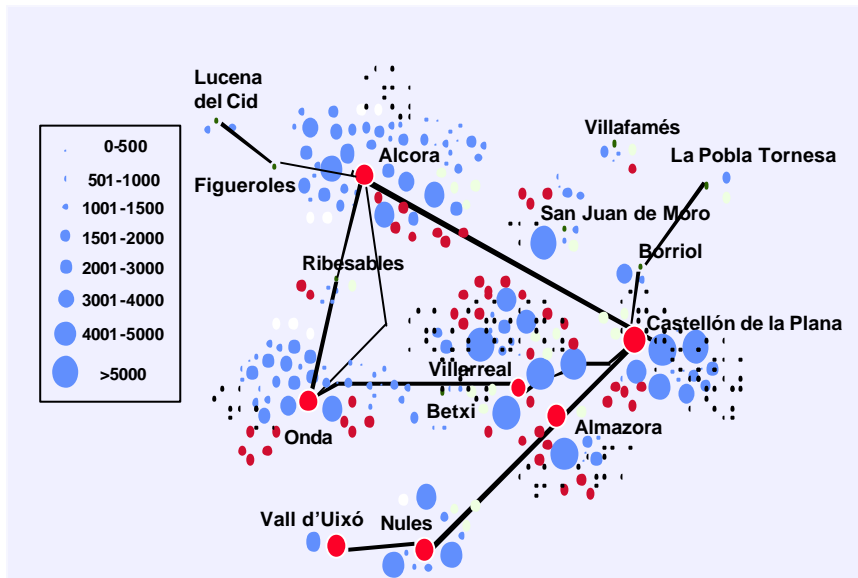


1. What is a cluster?

Cluster definition

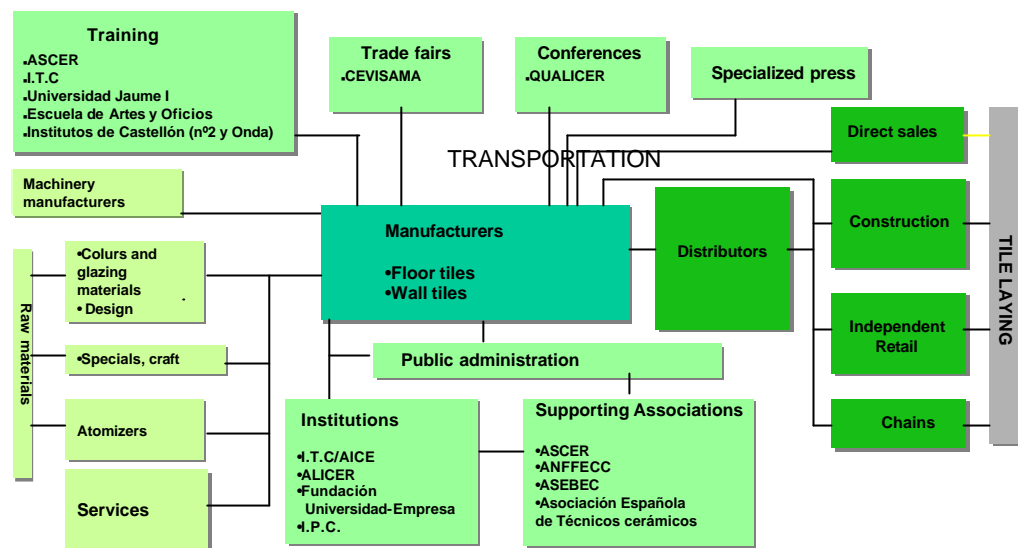
“A cluster is a geographically proximate group of companies and associated institutions in a particular field, linked by commonalities and complementarities.” Michael F. Porter. On Competition. Page 199

An outstanding example of a clustering is found in the ceramic tile industry: 40% of the world turnover of the industry is generated in the clusters of Castellón (Spain), Sassuolo (Italy) and Santa Caterina (Brazil). The following image shows how ceramic tile companies and suppliers are located in a radius of 30 km., each circle representing a firm.



Product-end firms, suppliers, related services, supporting institutions, etc. often form a cluster. The following image represents the relation amongst cluster agents in Castellon, which results in a rich and flexible network.

Cluster-based policies



A cluster is not a lobby or a group of firms that join to reach common objectives. It is just a reality, a non-planned phenomenon. Clusters exist, have their own evolution that can be influenced by private and public actions but it is very difficult to create them.

Why do clusters exist?

Industries tend to cluster. It may seem a paradox but global competition can be fostered with local elements of competitive advantage. Basically, proximity brings:

- Easy access to specialized suppliers, services and human resources
- Information spillovers
- Flexibility and fast change reaction due to extreme specialization
- Imitation facilitates faster innovation adoption

All in all, a cluster allows SMEs to compete globally thanks to a better access to information and specialized resources, flexibility and rapid adoption of innovations.

The main marble processing cluster is in Carrara (Italy). It was initially created around the availability of natural resources (the famous white Carrara marble). Although this marble is still extracted, nowadays the competitive edge for Carrara is in servicing specialized requirements in the decoration and building industry. Marble and other stones from all over the world are processed. Nowadays, the cluster structure has been adapted to these new requirements.

Large warehouses buy bulk quantities from quarries all over the world. Marble is processed to meet standard or tailor made

measures, shapes and finishes. Processing is often subcontracted to specialized workshops that have specific machinery and skills.

There is always a main contractor that controls design and quality specifications and is in constant contact with the client, architects, etc.

Another relevant fact is that the existence of the cluster has helped develop the world leading machinery industry to process marble.

Will a company in a cluster be more competitive than one outside a cluster?

In principle, it should be because there are better conditions for competitiveness. However, there are entire declining clusters. Being in a cluster is not enough. The key for competitive success is strategy.

“Competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value” Michael E. Porter. What is strategy?. Harvard Business Review. Nov-Dec 96.

Some clusters are outperforming others with longer tradition and much richer environment in terms of suppliers, training and technological institutions, associations, etc. Generally these clusters have reacted faster to industry changes as liberalization, client concentration, etc.

An incorrect strategic positioning will eliminate all the effects of operative efficiency improvements. A clear example are Nove and Faenza, two clusters in Italy for decorative ceramics. Faenza has long tradition and established institutions while Nove is younger and no so well furnished. Surprisingly enough, Nove is growing and beating Faenza in the world market:

SITUATION		
	Faenza	Nove
Strategy	Traditional product Local scope	Copy Multi market scope
Average product life	10 years	1-2 years

Cluster-based policies

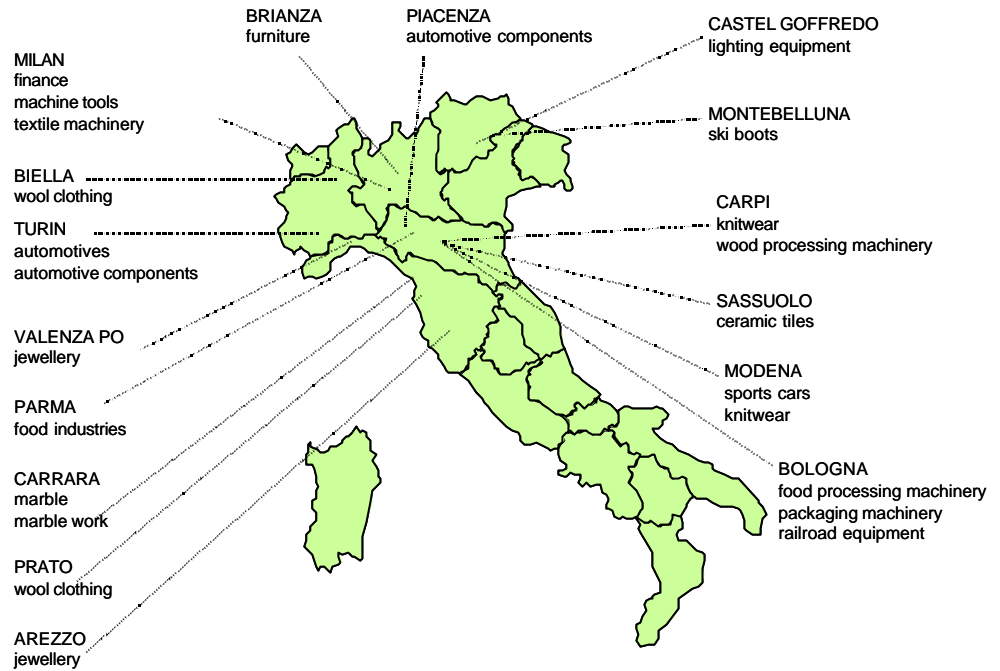
Manufacturing process	Integrated	Outsourced
Specialized training centres	1 Vocational training 1 Crafts training 1 University	1 Vocational training
Technological centres	2 (C.N.R. & ENEA)	None
Clients	Small wholesalers and retailers	Large wholesalers and distributors
Development agencies	Polo Ceramico	None
RESULTS		
Turnover (Eur.)	6 M	65 M
Average gross margin	10%	18-20%
% Exports	5%	75%
Turnover increase	Estancado	10-15% anual

Source: Cambio estratégico y clusters en Cataluña (Ed. Gestión 2000)

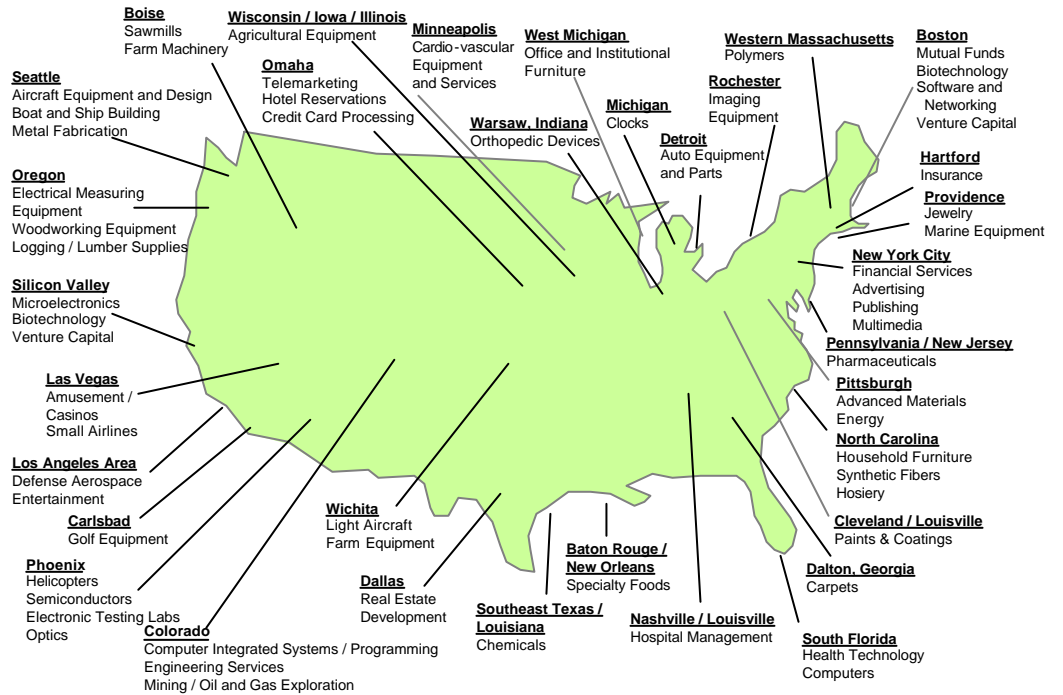
Where are clusters found?

Clusters are a common reality in all economies and industries. The following images are examples of clusters in Italy and USA.

Main clusters in Italy



Main clusters in US



2. Why are cluster-based policies effective?

Industry and Government Policies

Even if governments follow a non-interventionist policy, they affect economy with a number of competencies as subsidies, legislation, creation of infrastructures (technology parks, etc.) or with public purchases.

Government influence is though unquestionable and it can be or not used with a cluster perspective. On the other hand, Governments in the European Union action capabilities are limited in the fields of monetary policies, subsidies and tax breaks. There is an increasing emphasis in strengthening local firms networks. Specially since in 1990 Prof. Michael E. Porter described how clusters or locally based networks of firms in the same industry could constitute a source of competitive advantage. Most advanced economies are increasingly using cluster policies as they are market driven.

Some tools governments have are identification of existing or potential clusters in their region; providing clusters with strategic information such as benchmarking or trends; invest in technologies and capabilities that are beneficial to cluster firms; fill in gaps in the cluster with FDI or others; link firms to training programs from local universities and centers; foster networking, service centers and associations; etc. Support to firms in clusters, directly or through suitable supporting structures is a basic priority in the economic development and industrial policy political agendas.

Having clusters is no guarantee of a solid economy, though. Clusters size (in terms of market share in their specialization) can be determinant in the mid term. For example, in United States there is one relevant furniture cluster in North Carolina while only in Spain there are around fifteen. As trade barriers disappear and capital and labor flow freely, firms that were protected must reconsider their sources of competitive advantage.

Cluster-based initiatives provide governments with a better perspective of their territory economic reality as well as:

- A better understanding of the industry needs and a direct dialog means with the cluster firms
- A new way to create awareness of existing support programs to firms and associations in the industry
- Designing tailor made support for the industry, involving private sector in their financing and management
- Coordination within different Government departments to support the industry

The aim is to

“Change the dialog between companies and public administration from a relationship based on confrontation and unobtainable requests to a relationship based on co-operation and collaborative actions to enhance competitiveness” Antoni Subirà, Minister of Industry from the Government of Catalonia.

Where are cluster-based policies carried out?

Scotland, the Basque Country and Catalonia were the pioneers in 1992. Since then most countries carry out cluster-based policies. Even economic development departments are organized around clusters, as it is the case in The Netherlands.

“The Competitiveness Institute” (<http://www.competitiveness.org>), presided by Prof. Michael E. Porter groups most cluster practitioners around the world. Currently there are around 250 members from 40 countries from Japan to South Africa, India, Finland, United States, Australia, Mexico or Chile.

How to work in a cluster?

Government measures to foster cluster development

Cluster-based economic development strategies take advantage of clusters efficiency, flow of information, economies of scale and innovation potential.

Governments have different tools to work with clusters: from simple observation to change management.



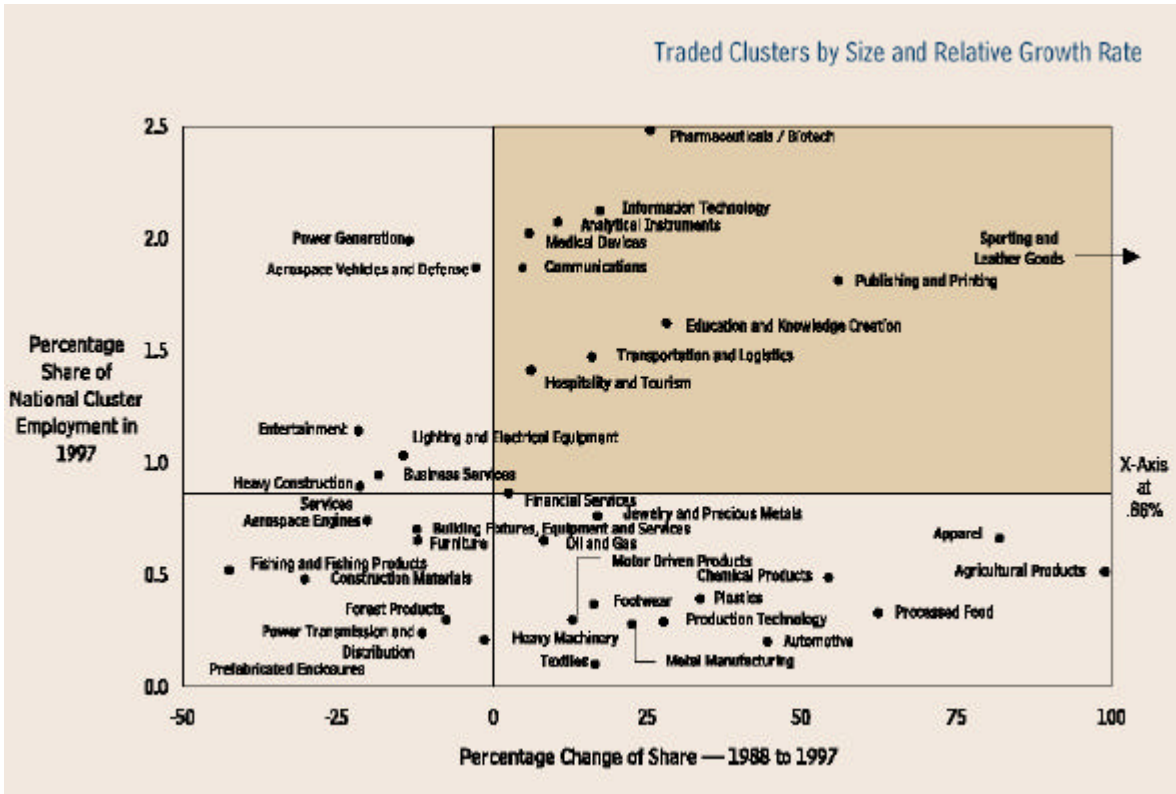
Statistical observation. Identification of existing or potential clusters in the territory and their strengths and weaknesses, through mapping and analysis exercises.

Cluster-based policies

The “Cluster Mapping” project from the Institute for Strategy and Competitiveness (Harvard Business School) consists of a detailed statistical information analysis that takes into account 40 types of clusters in United States (e.g. Information Technology, Automotive, etc.). The exercise allows to map the economy and benchmark clusters.

Another example is the regional survey in US “The clusters of innovation initiative”, that analyzes with qualitative interviews and data the historical growth, evolution and current composition of local economies and selected clusters.

Using a common methodology and data formats allows comparisons within regions and clusters to learn which facts are relevant in the development of that cluster. This information is also useful to design public support. This image shows a ten-year evolution for San Diego in different clusters¹.



Industry studies. Industry studies and strategic plans result in useful diagnosis and improvement areas for policy design. The problem is they do not

¹ Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

involve private sector in the implementation of solutions and therefore there is no change. These type of studies have been very popular in the 80's decade.

Forae. Means to establish dialog between public and private sector.

In Massachusetts, The Commonwealth of Massachusetts Department of Economic Development or Massachusetts Technology Collaborative, have people with a cluster related function. Their role is, first, if there is not one yet, create an industry group (e.g. biotechnology); then they act as intermediaries with the federal government to push firms demands forward.

Firms have a way to articulate their demands and support actions for the industry are more agile and focused towards their real needs. Firms that form these groups, specially in the case of biotech, are world leaders, advised by the best strategy consultants and with permanent demands from venture capitalists or stockholders.

This is a correct tool if firms that form the forum are aware of their challenges and have consistent future plans. Most SMEs do not have access to this information and these groups become a source of questionable petitions to governments.

Change management. Generar The aim is to foster strategic change and the tools are a combination of strategy análisis and change management techniques to influence the improvement of firms position. Those are the initiatives that have proven useful and have been implemented all over the world these last years.

Considerations on Public Policy

There are a number of considerations to take into account, but there are three fundamental ones when talking about clusters:

- **Build on local differences:** competitive advantage is based on being different. It makes no sense to try to clone two clusters in the same industry and same territory. Each of the clusters can follow diverse strategies successfully and have different optimal environments.
- **Understand what industries cluster:** not all industries tend to cluster and clustering principles are not useful for every industry. For example, petrochemicals do not need to cluster.
- **Understand the cluster life cycle:** governments must differentiate actions on consolidated clusters from potentialities or wishes. One can act on existing clusters while "creating" clusters (e.g. around a

multinational or a new technology) requires a different – and complicated - perspective.

Examples of organization in the implementation of cluster policies

Find two examples on the role and organization of governments to implement cluster-based policies: The Netherlands and Catalonia (Spain).

The Dutch Government adopts a value chain focus and analyzes the interdependences amongst different agents in clusters. Government supports networking by contributing to favorable local conditions and reducing systemic imperfections (e.g. information barriers). They use three pillars:

- Creating favorable local conditions. Rivalry creates an entrepreneurial stimulus and the government can play a facilitating role in the correct market functioning.
- Promoting communication forae. This tool is indicated to foster dialog between firms and government.
- Government as a sophisticated client. Government plays an active role with their purchases producing positive externalities.

Internally, the Economic Promotion department is structured around clusters or aggregation of clusters.

Catalonia initiated a sustained policy with a statistical observation exercise in 1992. Since then 25 cluster specific change management initiatives have been carried out. The different Department of Industry, Trade and Tourism divisions and agencies (export promotion, quality, innovation, etc.) are aware and actively following the cluster recommendations.

There was no prioritization of what clusters to promote or not. All the relevant ones have been treated equally, although for practical matters the projects have been sequential. Horizontal policies have been designed bottom-up. For example, seeing that clusters related to fashion industries such as furniture, clothing, etc. had similar challenges in the retail side, the department of commerce organized a specific program.

A key to success in Catalonia is the Commitment and continuity of the Minister and the allocation of a relevant responsible for clusters, the Deputy Director of Industry.

Both the responsible in The Netherlands and Catalonia are very proactive in international forae and have led flagship publications.

3. The Cluster Competitiveness Group

The Cluster Competitiveness Group, SA (Competitiveness) is the pioneer and leading consulting firm in fostering competitiveness in clusters. Services comprise both strategy consulting and digital networking.

Overview

Competitiveness is specialized in helping governments and institutions design and implement cluster-based innovation and competitiveness policies

Competitiveness philosophy is to foster change, involving firms and institutions towards common goals and solutions. Services are delivered by skilled professionals, supported by a robust methodology. Methodology combines a thorough strategy analysis with cluster change management tools. Strategy is applied with a global vision and change management takes into consideration the local milieu.

Competitiveness offers a comprehensive range of services that allow institutions different levels of involvement with clusters, from understanding of the economic reality to the implementation of IS supported cluster management tools.

Competitiveness is leading both in experience and experts recognition. Competitiveness has ample experience in Europe, with nearly 100 cluster-oriented projects carried out since its foundation. Offices are in France, Italy and Spain. Where we have no personnel, we work in collaboration with respected associate local firms. Competitiveness has led a new way of thinking in cluster consulting. Prestigious partners from different fields and demanding clients have an inestimable contribution to this success.

Services

Competitiveness establishes a long-term partnership with its government and institutional clients to help them shape a cluster-based policy that builds sustained trust within firms in their territory and fosters economic growth.

Competitiveness has a range of different services that allow a gradual adoption of the methodology. The required investment to put in practice such policies is small and it frequently involves firms and other agents in clusters in the implementation of results.

Cluster mapping	Identification of clusters and their main challenges in a defined territory
Cluster initiatives	Action oriented, cluster specific initiatives to foster competitiveness
Intercluster initiatives	Action oriented, multiple related clusters initiatives to foster competitiveness
Observatories	Intelligence tools to follow up and react to clusters strategic change
Horizontal policies	Bottom-up designed policies that cover relevant needs in clusters (e.g. innovation, internationalisation)
Cluster hubs	IS supported hubs to decrease common cluster inefficiencies

Services are tailored to best suit clients needs. Effectiveness is increased by following a methodological guideline that has been tested and improved throughout Competitiveness projects.

Experience

The following table shows the most relevant examples:

Cluster mapping in Rhône-Alpes (2001-2002), Aerospace Cluster in Barcelona (2001-2002), Pharmaceutical cluster in Madrid (2001), Marble processing cluster in Alicante (2001), Food processing cluster in Cremona (2001), Metalmechanics cluster in Varese (2001), Train Building cluster in Barcelona (2001), Footwear clusters in Alicante- Elda, Elche, Villena- (2000-2001), Mouldmaking co-operation in Italy/ Portugal/ France/ Spain (2000-2001), Challenges of consumer electronics manufacturing in Catalonia (2000), Furniture Cluster in Madrid (2000), Furniture Cluster in Valencia (2000), Fostering Innovation in Catalonia (1999-2000), Apparel cluster in Varese (1999), Home appliances cluster in Varese (1999), Furniture Cluster In Mallorca (1999), Cheese Cluster Of Minorca (1999), Identification of Clusters in Asturias (1999), Initiative To Reinforce The Competitiveness Of Home Textiles Industry In Valencia Region (1999), Information Technology Cluster in Wallonie, Belgium (1999), Ceramic Tiles Cluster in Castelló de la Plana (1998), Cluster Of Plastic Parts Suppliers for The Automotive Industry In Barcelona (1998), Vision Of The Future For The Audiovisual Industry In Catalonia (1998), City Development Analysis for Las Palmas de Gran Canaria (1998), European Scooters Suppliers Cluster Project (1996-1998), Tourism Cluster in Lloret de Mar (1998), Moulds And Dies Suppliers Cluster In Barcelona (1997-98), Textile Technology Cluster in Catalonia (1997), Telecommunications Equipment Cluster in Madrid (1997), Publishing and Printing Industry Cluster in Madrid (1997), Packaging Cluster in Navarra (1997), Toy Industry Cluster in Valencia (1997), A European Guide on the Setting Up

of co-operation and alliance schemes between SMEs / SMLs (1997), Regional Development in Solsona (Catalonia) (1997), Analysis of the Innovation Policy in Great Britain (1997), Identification of Clusters in Castilla-León (1997), Olive Oil Cluster in Aragón (1996), Analysis of the Technology Transfer model in Baden-Württemberg (1996), Tourism Industry Cluster in Bilbao (1996), Evaluation of the ONUDI Programs in Colombia (1996), Seminar in Uruguay about Industrial Policies (1996), Orientation of the Design Policy in Catalonia: Implications for the graphic design sector (1996), Digital Entertainment Cluster in Catalonia (1996), Ceramic Cluster in Girona (1996), Meat Machinery Cluster in Catalonia (1996), Organisation of the Japan Automotive Manufacturers (JAMA) / Association Des Constructeurs Europeens de Motorcycles(ACEM) Business Conference "International Industrial Co-operation towards PTW Component Supply Development" (1996), Tourism Industry Cluster in San Sebastián (1995) and Follow-up and Implementation of the Initiatives (1996), Confectionery Machinery Cluster in Estepa -Andalucía (1995), Wood processing companies Cluster in the Basque Country (1995), Consumer Electronics Manufacturers Cluster in Vallès (Barcelona)(1995), Industrial Electronics Manufactures Cluster in Vallès (Barcelona)(1995), Motorcycle Manufactures Cluster in Barcelona (1995), Agricultural Machinery Cluster in Lleida (1995), Cluster study in Andorra for the Tourism, Finance Services, Trade, Education and External Investment Areas (1994), Publishing cluster in Barcelona (1994), Knitwear Cluster in Maresme and Anoia (1994, 1995); and Clothing in Barcelona (1993), Wooden Toy cluster in Torelló (Barcelona)(1994), Meat Processing Cluster in Girona (1994), Jewellery industry Cluster in Barcelona (1994), Home Furniture Cluster in Montsià (Tarragona) (1994), Leather Tanning Industry Cluster in Igualada (Barcelona)(1993), Tourism Strategy for Galicia (1993)

Clients are mainly regional governments (Generalitat Catalonia, Regione Lombardia, Région Rhône Alpes, etc.), supranational organizations (European Commission, ONUDI, etc.), leading associations (ACEM, Confartigianato Lombardia, ASCAMM, etc.), financial institutions (Caja de Ahorros del Mediterraneo, Caja Asturias, etc.) and OEM companies, all with interest in developing competitive networks of companies throughout all the value chain of an industry.

Competitiveness has successfully started and operated two internet based cluster portals in the fields of textiles in Catalonia and Ceramics in Italy that are now owned and led by main firms in the cluster. Portals allow cost reduction for firms in their purchasing activities. A furniture portal is under development. Technology has been developed by the Competitiveness team.

Competitiveness relies on PTC Windchill software to provide companies with collaborative product development tools. A pilot in motorcycles is currently under development. The software allows coordination amongst several companies in the development phases of a product improving time to market.

Competitiveness counts with a core professional team of consultants, analysts and developers and a solid methodology that allows partnership collaboration with other consultants and professionals providing the same level of quality. Its specialization in the field of clusters allows focus, continuous innovation and a thorough process definition.

Cluster-based policies

Leading publications and academicians have recognized Competitiveness work.



Prof. Michael E. Porter from Harvard Business School, Alessandro Benetton from the Benetton Group and Jan Osterveld from Royal Philips Electronics are amongst Competitiveness partners and advisors.



Cluster-based policies

2 April 2002

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