial Intelligence, BigData
 - Securing of data / Cyber Security / Cloud Security
 - Future human-machines interaction
- **New business models for growing markets:**
 - Agile and adaptive production systems
 - Production capacities based on “internet of things”
 - Product – service optimization
 - Servicization/customization
 - Circular economy

3. Background of the partnership

3.1. Involved regions

3.1.1. **Auvergne Rhône Alpes**

Second most populous region in France with its 7.8 million inhabitants, **Auvergne-Rhône-Alpes** gathers 12% of the French population and cover 13% of the metropolitan territory.

With a GDP of 240 billion €, the economy of the Auvergne-Rhône-Alpes region depends on the one hand on the tertiary sector generating more than a half of the regional added value.



On the other hand, Auvergne-Rhône-Alpes is the first industrial region in France in terms of employment, gathering 500 000 industrial jobs, in sectors such as metallurgy, plastics, electronics, IT, aeronautics, chemistry, textile, bar turning and cutlery industry.

The region is home to international renowned technical and research centers as well as a rich network of SMEs, start-ups and big groups like Michelin, Renault Trucks or Aldes. Fourteen competitiveness clusters and eighteen regional clusters contribute to the competitiveness of these companies and the emergence of innovative projects in its sectors of excellence.

“Advanced manufacturing” has been identified as one of the 8 Domains of Smart Specialisation (“domaines d’excellence”) of Auvergne-Rhône-Alpes Region and in 2016, a dedicated Action Plan “Ambition Industrie du Futur” has been launched to support enterprises at regional level.

3.1.2. *Baden-Württemberg*

Located in the Germany’s Southwest corner, **Baden-Württemberg** with its longstanding high innovation power is home to internationally renowned industrial giants such as Daimler, Bosch, Porsche and SAP as well as thousands of successful small and medium-sized enterprises, many of which are world market leaders in their respective product fields. The Gross Domestic Product is about € 461 billion - 15.2 percent of Germany.

As the birthplace of the automobile, around one quarter of industrial revenue is generated today in Baden-Württemberg by the automotive engineering industry and its large supplier network, closely followed by mechanical and plant engineering (around 20 per cent) and the metal and electrical industry (each 7 per cent). Among others the chemical, pharmaceutical and optical industries also play a key role and the ICT-sector as well with 150 000 employees. Clusters are an important component of the regional innovation ecosystem.

The general focus of the RIS3 is on continuously developing the regional innovation potential and competitiveness considering cutting edge technological developments like Industry 4.0. For this it can draw from a wide array of specialisations which include sustainable mobility, environmental technology, renewable energy and resource efficiency, health and care, information and communication technology (ICT), green IT and intelligent products, creative industries, aerospace and the application of Key Enabling Technologies in all sectors.

3.1.3. *Catalonia*

Located in the north-eastern part of the Spanish mainland, **Catalonia** is a motor of the Spanish economy today representing 20% of the Spanish GDP, accounting for 25% of the Spanish international trade and 45% of Spanish multinational companies. Catalonia has a diversified industrial fabric with an important interrelationship between the different sectors and services. Food, Chemicals, Vehicles, Energy, Metal and Pharma have a significant presence in the regional economy.

However, in recent years there has been increased support for new Information and Communication Technologies (ICT). The Industry Ring initiative (Anella Industrial 4.0) is born with the objective to deploy sharpshooting infrastructure of telecommunications for the interconnection of business sectors and resources of high technological level. The project is led by i2CAT in collaboration with EURECAT and its will is to increase the competitiveness of the Catalan industrial sectors, to harness the collaborative work in RDI and to upper facilitate a real access of the industrial companies and sectors to ICT infrastructures of high level.



3.1.4. Lombardy

Located in the North of Italy, **Lombardy** is the most industrialized Region of Italy with high economic production, a strong diversification of businesses in the manufacturing and services, and an extremely extensive and articulated knowledge-based system. It contributes 21.7% of the National value added (first in Italy and fourth in Europe). It has 814,000 active companies and the fifth highest employment growth rate in Europe. Its economy is characterized by a wide variety of industries ranging from traditional sectors, such as agriculture and livestock to heavy and light industries.

The service industry has also had a strong development in the recent decades. Lombardy ranks first among Italian manufacturing regions, with strong technological and research competencies in machinery and manufacturing systems development and management, and plays a crucial role in Europe.

Thanks to the complementarity of the skills in Lombardy, the priority themes of technological development are connected to the development of the key enabling technologies such as advanced manufacturing processes, mechatronics for advanced manufacturing systems, modelling, simulation, forecasting methods and tools, ICT, sustainable manufacturing technology, advanced materials, strategy definition and management methodologies.

Deep attention in Lombardy S3 priorities is devoted to the digitalization process. Digital growth represents economic and, consequently, employment development, which originates from a greater and better diffusion of Internet and from an increasingly pervasive use of next-generation technologies. In order to achieve any smart specialisation for Lombardy, it is necessary to leverage on the smart use of ICT technologies to stimulate demand and the consequent supply of private and public services, and innovative processes. ICT technologies and their dissemination are therefore considered as enabling conditions for the efficiency of public administrations, business innovation, and quality of life for the community, but also as key elements for the transformation of production processes.

Basing on an analysis of future developments in the field of new technologies, innovation and digitisation, Regione Lombardia was the first Italian region, at the end of 2011, to start a process for the simplification and modernisation of the Region's system. This led to the definition of the new Agenda Digitale Lombarda 2014-2018 that intends to contribute to restoring competitiveness of economic and social growth, driving Lombardy innovation for its production system, contributing to the development of initiatives integrated in the context of smart communities and the use of ICT technologies in businesses related to previously identified specialisation areas.

3.1.5. Flanders

Flanders is the Dutch speaking northern part of Belgium.

The manufacturing industry plays a major and crucial role in the Flemish economy which is responsible for 70% of the research & development and for 80% of the export. In total the manufacturing industry consists of approximately 5.757 companies with 198.787 employees. Today the manufacturing industry is subject to enormous pressure due to global competition and the growing impact of digitalization. Although Belgium lost about 6% (to 13,5%) manufacturing share of GDP between 2000 and 2012 bringing it below the European average (15,7%).

Despite this negative trend, Flanders does have a future in manufacturing when proper actions are taken to support the industry by combining forces (industry, research centers and universities) and creating added value through smart specialization and the adoption of Industry 4.0.



3.1.6. North-West Transylvania - Romania

The **North-West** development region in Romania is an attractive region, with a dynamic labour market, private business environment and market competition. Average regional GDP per capita is the fourth largest in the country, and accounted for 87,5% of the average national GDP per capita and for 23,68% of the EU28 average in 2013 (Eurostat). In terms of the contribution to the Gross Value Added for 2012, the regional economy relies on services (57,03%) and on the manufacturing industry (28,14%) which is dominated by traditional sectors, such as food and beverages, clothing, textile and footwear, machinery and electric equipment, furniture, but also a few emerging sectors: ICT, plastics and rubber, construction materials and non-metal products. The number of SMEs in the region (over 74.000 SMEs in 2014 according to NIS) is one of the highest in the country with a density of almost 25 SMEs/1,000 inhabitants.

The Smart Specialization Strategy for the region is currently under development, a process towards which Cluj IT Cluster contributes constantly and consistently. Although the final outcome is not provisioned before the end of the year, we can already report that Cluj IT, as a representative organization for the IT and innovation sector in Cluj, succeeded in promoting certain technological areas to be considered for the strategy: bio-informatics, IoT and smart city solutions, open innovation and e-governance.

3.1.7. Região Centro Portugal

The **Centro Region** of Portugal encompasses 100 municipalities and covers an area of 28,199 km² (representing 30.6% of the total area of the country, making it the second largest region of the country). It has a land border of 270 km with Spain and an Atlantic coastline of 279 km and a population of 2,327,755 (according to the 2011 Census).

In 2015, the GDP produced by the Centro Region was 33,962 thousand million euro, which represented 18,9 % of the national figure, making it the third most productive. GDP per capita (15,026 €/person in 2015) stands at 86,7% of the national average. On the contrary, its export potential is above the national average, with a positive trade balance for goods (it is impossible to ascertain the situation for services, given the lack of regional data regarding the import and export of services).

The region's smart specialisation priorities promote a non-sectoral approach with equal opportunities for development in light of the current challenges for the rich and diverse industrial matrix that is a feature of the Centro Region. Within one of the four innovation hubs defined, the aim is the promotion of sustainable materials, products and processes leading to a new industry as a reply to societal challenges such as the efficient use of resources, circular economy, mitigation of climate changes and industry 4.0. This includes the promotion of projects that help to change industrial production systems, in keeping with the concept of valuing human beings in the factories of the future, and which also embraces what is nowadays taken as the revolution of Industry 4.0. This concerns the digitalisation and dematerialisation of processes (from design to production and from logistics to markets) as an element of transformation and industrial innovation.

Many past joint actions have been carried out by the 4M Regions and the other partnering regions are identified in Annex 1 and 2.

Finally, we would like to highlight that **this initiative received the support from all involved regions through letters specifying the great interest for contributing to S3 priorities in each territory** (you can consult them in Annex3).



3.2. 4 Motors and Associates background

The Four Motors and associates, first class regions in their respective countries, present many common points. Amongst them, a GDP above the European average, a solid and innovative economic structure, a rich natural heritage and a thriving tourism industry.

Furthermore, these regions have very similar domains of smart specialisation, especially on industry and topics related to the factory of the future but not only (energy, smart mobility, health, ICT...). Well recognized at the European level, this network of excellence works for the economic, scientific and technological competitiveness in the four Regions, with the objective to use the institutional cooperation framework to identify, launch and/or support collaborations between stakeholders.

The Four Motors and associates have therefore a dual vocation.

- On the one hand, this cooperation should support companies and territories in developing concrete cooperations such as through answers to European calls for proposals and,
- On the other hand, it should promote the role of the regions at the heart of the European and international institutions.

On May 2016, the newly expanded Auvergne-Rhone-Alpes Region took the chair of the Four Motors for a 12-month period. The overall ambition is to pursue the transition towards smart regions, a topic that the four regions have been working on over recent years. Therefore, the Auvergne-Rhône-Alpes presidency of the Four Motors will focus on transforming the industrial model into a digital one and will boost collaborations between the regions around the industry of the future (Industry 4.0).

A dedicated working group has been launched on June 2016 to identify and promote cooperation actions among the 4 Motors, in complementarity with the Vanguard Initiative in which the Regions are also actively involved, through regular Working Sessions and an Action Plan for the coming year.

Two regions with historical collaborations with the 4Motors for Europe (both at institutional and stakeholders level) have been invited to join the consortium, with the objective to broaden the impact and dissemination of results.

Concerning Região Centro (Portugal), Auvergne, and more especially Clermont-Ferrand, hosts an important community from Portugal (2nd largest in France) coming mainly from Centro and driving many economic projects. Plastipolis benefits from a historical collaboration with stakeholders from Centro, particularly with Pool-Net. The two clusters have been cooperating for many years in different European projects such as Clusterplast (FP7 Region of knowledge) in 2009-2010 or Wiintech (CIP world class clusters) in 2013-2014.

Finally, the cooperation with Cluj IT is of high strategic interest since many companies of Baden-Württemberg have opened branch offices in this region. Thus, there is a logical objective to extend the 4 Motors, a classical western European initiative towards the east.

The European Strategic Cluster Partnership is then composed of 12 clusters or other organizations representing 2500 organisations including 1500 SMEs. Partners come from 6 different countries, 2 of them are clusters established in regions classified as less developed. The involved clusters have the capacities to propose services to companies, to involve their industry and innovation stakeholders, to trigger and support cross sectoral and interregional cooperations.



- Auvergne Rhône-Alpes
 - ✓ Plastipolis
 - ✓ Viameca
 - ✓ Minalogic
- Lombardy
 - ✓ AFIL
- Baden-Württemberg
 - ✓ microTEC Südwest
 - ✓ Bwcon
- Catalonia
 - ✓ Eurecat
 - ✓ CEP
 - ✓ Clúster Digital de Catalunya
- Flanders
 - ✓ Flanders Make
- Romania - Transylvania
 - ✓ Cluj IT Cluster
- Região Centro Portugal
 - ✓ Poolnet

All partner organizations are described in more details below. To illustrate the complementarities between the partners and the European added value of the partnership, the main know how of the partners have been identified based on the strategic domains identified by EFFRA association.



EFFRA's Domains Mapping

	Minalogic	Viaméca	Plastipolis	AFIL	EURECAT	CEP	Digital Cluster Catalunya	Flanders Make	microTEC Südwest	BwCon	Cluj IT	Poolnet
D1 Advanced Manufacturing processes Innovative processing for both new and current materials or products		X	X	X	X	X		X	X	X		X
D2 Adaptive and smart manufacturing systems Innovative manufacturing equipment at component and system level, including mechatronics, control and monitoring systems	X	X	X	X	X	X	X	X	X	X		X
D3 Digital, virtual and resource-efficient factories Factory design, data collection and management, operation and planning, from real-time to long term optimisation approaches	X	X		X	X	X	X	X	X	X	X	X
D4 Collaborative and mobile enterprises Networked factories and dynamic supply chains	X				X							
D5 Human-centric manufacturing Enhancing the role of people in factories	X	X			X			X				X
D6 Customer-focused manufacturing Involving customers in manufacturing value chain, from product-process design to manufacturing associated innovative services		X	X		X	X	X			X		



3.3. **Consortium**

3.3.1. **Auvergne Rhône-Alpes**

A.3.3.1.1. **Plastipolis**

Plastipolis is the only competitive cluster of plastics engineering in France. Located in Oyonnax, in the so-called Plastics Vallée of France, it brings together all the operators in the sector (companies, R&D centres, training centres, and institutional entities) in the Rhône-Alpes and Franche-Comté regions. Its aim is to promote the expertise of French plastics engineering companies on a European and international level. As a leading Technology Cluster for Polymer Industry in France, Plastipolis gathers more than 350 members (220 companies).

The main missions of Plastipolis are:

- The stimulation of innovation within the plastics industry with connecting technologies and business applications
- The support of small and medium companies in the plastics industry in new developments
- The improvement of the cooperations between industrial and academic entities and the establishments of partnerships

In particular, Plastipolis has built its innovation strategy across different strategic technology domains that have been defined in connection with trends and challenges of the major business markets: construction, transportation, medical, packaging sector, energy and environment, sport and consumer goods.

From 2013, Plastipolis has awarded the Gold label, the highest European award in cluster performance evaluation. This label is an overall recognition of the cluster's dynamics put in place since 2005 and of the collaborative work lead between companies, universities and research laboratories.

ECCP profile: <http://www.clustercollaboration.eu/cluster-organisations/plastipolis>

A.3.3.1.2. **Viameca**

ViaMéca is devoted to design, production and integration of intelligent mechanical systems. Its members (SME's and groups, research and/or education bodies) bring skills that are coordinated and highlighted in 4 thematics: Surface Engineering and Processes, Advanced Manufacturing, Intelligent Systems and Robotics, Engineering driven by Uses and Services.

ViaMéca is located in the first French region on mechanical engineering regarding either scientific strength devoted to system engineering (CNRS statistic) or business in industrial outsourcing in the field of mechanics.

Since 2005 ViaMéca labelled more than 415 R&D collaborative projects. More than 200 were funded : they involved more than 499 companies and 342 labs. 60 funded projects are deeply linked with the « factory of the future » domains (in the light of EFFRA's roadmap).

On the international aspects, we are looking for collaborations into European projects (H2020 ICT, FOF, NMP, Eurostars, Eureka...) for our members, and new interclustering relationship that could be reinforced through Interreg or Innosup projects for example.

ECCP profile: <http://www.clustercollaboration.eu/cluster-organisations/viameca>



A.3.3.1.3. Minalogic

Minalogic is a global innovation cluster for digital technologies serving France's Auvergne-Rhône-Alpes region. The cluster supports the region's leading innovators by facilitating networking, fostering collaborative R&D, and providing companies with personalized assistance throughout all phases of business growth.

The cluster's initiatives target the unique niche where micro-nanoelectronics, photonics and software meet. The products and services developed by our members address all industries, from ICT and healthcare to energy and advanced manufacturing.

Since the creation of Minalogic in 2005, 450 projects have been launched after our certification for a total R&D budget of more than €2 billion incl 805 M€ public funding.

The 67 projects completed to date, contributed to the creation of 706 jobs and generated €1.6 billion in revenue (3 years after the end of the project). Overall, the projects have resulted in 56 products (either on the market or in the process of being prepared for market release).

From knowledge creation to technology transfer, Minalogic is active along the entire innovation value chain. And the role of Minalogic is to respond to the business community's need to identify new value-added services that can be integrated into existing products.

ECCP profile: <http://www.clustercollaboration.eu/cluster-organisations/minalogic>

3.3.2. Lombardy

A.3.3.2.1. AFIL

AFIL (Associazione Fabbrica Intelligente Lombardia) is a Lombardy technology cluster focused on Smart Factory gathering private enterprises, universities and public and private research centers. It promotes and facilitates research and innovation of technologies and qualifying practices for the manufacturing sector and plays an important role in defying the technology roadmap for Advanced Manufacturing Systems in Lombardy.

AFIL is characterized by a strong focus on technologies enabling intense technology transfer. AFIL is also committed to create national and European interregional networking to support contact among enterprises and research centers to develop new opportunities of joint research and innovation projects, also thanks to the connections with the European technological platforms and National Technological Clusters.

Moreover, AFIL is the technical referent for Lombardy in the Vanguard Initiative on following priority issues in Advanced Manufacturing: Efficient and Sustainable Manufacturing, 3D Printing and High Performance Manufacturing for Oil & Gas application.

Recently AFIL has been also recognised by I4MS as Regional Manufacturing Digital Innovation Hub (RMDIH) in the theme of Sensors, CPS and ICT, with the aim of creating the right suitable ecosystem to support SMEs towards the digitalization process.

ECCP profile: <http://www.clustercollaboration.eu/cluster-organisations/afil>

3.3.3. Baden-Württemberg

A.3.3.3.1. microTEC Südwest

The leading-edge cluster microTEC Südwest and the professional association (former Mikrosystemtechnik Baden-Württemberg e.V. - MST BW) are now being run under a joint corporate identity: microTEC Südwest. The professional organization is the central contact point for all microsystem technology activities in Baden-Württemberg. The central service for



members are technological and application oriented special interest groups in which microTEC Südwest's capabilities are bundled for further innovation in the field of microsystem technology:

The cluster microTEC Südwest with its over 380 cluster partners is one of the largest technology networks in Europe. With global players and many innovative small and medium-sized companies microTEC Südwest provides the basis for future lead innovations and new growth in the region across all industries. With respect to application, the cluster management focuses its work on four fields. Target markets of microTEC Südwest are smart health, smart production, smart mobility and smart energy. Current support actions include industry 4.0 for the region, where microTEC Südwest is responsible for the cyber-physical systems/smart sensors and actuators part of the initiative (www.i40-bw.de).

As a link between science, business and government microTEC Südwest supports its members with applications for and management of funded projects. This comprises matchmaking activities as well.

The 116 members (December 2016) come from companies, research facilities and institutions. There are global players such as Bosch, Festo, Roche Diagnostics, ABB, Zeiss, Endress+Hauser, Sick, Balluff and Testo, as well as many innovative small and medium-sized companies. Among the research facilities are the institutes of Innovationsallianz Baden-Württemberg (innBW) as well as the Fraunhofer Institutes. Colleges and universities are also members, such as the Institut für Mikrosystemtechnik (IMTEK) of the University of Freiburg as well as the Karlsruher Institut für Technologie (KIT).

This cluster meets the excellence criteria of the European Cluster Excellence Initiative (ECEI) and has been awarded with the gold label.

ECCP profile: <http://www.clustercollaboration.eu/cluster-organisations/microtec-sudwest-ev>

A.3.3.3.2. Bwcon

Bwcon is a high tech cluster in Baden-Württemberg which has been founded in 1997 and thus, bwcon is the network with the longest tradition in Baden-Württemberg. Bwcon has currently 600 members from the technology area with a strong backbone in all ICT disciplines.

Bwcon brings together companies from all size offering ICT services and has a strong knowledge in innovation as a whole. bwcon is Baden-Württemberg's leading facilitator for innovation in the technology sector. Being more precise, bwcon coordinates the technology transfer from research to industry by starting with early stage concepts at universities such as the Opportunity Recognition Workshops for Ph.D candidates and researchers from the ICT sector. Bwcon also organizes summer academies and idea factory workshops for students with various modules relevant for sensitization on entrepreneurship such as design thinking, effectuation, business modelling, prototyping or the lean startup method.

As a next step in the local innovation process, bwcon operates various Innovation Forum and accelerator programs like arena42. The forums gives founders, start-ups and researchers the opportunity to present their business concepts to broad audience ranging from investors to the local industries. bwcon has further initiated the CyberOne, Baden-Württemberg's leading Business Plan competition award, which has attracted over 300 m € private investment capital in the last 17 years. On behalf of the federal government bwcon screens 250 business ideas in the high-tech sector per year and creates roughly 50 start-ups in the ICT and high-tech area through its screening process. The start-ups involved in the screening attract investment capital of roughly 10-15 m € per year.

Together with the shareholder Steinbeis bwcon operates a virtual business incubator which can be considered a "cloud" service for start-ups and young entrepreneurs.



All in all, bwcon is acting as the innovation ecosystem for the members of the two shareholders, with about 600 companies in total ranging from entrepreneurs and start-ups, SMEs (major part) to large organizations like IBM, SAP, Zeiss and HP, Trumpf, Merck.

Within the initiative Allianz Industrie 4.0 Baden-Württemberg, a network founded and sponsored by the state of Baden-Württemberg in 2015 aiming to pool technological expertise in production as well as IT and communications to promote Industrie 4.0 bwcon coordinates the theme focus business model, business value creation and ICT.

ECCP profile: <http://www.clustercollaboration.eu/cluster-organisations/baden-wuerttemberg-connected-ev>

3.3.4. Catalonia

A.3.3.4.1. Eurecat

Eurecat (member of TECNIO) is the main Technology Centre in Catalonia, offering companies innovative products and services through research, applied development and technology transfer.

Eurecat brings together the expertise of 450 professionals generating a turnover of 36 M € yearly. Serving more than a thousand companies, the centre is involved in 160 national and international R&D projects with high strategic value and has 73 patents and 7 technology companies. It has nine centres in Catalonia and one in Brazil.

It directs its activity in all sectors, but especially to seven main strategic areas: Food, Energy and Resources, Industrial systems, Design-based industries, Industries linked to sustainable mobility, Health industries and Cultural and experience-based industries.

Website: <http://eurecat.org/es/>

A.3.3.4.2. CEP

The Centro Español de Plásticos (CEP) was born in Barcelona, in 1953, as an association of the Plastic and Composites Sector, with a Spanish scope.

From then until today, the Centro has become a Cluster of reference of the sector, carrying out leader Conferences as [CEP Auto](#) and [CEP Composites](#), and others, as the needs are detected, like CEP Packaging, CEP Innova, CEP Print3D, CEP Medica, etc.

On the other hand, and since 2015, CEP has been recognized by the Spanish Ministry of Industry as an Innovative Entrepreneurial Group (AEI) at the Spanish state level, and later CEP has also been recognized with the Bronze Label accreditation by ESCA.

As a result of these recognitions, the CEP has diversified its offer of services to the member companies, opening its portfolio to innovative projects, both Spanish and European level. The Cluster also responds to training and advisory activities in the sector, and also positions itself as a center of activities to promote networking among companies in the sector, and as a promoter agent to their internationalization.

CEPs members have the following profile: 54% are plastic and composite transformers, 26 % raw material manufacturers and distributors, 7 % software distributors and engineering experts, 6 % technological centers, and the rest comes from other linked sectors.

ECCP Profile: <https://www.clustercollaboration.eu/cluster-organisations/centro-espanol-de-plasticos>

A.3.3.4.1. Cluster Digital

The “Associació Clúster Digital de Catalunya” is an association created as a meeting point and network for SMEs, big companies, universities, R+D+i centers and public administration, in the field of the ICT. It aims at boosting the competitiveness of its members and, in general, the catalan ICT sector, by enhancing a new corporate culture based on collaboration and open innovation.

The “Associació Clúster Digital de Catalunya”:

1. Catalyzes the resources of the ICT catalan sector by multiplying their individual capabilities and taking profit of the synergies existing between the different agents,
2. Contributes to the development of the companies -by increasing their competitiveness and turnover with new products and intensives services of knowledge and high added value- and
3. Positions itself and its members as a reference of collaborative innovation at local and internacional level.

The entity was originally founded as “*Clúster TIC Barcelona Digital*” in 2008 by the “*Barcelona Digital Technology Centre*” with the mission of promoting the development of ICT companies and their competitiveness and become an internation reference in terms of innovation. In 2015, the “*Clúster TIC Barcelona Digital*” acquires legal personality and turns into the “*Associació Clúster Digital de Catalunya*” by being registered in the Register of Legal Entities of Catalonia.

At present, the “Associació Clúster Digital de Catalunya” has more than 40 members, with a high representitiveness of the whole ICT value Chain, and representing more than the 15% of the catalan sector turnover. It owns the European Cluster Excellence Initiative Bronze Label Certificate, issued by the European Secretariat for Cluster Analysis.

It is certified by the Ministry of Economics, Industry and Competitiveness as AEI (Innovative Business Group) and belongs to the Catalonia Clusters programm.

ECCP Profile: <https://www.clustercollaboration.eu/cluster-organisations/cluster-digital-de-catalunya>

3.3.5. Flanders

A.3.3.5.1. Flanders Make

Flanders Make is the strategic research centre for the manufacturing industry. We have establishments in Lommel and Leuven and collaborate with research labs at the 5 Flemish universities.

Flanders Make collaborates with major companies and SMEs. Together they focus on product and process innovation based on the challenges and needs of the industry. The research focus is on 4 technological domains: power electronics & energy storage, mechatronics & design methods, production processes and people-driven system development. This will, as a first step, yield product and process innovations in 3 fields of application: vehicles, machines and factories.

Flanders Make also attaches great importance to international cooperation in the field of innovation and to participation in European research projects.



By 2018, more than 300 researchers will work full-time at Flanders Make as a unique research community on a joint industrial research agenda. Flanders Make is also a membership (cluster) organization.

Website: <http://www.flandersmake.be/nl>

3.3.6. Romania - Transylvania

A.3.3.6.1. Cluj IT Cluster

Cluj IT Cluster is an innovation based value chain network of Romanian IT companies and related organizations with the purpose of increasing the competitiveness and growth of IT services and products on international markets and of forging a strong sustainable public – private partnership in order to improve the life quality of the community we are part of. Cluj IT Cluster strives towards the enhancement of innovation capabilities of its members, in particular, and of the Romanian IT industry in general. Cluj IT Cluster, although recently established (2012), has become in short time the foremost initiative of its kind in Romania, has more than 45 members, among which the top two universities in Cluj (Universitatea Babes-Bolyai and Universitatea Tehnica).

The cluster's main functionality is to provide facilitation of interest based interaction between various stakeholders along the value-chain of the IT industry. Every Cluj IT member is exposed to a new form of collaboration that seeks and leverages the strategic alignment with other players in the IT value chain in order to build new businesses, increase opportunities and create economic and social sustainability in our region. This is achieved through a tested environment which allows each member to identify its interests in relation with others in Cluj IT Cluster. Concretely, **Cluj IT Cluster** works as a facilitation platform where members identify common interests, share knowledge and build joint projects and initiatives. These are organized mainly under thematic working groups dedicated to business development, smart city solutions, education and training.

Cluj IT Cluster holds the Silver Label in cluster management excellence as a result of an auditing process conducted by the European Secretariat for Cluster Excellence. Cluj IT Cluster is also labeled a ESCP4i (European Strategic Cluster Partnership for Internationalization) organization by the European Commission (the only cluster organization in Romania with this label).

ECCP profile: <http://www.clustercollaboration.eu/cluster-organisations/cluj-it-cluster>

3.3.7. Região Centro Portugal

A.3.3.7.1. Poolnet

The Portuguese Engineering and Tooling Cluster, which incorporates the Moulding, Special Tools and Plastics industries, was officially recognised by the Portuguese Government in 2009, and is legally represented by the association Pool-Net – Portuguese Tooling & Plastics Network, whose comprises 91 members, being businesses (81%), Universities and R&D Centres (13%), Training Centres (1%), Trade Associations (4%) and Public Bodies (1%). Pool-Net been awarded the Gold Label of the European Cluster Excellence Initiative, since 2015.

The main goal of Pool-Net is to manage and coordinate initiatives, projects and bust corporate cooperation, to implement the strategic plan established for the Engineering and Tooling Cluster and place it in top5 at worldwide label. To carry out its mission, Pool-Net has key partners in specialised training, R&D +I&T and business development.



In the last years, the cluster was deeply involved in R&D and innovation projects, studies and other initiatives towards the sustainable development of the industry, promoting product development in strategic areas (aeronautics, automotive, medical devices, packaging, electronics, energy and environment) enhancing their competitiveness and international positioning. Pool-Net works to stimulate innovative activities by promoting interactions, the sharing of facilities and the Exchange of knowledge and expertise, as well as contributing to technology transfer, networking and information dissemination. The Cluster is presently involved with R&D Project involving more than 75 million Euros of investment.

The Cluster has a deep knowledge of the international environment and is fully aligned with the European Tooling Technology RoadMap (2014-2020), developed within the EUROPEAN TOOLING PLATFORM (MANUFUTURE SUB-PLATFORM) and geared towards the opportunities of HORIZON 2020, thereby taking advantage of the most advanced technologies which will be a feature of the “Factories of the Future” recommended by the EU.

Pool-net provides a portfolio of support services for its members: such as access and inclusion in international innovation network; expand visibility through promotion of the international campaign and brand “*Engineering & Tooling from Portugal*”; use a collective brand; access to events and meetings which disseminate knowledge, tools and the best practices in relevant areas; reports following the business trips or inter-clustering trips, support and technical advice in funding and setting up innovation projects.

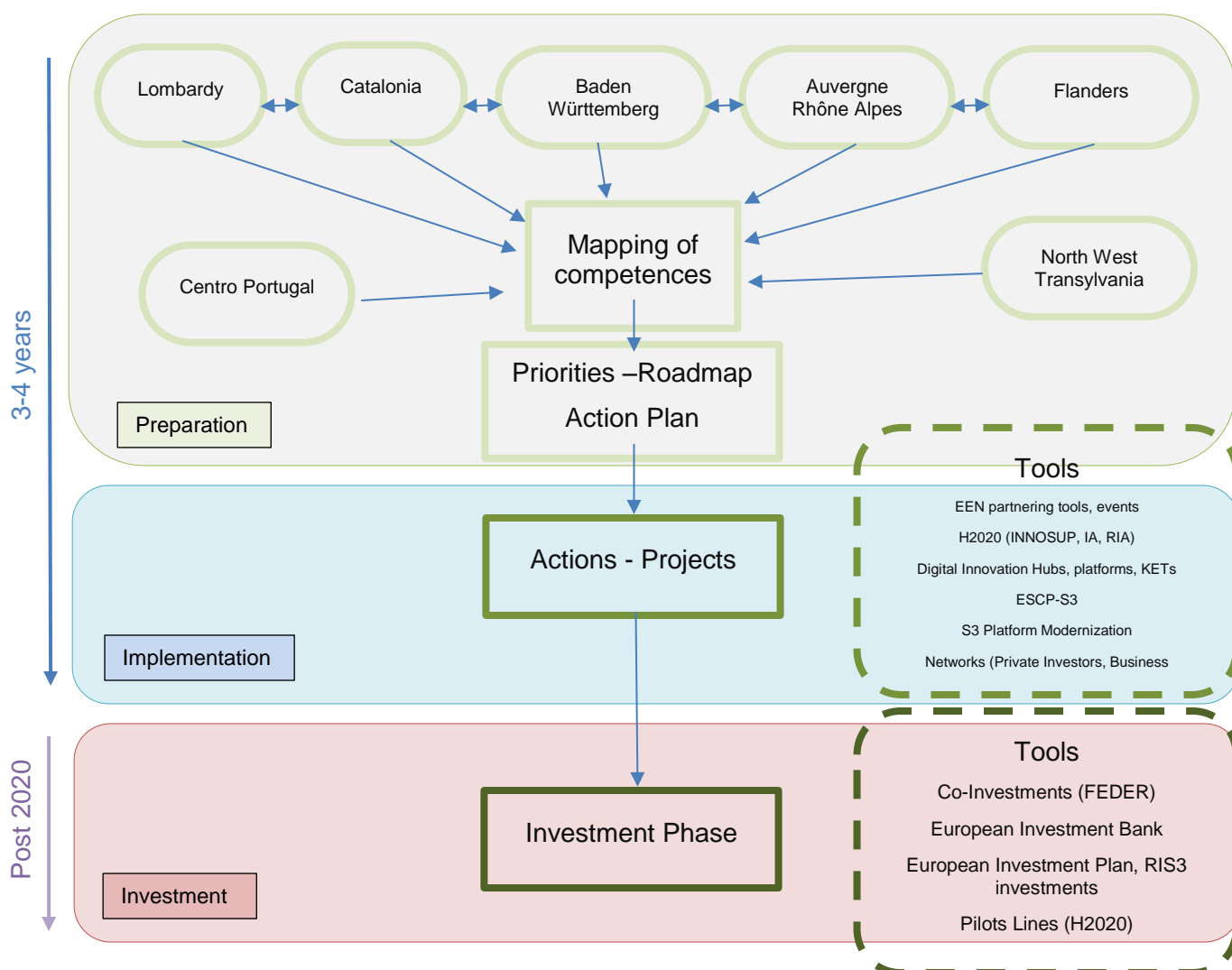
ECCP profile: <http://www.clustercollaboration.eu/cluster-organisations/associa%C3%A7%C3%A3o-pool-net-portuguese-tooling-network>

B. 4 Motors 4 Industry of the Future: Project and Partnership

1. Project organisation

Partnership activity is based on 3 steps as described in the chart below:

- **Preparation:** mapping, strategy setting and joint action plan. The joint action plan describes the strategy, the partners and the other stakeholders involved, the objectives, the priorities and responsibilities and the time frame
- **Implementation:** actions of demonstration, networking activities, cross regional projects, demonstration and pilot projects, using regional and EU tools
- **Investment:** business plan and proposals for investments, including interregional funding (ERDF)





2. Activities of the partnership

The partnership will aim at setting up the following actions:

1. **Connection of the different “Manufacturing and Industry of the Future” regional Alliances / working groups representing the main stakeholders:**

The partners will act to connect their respective regional industry 4.0 initiatives that have been developed in each region, e.g.:

- Auvergne Rhône-Alpes:
 - Group of 7 regional clusters for the industry of the future called “Collectif des Pôles Auvergne Rhône Alpes pour l’Industrie du Futur”,
 - Regional Steering Committee “Industry of the Future” (Comité de pilotage “Ambition Industrie du Futur”)
 - Baden Württemberg:
 - Allianz Industrie 4.0
 - Lombardy:
 - Lombardy Intelligent factory ecosystem (represented by the regional technology cluster AFIL)
 - Catalonia:
 - Plataforma Industrial 4.0
 - Big Data CoE
 - DIH on High Performance Computing
 - Região Centro:
 - Regional coordination group for economic development
 - Flanders
 - Regional coordination group
 - North-West Transylvania
 - Regional coordination group for economic development
2. **Connection and coordination of each “industry of the Future” regional S3 activities** (Mapping of competences and priorities, Identification of common interest thematic and synergies, Action Plan)
- Lombardy
 - RIS3 monitoring group
 - Cluster Steering Committee
 - Baden Württemberg:
 - Link with the partnering organizations of the Alliance Industry 4.0 Baden-Württemberg that set common objectives including:
 - to connect all relevant sectors and technologies,
 - to give the SME's orientation for their own way to smart industry,



- to prepare employees and apprentices for a varying range of responsibilities,
- to launch R&D projects and
- to deal with all questions of the Transfer of technology.
- Catalonia
 - Comunitats RIS3CAT on Industria del Futur
 - Comunitats RIS3CAT on Fabricació Additiva
- Auvergne Rhône-Alpes
 - Domaine d'Excellence "industrie du futur et production industrielle »
 - Regional action plan « Ambition Industrie du Futur »
- Flanders
 - Smart specialization platform Flanders
- North-West Transylvania
 - National Strategy for Research, Development and Innovation 2014 – 2020
 - Regional RIS3 strategy under development with assistance from DG JRC and DG Regio
- Região Centro
 - Economic development

3. Joint roadmap on industry 4.0

A Joint Roadmap will be defined upstream:

- Technical or industrial shared priorities,
- Joint approach for developing opportunities to support the implementation of the different regional S3.

4. Strategic Innovation Schemes & Policies

The aim is to strategically coordinate efforts & align funding schemes on transregional innovative industry 4.0 activities (common investment tools, collaborative projects, ERDF)

5. Common (projects) tools – Networks initiatives

The goal is to identify joint projects with partners from the different regions that will be aligned and coordinated with the different S3 regional strategies and other Initiatives such as:

- Vanguard Initiative (especially pilots on 3D Printing and ESM)
- Digital Innovation Hubs and Innovation Hubs.
- S3 Platform on Industrial Modernization and especially, ESM

3. Toolbox of the partnership for common projects

In this part, we highlight some tools we identified. The partnership will use different existing tools to support the implementation of the strategic cluster partnership for:



1. Matchmaking activities

- ✓ Major European fairs and events: e.g; Hannover Messe, Industrial European days...
- ✓ Major EEN Brokerage Events such as the IoT Solutions World Congress, Cebit...
- ✓ EEN Sector Groups meetings
- ✓ A dedicated 4M4IoF Brokerage through application for Watify
- ✓ Cluster dedicated matchmaking events: Cluster Matchmaking Conference...
- ✓ Open Days

2. Enhancing 4M and associates dimension in existing European funded projects (including Dissemination activities) or in existing networks

- ✓ Interreg MED, such as GREENOMED (AFIL, Plastipolis)
- ✓ Interreg Alpine Space: such as Bifocalps (Viaméca, Grenoble INP, Bwcon, AFIL), Smart Space (AFIL, Bwcon, Agence Régionale Auvergne Rhône Alpes), Care4Tech (AFIL, microTEC Südwest, Plastipolis)
- ✓ H2020 such as BeinCPPs (AFIL, Plastipolis)
- ✓ COSME such as Materialix (Pool-Net, Plastipolis)
- ✓ InSSIght (Minalogic, microTEC Südwest)
- ✓ Silicon Europe network, Vanguard Initiative, ETP (Manufuture, EPoSS)

3. Future Project financing schemes

- ✓ Interreg (Europe, Alpine Space, Central Europe, SUDOE, MED, DTP)
- ✓ H2020 (Innosup, IA, RIA, Pilots, I4MS, FoF PPP...)
- ✓ COSME support activities
- ✓ Watify and Re-confirm support services
- ✓ European Fund for Strategic Investment (Juncker Plan)

4. Governance

Plastipolis will coordinate the activities of this initiative. Its experience and management abilities were confirmed through its successful participations in MINAM 2.0 (FP7 NMP) and Care4Tech (Alpine Space project).

All the associated partners mentioned above will contribute to the Action Plan, and each of them will lead and promote at least one action.

Working sessions will be held (as previously) with a steering committee in order to go further on the planned activities.

1. Connection to the different "Industry 4.0" regional Alliances or working groups
2. Connection and coordination of each "industry 4.0" regional S3 activities (Mapping of priorities, Identification of common interest thematic, link competences, Action Plan)
3. Interregional Joint roadmap on industry 4.0
4. Strategic Innovation Schemes & Regional Policies coordinations
5. Common projects tools (Matchmaking activities, Project financing schemes)



Some Regional Agencies will contribute to this partnership through supporting the 4M4IoF activities and dissemination activities (for instance Agence Régionale Auvergne Rhône Alpes).

The Regional Authorities will be kept informed on the main deliverables of the project, and will organize some specific working sessions to organize promotion and dissemination of the results.

C. Annexes

Annex 1 - Consortium partners in figures

Annex 2 - Examples of Past and running Projects involving 4M regions.

Annex 3 - Letters of Support



1. Consortium partners in figures

	Size of the Network	Connections to Business Networks	Number of SMEs	Main Thematic	Projects References	Activities linked to Industry 4.0	Common 4M Background
<u>Plastipolis</u>	400 Members	Regional Business Clusters EEN Points of contact (CoC)	220	Plastics & Composites	Clusterplast (Region of knowledge), Alplastics and Alpclusters2020 (Alpine Space), COTECH, Nanocom, Minam 2.0 (FP7 NMP), IMPRESS, 3D Hipmas (FP7 FoF), Degricol, Hiperdry, TDM seals, Europha (FP7 Research for association of SMEs) , COLAE (FP7 ICT), WIINTECH, Health2care (CIP)	Hybrid Manufacturing processes, including 3D Printing, Machines and Processes monitoring Eco Design and End of Life product recycling Flexible and Plastic Electronics	MINAM 2.0 (FP7 NMP): Microtec Südwest (Germany) and Cardiff (Wales) Care4Tech (Alpine Space): AFIL (Lombardy)
<u>ViaMéca</u>	160 members	Regional Business Clusters Our international partners INPLAS, MESAP, FVEM, Tecnalia, CETIME Tunisie, AIDA	80	Metalworking Technology Production Technology and Heavy Machinery	2012 SASAM Europe European Commission 2012 METAL INNOVA Europe European Commission 2012 AMEPLM Europe European Commission 2014 ECOSTRIPPAIR H2020 EUROSTARS 2015 BOTS2REC H2020 ICT 2016 BIFOCAlps H2020 InterReg Alpine Space	3D printing Surface treatment (painting, galvano, polishing, CVD, ..) Engineering Automated driverless vehicles Advanced manufacturing systems Machinery & equipment n.e.c.	BiFOCALps (Alpine Space): Consiglio Nazionale delle Ricerche (IT), Fachhochschule Voralberg GmbH (A), Pososki razvojni center (SLO), Bwcon GmbH (D), Grenoble INP (F), ViaMéca (F)



<u>Minalogic</u>	330 Members	Partnerships with 2 SATT (tech & innovation transfer from public R&D to Business) + Banks + Lyon FrenchTech + Digital Grenoble + EEN + cluster alliances	240	Digital technologies / microelectronics / Photonics & Software	Silicon Europe Worldwide (COSME), InSSIght (H2020), ACTIVAGE (H2020), Silicon Europe (FP7), Health2Care (CIP), PhotonicsRoad SME (FP7)	Digitalisation of the Industry Smart product design and production considering hybrid processes (printing, molding, stamping, laser, technologies surface chemical and mechanical functioning....) Machines and processes monitoring (sensors, data acquisition, analysis, supervision and control, imaging/vision) Connected machines and processes (IoT) Smart, flexible and distributed maintenance Nanomanufacturing upscaling, processes combination & hybridization on new processing, Machine learning (BigData) High Performance Computing Human Machine Interface (VR/AR) Securisation data / Cyber Security	Silicon Europe Alliance (DSP valley, Flanders), Microtechnics Alliance with MicroTech SW
<u>AFIL</u>	147	Lombardy Regional Technology Clusters (CTL); National Technology Cluster Fabbrica Intelligente (CFI); Confindustria Lombardia	92	Advanced Manufacturing	ERICA (TREC) BEinCPPS (H2020 - FoF 2015) SCREEN (H2020-CIRC) 3DCentral (Interreg Central Europe)	Additive Manufacturing, Smart and Adaptive manufacturing, Digital and Virtual factory, De-and Remanufacturing for circular economy, Smart and	ERICA - Eurecat (Catalonia), Fundacio Privada Cequip (Catalonia) BEinCPPS - Fraunhofer- IPA (Baden



		(Lombardy regional entrepreneurs association)			<p>S34Growth (Interreg Europe)</p> <p>Smart Space (Interreg Alpine Space)</p> <p>Care4Tech (Interreg Alpine Space)</p> <p>Greenomed (Interreg MED)</p> <p>Vanguard Initiative</p>	<p>Adaptive production and assembly system, energy efficiency</p>	<p>Wuerttemberg), JOHN DEERE GMBH (Baden Wuerttemberg), Georges PERNOUD SAS (Auvergne Rhone Alpes), Care4Tech - Plastipolis (Auvergne Rhone Alpes), Microtec Südwest (Baden Wuerttemberg) Smart Space - bwcon GmbH (Baden Wuerttemberg), Agence Régionale du Développement et de l'Innovation Rhône-Alpes 3DCentral - Stuttgart Region Economic Development Corporation (Baden Wuerttemberg), Fraunhofer IWU (Baden Wuerttemberg) Vanguard Initiative - Catalonia, Auvergne Rhone Alpes (tbc), Baden Wuerttemberg Greenomed - Eurecat (Catalonia), Plastipolis (Auvergne Rhone Alpes), ACCIO (Catalonia), DIRECCTE</p>
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							(Auvergne Rhone Alpes).
<u>microTEC Südwest</u>	380 cluster partners (116 member in the association)	Partnership agreement with several clusters and networks, loose collaboration with some other networks	250	Micro Systems Technologies - Main applications: Smart production (sensors and actuators), smart health	Minam 2.0, EU-Knights (associated partner) (FP7), EXPRESS, inSSight (H2020) ScaleIT (German BMBF) Allianz Industrie 4.0 BW (founded by BW)	Smart systems integration, energy supply for sensor systems, printing technologies, cyber-physical-systems,	MINAM 2.0 (FP7 NMP):Plastipolis (France) and Cardiff (Wales) Care4Tech (Alpine Space): AFIL (Lombardy) and Plastipolis (France)
<u>bwcon</u>	600 members	Partnership agreement with several local clusters and networks like e.g. microtec südwest (joint office in Freiburg). Moreover, bwcon has a strategic alliance with BITKOM and acts as local branch for Baden-Württemberg	400	ICT applied to health, manufacturing, energy and mobility	Allianz Industrie 4.0 BW, Cloudmall BW, EXI Gründergutscheine BW, InvestHorizon, CREA, ePlus, Katana, FI Business, MobiGoin (all H2020), USE-PSS, D4X (German BMBF) DSTIR, Da-Space, Smart-Space, BifocAlps, DesAlps, AlpSIB (all Interreg Alpine Space)	Arena 42, Golnno Business Coaching, CyberOne,	BiFOCALps (Alpine Space): Smart-Space (ARDI)



Flanders Make	89 active members, 180 (manufacturing) companies in direct target group	Connection to the different Chambers of Commerce in Flanders, Agoria (Technology Federation), Flanders Investment & Trade, the Innovation Centres in Flanders and different regional business clusters (e.g. Locate in Limburg)	30 SME's in active member network, >80 SME's in direct (manufacturing) target group	Mechatronics, product and process design, manufacturing automation and operator support, monitoring and control, additive manufacturing, high precision manufacturing	eVectoorC (FP7), iCompose (FP7), Lightcar (Interreg 5C)	3-D printing, Agile and flexible manufacturing systems, digitisation of product and process, monitoring of manufacturing processes	Connection with electro mobility group of 4M4E (e-Mobil BW)
Cluj IT Cluster	50 active members, of which more than 30 are IT&C companies (especially software)	Cluj IT Cluster is founding member of the BBS ICT Network – an informal initiative of clusters and business associations throughout the Balkan and Black Sea macro-region with more than 20 such members, a member of the Digital SMEs Alliance – headquartered in Bruxelles, it is the largest pan-European alliance with more than 20.000 member SMEs, and of Clustero – the representative Romanian	24 SMEs active members	Mostly software development (IaaS, PaaS, SaaS)	Smart City (EU structural funds)	Digitization of products and services, digitization of manufacturing processes, smart moving of objects	None



		association of cluster organizations.					
Poolnet	91 members: businesses (81%), Universities and R&D Centres (13%), Training Centres (1%), Trade Associations (4%) and Public Bodies (1%).	Poolnet was officially recognised by the Portuguese Government in 2009, and is legally represented by the association Pool-Net – Portuguese Tooling & Plastics Network	65 SMEs	Tooling technologies	COSME: Materialix FP7: Clusterplast CIP: Wiintech In addition, the Cluster is a founding partner of the European Tooling Technology RoadMap (2014-2020), developed within the EUROPEAN TOOLING PLATFORM (MANUFUTURE SUB-PLATFORM)	Micromanufacturing 3D printing Rapid tooling Advanced automation Innovative materials Simulation methods Digitalization of processes and data acquisition and analysis	Several FP7 and CIP projects with Plastipolis Cooperation with Viameca (Cetim) within the Manufuture Platform
Cluster Digital de Catalunya	40 Members	Catalonia Clusters Programm	28	ICT Technologies	AEI Calls (Ministry of Industry): Shoplight, E-Freight BCN, School Energy League, Big Data: Innovation in processes. IRC (ACCIO-Catalonia): Luditrain FP7: Bewiser	Cybersecurity; augmented reality; simulation; data capture; data mining; IoT deployment; cloud computing; big data; data analytics	/
CEP: Centro Español de Plásticos	156 Members	European Cluster Collaboration Platform. Member of the Agrupación Empresarial Innovadora	136	Plastics & Composites	Nanosafepack (2012-15): Seventh Framework Programme from UE. Study of a	Dissemination and organization of Conferences in Barcelona and Zaragoza about the possibilities to	Nanosafepack project organized with companies and organizations from

ESCP-S3 4 Motors 4 the Industry of the Future

Concept note



		(AEI) from the Spanish Industry Minister			Carbon Footprint Tool in the Plastic Industry for the Spanish Industry Ministry	introduce de 4.0 Technologies in the SME Plastic Companies. Organization of a Materials for 3DPrinting Congress in 2017. Two Projects about 4.0 Industry in Plastics and Composites, presented to Spanish Industry Ministry, under approval.	Spain: Tecniplasper and Itene, APIP from Portugal, IOM from Scotland, Tec Star from Italy, EUPC from Belgium.
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2. Examples of Past and running Projects involving 4M regions.

Acronym	Topics	Title	Funding Scheme	Partenaires 4 Moteurs
ProRegio	FoF-05-2014	Customer-driven design of product-services and production networks to adapt to regional market requirements	RIA	<ul style="list-style-type: none"> - POLITECNICO DI MILANO (IT) - KARLSRUHER INSTITUT FUER TECHNOLOGIE (DE) - FLEXIS AG (DE) - TEXXMO MOBILE SOLUTION GMBH & CO KG (DE) - AUDROS TECHNOLOGY (FR)
FourByThree	FoF-06-2014	Highly customizable robotic solutions for effective and safe human robot collaboration in manufacturing applications	IA	<ul style="list-style-type: none"> - EFS- GESELLSCHAFT FÜR HEBE- UND HANDHABUNGSTECHNIK MBH (DE) - PILZ INDUSTRIELEKTRONIK SL (ES)
SYMPLEXITY	FoF-06-2014	Symbiotic Human-Robot Solutions for Complex Surface Finishing Operations	IA	<ul style="list-style-type: none"> - ROMAGNANI STAMPI SRL (IT) - HOCHSCHULE AALEN - TECHNIK UND WIRTSCHAFT (DE)
HORSE	FoF-09-2015	Smart integrated Robotics system for SMEs controlled by Internet of Things based on dynamic manufacturing processes	IA	<ul style="list-style-type: none"> - STIFTUNG FZI FORSCHUNGSZENTRUM INFORMATIK AM KARLSRUHER INSTITUT FÜR TECHNOLOGIE (DE) - ROBERT BOSCH ESPAÑA FABRICA CASTELLET SA (ES) - CETIM (?)
BEinCPPS	FoF-09-2015	Business Experiments in Cyber Physical Production Systems	IA	<ul style="list-style-type: none"> - ASSOCIAZIONE FABBRICA INTELLIGENTE LOMBARDIA (IT) - Whirlpool Europe srl (IT) - POLITECNICO DI MILANO (IT) - HOLONIX SRL-SPIN OFF DEL POLITECNICO DI MILANO - ETABLISSEMENTS GEORGES PERNOUD (FR)
ERICA	TREC	Establishing Regional Cluster Agreement for sharing good practices in / Advanced Manufacturing (www.ERICA-project.eu)		<ul style="list-style-type: none"> AFIL (IT) ITIA (IT) EURECAT (CAT) CEQUIP (CAT)
OPENMIND	FoF-10-2015	On-demand production of entirely customised minimally invasive medical devices	RIA	<ul style="list-style-type: none"> - IN-CORE SYSTEMES SARL (FR) - FONDAZIONE POLITECNICO DI MILANO (IT) - GIMAC INTERNATIONAL SRL (IT) - INNOVACIO I RECERCA INDUSTRIAL I SOSTENIBLE SL (ES)



ReCaM	FoF-11-2015	Rapid Reconfiguration of Flexible Production Systems through Capability-based Adaptation, Auto-configuration and Integrated tools for Production Planning	IA	<ul style="list-style-type: none"> - ROBERT BOSCH GMBH (DE) - POLITECNICO DI MILANO (IT) - COSBERG SPA (IT)
openMOS	FoF-11-2015	Open dynamic Manufacturing Operating System for Smart Plug-and-Produce Automation Components	IA	<ul style="list-style-type: none"> - WE PLUS SRL (IT) - Elrest Automationssysteme GmbH (DE)
PERFoRM	FoF-11-2015	Production harmonizEd Reconfiguration of Flexible Robots and Machinery	IA	<ul style="list-style-type: none"> - Whirlpool Europe srl (IT) - POLITECNICO DI MILANO (IT) - XETICS GMBH (DE)
Eco-Solar	FoF-13-2015	Eco-Solar Factory - 40%plus eco-efficiency gains in the photovoltaic value chain with minimised resource and energy consumption by closed loop systems	RIA	<ul style="list-style-type: none"> - INTERNATIONAL SOLAR ENERGY RESEARCH CENTER KONSTANZ (DE) - APOLLON SOLAR (FR)
Smart Sport	INNOSUP 2014	inter-cluster, inter-regional cross-KET project with each of the clusters having their own strengths in a specific KET (micro/nano electronics, photonics or (embedded) software) or in a specific sports application (biking, outdoor or water sports) or related preventive health or well-being.	IA	INDESCAT, Digital Cluster Barcelona, Minalogic, Flanders Beke, DSP Valley
Smart Health	INNOSUP-2015	Cluster facilitated support for SMEs developing User centric precision healthcare solutions enabled by digital and life sciences technologies	IA	Lyon Biopole, Minalogic, DSP Valley, FlandersBio



3. Letters of Support



La Région

Auvergne-Rhône-Alpes

Letter of support for the call for expression of interest "European Strategic Cluster Partnerships"

Auvergne-Rhône-Alpes is a region with a strong industrial sector and has defined "*smart manufacturing and factory of the future*" as a priority in its Smart Specialization Strategy. As such, Region Auvergne-Rhône-Alpes implements an ambitious action plan to support regional enterprises and is involved in a high number of activities which aim at facilitating, building and integrating its stakeholders in strong European industrial value chains, especially through the cooperation with the Four Motors for Europe and Associates.

The activities to be implemented by the project "**4 Motors 4 Industry of the Future**" will undoubtedly be a considerable step forward in the partnerships of the Four Motors for Europe to foster industrial renaissance in their territories. Auvergne-Rhône-Alpes, Baden-Württemberg, Lombardy, Catalonia and the associate members Flanders, Wales and Malopolska, have the capacity to pool their specific expertise through their regional ecosystems to learn from each other and to reinforce new opportunities for growth in the industries of the future.

Through a targeted bottom-up approach and strong political involvement, the idea is to strengthen and facilitate cooperation between regional infrastructure and platforms in the field of Digital Factory ((new materials, smart products, additive manufacturing, machine and process monitoring...)): the partnership will actively encourage and support the proactive involvement of regional industry, clusters and SMEs in cooperation and partnership projects for industrial modernization with focus on transnational, inter-regional and cross-border cooperation. The participation of **regional Clusters Minalogic, Plastipolis and Viameca** is particularly relevant in that field.

The long lasting cooperation of our economic stakeholders, particularly our clusters through the Four Motors for Europe working group on Industry of the future, has built trust and will facilitate and accelerate our results in this consortium. The proposed project will also find complementarities with the Smart Specialisation Platform on Industrial Modernisation in which the Regions are involved through the Vanguard Initiative ESM Pilot. For this reason, Region Auvergne-Rhône-Alpes is glad to express its support to this European project, and to actively contribute to its activities.

Sincerely yours,

Deputy CEO
Cécilia TEJEDOR



Baden-Württemberg

MINISTERIUM FÜR WIRTSCHAFT, ARBEIT UND WOHNUNGSBAU
MINISTERIALDIREKTOR HUBERT WICKER

Ministerium für Wirtschaft, Arbeit und Wohnungsbau
Baden-Württemberg • Postfach 10 01 41 • 70001 Stuttgart

Stuttgart 28.03.2017
Aktenzeichen

(Bitte bei Antwort angeben!)

Letter of support for the call for expression of interest "European Strategic Cluster Partnerships"

Baden-Württemberg is a region with a strong industrial sector and has defined smart manufacturing and factory of the future as a priority in its Smart Specialization Strategy. As such, Baden-Württemberg implements an ambitious action plan to support regional enterprises and is involved in a high number of activities which aim at facilitating, building and integrating its stakeholders in strong European industrial value chains, especially through the cooperation with the Four Motors for Europe and Associates. In March 2015 a network "Allianz Industrie 4.0." was established with the participation of highly innovative enterprises, business organizations, cluster initiatives, R&D institutions and trade unions.

The activities to be implemented by the project "4 Motors 4 Industry of the Future" will undoubtedly be a considerable step forward in the partnerships of the Four Motors for Europe to foster industrial basis in their territories. Auvergne-Rhône-Alpes, Baden-Württemberg, Lombardy, Catalonia and the associate member Flanders, have the capacity to pool their specific expertise through their regional ecosystems to learn from each other and to reinforce new opportunities for growth in the industries of the future.

Through a targeted bottom-up approach and strong political involvement, the idea is to strengthen and facilitate cooperation between regional clusters and platforms in the field of Digital Factory (new materials, smart products, additive manufacturing, machine and process monitoring...): the partnership will actively encourage and support the proactive involvement of regional industry, clusters and SMEs in cooperation and partnership projects for industrial modernization with focus on transnational, inter-regional and cross-border cooperation. The participation of regional Clusters as MicroTec Südwest, BWCON is particularly relevant in that field.

The proposed project will also find complementarities with the Smart Specialisation Platform on Industrial Modernisation in which the Regions are involved through the Vanguard Initiative ESM Pilot. For this reason Baden-Württemberg is glad to express its support to this European project, and to actively contribute to its activities.

Sincerely yours

A handwritten signature in blue ink, appearing to read 'Hubert Wicker', with a stylized, flowing script.

Hubert Wicker

General Director

A second handwritten signature in blue ink, also in a stylized script, positioned to the right of the first signature.

Letter of support for the call for expression of interest "European Strategic Cluster Partnerships"

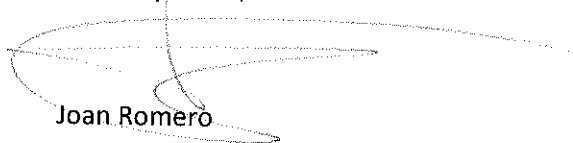
Catalonia is a region with a strong industrial sector and has defined "*smart manufacturing and factory of the future*" as one of the priorities linked to its Smart Specialisation Strategy. As such, Catalonia implements an ambitious action plan to support regional enterprises and is involved in a high number of activities which aim at facilitating, building and integrating its stakeholders in strong European industrial value chains, especially through the cooperation with the Four Motors for Europe and Associates.

The activities to be implemented by the project 4 Motors 4 Industry of the Future will undoubtedly be a considerable step forward in the partnerships of the Four Motors for Europe to foster industrial renaissance in their territories. Auvergne-Rhône-Alpes, Baden-Württemberg, Lombardy, Catalonia and the associate members Flanders, Wales and Malopolska, have the capacity to pool their specific expertise through their regional ecosystems to learn from each other and to reinforce new opportunities for growth in the industries of the future.

Through a targeted bottom-up approach and strong political involvement, the idea is to strengthen and facilitate cooperation between regional infrastructure and platforms in the field of Digital Factory ((new materials, smart products, additive manufacturing, machine and process monitoring...)): the partnership will actively encourage and support the proactive involvement of regional industry, clusters and SMEs in cooperation and partnership projects for industrial modernisation with a focus on transnational, inter-regional and cross-border cooperation.

The long lasting cooperation of our economic stakeholders, through the Four Motors for Europe working group on Industry of the future, has built trust and will facilitate and accelerate our results in this consortium. The proposed project will also find complementarities with the Smart Specialisation Platform on Industrial Modernisation in which the Regions are involved through the Vanguard Initiative ESM Pilot. For this reason, Catalonia is glad to express its support to this European project, and to actively contribute to its activities.

Sincerely Yours,



Joan Romero
Executive Director

Barcelona, 20th December 2016

Letter of support for the call for expression of interest "European Strategic Cluster Partnerships"

Centro region Portugal is a region with a strong industrial sector and has defined "*smart manufacturing and factory of the future*" as a priority in its Smart Specialization Strategy. As such, Centro region PT implements an ambitious action plan to support regional enterprises and is involved in a high number of activities which aim at facilitating, building and integrating its stakeholders in strong European industrial value chains, especially through the cooperation with the Four Motors for Europe and Associates.

The activities to be implemented by the project 4 Motors 4 Industry of the Future will undoubtedly be a considerable step forward in the partnerships of the Four Motors for Europe to foster industrial renaissance in their territories. Auvergne-Rhône-Alpes, Baden-Württemberg, Lombardy, Catalonia and the associate members Flanders, Wales and Malopolska, and regarding former collaborations with 4M4IoF regions, the group decided to include two majors regions, Transylvania (Romania) and Centro region (Portugal), have the capacity to pool their specific expertise through their regional ecosystems to learn from each other and to reinforce new opportunities for growth in the industries of the future.

Through a targeted bottom-up approach and strong political involvement, the idea is to strengthen and facilitate cooperation between regional infrastructure and platforms in the field of Digital Factory ((new materials, smart products, additive manufacturing, machine and process monitoring...): the partnership will actively encourage and support the proactive involvement of regional industry, clusters and SMEs in cooperation and partnership projects for industrial modernization with focus on transnational, inter-regional and cross-border cooperation. The participation of national Cluster POOL-NET Cluster Engineering & Toolingis, based at Centro region, is particularly relevant in that field.

The long lasting cooperation of our economic stakeholders, particularly our clusters through the Four Motors for Europe working group on Industry of the future, has built trust and will facilitate and accelerate our results in this consortium. The proposed project will also find complementarities with the Smart Specialisation Platform on Industrial Modernisation in which the Regions are involved through the Vanguard Initiative ESM Pilot. For this reason, Centro Regional Coordination and Development Commission, Centro region Portugal, is glad to express its support to this European project, and to actively contribute to its activities.

Sincerely yours,



Prof. Ana Abrunhosa
President of Centro Regional Coordination and Development Commission



Protocollo R1.2016.0015326/PData 19-12-2016

To whom it may concern

Letter of support for the proposal "4 Motors 4 Industry of the Future" to be submitted within the call for expression of interest "European Strategic Cluster Partnerships"

Lombardy is a region with a strong industrial sector and has defined "*Advanced Manufacturing*" as a priority in its Smart Specialization Strategy. As such, Lombardy implements an ambitious action plan to support regional enterprises and is involved in a high number of activities which aim at facilitating, building and integrating its stakeholders in strong European industrial value chains, especially through the cooperation with the Four Motors for Europe and Associates.

The activities to be implemented by the project 4 Motors 4 Industry of the Future will undoubtedly be a considerable step forward in the partnerships of the Four Motors for Europe to foster industrial renaissance in their territories. Auvergne-Rhône-Alpes, Baden-Württemberg, Lombardy, Catalonia and the associate members Flanders, Wales and Malopolska, have the capacity to pool their specific expertise through their regional ecosystems to learn from each other and to reinforce new opportunities for growth in the industries of the future.

Through a targeted bottom-up approach and strong political involvement, the idea is to strengthen and facilitate cooperation between regional infrastructure and platforms in the field of Digital Factory ((new materials, smart products, additive manufacturing, machine and process monitoring...): the partnership will actively encourage and support the proactive involvement of regional industry, clusters and SMEs in cooperation and partnership projects for industrial modernization with focus on transnational, inter-regional and cross-border cooperation. The participation of regional Clusters, AFIL, is particularly relevant in that field.

The long lasting cooperation of our economic stakeholders, particularly our clusters through the Four Motors for Europe working group on Industry of the future, has built trust and will facilitate and accelerate our results in this consortium. The proposed project will also find complementarities with the Smart Specialisation Platform on Industrial Modernisation in which the Regions are involved through the Vanguard Initiative ESM Pilot. For this reason, Lombardy is glad to express its support to this European project, and to actively contribute to its activities.

Best regards

Rosangela Morana
Deputy Director
University, Research and Open
Innovation



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**Letter of support for the call for expression of interest
"European Strategic Cluster Partnerships"**

The North-West Development Region of Romania is a region with a rapidly developing industrial sector, currently working on its Smart Specialization Strategy. As such, the Region implements an ambitious action plan to support regional enterprises in smart specialization areas and is involved in a high number of activities that aim to facilitate, build and integrate stakeholders in strong European industrial value chains.

The activities to be implemented by the project 4 Motors 4 Industry of the Future will undoubtedly be a considerable step forward in the partnerships of the Four Motors for Europe to foster industrial renaissance in their territories. Auvergne-Rhône-Alpes, Baden-Württemberg, Lombardy, Catalonia and the associate members Flanders, Wales, Malopolska and North-West Romania have the capacity to pool their specific expertise through their regional ecosystems to learn from each other and to reinforce new opportunities for growth in the industries of the future.

We strongly believe that the participation of Cluj IT Cluster is particularly relevant in this action aimed at strengthening and facilitating cooperation between regional infrastructure and platforms in the field of Digital Factory (new materials, smart products, additive manufacturing, machine and process monitoring) through a targeted bottom-up approach and strong policy interventions. The partnership will actively encourage and support the proactive involvement of regional industry, clusters and SMEs in cooperation and partnership projects for industrial modernization with focus on transnational, inter-regional and cross-border cooperation.

The proposed project can contribute to the achievement of objectives in the smart specialization priorities identified at the level of our region (especially cosmetics, furniture, packaging and production technology) and will also find complementarities and synergies with the Smart Specialisation Platform on Industrial Modernisation in which the Regions in focus are involved through the Vanguard Initiative ESM Pilot.

For these reasons, the North-West Region of Romania is glad to express its support to this European project, and to contribute towards its activities.

Sincerely yours,

Marcel Ioan BOLOS

General Director
North-West Regional Development Agency

