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SCIENCE PARKS: FROM THE OUTSOURCED INNOVATION TO THE CO-MANAGED INNOVATION

PARALLEL SESSION 1

STPs and AIs. Evolution of models and strategies: adapting to the new context

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Abstract
The purpose of this paper is to investigate the managerial approach adopted by Science Parks in order to manage the complexity of openness orientation in innovation development.
The research is founded on case studies related to Italian Science Parks that belong to a wider research focused on innovation and spatial relationships.
The research results are mainly ascribable to the ability of Science Parks to facilitate networking between tenants and also between tenants and external actors that belong to an Epistemic Network.
As described in the case study, the Science Parks are characterized by new business model founded on providing value-added services and networking. These actors thus become knowledge intermediaries that allow firms to identify innovation parties and transform them into innovation partners and thus outlining the shift from outsourced innovation to co-managed innovation.
In this way, Knowledge Intermediaries reinforce the relationship's DNA in an Epistemic Network founded on loyalty, engagement and commitment to improve the strength of a relationship made up by a shared vision and shared destiny.

Keywords:
relational proximity, epistemic network, Science Parks, spatial relationships, relationship's DNA, co-managed innovation, knowledge intermediaries

1. Introduction

In a complex and highly competitive global market, companies have to innovate faster than ever. To meet the new challenges of this economic environment, companies are adopting new approaches to their innovation strategies and processes (OECD, 2012). Firms are increasingly opening their innovation processes and collaborating on innovation with external partners (suppliers, customers, universities, etc.) (OECD, 2012). As noted by several scholars, in order to manage the new innovation landscape firms are specializing in their core competences and developing relationships to access external and complementary resources (Chesbrough, 2003[1]; Gann, 2005[2]).

Firms may now be looking outside in order to find new innovation parties, but is this sufficient for developing effective innovation? How much openness actually characterizes and makes for effective innovation?

The opening up of innovation between parties generates benefits because it can provide new firms or innovative firms access to information, advice and influence as well as the resources held by others (Hoang and Antoncic, 2003[3]; Hite and Hesterly, 2001[4]). But this may also create complexity: What kind of approach should be adopted in order to manage openness that furthers innovation and minimizes complexity? Which parties could be transformed in innovation business partners? What is the role of Science Parks in this context?

While innovation needs relationships, relationships also require the right management approach to reach positive results. This requires a shift from "searching for external party and its sources" to "managing the relationship with a business partner and its resources to reach a goal." This is based on a "co-managed" approach in which firms select specific stakeholders to become partners that cooperate in innovation development, and transforming knowledge into business ideas.

The co-managed approach requires both an "external" orientation and also the selection of key stakeholders, a process of collaborative learning and the development of relational capital. How can Science Parks support the development of co-managed innovation? How can firms select a key partner in an Epistemic Network?

Traditionally, Science Parks represent a systematic method of providing business assistance to firms. The members of the network become active participants in the innovation process by outlining on the basis of strong relationships, a business community that helps to develop innovation (Bourne, 2009[5]).

The main aim of this paper is to investigate the role of Science Parks in Epistemic Network. The findings show that openness can be managed on the basis of a shift from outsourced innovation to co-managed innovation that is founded on collaborative learning and relational proximity. Through the latter, on a new interpretation of space, firms can better identify the right stakeholder in order to transform them from parties to partners with which to develop long-term relationships to co-produce effective innovation. After the literature review, the paper presents evidences from the Italian Science Parks.

2. Emergence of co-managed innovation and relational proximity

"Openness" has increasingly become an important orientation for accessing knowledge resources in order to generate new ideas and bring them to the market (Chesbrough, 2003[6]). Removing the distance from the close model in which innovation is produced inside the firm, the open approach requires considering how a firm's creation of knowledge firm depends not only on what the firm realizes, but also on what firms do to each other. From this perspective, innovation implies connections with external actors; firms look for systematically performing knowledge exploration, retention, and exploitation both inside and outside an organization's boundaries throughout the innovation process (Lichtenthaler, 2011[7]).

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Innovation requires not only the research of external sources of innovation in an "outsourcing" perspective, referred to as "contracting out a business process to a third party," but also the development of an effective innovation solution involving strong interaction and cooperation with knowledge partners founded on the sharing and combining of knowledge (Powell et al., 2005[8]; Håkansson and Olsen, 2011[9]). Several stakeholders play a prominent role, including firms, research centers, public institutions, and universities (Etzkowitz and Leydesdorff, 2000[10]) that might have different objectives and priorities cooperating in the innovation process (Pekkarinen and Harmaakorpi, 2006[11]).

The development of the co-managed innovation requires continuous interactive learning based on collaboration and related to the creation, exchange, and combination of knowledge (Håkansson and Johanson, 2001[12]). In addition, the development of interconnected relationships in a long term perspective refers to collaborative learning and collaborative entrepreneurship. Unlike collective learning, which is a way for an independent firm to gain access to the sticky as well as the tacit knowledge of another firm, innovation is generated by the ability of the firm to cooperate in an external perspective (Miles et al., 2006[13]). The development of a firm depends on the development of its relationships (Echols and Tsai, 2005[14]). The interconnection of the relationships thus creates a value network founded on collaboration, with different actors, in order to share resources (Håkansson et al., 2009[15]).

In particular, knowledge relationships are narrow in Epistemic Communities (EC) and Communities Of Practice (COP) that involve a number of actors, linked by sharing the same profession or the same knowledge framework (Amin and Cohendet, 2004[16]). Defined as "a network of professionals from a variety of disciplines and backgrounds," the COP has a shared set of normative and principled beliefs, which provide a value-based rationale for the social action of community members. The COP is considered a network based on shared practices and mutual engagement that has developed a "situated" social theory of learning (Wenger, 2006[17]). Differently EC is related in particular to the scientific knowledge characterized by the main qualities: It spreads easily, going beyond the concept of ownership; it loses value over time, especially due to the imitative processes; and it has a "non-rival" use and therefore can be shared (Rullani, 2006)[18]. The development of epistemic communities also requires investing in their own distinctive differences—namely, in that kind of knowledge, skills, and abilities that make distinctions in the network (Rullani, 2006). Epistemic communities are then extended communities defined not by membership in the same territory, the same company, or the same profession, but by the same worldview and characterized by relational capital.

Relational capital, considered by many as a form of social capital (Granovetter, 1985[19]), is generated by the close interaction between partners and it is founded on mutual trust, respect, and friendship (Yli-Renko et al., 2001[20]). This close interconnection leads to the emergence of a congruence of goals and

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shared values (Nahapiet and Ghoshal, 1998[21]) that improve relationships and generate better business performance. The development of relational capital influences the relational proximity based on stakeholder engagement (Lenney and Easton 2009[22]) and a sense of shared destiny (Kohtamäki et al., 2013[23]). Effective innovation is more often founded on the emerging relational proximity and its relational space and thus on the new interpretation of spatial relationships.

2.1 Relational space

In the economic environment, space has always played an important role in the development of innovation, especially with the shift from a static approach based on efficient exchange (Williamson, 1975) to the dynamic perspective founded on relationships (Marshall, 1920; Becattini, 1987).
A first approach to analyzing the "space" in the economic management context refers to the physical characteristics of the metric space (Losch, 1954[24]). In this expectation, the definition of economic space is related to the contributions of the localization theory characterized by a predominantly static approach. The localization and interaction of organizations in a higher density territorial area allow firms to benefit from positive externalities arising from agglomeration economies. Based on this approach, the genomic space (Oerlemans, Meeus, and Boekema, 2000[25]) considers the industrial development process as localized, unbalanced, and cumulative (Peroux, 1955[26]). In this context, the main benefits can be summarized in external economies, localization economies, and agglomeration. Marshall (1920) pointed out the benefits of localization, especially considering the industrial atmosphere, the lower costs, and the dissemination of knowledge arising from the relationships between the local population and neighboring businesses. Geographical proximity thus promotes confidence in the logic of "trust needs touch" (Gallie and Guichard, 2005[27]) and supports innovation by facilitating the exchange of tacit knowledge.
On the other hand, geographic embeddedness can make firms vulnerable to external changes that exist beyond the local aggregation. The risk for business is becoming too introspective, and firms cannot respond to new market requirements in a flexible way. It follows, therefore, the need for a trade-off between local relationships and extra-local relationships to improve innovation development. Since the early 1970s, with research focused on districts and local milieux, the analysis of the development processes "from below" has been based on the concept of diversified space. Furthermore, in a dynamic perspective, the intensity of the interaction favors the transmission of ideas and information, generating knowledge spillovers and technology. Geographical proximity, combined with cognitive proximity (Wuyts et al., 2005[28]) and social proximity (Boschma, 2005[29]), allows for the investigation of effective mechanisms of learning and interaction. These interactions are based on similarities in terms of the way in which actors perceive, interpret, understand, and assess the context in which they operate.
Therefore, the modern enterprise cannot be understood through the analysis of what it contains, but only from the spatial relations that produce it and in which it is placed (Bathelt, 2006[30]). Everything has a position, but also everything is in a relation with the rest through interdependencies and connections; in the relational space, firms coordinate their actions in order to learn and generate new knowledge.

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Nor is such space limited to geographical, cultural, industrial, or intellectual boundaries. What happens between two firms might bring them closer to some other interaction processes but push them further from others in a network perspective. A business network can be considered a space connecting different actors that occupy a certain place (i.e., positions). Every position in a network is based on certain resources, but the network is also defined by the positions of the counterparts and their resources. Ties (boundaries) between the organizations of the network are considered to be factors that determine the growth and development of the firm. The boundaries of the network, and then the relational space, is not static, but it changes based on relationship development (Huemer et al., 2004[31]), generating new opportunities for knowledge sharing between new actors.

3. Research Approach

The purpose of this paper is to investigate the managerial approach adopted by Science Parks to manage the complexity of openness orientation in innovation development.
In order to better understand the phenomenon of open innovation and the new role of Science Parks, the paper applied a qualitative perspective (Dubois and Araujo, 2004[32]) and a case study approach (Beverland and Lindgreen, 2010[33]).
The analysis adopted an abduction process that enables data-driven theory generation (Järvensivu and Törnroos, 2010[34]): choices related to the theoretical framework influenced the empirical investigation. The research involved a systematic combination of the continuous interaction between theory and the empirical world (Piekkari et al., 2010[35]).
This case belongs to a wider research focused on spatial realtionships: 80 in-depth semi-structured interviews (face-to-face, e-mail, videoconference, and phone interviews) were conducted in the research project.
The main semi-structured interviews were realized over a period of two years, lasting from 60 to 120 minutes, with the key referents of Science Parks and firms involved in the innovation projects.
The primary data were combined with secondary data gathered from the firm's website, reports, trade press and other company documents. The holistic description of the network generated by multiple sources of evidence (Järvensivu and Törnroos, 2010[36]) has been required to analyze in greater depth the interconnected relationships.
These are emblematic cases in which we can observe the emergence of co-managed innovation in Epistemic Network. In particular the cases refer to Science Parks that at the beginning supported networking with external actors and then they decided to facilitate the internal relationships among tenants.
The Science Parks support the creation and growth of innovation-based firms through incubation and spin-off processes and provide other value-added services (IASP, 2002). STPs facilitate geographic proximity in order to create an environment that promotes technology transfer and innovation (Hansson et al. 2005). The main functions of STPs are generally synthesized in technology transfer and development of new venture based on the physical space. More and more the function of Science Parks, as depicted in the following section, has been focused on collaborations with different internal and external organizations to improve the innovation development process.

4. Science Parks: the Italian context

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In Italy the first STP was established in the 1990s using funding from the Ministry of University and Scientific Research and the Structural Funds of the European Community. The Association of Science and Technology Parks, which represents Italian Parks, includes more than 27 members working together in a network of 800 hi-tech firms: 250 incubated, 15 incubators, and 150 private/public research centres. In addition, 4500 R&D with 11000 employees have benefited from STPs.

4.1 KILOMETRO ROSSO

Kilometro Rosso, located at Stezzano, near Bergamo, was founded at the beginning of the 2000s and is based on strong ties among science, industrial research, technological development, and innovation.
Located in the centre of the Lombardy Region, Kilometro Rosso focuses on growing the knowledge district linked to innovation and high technologies. As such, the Park supports the development of firms and the aggregation of research centres.
Unlike the main European Parks, Kilometro Rosso is characterized by a private management firm; meanwhile, the real estate operation is supported by a different firm.
Kilometro Rosso provides an environment that promotes cross-fertilization and the contamination of various cultures thanks to the mutual proximity of hi-tech companies, research centres, and laboratories.
The tenants, participating firms, research centres, and laboratories will ultimately include 42 tenants with 1.500 employees.
In June 2004, the first settlement was related to the Brembo research centres (specializing in the planning and production of automotive brake systems). In the same year, the laboratories of a joint venture related to Daimler-Chrysler (ceramic composite material production) were opened.
Kilometro Rosso supports the networking within tenants and between tenants and external organizations.
Among the hosted partner there is UMANIA that was created by a team of experts in Ergonomics and Design with the main aim of giving importance to human beings, studying, observing, and understanding them. The goal set by UMANIA in each project is the creation of innovation “from” and “for” people. It does it by studying some aspects of man, from cognitive to physical, from postural to behavioural ones, to create design projects.
Kilometro Rosso cooperates with local firms in order to promote economic development. For example, K Idea—a Bergamo Science event—is a cultural and creative operation dedicated to the promotion of ideas and inventions. This initiative has been identified as innovation in a showcase. In addition, to promote the growing of the local economy, in 2006 Kilometro Rosso—together with Bergamo Industrial Association and Servitec (the management company of POINT SciencePark)—founded Intellimech, a consortium specializing in mechatronics. Firms are related to the consortium and belong to different geographic area. Intellimech supports interdisciplinary research in mechatronics that involves advanced electronic planning, informatics and ICT, mechanics planning, and planning for industry applications. The main aim of Intellimech is to benefit from the opportunities related to automation, robotics, and mechatronics while managing R&D projects. The project was developed in the laboratory localized at Kilometro Rosso, together with scientific and technological competences. Several actors, such as Turin Polytechnic, have been involved in developing this project, providing different competences.
The main cooperative agreements of Kilometro Rosso also involved international actors such as Kista Science City (Stockholm) and MIT (Boston).

4.2 AREA SCIENCE PARK

AREA is the first multi-sectoral Science Park in Italy and one of the largest in Europe. Based on two campuses in Padriciano and Basovizza (Trieste), AREA manages the activity of starting up and developing centres, companies, and institutes engaged in research, technology transfer, training, and professional service.
AREA was founded in Trieste at the end of the 1970s with a primary aim to create a structure to support joint development between science and firms. The main strength of the Park is the shift from science to technology: In the past 30 years, the Park has shifted from producing science to producing technological knowledge aimed at enhancing the quality of life.
The management company plays a key role in the Park’s development process. The Park’s main areas are related to energy and environment, life sciences, IT and ICT, physics and materials, nanotechnology, and innovative services.
To foster the development of the territory, especially at the regional level, AREA firms, research centres, and universities work closely together to define the ideal conditions under which to increase the level of

technical and scientific knowledge, developing basic and applied research as well as honing new technologies, products, and processes.
AREA also supports the development of collaboration among tenants. To date, 90 tenants have operated in the two AREA campuses. The personnel is over 2400 units. Laboratories, research centres, and spinoffs cooperate with firms involved in biotechnological, telecommunications, innovative materials, and nanotechnologies.
Moreover taking into consideration the tenants' area, Innovation Factory is the "first mile incubator" of AREA. The Incubator supports firms interested in creating their own business plan, and cooperates with them to transform an innovative idea into a competitive business.
The collaboration between potential star ups and Innovation Factory is founded on 3 phases:
- Evaluation of the business idea. The proposer submits to the Innovation Factory scientific and technical committee a description of the business idea and the activities plan.
- Pre-incubation. Once the proposal is accepted and an agreement is signed, Innovation Factory helps future entrepreneurs by providing the services and resources needed for the creation of a new business.
- Firm setup. The conditions for economic sustainability allow the creation of the new firm.
AREA further supports collaboration to increase local competitiveness, as evident in the Domotics FVG. Domotics, considered as key industry for the Friuli Region, is related to the application of technology and automation solutions to private homes improving the quality of life, reducing energy consumption, increasing security levels, and managing house appliances. The Domotics project aims to create a cooperative network for research and development in the field of prototyping solutions for the home in order to meet practicality, effectiveness, and efficiency goals. The main partners involved in the Domotics FVG project are Friuli Innovazione Science Park, Agemont (Agency for Mountain Economic Development), and Pordenone Technology Centre as well as collaboration with the Rino Snaidero Scientific Foundation and the firm Rino Snaidero.
Each actor provides specific competences, such as coordination (AREA), technology transfer (Friuli Innovation), and the promotion of economic initiatives and the valorisation of human resources and mountain materials (Agemont). AREA operates in order to promote collaboration between enterprises and scientific and technological research networks at the local level.
Meanwhile, AREA networking involves firms and centres that operate in an international context, including cooperation with the Massachusetts Institute of Technology (MIT) of Boston and the SRIC-BI in the European region. AREA has also partnered with IRENE (the European Innovation Relay Centre) and cooperates in the Enterprise Europe Network as well as with the Friend Europe Consortium.

4.3 ComoNExT - Technological Hub

ComoNExT (new energy for territory) is the first Italian technological hub (TH) founded in the Lombardy Region in 2007 in order to improve the attractiveness of the local economy. Today it is considered a "lighthouse technology" that attracts innovative and high-tech businesses. The network of cooperation involves, along with the joint venture ComoNExT Scpa, 400 businesses, thereby providing relationships with firms, universities, research centers, banks, and investment funds.
The high-tech firms are specialized in IT, robotics, biotech, new materials, and 3D technologies. The TH provides information, assistance, and advisory services and promotes the transfer of technology from universities and external R&D centers to businesses. In particular, since 2012, the TH has facilitated the creation and growth of innovation-based firms through incubation and through value-added services, such as networking.
Using the innovative business model, founded on the strong orientation to networking activity with local firms, in 2008 ComoNExT was recognized by the Lombardy Region as the leader of the regional DRIADE (Regional Districts of Innovation Attraction and Dynamism of local economy) project. This project aims to contribute to the process of the evolutionary maintenance of the metadistrict model. Thanks to the competences of ComoNExT, the Lombardy Region recognized in Technological Hub (TH) a key partner in the development of the metadistrict. The Region adopted a bottom-up approach and provided specific funding to support the new meta-clusters (e.g., aerospace, shipping industry, automotive, power generation, transmission and distribution, sustainable building).
In light of DAFNE's positive results, ComoNExT decided to support the development of relationships between the firms belonging to the new living concept supply chain and international firms.
In order to support local entrepreneurship, particularly the development of local start-ups, ComoNExT decided to develop a business incubator in 2010. In order to reach this aim, ComoNExT involved a new partner: H-FARM. H-FARM, born at Ca' Tron, a historic 1,200-acre farm close to Venice (Veneto Region) that has expanded into the United States, India, and the United Kingdom, has maintained a strong link with the territory of origin. In addition to be an accelerator in charge of direct mentoring startups, H-

FARM provides real estate services, administration general services, and sales and marketing services to accelerate the development of new initiatives.
In 2012, the Como Chamber of Commerce launched the "Business Incubator" call for proposals. The main aim of the call was to provide assistance in the development and promotion of innovative business initiatives within the incubator framework at ComoNExT through the allocation of resources aimed at fostering access to the services provided by Technological Hub.
The service incubator is a set of specialized technical assistance and logistics solutions through which a good business idea can actually become a startup. In this way the incubator service involves the use of specialized services for the initiation and development of the company through the skills of ComoNExT, especially the structuring of innovative ideas, the preparation of the business plan, and networking.
Focusing on physical space, the service incubator provides 24-hour accessibility, rooms for the startups' exclusive use, and workstations in open-space areas with dedicated furnished offices. It supports the sharing of common resources and spaces: meeting rooms of different sizes, training rooms, an auditorium, cafeteria, and parking.
Differently, the services include the study of specific areas of the business plan and project management, corporate communication, marketing plan, management of enterprise, participation in programs, and calls for subsidized loans. More specifically, the networking supported by the incubator service includes access to knowledge networks through the Technological Hub (universities, research centers, companies, laboratories, institutions, etc.) and participation in training initiatives on the generation of ideas.
The core service provided by the service incubator supported the evolution of the start-ups on the base of internal and external networking. New projects are now developing by start-ups that become significant knots of Epistemic Network.

5. Discussion

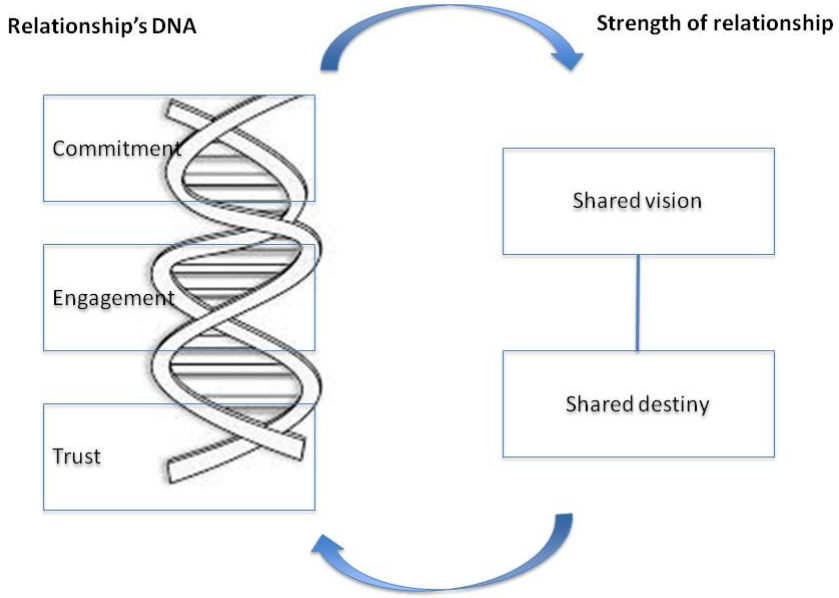
The research results are mainly ascribable to the ability of the Science Parks (STPs) to facilitate the sharing and combining of heterogeneous knowledge among different organizations, such as firms, universities, and governments.
As depicted by the case studies, the innovation is generated in the networking of actors characterized by different knowledge.
In this context, Science Parks support three levels of networking: 1) relationships within tenants 2) relationships between tenants and local actors 2) relationships between tenants and international organizations.
The first level of networking concerns the relationships developed within tenants. The research depicts how the STPs can support the key relationships between tenants and hosted universities in technology transfer. Universities, firms, and public actors are characterized by different knowledge settings and could develop together a project with the mediation of Science Parks. Thus, this becomes an opportunity to get to know new business partners better and work together with them. The new relationships among actors allow the development of innovative projects and the fulfillment of specific solutions. Kilometro Rosso hosts Bergamo University while Como NExT and AREA cooperate with local universities and research centers
Moreover the second level of networking regards relationships between tenants and local actors supported by Science Parks. AREA, Kilometro Rosso and Como NexT cooperate with the Region and other local actors improving the development of firms located in the local space.
AREA is responsible for the Coordination of Research Institutions, the networking initiative of national and international research centers, universities and scientific and technological Parks in the Friuli Region. Consequently, the start-ups supported by Innovation Factory can develop relationships with these universities and other local organizations to share knowledge.
Kilometro Rosso, that is the first private Italian Science Park, creates strong ties between science, industrial research, technological development and innovation. The start-ups located at Kilometro Rosso cooperate with the local University (Bergamo University) that develops research at the Park. STPs as relationship facilitators also improve the direct transfer of academic research results to industry through interaction. Kilometro Rosso have also promoted Intellimech Consortium together with Confindustria Bergamo and Servitec. Thanks to the Kilometro Rosso support, several competitors belonging to mechatronics cooperate in Intellimech that is a consortium of high-tech firms dedicated to interdisciplinary research in mechatronics.
AREA further improves collaboration to increase local competitiveness, as evident in the Domotics FVG. Domotics, considered as key industry for the Friuli Region, is related to the application of technology and automation solutions to private homes to improve the quality of life, reduce energy consumption, increase security levels, and manage house appliances. The Domotics project aims to create a cooperative network

for research and development in the field of prototyping and automation solutions for the home in order to meet practicality, effectiveness, and efficiency goals. The main partners involved in the Domotics FVG project are Friuli Innovazione Science Park, Agemont (Agency for Mountain Economic Development), and Pordenone Technology Centre as well as collaboration with the Rino Snaidero Scientific Foundation and the firm Rino Snaidero.
Using the innovative business model, founded on the strong orientation to networking activity with local firms, in 2008 ComoNExT was recognized by the Lombardy Region as the leader of the regional DRIADE (Regional Districts of Innovation Attraction and Dynamism of local economy) project. This project aims to contribute to the process of the evolutionary maintenance of the metadistrict model. Thanks to the competences of ComoNExT, the Lombardy Region recognized in Technological Hub (TH) a key partner in the development of the metadistrict. Unlike the industrial district policy, firms' territorial contiguity is not the key indicator for identifying metadistricts, which focus more on firms that exchange input/output goods and information within the same supply chain. The main objective is to compete more effectively on the international markets through technological and organizational innovation. The Lombardy Region recognized, promoted, and encouraged collaborative interactions aimed at sharing resources, mainly knowledge. The Region adopted a bottom-up approach and provided specific funding to support the new meta-clusters (e.g., aerospace, shipping industry, automotive, power generation, transmission and distribution, sustainable building). In DRIADE, the DAFNE action promotes the business cooperation in meta-districts focused on sustainability.
The third level of networking regards cooperation fostered by Science Parks with international organizations such as MIT and Kista Science City (Kilometro Rosso). Kilometro Rosso has developed strong relationships with tenants, and with international actors such as MIT and Kista Science City to allow start-ups and innovative firms located in Lombardy Region to benefit from that cooperation.
From a similar perspective, AREA provides a network of knowledge and skills through its extensive experience in transferring technology to companies; exclusive services for business intelligence; patent information, and documentation. Moreover Innovation Factory networking involves universities, enterprises, public institutions, venture capitalists, and business angels. Particular attention is also paid to cooperation with associations and international organizations (MIT, Stanford, and the International Association of Science Parks.Through this agreement, AREA aims at providing to start-ups with a range of skills and excellence to foster a competitive jumpstart and allow them to have privileged access to MIT knowledge. The objectives are to promote the creation of research spin-off more effectively and facilitate the development of innovative products, processes, and the management of regional firms.
ComoNExT also cooperated in a consortium with an INNOVAFOR partner and the coordinator for the Portugal and Foundation for Promotion of Entrepreneurship partner for Poland.

The research also emphasizes how high performances are generated by Science Parks' new business model.
In fact the attention of Science Parks stresses not only traditional services, such as tangible assets and real estate operations, but also increasingly innovative services that support networking.
ComoNExT bases its competitiveness on high-level services related to technology transfer, training, and networking. Similarly, Kilometro Rosso grants that each research centres, business and laboratory have the possibility to develop appropriate synergies, collaborations and relationships. The services are available and co-ordinated by the Park's management and development companies or by third parties selected to match the specific needs of the tenants, in line with agreements that will be stipulated by the existing tenants of the Park. Kilometro Rosso is an open system that offers its services not only to those located within the Park but also to institutions, companies, research centres and laboratories that are located outwith the Park. The aim of this strategy is to create a network of mutually beneficial relationships that will benefit all concerned. The services involve: Consultancy and support services, training services, promotional and support services, logistic services, infrastructural support, internal services.
In a similar way AREA provides logistic and infrastructural services, and added value services for industrial innovation and enterprise development.
From an evolutionary perspective, we can depict a new model of Science Parks that emphasizes the relevance of networking in national and international context.
The development of international projects also enabled ComoNExT to improve the networking activity in the international context.
In a similar perspective Area Science Park and Kilometro Rosso enhance the development of relationships in the community.
Area Science Park develops a day of business meetings BtoB dedicated in particular to the field of ICT applications that promote the 'social inclusion improving the quality of life. The one-on-one Business meetings lasting about 20 minutes and promote direct knowledge between entrepreneurs and researchers

in areas of mutual interest: technology and the initiation of collaborations and joint projects between companies, research partners and research stakeholders from all over Europe. The areas of interest are in particular: information technology, telecommunications applications for health, communication protocols and interoperability and multimedia and multi-sensing.
Kilometro Rosso supports the development of innovator community through “K-idea" that is proposed as a "knowledge hub". This is a showcase for authoritative creators, inventors and researchers that sustain the connection between ideas, companies and the research community.
Moreover Como NexT sustains the local initiatives related to supply chains focused on specific topics.
We can thus consider the following propositions:
P1. The competitiveness of the Science Parks is increasingly founded on intangible assets and on a business model networking oriented.
The cases analyzed also show how the projects and services provided by Science Parks involve several organizations in different places and are characterized by different resources. The innovation is generated by the interconnected relationships between actors that belong to different network positions. These organizations are characterized by a convergence in terms of those objectives that focus on innovation. We can also consider the shared vision of the firms/organizations involved.
The other propositions are:
P2 The role of Science Park is to enhance the development of relationships between actors located in different places/positions, but characterized by a relational proximity.
P3. Through networking the Science Parks enhance the evolution from Community of Practice to Epistemic Network
P4. The interconnected relationships developed through Science Parks allow a propagator effect for innovation diffusion that generates the growing of local economy.
Geographic concentration can influence the network horizon, but it is not sufficient to create the network context made up by the more important relationships. Science Parks sustain the development of relationships at different levels of relational proximity.
From this perspective, the Science Parks support the relational proximity based on a shared vision and long-term relationships. Science Parks allow tenants to benefit from the shift from geo-spatiality to relational spatiality.
We can thus consider the strengthening of relationships that generate the shift from Community of Practice to Epistemic Community and to Epistemic Network. In the first step, the Science Parks support the interconnection of relationships between firms that operate in the local area; these firms initially started to develop relationships focused on the same professional framework related to home living concept services. At the second stage the Science Parks reinforced the relationships with these actors and sustained the activity in international context. The community has the advantage of achieving a unified view of working, learning and innovation.
Moreover we can consider the Epistemic Network that involves external actors and interconnected relationships with new actors and the improved relationships with existing stakeholders. The shared values and mutual understanding between the parties facilitate the communication of meaning that is essential in the combination of resources for the knowledge creation. The transfer of knowledge is therefore not out of pure “epidemiological contact”, but rather founded on stakeholders’ commitment, engagement, and trust (see Figure 1).

Figure 1 - Relationship’s DNA and strength of relationship



Source: Cantù, 2013

These dimensions influence the strength of a relationship based on a shared vision and shared destiny. In addition, the stronger relationships generate the improvement of the relationship's DNA and the development of relationships characterized by a high relational proximity that serves as the basis for trust and a competitive advantage.
In a circular perspective, a vision and shared destiny will increase the commitment, engagement, and trust of the actors. In the model developed on the basis of the results reported, it becomes evident that:

P5 The relational proximity tends to increase as the number and heterogeneity of the actors increase as well as with a greater depth determined by the type of relationship. The more organizations present a shared vision, the more objectives converge and values are shared, as most relationships—long or short—between organizations are strong.

The depth of the relationship is therefore closely linked to the DNA of the relationship (commitment, engagement, trust) and its strength (convergent vision and shared destiny). The stronger these dimensions become, the more it will be possible to speak of a shared vision and a convergence of strategic objectives. Certainly the geographical dimension can facilitate the exchange of knowledge, but it is not enough to strengthen the commitment of the actors, their engagement, and their vision. Science Parks can assume an important role in strengthening the commitment of stakeholders.
All this leads in turn to an increase in the sharing of the vision and the shared destiny. The growth of the relational proximity requires and allows organizations to work on the fourth spatial dimension. We could then analyze the network of spatial relations by considering the spatial dimensions—namely, height, length, width, and depth (Cantù, 2013[37]).
It then becomes the fundamental skills of the actor-network coordinators to support a common vision that unites in this way not only the settled actors (characterized by a first geographical proximity), but also the actors who participate in local or international projects.

7. Conclusions and managerial implications

In an economy where the centerpiece seems to have become "open innovation," firms are increasingly considering how best to manage openness that reaches effective solutions. Openness means new

[37] Cantù C. (2013) Innovazione e prossimità relazionale. Il contesto dei Parchi Scientifici Tecnologici. Franco Angeli: Milano.

organizations, new relationships, and new activities, but how can firms manage this openness will affect their development of an effective innovation solution.
In order to manage the complexity generated by the dynamics of the economic environment and by the openness orientation, more and more firms are looking for a new approach that is founded on a shift from outsourced innovation to co-managed innovation. In the process of knowledge transfer, firms need to select the right stakeholders with which develop long-term relationships to co-create an effective innovation solution. In this context Science Parks support firm in selecting stakeholders based on relational proximity: firms develop strong relationships with actors that are characterized by a shared destiny, shared vision and goal convergence.
From this perspective, relationships are stronger in Epistemic Network characterized by interconnected spatial relationships that aim to share and combine different kinds of knowledge. Science Parks as knowledge intermediaries facilitate relationships in Epistemic Network.
Science Parks support the development of relationships and thus the sharing and combining of heterogeneous knowledge, not only within tenants located "inside" the physical space, but also between actors that occupy a different place in the relational space of the Epistemic Network.
The competitiveness of Science Parks is based on innovative business models that are founded on providing learning and on networking facilities.
The knowledge intermediaries help to define the right degree of openness, but this also requires them to better know the needs of their tenants and of business partners. In fact the intermediaries can monitor, manage and combine the fourth dimensions of a network: depth (relational proximity), heights (actors heterogeneity), length (number of actors) and width (strength of relationship – DNA) (Cantù, 2013).
Through virtuous business model Science Parks create a competitive advantage for firms and other partners, for the local territory where they are located and for the Epistemic Network as a whole. Stabilizing new business model Science Parks improve the engagement of partners in order to maintain their loyalty and their fidelity for long-term relationships.