



**International Link and Services for
Local Economic Development Agencies**

for a fair, human, sustainable and inclusive development

Territorial systems for innovation.

Hypothesis for the human development programs.

**Giancarlo Canzanelli
and
Luciano Loffredo**

October 2008

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1. Abstract

Knowledge and learning processes represent the most dynamic leverage for the growth processes of individuals, organizations, businesses and territories.

In the present economic scenario, *intangible assets* and innovativeness – the capacity to generate, disseminate and exploit new scientific, technological, and organizational knowledge - are key factors for development¹.

Understanding the phenomenon of innovation and its vast scope is, therefore, indispensable for the development of public policies and/or interventions aimed at promoting territorial economic development.

In the new "knowledge economy" approach, innovation is conditioned by several factors, of both a socio-cultural and technical-economical nature, which can affect the various stages of the process, ranging from the production of new knowledge to its practical application and commercialization.

Innovation is a collective/interactive process, which cannot take place outside a highly territorial and systemic dimension.

In this scenario, organized local networks are particularly important; for example local economic development agencies (LEDAs) in partnership with universities, research centers, institutions etc., can govern local innovation systems, encouraging the continuous processes of collective/interactive learning, both among territorial stakeholders and between these and the outside world.

But innovation is nothing more than a tool to be used to improve quality of life and as such it responds to a vision and a strategy shared by local actors, using multi-dimensionality and territoriality as indispensable paradigms for action and success, even if necessarily linked to actions of a national and international dimension, in both the production of knowledge and experience, and policies to improve the human condition.

In this respect, the innovation processes described and commented in this paper can support United Nations strategies for the achievement of the Millennium Goals and all programs that seek to promote participatory processes for human development.

The last chapter of the paper focuses on the potential of these processes and indicates some courses of action that can help to promote them.

2. Evolution of the concept of innovation

¹"*The knowledge-based economies*", (1996); according to the OECD, the knowledge-based economy is characterized by "*the more effective use and exploitation of all types of knowledge within all manners of economic activity*". Therefore it does not only concern high technology and scientific development but all economic sectors and involves the reorganization and reinvention of the methods of producing goods and creating new sectors and new types of goods.

Innovation is a process that introduces increased knowledge and know-how into a system (enterprise, institution, territory). The innovation could be technological, organizational, educational, etc., but in each case it concerns the application of innovative techniques and instruments (even those previously used) that produce added value and increase effectiveness and efficiency².

In the 'traditional' (neoclassical) approach, the innovation process is conceived sequentially. The sequence between the various stages of the innovation process is predefined starting with basic research and moving on to applied research, development and, finally, the effective production of the innovation and its dissemination.

However, reality shows that the innovation phenomenon is more complex, multifaceted and anchored to different dynamics.

It is no longer a linear model but one that is interactive and systemic, based on the "knowledge economy". Innovation is seen as a complex process that stems from interactions between individuals, organizations and the milieu in which they operate. In the new approach, a reassessment is made of the role of tacit knowledge, produced and transmitted by individuals and businesses - often informally - through relationships, and learning. It is a collective, multifaceted and cumulative process. The centrality of scientific research is, therefore, flanked and eroded by contextualized uncodified knowledge and technical know-how³.

Bursting onto the knowledge production stage is a series of factors outside (customers, suppliers, public operators, etc.) and inside the company (holders of a heritage of knowledge that is often exclusive, or at least extremely specific), which can affect the effectiveness, and the guiding principles of the innovation process. Even small businesses have the capacity to innovate, albeit in a mainly incremental fashion. At the spatial level, however, innovative activities are less concentrated and more dispersed; the territory becomes a crucial factor because of its heritage of knowledge and accumulated know-how, and a space for interaction and relations⁴.

What emerges is an idea of innovation that is *path-dependent*: the path taken by innovation depends on, but is also limited by, the history and accumulated experience of a system.

Innovation therefore has a *multi-dimensional* connotation⁵, which is accomplished through the involvement of several different entities (companies, institutions, research centers, etc.), involving learning and the metabolization, combination and implementation of knowledge. A process which is both *systemic and territorialized*, given that it is influenced the intensity of the interactions that are created between the aforementioned entities and the milieu (territory) in which they operate (physical resources, infrastructure and socio-economic, cultural, relational, institutional and organizational conditions).

According to Polanyi, knowledge is an extremely dynamic variable with two particular connotations: tacit knowledge and explicit knowledge.

Tacit knowledge includes intuitions, sensations, ideas, skills that are difficult to convey, since they are deeply rooted in individual experience and strongly connected to values and ideals shared by specific groups of people. Tacit knowledge has a technical component, represented by the experience acquired by economic actors during production processes, mainly through organizational, institutional and strategic practices, and a cognitive component, which concerns the ideals and values that determine how individuals of a particular territorial community relate, and is identified largely with the culture of a population (widespread knowledge formed through historical processes). This knowledge

² In this sense, while technology (like computers or new machines) can be transferred, innovation is linked to the use of techniques and tools (for example a new use for Office programmes or incorporating new machinery into the production system), and therefore it is specific to the milieu in which it operates and is not transferable.

³ Cf. B. Asheim and L. Coenen (2005): "The basic critique of the linear model is precisely the equation of innovative capacity with R & D-intensity". "Contextualizing Regional Innovation Systems Learning in a Globalizing Economy: On Knowledge Bases and Institutional Frameworks", http://www.circle.lu.se/html/working_papers.aspx

⁴ Ibid: "In a learning economy innovation is basically understood as an interactive learning process, which is socially and territorially embedded and culturally and institutionally contextualized".

⁵ European Commission (2006): "All forms of innovation need to be promoted ... innovation comes in many forms other than technological innovation, including organizational innovation and innovation in services" COM (2006) final 502, "Putting knowledge into practice: A broad-based innovation strategy for the EU"; <http://www.europeinnova.org/exportedcontent/docs/6/6206/en/EN%20502%20%20original.doc>

is strongly anchored to the territory and lacks mobility since it is made up of elements that are difficult to codify and hence difficult to disseminate formally.

Codified knowledge may be interpreted as knowledge that uses abstract symbolic codes to structure languages that allow knowledge to be perfectly described, stored and transferred.

The development of knowledge, especially tacit knowledge, always starts with the individual and then spreads to organizations and contexts.

Enterprises (or more generally all productive facilities and services) represent the next level in the development of knowledge. They can be seen as organizations that learn and which have specific knowledge embedded in organizational routine⁶. They develop learning processes, accumulate knowledge, invest in innovative activities, introduce new technologies, coordinate innovative processes, and produce added value and growth through innovation.

Nonaka and Takeuchi⁷ have focused on the crucial role of organizations in the creation, dissemination and translation of knowledge into products and services.

They identify four phases of a circular process: a) *socialization*: development of an organizational culture; b) *externalization*: development of metaphors and analogies; c) *combination*: processing of information; d) *internalization*: organizational learning.

In the first phase, *socialization of knowledge*, several individuals share experiences, i.e. uncodified *tacit* knowledge rooted in a particular context and therefore difficult to acquire if not by observation and practice, "*from tacit to tacit*".

In the second phase, *externalization*, the tacit experiences of individuals is made explicit through the use of formal, shared and codified languages, "... *tacit knowledge becomes explicit, taking the shapes of metaphors, analogies, concepts, hypotheses, or models*".

When this knowledge becomes explicit, it circulates outside the original group and is added to other similar knowledge, through "... meetings, telephone conversations or computerized communication networks", which guarantee the availability of codified knowledge at any point in the network: this is the knowledge *combination* phase and is used for innovative products or services.

Finally, *explicit* knowledge is again incorporated into various operational and *internalized* contexts through processes of learning by doing, learning by experience, acquiring once again the connotation of *tacit* knowledge, "*from explicit to tacit*", and the process starts once again.

In this circular process, knowledge has increased and new knowledge created, "*knowledge creation*". After it has gone through the phases of individual tacit acquisition and socialization - thanks to the business organization's cognitive role - knowledge is enriched with the experience of others and the inherent knowledge of an external organization.

In Nonaka's model, truly innovative businesses and institutions can translate tacit knowledge into codified knowledge, combining knowledge and using it in production processes, creating, in turn, new tacit knowledge.

To effectively ensure the rapid flow of information and knowledge (in particular tacit knowledge), intensive interaction is needed between multiple individuals/organizations-enterprises (*interactive learning*). Learning by interaction, through formal and informal networks, provides the different individuals and/or organizations involved with stable, long-term and highly participatory relations.

In this way, interactive learning makes it possible not only to transfer and exchange knowledge but also generate new knowledge⁸.

Those taking part in the interactive learning process integrate the information received from others into their specific cognitive system and combine this information with previous knowledge. Thus they can develop knowledge in an original way and differently from others⁹.

⁶ Business models embedded in a company's production methods and organization.

⁷ I. Nonaka and H. Takeuchi (1995), [The Knowledge-Creating Company](#), Oxford University Press.

⁸ Cf. R. Cappellini, "Creazione della conoscenza e innovazione", Faculty of Economics of the Tor Vergata University of Rome (2005), "According to an interpretation, which is closely linked to the development of cognitive sciences, learning processes are described as processes of construction, which do not involve mere acquisition of new information but rather a reformulation of problems, construction of different categories or models of mental representation, recombination and development of new heuristic problem solving procedures; <http://www.yorku.ca/hdnet/library.asp?id=161&subid=162>

The knowledge creation cycle is divided into eight stages (see figure)

The knowledge creation cycle

1. Codified knowledge is understood and absorbed
2. New codified knowledge is invented or created by combining codified knowledge in an original way
3. Codified knowledge is innovated or applied to solve applicative problems
4. Codified knowledge is formed or transformed into know-how or tacit knowledge
8. Codified knowledge is disseminated in different enterprises and sectors
7. Tacit knowledge is codified through socialization
6. Collective tacit knowledge is developed in organizations and institutions
5. Interactive learning processes are developed by exchanging tacit knowledge

3 The role of the territory

The territory becomes a crucial factor in determining the innovative capacity of enterprises and organizations¹⁰, in terms of both knowledge heritage and accumulated know-how, and as "interactive-relational" areas.

The basic idea is that it is the variables in localized knowledge, "localized cognitive capital", which can guarantee, at a time of increasing globalization and standardization of production processes, long term competitive advantage. Moreover, "the more this localized knowledge is specific, not transferable to other contexts and uncoded, the more difficult it is to trigger imitative processes that can erode this advantage"¹¹.

The creation, dissemination, regeneration and use of this localized cognitive capital is achieved through complex processes of collective and interactive learning that are triggered by two specific conditions: the **geographical and relational proximity** of the various actors involved in the process (companies, customers, suppliers, research centres, universities, institutions, etc).

The organization of fully fledged territorial innovation systems (TIS) is seen as an effective way of metabolizing these processes by different schools of thought that have analyzed the relationships existing between knowledge, territory and innovation (especially schools of thought linked to the concepts of: *milieux innovateurs, regional innovation systems and learning regions*)¹².

Proximity to other actors, concentration and/or proximity to firms of the same or different sectors of a chain, proximity to places of knowledge creation, such as universities, research centres etc., are the preconditions for the establishment of *knowledge spillovers*, but this does not fully explain the dynamics that trigger these processes. Indeed it is simplistic to think that the production and dissemination of knowledge spillovers comes about through "purely probabilistic contact mechanisms".¹³

The factors that determine the greater innovativeness of one area compared to another, are, in fact, much more complex. To the concept of **physical proximity** we must add **cultural proximity**, that is a sense of belonging to an area, capacity for interaction with others, shared common values, which, in short, determine **relational capital**¹⁴. And it is precisely relational capital, consisting of various forms

⁹ Cf. R. Cappellini, op. cit.

¹⁰ When referring to enterprises or businesses these include both industrial and service companies (including tourism).

¹¹ Cf. R. Capello and A. Faggian (2002), "Knowledge, innovation and collective learning: theory and evidence from three different productive areas in Italy", <http://www.ersa.org/ersaconfs/ersa02/cd-rom/papers/042.pdf>

¹² For a recent analysis of territorial innovation models, see: C. Carricazeaux and F. Gaschet (2006) "*Knowledge and the diversity of innovation systems: a comparative analysis of European regions*", Cahiers du GRES - Groupement de Recherches Economiques et Sociales, <http://beagle.u-bordeaux4.fr/gres/publications/2006/2006-29.pdf>; For a critical review of these models see: F. Moulaert and F. Sekia, "Territorial Innovation Models: A Critical Survey", in *Regional Studies*, Vol. 37.3, pp. 289–302, 2003; D. Doloreux, S. Parto (2004), "*Regional Innovation Systems: Current Discourse and Challenge for Future Research*"

¹³ Cf. R. Capello and A. Faggian, op. cit.

¹⁴ Cf. M. T. Matisse (2005), Rational capital is to be understood as "the capacity of interaction - between businesses, but also between businesses and local people - arising from a strong sense of belonging to an area and strong cultural proximity". "*Les apports du GREMI*

of explicit and implicit cooperation between territorial actors, and of public and private partnerships, which is the essential element/prerequisite that triggers the processes of knowledge spillovers.

The dissemination of knowledge in a territory, through **collective learning** processes, or "dynamic and cumulative knowledge production processes, is achieved through interaction mechanisms typical of an area characterized by a strong sense of belonging and strong relational synergies"¹⁵, and therefore strong relational capital (*milieux innovateurs*).

Following this approach, the specific channels for the dissemination of knowledge in a territory are: the high mobility of factors relative to capital, (for example new business spin offs); knowledge (for example, stable and profitable relationships between businesses, local suppliers and customers); labor (local labor market mobility). Innovative processes are based, therefore, on paths and methods that are not consistent with the formal procedures for acquiring knowledge and know-how in a structured R & D laboratory, but which represent a kind of "**implicit territorial laboratory**".

The territory's role in determining innovation capacity is, therefore, expressed through socialized knowledge creation processes, accumulation and dissemination of knowledge and reduction of the uncertainty that usually characterizes the innovation process (risk socialization)¹⁶.

The importance of geography now emerges more clearly, with its heritage of knowledge and accumulated expertise and as an area for interaction and relations.¹⁷

The concept of territorial innovation systems, in fact, refers to "complex systems characterized by interaction between multiple actors and institutions that produce and reproduce knowledge and know-how, govern how they are transferred to businesses and other local organizations, and manage how they are implemented."¹⁸

Due to the nature complex of these systems they need to be regulated by governance mechanisms that involve all actors to facilitate the implementation of innovative processes, avoiding the bureaucratic pitfalls of public administration and the corporate pitfalls of the special interests of different actors.

That is why more consolidated experiences always make use of **innovation development agents**, who are often not concentrated in a single organization but act for the wellbeing of the whole community: development agencies, service centers and technology parks and centers, universities, local authorities, educational institutions that facilitate the exchange of experiences, know-how and knowledge, urge action to meet different needs, link demand for skills and services to suppliers (both inside and outside the local area) to increase territorial planning capacity and boost its place in national and international contexts. To this we should add the importance of the support provided by financial institutions (banks, venture capital, etc.).

However, it is essential that the processes described above involve not only the actors in a certain area but also, through the development of non-local networks, actors and producers of knowledge outside the territorial context ("external learning").

Innovation should be seen as "*a localized (though not exclusively local) process*"¹⁹ and therefore territorial innovation systems must be open and linked to international, national and regional innovation systems in a perspective of multilevel governance²⁰.

à l'analyse territoriale de l'innovation ou 20 ans de recherche sur les milieux innovateurs" , <ftp://mse.univ-paris1.fr/pub/mse/cahiers2005/R05018.pdf>

¹⁵ R. Camagni, (2003), "*Regional Clusters, Regional Competencies and Regional Competition.*" In: *Cluster management in structural policy – International experiences and consequences for Northrhine-Westfalia*, http://www.ruhrpakt.de/downloads/veranstaltungsdocs/camagni_rede.pdf.

¹⁶ Ibid: (cognitive outcome of the milieu innovateur) "*Local relational space is seen as a means of reducing uncertainty, since – due to geographic and cultural proximity – collecting, evaluating and particularly transcoding information, selecting decisional routines, controlling and coordinating competitors (all functions usually performed by research and development or strategic planning teams in large enterprises) are carried out collectively within the social context of the local milieu.*"

¹⁷ Cf. B. Asheim and L. Coenen (2006) "*It is crucial not to treat geography as simply referring to physical space but as socially constructed, relational space.... the territorial system derives its salience from localized and dynamic patterns of communication, search, learning, knowledge-sharing and innovation.*" "Constructing Regional Advantage at the Northern Edge", CIRCLE - Electronic working papers series, http://www.circle.lu.se/html/working_papers.aspx

¹⁸ Cf. G. Garofoli "Piccole imprese, innovazione e territorio: economie di apprendimento e sistema innovativo locale" in R. Camagni- R. Capello (edited by), "Apprendimento collettivo e competitività territoriale" Franco Angeli, Milan, 2002.

¹⁹ Cf. B. Asheim and L. Coenen (2006), op. cit.

4. European Union programs and activities in support of regional innovation systems

Through the European Regional Development Fund, ERDF, the EU started promoting and financing innovation processes at the regional level in the 1994-1999 period.²¹ The 2000-2006 programme identified three strategic intervention areas: *regional economy based on knowledge and technological innovation* (through networks, incubators, spin-offs, support for technology and research projects, new technology services for trade etc.), *e-EuropeRegio*: the information society in the service of regional development (with solutions for e-business, e-commerce, web services, tools for knowledge management); regional identity and sustainable development (development of new applications for energy and waste management, sustainable tourism and innovative technologies for enterprises in the environment sector). Three networks were set up and co-financed, one for strategic issues aimed at promoting cooperation between regions and the sharing of experiences and best practices:

- ❑ *ERIK* (European Regions Knowledge Based Innovation Network) for technological innovation, headed by the regions of Tuscany and Emilia-Romagna, comprising 13 members and 23 associate members.
- ❑ *IANIS +* (Innovative Actions Network for the Information Society) information at the service of regional development, headed by Saxony and involving 39 regions.
- ❑ Sustainable European Regions Network coordinated by Wales, which includes 11 regions.

For the 2000-2006 period the Commission proposed a new programme²² aimed at encouraging each region to find their own innovation promotion solutions. These programs were designed and implemented directly by the regions, in partnership.

In order to capitalize on important experiences carried out over the past few years, the European Commission has published two documents of great interest: "*Innovative strategies and actions: Results from 15 years of Regional Experimentation*", October 2006, which is a practical guide urging regions to test innovative approaches in future operational programs (2007-2013) and to improve their innovation strategies using concrete methodologies, tools and examples implemented in the 15 years experience of Innovative Actions, and "*Examples of regional innovation projects - Programs for Innovative Actions 2000-2006*", March 2007, which gave an analysis of innovative projects, highlighting existing best practices in different European Union regions, relating to regional programs for Innovative Actions in 2000-2006.

5. Best Practices

5.1 Sweden and Region Skane

Sweden is permanently in the top rankings of countries with the most significant performance in terms of innovation, showing excellent values in all areas that are normally taken into consideration in this type of analysis²³.

²⁰ Cf. P. Cooke and G. Schienstock (2000), op. cit.

²¹ Several scholars have stressed the importance of these programmes and the validity of the proposed systemic approach to innovation: D. Maillat and L. Kebir "*Conditions-cadres et compétitivité des régions :une relecture*", Revue canadienne des sciences régionales, 2001, Vol. XXIV n°1; Asheim B. and Coenen L. (2006), op. cit

²² 144 of the 156 regions submitted 181 proposals (figures for February 2005).

²³ Finally, as announced by the 2006 "*European Innovation Scoreboard*", Sweden continues to lead the Group of *Innovation leaders*, along with Switzerland, Finland, Denmark, Japan and Germany. The indicators used to measure the performance of innovation in the 'European Innovation Scoreboard' refer to five specific aspects of innovation, divided into two categories: Innovation inputs (Innovation drivers, knowledge creation, innovation and entrepreneurship) and Innovation outputs (Applications, Intellectual Property): Innovation drivers (science graduates, population with service sector training, broadband penetration, participation in continuous learning, training of young people), Knowledge creation (public expenditure in R & D, private spending on R & D, percentage of R & D in medium/high tech sectors, enterprises that receive public funds, university R & D funded by business), Innovation and Entrepreneurship (SME in-house innovation, innovative SMEs that collaborate with other SMEs, spending on innovation, venture capital, spending on ICT, SMEs that implement non-technological change); Applications (employment in high tech services, export of high technology products, sales of new-to-market products, sales of new-to-firm products, manufacturing employment in medium/high tech sectors), Intellectual property (different types of new patents). <http://trendchart.cordis.europa.eu/>

As part of a new national strategy to promote socio-economic development, greater territorial cohesion and a more active role of sub-national governments in policy development, the Swedish government launched in 2001, the "VINNVÄXT programme - Regional growth through dynamic innovation systems".

This programme, administered by the National VINNOVA Agency (Swedish Agency for Innovation System) is designed to promote sustainable regional development through the construction and/or consolidation of dynamic and competitive innovation systems on an international scale, having noted a lack of a systemic approach to innovation at the regional/local level and, therefore, a lack of effective interaction between institutions/local administrators, universities and the business world. To that end, the VINNVÄXT programme puts a strong emphasis on collective learning²⁴.

The programme focuses on collaboration between different actors within the so-called "triple helix" (government - industry - university), on the construction of structured platforms for collective learning and the development of a joint strategic vision of key territorial actors, with respect, at least in the first phase, to a specific area/sector with strong growth potential.

Activities must focus on a sector in which the region already has a lot of expertise, offering a realistic assessment of its potential for growth and a credible development strategy (such as through the creation of an international brand) and developing research strategies that meet the needs of the productive/industrial fabric (for example through the creation of new courses for specialists, as well as new areas of research), so as to encourage the active participation of businesses throughout the project cycle²⁵.

The Region Skane²⁶ participated successfully at the first call of the VINNVÄXT programme, presenting a project proposal aimed at the progressive construction of a regional innovation system built around the agro-industry chain "*Food Innovation at Interfaces*", since the sector is responsible for about 50% of the country's agricultural/agro-industrial production²⁷.

The project proposal was submitted by the consortium "Skåne Food Innovation Network", whose members come from the "triple helix" and is built on a shared strategic vision: to make Skane a leader in the agro-industrial field, turning the region into a major global "innovative food region", through investment in new *knowledge-intensive* market segments.

At the operational level "*Food Innovation at Interfaces*", is divided into four main project areas:

- ❑ *Food and Health - Functional Foods,*
- ❑ *Good and Convenient Food on a Large Scale*
- ❑ *International Consumer Marketing*
- ❑ *Innovations in Theory and Practice*

From 2003 to 2005, 87 projects were launched with the participation of 74 researchers and 142 companies.

5.2 The Helsinki Region

The Helsinki Region²⁸ is high in the European rankings for knowledge economy attractiveness, making it one of the main "knowledge hubs" globally (*Regional Innovation Scoreboard 2006 World Knowledge Competitiveness Index 2004 European Competitiveness Index 2006*).

²⁴ Cf. "*Effects of Vinnväxt in Swedish Regions*" - Final Report, 2007; www.vinnova.se

²⁵ Note that a percentage of at least 50% of the project budget should be invested in R & D activities relative to the identified areas/sectors.

²⁶ Region Skane is one of four "experimental" regions engaged in an effort to increase autonomy in regional development by conferring special powers to a *regional council*. The 'region' was formally established in January 1999 with the merger of Kristianstad County and Malmöhus County.

²⁷ www.skaneinnovationnetwork.se

²⁸ The Province of Southern Finland (Etelä-Suomi) is divided into six regions, including Usimaa (another name for the Helsinki Region). The region of Usimaa is in turn divided into 24 municipalities. The three major cities in the region are Helsinki (560,000 inhabitants), Espoo (230,000) and Vantaa (185,000).

The presence of highly qualified human capital, considerable know-how, especially in the area of ICT, major knowledge infrastructure (the region is home to the largest technology cluster in northern Europe, one example is Nokia), and a deeply rooted culture of cooperation, are the main strengths of the region.

Finland's regional innovation strategies are based on detailed studies of business needs in all fields of interest (training, R & D, financial needs, etc.) and the needs of different sectors, taking into account the interaction mechanisms established between enterprises, universities, institutions, financial system, etc. It follows that action plans are drawn up which have clearly defined priorities, calibrated on the potential and weaknesses of the area's system, which are systematically monitored and evaluated²⁹.

In 1994 the government launched, as part of its regional development policies, the "*National Centre of Expertise Programme*", a programme designed to create 22 regional centers of excellence, operating in more than forty sectors. The centers are based on the principle of geographical and sectorial specialization with the main aim of stimulating coordination between industrial partners and local universities.

In the case of the Helsinki region, close cooperation between local actors (companies, research institutions etc.), is the most important element. As mentioned above, the cooperative approach is the basis of the Finnish innovation model, both for relations between national agencies/centers and regional systems, and relations between local actors within regional innovation systems. The region has its own innovation promotion strategy³⁰, which sets the guidelines for the development of the regional innovation system.

The *Innovation Strategy - Helsinki Metropolitan Area Programme*³¹, which has been operational since 2005, coordinates the actions of different territorial actors in the field of innovation, based on identifying a shared vision of the area's future development. The long-term goal is to make Helsinki the world innovation center for the arts and sciences, thanks to interventions aimed at improving infrastructure and local innovation potential.

The programme revolves around four main hubs: improve the international attraction of the region in terms of research and expertise, strengthen the expertise of the region's clusters (in collaboration with *centers of expertise*); create common development platforms for the creation of future clusters; reform public services by introducing innovations; provide, cross-sector support for the region's innovation activities.

To reduce the risks associated with the lack of diversification of the region's industrial fabric, characterized predominantly by the ICT sector (25% of industrial activity), *Culminatum Ltd Oy - Helsinki Region Center of Expertise*, undertook, in 2001, a course of action aimed at promoting and developing six new areas considered particularly competitive at the international level: active materials and microsystems, digital media, learning services, genetic technology and molecular biology, logistics, medical and welfare technology; software. These sectors are developed by involving the area's knowledge infrastructure, in particular public technological parks and, in the case of software, logistics and microsystems, in collaboration with *TecnoPolis* (a private company for technology transfer which has three facilities in the Helsinki area).

5.3 The Emilia-Romagna Region

The Emilia-Romagna Region won the *European Commission Special Prize for Innovative Policies (2004)*, the first out of 22 European Regions of Excellence.

The regional strategy for promoting innovation started with major legislative action (Regional Law n.14 May 2002, *Promoting a regional system for industrial research, innovation and technology transfer*) which followed the approval, in the same year, of the *Regional Programme for Industrial Research, Innovation and Technology Transfer - PRRIITT*, an instrument to implement the law, which led to the establishment in 2003 of the *Regional Network of Research Laboratories and Innovation Centers and*

²⁹ Cf. Jean-Claude Prager (2005) "*Le management stratégique des régions en Europe*" (Tome I: Les pratiques régionales), *Agence pour la diffusion de l'information technologique* (République Française), www.adit.fr/IT/evenement_IT.html

³⁰ Ibid

³¹ The programme involves the four main urban areas of the region: Helsinki, Espoo, Vantaa and Kauniainen, which together have over a million inhabitants.

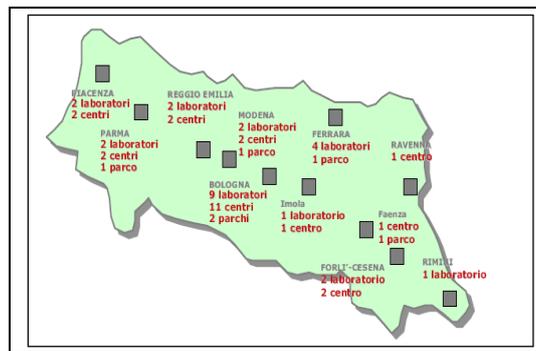
Parks, assigning ASTER, *Emilia-Romagna Technological Development Agency*, which in 2001 became the ASTER consortium - *Science Technology Enterprise*, the duty of coordinating the network, delivering services and implementing projects aimed at promoting the innovation of the region's productive fabric.

Through this, the region aimed to develop a strategy to ensure the systematic involvement of universities and research institutes in promoting competitiveness and quality in the regional system, to ensure the development of innovative activities and growth of innovative knowledge in existing sectors.

At the end of 2004 the "*Regional Network of Research Laboratories and Innovation Centers*" was formed, which is essentially the infrastructure within which specific PRRITT measures are triggered.

The Network, the first in Italy, consists of 57 facilities dedicated to industrial research, innovation and technology transfer and 1,300 enterprises located in different areas of Emilia-Romagna. The facilities comprise 27 industrial research laboratories, 24 innovation centers and 6 innovation parks operating in 7 key areas of the region's economy: High Mechanical Technology (HI-MECH District), Environment, Energy and Sustainable Development, Food Processing, Building and Construction Materials, Life Sciences and Health; Organizational Innovation; Information and Communication Technologies (ICT).

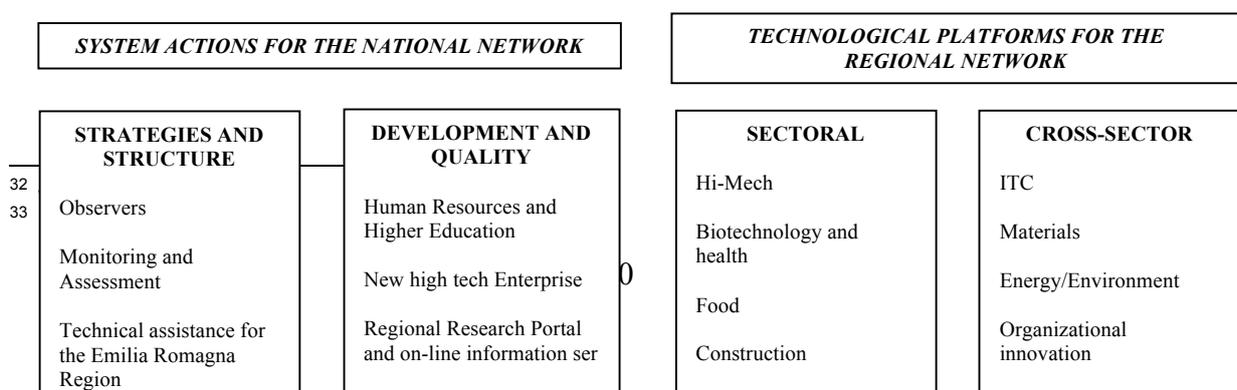
The aim of the network³² is to enrich the area's heritage of knowledge by strengthening synergies between different research centers, encouraging the creation of a critical mass of high level industrial research activities and setting up effective mechanisms for the transfer of new technologies from research centers to the region's businesses.



The Consortium operates through two main strategies: system actions and technological platforms for the regional network.

System actions are directed at strengthening the system's strategies and structure (actions to support the definition and development of system strategies, assessment and monitoring) and developing system quality (cross-sector actions aimed at implementing strategies and improving the quality of expected results). The technology platforms are designed to provide a roadmap for joint technological actions at the regional level (but not only), which can mobilize a critical mass of public and private resources; they are divided into sectorial technology platforms (technological initiatives and actions dedicated to specific sectors) and cross-sector technology platforms (covering technological initiatives and actions common to different sectors).

Specifically, ASTER³³ provides services to the network; coordinates the activities of laboratories and centers, promotes and implements, on behalf of universities, research institutes and the region, strategic projects for developing the network (European and national projects), contributes to the international promotion of the regional research system, and provides assistance to the region in monitoring activities, regional foresight and operations management.



The Emilia Romagna Innovation System

5.4 The Mersin Region³⁴

The aim of the "RIS-Mersin" project is to build, together with the area's key actors, a platform for ongoing work aimed at promoting collective actions for territorial innovation. The project will involve the development of a regional innovation strategy to be implemented through an action plan.

This, in turn, is built on four strategic objectives:

1. Improve the regional innovation system while encouraging the promotion of a culture open to innovation;
2. Encourage investment in innovation;
3. Enhance the region's development potential in three key areas;
4. Encourage the creation and development of new knowledge infrastructure ("knowledge producers").

The general aim is to try and involve actors who are still missing or not sufficiently represented in the present system by promoting progressive capacity building. This will be carried out through structures specializing in technology transfer (within universities, research institutes, etc.), organizations (public and private), advanced services to businesses (in the field of intellectual property rights, knowledge and innovation management, technology forecasting, etc.), financial institutions and instruments (financial incentives for innovation, venture capital funds, business angels, etc.). In addition cluster-building and business networking processes are also promoted.

To improve the regional system for the governance of innovative process, a *Regional Innovation Council* has been set up to take charge of governance, made up of representatives of the region's stakeholders.

Other important aspects include the promotion of a culture open to innovation and the construction of a regional image that can attract outside human and financial resources.

The second aim relates specifically to the creation of innovative companies with strong growth potential, using appropriate funding mechanisms to start-up innovative companies and university spin-offs.

The third strategic priority is to enhance the potential for regional development in three key sectors: tourism, agro-industry and logistics,

The fourth and final goal is the creation and development of new knowledge infrastructures ("knowledge producers", such as centers of excellence in areas/sectors of strategic interest for regional development).

6. Innovation, social inclusion, sustainable development

Innovation is the main instrument for supporting territorial competitiveness, but it cannot be considered either a goal or detached from development quality.

³⁴ In this paragraph, for the sake of uniformity, the term Mersin Region is used although, in the administrative division of Turkey, Mersin is one of the country's 81 provinces.

The latter is the main goal to improve people's living conditions and it is to that end that the leverage of competitiveness and innovation must be applied: decent, equitable and sustainable human development is the fundamental aim of economic policies.

The achievement of economic growth (income, employment, exports etc.) in a way that is compatible with social development (participation, education, job quality, births-mortality, life expectancy, etc.) and environmental protection (indicators of maintaining natural resources, bio-diversity, etc.) is one of the most difficult and controversial challenges, since it is tied to the constraints of an increasingly tight budget for short-term policies and the danger of negative prospects for future generations.

The United Nations and some of its initiatives, such as ART programs (Support to Thematic and Territorial Networks) work towards achieving this compatibility³⁵.

The ART Initiative promotes a new type of multilateralism, in which the United Nations system works with governments, encouraging the active participation of local communities and social actors from the South and North in the pursuit of the Millennium Development Goals.

Can innovation policies be oriented towards the goals of quality of life, social equality, economic competitiveness, democratic governance and environmental protection?

It is possible if on the one hand we encourage highly participatory local innovation systems finalized towards collective learning, and on the other we pursue innovations simultaneously on several fronts:

- i) innovations that can improve competitive potential, both in business and the public administration;
- ii) innovations that can improve the access of disadvantaged populations to social services and the economy;
- iii) innovations that can promote participatory processes;
- iv) innovations that can improve quality of life in terms of health, ease of access, physical and food security, use of time etc.;
- v) Innovations that encourage the creation and dissemination of innovations themselves.

Innovations that can improve competitive potential, both in business and in public administration;

As far as business is concerned: product, process and organizational innovations that boost long-term competitive performance, typical local products and vocations, territorial integration of competitive chains, democratic business management. public administration innovations: transparency, electronic services to citizens, quality of information, access to and ease of use of services, quality services, environmental services and participation.

Innovations that can improve the access of disadvantaged populations to social services and the economy;

The organization and management of services, promoting, for example, various forms of social enterprises, direct producer-consumer relations, the solidarity economy, social shareholders, joint venture and public private partnership services (such as specific territorial economic development agents), corporate social responsibility, integrated actions to support the most disadvantaged and vulnerable population, using modern information technology.

Innovations that can improve quality of life in terms of health, ease of access, physical and food security, use of time etc.;

Innovations that promote food quality, food processing, logistics, communication, non-harmful use of technologies, health improvement, indiscriminate access to new technologies, improving the environment and so on.

Innovations that can promote participatory processes;

Both organizational innovations, such as new forms of civil society associations, and participative innovations, such as participatory budgets, territorial pacts, negotiated planning. Innovations in information technologies, public consultation, dissemination of information, and assessment and

³⁵ Cf. Canzanelli, 2006

monitoring processes (for example open geographic information systems) can enhance participation in development processes.

Innovations that can promote the creation and dissemination of innovations themselves.

All procedures that create opportunities for triggering innovative ideas, exchange of practices and experiences, dissemination of new techniques and technologies. These may include *ad hoc structures*, such as technology parks, business innovation centers, technology transfer centers, applied research labs, one-stop shops for innovation or informal activities such as innovation clubs, which carry out internal and external benchmarking, or occasional activities, such as international promotion events, exchange and dissemination events, or processes to stimulate or promote innovation, involving schools, universities, governments and associations.

7. A territorial innovation strategy for human development programs

From the above analysis we can identify the following general principles:

- 1) Innovation is a *multidimensional* phenomenon of a *collective* nature, the result of relations between different actors interacting with each other and which form a (territorial) innovation system (interactive learning).
- 2) Membership of an organized community enables organizations to transcode certain information more easily, or interpret behavior, codes, messages that can be used to promote innovation, making it possible to create of a heritage of specific tacit knowledge, which can be further enriched through the exchange of different experiences.
- 3) Territorial innovation systems are becoming increasingly important in Europe, where communities benefit from close physical and cultural proximity, a sense of belonging to an area, of citizenship, the capacity for interaction, shared values and common aims, which produce and reproduce knowledge and know-how, govern how it is transferred to businesses and other local organizations, and manage how it is implemented.
- 4) To promote territorial innovation systems, it is important to have a governance body, such as development agencies, technology centers and parks, universities, educational institutions that facilitate the production and development of innovation and interchange of different experiences and knowledge, making sure different needs are met, linking demand for know-how and services with providers (both inside and outside the local area), increase the planning capacity of local actors and businesses, boost the territory's position nationally and internationally, and channel the support of financial institutions.
- 5) Innovation is an important tool in a shared view of territorial development and is part of a strategy, which aims to improve people's quality of life.

How can we apply these principles within the human development strategies?

Generally these strategies (as for example those implemented by the ART Initiatives (Support to Territorial and Thematic Networks) are highly participatory, in which local actors jointly analyze and decide what steps should be taken to meet the needs of improving quality of life, it is clear that the aspects discussed so far are functional to this strategic plan since they include *collective governance* (the territorial nature of development processes, collective learning, territorial systems for participatory implementation, etc.) and because of the role played by innovation in *improving the socio-economic conditions* of the population.

It is clear that, because of the path-dependent nature of innovation processes and local development processes, there is no single recipe that can be adapted to different contexts.

By this point of view the aforementioned ART programmes have already promoted and consolidated experience and knowledge in different aspects of the innovation process in the various countries of the world where it has operated³⁶.

³⁶ Albania, Angola, Bosnia-Herzegovina, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Lebanon, Libya, Morocco, Mozambique, Nicaragua, Dominican Republic, Serbia, Sri Lanka, Sud Africa, Tunisia, Uruguay

By supporting territorial economic development strategies and processes (ISLEDA Programme)³⁷, the international transfer of innovative practices (IDEASS Programme)³⁸ and the role of universities in forming and building laboratories (UNIVERSITAS Programme)³⁹, ART programmes have supported the local actors and national policies of developing countries in the production and dissemination of knowledge.

The ART type programs are then the most appropriate for enhancing the territorial systems of innovation, according to the principles and actions illustrated in the previous chapters.

These actions can be described in a logical order but they are totally interdependent:

- 1) the construction of internal innovative capital
- 2) the aims of the innovation system
- 3) territorial planning for innovation
- 4) implementation of innovative actions
- 5) construction of external relations

The construction of internal innovative capital

Firstly we must identify a group (even if small) of local institutions or personalities that are particularly sensitive to the issue of innovation and who have a certain local charisma. They could become a "**promoting group or team leader**" for local innovation dynamics and have the task of creating consensus through awareness raising actions, focusing on the importance of innovativeness.

It should be borne in mind that, generally, innovation drivers can come from universities and research centers, innovative enterprises and associations (Chambers of Commerce), local administration offices that are particularly sensitive to the issue. This group will organize events, conferences and initiatives to raise public awareness and initiate the activation of a local network.

The **local network**, which in many cases, will be formalised through **Territorial Innovation Councils**, made up of representatives of various regional stakeholders which take of charge of "innovation governance" and which incorporates the original promoting group, will establish a working plan that includes the best local initiatives to promote the processes of innovation, exchange of experiences and dissemination.

For this purpose awareness-raising initiatives can be organized for the purposes of exchange, promotion and dissemination:

- school and educational programmes that use innovation as a tool for development
- national and international fairs and events
- scholarships, which reward innovative applications
- focused university courses
- focus groups on specific issues
- newsletters and other media instruments
- training

These networks work with other territorial structures in contributing to strategic planning and forming a joint vision of development.

The goals of the territorial innovation system

A good example of goals is the Mersin Region, namely:

1. **Improve the regional innovation system by** simultaneously encouraging the promotion of a culture open to innovation, creating or consolidating facilities specializing in technology transfer, organizations specializing in delivering advanced services to businesses (intellectual property rights, knowledge and innovation management, technology forecasting, etc.), financial institutions and

³⁷ See www.ilsleda.org

³⁸ See www.ideassonline.org

³⁹ See www.yorku.ca/ishd/

instruments (financial incentives for innovation, venture capital funds, business angels, etc.), business networking.

2. **Promote a culture that is open to innovation** among different actors (promotion of entrepreneurship, creativity, acceptance of risk-taking strategies, and formation of knowledge sharing networks, dissemination of ideas, etc.).

3. **Encourage investment in innovation**, by improving the administrative and legal context, investing in human capital development (high-profile expertise), setting up appropriate mechanisms to fund the start-up of innovative companies and university spin-offs, improving interaction between the business community and the producers of knowledge.

4. **Enhance the development potential** of the area by focusing on key sectors of the local economy

How the innovative actions can be implemented?

To this end proper structures are required to form the basis of the territorial innovation system.

Firstly a head agency should be defined, as we have seen in Europe. In the case of ART programmes, local economic development agencies (LEDAs) could take on this role, after their functions and responsibilities have been updated.

The LEDAs could, therefore, promote and coordinate other **specialized structures** such as:

- applied research laboratories
- business innovation centres, which may be linked to universities
- one-stop shops for innovation
- centres for technology transfer
- science and technology parks

The role of **finance** should not be underestimated, which represents a primary lever in the introduction of new techniques and technologies in businesses and the public administration.

Tools such as specialized guarantee funds or venture capital can act as a financial catalyst for innovations, and to that end, the involvement of banks and financial institutions is essential.

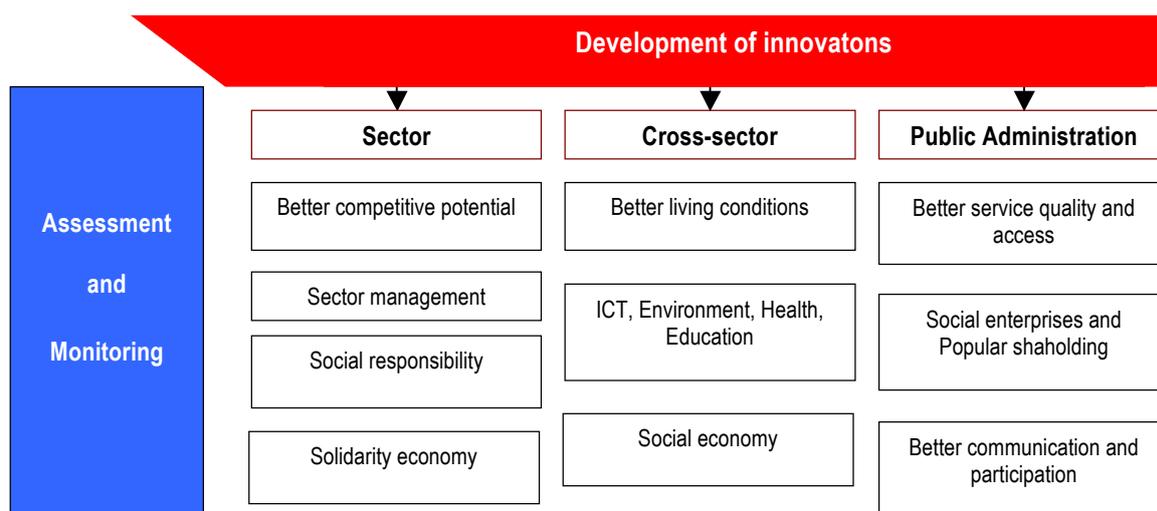
The process of promoting and implementing territorial innovation systems can be seen in diagram form below.

THE PROCESS FOR THE PROMOTION AND IMPLEMENTATION OF A TERRITORIAL INNOVATION SYSTEM

Aim	Promote the capacity for innovation to maintain sustainable territorial competitiveness and continuously improve people's living conditions without discrimination
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General goals	Improve the innovation system	Disseminate the culture of innovation	Stimulate innovative investment	Enhance endogenous potential
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Specific objectives	Build relational capital	Create a culture of innovation	Improve the legal context	Map innovative resources
	Set up a governance system	Carry out awareness-raising activities	Train innovative entrepreneurs	Analyze needs
	Improve innovative capacity	Dissemination and exchange activities	Fund innovative companies	Verify the state of the art for key sectors
	Train innovation agents	Reward innovative ideas	Improve business research interation	Encourage innovation in key sectors



Operational instruments	Structures	Finance	Networks	Pilot actions
	Development agencies as leaders	Guarantee funds	Links with national institutions	Promotion of innovative enterprises
	Technological and Scientific parks	Seed and Venture Capital	Links with international institutions	P.A. innovations that have a strong impact
	Technology transfer centres	Popular shareholding	Thematic partnerships	Innovative social enterprises
	Innovative business incubators (BIC)	Pre-investment funds		Technology transfer
	One-stop shops			