






# How Knowledge, Innovation and Place Work Together to Design Entrepreneurial Discovery Process: Insights from Maps-Led Project

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**Abstract.** The paper highlights the key findings of the research activities conducted under the MAPS-LED project, in examining how the place acquires a specific connotation in designing “tailored policy” for innovation and knowledge spill-overs. The contribution of the Project, in the current debate on the innovation policy, concerns the explanation of how territorial strategies can be part of regional innovation strategies for Smart Specialisation Strategies (S3). The MAPS-LED spatial oriented approach to US cluster highlighted the relevance of the urban dimension in concentrating knowledge resources and linking them to economic activities. The research focused on the occurrence of “innovation spaces” in the places characterized by the presence of Cluster, in order to identify specific urban areas (target areas) in which analyzing the interaction of cluster with the urban fabric, to make evident the emerging factor of a new demand of innovation-oriented physical transformation. Through the lens of the general framework of the Project, innovation spaces have been surveyed using on-line questionnaires distributed in different public and private innovation centers. The findings provide interesting insights on the role played by innovation spaces in the urban and the economic environment. Networking activities, services provided and the support of local place-based policies turn out to be key elements in spreading innovation in specific places and handler of the urban transformation demand. The quantitative approach to spatialize innovation joint with the qualitative approach through interviews led to connect Place, Knowledge and Innovation as main categories of output indicators to set the entrepreneurial discovery process as evidence-based and horizontal policy.

**Keywords:** Innovation spaces · Demand for urban transformation  
Entrepreneurial discovery process

## 1 Introduction

After almost 4 years since Smart Specialisation Strategies (S3) was introduced in the new agenda for Cohesion policy, the increasing importance of the cities in following and supporting the wave of innovation grounded on the Knowledge-based economy [1, 2] is contributing to underline the evolution path that S3 has taken, especially with respect cluster policy and cluster organizations. Beyond the concept of economic cluster related

to geographic concentration, the political context in which the activation of measures to enhance the creation and the development of cluster is partly connected to a complex governance, in which the City is acquiring the principal role. The MAPS-LED project focuses on these relationships to underline the comprehension of the context in design innovation policy according to regional innovation strategies for Smart Specialisation Strategies (S3). The process of investigation on linkages between space/place with innovation was conducted in seeking cognitive elements converged in the identification of a new concept of the urban dimension in the context of S3 in emphasizing the role of the Entrepreneurial Discovery Process (EDP). Academics and policy makers have been long discussed on the implementation of S3 at the regional level (RIS3), trying to identify the right path to implement a “tailored” innovation policy in driving the society towards a knowledge economy. The crucial element for making S3 implementation tailored to the context relates the activation of the Entrepreneurial Discovery Process (EDP) [3], which is triggered by entrepreneurial knowledge, the main ingredient of a process of smart specialisation [4]. However, EDP activation process, in the fact that embodies the peculiarity of the context (in terms of cultural, social and physical capital) and grasps the horizontal implication of S3, resulted problematic and different among EU regions, due to several risk factors such as the lack of preconditions for innovation, especially in lagging regions [5]. Some authors argue that localization economies characterized by the firms’ concentration and their interaction - sharing of infrastructures, labor forces, suppliers and markets - combined with knowledge spill-overs, provide the pre-conditions for innovation [6]. This paper takes the perspective that the spaces in which innovation concentrates at urban level - namely innovation spaces - appear as catalysts for knowledge dynamics. They catch innovation and feed transformation processes towards a knowledge-based society through the convergence of entrepreneurial knowledge. The first section identifies the main characteristics of innovation spaces in the new wave of urban transformation characterized by the widespread of the innovation districts phenomenon in the transition towards the knowledge-based society. The second section focuses on the MAPS-LED project (Horizon 2020) research activities. Particularly, on the results deriving from on-line surveys provided to the users of the Cambridge Innovation Center aiming at analyze how the variety of knowledge can be embedded and driven by these innovation spaces. Findings, deriving from the Cambridge Innovation Center on-line survey, were grouped in three main drivers, — place, knowledge, and innovation - which synthesize the joint actions of public, private and community actors within innovation spaces. The capacity of innovation spaces to embed and drive knowledge in the current knowledge-based urban development phase can help in the comprehension of Entrepreneurial discovery process (EDP) activation elements. The case of the CIC shows how innovation spaces act as a catalyst for knowledge dynamics, stimulating a new wave of knowledge-based urban development. Such mechanisms can help in triggering entrepreneurial discovery process and expand innovation in deprived areas through public-private partnerships.

## 2 Innovation Spaces as Knowledge Convergence Hotspot in the Knowledge Based Urban Development Era

The shift from the industrial mass production to knowledge-intensive goods and services production generated novel economic development trajectories [7] in moving towards the knowledge-based society. Globalization is not a new but a changing phenomenon: the core drivers of globalization used to be trade in goods and capital flows, today, they are spurred on by rapid technological change, which is increasingly knowledge driven. In many EU and US cities, knowledge dynamics are sparking the interaction among actors involved in the production and use of innovation supported by local economic development strategies, urban policies, and planning tools. At the urban level, such dynamics are feeding a new wave of urban development contributing to the reshaping of cities through a re-interpretation of the relationship between innovation and space. This approach, defined as Knowledge-Based Urban development (KUBD) [7], is characterized by “*a new strategic development approach that involves management of value dynamics, capital systems, urban governance, development and planning*” [7] is commonly associated with the urban environments [8]. This phase is taking the shape of innovation districts: “*geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators and accelerators*” [9] in physically compact, transit-accessible and mixed-used districts. Innovation Districts supply the growing demand of spaces for research, development and networking activities coming from the local entrepreneurial community, which plays a relevant role in innovation processes oriented both at the production or the use of innovation. In such spaces, the complex and dynamic community of innovators cluster, interact and connect with private and public actors. Since the late 2000s, innovation spaces grew constantly in US and EU cities [10]. The analysis of the literature pointed out how this is a rising topic in the academic and policy-makers debate. In the era of the continuous advancement of Information and Communication Technology, the face-to-face communication remains crucial [11] and innovation spaces appear to be the key places where knowledge can be shared and transferred. These spaces are “*physical manifestations of the current socio-economic and cultural forces*” [10] enabling and supporting innovation, and facilitating the creativity and critical thinking (of the participants) [12]. Wagner and Watch [10] identify eight main typologies of innovation spaces in the US: incubators, accelerators, co-working spaces, start-up spaces, innovation centers, maker spaces, research institutes, innovation civic hall. Here, innovation is boosted by bottom-up processes, stimulated and animated by the local entrepreneurial community which clusters and interacts proactively with the private and public sectors favoring the knowledge convergence. Others [13] emphasized the role played by local communities and the interaction among public and private actors, in boosting innovation in localized spaces of collaborative innovation (LSCI - hacker spaces, maker spaces, living labs, Fab labs and co-working spaces). These spaces involve the community empowering local innovation processes and creating a critical mass in specific places, where knowledge is continuously transferred and exchanged. In Europe, as stated by Foray [3], knowledge is fragmented and dispersed, making difficult the process of entrepreneurial knowledge convergence,

which represents the basis of the entrepreneurial discovery process for S3 implementation. The MAPS-LED project preliminary findings highlighted how knowledge dynamics and innovation are included in economic development strategies, urban policies, and planning tools [14], in responding to the growing demand of transformation driven by such dynamics. The next section will briefly describe the rationale of the MAPS-LED project in analyzing the spatially oriented approach to US clusters, highlighting the relevance of the urban dimension in concentrating knowledge resources and linking them to economic activities. Particularly, it presents the results of an on-line survey [15] provided to the users of innovation spaces in the City of Cambridge (Ma, USA).

### **3 Entrepreneurial Knowledge Convergence in Innovation Spaces: The Cambridge Innovation Center**

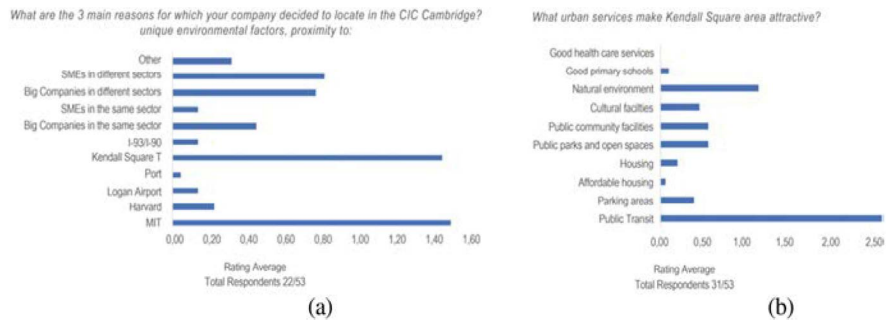
The MAPS-LED Research Project investigates how S3 can be implemented, with respect to the new agenda of Europe 2020, by incorporating a place-based dimension [16]. One of the preliminary findings of the project pertains to an innovative conception of the “place” as a key element for effective design and implementation of innovation-oriented policies [16]. From a spatial perspective, innovation can be explained by the occurrence of clusters, which provides a conceptual framework to describe and analyze important aspects of modern economies of different territorial dimensions [16]. The Cluster provides a conceptual framework to describe and analyze important aspects of modern economies [17] of different territorial dimensions. Cluster captures “the concept of dynamic location advantages” [18] in which “... local efficiency factors, like geographical and organizational proximity, external economies promoting a sort of industrial atmosphere, are overcome by more dynamic spatial elements like dynamic synergies and collective learning which explain innovation processes at the spatial level [18]. Furthermore, “when specialised and highly innovative small and medium-sized firms cluster in a particular area of the city, (...) an interesting question emerges on whether the innovative activities of these firms is more influenced by dynamic urbanization economies, i.e. by the more traditional advantages stemming from an urban atmosphere, (...) or by milieu economies, i.e. by collective learning of specialized knowledge, by specialization process of local specialised human capital [18].

The spatialization cluster methodology [16] led to consider the cluster, even with a physical configuration, as a proxy of innovation concentration because its occurrence is strictly connected to innovation, specialization, job creation [16]. The spatially oriented approach to US cluster highlighted the relevance of the urban dimension in concentrating knowledge resources and linking them to economic activities [16]. Clusters are featured by a high number of start-ups, which tend to locate in innovation spaces and attract R&D investments in generating innovative outputs [19].

This paper integrates the information deriving from the spatialization of clusters with an on-line survey provided to users of innovation spaces [16]. The main aim of the survey is to comprehend how innovation spaces are coming to the light as emerging factor of the new demand for innovation-oriented physical transformation. For the purposes of this paper, here are presented the results of the survey distributed to the

users of the Cambridge Innovation Center (CIC). The CIC is a facility located in Cambridge that offers offices and co-working spaces for entrepreneurs and start-ups, as well as education programs, training and networking opportunity to increase workers’ skills and connect innovators, venture capitalists, mentors, and big companies. The selection of the CIC as a case study came out from the spatialization of the Education and Knowledge Creation and the Business Services clusters in Cambridge [16], the presence of cluster-oriented policy initiatives and the urban regeneration initiatives in the area. The on-line survey was developed through the Survey Monkey web-tool [14] and distributed to the users via email. Since the survey was conducted online, and since it can be difficult to predict the number of people who have opened the emails containing the link to the survey, or who have read the posters that were hung on the bulletin boards, it hasn’t been possible to calculate the actual response rate of the survey, but only the number of respondents to the survey itself. The respondents (i.e. the users of the innovation center) were divided in two main target categories: members and visitors. The members of the CIC are start-ups, entrepreneurs and companies that pay a membership fee to use the office spaces and the services that the center provides, while visitors are non-members who join the programs and events hosted in the Innovation Space, such as researchers, investors, entrepreneurs, etc. The total users reached by the survey are 53, the majority of them (71.7%) are CIC members.

The survey included 38 closed questions, which the authors have grouped into three main drivers: place, knowledge and innovation. The first is related to spatial factors (localization, proximity, attractiveness). The second is related to the activities and services provided by the CIC (network activities, co-working spaces, advice, financial support). The last provides information on the actors (company typology, business sectors, R&D activities, interaction with other companies) involved in the innovation process. The first set of questions relating to the “place” driver encloses those spatial factors - in terms of localization aspects, proximity and attractiveness - which constitute the reasons pushing companies to locate at the CIC. Here (see Fig. 1), are reported the answers of the members of the CIC about the attractiveness of the Kendall Square area (where the CIC is located) in terms of urban services. The participants rated the

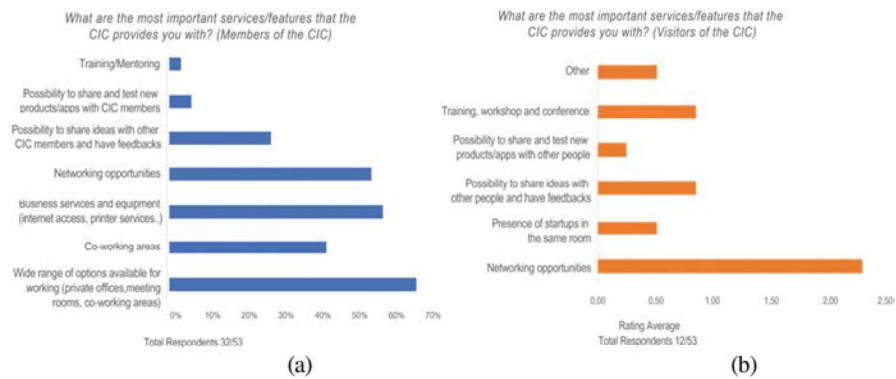


**Fig. 1.** Place driver. Proximity and attractiveness factors in Kendall Square area. Questions: What are the three main reasons for which your company decided to locate in the CIC Cambridge? (a) What urban services make Kendall Square area attractive? Rating options: 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> factor (b).

presence of public transit services as the most important feature for the attractiveness of Kendall Square, together with the proximity of the Charles River (natural environment) and public facilities (community facilities, parks and open spaces). The second important aspect relates to the proximity of the CIC to anchor institutions such the MIT as well as to public transportation facilities (subway station).

The second group of questions relates to the “knowledge” driver, investigating how innovation spaces act as a catalyst for knowledge transfer and exchange among users of the innovation center. This group of questions refers to activities taking place at the CIC and the typology of advanced and specialized services that the center provides.

Both the members and the visitors of the CIC indicated that the networking opportunity that the center offers, and the possibility to share ideas with other people and have feedbacks are some of the most important features of the CIC (see Fig. 2). In addition to these factors, the members of the CIC indicated that the wide range of options available for working, and the provision of business services and equipment are other important services that the center provides them, while the visitors highlighted that the training programs, workshops and conference that the CIC hosts are relevant services for the community.



**Fig. 2.** Knowledge driver. Question: What are the most important services/features that the CIC provides you with? Members (a). Visitors (b).

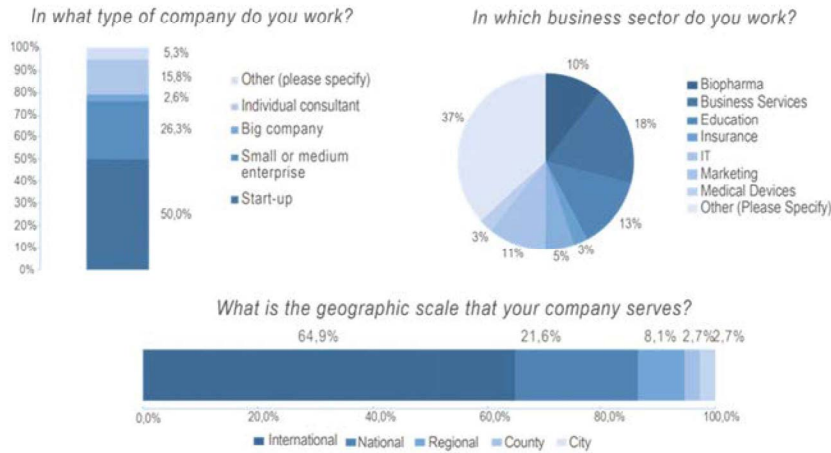
From the results of the on-line survey (see Fig. 3), knowledge sharing appear to be key elements to feed innovation and competitiveness of companies located in innovation spaces. The members of the CIC highlighted the importance to interact with other companies (40,6%), research centers or innovation space (28,1%) and universities (18,8%) for the generation of new ideas through knowledge sharing and collaboration.

The need for interaction is also highlighted by the way companies intend to have access to the Key Enabling Technologies (KET). The 56,4% of the companies surveyed at the CIC intends to have access to KETs through the empowerment of contacts with universities (25%), public/private research centers and innovation centers (34,4%).



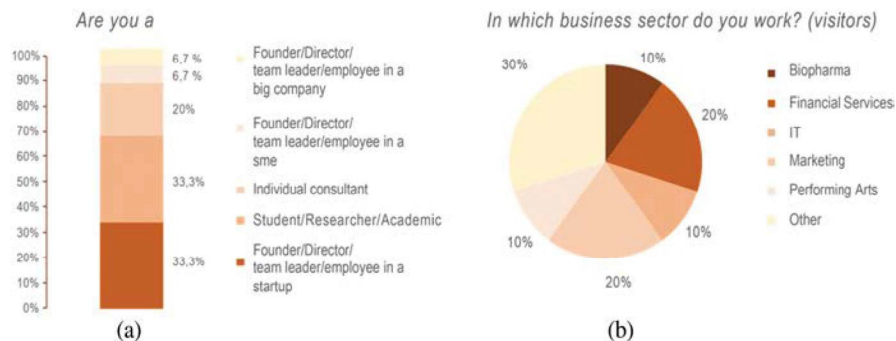
**Fig. 3.** Knowledge driver. Question: How does your company intend to be innovative and competitive?

The third group of questions relates to the “innovation” driver, investigating how innovation spaces contribute to the use/production of innovation. The innovation driver takes into account the actors operating in innovation spaces. In this case the typology of companies located at the CIC, the variety of business sectors, the research and development activity of companies, as well as the profile of the visitors that join the networking activities and the events held by the CIC (Fig. 4).



**Fig. 4.** Innovation driver. Questions: In what type of company do you work? In which business sector do you work? What is the geographic scale that your company serves? (Members of the CIC).

The 50% of the companies located in the CIC are start-ups. This confirms the general trend of the area, considered as the densest start-up area in the country. The start-ups which decided to locate at the CIC increased constantly in the last ten years, with a peak in 2015 of the 29, 7%. The non-members, or visitors, of the innovation space, are mainly people working for a star-up (33%), students/researchers/academics (33%) and individual professional (one-person company, 20%) (Fig. 5).



**Fig. 5.** Innovation driver. Questions: Are you a...(a) - In which business sector do you work? (Visitors of the CIC) (b).

The variety of business at the CIC was rated as one of the most important factors in pushing companies to locate at the CIC. However, only the 31,6% of the companies are focused on Research and Development. It can suggest a propensity to share information and knowledge rather than a specific focus on the production of innovation. The majority of members (93,5%) interact regularly with at least 1–5 companies (54,8%) and networking events are considered among the most important activities in favoring interaction at the CIC (56%) [15].

#### 4 Conclusions

The results of the on-line survey show how innovation spaces are dynamic places where entrepreneurs interact with public, private sectors and communities in generating and spurring innovation. The City of Cambridge is supporting this new phase urban development with innovation-oriented economic development strategies and urban planning tools. Particularly, innovation spaces are a requirement for new development initiatives [14] in the Kendall Square area. In the case of the CIC, the complexity of knowledge dynamics as well the complexity of relationships among actors came out. However, the survey highlighted some rising negative effects. The urban development experienced in Kendall Square is generating gentrification phenomena characterized by housing and office spaces' unaffordability. Respondents have highlighted the following negative aspects: unaffordability of housing, unaffordability of space for businesses, increase of living costs. These elements suggest the need to focus also on “weak” and disadvantaged stakeholders through the development of specific programs.



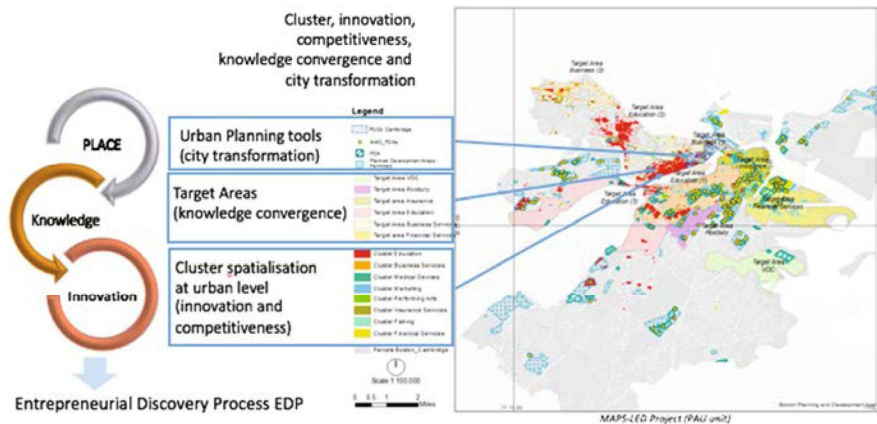


Fig. 6. Main categories of output indicators: Place, Innovation, Knowledge.

Data coming from the surveys have been synthesized taking into account three main key drivers: Place, Knowledge and Innovation. The drivers - place, knowledge, innovation - stem from the overlay mapping of cluster spatialization and zoning [16], which include innovation spaces and innovation initiatives [16]. The quantitative approach to spatialize innovation joint with the qualitative approach through interviews led to connect Place, Knowledge and Innovation as main categories of output indicators to set the EDP as evidence-based and horizontal policy. In those areas where clusters and innovation spaces occur, urban regeneration mechanisms empower the entrepreneurial convergence in specific places, featuring them as emerging factor in the current demand for innovation-oriented physical transformation. However, such processes call for the support of innovative financial instruments and products (from equity to loans) to stimulate the local credit access system and act as leverage for local economic development.

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