

Clusters at the centre of competitiveness arena: how to excel

A practical guide of actions to implement, replicating the experience of cluster organisations partner of Clustem project

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The partnership



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Asociacion de Empresarios Textiles de la
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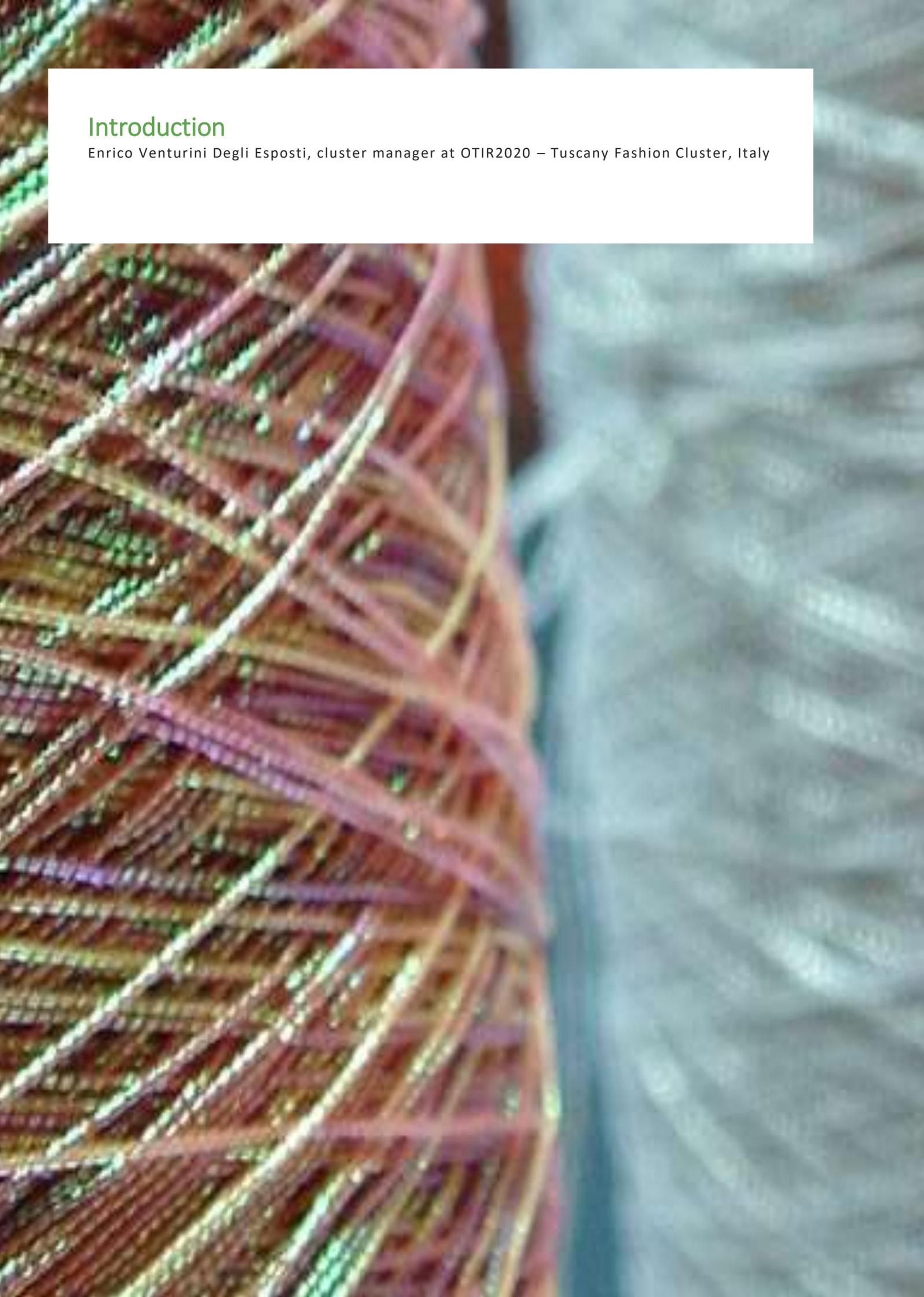
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Introduction

Enrico Venturini Degli Esposti, cluster manager at OTIR2020 – Tuscany Fashion Cluster, Italy

Preamble

This document is the final publication of CLUSTEM project, a two-year experience about improving European cluster management practices and services delivered to associated companies.

This 2-years process allowed the partners to benefit from a consistent improvement of their personal skills, their clusters organisation and support provided to member companies. Therefore, this publication is a comprehensive elaborate that contains most relevant project results and useful considerations for cluster experts, managers and supporters, especially on how some good practices in terms of cluster management can be implemented in one cluster organisation and his daily activities.

By going through this publication, the reader will make a journey through the process made by CLUSTEM partners in two years of project implementation. Many activities are recalled and explained here, but most importantly, many conclusions and lessons learnt are reported. The publication is therefore a concrete support not only for cluster managers, but also for industries, policy makers and other stakeholders forming a socio-economic ecosystem operating for the progress of a given community, in given territory, for a given sector.

The present volume is composed of different parts, that were compiled by the main actors of the project, and experts who contributed to its successful finalisation.

The CLUSTEM team wishes you an advantageous and enjoyable reading!

About clusters and CLUSTEM

Clusters are very new for us, but at the same time are very old. This is what we can state for a country like Italy, whose economy is strongly based on forms of aggregation of small enterprises.

A better coordination of the efforts that European companies are doing for staying competitive in the global scenario is more than welcome and clusters can really be the key factor in this respect.

This is why CLUSTEM project was an outstanding experience.

Thanks to CLUSTEM project, project cluster organisations are now able to offer new services to their companies and to manage the services delivered with an increased level of quality.

The outline of CLUSTEM project can be found in Chapter 1.

The COSME programme of the European Union

COSME is the EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (SMEs). It runs from 2014 to 2020 with a planned budget of €2.3bn.

COSME supports:

- better access to finance for SMEs
- access to markets for SMEs
- entrepreneurship
- more favourable conditions for business creation and growth.

COSME

Small and Medium-sized Enterprises (SMEs) are the backbone of Europe's economy, providing 85 % of all new jobs. The European Commission aims to promote entrepreneurship and improve the business environment for SMEs, to allow them to realise their full potential in today's global economy.

ACCESS TO FINANCE



One of COSME's main objectives is to provide enhanced **access to finance** for SMEs in different phases of their lifecycle: creation, expansion or business transfer. In order to achieve this objective, the EU will mobilise loans and equity investments for SMEs.

- Through the **Loan Guarantee Facility**, the programme will provide guarantees and counter-guarantees to financial institutions (e.g. guarantee societies, banks, leasing companies) so they can provide more loan and lease finance to SMEs. It is expected that COSME will enable between 220 000 and 330 000 SMEs to obtain financing for a total value of between €14 and €21 billion.
- Through the **Equity Facility for Growth**, the programme will provide risk capital to equity funds investing in SMEs mainly in the expansion and growth-stage phases. The Facility should help between 360 and 560 firms to receive equity investment with an overall volume invested ranging from € 2.6 to € 4 billion.

ACCESS TO MARKETS



COSME provides support to European enterprises so that they can **benefit from the EU's single market** and make the most of opportunities offered by markets **outside the EU**.

COSME funds the **Enterprise Europe Network (EEN)** consisting of over 600 offices in more than 50 countries helping SMEs find business and technology partners, understand EU legislation and access EU financing.

COSME also funds web tools specifically designed for enterprises development such as **Your Europe Business Portal** or the **SME Internationalisation Portal**. The first provides practical online information for entrepreneurs who want to become active in another Member State. The latter puts the emphasis on support measures for companies which want to develop their business outside Europe.

COSME finances the **ASEAN, China and MERCOSUR Intellectual Property Rights (IPR) SME Helpdesks** that offer advice and support to European SMEs facing difficulties in IPR issues, standards or public procurement rules in those geographical areas.

The programme also provides financial assistance to the **EU-Japan Centre for Industrial Cooperation**, to promote all forms of industrial, trade and investment cooperation by disseminating information on how to access the Japanese market, facilitating exchanges of experience and know-how between EU and Japanese businesses.

CREATING BETTER FRAMEWORK CONDITIONS FOR COMPETITIVENESS



COSME supports actions to improve the **framework conditions** in which enterprises operate, in particular SMEs, by reducing unnecessary administrative and regulatory burdens. Such actions may include measuring the impact of relevant Union law on SMEs, developing smart and business friendly regulation for them and reinforcing the use of the "Think Small First" principle for policy-making at national and regional level.

COSME supports the emergence of **competitive industries** with market potential, by helping SMEs to take-up new business models and integrate into new value chains. The programme complements the actions of Member States in areas with high growth potential such as the tourism sector.

COSME promotes the development of **world class clusters** in the EU, fostering cluster excellence and internationalisation with an emphasis on cross-sectoral cooperation, notably in support of emerging industries. The programme also aims at accelerating the digitalisation of the business community and promoting e-skills and e-leadership.

ENCOURAGING ENTREPRENEURSHIP



COSME backs the implementation of the **Entrepreneurship 2020 Action Plan** through a wide range of activities. These include mobility exchanges, research, best practices diffusion and pilot projects in areas such as entrepreneurship education, mentoring or the development of guidance and support services for new and potential entrepreneurs, including young, women and senior entrepreneurs.

Erasmus for Young Entrepreneurs is for instance a cross-border exchange scheme which aims to help new and aspiring entrepreneurs acquire relevant skills to run and grow a business by working with an experienced entrepreneur in another country for one to six months. It increases their know-how and fosters cross-border transfer of knowledge and experience between entrepreneurs.

COSME especially focuses on **digital entrepreneurship** to help European businesses drive their digital transformation and fully benefit from the unprecedented new opportunities created in the digital era, which are crucial for their competitiveness and growth.

The CLUSTEM project contributed to reach the EU objectives aimed to strengthen cluster management excellence in the EU as a way to provide more professional business services to European SMEs through clusters and therefore contribute to the development of more world-class clusters in the EU.

The project was part of a more comprehensive programme supporting the Cluster Excellence Programme under COSME, and aimed to promote cluster excellence across the EU for the benefit of European SMEs involved in clusters. The action was conceived to assist cluster organisations, business networks and their managers to provide high quality services to SMEs in different areas, including access to foreign markets.

The programme addressed cluster organisations and business networks engaged into a strategic industry-driven collaboration along a common value chain or on a transnational project in any manufacturing or service sector, facing common challenges, and willing to:

- Improve their management practices as well as their market/competitive advantages or value-chain analytical capacities and;
- Provide top quality services to their SMEs, especially on integrating creativity into their business.

Why a project for cross sector clusters improvement

Both European textiles and machinery are manufacturing sectors with immense possibilities, if diversified from the mass production typical of cheap labour countries.

There is a consequent need in these sectors for introducing innovative solutions by increasing the added value connected to the products-services offered on the market, that a consistent empowering of management practices and services received by supporting organisations can be of outstanding effectiveness.

Starting from those considerations the idea for a project addressing the need for empowering services offered to machinery and textile SMEs in relevant European regions started to grow. The EU manufacturing sector is always thirsty of development activities, made possible through the acquisition of experience and forms of cooperation between SME. This is a in-use practice now, as a must for European SMEs facing the challenges coming from novel foreign markets, where textile products (both traditional and advanced) have a massive quantity of possibilities of differentiation and allow a concrete internationalization process of the producers.

European production still has a strong value when sold abroad. It is inevitable that textile and machinery industries and their supporting organizations within the EU should achieve a set of competences and strategies without disregarding a local action focus, aiming at the success of common entrepreneurial, technological or marketing strategies. CLUSTEM project born like a tool aimed at giving a concrete contribution to achieve such goals, as it brings together relevant cluster organizations within the textile and clothing EU scenery and namely from the most active and important countries operating in textile and machinery building: Italy, UK, Spain and Turkey.

This is crucial to maintain the competitiveness of European enterprises. Nowadays the textile & machinery industries face an unprecedented challenge regarding global competition in every single market across the world. Within EC countries, innovative forms of cooperation and aggregation were put in place in a recent past to better face the challenges coming from the fierce competition of developing countries. Clusters are a response to those challenges and are able to link cross-border complementarities and geographical proximity of SMEs in the same production area; this can

stimulate diversity of production and increase creativity of new products. If Europe wants to preserve its strong power in traditional manufacturing systems it needs new forms of cooperation between industries, and SMEs in particular. For this reason the impact of CLUSTEM proposal has been wide and consistent, as it really stimulated local clusters to increase the quality and the number of services offered to associated SMEs, that can more easily and efficiently undertake the path of innovation as the guiding light for competitiveness.

Chapter 1 – The project and the consortium

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Andrea Phillipson – Textile Centre of Excellence, United kingdom

Felipe Carrasco – ATEVAL, Spain

Esma Akyuz – Construction Machinery Cluster, Turkey



The Clustem project Overview

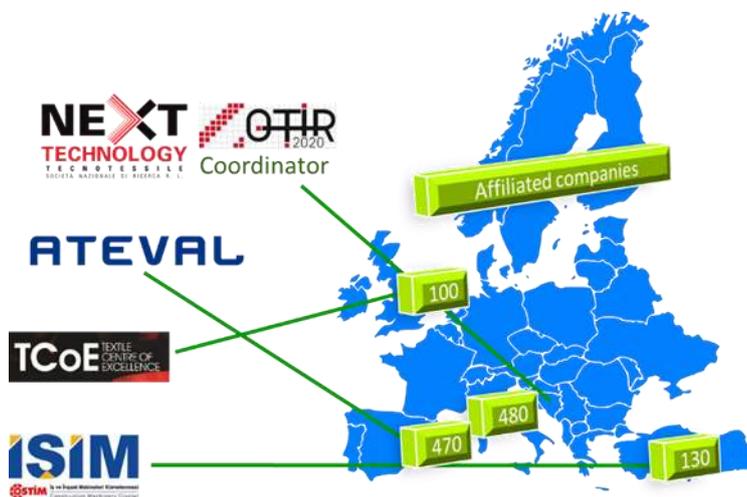
The CLUSTEM project focus on boosting Clusters competencies in management and services provided to associated SMEs, enabling them to increase international networking and reach excellence in management and Cross Border Cooperation. The CLUSTEM project is based on the results of European Cluster Excellency Initiative (ECEI), which aims at the improvement of the policy in the field on cluster management; a better management and organisation can address some of



the key factors affecting competitiveness in textile and machinery clusters in Europe. The project could lead the partners to the achievement of the Bronze label certification by ESCA organisation (www.cluster-analysis.org).

Project activities are specifically addressed to industrial textile and machinery clusters. These two sectors are bearing columns of EU economy, presenting immense possibilities, if diversified from the mass production typical of cheap labour countries.

Nowadays the textile & machinery industries face an unprecedented challenge regarding global competition for every single market across the world. Clusters are a response to those challenges and are able to link cross-border complementarities and geographical proximity of SMEs in the same production area, which can stimulate diversity of production and increase creativity of new products. CLUSTEM intend to address these issues and to help the replication of this process to nearby areas in Europe. The strategy adopted by European leading clusters to strengthen the economic performance and the improvement of services provided to the associated SMEs is a beneficial strategy that similar clusters in the same sector (or in proximity of it) can easily adopt.



European production still has a strong value when sold abroad. It is inevitable that textile and machinery industries and their supporting organizations within the EU should achieve an advanced set of competences and implement new strategies for staying competitive, without disregarding a local action focus, aiming at the success of shared entrepreneurial, technological or marketing actions. CLUSTEM tries to give a concrete contribution to achieve such goals, as it brings together relevant organizations within the textile and

machinery EU scenario and namely from the most active countries operating in those industries: Italy, UK, Spain and Turkey.

Within CLUSTEM project, activities specifically addressed at industrial textile and machinery clusters were performed. Project results are now shared with companies within the clusters and provided the possibility to design new services for textile and machinery SMEs.

The project was made concrete by mean of a comprehensive set of actions, leading to a real reinforcement of the cluster management capacities, through specific actions as benchmarking,

training, study visits. This allowed for the transfer of knowledge and experiences developed in other clusters for the provision of high quality services to SMEs, increasing the level of innovation capacity and introducing new creative-based ideas for the realisation of new products, facilitating internationalization of SMEs, better exploiting and diffusing Key Enabling Technologies, assisting SMEs in further addressing resource efficiency issues.

The following actions were activated: benchmarking consultancy from ESCA experts, that allowed to get the first level of labelling (bronze) for the 4 clusters; training with European experts in ECEI curriculum for at least the 5 core modules; study visits to 3 gold labelled clusters in other European countries; design of new top quality services for SMEs of the 4 clusters and dissemination of project activities.

All these actions are described in detail in the following chapters.

The contract activities have been deployed for two years, from 1st January of 2016 till December 2017.

PROJECT METODOLOGY

The project will utilize a cascade effect, first on the cluster management organizations and then on the SMEs belonging to them, according to the following scheme:

IMITATION PROCESS → ESCA Label achieved → other organisations will follow

- ✓ Interview technique and desk analysis for mapping cluster's state of the art, organisation and needs in terms of innovation, market and resource efficiency;
- ✓ Benchmarking tool, according to ECEI initiative and procedure, for drawing a vision for achieving a high quality management capacity;
- ✓ Capacity building programmes composed of both training courses and study visits as capacity development tools;
- ✓ Study visit will feed the design of new services portfolio;
- ✓ Dissemination tools for cluster community, to SMEs and stakeholders

THE PARTNERSHIP

 <p>NEXT TECHNOLOGY TECNOLOGIA SOCIETÀ NAZIONALE DI RICERCA R. L.</p> <p>ITALY 480 Affiliated Companies (Cluster OTIR2020)</p>	 <p>ATEVAL</p> <p>SPAIN 320 Affiliated Companies</p>
 <p>TCoE TEXTILE CENTRE OF EXCELLENCE</p> <p>UNITED KINGDOM 101 Affiliated Companies</p>	 <p>ISiM İs ve İnşaat Makineleri Kümelemesi Construction Machinery Cluster</p> <p>TURKEY 144 Affiliated Companies</p>

The following paragraphs present the project consortium.

OTIR2020 – TUSCANY FASHION CLUSTER

NTT (Next Technology Tecnotessile) is a research centre established in Prato (Italy) since 1972, participated by the Italian Ministry of Research and University, having the mission of supporting technology and competitiveness improvement of Italian enterprises. NTT represents today a reference point for research and technological innovation in the textile and textile machinery sectors¹.

NTT is located in Prato, the textile town of Tuscany region, and has been developing for the last century a local network of textile SMEs and fashion value chains where the innovation is the engine that allowed the cluster to take birth and start moving.

In July 2011 NTT, in cooperation with other 6 Tuscan partners and with the support of Tuscany regional government, established the “Officina Toscana per l’Innovazione e la Ricerca di Settore (OTIR2020) – Polo dell’Innovazione per il Sistema Moda”, a new cluster for the Tuscan fashion sector.

OTIR2020 was formed with the aim of developing the competitiveness and skills of the production system of the Tuscan area of fashion and also seeking financial resources to set up projects for local industry, in order to improve the technological innovation and transfer to the fashion sector, both for the internal and for the foreign market.

The network organisation is an initiative of the Region of Tuscany, that supported with a co-financing the activities of the cluster in the three-years period 2011-2014.

OTIR2020 aims to carry out an efficient action in support of the Fashion Industry as a whole, through a wide range of services (integrated and co-produced by the most skilled actors operating in the area) in the field of innovation. The regional areas of fashion where the cluster is active, are:

- textile-clothing and clothing (Prato)
- leather and fashion (Florence)
- tannery (Santa Croce sull’Arno)
- footwear (Lucca, Pistoia-Valdinievole)
- goldsmith and jewellery (Arezzo)

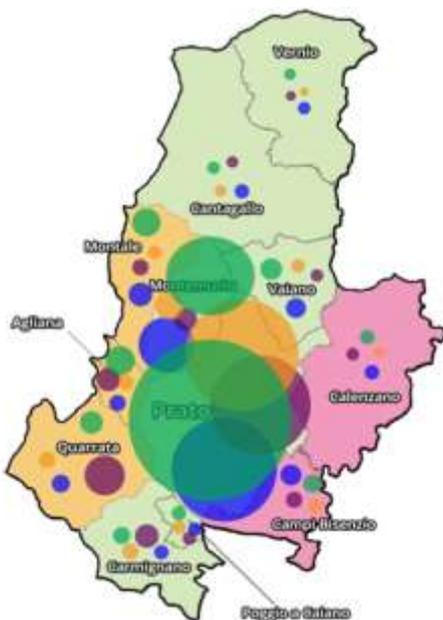


¹ For further information: www.tecnotex.it

Its main objective is the development of collaborative activities and R&D diffusion among companies in the fashion sector of the Tuscan territory, involving research institutions supporting innovation and local businesses development; also new financial sources will be enabled, to support investments that will be necessary for the development of new technologies, new products and innovative services.

In 2014 the cluster updated the policy and also the official name, turning it into OTIR2020 –TFC (TUSCANY FASHION CLUSTER), to guide member companies along the developing trends of fashion industry to increase their level of competitiveness:

- Product Functionalisation
- Environmental sustainability process and product
- New components for fashion product design
- Factory 4.0, Marketing, Distribution and Logistic
- Compliance to international standards



The OTIR2020-TFC cluster has at present around 80 member companies, but can operate with a total of 480, that are part of the previous period of activity (2011-2014). Next Technology Tecnotessile (NTT) is the managing organisation of the cluster.

OTIR2020-TFC can count on wide network of local Universities and research centres, including also business support units and companies confederations.

The activities of the cluster focus on the research of new opportunities offered by new economies, sustainability, improvement of the design and features of products, integration between the sectors of fashion, processing of new textile materials, creation and strengthening of the brand, development of the international market.

The expected impact for companies is:

- Increase of the added value of services and products
- Re-engineering of traditional products
- Development of Eco-friendly products and technologies
- Opportunities to take part in regional and European innovation projects

The cluster Smart Specialization roadmap focus primarily on the thematic area of "Smart Manufacturing":

1. "Circular fashion";
2. "Factory 4.0" (Smart processes/products);
3. "The cluster of the future between tradition and innovation".

1. Circular Fashion

Main Themes:

- Recovery and treatment of end-of-life materials
- Industrial wastewater treatment
- Reduction of chemical products
- Treatment and disposal of solid waste deriving from the production phases and from the end of life of the product
- Reengineering process for new bio-based polymers
- Technologies with low-environmental impact (plasma, enzyme finishing processes enzyme, new concepts of machinery)

2. Factory 4.0 (Smart processes/products)

Main Themes:

- ICT technologies for production planning
- Technologies for bi/three-dimensional systems design, rapid prototyping and virtualization, integrated systems. Planning and production planning, integrated with the management systems
- Technologies for the Product Lifecycle Management
- RFID technologies
- App for tablets and smartphones for stock and shop management
- Nano technologies for finishing process
- Electrospinnig
- Ink jet technologies for printing and finishing
- Technologies for surface treatment and coating
- Application of microelectronic systems, microsensors and actuators (Wearable Electronics)
- Smart materials, multifunctional and interactive, even through the integration of microelectronic components
- Virtual prototyping and 3D technologies

3. The cluster of the future between tradition and innovation

Main Themes:

- Business partnership laboratory-enterprise
- Fostering partnership-school-enterprise and research centers
- ICT functional for collaborative design
- Technologies for advanced design

So far, the most requested services are related to "Support on calls", "Planning of process and product innovations", "Laboratory tests" and "Improving the efficiency of manufacturing operations".

Technical services offered by TFC are:

- matchmaking for B2B, R2B and F2B
- technological and consulting services
- workshops and events

- free technological audits
- investigation of R&D company needs and development area
- research intelligence
- R&D results monitoring
- set up of R&D projects
- free tests and laboratory activities
- technical and life-long training
- innovative services for marketing and internationalisation to new markets.

THE TEXTILE CENTRE OF EXCELLENCE - TCOE

The Story

The cluster has a unique and interwoven combination of location, skills and heritage which is still equated world-wide with the production of fine fabrics. Soft Yorkshire Pennine water has been one of the secret ingredients for the centuries old excellence in production of beautiful cloth. Expertise has been handed down through generations. The craft skills are still very much in demand in a specialist growing industry.

In the early fourteenth century King Edward III encouraged the immigration of Flemish master weavers to encourage woollen cloth manufacture. The skills these economic migrants brought with them allowed a major export industry to be created by the end of the fifteenth century.

In the sixteenth century the skills pool was further enriched by Huguenot weavers, asylum seekers fleeing religious persecution in France, allowing the industry to expand ever more quickly.

During the Industrial Revolution of 1750 to 1850 a tidal wave of scientific and technological innovation combined with the high existing levels of materials knowledge. Driven by cheap, abundant energy, first from the rivers of the Pennines and later the Yorkshire coalfields, the industry exploded.

At its height Yorkshire was the world's leading manufacturer of woollen and worsted textiles. This was not only because of the sheer volume it produced, but also because of the rich diversity of its designs and cloths and their quality.



Continuing Excellence

The closure of the coalfields and the invention and popularity of synthetics led to a relative decline in the industry. What remains is a cluster that, although reduced in capacity, is still highly skilled, highly innovative, and technologically capable and focused on quality.

The clusters mills continue to produce the majority of England's worsted and woollen fabric, used by many of the world's great fashion brands, high-end retailers and tailors, such as Gucci, Burberry, Etro, Hugo Boss, Prada, and on London's Savile Row.

The Huddersfield and District Textile Training Company was established in 1976 to unite the local textile industry in a shared approach to professional, equitable and high-quality training for the cluster. HDTT Co Ltd is a private, not for profit business. The Board of Directors is made up of business leaders from textile and clothing manufacturers that supply the world's premier fashion houses and technical fabric markets.

TCOE Cluster Map showing the textiles sector in the region. It illustrates the main geographic concentrations where textiles remain central to future manufacturing ambitions.



In 1999 the company established the *Textile Centre of Excellence*, a £2 million development located in the heart of the UK textile sector, Huddersfield. The organisation is a recognised National Group Training Association (GTA) and provides a wide range of 'state of the art' textile and clothing training, boasting unrivalled production facilities including:

- A textile manufacturing workshop for commission warping and weaving operations
- A research and product-testing laboratory including authentication technology
- A fully equipped clothing studio for bespoke suit manufacture
- Information technology training suites
- Award winning meeting and conferencing facilities

The 20,000 sq ft Centre offers quality assured, flexible training at all levels from introductory pre course programmes, to apprenticeships, technician training, supervisor and management courses. The Centre's legal and professional services, such as occupational and environmental health, safety and welfare services, provide the textile and clothing sector with access to highly qualified advisory consultants. The Centre is a recognised BS EN ISO 9001: 2000 organisation, with other accreditations such as the 'Customer First' standard and the 'Matrix' standard.

The Centre employs 30 full time staff and works with a number of industry specialists to support innovation and skills development across the sector.

The Centre is funded through Member Subscriptions, Commercial Training and Conferencing Income, SFA funding for Apprenticeships and EU funding for projects.

Assets/skills/platforms relevant to the project:

- Membership organisation with 108 Textile and Clothing company members;
- 38 year history of supporting the Textile and Clothing sectors with training, business support, R&D;
- State of the art R&D facilities;
- 3 leading edge (disruptive) technology platforms;
- Textile Innovation Knowledge Platform;
- Significant experience in funded EU/UK project management and delivery;
- Experience in supporting new fashion and textile design and manufacture start up businesses (incubation);
- Widely networked in EU H2020/Euratex/R&D community (member of Euratex DG Group, Euratex Board of Directors and European Technology Platform Governing Council).

Our Cluster works closely with a number of academic institutions across the UK, most notably with The Universities of Huddersfield, Sheffield, Leeds and Oxford Brookes. We have worked on a number of shared programmes with the Advanced Manufacturing Research Centre (AMRC) in Sheffield and have current projects and programmes with MTiX for laser and plasma treatment applications.

The Centre operates as the national Group Training Association for the Fashion, Textile and Apparel and Technical Textile sectors across England. The GTA provides national coverage for skills development in industry, working directly with employers to support the growing needs of the workforce.

The net worth of the Centre is £1,123,000 with no current or long term debts and our turnover for the year 2015 was £1,260,000 70% of which via public funding and 30% commercial or privately funded.

The Centre is a membership organisation and is represented regionally, nationally via U.K. Fashion & Textiles (UKFT) and at the European Union level via the European Apparel and Textile Confederation (Euratex).

The main targets and interests of the cluster are for skills provision and learning content development, Research & Development in technical textiles materials processing with reduced environmental impact. The Centre concentrates on near to market applications but also works with higher education and research centres. Our agenda is steered by our members.

The Board of Directors is made up of 8 local business leaders from textile manufacturers that, both locally and globally, supply the world's premier fashion houses and technical fabric markets.



As a Lead Cluster organisation, we engage our sector in a variety of other ways. The Centre of Excellence provides industry specialist business broker support, undertaking training and organisational needs analysis for companies to identify, engage, deliver and support the work needed to meet the changing demands of advanced manufacturing businesses across the nation. Our business support team analyse and evaluate training activity and support improvements, safeguarding the provision for the future for our workforces.

We are highly responsive to the needs of manufacturers. Our team work day or night, evening and weekend to support growth in the sector by assisting SMEs. Our team carry out frequent review visits with companies to understand the skills challenges and the dynamic approaches taken by some are shared with others as the sector increases levels of collaboration and shares resource.

The wider manufacturing network is frequently informed of industry developments and changes through the use of periodic (seasonal) newsletters, briefing seminars, breakfast meetings and network events. We hold Members' Management Meetings throughout the year, where all member companies are encouraged to attend and engaged, to help shape the skills landscape of the local manufacturing area.

The critical points identified for the Centre include business engagement which is seen as a key strength. We are the regional contact point for any enquiry in our sector. We represent our member companies which consist of U.K. manufacturers who export 95% of production and R&D innovation projects at industry level.

The cluster acts as the intermediary between industry, higher education and Government at both the U.K. and regional level.

We are seen as the main voice to affect policies relating to our sector and U.K manufacturing.

Our textile Cluster objectives are to:

Create a vibrant collaborative environment
Establish a contact/referral point between industry, researchers, support centres & other bodies
Build a critical mass of resources
Identify and support the transfer of best practice
Reduce cost through collective action
Promote the sector to new entrants
Share risk through collaborative Research & Development
Develop new services to anticipate change
Drive curriculum and skills development - progression
Identify and promote policy priorities

ATEVAL

The emergence of textile activity in the most traditional drapery municipalities of the Region of Valencia, dates back to the settlement of the Arabs in these towns during de 10th and 11th century.

The industrial development of the activity begins around the use of small river jumps used as a driving force to move the fulling mills.



At the end of sixteenth century the growth of textil activity led to the grouping of manufactures around “The Fábrica de paños”, a textile manufacturer’s organisation of Alcoy that provided clothes to the Royal Army. This organisation was converted in 1800 in “The Real Fábrica de Paños”. This institution founded in 1829 the first textile school of technical education located in Spain.

In the twentieth century world war was a turning point in the industrial consolidation.

In the 1960’s Spanish economic growth led a group of companies to re-orient their production from low level textiles curtains manufactures to home textiles

with a medium quality and good prices.



From 1950 to 1980 the Vall de Albaida has a significant increase in the number of companies of blankets producers and home textiles.



In this context ATEVAL was founded, back in 1977, with the objective of supporting the growth of companies helping them and offering administrative services.

Years later in 1996 due to the development of emerging economies and their consolidation as major competitors of the products of the Valencian Community (textiles, clothing, leather, etc.) in world markets ATEVAL developed the Brand “Home textiles from Spain” to help the companies to export and explore new markets.

These countries have become new competitors both in the production of goods and in the attraction of investments. This has intensified competition in the international context.

Fifteen years ago the Valencian Community economy needed to redefine the production model, especially in all those productive sectors that entered into direct competition with emerging countries, and should direct the growth towards specific activities to the most developed countries, as technical textiles, smart textiles and fashion.

To respond to all these changes, ATEVAL designed a strategy to support companies in the textile sector. In 2009 ATEVAL launched the Innovation department to help companies to succeed in specializing in their activities and parts of the value chain, more knowledge-intensive.

The technological changes and the emergence and development of the so-called knowledge society also had an influence in ATEVAL: new technologies were established as engines of innovation and productivity in the most advanced companies and economies, based on the ability to compete at the highest efficiency, mainly helping companies to redefine their production model.

The Valencian Community has a great industrial tradition thanks to the existence of a cultural and industrial base of local entrepreneurs. In brief, it has an atmosphere of great business vitality.

Another characteristic of the Valencian industrial sector is the existence of industrial districts with a greater presence than at the state level, linked to the most representative traditional sectors. This type of organization, in some cases, as in the textile sector, have generated a series of competitive advantages.

However, the business dynamism and the technological developments have allowed for the improvement of the quality and the differentiation of the traditional production and the emergence of new sectors, diversifying the productive structure.

ATEVAL mission is to achieve the adaptation of the industrial sector to the new international context. It is essential to work on increasing productivity, and for this it is necessary to provide human capital, investment in R&D, flexibility and competition in product markets, as well as finding new sources of competitive advantages associated with the generation of added value.

The aim of the cluster is to seek ways to support the development policies, in order to satisfy the needs of our associated companies and the development of innovation strategies (R&D) in order to increase the competitiveness of the cluster.

ATEVAL represents more than 320 companies of the whole value chain.

ATEVAL rely on a local network of composed of Universities (EPSA), research centres (AITEX), business support units (IVACE) and companies confederations.

The strategy rises from the need of current competitors to maintain the competitive position and bet on distinction and specialization. The importance of technical regulations and the decrease of R&D support tools also require to develop innovation strategies to improve competitiveness of companies. The cluster search and detect innovative opportunities for advanced textile projects. Another axis is the development of promotion and internationalization strategies.

Management structure of the cluster

The members of the Board are elected by free and secret vote.

Corporate bodies are:

- Executive committee: It is constituted by the president and the vice-president of the association, the general secretary, the treasurer, and the presidents of functional and local areas. Its main functions are: leading ATEVAL activities, proposing action programs to the General meeting, realizing approved measures, presenting balances, settlements and fees for General meeting approval, elaboration of the annual activity report, setting up cooperation agreements.
- General committee: It is the main and higher governing body of ATEVAL. Its main functions are: approving and modifying statutes, designating its members (president, vice-president and general secretary), approving programs and action programs, etc.
- Management commissions of the different functional areas: created by the general committee
- Sub-sectorial and inter-local committees: They act as bodies of the Association within their territorial boundaries and represent the management and defence of own interests to the Cluster, Administrations or others organizations, and benefit from technical and commercial services of ATEVAL.

ISIM – Construction Machinery Cluster

Construction Machinery Cluster (ISIM) was established on 17 March 2007 within the scope of a protocol signed between Cankaya University and Ostim Organized Industrial Zone in Ankara, Turkey. ISIM is the first Machinery Cluster in the Central Anatolia Region.



Machinery Manufacturing Industry is a decisive, important and priority sector on the targets of the countries being global power and it is in strategic cooperation with all important industrial branches in terms of intermediate goods and services produced.

One of the important areas of the efforts to establish a new state on the destruction of the Ottoman Empire was the great infrastructure investments. Atatürk's Speech in "Nutuk", as

stated in the new Republic of Turkey's institutions could lead to tensions in the negotiations prior to the signing of the Treaty of Lausanne, one of the documents in the debate, there was also the first major construction and railway projects. One of the most important targets of the founding

members of the Republic was the construction of the nation state and the provision of the integrity of the internal market which is one of the most important means of this.

A total of 18335 kilometres of roads and 94 bridges were inherited from the Ottoman Empire, including 4000 kilometres of railway, 13885 kilometres of narrow surface narrow roads and 4450 kilometres of dirt roads. For a country of 13 million, spread over an area of about 780 thousand square kilometres, this transportation network was extremely inadequate. It means the new Republic needs construction. After Independence War, Turkish Republic chose Ankara as a Capital city rather than İstanbul in 1923.

As a new Republic, which stays on the Silk Road, felt the need of machinery for Agriculture and Industry in. Then all the governmental fabrics opened in Ankara and the governmental fabrics needs spare parts, maintenance and repair. In 1950s, the Turkish General Directorate of Highways send their engineers to abroad in order to improve the machining industry. As a result, Ankara became naturally the centre of metal cutting.



ISIM has 136 member companies, all located in Ankara/TURKEY. There is no R&D centre of clusters in Ankara. However, there are some governmental promotions and studies for R&D in sector such as Ankara Development Agency, TUBITAK (the scientific and technological research council of Turkey), KOSGEB and Ministry of Science, Industry and Technology of Turkish Republic.

ISIM has strong cooperation and collaboration with several educational institutions, universities and research centres in Ankara. ISIM performs his activities with the financial resources from the cluster membership fees, national and international project supports, governmental incentives and Ostim Organized Industrial Zone financial supports.

ISIM has 2 full time staff and 2.000.000 USD National Governmental Project Incentives.

ISIM members are local manufacturers in field of Construction Sector. Therefore, the specific field of interest of the cluster:

- light construction machineries,
- heavy machineries,
- special purpose machineries,
- concrete plants,
- crushing and screening plants,
- asphalt plants,
- vehicle mounted equipment,
- conveyor systems

ISIM members are mostly concentrated in Ostim Region;

The main target of ISIM Cluster is the development of innovations and partnerships of its members in order to increase the national and international competitiveness and ensure their brand will become global.

Specific objectives are;

- ❖ Increase the quality standards of production,
- ❖ Identify the best international markets to construction sector,
- ❖ Support project development process of companies,
- ❖ Perform capacity Studies for high-tech products
- ❖ Increase the awareness of the companies on quality and standards,
- ❖ Support R&D activities,
- ❖ Improve the collaboration within the region,
- ❖ Increase the competitiveness of producers,
- ❖ Impact on sectoral political strategies,
- ❖ Develop new services for cluster members
- ❖ Create an International Accredited Shared Testing Laboratory
- ❖ Transfer of best practices

Therefore, ISIM helps to improve construction sector in Ankara and, thanks to its regional development model, the voice of Construction Machinery is heard at national level. In addition to this, ISIM affects the education level of industry workers and the employment rate. At national scale, the cluster has a big role in order to develop the industry as a whole, putting forward the flexible production ability of Turkish companies as a competitive approach in international seminars.

Management

Cluster management is organised in accordance with decisions taken by a board of member companies. Management and financial plans are decided in the monthly board meetings.

With the busy schedule of ISIM, 3 commissions were established to work on the issues below:

1. Creating Corporate Identity and Internationalization
2. Capacity Building and Training
3. Relations with Public Institutions and Financial Institutions

Instruments, technologies, laboratories are available for cluster's stakeholders.

Our cluster member companies have been performing mainly on metal cutting with the technology required for the metal industry. They have a production system mainly based on labour force. In total, the 144 members of the cluster account for a working staff of over 6000 units, 850-900 of them are university graduates. Approximately 700 units speak at least one foreign language.

WCM Cluster has a close cooperation with many public institutions and universities, like KOSGEB (Small and Medium Industry Development Organization of Turkey). Test laboratories (mechanical, stiffness, metrology etc.) have been serving our members located in our region. In addition to these, WCM cooperates with the university academic staff in order to support R&D projects for member companies.

Details of services provided and methodologies used to involve stakeholders

The promotional activities are one of the top services offered to cluster members by ISIM. Our web site and brochure include the entire product and contact information of our members. All these brochures are delivered by coordinators in international exhibitions in order to increase the recognition of our members.

In order to increase the intra-cluster cooperation, various seminars and meetings are organized by ISIM. In particular, several services are carried out, such as training and consultancy programmes, Trade Delegations to International Exhibitions and organising B2B meetings abroad, in order to increase the exports of member companies.

Companies can become cluster members by applying through the specific procedure. Only the applications of producers and companies from machinery sector will be evaluated. Then, after a visit to the applicant, the evaluation is produced and the membership is finalized.

Marketing strategies of the cluster

ISIM coordinators regularly organise meetings with public institutions and the private sector to promote the member companies. The promotion takes place through the website and social media (Facebook, Twitter and LinkedIn). A detailed catalogue is available for foreign trade delegations or overseas visits. The valuable news is published in various newspapers and magazines by the cluster coordinator. As a marketing strategy, we are planning to produce a common product under ISIM brand with the cluster members.

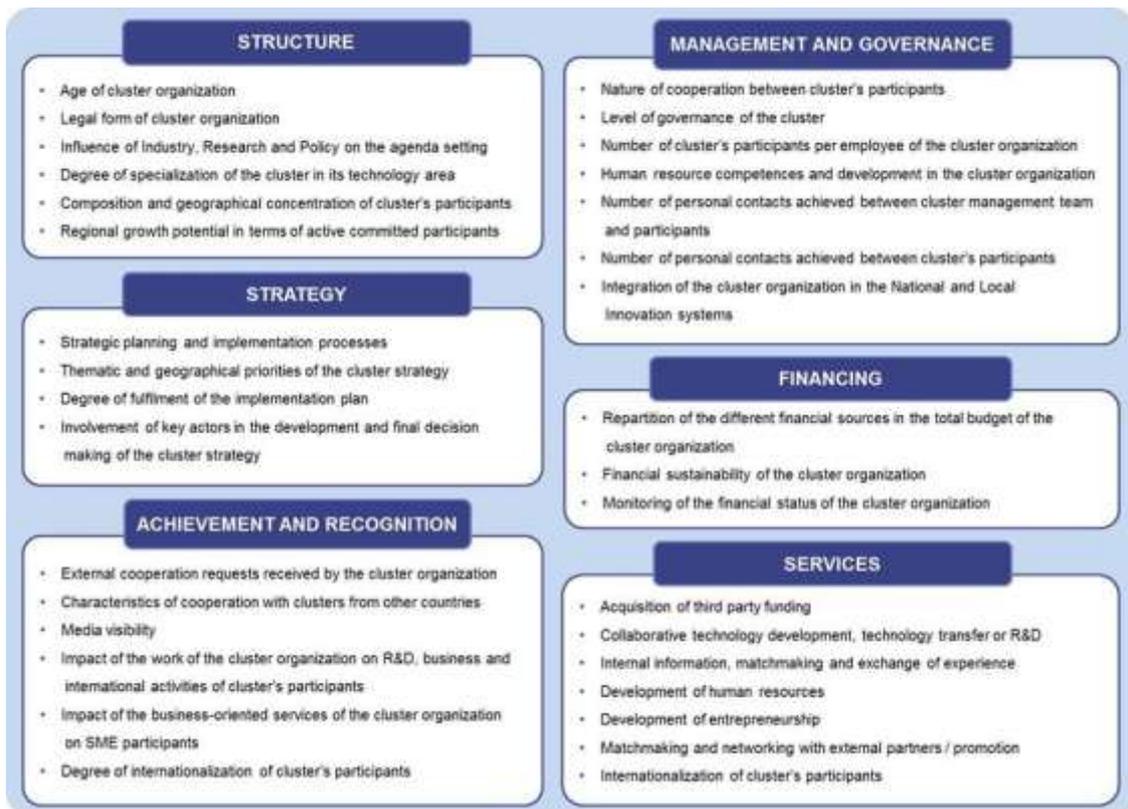
Overview of the benchmarking performed

Clusters are subject to permanent development. Therefore, cluster organizations require information on performance and competitiveness as an input for strategic decision making. Benchmarking can support this process as it offers the opportunity for active learning through a comparison with other clusters. By relying on qualitative and quantitative indicators and by comparing cluster-specific results among peers (e. g. clusters from the same country and/or the same technology area / industrial sector), benchmarking can be used to document success and to identify opportunities for improvement. The findings are of interest to the cluster participants as well as to the cluster organizations.

The objective of the benchmarking exercise is not to rank or evaluate individual clusters but to provide cluster organizations with a better understanding of how to improve the quality and effectiveness of their work. The “Benchmarking” exercise for Clustem project provided detailed information about strong and weak points of clusters analysed as well as being compared in 40 countries with over 900 clusters in Europe. The main result of this analysis is a roadmap for the future strategic plans. This is crucial in order to understand the current positioning and what can be done in the future. All project partners are now “Bronze Labelled Clusters” as a result of this process. This has a big effect on market popularity, but most of all provides clear management practices to be implemented for the improvement of the service offered to member companies.



The benchmarking is focused on the cluster organisation that is responsible for managing the cluster and its activities, and – to a certain extent - on the community of the cluster actors. The dimensions and indicators analysed for the project partners are presented in the following chart.



According to ESCA methodology, the benchmarking analysis compares the analysed organisation with the “state of the art” of cluster organisations reaching a minimum score of management excellence and included in a set of comparative portfolios (national, technological and excellence portfolios).

A benchmarking exercise is divided into various stages:

1) Preparation stage:

- The appointment of a benchmarking expert, depending on the areas of technology involved and the character of the network or cluster;
- The selection of the persons of the network or cluster management to be interviewed;
- The making available of prior information concerning the queries to be posed at the interview.

2) Data collection through a benchmarking interview:

The benchmarking is structured to highlight the relevant aspects and queries for the benchmarking routines. A senior member of the management, preferably the manager of the network or cluster, should be present. The duration of such an interview is around three hours.

3) Data analysis and evaluation:

The evaluation of the data collected is conducted. All network or cluster-specific data are treated with the strictest confidence and are recorded anonymously in the comparison portfolios.

4) Results:

- A graphical comparison of the cluster with peer clusters from the same technology areas and with clusters from other areas;
- An evaluation of the cluster's strengths and weaknesses;
- A comparison with the indicators on cluster management excellence according to the 'European Cluster Excellence Initiative' (GOLD Label indicators);
- Recommendations for improvement.

Results of the benchmarking

As a result of the analysis, the cluster organisation has feedback information and data essential for defining the roadmap for the future strategic plan. Cluster benchmarking methodology focuses on 5 major criteria:

- Structure of the cluster
- Typology, governance, cooperation
- Financing
- Strategy, objectives, services
- Achievements, recognition

Generally speaking, it can be stated that only a few cluster organisations can present real success stories, meaning projects are somehow unique and ground-breaking in terms of entering new territories of cluster development and activities that change existing structures in a profound way. One example can be the joint development of training courses with universities that contribute to the development of skills in emerging industries.

From the analyses carried out by the European organisation, it was noted that one of the main weaknesses of active clusters in Europe is that 40 % of them do not regularly conduct satisfaction surveys among their cluster participants, although such surveys help to collect precious information about the needs of cluster participants and provide feedback on how successful the cluster organisation is. Such feedback is essential for the further improvement of the strategy and the service portfolio. It may also help to develop services for which cluster participants are ready to pay. Further weaknesses could be determined in particular when analysing cluster organisations from the Central, Southern and Eastern European Member States.

Several clusters feature a low number of committed cluster participants.

Two thirds of the clusters have less than 40 participants. A minimum of 40 participants appears to be necessary to have a well-prepared and not only sufficient nurturing ground for the development of ideas and projects within a cluster.

Clusters are not much integrated in the national and regional innovation system. While universities and research institutions participate in the clusters, clusters interact only to a limited extent with relevant intermediaries, as innovation service providers, business incubators, technology transfer agencies, financial institutions, etc.

65 % of the cluster organisations offer only a limited number of services to the cluster participants or focus only on few areas. In order to overcome this situation and to support innovation, the service portfolio of cluster organisations should include at least the following service areas:

- information/market intelligence, matchmaking,
- initiation of R&D and innovation projects,
- promotion of the cluster and internationalisation.
- human development initiatives or support of entrepreneurship.

There is a lot of discussion about what role cluster organisations can play for the development of new value chains and emerging industries. Policy makers raised high expectations to cluster organisations in this respect, expecting them to be a favourable environment for facilitating entrepreneurship and cross-sectoral collaboration.

Cluster organisations whose main rationale is to match different stakeholders within a cluster are ideal intermediaries for creating an “open space “ or a brokerage platform, where businesses, knowledge institutions and business support organisations can meet to search for and explore radically new, cross-sectoral business solutions. Moreover, this is only possible with a strategy that goes beyond the generation of individual projects or innovations driven more by chance than logic.

Insights into cluster strategies and service portfolios of cluster organisations demonstrate that the majority of cluster organisations do not yet follow a strategy aiming at an holistic approach in their daily work. And when guided by a strategy, they tend to catch funding programmes that are available at a given point in time. This results in a number of rather solitaire projects that have limited or even no strategic perspective. These cluster organisations are mostly following an approach focussing on a specific industry and trying to replicate successful cluster organisations. They can be successful in terms of promoting industrial development along an existing value chain, but it is not likely that they will create entirely new value chains.

In contrast, more and more cluster organisations are looking beyond the borders of their industrial sectors by integrating different sectors within an existing or newly emerging value chain. Projects of these cluster organisations are not driven by chance, but pursue the common objective of the cluster actors to develop systemic solutions for new markets and technology areas. Their strategies are much more sophisticated and combine R&D projects with technology transfer and market development activities. They are likely to be coordinated by a highly professional cluster organisation based on a business model that is owned by all cluster stakeholders. Such strategies are the result of an implemented evolutionary processes.

What can be done to fill the gaps

Committed Cluster Participation

Participants of a cluster should commit themselves by some kind of written agreement. Such a document should indicate potential benefits for the participants but also their duties as a committed cluster participant. At least 80% of the cluster participants should be committed participants. The idea behind this limitation is that the cluster management should be able to focus on the needs of the committed participants; therefore the number of non-committed participants has to be very limited.

Companies, research stakeholders or any other party that have registered just for an email-newsletter or have attended a workshop or event just once without contributing anything to the progress of the cluster should not be considered as committed.

Composition of the cluster participants

More than 70 % of the committed participants of the cluster should originate from industry (both SME and non-SME). The cluster should also count at least one research institution and at least one education organisation as committed participants. Finally, the cluster should incorporate at least one committed participant from the following categories: Intermediates, government/public organisations, marketing, others.

Maturity of the cluster management

As it takes time to successfully develop and implement activities for a cluster, a cluster organisation should normally need at least four years to reach a sufficient maturity.

Lifelong learning aspects for the cluster management team

It was observed that most of the team participates to the training programs that are organized for the companies and training activities for the team itself are quite limited. Moreover, human resource allocation for the cluster management organization should be in line with the strategy and expected outputs for the planned actions. Lifelong learning is crucial, because cluster management can be considered as a new profession and one should be trained significantly to coordinate actions on behalf of the cluster.

Additional to that clarity of the roles and responsibilities of the staff is another important subject for cluster management. Measures for lifelong training for the cluster management team should be planned and based on a sufficient budget. They should be implemented on a regular basis with more than two training days per year for every staff member.

Stability and continuity of human resources of the cluster management team

Leaving personnel of the cluster organisation management team should be replaced immediately. An overlap of leaving and new personnel would support a gapless transfer of the working tasks. Existing job descriptions for the various staff participants made the search for new personnel easier.

Clarity of roles - involvement of stakeholders in decision making

At least five of the six following points are considered necessary:

- Contracts, statutes, and/or bylaws exist that define benefits and responsibilities associated with committed membership;
- Legal form of the cluster organisation;
- General manager of the cluster organisation is nominated and actively in place, managing his team, the day-to-day business, as well as the strategic activities of the cluster;

- Regular General Assembly held at least every year, allowing cluster participants to express wishes and to provide input to the strategy of the cluster organisation;
- A management board, mainly composed of representatives of industrial cluster participants, elected or nominated by the cluster participants in a transparent manner and having the decision power regarding strategic orientations, new membership requests, recruitment of cluster organisation management personnel, budget control, etc. Instead of a management board, specific high-level working groups could fulfil this role as well;
- Advisory board / scientific board(s) or thematic committees composed of participants; both to conduct decision making and to support the cluster management team in implementing the action plan.

Direct personal contacts between the cluster management team and the cluster participants

The management team should have direct personal contacts with more than 40 % of the cluster participants in the last year of activity. For excellence an even higher share of 60 % of the cluster participants reached is required. Eligible personal contacts are, for example, visits to the participant premise. Other forms of keeping the contact are extensive bilateral exchange of information, for instance, via telephone or mail; joint work of the cluster organisation management staff and representatives of the cluster participants in specific projects, working groups, or other joint activities.

Degree of cooperation within the cluster participants

The success of a cluster management organization depends on its driving forces. If the organization is in practice directed by a small group of big companies, it is more a lobbying group instead of cluster management body. More than 30% of the cluster participants, including mandatorily SMEs, should be actively involved in a significant manner in collaborative multimember activities or collaborative projects during the last year of activity. Participation in working groups, projects, delegation / trade visits, joint trade fair activities, active lecturing activities, etc. with a minimum involvement per cluster participant of two days are considered as collaborative multimember activities. A simple passive attendance to an event (seminar, workshop or get-together) is not considered as collaborative activity.

Prospects of financial resources

Organizations should focus more on income generation and deliver international services for global value chains. A stable income is crucial for the sustainability of the cluster organization. In most of the artificially established cluster management organizations, income is raised from public funds rather than members. A robust financial situation of a cluster organisation is the one with the budget secured for the next two years of activity and with a positive outlook beyond.

Share of financial resources from private sources

The goal to be achieved by the cluster management organization is to increase number of members, and consequently the income generated by private sources. However, if the organization is not creating value, more specifically services to her members, life time of the cluster depends on the

availability of the funds. The cluster organisation should ideally generate more than 20 % of the budget for cluster management from private sources.

Degree of fulfilment of the implementation plan

The implementation plan with measurable targets and dedicated budgets should exist in a written form and fit to the strategic challenges. The degree of fulfilment of the implementation plan during the last year of activity should be above 80 %.

Activities and services of the cluster management

Cluster management organizations should have all necessary human resources and skills to develop the strategy with a participatory approach. It was observed that the strategy of the cluster management organization sometimes fails to match the needs of its members, not because of the lack of a strategy, but because it is more the strategy of the parent organization. It is proven that a certain intensity of activities and services initiated and/or performed by the cluster management is necessary in order to achieve positive effects, for the cluster participants as well as for the industrial/technological sector in general. A certain continuity and a regular schedule of activities and services are necessary as well. However, cluster management should focus on the most promising areas of activity, according to the demands of the cluster participants and/or the strategic challenges being documented in the cluster strategy and the related implementation plan.

Working groups

During the project it was observed that working groups do not work properly to bring real life experience to cluster management organization. Working groups covering specific issues within the cluster should be set up to provide cluster participants with a platform for joint projects. The cluster management team shall rather facilitate cooperation between the cluster participants than being the driver and involved directly in all activities. Initiating and implementing a structure of working groups can be considered as good practice for cluster organisation management.

Web presence

A regularly updated content about the cluster organisation should be available in the local language on a website and on social networks/platforms like LinkedIn, the European Cluster Collaboration Platform or Facebook, giving a general overview and details on the work of the cluster and possibly the technology area as well as important contact points. As internationalisation of clusters is an important issue, the public part of the web presence should be available in the English language, plus the languages of the key countries targeted for collaborations and market opportunities. Furthermore, contacting cluster participants should be possible via the web presence where the appropriate contact details should be available.

Success stories

Success stories of the cluster and/or its participants have to be communicated by the cluster organisation. The success stories should highlight the following points:

- The complexity of the objectives and activities;
- The positive impact on the majority of the cluster participants and industry in general;
- The degree of achievement of cluster objectives;
- The contribution to the sustainability of the cluster organisation development.

Satisfaction surveys

Satisfaction surveys with cluster members about the strategy update and implementation should be carried out at least bi-annually. Cluster management should serve and aim for the benefit of their committed cluster participants. This however implies that the cluster organisation is aware of the needs of the participants and is informed of any specific demands. The degree of satisfaction of the cluster participants and/or even external stakeholders of the cluster should be assessed on a more or less regular basis.

Chapter 3 - Training for Excellence

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About the capacity building for cluster managers

Cluster organisations of CLUSTEM project could benefit from a specific and dedicated training course specifically conceived for improving cluster management performances and establish a strategic collaboration between textile and machinery sectors.

The activity of clusters is vital for supporting the competitiveness of European SMEs through collaboration and sharing of added value. With a solid strategy and good management practices organisations can address some of the key factors affecting our industry.

This training should be reflected on served SMEs, by improving the knowledge to address resource efficiency, the transfer of knowledge and increase the level of innovation capacity.

The objectives of the task were to:

- Provide specific training about cluster excellence to the four partners (2 participants per partner.)
- To report on lessons learned and recommendations for the future delivery of effective services.
- To evaluate, raise and sustain the competitiveness for the future delivery of effective services.
- To increase the level of innovation capacity and introducing new creative based ideas for new products.

Training provided to the clusters professionals included 5 core modules listed below.

Training	Knowledge Area	Concepts and/or techniques
Module 1	Cluster Economics	Location theory, Industrial Districts, Clusters, Cluster management.
Module 2	Cluster Initiative Screening	Statistical Cluster Mapping, Cluster Initiative Selection (Industry Analysis and Segmentation, Value Chain and System). Value chain positioning.
Module 3	Industry Analysis and Segmentation	Industry Analysis (5 Forces), Strategic Segmentation / Innovation on business models.
Module 4	Value Chain Analysis	Value Chain, Local Value System, Global Value System.
Module 5	Benchmarking and Internationalisation of SMEs	Value Creation. Advanced Buyer Purchase Criteria, Key Success Factors, Value Chain Activity Benchmarking.

The training included the implementation of specific case studies and was delivered by the European Foundation for Cluster Excellence.

The training package that took place consisted of class sessions in Barcelona; partners took part in seminars, workshops, lectures, group discussions and visits.

Partners were asked to be prepared in advance for the in-class lessons, by analysing case studies, to stimulate conversation and support planned classroom activities. The case studies that were selected were from different industries/clusters but gave a real insight into how each industry diversified to introduce new products or identify new markets to be in and set themselves apart from the competition. In between working through the case studies trainees had read and worked through, modules were covered that were relevant to each case study, these included worked

examples of different types of analysis and segmentation to help cluster managers understand how to put these measures and tools in to practice.

At the end of week one in Barcelona cluster managers were asked to return to their organisations and perform an on-the-field work, producing an 'industry document' outlining the reference industry, the industry supply at an international, national and regional level, value chains and consumer trends. The second document was a 'cluster document' outlining the clusters we work in and support, their history and origins, impacting factors, key facts and figures of each cluster, value chains and cluster mapping, and also an explanation porters cluster diamond. A 'Cluster database' to help analyse the cluster.

The second week in Barcelona consisted of additional case studies to support our understanding of the analysis and segmentation as well as now putting these tools into practice. During the second week trainees were introduced to the 'ten steps of analysis', segmentation, cluster management, value chain analysis and internationalisation. During the latter part of the second week two field visits were completed. The visits allowed partners to look at different parts of the supply chain and how their innovative ways support and influence industries. The second week allowed cluster managers to widen their understanding of the cluster analysis and segmentation preparing partners for the completion of their case studies using the knowledge and tools they had acquired during the working time spent in Barcelona.



In summary, the training consisted of plenary and group sessions involving case studies and applying the five forces technique to analyse different clusters and performance. The Partners were also introduced to the 10 step methodology and strategic segmentation.

Training for the 5 core modules was successfully completed and the participants were awarded with a certificate of completion.



In addition to the delivery of the training, the Foundation supervised the participants in the development of a specific case study related to their clusters. Based on the experience of the training participants, the development of an additional new case study, directly relevant to the partners would, in the long run, bring clear added value to the CLUSTEM project. Such a new case study could even become part of the cluster management training curriculum later on. It is based on a business case from one of the countries/regions from the CLUSTEM partnership and might have high relevance to the CLUSTEM project partners and to potential trainees of the cluster management trainings in the future.

In compliance with the initial ToRs from CLUSTEM, Case Studies were developed following the end of the in-class training weeks: the first one on the textile cluster from Huddersfield, Yorkshire, and the second one on the textile and fashion cluster of Prato, Tuscany.

Lessons Learnt from the Essence of Cluster Excellence Management Training

Extract from Recommendation report.

A positive Change in Mind-sets and Behaviours

The training has provided the participants from CLUSTEM with a new approach to enrich the set of tools at their disposal as cluster practitioners. Through the Cluster Excellence Management course,

they were acquainted with key concepts, cases and methods to conduct a thorough value chain analysis and address their regional development needs.

The training helped CLUSTEM participants contemplate their role under a different angle and reassess their potential responsibilities – and opportunities to exert an impact – as “strategic guides” towards their cluster companies. The trainees have evolved from a somewhat inward oriented look, with mostly “cluster organisation” cases as benchmark references, towards a broader business-oriented knowledge of value chains and processes of change in other countries and economic contexts.

A Better Understanding of the Industry and of the Cluster

The training has achieved a major goal in that it brought the participants to realize that a better understanding of the industry goes through a thorough strategy formulation and that this strategy formulation can only be based on value chain identification and value chain benchmarking.

Participants managed to get to an accurate picture of the ideal value chain and of the ideal cluster diamond (cluster environment) performing the analysis of the cluster’s value chain and of the cluster diamond. The comparison of the ideal pictures with the local cluster reality permitted them to understand what the weak areas of their cluster were, both at company level and cluster level.

With more time, going deeper in their analysis participants would have been able to pinpoint what should be done to “repair” the weak points.

The training also demonstrated an essential fact: if you analyse your cluster through the lens of a value chain, you soon realize that your cluster is in fact broader than just the community of the Cluster Organisation associates. Often compared to an ecosystem or a “living” being, a cluster, in its “spontaneous” acceptance, is usually made of more agents than the fee-paying members of the organisation.

A Stepping-Stone to Leverage on...

When it comes to enhancing regional competitiveness the Foundation’s methodology emphasized the need for a coordinated effort involving: a) interacting with local companies and institutions, b) using strategic tools for strategy formulation, and c) ensuring alignment of the different layers of policy-making (from local to national). This remains a long and challenging process. Reinforcing the competitiveness of regional clusters must be seen as an iterative endeavour that should be planned and integrated into a broader economic development vision.

The delivery of the training comes as a small, but nonetheless instrumental, part of a paradigm shift. It has the vocation to set the stepping-stone and standards for future similar cluster reinforcement projects. Those future projects should be this time applied on the field and would capitalize on two factors for success: real and comprehensive interaction with local SMEs on the one hand and well understood support from every political stakeholder on the other hand.

In addition to this the consortium also feel they have a better understanding of organisations like theirs in other parts of Europe and how they respond to their sector needs. The partners are more confident of the service offer and they are more active in relationships with regional fundholders in the respective countries.

Recommended Steps for CLUSTEM Consortium members

Keep Honing Knowledge and Skills by Using the Methodology

The analysis of the outputs (class interaction and deliverables) presented by the CLUSTEM participants constitutes the best proof of their commitment and of a change in mindset and behaviour that goes in the right direction. But further training is needed to ensure that participants master the tools and progress towards the management of complete Cluster Initiative that are usually very sensitive and complex projects in a context of high expectations.

Travels and Interviews

For their next foray into Cluster Initiatives it is recommended to CLUSTEM partners that they include:

- a. Firm visits (company interviews within the cluster)
- b. National and international expert interviews
To complement of the cluster agents' interviews the team will have to talk with industry experts. The opinion of the industry experts is helpful as they can transmit their vision of the industry, provide interesting sources, and even sometimes pass the team hard-to-find reports or documents. Experts can be anyone who can bring to the team a qualified "insider" point of view.
- c. Advanced buyers interviews (BPCs)
The advanced or sophisticated buyers are the buyers who ask for advanced, more demanding, specific features. What they request from their provider differs from what standard buyers usually ask for.
- d. Benchmarking trip (Reference trip)
Once the most innovative strategic option has been identified, the team has to understand the ideal value chain and cluster diamond (cluster environment) to be competitive in this strategic option. The ideal value chain and ideal cluster diamond will be analysed through the reference examples and best practices.

A new Dialogue between Government and Industry

The European Cluster Excellence Initiative methodology is ultimately about helping companies achieve business transformation through the mobilization of clusters seen as economic tools.

Assessing the changes required at value chain level helps target interventions, helps foster productive innovation and advanced services. It also allows for identifying and engaging both the firms and institutions (ministries, agencies, universities...) that are involved in specific industries.

The opportunities gained as a result of the Clustem project training enable the partners to move into more attractive business segments. By identifying and analysing the chosen segment using the case study methodology, by having a strong and diverse network and using the techniques applied

to shape the innovation of the future, the Clusters should continue to be strong and successful for many years to come.

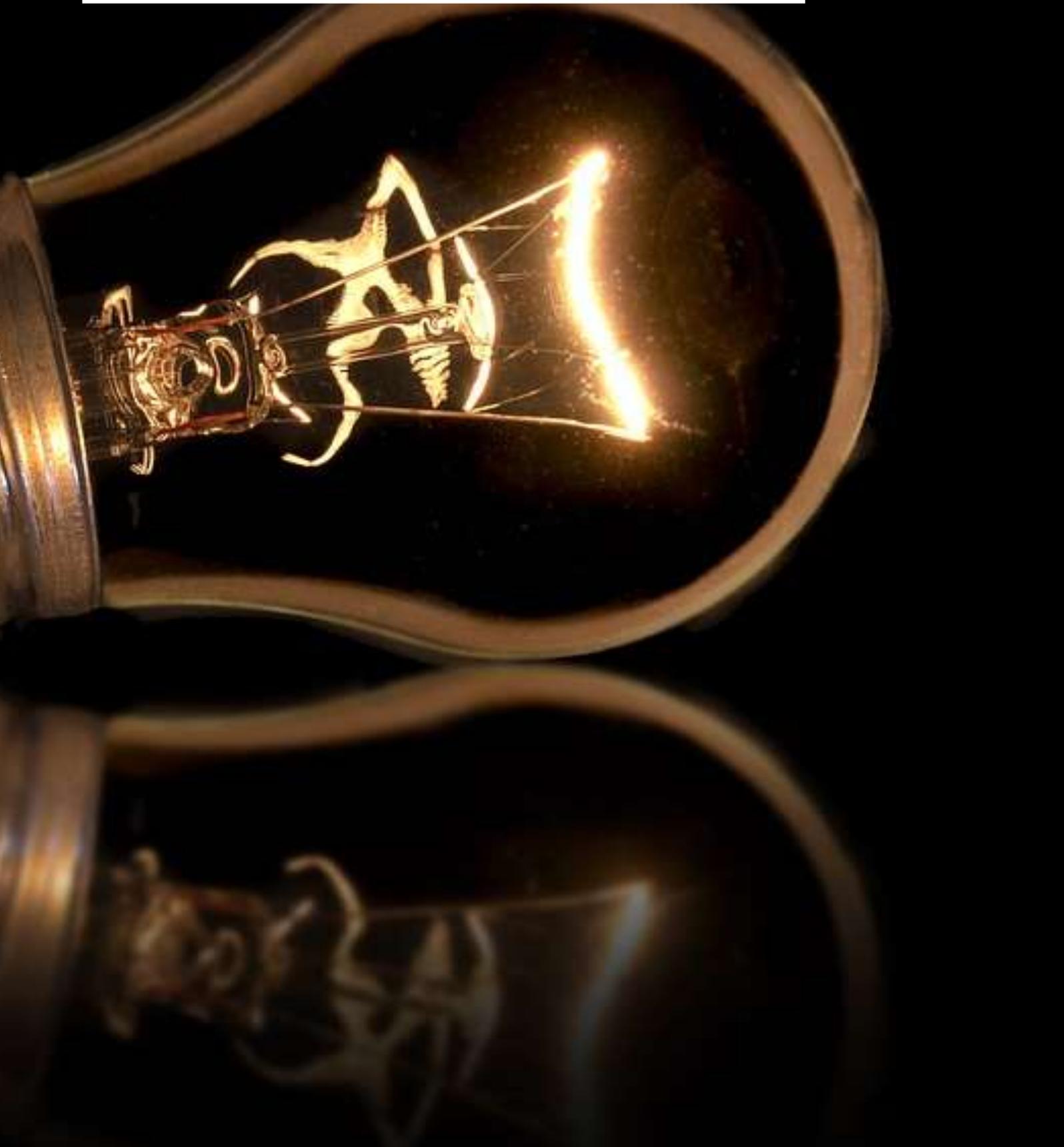
Chapter 4 – Study visits to Gold labelled clusters

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Overview of the visits performed

CLUSTEM project gave the chance to participants to perform study visits to Gold Label Clusters. This task complemented the benchmarking exercise, giving the consortium the possibility to have a direct contact with organisations excelling in management practice, that could be analysed and imitated.

The procedure leading to the achievement of the purpose was composed of the following steps:

- Search for most attractive Gold Label Clusters to be explored
- Identification and preliminary analysis of the high potentiality clusters selected
- Joint evaluation of possible Gold Clusters to visit
- Selection process ended with the following results in terms of visits to perform:
 - Lifestyle & Design Cluster
 - Techtera
 - Pôle Véhicule du Futur
 - Hamburg Aviation

To get the most out of the visits, a specific questionnaire was prepared, discussed and finalized by the CLUSTEM consortium partners. This supported the gathering of info, data and insights about particular subjects or services that the gold cluster offers to its companies, as well as its working procedures, at least on the following categories:

- Creativity support
- New and innovative services to the SMEs
- ITC and open innovation
- Resource efficiency
- International networking
- Internationalization of the R&D
- KETs

The lessons learnt from the visits were defined by mean of the following means:

1. direct interviews with the responsible of the clusters, both attending in person the meetings and by video-conferences or conference-calls;
2. written questionnaires answered by the cluster managers;
3. oral presentations and discussions;
4. materials sent by the clusters to the author;
5. Web site of the clusters.

The Gold Clusters, organized several visits to different associated institutions within the textile business or other related sectors, in order to identify good practices carried out by them.

- Pôle Véhicule du Futur (PVF), organized different visits to:
 - NSC Schlumberger Company, focused on the manufacture of spinning machinery
 - Textile Alsace Pôle de Competences
 - ENSINSA, Ecole nationale supérieure d'ingénieurs sud alsace

- TECHTERA:
 - TEXT'IN platform
 - IMP laboratory (University of Lyon)
- Hamburg Aviation:
 - ZAL, Centre of Applied Aeronautical Research

The lessons learnt were followed and complemented by a **TRANSFER PLAN**, to allow Clusters partners the adoption of lessons learned and good practices.

Pôle Vehicule du Futur

Pôle Véhicule du Futur is an automotive cluster that fosters synergies between companies, education and research in the field of vehicles and mobility of the future.

PVF has two branches: an innovation section and an industrial one. PVF has been created by the fusion of two existing associations: Astrid (innovation branch) and PerfoEst (industrial branch). The cluster has been working since its foundation to generate R&D collaborative projects, to develop research activities and to accelerate members' innovations time-to-market.



Picture: 1. Meeting with Polè Vehicule du Futur

The key services are built-up around three axis:

- Innovation, to support companies' RTD projects (free)
- Competitive intelligence (free for the global data and with cost for strategic ones)
- Networking (free)

The main KETs that the Cluster organization promotes/uses are: advanced materials and advanced manufacturing technologies, electric cars & hydroden, connected and autonomous veichles, mobility as service.

PVF faces some strategic challenges for the future:

1. Develop the best services requested by the companies.
2. Increase the number of services paid by a specific fee to conserve above 50% private financing.
3. The growth of the territory to be served: PVF needs new organization and resources.

Association Techtera

TECHTERA is an Innovation and competitiveness cluster in the field of textile and flexible materials in the Auvergne-Rhône-Alpes region. It promotes innovation in the textile and flexible material industry and increase competitiveness of the sector at regional level. France is nowadays one of the world leaders in the technical textile sector, with Japan, USA and Germany.

The mission of TECHTERA is to increase business competitiveness through co-operative innovation.



Picture: 2: Meeting with Techtera

Services offered to companies:

- support to project set-up (creativity workshops, partner search, scientific advice);
- delivering a specific label to R&D projects and consortia in order to allow for national funding (called FUI);
- internationalization.

KETs: Smart textiles, Assembling, 3D printing, Innovation on fibers, FoF (Factory of the Future).

TECHTERA has influence on policy at regional and national level, like the REGIOTEX initiative.

The challenges faced by the assisted textile industries:

- Identify and develop new supply sources (raw materials)
- Help the transfer of know-how and the development of technological hybridisation
- Strengthen innovation in flexible materials
- Develop innovation in the production process (machines) and the environmental performance of the installations

The economic and social challenges to which the textile/flexible materials sector can provide answers:

- The growing energy requirements and the need to optimize their use
- Increasing urbanisation, to associate with a sustainable building policy and stricter safety standards
- Rising living standards in emerging countries
- The protection and comfort of people in their environment
- Medical and social issues linked to aging populations

The five strategic areas for action, and a priority for the cluster, are:

1. The renovation of infrastructures (construction work)
2. The safety of people at work (protection)
3. Less weight in transport (transport)
4. Comfort through personal assistance (health)
5. Excellence in luxury goods (clothing, furniture)

Hamburg-Aviation

Hamburg Aviation is the aviation industry cluster for the Hamburg Metropolitan Region.

The local main players of the sector got together in Hamburg Aviation to pursue a common goal: to network research and development, thereby bringing to market high-quality products and services for the aviation of the future.



Picture: 3. Meeting with Hamburg Aviation

Cluster services have a clear impact on the sector's competitiveness, even if the objective measurement is quite difficult to perform. Clusters like Hamburg Aviation have concrete knowledge, and can support the companies more efficiently, especially those looking for the technical services.

Hamburg Aviation develops its strategy together with all the cluster members along initialising international missions for connecting members with future cluster partners worldwide.

The internationalisation strategy focuses on intercontinental target regions abroad (such as Québec in Canada) and shows feasible options for action.

The main challenges faced by the cluster are:

- related with the market
 - a. Changes of the aviation industry: the production capacity needs to grow-up, and the cluster needs to be able to facilitate the cooperation capacity
 - b. Adaptation to the changes coming in the supply chain
- related with the clusters
 - c. Secure the cluster team, taking into account that the payment in the public sector is less than in the private sector
 - d. Attract more foreign companies
 - e. Generate cross-sectorial projects

LifeStyle & Design

The Innovation Network Lifestyle & Design Cluster (LDC) works to promote innovation and sustainable growth, primarily in small and medium-sized interior and clothing companies as well as in the creative industries.

The strategy of Lifestyle & Design Cluster is linked to the overall strategy of innovation networks in Denmark:

- Being a bridge between research and education institutions and businesses
- Being a driver for internationalization
- Ensure constant development of a strong and professional cluster



Picture: 4. Meeting with LifeStyle & Design

LDC extensively uses the triple helix principle: business and companies, public authorities and science and technology centres, working together to activate a systemic change.

LDC is focused in making companies adopt the principles and models of the circular economy and work for the value chain improvement: to this extent innovation programs are promoted, to help businesses to develop a profitable and sustainable business model for a product or service.

The level of internationalization of LDC is very high: 220 companies participated in international activities in 2015, and 60 foreign companies participated in the cluster activities.

Lifestyle & Design current commitment:

1. To identify challenges companies are facing (at least, one year ahead): new technologies, new barriers, and new opportunities.
2. To contribute to the sustainability (circular economy) and digitization of the companies.
3. To improve the international cooperation among the companies and the cluster itself.

Other companies and institutions visited

NSC-Schlumberger

N. Schlumberger, located in *Guebwiller*, in Alsace, draws on its internationally renowned expertise to design, manufacture, and deliver high-quality machines and spare parts for spinning industry as quickly as possible.

Based on Lean Manufacturing principles, N. Schlumberger's new production system has created a tighter, more efficient plant that is organised around the logistics flows.

The visit covered the Lean Manufacturing application to the internal processes, along with the latest developments implanted by the company.



Picture: 5. Visit to NSC-Schlumberger facilities

Textile Alsace Pôle de Competences

Textile Alsace was founded in 1947 by a network of textile companies in Alsace, and has now four main strategic goals:

1. INNOVATION in soft material – new solutions for Industry 4.0 by promoting R&D and technology transfers
2. Expansion on new valuable MARKETS
3. Environnement and sustainable development
4. Continuous TRAINING in: strategy, marketing, sales, web marketing...



Picture: 6: Textile Alsace Pôle de Competences

Le Laboratoire de Physique et Mécanique Textiles

This laboratory is developed on the campus of the University of Haute-Alsace (UHA) and performs research within the science of fibre and the field of coatings. It is geared towards textile physics.

The LPMT is structured in 3 teams:

1. Mechanics and physics of fibrous materials.
2. Physical mechanics of fibre and interfaces
3. Mechanics and physics of coatings.

TEXT'IN platform

The platform was created in July 2005 in the Rhône-Alpes region and is specialized in textiles and clothing. It is formed by four schools, two business associations, two technology centres, two universities and the competitiveness centre.



Picture: 7. Visit to TEXT'IN platform

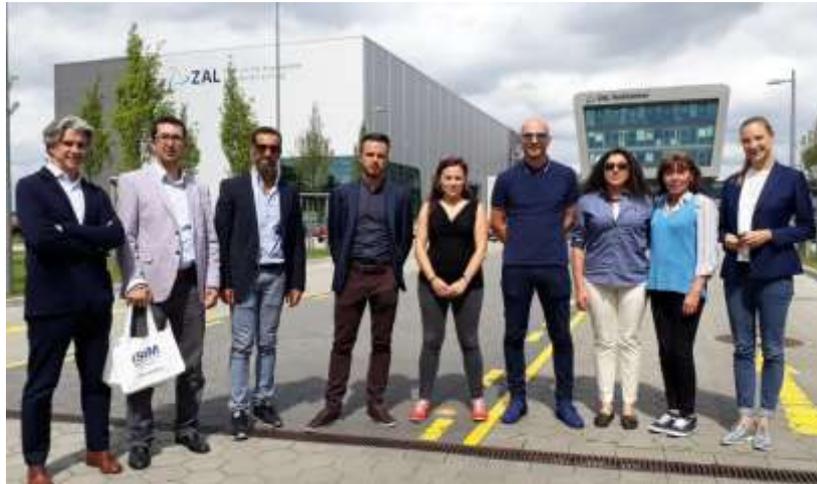
IMP laboratory (Universidad de Lyon)

IMP laboratory develop a global material by way of macromolecular chemistry strategies, which may be combined with physical and physic-chemical approaches, to simulate the creation of materials, define functions and integrate them into systems.

ZAL, Centre of Applied Aeronautical Research

ZAL's intends to function as a driving force, coordinator, and research platform for Hamburg region actors of aviation industry, further expanding the technological competence of the local aviation industry, and to enhance the profile of the global civil aviation industry.

ZAL has been driven by Hamburg Aviation Cluster and meets the biggest companies and SMEs within the aerodynamic sector together like: AIRBUS, Lufthansa, Hamburg Airport the new spin-off companies and another supplier companies.



Picture: 8. Visit to ZAL

Lessons learnt

As conclusion of the study visits to the reference clusters, a transfer plan is defined for CLUSTEM partners, including hints for the joint definition of top quality services for SMEs of the four countries on key intervention areas.

Therefore, and it is confirmed by the lessons learned in the project, to define new services in an isolated way is not functional to the improvement of the activities and the performance of the concerned clusters. The four organisations have been working together about this point, maintaining the specifics of the four different regions.

The analysis done in the 4 gold clusters visited shows some common elements that are of crucial importance to define a plan for CLUSTEM clusters:

1. the clusters analysed have a strong and clear strategic approach, based on the promotion of innovation projects into their companies' members, normally through national and international cooperation.
2. gold labelled clusters have a sound and stable financial background, on a long-term basis, secured by the stability of a public stream of funding, national and regional.
3. the labelling system, guaranteeing to the innovation projects a priority access to the public funding, at national and/or regional level, facilitate the access by the companies, and it provides the cluster with a recognized value in front of these.
4. the intensive use of the ICT and digital resources, especially CRM, in the relationship among the clusters and the companies, in order to have a permanent contact and feedback with/from these, allow a fast and successful reaction.
5. the management system of the gold clusters is composed of high-skilled and diversified profiles, covering the different areas of intervention: marketing, community management, innovation projects, internationalization, finance, human resources, events, etc. up to 10-12 persons.
6. the gold clusters provide services focused in the promotion and support of innovation projects, concerning radical or incremental innovation in products, services and/or processes.
7. internationalization is one of the 'mantras' of all clusters analysed; both for new markets and new partners in other countries, not only European, providing opportunities for both aspects.

All these elements converge in three main conclusions:

- a global strategic approach in facilitate projects in front of a set of different services is the base for a good cluster management;
- stable funding and structure is key to allow for durability; and

Transferring good practice

The promotion of a change in a Cluster is directly linked to the adoption of new strategic challenges and the implementation of new operational services. Both levels address the improvement of competitiveness and internationalization of cluster members.

Innovation projects for member companies are vital for a cluster effectiveness: innovation projects need strong networking of the actors of the regional innovation eco-systems, preferably through a cross-sectorial and cross-regional dimension.

These actors are:

- SMEs Associations
- Technological and research centres
- Universities and training centres
- Business innovation centres
- Chambers of commerce
- Regional development and innovation agencies
- Local development services

Innovation projects, including RTD projects, are the key for SMEs competitiveness. Cluster should support them in every respect: generation of ideas, concept definition, consortium formation, proposal presentation, project management and evaluation, and IPR protection and exploitation.



Strategic level

Strategy

Lessons learnt from the study visits should be crossed and interlaced to the results deriving from the benchmarking exercise. The latter fed back partners with operative recommendations about actions to take for the improvement of current level of performances of each cluster organisation. This had the final goal to increase the level of satisfaction of member companies, with regard to the services received by the organisation itself.

One of the main lessons learnt with Clustem project refers to the inevitable necessity for a cluster to have a very well defined and clear strategy. The definition of the strategy can be strongly supported by the transfer of the good practices in use in gold organisations.

Example for a successful transfer in terms of strategy definition

The Aviation cluster in Hamburg is very keen in defining its strategy and updating it regularly with a yearly frequency. To define the strategy, some supporting tools are the working groups and the meetings with the members.

The Aviation cluster has 4 permanent working groups for different themes: internationalisation, skills, technology and strategy. The outcomes of the discussions taking place within the 4 groups are the bottom-line for the definition of specific projects to implement by cluster companies. For instance, once one foreign country is individuated for internationalisation purposes, a relation with a local cluster from that country is established and a staff exchange is activated.

Three times a year, specific meetings with members take place, according to a predefined tested format (North German Forum); each forum has a specific topic, and this helps the community to get together and to generate ideas for the strategy definition.

Also the social side of the community is looked after, with events at different levels (sailing parade and restaurant chats).

Funding

Clusters need stable and sufficient funds, as well as a qualified team, to implement a long-term plan for services delivery.

Ideally, this funding should come from different sources:

- public funding, from regional and local governments
- membership fees
- service fees
- donors and sponsors, others

A fund-raising service is in any case indispensable, not to depend too much on public funding.

Example for a successful transfer in terms of funding

The Aviation cluster in Hamburg has member fees but very low, that depends on the size of the companies. Only 3-4% of cluster budget comes from membership, a 10% is from services and events, another part (around 20%) is from EU funded projects, and a 10% is from services provided to companies. The rest is coming from public authorities.

The loyalty of members and the commitment to pay a small fee ensure the active participation of them to the cluster activity, and reduce the dependence from public authority.

Management systems

Clusters should also define and implement an integrated management system, preferably certified under an ISO standard, and/or the ESCA label initiative, for a proper support to the innovation process in favour of member companies.

The cluster management system needs an adequate CRM and/or other digital tools for the communication and the relation management with the companies, as well as other tools (like surveys) to gain knowledge about the perception of cluster organisation effectiveness and impact of cluster services.

Example for a successful transfer in terms management system

The Aviation cluster in Hamburg, at the time of the analysis by the ESCA auditors for the gold labelling, did not have a proper CRM, able to gather a good level feedback from the members. The CRM in place was not comparable with the average level of the system used by some other 60-70 gold clusters. So that, the certification led to the replacement of the old CRM and the acquisition of an advanced one, now working effectively.

Operational level

Projects structuring

Innovation projects, including RTD projects, are the key to improve companies, especially SMEs.

The service must support companies along the different phases: generation of ideas, project definition, consortium build-up, proposal presentation, project management and evaluation, and IPR protection and exploitation.

The main steps of the service-process are:

- i. generation of ideas
Ideas could come from one company, one researcher or technological centre, or from a specific creativity workshop or event, as the BarCamp defined in 2.2.c;
- ii. project definition

Each one of the ideas selected is defined in terms of objectives, work programme, resources, results and calendar, all the necessary elements to implement the project;

iii. consortium build-up

Search for potential partners is the key element, within the cluster and using a network of facilitators in different sectors, regions and countries. This point is the anchor to stabilize a “common service” from different clusters;

iv. search for funding

Permanent economic ‘intelligence’ of the different opportunities for funding at regional, national, and European level; this should be produced with a shared methodology by the different clusters involved;

v. project management

Support to the companies in terms of project management, offering specific and dedicated skills and capabilities;

vi. project evaluation

Services for permanent monitoring and external evaluation for the implemented projects, assuring an independent and objective procedure;

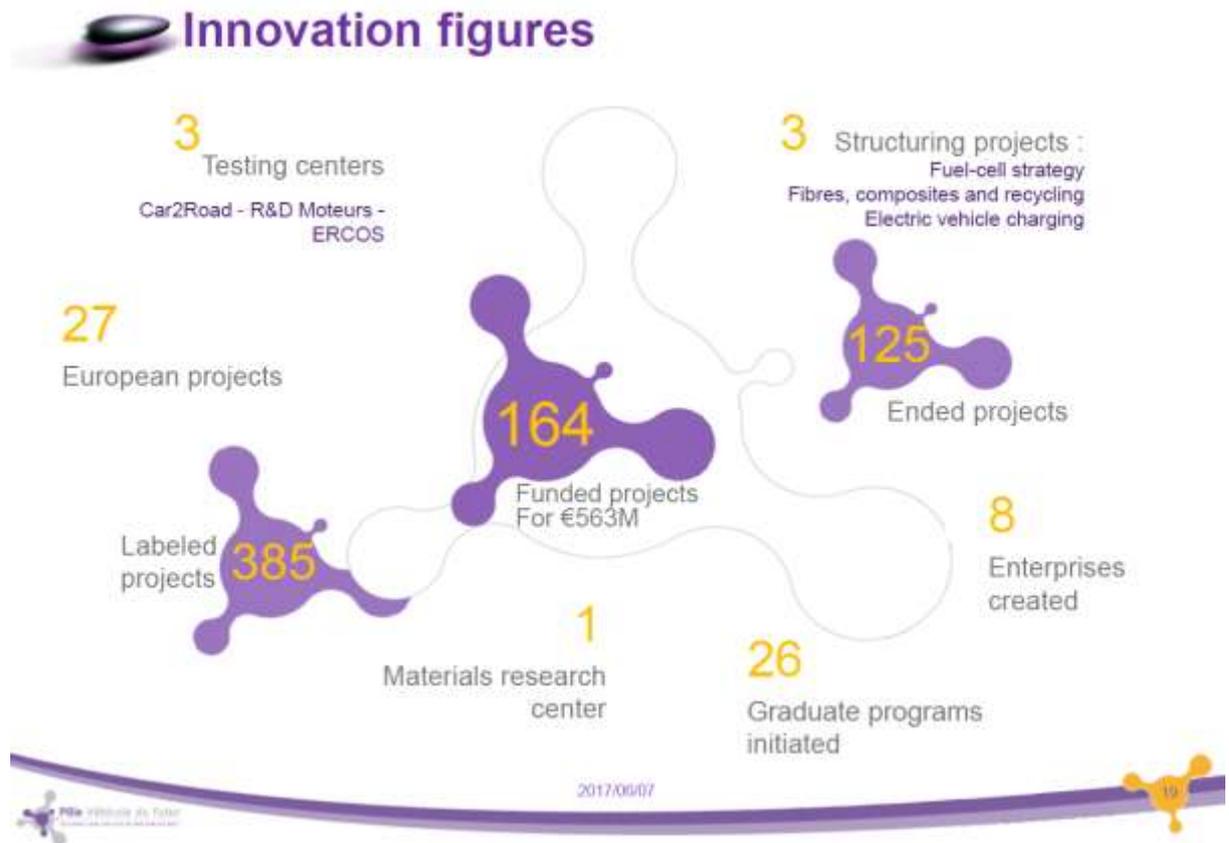
vii. IPR protection and exploitation

Services to define and agree IPR within the projects, and support to define and implement exploitation plans; this can also represent a point for a ‘skills sharing’ service.

All steps above needed for the service delivery can be provided to companies as a global sequence or separately, to an individual company or a group of them.

Example for a successful transfer in terms of project structuring

The following scheme is taken from the gold cluster “Pole Vehicule du Futur” visited in France during WP3 of the project, where the constant structuring of innovation projects happens according to the following concept and is part of the statutory mission of the managing organisation.



Internationalizing Companies

Active promotion of, and support to, the internationalizing of SMEs must be a component of the global service of the clusters. Besides the traditional services around commercial and/or technological missions, attendance to international trade fairs, etc., search for potential partners, both at strategic and operational level, for the SMEs is a must.

Internationalization services are build-up around two axis:

- The internationalization of the cluster itself, as part of different networks, associations, bilateral agreements, etc.
- The internationalization of the companies, especially in RTD and innovation issues.

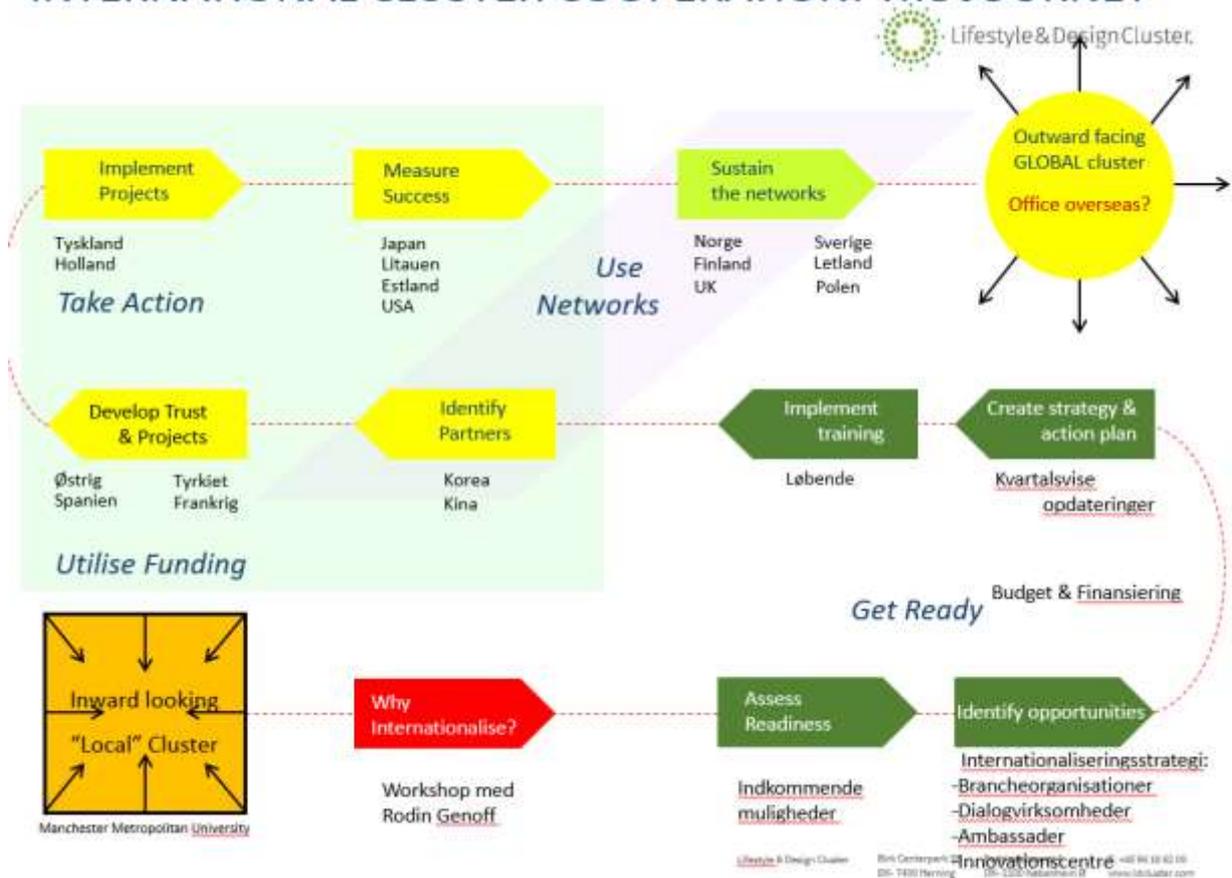
The first set must be considered as an instrument for the second one, and not as an autonomous objective itself.

Example for a successful transfer in terms of internationalisation

One good example of internationalisation methodology is provided by the Lifestyle and Design cluster of Denmark, where a specific procedure was developed to support the international expansion of cluster companies in targeted overseas countries.

The final goal of the methodology is the implementation of an office overseas for a stable commercial activity. The procedure can be easily transferred after small adaptations.

INTERNATIONAL CLUSTER COOPERATION: The JOURNEY



BarCamp

A BarCamp is a user-generated conference primarily focused around technology. It is an open, participatory workshop-event, the content of which is provided by participants. Clusters must take the role to promote the event among their members and other participants included in the ecosystems; a cross-sectorial and cross-regional approach is desired.

Although the format is loosely structured, there are rules at BarCamp. All attendees are encouraged to present or facilitate a session or otherwise contribute to the event. Everyone is also asked to share information and experiences of the event via public web channels, including blogs, photo sharing, social bookmarking, Twitter, wikis, etc. This encouragement to share is a deliberate change from the "off-the-record by default" and "no recordings" rules at many invite-only participant driven conferences. It also turns a physical, face-to-face event into a 'hybrid event', which enables remote online engagement with BarCamp participants.

It is possible to find examples in the Clusters, as Hamburg-Aviation and Lifestyle & Design. In both cases, BarCamp methodology – no speakers, no fixed agenda, no seating – is used to find new collaborative innovation projects, resources, etc.

Testing Centres

Clusters should define, in cooperation with the sectorial technological centres, the set-up and operation of testing centres, adequate to the sector needs, to test and validate new and innovative products, services and/or processes. This would help the technical area of services provided to members. Normally SMEs and also large companies are very attracted by technical innovations, especially if these are able to provide concrete business opportunities. It is known that the provision of product/process testing service work as the entry level for the provision of more complex R&D opportunities at a later stage. This is why testing and R&D are key priorities for cluster organisations.

In some Clusters facilities can be found in the associated technological centres, in some others not. In any case, a service facilitating this application, not necessarily linked to new infrastructures, is an option to complement 'structuring projects'.

Example for a successful transfer in terms of joint R&D and testing

ZAL, the Centre of Applied Aeronautical Research in Hamburg-Aviation, is a good example: it networks major corporations in the industry, small and medium-sized businesses, and the academic and scientific world. ZAL groups the industry and the academic world, networks their capabilities, initiating joint projects and translating new technologies into innovative products.

It is also a good example of how all these 'services' are interconnected and have the same strategic approach: internationalization, BarCamp, Testing Centres, Campus, skills sharing, etc., are ways to help companies to structure innovation projects.

The effective impact of ZAL in R&D and innovation lays mainly in the possibility to join under the same roof big players of aviation sector, like Airbus and Lufthansa Technik and the small actors of their supply chain, directly involved in the realisation of the innovative installations conceived for cabin interiors. This is an effective example of joint implementation of innovation projects. This model is very ideal, and sometimes difficult to replicate due to the need for high public investments in infrastructures.

Textile Campus

There is a need to study the possibility to integrate the different actors present in the innovation eco-system in a campus fully oriented to the companies. As an example, in Valencia, the Polytechnic University, AITEX and CEEI in Alcoi, ATEVAL in Ontinyent, etc.

Skills sharing

Additionally, a highly strategic service to be adopted can be the promotion and the subsequent contract of knowledgeable staff, better if on a part-time basis, to be shared by more than one SME lacking of specific competences in technological and marketing areas.

This service can be considered as the first step to finalise a full time contract for the skilled staff, overcoming the temporary service provision.

Clusters are advised to become responsible for the definition of the skills and competences needed by the companies, for the contracting process and for their constant monitoring, follow-up and evaluation.

Example for a successful transfer in terms of skills sharing

Pole Textile Alsace is very active in terms of training and capacity building. The skills sharing is here active with a programme consisting of 3 skilled young graduates: one textile engineer, one sustainable developer and one web marketing professional. The experts are hired by the Textile Pole and are shared among 3 different companies for 1 year, under strict privacy and non-disclosure clauses. The companies benefit from the work of the 3 experts, present on a part time basis at a much reduced price, creating considerable added value for their competitiveness.

Chapter 5 – New portfolios of services

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The new portfolios

The core of CLUSTEM initiative is undoubtedly the definition of new services or, as an alternative, the substantial improvements to existing one.

The final period of CLUSTEM project was devoted to the definition and selection of most strategic new services for clusters members and most valuable sources/inputs for their definition.

In this case, the definition of new services is fundamentally nurtured by the benchmarking results, the training activities outcomes, the ECEI methodology implemented, the recommendation plan following the training, the visits to the gold clusters and the transfer of their good practices.

A dedicated methodology for the definition of new quality services for cluster members was defined. The project worked through a “brainstorming” method, producing a shortlist of 20 new possible services for cluster members. Based on previous experiences it was decided to set up a specific questionnaire to investigate among clustered companies what top quality services could raise the highest interest and produce the best benefits. The questionnaire can also function as the base for the development of a SWOT analysis useful to individuate the best offer of services. As it was agreed to keep the questionnaire as simple as possible, reducing the number of services that companies can judge to maximum 10, the list of 20 new services was reduced by the project team in order to assess the best 10 to be included in the questionnaire. The ten most relevant services were identified this way by the project team.

The following sections contain a schematic representation of the new services proposed by the four cluster organizations to the associates.

OTIR 2020

Services already in place

- 1 Technological audits of SMEs of the fashion value chain to detect specific needs, particularly in terms of innovation and technological transfer
- 2 Matchmaking actions in the field of R2B, B2B, F2B (Research to business, Business to business, Finance to business)
- 3 Support in participation to funding programmes for RD and innovation, available at European, national and regional level
- 4 Provision of lab services and testing
- 5 Organisation of events and marketing activities (newsletters, publications, etc.)
- 6 Training for Fashion value chain managers, technicians, operators
- 7 Other support for business development and competitiveness

New services to introduce

- 8 International commercial intelligence (training and consultancy programme to better perform market intelligence and scout business opportunities)
- 9 Cross-sector business opportunities and matchmaking events - Visits to world class leaders in other sectors

- 10 Community Business Development manager - Having in the organisation a permanent resource dedicated to the relations with the SMEs of the cluster and the provision of dedicated services
- 11 Training to better deal in export and international business relations (IP, patents, branding etc)
- 12 Companies meeting the students - School engagement programme for a better introduction of students at the end of the school into the companies

Description of portfolio services

Identifier	Short description of the service	Targeted company (if applicable)	Methodology	Timing
1	<p>Technological audits of SMEs of the fashion value chain to detect specific needs, particularly in terms of innovation and technological transfer.</p> <p>The service provides:</p> <ul style="list-style-type: none"> → supporting technology transfer process → managing the innovation process for products, technologies, and business models → new ideas generation → instruments and technologies for: innovative design; process efficiency; energy and environmental resources saving 	Companies in need of an external support for innovation process and new ideas and instruments to manage changes in technology and business areas.	The service is provided organizing and managing specific meetings with entrepreneurs or technicians to make technological audits. The service can be provided to companies that are already members of the cluster and to companies that would be potential member of the cluster, <i>for their enrolment</i>	Service already in place
2	<p>Matchmaking actions in the field of R2B, B2B, F2B (Research to business, Business to business, Finance to business).</p> <p>The service provides:</p> <ul style="list-style-type: none"> → organisation of B2B, R2B and B2F Meeting → management of relation between companies and research centres and/or laboratories → organisation of events for knowledge, R&D results and technological transfer 	All companies that are members the cluster	<p>The service is provided organising events with specific thematic of interest for companies belonging to fashion value chain; inviting all members of the Cluster or specific segments by campaign of e-mail (thanks to updating mailing list of member and stakeholder of the cluster).</p> <p>The service can be provided also by personal contacts and tailor-made service</p>	Service already in place
3	<p>Support in participation to funding programmes for RD and innovation, available at European, national and regional level</p> <p>The service provides to companies news and updates about the latest calls and necessary support for participating to a specific call considering administrative and managing aspects and technical aspects</p>	Company ready to undertake an innovation process but in need of financial support	The services is provided updating companies about latest calls for project available, by newsletter, by news on the Web site of the Cluster and by personal contact. The Cluster can individuate and give information about a specific call if a company requests a specific area of investment. When a company request a specific support for participating to a call, an operating team of the cluster follows the process of the application	Service already in place

4	<p>Provision of lab services and testing</p> <p>The service provides:</p> <ul style="list-style-type: none"> → feasibility studies → lab test and experimental activities → consultancy and technical training for new product and / or process developments → management of external relations with research centers and laboratories → products compliance at international level 	<p>Companies in need of in-place-technologies validation and new product or new process technical testing</p>	<p>The service is provided making available lab service and testing facilities from different members organisations of the Cluster</p>	<p>Service already in place</p>
5	<p>Organisation of events and marketing activities (newsletters, publications, etc.)</p> <p>The service consists of the organisation of seminars, conferences, workshops, round tables or focus groups, where very "hot" topics are discussed. Topics are linked to the other areas of intervention, predefined by the other services of the cluster.</p>	<p>Companies in need of better understanding sector trends and phenomena</p>	<p>Organisation of public events (quite usually combined with a matchmaking event)</p>	<p>Service already in place</p>
6	<p>Training for Fashion value chain managers, technicians, operators</p> <p>Organisation, in partnership with other local institutes, of training courses (from short up to 1500 hours in total) for specific and targeted professional profiles, to be adopted by sector companies</p>	<p>Companies in need of new professional profile, with a high level of specialisation, or in need of updating skills of operators in place (long-life learning)</p>	<p>Organisation of public calls for trainees of tailor made service for one company or one group of companies</p>	<p>Service already in place</p>
7	<p>Other support for business development and competitiveness</p> <p>Support services in different areas: marketing, organisation, logistic, administration etc.</p>	<p>Companies in need to improve business their and competitiveness</p>	<p>Tailor-made service</p>	<p>Service already in place</p>
8	<p>International commercial intelligence (training and consultancy programme to better perform market intelligence and scout business opportunities)</p> <p>The service supports companies to individuate information relevant to a company's markets, gathered and analysed specifically for the purpose of accurate and confident decision-making in determining strategy</p>	<p>Companies that are interested to make global their business and want to learn all aspect of new focus-markets</p>	<p>The service can be supplied by different methodologies:</p> <ul style="list-style-type: none"> - training programme during which companies learn how to individuate information about markets-objective, gather and analyse specific data; - consultancy process where external cluster provides information and data required for their global scope 	<p>5-7 months</p>
9	<p>Cross-sector business opportunities and matchmaking events - Visits to world class leaders in other sectors</p> <p>The service supports companies to learn action methodologies, industrial solutions and marketing strategies of companies of other sectors to investigate possibilities of</p>	<p>Companies that look for new product/service/industrial/business solutions and companies that need to build multi-sector partnership to</p>	<p>The service can be supplied by different methodology:</p> <ul style="list-style-type: none"> -organizing matchmaking events opened to companies come from different sectors -organizing a specific programme to know in detail 	<p>3-7 months</p>

	transferring business solution and re-interpreting them for own business area	develop own specific business	the action methodology of world class leaders in other sector, including specific visits to target companies' plants	
10	<p>Community Business Development manager - Having in the organisation a permanent resource dedicated to the relations with the SMEs of the cluster and the provision of dedicated services</p> <p>The community business Development manager is a key profile as he/she allows to animate the community and become a specific reference point for the members, facilitating interpolation between supply and request of companies of the cluster.</p>	All companies that are members the cluster	Community Business Development manager can organize and manage specific visits at companies to keep them engaged and interested to the Cluster and relative services. Community Business Development Manager will put effort into the recruitment of the member of the Cluster to enlarge the Community	10-16 months
11	<p>Training to better deal in export and international business relations (IP, patents, branding etc.)</p> <p>The service supports companies to know or optimize the managements of duties and commitments during a business relationship; in addition the service supports companies to use better patents and branding to take advantage in a global business.</p>	Companies that are interested to make global their business	<p>The service can be supplied:</p> <ul style="list-style-type: none"> → by training programme that clarify export practices and business relations. Training programme could focus on specific markets or international areas (for example China or America) → supporting actively each company in need of a solution for own specific case 	5-7 months
12	<p>Companies meeting the students - School engagement programme for a better introduction of students at the end of the school into the companies</p> <p>The service allows a direct and better link between industry and school. The service can be supplied by making recruitment in secondary schools before the end of last year curricula. Visits to the companies' plants can support students to understand better their future possible jobs and support the school to build training programme more well-fitting for the industrial world</p>	Companies that look for new figures in their plants and offices, with traditional and new competencies and skills	<p>The service can be supplied:</p> <ul style="list-style-type: none"> → organising targeted presentations in secondary schools → organising specific meeting and lessons between students and entrepreneurs or technical specialized → organizing various and different guided visits in companies plants 	0-12 months

Services already in place

- 1 Organisational Needs Analysis/Training Needs Analysis (Business Advice)
- 2 Leadership and Management Training (Level 2 to 5)
- 3 Apprenticeships
- 4 Laboratory
- 5 R&D/Innovation
- 6 Health and Safety Training and Consultancy

New services to introduce

- 7 Support for Export Activities
- 8 Integrating University/Research Centre Expertise
- 9 Better School Engagement Programme
- 10 Monitoring and Brokerage Service

Description of portfolio services

<i>Identifier</i>	<i>Short description of the service</i>	<i>Targeted company (if applicable)</i>	<i>Methodology</i>	<i>Timing</i>
1	The Centre employs industry business and training specialists to help you identify the right support for your staff. Our Business Development team can provide an ONA/TNA assessment in your organisation to help clarify where you are now, where you want to be and how to get there.	All member companies	One to one consultancy plus referral	Ongoing
2	The Centre offers a huge range of benefits and services designed to support professional development and to improve the leadership and management skills of employees working for member companies	Member companies and other local companies	Formal training and assessment in company or at the Centre	Ongoing
3	The apprenticeships programmes are for employed individuals, these include qualifications in business skills, Textile/Apparel manufacturing, warehousing and management. These support members in bringing new people to industry or to help upskill existing staff	Members and other local companies	Formal training and assessment in company or at the Centre	Ongoing
4	The Centre has a fully equipped industry relevant laboratory for all types of fabric, fibre and yarn testing. Companies can hire the whole facility or individual machines to conduct their own testing.	Textile Manufacturing companies and students.	Lab hire and tests by Centre staff	Ongoing

5	<p>The Centre initiates and participates in projects that are relevant to the developing needs of the sector.</p> <p>Projects can be commercial, or supported by local and national economic development agencies and by the European Union. Our team has a strong track record for working with trans-national partnerships and for successful project delivery</p>	Local manufacturing companies/academies/schools	Working with partners to deliver project outcomes	Ongoing
6	The Centre offers site safety audits, occupational health surveillance and noise testing, IOSH & NEBOSH classroom training provision, we cater for most circumstances across manufacturing.	Local manufacturers	In company training or onsite delivery. Onsite services for employers	Ongoing
7	Development of an online learning platform for employers to train staff in export activities, including subjects such as routes to market, branding protection, product placement and export logistics.	Fashion and Textiles Companies	Development, testing and delivery of content.	Ongoing
8	Develop new relationships between industry and higher education and research centres. Coordinating industry development and work collaboratively to secure funding.	Local textile and fashion companies, universities and funding organisations	These relationships will have 3 target areas; Industrial digitalisation, Environmentally friendly production processes and Product and Process Innovation.	Ongoing
9	The Centre will develop better relationships with Schools, increase young people's knowledge of opportunities available and will educate teachers and careers advisors about the sector and the careers available within the cluster.	Teachers, careers advisors and students	<p>Better collaboration with schools.</p> <p>Develop improved resources with clear information on employment opportunities for students.</p> <p>Develop improved resources with clear information on cluster employment opportunities for careers advisors and teachers.</p> <p>Deliver workshops for teaching staff to understand sector/cluster and provide opportunities for cluster visits.</p>	2018 onwards
10	The Centre will provide a 'Cluster Brokerage Information Service' outlining trends, research opportunities, funding streams and partnership projects for cluster organisations.	Textile and fashion companies	The Centre will provide a public procurement service for cluster organisations that monitors	2018 onwards

			opportunities for collaboration. Will develop a system for gathering EOI's	
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ATEVAL

Services already in place

- 1 Management of grants and subsidies
- 2 Market development.
- 3 Commercial promotion and internationalization. Fair service.

New services to introduce

- 4 International commercial intelligence.
- 5 Project information service.
- 6 Training courses on circular design for the definition of sustainable products.
- 7 Scouting and permanent monitoring of Tender pages.

Description of portfolio services

<i>Identifier</i>	<i>Short description of the service</i>	<i>Targeted company (if applicable)</i>	<i>Methodology</i>	<i>Timing</i>
1	<p>Management of grants and subsidies</p> <p>Project detection</p> <p>Development of technical and economic reports</p> <p>Preparation of requests</p> <p>Presentation and management of the application</p> <p>Preparation and monitoring of justifications</p> <p>Tax deductions for R + D + I</p> <p>Management of applications to binding guarantees in the application of tax deductions related to R & D & I and the environment.</p> <p>Study of company accounts</p> <p>Analysis of projects for tax deductions</p> <p>Preparation of reports and requests</p>	All associates	Give information to companies sending them mail and newsletters	When calls arise. Ongoing tax deduction for developing catalogues, investments in machinery and industrial digitalisation 4.0.

	Presentation and management of the application			
2	<p>Market development</p> <p>Assistance and support for the scouting of advanced textile markets. (Fairs, Missions, Grouped participation)</p>	All associated companies	Through the website of ATEVAL: www.ateval.com	On-going services
3	<p>Commercial promotion and internationalization. Fair service.</p> <p>In the domain of internationalization and commercial promotion to associated companies.</p> <ul style="list-style-type: none"> → Commercialisation in foreign markets for ATEVAL associates for home textiles at the state level: grouped fairs, monographic exhibitions, reverse missions → Through ICEX and IVACE International for participation in internationalization actions. → Information and guidance through the dissemination of sectorial reports, bulletins and circulars with specific information on commercial promotion. → Advertising campaign of companies from the textile sector through the web of ATEVAL: www.ateval.com and image promotion for the Spanish textile-home sector in foreign markets through the web: www.hometextilesfromspain.com <p>Support to Fair Participation</p> <ul style="list-style-type: none"> → Manage Internal Commissions of Commercial Promotion → Promotion and Coordination of commercial activities in foreign markets for Valencian textile companies and Spanish home textiles. Direct missions, monographic exhibitions, grouped fairs, sectorial show-rooms, advertising campaigns → Positioning and promotion of the Spanish textile-home sector image in foreign markets → Dissemination of studies, sectorial reports, surveys and conjunctural reports, foreign trade reports → Disseminate information on foreign markets from other sources. 	Exporting SMEs	Through our commercial promotion department. This department organize the calls and the participation of our beneficiary companies at international trade fairs, and also manages the export grants.	Ongoing services.
4	Training and consultancy programme to better perform market intelligence and scout business opportunities.	All associates	Image promotion of the Spanish textile-home sector in foreign markets through the web: www.hometextilesfromspain.com Market knowledge through the permanent management of the flow of information to determine	On-going

			the behaviour of companies and market trends.	
5	Involving SMEs in joint project proposals by regularly informing them about potential open co-operations.	Specific sub-sectors depending on the project	Organisation of public events like seminars, conferences or workshops.	On-going
6	Training courses on circular design for the definition of sustainable products.	Associates, other local companies and students	A way to link innovation processes and eco-friendly production.	Start up in 2018
7	Offers and demands related to the sector coming from public authorities	All associates	The service is provided updating SME's about latest calls for public procurement	When calls are available.

ISIM - Construction Machinery Cluster

Services already in place

- 1 Matchmaking events
- 2 Training programs
- 3 Internship program with Universities
- 4 International Exhibitions participation with companies
- 5 Need Analyses
- 6 Services for Publicity of Cluster Members

New services to introduce

- 7 Commercial Intelligence Consultancy
- 8 Matchmaking Events with cross-sectors
- 9 KAIZEN and 6-Sigma Techniques Consultancy
- 10 Tender Pages
- 11 Porter analysis and Functional analysis

Description of portfolio services

<i>Identifier</i>	<i>Short description of the service</i>	<i>Targeted company (if applicable)</i>	<i>Methodology</i>	<i>Timing</i>
1	Matchmaking event in Brazil-Argentina and Peru with the contractors	Cluster companies to be specifically selected	Work with a Local B2B Events Company in Brazil-Argentina and Peru, Searching & Emailing with the contractors in these countries	May 2018
2	Training program on Commercial Intelligence and KAIZEN for Cluster Members. Companies can find their most potential customers and increase of productivity.	Cluster companies to be specifically selected	Planning the training time, place and trainer. Emailing to the companies about the announcement of the training.	October 2017-still

3	Internship Program with Universities	Cluster companies to be specifically selected	Last-year students of Foreign Trade Department of Cankaya University. Planning the student group with teacher. Preparing the Matchmaking list of student-company. Following the internship program for 6 months.	February –July 2018
4	International Exhibitions participation with companies to Bauma Africa 2018 in Johannesburg South Africa.	Cluster companies to be specifically selected	Taking service for flight ticket, accommodation and organization. Contact with the Commercial Attaché, Governmental Institutions and Associations for planning meetings.	March 2018
5	Need Analyses	All cluster members	Application of Ministry of Economy project for Increasing Competitiveness of the companies .Time plan for Need Analyses visits to companies in the project.	April – July 2018
6	Services for Publicity of Cluster Members to Governmental Institutions	Governmental Institutions Relation Commission of ISIM (6 company from cluster)	Planning the visits and calling the secretariat of the planned institutions. Meeting before the visits about the subject of visit. Planning the matchmaking events with the governmental institutions between cluster members.	12 visits (Each month in 2018)
7	International Commercial Intelligence Consultancy	10 Cluster member company	Planning the Timesheet for the visits by the consultants to 10 company each month, Lists of potential and targeted customers and markets in the World	January-June 2018
8	Matchmaking Events with cross-sectors	All cluster members (144 member company)	Analyses studies and meetings planning for searching the cross-sectors. Planning the matchmaking events with the determined cross-sectors. Questionnaires delivering in order to see the total b2b number.	September 2018
9	KAIZEN and 6-Sigma Techniques Consultancy	10 Cluster member company	Planning the visit times to the companies by Kaizen Institution of Turkey. 6 months consultancy program content planning. Evaluation reports demand from companies.	July-December 2018
10	Scouting and permanent monitoring of Tender pages	All cluster members (144 member company)	Searching a IT company and making a service contract with them. Visiting the public bodies in order to make a protocol for the page. A person will be hired for following and publishing the Offers and demands related	October 2018

			to the sector coming from public authorities	
11	Porter analysis and Functional analysis	All cluster members (144 member company)	Implementation of the methodology to define a new strategy for your company business that we had trained in Barcelona under Clustem project. Planning the timeline for the companies for this analyses. Developing Implementation and Monitoring & Evaluation standards.	2018-2020

Special focus: the UK textile cluster (TCOE) in the economy scenario of next 10 years

The UK sector's economic forecast suggests that:

- growth in the technical textiles sector (in the UK that includes load bearing webbings and belts, harness assemblies, and medical textiles such as bandages or implants) is likely to continue as funding continues to be invested in product innovation;
- increasing costs in competing countries (associated with labour, energy, transport) mean that reasons to source outside of the UK are weakening;
- the reasons for sourcing within the UK are strengthening, due to increased customer demands for shorter lead times and genuine British products;
- the primary barrier to growth will be the sector's ageing workforce creating an endemic skills shortage, coupled with a negative image for potential new workforce entrants;
- textile firms are diversifying into higher value opportunities including technical and functional textiles and increasing the production of luxury goods. Investment in innovation is seen as a key factor in the industry's future.

While the potential for UK textiles manufacture is unquestionable, other countries are pushing for dominance in the higher value markets too. For example, China is expected to account for 44% of the global luxury goods market by 2020. The challenges of Brexit will unquestionably have a serious impact on the sector. Companies will be likely to face renewed skill shortages if restrictions are placed on EU workers, the introduction of tariffs and NTBs will change the dynamics of the sector's main customer base and new markets will have to be identified and developed. The other significant influence will be how effectively the sector adopts the use of industrial digitalisation technologies, one area where there is likely to be significant government investment. .

The specific characteristics and opportunities in the UK textiles sector create an excellent prospect for the application of digital technologies for value creation in the sector. Technical textiles open up new market opportunities for an innovation rich UK textiles sector. Materials and process modelling and digitised process control and verification could enable rapid growth of the sector with shorter supply chains and faster response. At the same time, provenance of textiles is of increasing importance to consumers with respect to ethics of supply and also marketing built on UK source and branding. Digital traceability of raw material through to finished and supplied

product will enhance product value for UK made fabric and products and open up opportunities for the UK textiles supply chain.

However, some of the older textile companies might resist such changes, and would be unlikely to succeed in implementing digitalisation unless they have the necessary skills to see the integration of IDTs through.

Adaptation and adjustments of current clusters

The Cluster's services must adapt to assist companies to meet the challenges of the future. Forecasting change, illustrating how new approaches, particularly utilising IDTs can be identified and integrated into existing operations with minimal risk will be important adaptations. Developing and supporting new skills initiatives from creating new relationships between the industry and schools to developing the skills to open up new markets will also be key in order to create the skills base of the future. Increased focus on driving investment in product and process innovation will also be important to ensure the sector's future in an ever more competitive global manufacturing environment.

Recommendations for sustaining SMEs competitiveness through cluster's tools and practices.

The competitiveness of the sector's SMEs will be best supported where the cluster can:

- Create a network to share best practice and solve common problems
- Provide access to business excellence, skills and training
- Drive innovation and the adoption of new technologies & processes
- Create a focal point for collaborative projects and access to funding
- Provide a voice for the sector and an interface with Government bodies
- Promote the sector locally, regionally, nationally and internationally
- Align to regional and national strategic objectives (e.g. Re-shoring)

Alongside the existing range of services around the development of new skills initiatives the cluster's role will be need to develop to advise and support companies through the challenges and opportunities associated with leaving the European Union's Single Market and Customs Union.

CHAPTER 6 – CLUSTERS AT THE FOREFRONT OF STRATEGIC DEVELOPMENT

Henri Varlet - European Foundation for Cluster Excellence, Spain



Talent-intensive, innovative, internationally competitive companies are key to sustain the growth of any developing or developed economy. As statistics consistently show, today most companies of this type are rooted in powerful industrial clusters, also sometimes referred to as economic and Porterian clusters. Clearly, clusters appear fundamental in the way they structure and orient the global race to competitiveness, affecting in direction and volume the influxes of capital, assets and workers worldwide.

This explains why - if they want to remain pertinent - countries, regions or metropolitan areas need to implement effective cluster strategy, building on existing or potential strengths. Over the last decade more and more governments realized the responsibility they had in supporting cluster growth, responding the challenges and seizing the opportunities laying in the implementation of a cluster-based economic strategy. As it appears, clusters are at the forefront of economic development: they may well be the most efficient tool to maximize long-term success when it comes to bring competitiveness forward.

Clusters: what they are and why they matter

Since the nineties, much has been written about the concept of "cluster": it has been analyzed and applied in extremely varied contexts and for very heterogeneous objectives. As the cluster approach made its way into economic decision-makers' mind we saw the emergence of multiple interpretations of the concept of "cluster" bringing its different variants: Economic Cluster, Industrial District, Competitiveness Cluster, Local Productive System, Regional Innovation System, etc.

More often than not, professional began translating the word "cluster" according to the context in which it was pronounced: the word can indeed refer to territorial spaces, to the legal organization that has been created to represent the shared interests of local economic agents, or to projects funded to improve the competitiveness and performance of the local business community.

What is the correct definition of the economic aggregate known as the "cluster"? What are we talking about when we talk about clusters? A correct understanding of the terminology is necessary: it is only if they properly circumscribe the tool that practitioners in economic development may be able to define effective cluster-based competitiveness policies in a sustainable perspective.

Cluster: a definition

The cluster as an ecosystem: a spontaneous territorial and socio-economic reality

The concept of cluster as a space, or socio-economic territory, is not new. British economist Alfred Marshall formalized the concept for the first time in 1890 under the expression "Industrial Districts". Marshall observed that synergies were being established between the manufacturers of the districts and that a specific "industrial atmosphere" was stimulating innovation locally. Thus, it appeared that the agglomeration of enterprises in a given physical space produced more than the simple sum of its parts: specialization, increasing productivity, professionalization of the workforce, scientific and

technological advances. The positive effects induced from such districts were for the first time isolated and recognized. Throughout the 20th century, the concept of cluster was further refined and continued to be the subject of numerous complementary analyzes - the work of Professor Becattini of the University of Florence in Italy is therefore a reference in this field.

Nevertheless, it is in 1990, with the publication of "The competitive advantage of the nations", the seminal work of Michael Porter, that the concept acquired its final and most complete form. For the Harvard Business School professor and future Director of the Institute for Strategy and Competitiveness, one must understand "cluster" as the concentration of companies, institutions and other economic agents, dedicated to the same field of specific activity in a given territory. In terms of perimeter the Porterian definition considers as "cluster agents" all the companies and institutions that are somehow linked to the studied business, i.e. all the economic players positioned on a link or another of the value chain they share.

A few years later Porter will confirm his initial definition of the cluster in his book "On Competition" published in 1998.

A cluster is:

"A community of interrelated companies and supporting institutions working in the same industry and geographically concentrated"

Michael F. Porter. On Competition

Thus a cluster, taken in its multiple socio-economic realities, develops like an ecosystem, i.e. almost always in a spontaneous way, around a historical know-how or a patiently consolidated competitive advantage. It is precisely the existence of this know-how, this specialization, combined with synergies, that makes the cluster an extremely relevant tool for economic development: through a cluster it is possible to reinforce the local economy. By understanding the cluster's levers (its strengths) and capitalizing on them, one can increase the prosperity of local companies and ultimately of the local population.

The "cluster" as a work program from the public authority: the cluster initiative

Since Porter, many governments have understood the importance of clusters as a tool for structuring local economies (and beyond: regional, national or international). This is the case in the Basque Country and in Catalonia, where autonomous governments committed themselves as off 1991 to strategic efforts to boost competitiveness by focusing on local clusters. The basic idea: powerful and healthy clusters are the guarantee of a strong and healthy economy.

A Cluster Initiative is:

"A collective, coordinated and organized effort to support the growth and competitiveness of a cluster in a given region, involving cluster companies, governments and / or the research community. "

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Quickly - and whether in developed or developing countries, in rural or urban economies - came the idea of organizing public action to support and improve clusters.

When we are faced with this type of proactive intervention, for the sake of semantic clarity, more than a cluster, we should speak of Cluster Program, Cluster Policy or Cluster Initiative. It is a concrete and coordinated effort between companies and public institutions aimed at improving the situation of SMEs and supporting the business environment of a cluster. Like any other policy instrument, the implementation of a Cluster Initiative has a beginning and an end. But the end of the Cluster Initiative does not equate the end of the cluster as a territorial reality.

While all cluster initiatives aim to improve the competitiveness of cluster agents - in order to create wealth and employment in the region - their lines of action can greatly vary. Some programs may focus on R & D, while others may prioritize innovation, internationalization or a more aggressive positioning of SMEs. What is essential is the coherence between the objectives of the program and the roadmap deployed to achieve it.

The cluster as an organizational and legal structure: the cluster organization

Given the potentially high number of companies and institutions that make up a cluster (their "critical mass" can easily exceed 100 units), it is often useful when deploying a cluster program to set up a coordinating entity: A Cluster Organization or Cluster Association. The creation of such body generally facilitates governance and management of the related projects, makes it possible to capture resources coming from various financial partners, to host the manager and the team in charge of animating the cluster, to coordinate the contact with public institutions, etc.

When setting-up this type of structure, one must ensure that it is representative of the territory and of the value chain considered, that it reflects and accompanies the evolution of the "natural cluster". It should never degenerate into a sort of "Private Club" reserved to only a few if the cluster's agents, nor fall into a static vision of the members it represents.

« Take good care not to confuse the cluster with the Cluster Association created to coordinate collaborations and deliver synergies among its members. »

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The existence alone of a Cluster Association does not automatically imply the continuity or the good development of the cluster as a territorial reality and economic aggregate: most clusters are born without Association and it is a question of strategic vision from the Association team to turn their support into a meaningful and impacting mechanism. To sum it up, a Cluster Association is not to be confused with "the" cluster it helps. The Cluster Association must be understood as an (essential in many cases) institution among all the agents forming the cluster. It is a sub-part of the "natural cluster".

Clusters as levers for economic development: why cluster-based economic policies are growing globally

Clusters are thus important to support the competitiveness of a given territory and the prosperity of its inhabitants. A cluster offers the unique ability to interact on the competitive advantages or economic specialization of a geographical area. It provides a framework of analysis and an econometric unit not only grounded in the reality of the field (the "terroir") but also ideally sized to fund public action of economic development: neither too granular nor too vast.

Through a Cluster Program it is possible to exert leverage acting along two levels:

- At company level: identification of appropriate strategies to address the advanced demand from the market;
- At business environment level: alignment of support entities according to the needs of companies, and possible adaptation of public policies.

It is the capacity to generate this double driving force that has convinced federal and regional governments around the world facing common challenges in economic development. From Norway to Tunisia, from Palestine to Turkey, from Mexico to Brazil, from Kazakhstan to Morocco, via Bulgaria, Chile, Denmark, France, Ireland, Italy, Lebanon, Portugal, or Haiti, countries that capitalize on their clusters to promote employment and increase the standards of living of their citizens are now uncountable.

« Beyond the sole economic mechanisms, the wealth of a cluster comes from the men and women who make it live. Trust is the essential ingredient of any cluster. »

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Finally, let us not forget that clusters also make it possible to deal with economic issues by mobilizing the human component - entrepreneurs, researchers, political decision-makers – that is at the center of territorial dynamics. It is this incessant dialogue in « triple helix² » allowed by the cluster that makes it a strong and yet nimble instrument to support local and regional competitiveness.

Trust between the various professionals who compose it is not an accessory of the cluster: it is the heart of it. Knowing each other and meeting regularly, in order to understand how to compete on certain subjects and to collaborate on others, is definitely a prerequisite for a cluster to continue its evolution in an upward perspective: towards ever more innovation and job creation.

Example of the LEATHER cluster of Igualada, catalonia, Spain



Historical legacy

Challenges and hopes

Back in the 1950s there were 268 companies and 1000 professionals working in the tanning sector of Igualada – a medium-sized industrial city of 30.000 inhabitants located at 60 km west of

² Etzkowitz (1993) et Etzkowitz and Leydesdorff (1995)

Barcelona. Tanning and leather work had been traditional activities in the city for more than seven centuries. Today in the same district, only 28 of them remain, still employing 800 people directly, and 1.200 indirectly. Indeed, by the mid 1970s under the twofold impact of Spain's market opening to the rest of Europe and the progressive dismantlement of public subsidies, the new rules of the game compelled many local firms to shut down, making their labor-force redundant. By 2000 Igualada was the city of Catalonia with the highest unemployment rate.

Notwithstanding, getting used to fight the crisis, and obliged to deploy smarter strategies, local leather companies started to find worthwhile niche markets. But what was instrumental in their search for enhanced competitiveness and what allowed them to collectively overcome their most serious threats definitely is the launch of a cluster initiative in 1994, resulting into the creation of a cluster organization: as one of the local entrepreneur recalls, "When Igualada was mono-product everyone was competing with each other and nobody showed their cards. But with smarter specialization, the companies began to be opened to collaboration".

Building-up new capacities

Back in 1993 Igualada presented a series of negative signs promising a dark future for the cluster, mainly: a) not meeting the European Commission environmental regulations and b) losing the traditional clients in the shoe industry gained by low-wage labor-force countries from Asia: Bangladesh, Pakistan and China.

Under the impulsion of the Catalan Ministry of Industry and Trade, a cluster initiative was undertaken in 1994: a six-month effort bridging all agents in the cluster (entrepreneurs, services providers, R&D laboratories, public institutions etc.) and involving a highly structured strategic approach combining analytical tasks and field-oriented work too.

20 years later the cluster has reinvented itself, with a 3.000 square meter technology center, that now certifies their products for luxury upholstery in cars and aircraft. The cluster leather companies now fulfill all EC environmental regulations, thanks to a joint waste water treatment plant of 17M US\$, financed with a 25% direct investment from the tanneries, and the rest financed through private bank loans.

Today the leather cluster of Igualada has turned into one of the main suppliers of leather for luxury leather goods: a handbag, a purse and other accessories from Hermès, Loewe, Celine, Vuitton, Gucci, Dior, Fendi, Todd's or Prada are likely to have been made with skin treated in Igualada. The cluster's quality leather is now globally recognized by high-end clients, even if the general public is not often aware of this.

Defining the strategy: process and steps

To achieve this spectacular turnaround, the cluster initiative was instrumental as it helped deploy a 10-step strategy which major steps can be summarized as follows.

Strategic segmentation

Strategic segmentation is the first and probably most important step when formulating a cluster strategy. This exercise consists of analyzing an industry from a global point of view and try to identify the different ways to compete in it. The most efficient way to perform strategic segmentation is to

organize one’s reflection with the help of a matrix the two axes of which are a) Products and Services and b) Users and Markets.

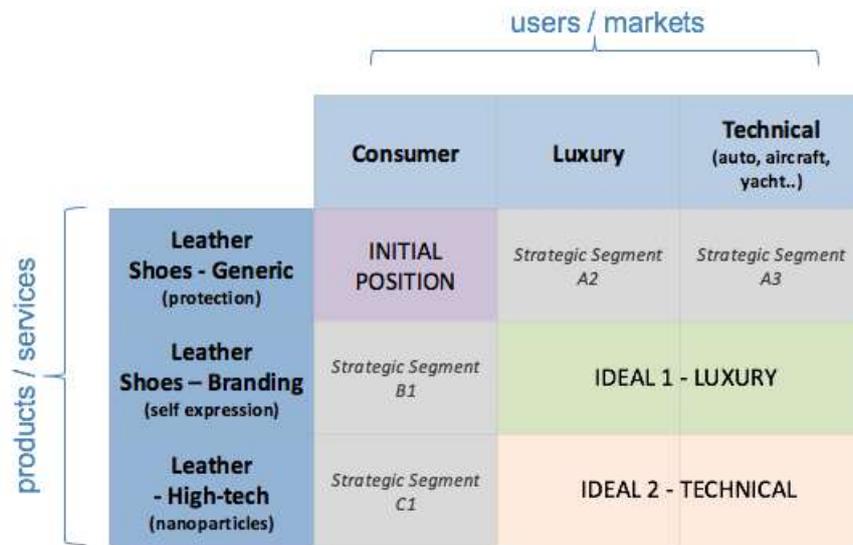


Figure 1. Strategic segmentation for the leather industry

The analysis for the leather industry demonstrated that the cluster could compete 3 different ways:

- ✓ Producing leather for shoes (generic leather); this is the positioning the cluster had at the time of the analysis (segment “Initial position”)
- ✓ Producing leather for the luxury sector, whether in fashion (shoes, bags, purses, accessories, etc.) or in transport and automotive (upholstery, seats etc. for segment “Ideal 1”)
- ✓ Producing quality AND technical leather for high-tech clients (segment “Ideal 2”)

Five Forces analysis

The Five Forces analysis is a tool developed by Michael Porter which proposition is to pinpoint the different types of pressures affecting the competitive position of a company within a given industry.

The strength or fragility of the competitive position is assessed according to 4 main “forces”:

- a) the Barriers to Entry (or whether it is difficult for new entrants to start a doing business in the studied industry),
- b) the Substitutes (or whether a certain product is jeopardized by the existence and availability of others meeting the same needs),
- c) the bargaining power of the Suppliers, and
- d) the bargaining power of Clients. The 5th force – the intensity of Rivalry among firms – is resulting from the play of the first four.

If we apply this framework to understand Igualada’s leather cluster initial positioning (generic leather for shoes) we obtain the following figure.

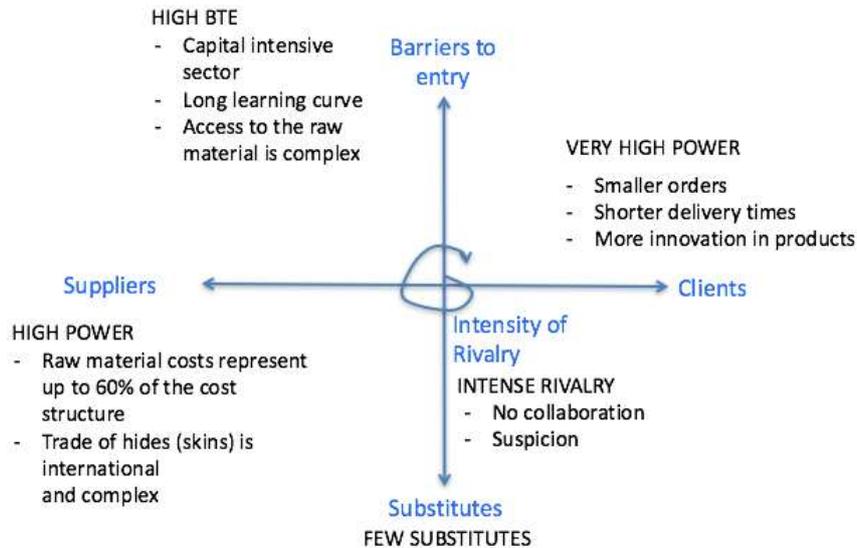


Figure 2. Porter's 5 Forces analysis for the "leather for shoes" (purple) segment

We soon realize that the cluster was positioned on a business where margins were thin and where no competitive advantage could be developed. Applying the same thinking process to analyze "Ideal Segment 1" and "Ideal Segment 2", we would see that the play of the 5 Forces on these two other segments would be much more favorable to the local leather firms. The main reasons being that a) Suppliers would look for long-term relationships with Igualada's companies and thus would exert less pressure on them, and b) Clients looking for the highest quality / technicality would at their turn exert less pressure on the Catalan leather firms in order to secure their demanding procurement.

Benchmarking trip & Value Chain improvement

The cluster initiative team organized a quick trip to the city of Arzignano, an industrial commune in the province of Vicenza, Veneto, Italy. Leather tanners from Arzignano were famous for the high-end quality of their products combined with a flexibility that allowed them to meet the needs of demanding clients almost on-demand.

From the benchmarking trip the team came back with a clear vision of the parts of the value chain that the tanners in Igualada should modify if they wanted to follow the same path of excellence than their Italian counterparts. The fruit of this benchmarking work is illustrated as follows, where the "Ideal" value chain is inspired by Arzignano and "Today" value chain is how the Catalan tanners used to produce to date.

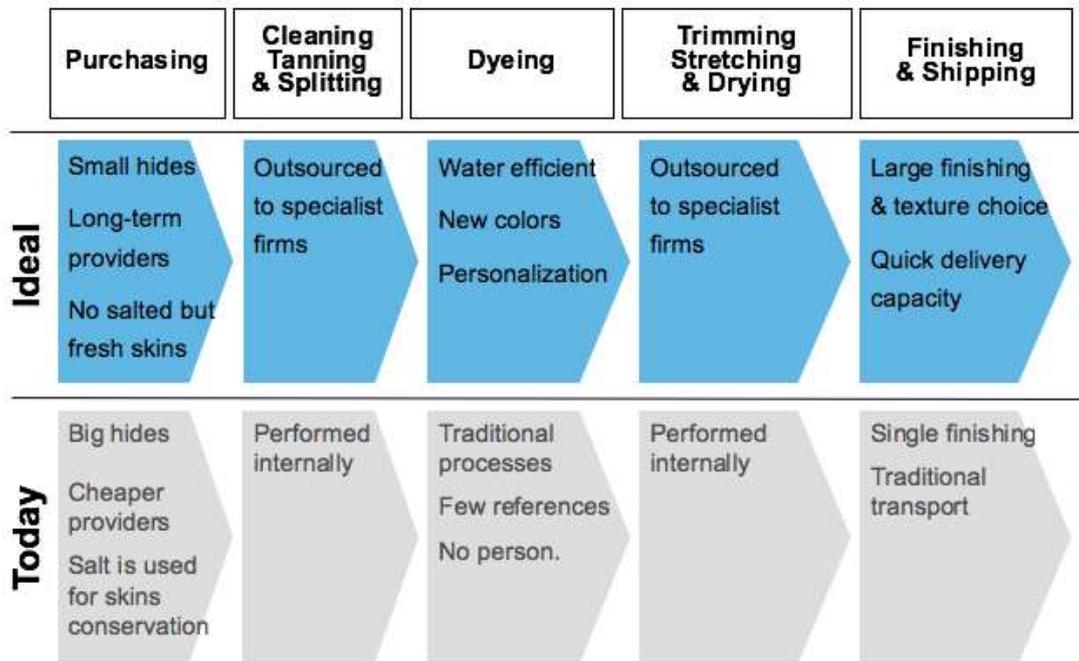


Figure 3. Benchmarking of the ideal value chain versus the current value chain

Actions implemented

Final action plan for the leather tanning cluster initiative was based on the strategic repositioning of local firms on luxury and technicity. It also combined long-term high investment actions with shorter-term affordable actions. When it comes to long-term, it was decided to set-up a 17M US\$ waste water treatment plant that took 10 years to finance and build. Conversely, it was also decided to champion the development of a technology center that was accomplished in stages, the first one in less than a year.

New strategic positioning: from traditional to luxury and technical

The cluster moved forward its traditional core activities, taking into account the latest market trends and putting some distance with respect to low-cost competitors. This is how tanners from Igualada, from 2005 on, made a successful move from the generic production of un-differentiated shoe soles to a new market of high quality leather products sold to clients of the luxury and high-tech market.

The cluster's new business model was based on quality, design, close relationship with the customer, service and speed. The Catalan model provides added value, which became the only way to remain competitive in Europe. As high quality brands, such as Loewe, Vuitton or Dior were increasingly looking for unparalleled quality and highly technicity, the leather products from Igualada earned recognition of excellence by these latter. As an example, in the wake of the cluster's new positioning, Vuitton decided to double its production unit in Barberá Del Vallés, a location 50 km away from Igualada.

R&D policy and professional training

New skills, new innovative capacities were sought after and developed.

It was first decided to move the existing academic bodies and professors specialized in leather and tanning techniques from Barcelona to Igualada. Moreover, a Chair in Leather Innovation was created in Igualada at the Technical University of Catalonia through a joint agreement of the municipality of Igualada, the Technical School Consortium (CETI), the Association for Research on the Leather Industry (AIIICA) and the Spanish Chemical association of the Leather Industry. The objective was to help promoting Igualada as an international research center on leather.

Among its first projects, the Chair provided training to the designers from the Carolina Herrera Group and initiated projects to develop specially treated leather materials for specific uses, such as cinemas or buses seats.

Sustainability

Over the last 20 years, Igualada's tanning cluster heavily invested to create a sustainable industry which would fully respect the strictest environment regulations. The construction of the new water treatment plant helped firms optimize the amount of chemical products used. It also reduced their production costs – saving energy through a system of pay-per-use - and allowed them to redirect resources to new areas of business.

Plans for saving water were implemented and the best available clean technologies applied to manufacturing processes. Skins began to be sourced locally from trusted long-term providers allowing to reduce transport times (hence, causing fewer defects in the skins) and making it possible to use fresh skins instead of salted skins, known for their high contaminating impact on rejected waters.

Finally, local firms coordinated efforts to minimize waste while recycling by-products and through the promotion and development of precise tooling that would optimize cuts and decrease default rates.

INSPIRING outcomes FROM the LEather cluster

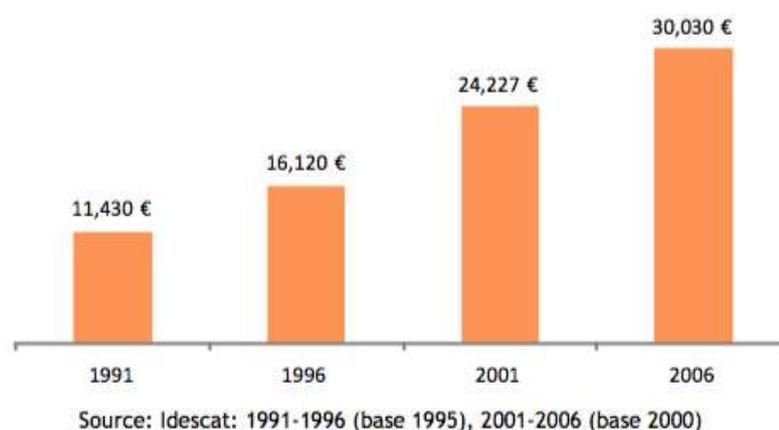


Figure 4. GDP per capita in Igualada 1991-2006

Towards smarter ways to do business

A shared vision and trust allowed a successful private-public dialogue

During the crisis years many people thought that Igualada had to become a service oriented city. However, from the cluster organization's point of view there could not be good services without a good industry. The firm belief that industry should be the cornerstone of the city's economic recovery was conducive to the cluster's achievements.

Until 2011, the number of tanneries in Igualada declined slightly. But overall, both production and annual turnover increased. Today, most companies in the cluster are selling to high-end clients such as Louis Vuitton or Versace. Most businesses are family-owned and some of them exclusively focus on exports.

Equally important in the process of developing the new business model was the fact that local companies developed strong relationships based on trust and common strategic interests (the wastewater treatment plant). This new serene and constructive mindset was probably the most remarkable success factor for the cluster initiative that was carried-out in Igualada.

Towards a more circular economy

In 2016 the Leather Cluster Organization – in coordination with the regional Business Union – launched a program oriented at introducing principles of the circular economy into the cluster's manufacturing processes. The program involved a working group of experts in the field whose objective was to help the firms from the cluster make progress towards even more sustainable and environmentally advanced business models.

Comprising representatives from paper, chemical, tanning and textile companies, environmental consultancies and the School of Engineering of Igualada (SEI), the working group began analyzing the waste generated by the companies in the region and assess the possibilities of reuse.

An expert in chemical engineering from the SEI was appointed responsible for visiting the industries and extracting the necessary data for the project. His mission was to analyze the information, develop a large database of the types of waste - acids, paper cuts, varnishes, ashes, polyethylene, etc. - and evaluate if other local companies could give them a second life through their reintegration into their production line.

If successful, the findings of the working group would allow some companies to reduce the amount of waste they send to the landfill, while they would allow others to reduce the amount of raw material they need. A great illustration of the cradle-to-cradle philosophy.

Example of the mutation of a best-practice company from Igualada

Founded in 1889, Curtidos Badia S.A. can be described as a best-practice company from the tanning cluster of Igualada. The production unit initially specialized in leather for shoe soles using a process based on vegetable extracts.

In the 1950s chrome tanning began to take-off and Curtidos Badia was among the first companies in Spain to master the new technique. Later in the mid 1980s, with the rise of EU's common market, Badia started to be seriously challenged by Italians importations. They had no choice but to reinvent themselves.

The company gradually went to high-quality leather goods and finally left its low-end footwear activities. A historic supporter of the cluster initiative, and a strong believer in the strategy that was set-up at the end, its CEO successfully managed the business turnaround. Curtidos Badia is now positioned as one of the largest and most important suppliers of luxury leather goods from Spain.



The following figure summarizes the company's main data before and after completion of its strategic repositioning.

	2003	2015
Main strategy	Volume & price	Quality
Product mix	Footwear 60%, fashion accessories 40%	Luxury handbags and purses 70%, fine travel and horse-riding equipment 30%
Skin providers	National providers of large-sized skins from mass cattle farming	Worldwide providers of small-sized skins from open range farming
Employees	10-49	100-149
Turnover	€ 3 millions	€ 54 millions
Markets	200 clients in Spain, 2 clients in France	85% of the production is exported to France, Italy, UK, Germany
Sales growth	-0,5%	+35%
Number of offices & facilities	Spain	Spain, Portugal, Italy, France, Belgium, Germany, UK, China

CHAPTER 7 – FINAL CONSIDERATIONS & PROSPECTIVE

Henri Varlet - European Foundation for Cluster Excellence, Spain



Clusters are a key component of the world's governments policies for innovation and skill development. Clusters appear as a catalyst for positive change as they can precisely channel and optimize public investments to promote collaboration between private companies, universities, and the various governmental layers. It is expected that the collaborative momentum driven by clusters will keep on fostering more innovation that will move along the value chain: from research to commercialization and after-sale services.

In this regards, because the world's economy is increasingly rhythmmed by shorter business models and heavily relies on technology-intensive industrial disruptions, in a 10-year time clusters should be more important – more needed - than ever. They will be the place - the forum – where new ideas collide, where (seed) funding can be found and where innovators and their future teams can meet. As to cluster organizations they will have the essential task to orchestrate this creative chaos into a meaningful and sustainable march.

Clusters in TOMORROW's economy – a 10-year prospective attempt

Mobilis in mobile³: clusters' main role will be to sustain adaptation and champion evolution in an ever-changing economy

Policy areas where clusters can make a difference

Lobbying and creating fruitful dialogue among industry, the scientific community and government authorities is a traditional but nonetheless critical “raison d'être” of any cluster.

This explains why historically many cluster organizations were set-up to sustain and coordinate the triple-helix dynamics. This is for example the case for the Öresund IT Academy (covering the Öresund area between Copenhagen, Denmark and Malmö, Lund, Sweden). It was set-up to reduce administrative hurdles and allow the alliance of the IT micro-clusters scattered across the Öresund Strait.

The three main policy areas that clusters should keep-on building on are: a) Regional and SME, b) Investment attraction and c) Science & innovation (see figure below). This threefold involvement will remain all the more important in a 10-year horizon as quick response and agility will increasingly discriminate winning clusters from the ones lagging behind.

³ Latin for “staying mobile inside the movement itself”

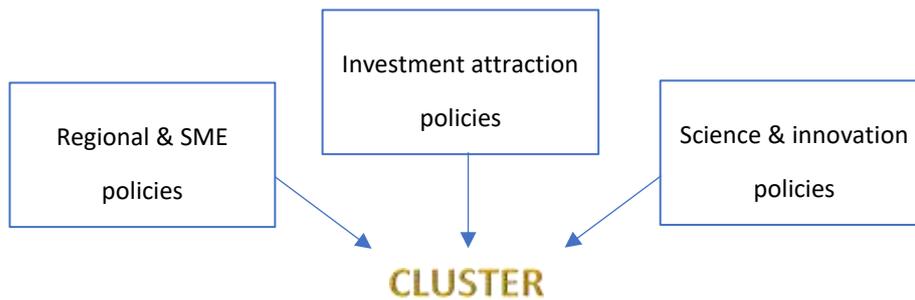


Figure 5. The three policy areas of a cluster organization

Beyond economic policies: the responsibility to maintain a whole ecosystem alive

In a time when private businesses can impact the global economic balance as profoundly as governments used to do until a recent past, beyond managing the various aspects of public policies, cluster organizations should set to themselves a broader range of dimensions to fine-tune (see Figure 3 below).

Research and networking – In addition of information gathering, publishing cluster reports, sharing information through seminars, inviting speakers, networking is a central duty for cluster organizations.

Commercial cooperation - Commercial cooperation involves a number of objectives, such as joint purchasing, business assistance, market intelligence, export promotion and representation of the cluster at trade fairs.

Education and training - Education and training involves both workforce training and management education.

Innovation and technology - Improved innovation processes and enhance technology. This involves following technical trends, setting technical standards, diffusing new technologies and improving production processes.

Cluster expansion - Promoting a region by enhancing its brand image and fostering foreign investment, incentivizing new companies to open facilities in the cluster is second to none. Cluster organization should always look for maintaining - if not increasing - the critical mass of businesses it comprises. The more a cluster's value chain is covered by complementary firms, the better. Cluster expansion also involves incubator services and the promotion of spin-off firms.

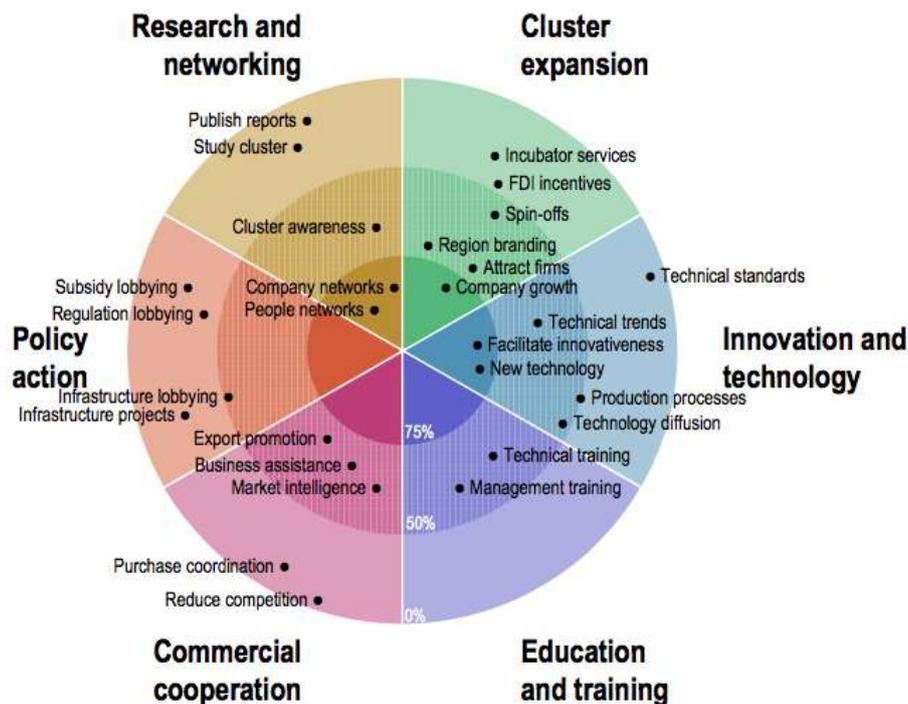


Figure 6. Cluster organization target board

The example of Bologna: from silk to packaging machinery

An example of a cluster recognized for its flexibility and responsiveness across times and that avoided the “lock-in syndrome” is the cluster of Bologna in Italy, one of the most remarkable and deep-rooted clusters in Europe.

Since the 14th century, Bolognese firms were famous for the silk they sold to the doges of Venice or exchanged for spices and salt, and they were also exported to the large international markets, to France, Germany or England. But when the industrial revolution arrived the Bolognese silk industry was faced with changing consumer tastes, higher labour costs, and new production technologies that all led to the contraction of the activity. The result was a profound and prolonged recession.



Nonetheless, today, the Bolognese “Packaging Valley” stands out internationally for its ability to meet the specific needs of manufacturers across the world. Firms in the cluster now design, manufacture, and assemble packaging machinery for a wide range of products from food and beverages to pharmaceuticals and chemicals.

What allowed this successful transition within excellence is the special sensitivity of the Bologna cluster members to the changing market needs, a long tradition of tailor-made solutions towards sophisticated clients, and the customary use of innovative techniques and materials.

The message from Bologna? That vibrant clusters can adapt and learn. They work as ecosystems where different but interdependent players give rise to intertwined entrepreneurial projects. Dynamic clusters thrive if they are made of people with a prepared mind. The most essential role of a cluster organization today may well lie in preparing people’s mind to be forward-looking.

Good practices allowing for a cluster’s adaption and adjustment

Goal setting, monitoring and evaluation

It’s understood, clusters grow and have to change over time. Technological ruptures and market forces constantly alter the perimeter of a given cluster and can even sometimes threaten its existence. It is hence critical to monitor the health of a cluster throughout its lifetime, and to observe the emergence of new areas of strength where it could shine.

However, monitoring clusters and defining success are no easy task because of the multitude of actors and impacting variables involved, the lack of clarity on a cluster’s boundaries, and the necessity of a long-term horizon for evaluation. One can also add that by definition, everything is not quantitative in a cluster: on the contrary many important aspects of a cluster are qualitative and for that matter subjective, hence difficult to assess. The level of interconnectedness among cluster participants - an important measure of success - is a good example of this type of shortcomings.

Appropriate metrics for tracking cluster health will vary for each cluster, depending on its own stage of growth, strengths and weaknesses, as shown in the following figure.

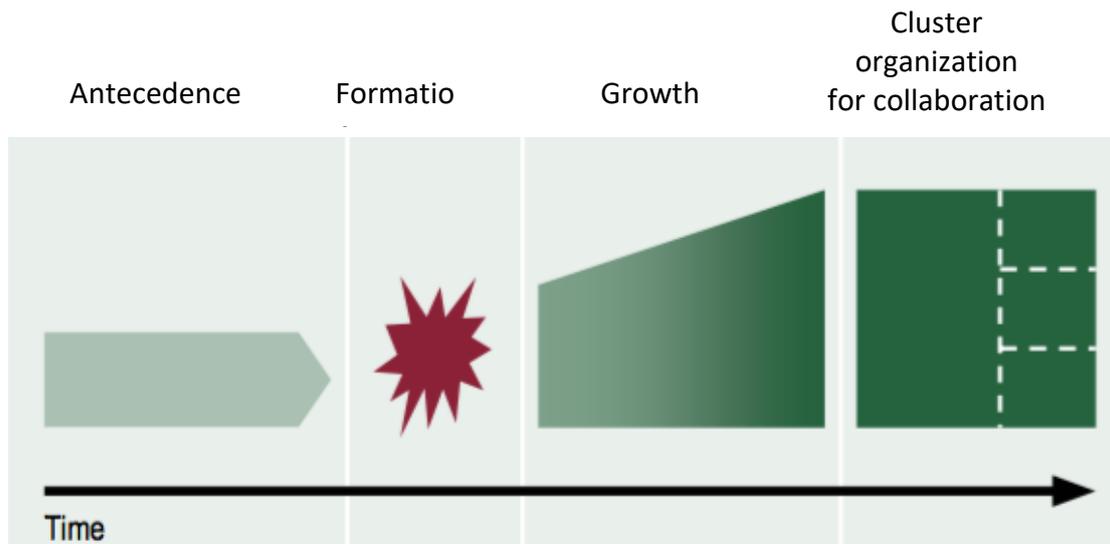


Figure 7. The cluster lifecycle

Metrics could include the number of patents registered, of new companies funded, the amount of capital invested, the part of the firms' overall turnover coming from international markets, the local GDP per capita. Many of these metrics could be challenging to quantify. However, even estimates should shed light on directional changes over time.

Data and analysis to mitigate risk-taking

Sustaining the lifecycle of any cluster means taking risks. Status quo is never a solution for an ambitious cluster in search of better tomorrows.

These risks may mostly happen during two major decision-making events which may involve a dose of uncertainty: a) the decision to modify the strategic positioning of a cluster's firms and b) the decision to fund / invest in a certain type of technology, educational curriculum, expensive equipment etc.

And this uncertainty means significant political risk.

For this reason, cluster managers should be prepared to develop their capacity in rooting important decisions in a solid and structured analytical process. They should get familiar with the use of strategic frameworks, master the art of data-mining and data-analysis. In short, cluster managers should become more than facilitators, strategic guides able to recognize the turning points of a cluster's lifecycle and to seize the potential momentum they can offer to the cluster's firms in terms of long-term and short-term wins too.

Recommendations to sustain SMEs competitiveness through cluster practices

Keep clusters as a focal point for innovation dissemination

Target platform technologies

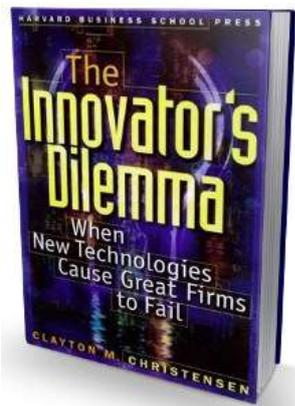
Government plays a critical role in driving innovation. It shapes the policy frameworks within which companies operate, including by setting rules regarding consumer protection, competition, trade, and foreign investment. Most importantly, government helps overcome market failures that would otherwise inhibit the development of strong clusters.

Government can sometimes fill the gaps left by the private sector in early-stage research, commercialization, and access to talent. This is especially true when it comes to “platform” technologies.

Platform technologies (Internet is one of them) are groups of technologies that are used as a base upon which other applications, processes or technologies can be developed. They are used by many sectors, tend to provide increasing value for money over time, and make it easier to invent and produce new products or processes. Since governments are interested in net economic gain over the long-term, they are more willing to invest in the development and commercialization of platform technologies, which can attract private sector collaboration and involvement.

Nourish and lift the innovator’s mindset

Sometimes referred to as Regional Innovation Systems, clusters are a privileged place for fostering, incentivizing and disseminating innovation.



In his seminal publication “The Innovator’s Dilemma”, published in 1997, Professor Clayton M. Christensen explains how new technologies cause great firms to fail and keep SMEs relevant on the global scene.

One of most respected conceptual insights on the nature of innovation, the book demonstrates that innovation comes from the collision of a series of factors: a) the presence of nimble SMEs having to compete with bigger and powerful companies, b) the ongoing flux of people, technologies and ideas in a single place, and c) the constant dialogue and friction between a variety of professionals and experts. It quickly appears that such an environment, depicted as being prone to innovation, exactly looks like a cluster.

Christensen also reminds readers that most innovators present a consistent pattern of actions and that to express his full potential he must have the opportunity to practice and develop at least 5 critical skills:

- INNOVATION SKILL #1 - ASSOCIATING
- INNOVATION SKILL #2 – QUESTIONING
- INNOVATION SKILL #3 – OBSERVING
- INNOVATION SKILL #4 – NETWORKING
- INNOVATION SKILL #5 – EXPERIMENTING

Innovation comes as the sum of individual behaviours in a conducive collective environment through which microeconomic decisions positively impact macro-economy. In this regards, clusters offer the ideal environment where the 5 types of skills listed can be facilitated. Cluster managers have many tools that they can mobilize in order to support innovators, inspire them and make them thrive.

Look for cross-sectoral and inter-regional alliances

Cross-sectoral alliances: the example of FEMAC with SECPHO

Innovation is cross-sectoral by nature and it is often achieved through partnerships and collaborations among sectors that did not know about each other and had previously almost no reason to meet. In tomorrow's innovative economy, the art to find the right technological partners will become a new competitive advantage to develop for every clusters.

The trend is already there, but still, only emerging. It should nonetheless become mainstream in the coming 10 years.

An example of this type of good practice is the partnership that was established in Catalonia between FEMAC, the agricultural machinery cluster of Lleida, with SECPHO, the cluster in photonics and optics based in Barcelona.

FEMAC needed to respond a double challenge: a) reduce the environmental impact of fertilizers poured in the fields (a growing public concern), and b) reduce the costs of fertilizers overuse (a growing complain from the local farmers).

Together the two clusters started working on an advanced optics-based solution able to analyze in real-time the precise quantity of fertilizer that a soil needs combined with a mechanism that would dispense the fertilizer on-site.

Inter-regional alliances: the example of Upper Austria with Styria

Depending on the emerging market a cluster has to explore, the proper experts and partners may be very hard - if not impossible - to find in the same region or country. What is more, in the near future innovative projects are likely to require a more systemic and holistic approach, bringing together a great mix of skills and talents: researchers, programmers, designers, ergonomists, social economists etc. For that matter inter-regional alliances will become mainstream, taking the lead in innovation where just local cross-sectoral partnerships will not be enough.

The "Clean Motion Offensive" program which started in Austria in 2012 might serve as a benchmark to understand how things will work tomorrow. The program aims at developing efficient and market-oriented technologies for electro-mobility and its related infrastructure. The consortium team led by the Automotive Cluster Upper Austria hosts 12 partner companies from the regions of Upper Austria and Styria. It also involves the active participation of the municipalities of Linz and Graz.

Today the alliance can boast about its 19.000 kilometers of tests and its 100.000 hours of joint research. And the Offensive is still on.

Beyond regions: virtual Networks and industry 4.0

Tomorrow's economy will be smart and frugal, giving much more space to collective intelligence and remote collaboration than today.

When assets in a specific domain of expertise are spread across distant locations, it will be important for cluster organizations to develop and work in virtual networks. The success of one geographically concentrated cluster – a traditional cluster – will be augmented through the establishment of extended networks with other well-performing clusters operating in the same sector or in complementary ones.

In such a context, high-speed connections, data sharing, virtual meeting rooms and virtual laboratories will become pervasive and instrumental.

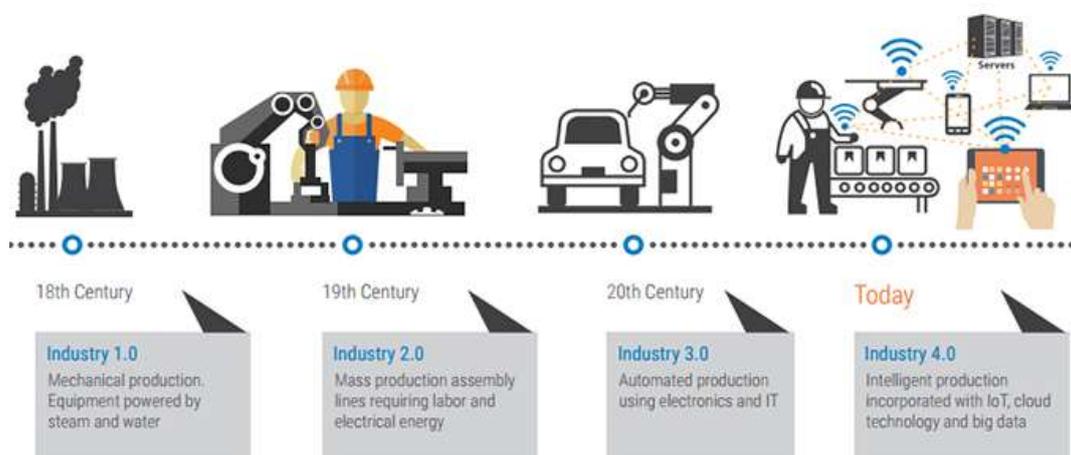


Figure 8. The 4 stages of the industrial society

The rise of industry 4.0 - defined as the changes in manufacturing associated with the digital revolution of 3D-printing technologies and fully-automated factories – will also give clusters a whole new opportunity for growth. Such technologies are expected to facilitate SMEs participation in digitalised supply chains. What used to be associated with high costs and high risks, will be in the future made more affordable and flexible. As production costs and time to market will shrink, even the smaller cluster in the remotest region will have its say in the global competition.

This is one area where clusters and cluster organizations could play an important role: in responding to and shaping the impacts of these game-changing emerging technologies.

Other missions of importance

Align, reinforce & rationalize

With increased public-private collaboration, easier access to data and affordability of disrupting technologies, there will be in future a substantial opportunity for improvement in the quality and quick commercialization of new products.

Cluster organizations will be able to act as hubs for all the actors in the commercialization process, such as universities, research institutes, government funding programs, incubators, accelerators,

and private firms, to form connections between their activities and to identify opportunities more efficiently.

As the best spoke-person for the cluster agents, as the natural bridge between the public and private economies, clusters should see their prerogatives get extended, merging with other mechanisms of public support that became redundant. Acting from within a more rationalized public landscape, cluster organizations will then see some of their limitations and administrative burden disappear. Their reach, attributions and capacity of intervention will get to the next level.

Educate the customer

In a 10-year horizon the competitive landscape in which SMEs – and along with them clusters – is bound to look radically different from what it is today. Sustainability, automation, 3D-printing and big data will profoundly transform for the better the resource-efficiency of manufacturing and the ecological pertinence of the products and services released on the market.

What about the end-customer in this scenario? What about the man in the street? The interactions between clusters and this latter should also be improved. Campaigns of information towards the connected consumer will be pervasive as getting to know the precise origins of any product – traceability of its raw material, identification and, why not, direct connection with the workers involved in its production – will become natural. Awareness of all the implications of the purchasing act will no longer be a nice-to-have but will become a must-have: an additional but crucial criterion to trigger the purchasing decision.

Also, educating citizens to appreciate the importance of consuming non-polluting, environmental and societal conscious, zero kilometre products will help companies complete their efforts towards more sustainable business models. It will give more visibility to best-practice firms, helping them expand their potential market. A win-win process benefitting to both parties.

CONCLUSION

In the near future good cluster strategies will be systematically aligned with and integrated within a holistic public policy for innovation and know-how. At the core of a more business-conducive environment, cluster organizations will contribute to a better coordination of governmental support, matching the right companies with the relevant public programs, whether they deal with talent attraction, training, or R&D funding.

But beyond coordination, cluster organizations will be the best positioned to drive tomorrow's policy changes. They will have the power to turn a formerly rather slow-moving state-centric vision into a field-oriented, world-connected and community-conscious set of actions working for the local, regional and national greater good.

Cluster organizations will become the preferred platforms for developing talent, delivering programs to help local firms in a globalized and opened economy. Clusters will function as pipelines for intelligence and the smart implementation of the insights coming from a constant public and private dialogue. For instance, because they will be the best institutions to gather data from the field, cluster organizations should become a primary interface for data-mining, a much needed work that most governments today are struggling to tackle well. And the same applies for the promotion of sustainability.

Amidst this very promising landscape, the responsibilities of cluster managers will become more essential than ever. In a fast-changing economy, continued attention to new trends and ongoing self-training will be required from cluster managers if they want remain on top of their game. To this condition only will they be ready to explore the many new avenues likely to support the growth of their clusters and help them deliver breakthroughs, synergies, job creation, and ultimately local prosperity, at full capacity.

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