

Policy Forum on:
**Regional “competence centres”
and European knowledge and innovation networks:
an international comparison of innovation cluster policies**
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KNOWLEDGE CREATION IN REGIONAL NETWORKS AND THE POLICIES OF “COMPETENCE CENTRES”

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1. Aims of the Forum

The **Policy Forum** on competence centres in Europe organized by the European VI FP project: IKINET - International Knowledge and Innovation Networks , aims to discuss **the role of competence centres in innovation and industrial policies** at the European, national and regional level. It also aims to promote international learning and benchmarking and **the launch of programmes for the creation of networks of competence centre** in countries and regions which do not have them. In particular, it aims to investigate how competence centres can promote the international competitiveness of SME and these latter can be linked in international networks of innovation and knowledge.

A complex interaction is needed between **regional policies and national or European innovation policies**. Various new sectors (such as aerospace, environment, energy, finance, major international infrastructures, etc.) seem to require **an higher national or European coordination** and the initiatives to be taken at the regional level should be stimulated and orientated within the framework of national and also European networks.

However, **the spatial dimension of innovation** is also increasingly clear and that has lead to adopt policy schemes, which focus on the **regional clusters**. These programs are highly similar in the various countries, while having different names, such as national networks of clusters, poles de competitivité, competence centres, centres of expertise or technological districts.

While innovation policies mainly focus on the development of high technologies and R&D investments, **European industry is still dominated by medium and medium-high-technology industries**.

Medium tech sectors are characterized by **many specialized small firms**, but also large firms or medium size firms are important in these sectors, such as in the case of the aeronautic, automobile and machinery productions.

The IKINET project has focused its analysis on **the process of innovation in medium tech sectors**, where innovation has different characteristics than in high tech sectors. Technology in these sectors is characterized by an high complexity, as products are made by an high number of heterogeneous physical components requiring specific knowledge.

In particular, medium size firms have developed **vertical flows of tacit knowledge within their respective value chain**. However, they need to be supported for **developing horizontal linkages with different technologies and sectors**, in order to promote structural changes and a **productive diversification of the cluster**, through the creation of new fields of production.

2. A new model of innovation

The knowledge creation process is not a black box any more and the IKINET projects has clarified **why innovation and knowledge creation are local processes**.

Innovation requires the **combination of different competencies** within a processes of collective learning, as firms are forced to cooperate to increase and diversify their knowledge base.

Innovation is not the result of the individual inventor or entrepreneur, but rather the result of a processes of collective learning and **flexible forms of cooperation** between many different private and public, regional and international actors, such as large firms, SMEs suppliers, knowledge intensive services, higher education and research institutions, financial intermediaries, public administration and many other partners such as professional association and media.

Technology spreads across industries and the new knowledge indicates an **high level of fungibility**. Moreover, the development of new productions requires the **innovative combination of the different types of technologies** characterising the different sectors. **Clusters are no longer organized along the boundaries of a sector**, as the knowledge and technology can be used in different product segments.

The IKINET project has highlighted that the innovation process in medium tech sectors is **different from the “linear” approach** focusing on **R&D expenditure** and the rational process of optimization of **individual firms**.

On the contrary, innovation can be interpreted according to a **“systemic” approach**. This approach focuses on the process of knowledge creation, on **collective processes of interactive learning**, on the iterative **adaptation between the different partners** and on an implicit process of **automatic selection of the most competitive innovations**.

In particular, innovation processes **in SMEs and in medium technology sectors** has a **gradual character** and is driven by an **intensive interaction** between the suppliers and the customers. This process of **interactive learning** leads to the development of a **“tacit” knowledge or a complex set of capabilities**, which are localized or idiosyncratic and cannot easily be transferred.

This new **cluster based or network oriented approach** implies a **shift from a linear approach**, which just promotes **transfers of information and modern technology** or provides customized expertise to individual firms, to a **systemic approach focused on promoting knowledge networks**

and cooperation between various local and external actors and on the development of their internal capabilities.

Thus, competence centres should not only focusing on **financing pre-competitive and competitive R&D** and promoting technology transfers to individual firms, but should also aim to **promote knowledge creation, network building, knowledge exchange, interactive learning, the development of labour competencies and of creativity capabilities in the design of new projects.**

3. The methodology of Territorial Knowledge Management

The approach of learning networks underlines that **the time is indeed a key dimension.** The competitiveness of firms and regional innovation systems is increasingly less determined by low production costs or even by high quality of the products or services and it requires **a faster speed of the process of change** with respect to the competing firms and regions.

Well structured production and innovation networks allow a greater flexibility, to accelerate the policy making process and to decrease the decision and implementation times, by reducing transaction and adjustment costs.

Competence centres are crucial in order to **reduce the “switching costs”** to innovation and to accelerate the speed of innovation, thus **avoiding the risk of a lock-in effect** in territorial clusters and **promoting an horizontal and vertical diversification of the traditional productions** in these clusters.

Clusters and networks may have different characteristics. In particular, **clusters should evolve toward the form of ‘Strategy networks’**, which are based on intended relationships and cooperative agreements between firms and other organisations. They imply forms of central coordination, the creation of procedures for the exchange of information, the codification of individual tacit knowledge and the investment in the creation of collective codified knowledge.

The linkages between SMEs in the process of interactive learning within a cluster are often informal, rather chaotic and time-consuming. The IKINET project has adopted an original methodology called **“Territorial Knowledge Management”**.

Territorial Knowledge Management aims to **organize the cognitive relationships between the firms** in the case of local clusters or networks. TKM aims to facilitate the flows of tacit and codified knowledge, by enhancing **six factors or dimensions**: stimulus to innovate, accessibility, receptivity, local identity, creativity and governance capabilities. This approach is highly flexible and can be adapted to the various European clusters.

These six factors allow to **focus the various policy instruments for the governance of the learning networks** in a regional innovation system **on a limited number of dimensions**, which are tightly related to the factors of the processes of knowledge creation according to the literature in cognitive economics.

Major factors of weakness in **medium tech sectors** are 1) a low international accessibility 2) the lack of creativity and of promoting product innovation rather than only process innovation 3) the lack of formal instruments of governance of knowledge relations, rather than automatic spill-over of technologies and informal cooperation.

On the other hand, **high tech sectors** indicate other key problems, such as 1) a low local embeddedness of firms, 2) the difficult combination of R&D and analytical knowledge with creativity and symbolic knowledge, 3) the need to avoid the concentration in large firms and to promote spin offs and participation of other partners in decision making.

Finally, the **low tech sectors** are characterized by various weakness, such as 1) a too low international accessibility, 2) the lack of receptivity and of qualified skills, 3) the lack of identity and fragmentation in decision making.

4. The characteristics of the “competence centres” policy

Knowledge circulates within networks through formal and informal institutions. Explicit or codified knowledge may be exchanged on technology markets. Instead, **tacit knowledge requires allocation mechanisms which are different from the markets**, since it has an asymmetric character, it implies high risks and it requires reciprocal trust, identity and shared values leading to collaborations. Only specific organizations and institutions and not traditional markets are capable to insure those connections which allow the exchange and the tight interaction of tacit knowledge and competencies.

Since interactive learning is the key process in knowledge creation and the access to tacit knowledge is crucial in SMEs and medium-tech sectors, **networks are an appropriate form of organization**, which facilitates the interaction and the flows of information and knowledge. Within networks nodes and links are constrained by the existence of spatial distance.

The challenge of an increasing international competition call for **a new industrial policy** supporting **large projects realized within national thematic networks** and building on the existing strengths and innovative capacities of the various regions.

National and regional **competence centres** are designed to stimulate cooperation in research and technological development **in strategic important production fields** between companies, academia, the public sector and other organisations involved in promoting innovation, overcoming the gap between **pre-competitive technological research and practical industrial application**.

The idea of the cluster policies and competence centres in various European countries is based on the following **characteristics of competence centres**:

- are part of a **national or regional network** created by a national or regional public program, which has defined a competitive mechanism for the selection of the various proposals of competence centres and an national or regional agency for the steering of the overall network of competence centres,
- have a **regional focus** but act on an **international scale**,
- concentrate on a specific **thematic production field**,
- are capable of **generating innovations** with a particularly high value-added potential,
- cover many links in the value chain and **connect multiple sectors of industry** and scientific disciplines,
- establish an outstanding communication and **co-operation platform** by promoting **public-private partnership** and existing networks between large and small firms and other regional actors, in close cooperation with universities and research, educational and vocational centres,
- aim to implement a **common strategy** of innovation and economic development for a specific **territorial cluster** or **regional innovation system**,

- represent **an innovative and operational mode of “governance”** or a “soft infrastructure”, that aims to develop synergies around **specific collective innovation projects** oriented toward one or more **well focused markets**,
- allow to reach a critical mass, in order to develop **international visibility** in an industrial and/or technological perspective and to increase the attractiveness of a cluster with respect to international competitors.

“**Centres of Competence**” are different from research “**Centres of Excellence**”, which mostly belong to larger research institutions and focus on well defined fields of advanced pre-competitive research, often in tight cooperation of specific industries, with the aim to raise the quality of research and to improve its international visibility and reputation. However, Centres of Competence, which **concentrate on innovative industrial projects**, may clearly contribute to the enlargement of the technological and general information base, required for cultural and social development, while specifically focusing on the competitiveness of a national and regional industrial and innovation system.

“**Centres of Competence**” are different from the traditional “**Technological Centres**”, which have been created by local and regional institutions and aim to provide rather routine technological and business services to individual SMEs within territorial clusters, as Centres of Competence aim to the **design and management of large joint projects with several firms** and other partners for the development of new innovative productions for the **industrial diversification of a cluster**.

The results of the IKINET project may indicate some policy guidelines for the activity of competence centres. In particular, they should:

- promote the development of existing or **emerging clusters**,
- promote a **production diversification of the regional economy** and new areas of business activity in new sectors of application, by investing in projects close to commercialization or in joint industrial research (not in pre-competitive research with a too high level of abstraction) to **avoid path-dependencies and lock-in effects**,
- promote the **circulation of tacit knowledge and process of interactive learning**,
- represent an **bridging institution and should promote contacts** between the **large international firms** on one hand and the **research institutions** (thus promoting a new organizational model for universities) and the **SMEs** (thus promoting a greater R&D effort and a mid term development strategy), on the other hand,
- **identify and aggregate new demand and explore new markets** for the regional productions
- build new formal and informal institutions, infrastructures, norms, rules and routines for the “**governance**” of the **knowledge and innovation networks** and promote the **participation of new partners** in innovation networks, such as KIBS and universities,
- raise **new funding** through public – **private partnership** and involvement of **modern financial intermediaries**, as the **problem is** the abundance of funding and the **not** (the lack of profitable projects).

5. The European dimension and the internationalization of competence centres

Innovation and new knowledge are the key factors for the **international competitiveness of the European firms and regions**. Firms have organized **complex production systems** with an higher content of know-how and made by **different complementary partners** and that has led to the **internationalization of the industrial value chains** and not only of the markets.

Many small firms have only few international contacts and experiences in international cooperation. However, while the internationalization of the markets of the products and the internationalization

of the industrial supply chain are well developed, the internationalization of knowledge links is still lacking behind.

Thus, **even medium size firms are reluctant to internationalize in a knowledge perspective** or to promote new forms of international **interactive learning with foreign partners**, due to the fear to lose their proprietary know-how, which they believe that it represents their most important tacit competitive asset.

The **international extension of knowledge networks** of SMEs call for the identification of common objectives and **collaboration in projects that go beyond their own territory**.

The process of internationalization is a **gradual learning process** and it requires a new mental model by the firms. Moreover the internationalization process has a **selective character** and a key role is played by **“gateways” or “bridging” institutions**.

Regional, national and European institutions are needed in order to promote **international forms of cooperation between SMEs**. In fact, the development of international relations requires a more **stable framework**, than what the market mechanisms, multinational companies or private forms of bottom-up international cooperation may be capable to provide.

The internationalization process of the individual firms is easier when it is accompanied by the **support of the respective economic, social and institutional system**.

Competence centres also represent a **stimulus to the international openness** and competitiveness of the regional clusters. Competence centres may create that **institutional framework made by trust, reciprocal commitment and well designed governance**, which allow the firms of distant regions to collaborate in joint projects, where **exchange of tacit knowledge** can not be protected through intellectual property rights.

As firms are increasingly integrated in international production networks, **also competence centres have to build international networks**.

The creation of **European networks of “competence centres”** would **increase their specialization** with respect to those of other regions at the international level and **widen the knowledge base of existing clusters**.