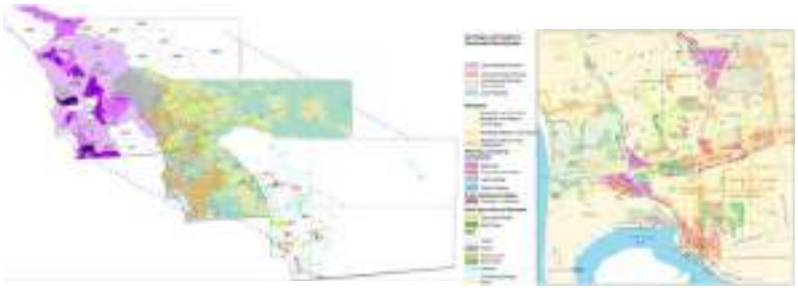
SOCIAL INNOVATION AND TERRITORIAL MILIEU

LOCAL CLUSTERS TERRITORIAL ANALYSIS



Local Real Estate

		S		W		O		T		
		Job creation	Innovation	Poverty Rate	Low Location Quotient	Modernization	Inter-sectorial activities	Lock-In Dynamics	Risk-Adverse behavior	Tot
S	Job creation	-----	1	-1	-1	1	0	-1	-1	0
	Innovation	2	-----	-1	-1	2	0	-2	-2	-1
W	Poverty Rate	-1	0	-----	1	-1	-1	1	2	-1
	Low Location Quotient	-1	-2	2	-----	-1	-1	2	0	-2
O	Modernization	2	2	-1	-2	-----	2	-2	-2	-1
	Intersectorial activities	2	1	-1	-1	2	-----	-1	-1	2
T	Lock-In Dynamics	-1	-2	1	2	-2	-2	-----	2	1
	Risk-Adverse behavior	-1	-2	1	1	-2	-2	2	-----	-1
	Tot	-1	2	1	0	-2	-4	-1	0	

RESEARCH FINDINGS
BOOK OF LESSONS
LEARNED ON
SUCCESSFUL CLUSTERS
FROM THE SAN DIEGO
CASES

MARCH 2018

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MAPS-LED Project
Multidisciplinary Approach to Plan Smart specialistation strtaegies for Local Economic Development

Work Package no.3

Social Innovation and Territorial Milieu

Deliverable 3.3

3RD MIDTERM SCIENTIFIC REPORT:
BOOK OF LESSONS LEARNED ON SUCCESSFUL CLUSTERS FROM THE SAN DIEGO CASES

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Introduction

Local Knowledge and Innovation Dynamics1

THE MAPS-LED project reflects the progressive attention given to Smart Specialization Strategies (S3) in boosting the implementation of Europe 2020 strategy, at regional and local level. S3 has been designed to capture knowledge and innovation dynamics closely connected with the characteristics of contexts. The main challenge is to reverse the persistent gap among lagging regions in Europe, which remain at same development stage despite long-term structural funds in research, innovation and technological development.

The principal cause/effect relationship of the different regional responses to European innovation policy during the last decades seems to lie in the existence of a market asymmetry because of a chronic mismatch of supply-demand for innovation. The Entrepreneurial Discovery Process is proposed as a trigger for the coordination of the efforts – public administrations, research institutions, entrepreneurs, communities – at local level in boosting the local knowledge convergence and generating the expected change.

MAPS-LED focuses on the influence of the context on resource utilization behaviour with respect the innovation flow, especially in lagging regions. The aim is to figure out how the connection of innovation policy with place-based approach allows at reaching the knowledge convergence to activate informational spill-overs.

The core of the research activities has earmarked for exploring how Smart Specialisation Strategies (S3) can be implemented by incorporating the place-based approach towards regenerating local economies. The S3 has been designed in order to capture knowledge and innovation dynamics strictly connected with characteristics of context.

Figure 1 - MAPS-LED Project: Smart Specialisation and Territorial Dimension in the MAPS-LEd perspective

According to the Maps-led perspective, the key concepts of S3 lie in the mutual correlation among entrepreneur, innovation and economic development. The entrepreneur is pushed by a local entrepreneurial culture activated by enhancing local knowledge. This process is called

[1] Bevilacqua C. (2018). Local Knowledge and Innovation Dynamics:The MAPS-LED Perspective. In (eds) Bevilacqua C., Calabrò F., Della Spina L. (2018) New Metropolitan Perspectives Local Knowledge and Innovation Dynamics Towards Territory Attractiveness Through the Implementation of Horizon/E2020/Agenda2030. Smart Innovation, Systems and Technologies Volume 100, Springer, ISBN 978-3-319-92098-6 ISBN 978-3-319-92099-3 (eBook) https://doi.org/10.1007/978-3-319-92099-3

"entrepreneurial discovery" towards knowledge convergence and informational spillover for clustering phase, as precondition of competitive advantages. Among the theoretical standpoints that explained how cluster policy and S3 share many similarities in their rationale, the research activities led to focus on the place-based approach as nexus in spurring the innovation process towards emphasizing the role of the city. Thanks to the exchange scheme of the RISE programme, the MAPS-LED project has delivered a methodology to spatialize economic clusters in Boston and San Diego, as expression of how innovation is experimented in the modern economy and how the "place" works. The "spatialization cluster methodology" has brought about a proxy for innovation concentration, by turning clusters in physical configurations at city level. This interpretation comes from the rationale grounded into cluster definition, validated by Porter with the model in which innovation, specialization and job creation are connected among those productive sectors related to shaping a cluster.

Figure 2 - MAPS-LED Project: Boston Traded Cluster spatialisation: from the regional to the urban dimension of innovation

The preliminary research findings pushed towards the explanation of how cluster performance factors can be combined with the context characteristics, by highlighting the spatial implications of knowledge dynamics. The case studies have been grouped into two frameworks of cluster rationale— Traded, to enhance competitive advantages, and Local, to reinforce comparative advantages. In synthesis, the first framework considers innovation as the main drive to define the relativeness of productive sectors to shape traded cluster, and the second ones bring into specialization the main impulse in forming local cluster. The spatially oriented methodology adopted for Traded clusters in the Boston area analysed 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 investigating the interaction of cluster (demand of innovation) with the urban fabric, its sociability and sustainability. The findings from "target areas" analysis allowed, on one hand, at identifying the link between city and S3 by introducing the innovation-driven urban policy as an important phase of the Entrepreneurial Discovery Process (EDP). On the other hand, gentrification and inequality issues resulted as the main negative effects in both cities, Boston and Cambridge, due to the evident increase, more than proportional, of the rent and property values. The link between city and S3 is mainly stemmed by the emerging business environment or the atmosphere for innovation that acquires an important role in what Foray calls structuring entrepreneurial knowledge. Inside the "target areas", anchors institutions, public and private research centres, the entrepreneurs' community and citizens concentrate their efforts supported by public policies (economic development and urban planning). The occurrence of such dynamic forces, able to trigger socio-economic and physical transformation, has brought to investigate how innovation policy can be harnessed in driving growth in specific localities. This aspect called for a better understanding and the exploration of innovation as a source for socio-economic and urban transformation, highlighting urban regeneration initiatives driven by the increasing demand for innovation[2]. The analysis of surrounding conditions has been considered important to give a practical explanation of how the EDP could be structured as policy action. The role of the city has emerged in spurring the innovation process and, in particular, how it can be the start point of the EDP, in terms of public policy action.

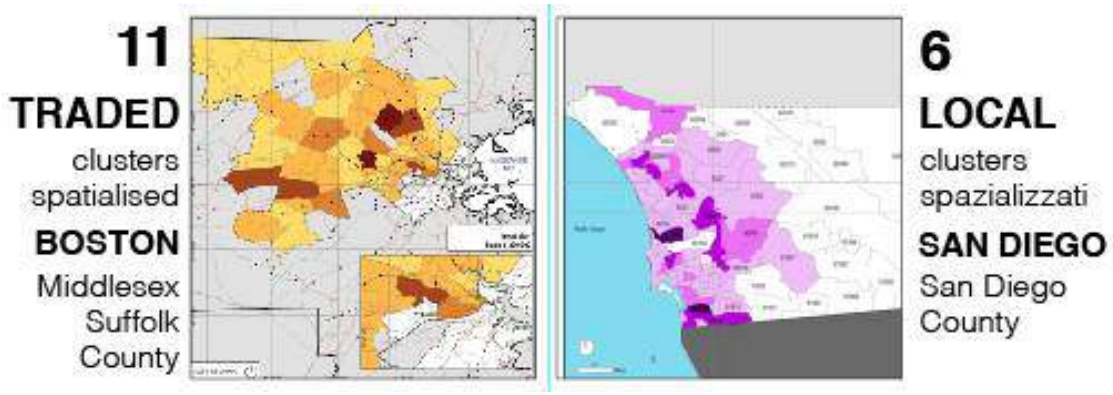

Figure 3 - MAPS-LED Project: Traded and Local Cluster spatialisation in Boston and San Diego

The possible result of these research activities lies in finding a new concept of urban dimension within S3. The urban dimension inside the S3 implementation could be part of the EDP as engine of the quadruple helix model for knowledge dynamics. It is possible to group under the innovation-oriented urban policy' s concept the increasing phenomena of innovation districts (in a broadly sense) to refine a different perspective of the role of the city in the creation of an innovation ecosystem. Another aspect emerged from the research activities in Boston is connected to how innovation has become a source of urban form and its transformation, pushing urban regeneration initiatives driven by the demand for innovation.

[2] The MAPS-LED has been appointed as "success story" in European Commission: New thinking to drive regional economic development. EU Cordis Research and Innovation success stories available at: http://ec.europa.eu/research/infocentre/article_en.cfm?id=/research/headlines/news/article_17_11_15-2_en.html?infocentre&item=Infocentre&artid=46436.

Figure 4 - MAPS-LED Project: Cluster Education spatial occurrence 2008-2013

The spatially oriented methodology adopted for Traded clusters in the Boston area has been implemented also for the spatialization of Local clusters in San Diego. Here, the focus shifted from mapping innovation concentration towards mapping specialization in the innovative milieu perspective. Clusters and knowledge networking reveal how territorial milieu can influence the knowledge dynamics and how knowledge can be shared along the territorial milieu. The aim was to find a connection between urban and inland areas through the territorial milieu as an explanation of innovative milieu. Local Clusters have been examined through Dynamic Analysis, Innovation Ecosystems and their relationship with Community Plans and Zoning providing interesting insights into the activation of social innovation thanks to the interaction of three driving elements: knowledge, innovation and place. The different socio-economic and spatial configuration allowed to identify different development dynamics for local innovation ecosystems. In San Diego, harnessing innovation ecosystem is not limited only to local actors, even regulatory agencies and municipal or regional governments that create a dynamic, innovation-driven economy can be involved in the orchestration process. In both cases (Boston and San Diego), innovation-oriented public policies pivot around the entrepreneurial spirit, in line with the desired entrepreneurial knowledge convergence of the S3 approach. The MAPS-LED project proposes the Entrepreneurial Discovery Process as a trigger for the coordination of the efforts at local level— public administrations, research institutions, entrepreneurs, communities— in boosting the local knowledge convergence and generating the expected change.

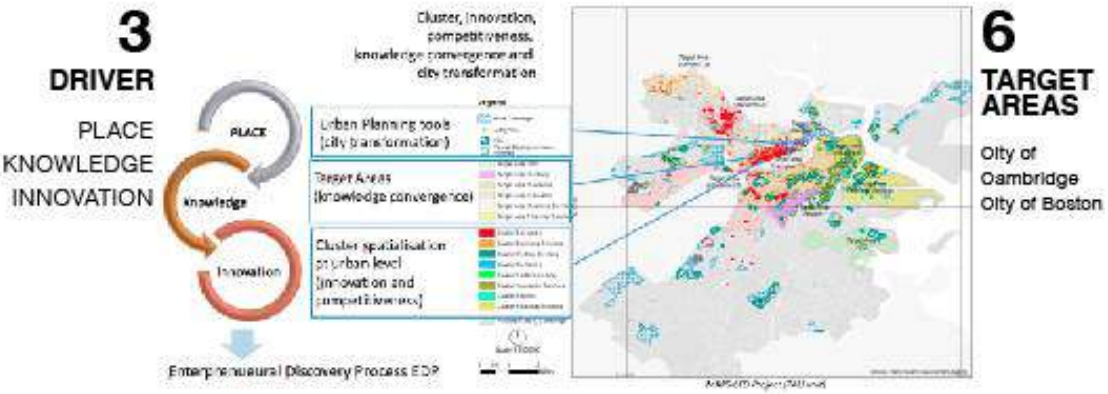

Figure 5 - MAPS-LED Project: MAPS-LED: Innovation-oriented socio-economic and physical transformation

The MAPS-LED project emphasized how the linkage between planning and innovation policy empowers EDP through bottom-up approaches. In other words, local communities and organizations are in the best position to know what can drive a city' s regeneration and deliver

economic change reinforcing the urban dimension of S3. The research activities highlighted how EDP could be the mean to design tailor-made policy acting on the fruitful relationship among knowledge, innovation and place. This process should be managed at local level and embedded in the urban development agenda due to its ability to activate urban regeneration mechanisms and expand innovation in distressed areas through public– private partnership and innovative financial instruments. In this sense, the MAPS-LED approach works as cross-cutting element in the understanding of knowledge dynamics, which are complex and difficult to trigger in specific places. The interaction of knowledge, innovation and place— and the related potential output indicators provided by the MAPS-LED project— attributes the local asset to the entrepreneurial discovery process activated by urban policy aiming at regenerating urban areas through innovation-led processes. In synthesis, the analysis of the local context shed the light on EDP as evidence-based and horizontal policy for S3 by considering two drivers: the urban regeneration mechanism joint with Knowledge-Based Urban Development to guide the identification of output indicators of EDP; the cluster life cycle analysis to guide the result indicators of the EDP.

Furthermore, the cluster spatialization methodology could help in finding out the regional areas of innovation towards focusing on public and private financial resources. The methodology developed could help in the understanding "where" entrepreneurial knowledge and forces are active and concentrated, lighting up the potential for the discovery phase. This is a cross-sectorial approach because the identification of potentials with respect to the local context allows to discover concentration of knowledge and feed innovation at local level. The identification of local potential areas of innovation, coherently with the principle of Smart Specialisation, can favour the discovery of new domains through an evidence-based territorial perspective rather than a mere analysis of regional economies. Further insights from these findings reveal the potential transformation of these urban areas of innovation in Economic Special Zones. The multidisciplinary approach to plan Smart Specialisation Strategies proposed with the MAPS-LED project emerged as crucial to properly pursue the local economic development in the S3 perspective. Hence, the MAPS-LED project appears at forefront into this research domain.

The methodological framework for the Working Package No. 3 "Social Innovation and Territorial Milieu" is based on the implementation of a spatial-led approach to the analysis of US clusters. The report "Social Innovation and Territorial Milieu" is structured in two main parts.

The introduction describes the context of the research activities conducted in San Diego as consequence of those conducted in Boston during the first period of the project. It synthesizes the differences between the Boston and San Diego areas about cluster-based innovation policies and the response of public authorities in supporting regional innovation ecosystems.

The first part "knowledge, innovation and space" expands the findings coming from the research findings of the WP2 on the urban dimension of innovation policies. In this part it is analyzed the San Diego Innovation economy as well as the innovation ecosystem. In order to catch the differences with respect the local context analyzed in Boston, the case of the IDEA district in San Diego is described. The role of Public spaces emerged as catalyst for social innovation in both San Diego and Downtown context. Findings sheered that as part of cultural - districts the Place-making approach deriving from place-based approach can works as a tool to enclave urban knowledge and innovation spaces.

The second Part "San Diego Local Cluster Territorial Analysis" reports the the results of the cluster spatialization methodology developed during the WP 3 of the project and adopted to map out the Local Clusters in the San Diego area. After the description of the spatialization methodology with respect the context of San Diego, it is reported the analysis of the selected Local Clusters declined according with three elements: Dynamic Analysis, Innovation Ecosystems, Community Plans.

Part I

Local Knowledge and Innovation Dynamics

The Role of Public Authorities in Supporting Regional Innovation Ecosystems: The Cases of San Diego and Boston Regions (USA)

Francesco Cappellano and Alfonso Spisto[3]

There seems to be a wide consensus among the scientific community that knowledge, education, lifelong learning, creativity, and innovation are the key components for the prosperity and global competitiveness of cities and regions. The post-Fordist societies are more and more characterized by knowledge-based economies and, for this reason, innovation ranks on the top of policy agendas within the regional policymaking field (Todtling & Trippl, 2005). As Judy Estrin reminds us, "innovation is not optional" (Estrin, 2009, p. 1). Since Harvard Business School professor Michael Porter introduced the connection between clusters and innovation to the policy community (1990), almost ten years have passed for the spread of public strategies in supporting regional economic clusters across every U.S. state. Furthermore, it took ten more years until the U.S. Congress adopted the "regional innovation clusters" (RICs) as the framework for structuring the nation's economic development policies (Muro & Katz, 2010). Also for the European Union, innovation represents the key element when it comes to formulating guidelines and legislation for regional policies. For the programming period 2014 – 2020, the EU Commission pointed out the Smart Specialisation Strategy (S3) as the regional policy aiming at placing greater emphasis on innovation-driven regional development, based on each EU region's strengths and competitive advantages (EU Commission, 2011). The development of regional clusters represents an expected - and desirable - stage within the S3 implementation, since it is recognised the crucial role of clusters' knowledge spillovers in boosting innovation (Baptista & Swann, 1998). The importance given to innovation and clusters development is demonstrated by two main aspects: 1) the development of the S3 plan (called RIS3 – Research and Innovation Strategies for Smart Specialisation) is the ex-ante conditionality for the EU regions in order to access the European Structural and Investment Funds (ESIF) for regional development; 2) in the RIS3 Guide, EU regions are invited to "[…] develop world class clusters and provide arenas for related variety/cross sector links internally in the region and externally, which drive specialised technological diversification" (Foray, et al., 2012, p. 17). Besides pushing regional specialisations and agglomerations through the S3, the EU also emphasizes the importance of governance-related aspects in order to promote regional innovation and fully exploit local endowments and competitive advantages. The research carried out by several Scandinavian scholars and the Espoo Innovation Garden project (FI) have been determinant steps in developing an eco-systemic approach to regional innovation and raising the importance of well-functioning collaborative and networking platforms for the production and promotion of innovation for regional prosperity (see Rajahonka, et al., 2015; Lappalainen & Markkula, 2013; Oksanen & Hautamaki, 2014; Markkula, Kune, 2015a-b). In 2016 the EU Committee of Regions (EU CoR) – chaired by Markkula - released a guide encouraging decision-makers to foster collaboration among regional innovation actors: "Europe needs more partnering with collaborative power, creative thinking, eco- systems thinking, synthesis, and a stronger focus on outcomes and impact […] In the face of a fast-changing world, innovation and an experimental mind-set are required more than ever. If Europe is to continue to provide quality of life for our citizens, the capacity to work together and learn from – and with – each other is essential" (EU CoR - Committee of the Regions, 2016, pp. 9, 21). This paper contributes to the body of

[3] Bevilacqua C., Spisto A., Cappellano F., The role of Public Authorities in supporting Regional Innovation Ecosystems: The Cases of San Diego and Boston regions (USA), INTERNATIONAL RESEARCH CONFERENCE 2017, MAPS-LED Second International Workshop - Manchester (UK), pp. 1004-1017 ISBN 978-1-912337-04-0

knowledge in the policy-making field by showing whether and how the public authorities support the interconnections between innovation players within two world-class U.S. life science clusters, located in the regions of Boston (MA) and San Diego (CA). There are two reasons we focus our study just on one cluster constituting the innovation ecosystem of the two regions: opportunity and feasibility. In terms of opportunity, 1) the economic performance of the life science cluster in both the regions is so high - 1st and 3rd in the world (JLL, 2015) - that allows to highlight the successful top-down public choices to promote innovation actors' synergy; 2) it allows to investigate the planning aspects connected to the support of innovation ecosystems. In terms of feasibility, for their very nature - based on geographic concentration, competition, cooperation and interconnection of several actors (Porter, 2000) - clusters can be considered as a proxy of regional innovation ecosystems. Through comparing the aforementioned life science clusters we will answer the following research question: which kind of policies have been set up by the U.S. public authorities in in order to orchestrate the interface between the innovation actors within the life science clusters of Boston and San Diego' regions? To answer this question, the paper develops through the following stages: in the section 2, we identify the main characteristics of innovation ecosystems and then connect the concept with the cluster one. Section 3 sets up the methodology and limitations in order to break-down the different public choices made by the public authorities in supporting the innovation ecosystem of the two life science clusters. In particular, we employ a policy monitoring methodology called "social auditing" (see Dunn, 2012). In the section 4, we discuss more in depth the public policy choices to support both the life science ecosystems, highlighting the main outputs of such choices. In the section 5, we conclude that both the public authorities of Boston and San Diego regions have been pushing for the life science industry agglomeration from an urban planning perspective, while they have been adopting different approaches in promoting the interface between innovation actors. In particular, in Boston, the public authorities actively intervene in boosting collaboration and co-creation between the several life science-related firms, through the Mass Life Science Center. In San Diego, public authorities allow the life science ecosystem to self-organize, leaving the orchestration role to not-for-profit organizations, such as CONNECT and BIOCOM.

Innovation Ecosystems in The Literature

The concept of innovation ecosystem has increasingly gained a lot of popularity in the academic and policymaking debate. In his Google N-gram chart, Hwang showed the dramatic increase of the use of this phrase from the end of the '80s to 2008 within all the vast amount of books that Google has scanned to make them available on its famous search engine (see Hwang, 2014). However, the most recent works of literature review on the concept (see Durst & Poutanen, 2013; Oh et al., 2016) show that there is not a widely recognized definition for this concept, since it can be related to different fields (business, industrial, institutional) and geographical scales (from the business to the national level). According to Durst & Poutanen's work (2013), the majority of the academic articles focused on innovation ecosystems provides different ideas and interpretations from one another. Oh et al. (2016) argue that within their literature search, first, the concept of "innovation ecosystem" does not distinguish from the "innovation system" one and, second, the eco addition appears mostly in trade publications. The first idea that comes to mind is the analogy with the biological ecosystem. Starting from this analogy and comparing the two types of ecosystems, Jackson (2011) highlights the structural factors constituting them and provides a definition for the innovation one: "[…] the complex relationship that are formed between actors or entities whose functional goal is to enable technology development and innovation" (Jackson, 2011, p. 2). In terms of actors, Jackson refers to material resources (funds, equipment, facilities, etc.) and human capital (students, faculty, staff, industry researchers, industry representatives), while entities are meant to be made up of these actors and they are the institutions participating to the ecosystem (e.g. the universities, colleges of engineering,

business schools, business firms, venture capitalists, industry-university research institutes, federal or industrial supported centres of excellence, and state and/or local economic development and business assistance organizations, funding agencies, policy makers, etc.). Similarly, Mercan & Goktas (2011), describe the innovation ecosystem as a complex environment made up by different actors and relations: "innovation ecosystem consists of economic agents and economic relations as well as the non-economic parts such as technology, institutions, sociological interactions and the culture" (Mercan & Goktas, 2011, p. 102). Estrin (2009) also starts from the biological analogy and identifies a hierarchy among the members of the innovation ecosystem. She recognizes in the research, development, and applications communities those with the role of sparking innovation. According to Estrin, the "cross-pollination" of ideas, questions, knowledge and technology between the three communities is similar to the interaction occurring among all the species within a tidal pool, which creates a unique ecosystem. The "nutrients" supporting each of these communities are funding, policy-making, education and culture (Estrin, 2009). The idea of specific communities pursuing innovation – so-called innovation communities – is also put forward by Wang (2009, p.7): "an innovation community is a set of organizations and people with interests in producing and/or using a specific innovation". The networks among these communities and their interaction to produce and use innovation represents an innovation ecosystem. Adner (2006) describes innovation ecosystems mostly as a thriving business environment: "the collaborative arrangements through which firms combine their individual offerings into a coherent, customer-facing solution" (Adner, 2006, p. 2). The benefits for the firms part of the ecosystem are in terms of productivity and value creation, and they are labelled as platform leadership, keystone strategies, open innovation, value networks, and hyperlinked organizations (Adner, 2006). Adner's idea is similar to the older concept of business ecosystem developed by Moore (1993), who considers the ecosystem composed by individuals and organizations producing value and services for consumers, the latter also part of the ecosystem. In 1999 Moore expanded the concept of business ecosystem including also financing providers, trade associations, standard bodies, labour unions, governmental and quasigovernmental institutions, and other interested parties. The reason is that each one of these actors fills out the need of one another in complementary way (Moore, 1999). Another description, still belonging to the business and management field, is given by Autio & Thomas (2014), who highlight the 1) interconnectedness characterizing the factors and actors constituting the ecosystem and 2) vertical and horizontal relationship between the actors. Based on the study of Adner & Kapoor (2010), Iansiti & Levien (2004) and Teece (2009), Nambisan & Baron (2013) highlight three main factors of innovation ecosystems: interdependencies among the members, shared set of knowledge and skills, and a common set of aims (Nambisan & Baron, 2013). Moving to the regional policy-making context, the concept of regional innovation ecosystem perfectly reflects - at different scale - the descriptions shown above. Also in this case innovation ecosystems are used to describe all the collaborating actors having different roles and responsibilities in the production and promotion of innovation (Lappalainen & Markkula, 2013). The partners of regional innovation ecosystems are those constituting the so-called Quadruple Helix – universities, business, governments, NGOs and citizens. The Quadruple Helix model is based on the cross-sectorial co-opetition, co-evolution and cospecialisation between all the aforementioned actors within the regional innovation ecosystem (Carayannis & Campbell, 2009). They all experience multiple gains from an open, participative and collaborative innovation process: "[…] business can develop the scalable product and service solutions that users want, the public sector can provide effective and affordable solutions to regional challenges, citizens share ownership of the specific, often highly personalized solutions they need, and universities can actively contribute knowledge and reap new knowledge and insights in return" (Markkula & Kune, 2015a, p. 17). In conclusion, even agreeing with the argument about the lack of a specific definition and the different fields and geographical scales the

concept can applied to, we think that the aforementioned descriptions of innovation ecosystem provide a straightforward idea of the characteristics of such an environment: crosssectorial, collaborative and – above all - explicitly systemic, the latter also highlighted by Oh et al. (2016). Furthermore, innovation ecosystems distinguish from the Porter's clusters since the latter is a physical agglomeration with a defined spatial dimension, which can be national and regional. Instead, innovation ecosystems, as collaborative relationships among several actors, may have also a world-wide geographical scale (global innovation ecosystem). However, adding the regional attribute, innovation ecosystems acquire a spatial dimension too, which allows to argue that a cluster - at regional level - may be part of a regional innovation ecosystem, while a single cluster can be considered as specific innovation ecosystem per se. This argument is also supported by the EU Commission's idea of cluster: "Clusters are potential elements of a regional innovation eco-system […]" (EU Commission, 2013, p. 16). Even being collaborative, regional innovation ecosystems needs to be orchestrated in order to contribute the addressing of societal challenges while guaranteeing regional competitiveness. The guide for EU cities and regions released in 2016 by the EU Committee of Regions (EU CoR) highlights the crucial role of public authorities in promoting the interfaces between innovation actors in order to orchestrate regional innovation ecosystems: "[…] innovation ecosystems are self-organising systems but evolve through an interaction between top-down policy choices and bottom-up creative forces […] The role of public policies is to facilitate the ongoing process of the discovery of new opportunities. Be it through the provision of resources, such as education or infrastructures, or through the articulation of demand, such as public procurement. But more strategic: by promoting the interfaces between innovation actors" (EU CoR, 2016, p. 11). In the next section, the paper highlights the top-down policy choices made by the public sector in order to orchestrate the life science sector of the Boston and San Diego regions. The two examined regions were selected upon their remarkable performances which allow to the successful top-down public choices to promote innovation actors' synergy. Furthermore, the two clusters have been considered as a proxy of regional innovation ecosystems for their very nature as explained in the previous section. The two study cases have been analyzed through a clear methodology, suitable to observe the two approaches adopted by public authorities in the Boston and San Diego regions. According to an inductive approach we explore the public choices in compliance with a policy monitoring procedure. To do so, we consider both inputs and processes set by local public authorities in the two study cases in compliance with the "social auditing" methodology (Dunn, 2012) indicated in the framework below (Table 1). The qualitative and quantitative data used within the methodology are secondary.

Table 1: Social auditing methodology (Dunn, 2012) (Table. 1 in Annex 1a - Francesco Cappellano, Alfonso Spisto)

POLICY ACTIONS	POLICY OUTCOMES
POLICY INPUTS	POLICY OUTPUTS
Resources used to produce impacts and outputs: time, money, personnel, equipment, supply	Goods, services and resources received by target groups and beneficiaries
POLICY PROCESSES	POLICY IMPACTS
Administrative, organizational and political activities and attitudes that shape the transformation of policy inputs into impacts and outputs	Actual changes in behaviour that result from policy outputs

The analysis will be discussed in two following steps: 1) firstly urban planning choices implemented in the two regions will be examined since they were determinant for the physical cluster formation; 2) afterwards, we will shed light on the orchestration of the innovation ecosystem development and the relative choices made by the public sector. The focus of the analysis is confined under two criteria: the spatial boundaries will imply only the geographical

areas where the sector employment is highly concentrated whereas the industry sectors investigated are referred to the broad umbrella of "Life Science". The composition of this cluster implies several industry sectors (NAICS – North America Industry Classification System) including: Drugs and pharmaceuticals; Medical Devices equipment; Research testing and laboratories; Biosciencerelated Distribution. Notwithstanding there are some discrepancies concerning the definitions of the Life Science cluster across the two regions observed. In San Diego, for instance, some NAICS mostly related to "M-Health or Wireless Health" and "Agricultural Feedstock and animals" are included in the cluster composition.
Under these premises, we confined the spectrum of policy choices to those directly targeting the "Life Science" cluster. In this respect, any cross-cutting policy effort has been considered a possible confounding variable and accordingly excluded from the present analysis. Moreover, the limited data availability referring to these particular areas forbids us to lead any conclusion concerning the causality between the planning practices and their economic outputs. considering some planning practices (namely Life Science Corridor in Massachusetts and the University City Community plan) entered into force in 2013 and 2015 respectively. We report the main findings of the analysis conducted in Table 2.

Table 2: Social auditing methodology applied to San Diego and Boston regions' Life Science Clusters (Authors' elaboration based on Dunn, 2012) (Table. 2 in Annex 1a - Francesco Cappellano, Alfonso Spisto)

	Policy Actions		*Policy Outcomes*	
	Input	*Processes*	*Outputs*	*Impacts*
San Diego Region	Zoning	Scientific Research Zone	8% land use in University City is zoned to host life science labs.	Employment 64490,00 Emp. Growth rate -3,10% Establishments growth rate 3,00% % VC to total U.S. 6,88%
	Infrastructure Provision	Guaranteed Water for Industry Program	Uninterruptible supply of water for manufacturing and R&D firms	
		Public Transportation	Metropolitan Transit Service (MTS) routes that serve the main Life Science R&D and employment centres	
Boston Greater Area	Zoning	Life Science Corridor	Agglomeration of life science firms in the surrounding of the mass transit Red Line -	Employment 86235,0 Emp. growth rate 1,30% Establishments growth rate 4,30% % VC to total U.S.

			over 27.7 million square feet of Research & Development /Lab (Existing, planned or under construction).	38,01% % NIH to total U.S. 18,72%
	Funding & collaboration	Massachusetts Life Science Centre Programs	Total budget of 1billion $	

The Case of San Diego

In San Diego, a specific urban policy devoted to spurring research facilities concentration dates back to 1900s when the first research institutions were placed. In 1907 hundreds of public land acres were ceased to build new research facilities in Torrey Pines mesa (San Diego Regional EDC, 2015). Over time, the University of California – San Diego (UCSD) and several other research institutions located in neighbouring areas began a fruitful collaboration with the City of San Diego, which has been leading to the tailored urban planning interventions (see Economic Development strategies 2002, 2008, and 2014 by the City of San Diego) discussed below. In compliance with the methodology adopted, the urban planning tools are considered as policy inputs - which include zoning, infrastructure provision and job training programs.

These direct interventions have been coupled with other types of infrastructures which indirectly create competitive advantages for the cluster, such as the port of San Diego and the borders which ensure great communications and important gateways for the whole economic activities in the San Diego area. The aforementioned policy inputs can be considered as a result of a long lasting and complex policy process which involved both public and not public stakeholders. We are primarily concerned with the region around University City and the neighbouring areas, including La Jolla and Torrey Pines Mesa. We focus on this region given its prominence in the sector employment as demonstrated in Figure 2.

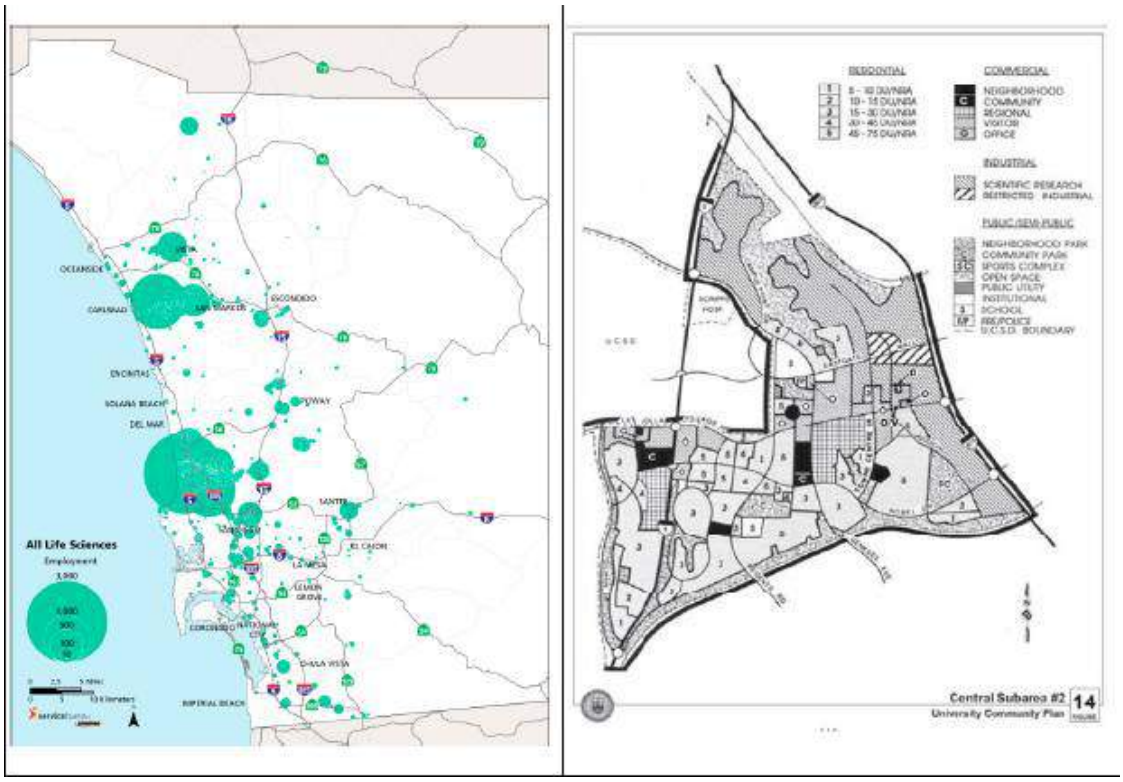

Figure 6: 2a Life Science Employment Map (San Diego Workforce Partnership, 2014); 2b: University City Land Use (The City of San Diego, 2015a) (Fig. 1 in Annex 1a - Francesco Cappellano, Alfonso Spisto)

The University Community Plan was advocated by the UCSD. The City developed it upon the idea – nurtured by the public officials - to create a life science cluster, since they forecasted a strong development in the area (Kim, 2015). Hence, long-lasting ties with research anchor institutions and extensive public outreach have been inherent features of San Diego's planning process - in compliance with the so called "Community planning" approach. The City rewarded considerable attention to the need of employees as well as companies naming a specific land use, as the Scientific Research which includes: research laboratories, supporting facilities, headquarters or administrative offices and personnel accommodations, and related manufacturing activities (The City of San Diego, 2015b). However, the urban planning processes were not only focused to the provision of specific zoning. At the request of the local biotechnology industry's representatives (called BIOCOM), the City implemented a tailored program (the "Guaranteed Water for Industry Program") to offset the drought which represents a serious threat to manufacturing and R&D firms, since they are highly dependent on water for industrial processing and cooling needs. Furthermore, the City of San Diego has been committed in providing a public transportation service to the most significant employment and R&D centres (namely, the areas neighbouring UCSD campus). For transportation planning, the City of San Diego relies on the local Metropolitan Planning Organization (called SANDAG) which is responsible for planning and programming financial resources for a multi-modal transportation system. In sum, the city of San Diego adopted similar approach as several other cities (e.g. New York City, Novato City and Boston) by right sizing the zoning, streamlining permits, strengthening the infrastructure provision. In this respect, the "Development Intensity" element within the University City's Community Plan allows higher density in order to reinforce the existing patterns, accounting a percentage around 8% of land devoted to Life Science/Research. The land devoted to the "SR Zone" accounts for 1,047 gross acres and will allow 14,359,530 s.f. (The City of San Diego, 2015a) of facilities in order to accommodate additional 9,665 jobs, forecasted by 2018 (The City of San Diego, 2014). In respect of public

transportation, the City intervened by placing additional 14 Metropolitan Transit Service (MTS) routes in order to serve the University community. Moreover, through SANDAG, the City has planned, funded and started to implement the Mid-Coast trolley project which runs through the University City region. This project will extend the existent LRT (the Blue Line trolley) which will serve the UCSD campus and the surrounding areas. As shown, the City set the ground for the geographical concentration of the life science industry, research organizations and venture capital (Powell et al., 2002, in Majava, Rinkinen, & Harmaakorpi, 2015), which represent the basis for "a robust entrepreneurial activity and the formation of entrepreneurial habitats" (Kim, 2015, p. 3). Along this paragraph, we explore how the public choices supported the innovation ecosystem. Drafting on the relationships nurtured by the City, it is remarkable the role exerted by not-for profit organizations BIOCOM and CONNECT who has been building strong ties with public officials. Their relevance is twofold: on one side, they have been advocating innovation process by lobbing government at all levels and establishing collaborations with SANDAG and San Diego EDC (Walcott, 2002); on the other side, since their foundation, they have been serving as collaboration platform for both entrepreneurs and academics within the life science sector in order to boost entrepreneurship and technology transfer (Kim, 2015). Hence, the case of San Diego witnesses how innovation ecosystem relies on flows of knowledge – as demonstrated by Kim (2015) - which are critical to "power collaboration and co-creation" (Gobble, 2015). At this regard, the talented managers attracted in San Diego were critical to create fruitful human networks which are considered the main reason for the cluster success (Walcott, 2002). Moreover, they developed a wide-spread entrepreneurial culture in the area (Walcott, 2002; Kim, 2015; Casper, 2014) which is crucial to support attempts toward commercializing the research outcomes carried out in the local clinic or R&D facilities. In fact, the UCSD and the outstanding independent research institutions (Scripps Research Institute, Sanford Brunham Prebys and Salk Institute for Biological Studies) have been at the forefront in the research. They are all ranked among the 10 most performing research institutes upon the NIH funding (San Diego Regional EDC, 2015). Additionally, the sum of patents (704 in 2014) resulting from this public funding sources (ib.) witnesses the efficiency of the public expenditures invested in those centers. This first tier scientific environment is fed by a talented workforce available in the area given the presence of important universities in San Diego (namely UCSD, SDSU, USD). Moreover, job/training programs, (e.g. Life Science Summer Institute) provided by the City of San Diego through the San Diego Workforce Partnership, spread the know-how over next generations of students and teachers who reach San Diego every year from all over the U.S in order to appreciate a real-life work experience in the life science industry (The City of San Diego, 2014). Additionally, several other factors make part of the ecosystem and work significantly to its degree of innovation, including: considerable supply of venture capitalists which afford risk financing, a three-tier real estate market providing space for companies from incubation to start-up and through established market-seasoned success (Walcott, 2002) accelerators, incubators and angel investors by sharing their knowledge support the rise of new economic activities, health providers who partner in clinical trials, further business services leverage their expertise in financial, legal, human resources fields (Majava, et al., 2016). Notwithstanding, harnessing innovation ecosystem is not limited only to local actors. In fact, even regulatory agencies and municipal or regional governments that create a dynamic, innovation-driven economy can be involved in the orchestration process. In this respect, federal legislation (namely the federal Bayh–Dole Act or Patent and Trademark Law Amendments Act) deeded the property rights for federally-funded technology to not for profit universities (Walcott, 2002). By allowing that, a number of companies settled down close to anchor R&D institutions to turn research outcomes into patents as demonstrated by the data aforementioned. Additionally, actors at state level prompted a crucial contribution to the multi-scalar-featured policy process: 1) the State of California supports the University of California (UCSD) allocates the 20% of resources reported in their annual budget of the UC system; 2) the University of California

played a significant role in the 1980s when it laid the basis for a biotech base through university technology transfers in San Diego (Walcott, 2002; Markoff, 1997). Such multi-faceted ecosystem is unique for its government since the leaders of BIOCOM and CONNECT are the ones who play a prominent role in the orchestration of the innovative ecosystem (Majava, et al., 2016). In fact, the City of San Diego forecasted the development of the life science sector and so implemented an urban policy to set the ground for the cluster development earmarking resources (water, zoning, infrastructure provision) and attention to the cluster needs. As claimed by a public official, the City consciously limited its efforts in providing the aforementioned inputs (Kim, 2015) leaving the orchestration role to private and not-for-profit sector. In fact, "since 1980s when the major actors see a gap in the ecosystem, they tend to fix it withouttop-down guidance" (Majava, et al., 2016, p. 10). In conclusion, a multi-scalar featured and complex policy process as a whole achieved to orchestrate a wellperforming regional innovation ecosystem. A combination of federal legislation and educational statefunded policies contributed to leverage the human capital toward innovation.

The Case of Boston

The case of Boston, defined as "supercluster", represents the best performing life science cluster in the world by attracting firms, companies, venture capital and private banks (Business Wire, 2015). By a planning perspective, local authorities have accommodated the life science ecosystem development through specific urban planning tools – such as zoning to increase life science-related spaces, streamlined process to permit buildings and sites for biotech-uses in their municipal plans, life science-related planned area development. At this regard, the MassBio - a not-for-profit organization representing the actors working in the life science field and providing services and support for the ecosystem - has developed an index - called BioReady - considering the zoning practices and the degree of infrastructure provisioned as suitable to host life science companies or facilities (see https://www.massbio.org/whymassachusetts/supercluster/bioready-communities). The results claim that five cities are top-rated and that they are linked by the mass-transit infrastructure - namely the Red-Line operated by the MBTA. These cities (Somerville, Cambridge, Boston, Quincy, Braintree) joined in 2013 to promote the "Life Science Corridor". Hence, more companies are attracted by the abundance of R&D facilities (e.g. 27.7 million square feet of Research & Development /Lab) around the Corridor. Moreover, the choice to adopt a Transit Oriented Development scheme (developed around mass transit line) generates stark economic advantages in terms of greater workforce/employers access, lower transportation costs which self-reinforces the business attraction. Such tailored urban planning policy led to a physical agglomeration of life science sector companies which is forecasted to increase over time given the presence of top-ranked universities in the world (e.g. Harvard, MIT, Tufts, Boston University, etc.). The Mass Life Science Centre represents not only a massive fiscal stimulus which granted a 1$ billion in aid to boost the Life Science sector in the Boston area (Bluestone & Clayton-Matthews, 2013). Additionally, it depicts the strong ties among the different actors within the regional innovation ecosystem. In fact, the structure itself of the Mass Life Science Centre does include representatives from academia and from private sectors. For instance, its board is composed by government officials, industry CEOs and leaders from academia (ib.). In a certain extent, we can state that the "Triple Helix" takes place in this tailored structured. Additionally, the public funds' allocation is assessed by a panel which gathers up to 200 specialists including: "academic researchers, industry scientists and private venture capital experts" (ib., p. 6). Their evaluation takes into account the scientific extent and the economic return of investment. Such articulated structure does not affect the time process of public funds' allocation but it enhances the efficiency of the public expenditure. In fact, the massive state-funded MLSC is proven to be very effective since till 2013 has been reported to generate $ 1,66 gain per each state dollar spent (ib.). The initiative has been in charge of the state of

Massachusetts since 2008, lasting for ten years. The Centre works trough implementing seven programs which earmark resources throughout the whole R&D pipeline including: the research institutions, the start-ups, SMEs, bigger companies, business incubators and not-for-profit organizations. The main rationale of the MLSC is centred in supporting small and medium enterprises as well as start-ups. According to Bluestone and Clayton-Matthews (2013), "[…] In the life science and other innovative sectors [...] the large companies that depend on the development of breakthrough innovations and sophisticated medical devices prosper by being near a concentration of small start-firms" (ib., p. 8). The authors explain this defined business location pattern since the large companies can take stock of "the scientific discoveries under way in university research laboratories and in the transnational research carried out by small start-ups" (ib., p. 40) and eventually invest in the most promising outcomes. Such detailed and robust policy process implemented in Boston succeeded to achieve outstanding outputs. In fact, 36250 people are employed in 450 Life Science companies with over 150 million square feet of lab space available considering only the specific region of the Life Science Corridor.

Conclusions

With the shift to a knowledge-based economy, to be innovative and creative is not advice for just young people anymore. Rather, it represents the new policy imperative that cities and regions should follow in order to prosper and be competitive in a globalized world. The nurturing of regional innovation ecosystems is widely claimed to be the most effective way to pursue the production and use of innovation for regions' growth. As well as in the biological ecosystem all the living species interact with one another and with the environment they live in, as in innovation ecosystems all the actors constituting cities and regions – universities, businesses, public institutions, civic society and NGOs – have to collaborate in order to contribute the ecosystem's success. By analysing the role that public authorities perform in supporting two successful U.S. innovation ecosystems- the life science clusters of Boston (MA) and San Diego (CA) regions – this paper contributes the knowledge in the policy-making field by clearly breaking down all the strategies adopted for regions' prosperity, thus identifying the different approaches in promoting the interfaces between ecosystem's innovation actors. In particular, two main findings can be highlighted within this research: first, either in Boston and San Diego regions, public authorities promote the clustering of life-science related actors through specific zoning tools and infrastructures provision. Beside the water supply and the public transportation development, San Diego's public authorities set up the Community Plan of University City neighbourhood in order to devote the 8% of the land use to host life science-related laboratories (Scientific Research Zone). In the Boston region, local authorities have accommodated the life science ecosystem development through specific urban planning tools – such as zoning to increase life science-related spaces, streamlined process to permit buildings and sites for biotech-uses in their municipal plans, and life sciencerelated planned area development. The increase of life science-related land uses is boosted also by MassBIO's rating for municipalities, whose aim is to help companies to locate in the best-rated municipalities – based on their zoning rules easing the location of life science-related firms.

The second finding concerns the role of the public authorities in supporting the synergies among the life science-related actors. The public founded Mass Life Science Center works as a platform providing incentives and collaborative programs targeted to the life science ecosystem. It creates new models for collaboration and partnership with both public and private actors from local to the global level, in order to boost its innovation ecosystem. The public leadership in orchestrating the life science innovation ecosystem have been proving societal benefitting, as demonstrated by the public return on the MLSC investments. In the San Diego region, the interfaces between the life science ecosystem's innovation actors is supported by two main not-for-profit organizations, namely BIOCOM and CONNECT. The latter work as collaborative platform aimed to boost life science-related entrepreneurship and technology transfer. As

explained in the previous section, this bottom-up and self-organizing feature of San Diego's life science ecosystem is probably due to historical reasons characterizing the entrepreneurial environment and the connections universities-firms.

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Innovation Districts: IDEA district in San Diego

Laura Biancuzzo and Luana Parisi[4]

Innovation Economy

Over the last decades, innovation has increased its importance within the pattern of economic growth, moving to the central stage of economists and policymakers researches concerning the factors that enable the process. The concept of innovation economy has been introduced in the early '40s, when the economist Joseph Schumpeter in *Capitalism, Socialism, and Democracy* recognized the key role of innovation in creating economic prosperity, by pointing out that the continuous progress and the improvements in the standards of living for everyone shall be allotted to the entrepreneurs "creative destruction". So it was that, the introduction of new ideas and products nurtured by entrepreneurs together with new forms of organization among evolving institutions, began to be widely acknowledged as the engine of economic growth. Schumpeter's visionary insight became apparent in the shift from the "old growth theory" to the "innovation based growth theory", whereby economic prosperity no longer results from the accumulation of the basic ingredients of production (i.e. capital, labor and natural resources), but instead, additional wealth is generated by increase in knowledge, scientific and technological improvements, along with the development of an effective private-public partnership (Porter, 1990; Baily et al., 2011). Innovation and entrepreneurship are therefore considered as crucial factors of nations central strategies targeted at growing and sustaining competitiveness in the 21st century globalized economy (West, 2011). Indeed, the creation of knowledge as a result of research and development efforts, as well as its commercialization and dissemination, are seen as an effective response to the pressures generated by globalization and the increasing international competition (Dahlman, 2007). In this respect, a sound body of knowledge assigns a pivotal role to regional innovation clusters in increasing the competitive advantage; accordingly, "geographic regions that are bound together by a network of shared advantages create virtuous cycles of innovation that succeed by emphasizing the key strengths of the local businesses, universities and other research and development institutions" (Sallet et al., 2009). This tendency of firms, economic actors and institutions to co-locate in order to enhance their productivity, because of their mutual proximity and connections, generating positive economic results is a phenomenon that has long been recognized by economists (Muro and Katz, 2010). The agglomeration economies advantages in skilled labor pool, supplier specialization and knowledge spillovers have been acknowledged by Alfred Marshall as far back as 1850, and more recent theories have increasingly investigated the clusters capabilities in boosting regional economic performances as well. Thus, according to Porter (2003) the presence of strong clusters together with the buzz on innovation deeply affect the regional economy, revealing "important insights about the role of location in competitive advantage" (Porter, 2000). Furthermore, the geographic agglomeration is considered a crucial factor in providing concentration and exchange of knowledge through the information transfers among the extensive network of institutions and firms in close proximity; hence, on the one hand "entrepreneurs benefit from location" and, on the other hand, they contribute to foster the innovation that will sustain the regional competitive advantage (Feldman, 1994; 2014). Additional evidence of clusters beneficial impact on entrepreneurship is provided by Delgado et al. (2010) through the demonstration of the higher growth in new business formation and start-up employment experienced by industries located in regions where strong local clusters occur. In sum, clusters act as a vehicle for the economic development of a region by enhancing its

[4] Bevilacqua C., Parisi L., Biancuzzo L. (2019) Multi-stage Strategic Approach in Spatial Innovation: How Innovation District Matter?. In: Calabrò F., Della Spina L., Bevilacqua C. (eds) New Metropolitan Perspectives. ISHT 2018. Smart Innovation, Systems and Technologies, vol 100. Springer, Cham

competitive advantage, fundamental to compete in the current globalized economy; having as a core function the creation and dissemination of knowledge fostering innovation is their key to success (Porter, 1998).

Innovation Ecosystem

Nevertheless, the presence of a favorable environment, namely innovation ecosystem, is an essential requirement for innovation to occur. Ecosystem as an economic concept has been introduced by James Moore (1996) to describe a business environment in which companies are forced to co-exist and interact with other organizations and individuals within their business ecosystem. The evident conceptual parallelism between biological and economic environment represents a leading line of researches attempting to study the innovation ecosystem (Gobble, 2014), all culminating in a comprehensive and widely recognized definition which refers to "dynamic, purposive communities with complex, interlocking relationships built on collaboration, trust, and co-creation of value and specializing in exploitation of a shared set of complementary technologies or competencies. Strong innovation ecosystems translate knowledge into increased value and they are resistant to disruption" (Autio and Thomas, 2014). Following the strand of ecological analogies, Deborah Jackson (2011) further developed the concept by investigating the equilibrium between the two economies the innovation ecosystem embraces: the knowledge economy and the commercial economy. Specifically, if investments in research and development are balanced by innovation, which in turn brings about an acceptable rise in sales and profits, it follows that an innovation ecosystem can be considered "thriving and healthy". Furthermore, business creation, proven by the expansion of high-growth companies and the increase in the number of start-ups, is taken as an indicator of the innovation ecosystem strength in fostering economic growth (Clark et al., 2016). All the afore mentioned considerations reveal the complexity of the innovation ecosystem structure, resulting from the multitude of actors involved in the economic and sociological interactions. However, Mercan and Göktas_ _(2011) tried to untangle this issue, by investigating the impacts of the three main components thriving an innovation environment, according to the Global Innovation Index developed by Word Economic Forum and INSEAD business school. Unsurprisingly, the development of clusters is the first factor identified, showing a strong positive effect in creating a favorable business environment, thanks to the connections among organizations which enable advances in knowledge and technology facilitated by geographical proximity; secondly, the high qualified labor attracted by clusters has proven to play a key role in fostering innovative activity and accelerating economic progresses; and finally, the development of R&D collaboration between universities and industries is seen as determinant for innovation making. The pivotal function of cultural institutions in the innovation process has been well described by the triple helix model developed by Etzkowitz and Leydesdorff (1997), which ties together university-industry-government. Specifically, the approach explores the innovation dynamics by identifying universities as the engine of economic development within a knowledge society, given their ability to produce, transfer and apply knowledge; at the same time, small and medium-sized industries allow the production of new technologies in partnership with other organizations, while government sets the policy framework affecting the institutions behavior in order to ensure constant and profitable interactions between the parties. Furthermore, Carayannis and Campbell (2012) add the "media-based and culture-based public" helix to the afore mentioned ones, advocating the strong influence of the means of communication and cultural values on every innovation ecosystem. In conclusion, the occurrence of innovation is strictly related to a conducive innovation ecosystem characterized by a group of diverse agents, profit seeking, who generate and commercialize flows of knowledge, increasing the competitive advantage of the entire region (Metcalfe and Ramlogan, 2008).

The Urbanization of Innovation

In recent times, however, the research on the geographical distribution of innovation has provided controversial views, confirming the complexity of the phenomenon; indeed, geographers and regional scientists devoted increasingly efforts in an attempt to disclose the proper spatial dimension of innovation and entrepreneurship, by investigating the dynamics that lead to define their geographical patterns. Although an extensive body of knowledge corroborates the idea that innovation economy prefers regional innovation systems, as location for creating and spreading new knowledge generating well-performing cycles of innovation (Feldman, 1994; Asheim and Gertler, 2006; Cortright, 2006; Sallet, 2009), the opinion that cities and innovation are strongly linked is becoming progressively popular (Shearmur, 2012). As a matter of fact, as Richard Florida et al. recently observed (2017), "innovation is highly concentrated across and within cities and metro areas". This new trend highlights how cities give a meaningful response to the challenges put forward by the 21st century globalized economy about the businesses critical choice of where to locate (Florida, 2008). The urban environment, indeed, has proven evidence to encompass the suitable economic and cultural dynamics in order to generate radical innovations and boost the development of new industries (Montgomery, 2007). It follows that, "innovation and entrepreneurship do not simply take place in cities but in fact require them" (Florida, 2017). In addition, it has been demonstrated that cities allow innovation economy to reveal its potential in regenerating local economic areas and promoting local assets (MAPSLED, 2017). In this regard, the active role of innovation within urban development policies has been investigated by further reflections on the so-called innovative cities (Inkinen, 2015), which point out the massive transformations cities are experiencing by fostering "knowledge-intensiveness and technological advancement … in order to become competitive providers of first class living for highly skilled global work-force".
All the above mentioned observations lead to the conclusion that a process of urbanization of innovation is now occurring. A physical shift of innovative businesses from suburban corridors and science parks to inner-cities areas has taken place, prompted by the companies need to relocate in places that ensure close connectivity among people and give direct access to markets and finance, in order to support the innovative entrepreneurial activities. Cities are therefore seen as "hubs of technological innovation bringing together a wide range of sectors, deep international networks, customer and client opportunities, and cultural and artistic quality" (Mulas et al., 2015). Innovation as an urban phenomenon calls for economic development measures and urban policies to foster the ecosystem preconditions and control the cities urban regeneration (MAPSLED, 2017), given the spatial implications it entails at different scales: on the one hand, wide regeneration processes are targeted to re-shape entire neighborhoods in order to create the vibrant environment required by the innovation economy, and on the other hand, on a smaller scale, several of the existing buildings are also involved in restructuring activities to meet the needs of innovative newcomers (Clark et al., 2015). In sum, cities are naturally providing the physical and cultural environment to innovation economy, becoming the centers of innovation activities and playing a key role in boosting economic growth, at the same time policymakers are responsible for the institutional and regulatory framework in order to manage the re-urbanization and influence the amount of innovative activity through the adoption of designated policies.

Innovation Districts

The tangible effort of cities at providing a favorable context for innovation to prosper, can be read in the emerging trend of innovation districts proliferating globally. The 22@Barcelona District is considered the pioneer of this trend that paved the way to a multitude of innovation-led regeneration projects, representing a successful model of planning and innovative urban design for several cities around the world. Specifically, the government initiative converted

approximately 200 hectares of deprived land near the city center, previously occupied by the historic cotton district of Sant Martí, into a knowledge center of excellence that fosters vibrant interactions among the main actors of the innovation ecosystem: cultural institutions, companies and the administration itself (Ajuntament de Barcelona, 2010). The crucial factors behind the success of this newly conceived urban model can be easily deduced from the innovation district definition provided by the influential Brookings Institution report, edited by Bruce Katz and Julie Wagner (2014), which refers to "geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. Compact, transit-accessible, and technically-wired, innovation districts foster open collaboration, grow talent, and offer mixed-used housing, office, and retail." It follows that, innovation districts all contain a powerful and unique combination of economic, physical, and networking assets which, brought together in geographic proximity, stimulate the idea generation facilitating the entrepreneurial activity (Giuffrida et al., 2015). Thus, this mixed-use approach has a fundamental role within a wider strategy of urban growth, in enhancing competitiveness by nurturing and accelerating the innovation process, and in improving livability by providing solutions for a more efficient land use. However, innovation district urban forms and functions cannot be defined a priory; given their ability to leverage the economic strengths of the specific metropolitan area in which they locate, they significantly vary by type and size, but also differ in specializations for growth (Read, 2016). Nevertheless, according to their location and the type of businesses settled within their boundaries, they have been categorized into three models: (i) Anchor Plus Model, which includes at least one research-oriented institution, located in downtown areas, that attracts related firms and start-ups triggering a knowledge commercialization process; (ii) Re-imagined Urban Areas Model, that entails the revitalization of post industrial landscapes in close proximity to downtown and well-connected to it, powered by anchor companies; (iii) Urbanized Science Parks Model, mainly located in suburban corridors, where the density has been increased with the reallocation of mixed activities (Katz and Wagner, 2014). Furthermore, whether the districts are the result of strategic government policies and investment programs or are driven by market forces and location preferences of entrepreneurs, they tend to be more successful in cities characterized by "well-established growth sectors, dynamic population growth, access to capital, connectivity to growth markets, knowledge rich institutions, a conducive regulatory environment, and a collaborative and entrepreneurial working culture" (Mulas et al., 2015). From the above mentioned considerations it stands to reason that innovation districts represent the physical environment where the dynamic innovation ecosystem takes shape. The relation that links them has spurred debate in the literature, given its multi-dimensional and non-linear nature: innovation districts precisely reflect the city's wider economic, social and political systems, and they cannot flourish without the innovative ecosystem in which they are embedded, however, by contrast, innovation districts on their own do not generate any innovation ecosystem; moreover, districts could act as facilitators for such ecosystems to develop and expand, but at the same time they cannot operate as drivers of such ecosystems; this leads to the conclusion that "a city does not become an innovation hub simply by promoting the establishment of an innovation district … successful districts are driven by larger trends than site availability" (Clark et al., 2016). As a consequence, the creation of innovation districts is the last stage of a process that starts with exploring the broad innovation economy, and then analyzing the distinctive features of the city's innovation ecosystem, in order to assess the feasibility of an innovation district approach, which can achieve scale and strengthen critical mass just with the combined efforts of the private and public sector.

Innovation in San Diego

Innovation Ecosystem in San Diego

The city of San Diego is uniquely positioned for long-term growth and prosperity (Major, R.,

2017). Economically, it "would rank 26th as a state" and more than half of its economy is in recession-resilient sectors", namely, Innovation, Tourism, Military, Health Care, Education and Government (Major, R., 2017). Exploring its economic structure, it emerges that no sector represents more than 20% of the economy, outlining a highly diversified system (Major, R., 2017). "The industrial clusters include telecommunications, biotechnology, computing, other electronics, software and the Internet, and energy and environmental technologies" (Walshok, M. L. *et al*. 2002). This diverse economic base is expanding under the three drivers represented by the Innovation, Tourism and Military sectors (Figure 1). Considering the length of time 2010-2014, the sector of Innovation has grown by 12 points and continues to thrive, the Tourism one "will outpace GDP growth in 2017" and Military grew by 15 points and will expand its already strong presence (Major, R., 2017), even if the region is no more dependent primarily on it for its wealth (Walshok, M. L. *et al*. 2002). On the contrary, the supporting sectors, considered population-driven, did not go through major changes and the traditional ones are going through a very slow growth process (Major, R., 2017).

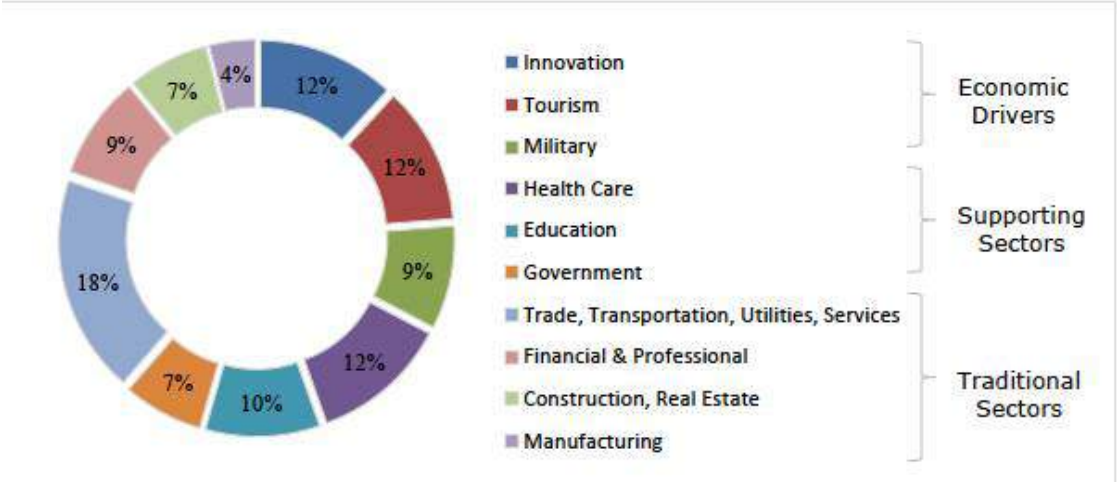

Figure 7 - San Diego 2016 Economic Structure. (Source: Author's elaboration based on SANDAG data, 2016) (Figure 1 in Annex 1i – Laura Biancuzzo, Luana Parisi)

As clear from the previous outline, San Diego went through a major economic structural change, which is helping it to be better positioned globally within the new Economy. In particular, the San Diego region "has transformed itself into one of the most innovative regions in the USA" (Walshok, M. L. *et al*. 2002). The mere fact that innovation is currently conceived as a cluster itself, represents a "new way of thinking about the economy", based on the assumption that "future U.S. competitiveness will hinge on our capacity to foster clusters of innovation in regions throughout the country" (Porter, M. E., 2001). As a matter of fact, "the nation's ability to produce high-value products and services that support high wage jobs depends on the creation and strengthening of many more regional hubs of innovation" (Porter, M. E., 2001). Since "with change, comes opportunity", it becomes essential to understand this turning point for taking its promises in the best possible way (Khosla, P.K. & Walshok, M., 2016). The history of the city of San Diego is just dotted with tipping points that contributed to forge its actual innovative character (Khosla, P.K. & Walshok, M., 2016). The first of these ones is recordable in the 1930s and '40s when the city turned into an important military outpost (Khosla, P.K. & Walshok, M., 2016). Besides the defense sectors, the economy was led by tourism and real estate development and did not depend on universities or research centers at all (Walshok, M. L. *et al*. 2002). The other turning point was in the 1950s and '60s, as soon as the "research clusters" established in the Torrey Pines Mesa area (Walshok, M. L. *et al*. 2002) and the zoning was changed to accommodate Research and Development and light industry (Khosla, P.K. & Walshok, M., 2016). In particular, some important research centers, such as The Salk Institute,

and the research university of UC San Diego (UCSD), considered the 'MIT of the West', have been "extremely successful in attracting world-class scientific talent to the San Diego region, which is now reputed to have one of the highest percentages in the USA of PhDs and MDs in its population" (Walshok, M. L. *et al*. 2002). This started to create the Innovation Ecosystem in the city, letting it grows and develop into a "center for science and innovation" (Khosla, P.K. & Walshok, M., 2016), a hub "for academic research and high-tech industry in fields such as biotechnology, wireless telecommunications and genomics" (Walshok, M. L. *et al*. 2002). In the last years, in fact, some other research institutions grew up in the region, recruiting world-class talents (Walshok, M. L. *et al*. 2002). The last turning point is happening in these years and talks about the need to rethink and reinvest in the urban core's city assets, where the innovation economy is spurring, since it "must involve the broader community and not be limited to one area" (Khosla, P.K. & Walshok, M., 2016).

The three main milestones that contributed to the city change have been:

- The enhancement of a strong intellectual capital, since the presence of world-class scientific and research talents represented the sparkle for creating an important critical mass that makes possible innovation and entrepreneurship. This is the main reason why the San Diego region ranks second in California in terms of federal R&D funding and is receiving also consistent private venture financing, which is important to highlight since back in the 1970s the region "had no major banks or venture capital firms of its own" (Walshok, M. L. *et al*. 2002).
- The development of the human capital, referring to the specialized human capital that is emerging thanks to the offered educational and training programs (Walshok, M. L. *et al*. 2002). They are the high-skilled workers that are involved in formal and informal technical and business networks, becoming essential for tailoring the region's competitive advantage (Walshok, M. L. *et al*. 2002).
- The creation of particular social networks, thanks to thoughtful regional initiatives that brought together the communities of businesses, entrepreneurs and researchers, accelerating the economic growth process and spurring "new sources of capital and expertise", namely, new high-wage jobs and new companies (Walshok, M. L. *et al*. 2002).

In light of the above, it is possible to affirm that in the last decades the city of San Diego has been able to transform itself. Its economy thrived because it has diversified it, as we have seen previously, growing new industries based mainly on R&D (Walshok, M. L. *et al*. 2002).
This process has been driven by the above mentioned forces and some specific features, such as the quality of life, able to attract the intellectual capital, the frontier mentality, the entrepreneurship tradition and "the absence of a traditional business and 'old family' establishment", that allowed the establishment of new social networks that boost the innovation process (Walshok, M. L. *et al*. 2001).

The role of the Public Sector adopted in the city

The data about the impressive transformation of the San Diego region of the last years talk about the fact that "the research capacity has grown, the managerial and business competency of the region has increased, the pool of investment capital has grown and the expansion of education and training programs in advanced skills has been significant" (Walshok, M. L. *et al*. 2002). These activities were externally funded, being subsidized by national foundations and federal sources, or business service providers and employer reimbursements (Walshok, M. L. *et al*. 2002). The public actors put their efforts in building a regional research capacity focused mainly on science and technology, promoting initiatives triggering networked communities and mobilizing the skills and knowledge of the main educational institutions (Walshok, M. L. *et al*. 2002). As a matter of fact, the civic leaders used, in the past, to act as the needed catalyst to

spur and promote the innovative economic environment (Urban Land Institute & the Aspen Institute, 2012). The role of the public sector, for instance, was to set a "public climate for an innovative economy" as in the example of Torrey Pines Mesa, near the University of California San Diego, which is among the main biotech and high-tech hub of the region (Urban Land Institute & the Aspen Institute, 2012). The city institutions developed the broad vision for the "academic-driven biotech/high-tech cluster of economic activity", providing the land and bringing in the academic institutions (Urban Land Institute & the Aspen Institute, 2012). The result was the development of the UCSD campus, that had a ripple effect on the stimulation of the startups that later on evolved in important biotech and high-tech companies (Urban Land Institute & the Aspen Institute, 2012). It is important to highlight the long-term vision that the city has had, developing its support to the interventions, that included the setting of values and the provision of the necessary tools to attract the private sector, able to implement the public decisions (Urban Land Institute & the Aspen Institute, 2012). The Public actors acted entrepreneurially, bringing "money, land, and deal making together", creating the nexus between academic and research institutions, that activated the ideas valuable for spurring innovation (Urban Land Institute & the Aspen Institute, 2012). This process of transformation already brought together actors from "government, business, community groups, and academia", creating a momentum that represents a great opportunity to do a step forward towards the birth of collaborative programs (Brookings & JPMorgan Chase, 2015). This is even more true in virtue of the new tendencies to allocate the innovative activities within the core of the city. In this regard, the public side is supporting the boost of innovation, but it is not putting its efforts to collaborate with the other actors, nor to controlling the future initiatives through taxation or zoning programs (personal communication, May 16, 2017). What emerges, talking about the shift of innovation towards downtown, is that the Public side does not fully believe in its potential, focusing only on the higher risks that would result from the process. Thus, the risk adversity and the lack of a long-term vision strategy of the public side, for implementing new economic activities in the city core, is leaving the other actors to fend for themselves (personal communication, May 3, 2017), differentiating the last interventions from the earlier ones.

Downtown San Diego

Downtown San Diego can be considered as "a collection of unique neighborhoods and sub-districts, reflecting variations in function, history, topography, location, architecture, building scale, and civic icons" (Centre City Development Corporation, 2006). The area, the historic Centre City, is specifically defined by the Downtown Community Planning Area (CPA) and comprehends 7 neighborhoods, under the same 92101 zip code, namely: Little Italy, Columbia, The Marina, The Gaslamp, Civic/Core, Cortez Hill and East Village (Downtown San Diego partnership & UCSD Extension, 2016). The 1,450 acres of the downtown area, during the 1950s and 60s, were the place of "government offices, the courts, law firms, and retail" (Downtown San Diego partnership & UCSD Extension, 2016). "In more than 40 years of redevelopment, downtown San Diego has added pricey as well as affordable housing, high-rise office and hotel towers, convention, shopping and sporting meccas and dozens of trendy bars and restaurants" (Showley, R., 2016). The variety of functions is reflected in the Land Use of the area (Figures 2 – 3), where the "public and institutional uses, including government, education, and the 10th Avenue marine terminal", occupy the greatest percentage of land use (22%) with one-third of the land area, excluding the streets, the commercial and office category is the second largest one, occupying 195 acres, which represent the 13% of the land area. The residential use covers the 9% of the land, followed by the 5% of industrial uses and the 3% of open space (Centre City Development Corporation, 2006).

Figure 8 - Land Use in Downtown San Diego. (Source: Author's elaboration based on Center City Development Corporation, 2006) (Figure 2 in Annex 1i – Laura Biancuzzo, Luana Parisi)

The Vacant Land occupies the 2% of the Land Use and it is distinguished in: residential, commercial, industrial, agricultural and other (Figure 4) (SanGIS/SanDAG 2011).

Figure 9 - Vacant Land in Downtown San Diego. (Source: Author's elaboration based on SANDAG, 2011) Figure 6: Landownership in Downtown San Diego. (Source: Author's elaboration based on Center City Development Corporation, 2006; The City of San Diego) (Figure 4 and 6 in Annex 1i – Laura Biancuzzo, Luana Parisi)

In the downtown area, the city owns small pieces of land, since most of it is private property (personal communication, May 16, 2017). There is land owned by the navy, that is the Federal government, as well as by the State of California and the County of San Diego (personal communication, May 16, 2017). The Downtown Community Plan is the document that establishes the Land Use vision and development policies. The document addresses a wide

range of planning topics, related to Downtown's physical development and provides the strategies for implementing the visions. It is adopted by the City Council and is part of the City of San Diego's General Plan and Progress Report, which "directs the future growth and development of the entire city" (Centre City Development Corporation, 2006). The Downtown Planned District Ordinances (PDOs), distinguished into Centre City, Marina, and Gaslamp Quarter, have the task of implementing the policies of both the Community Plan and the effective redevelopment Plans, containing regulations pertaining the development characteristics of the area (Centre City Development Corporation, 2006). In order to preserve the uniqueness of each single neighborhood of the Downtown area, instead, the Neighborhood Design Guidelines develop the policies and regulations contained within the Community Plan and the PDOs, providing greater details concerning the public improvement of each neighborhood (Centre City Development Corporation, 2006). It is up to these planning tools to support also the new shift of the innovation sectors of the economy within the city core, underpinning the move of the so-called millennials, who are "are turning their backs on the more suburban, shopping mall lifestyles of their parents and seeking 'community' in urban neighborhoods" (Downtown San Diego partnership & UCSD Extension, 2016). Under the "range of educational institutions that cluster in and around the urban core", downtown San Diego is becoming an innovation hotspot, counting about 110 startups, 7 incubators/accelerators and 8 co-working spaces "that are connecting talented people and nurturing new business opportunities" (Downtown San Diego partnership & UCSD Extension, 2016). Figure 7 illustrates the cluster of startups and organizations by category in the
Downtown area.

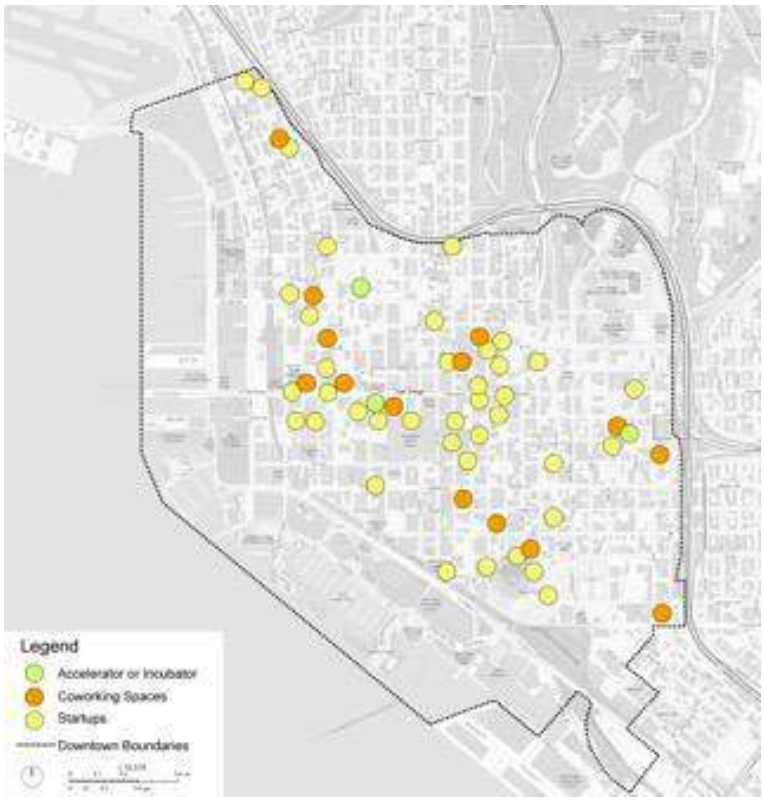

Figure 10 - Start-ups and Organizations by category. (Source: Author's elaboration based on Downtown San Diego Partnership & UCSD Extension, 2016) (Figure 7 in Annex 1i – Laura Biancuzzo, Luana Parisi)

The East Village is among the neighborhoods with the greatest concentration of "tech startups and innovation firms, mostly focused on software and digital marketing" (Downtown San Diego partnership & UCSD Extension, 2016). The East Village traditionally has been less developed

than the other closer neighborhoods and it further "experienced substantial blight" when "a significant share of maritime commerce moved away from San Diego Bay and industry moved to outlying areas" (Centre City Development Corporation, 2006). It then developed into "a mixture of light industrial and warehousing; artists and design studios; residents in pockets of small California bungalows; and human service providers and users" (Centre City Development Corporation, 2006). Today, this diverse neighborhood represents one of the fastest growing and changing area of Downtown. It will encompass a vast array of activities, from the academic ones, supported by both the already existing institutions and the new ones, to the entertainment ones, with the Petco Park baseball stadium, to arts and culture, supported by the new main Library and the new spaces of innovation (Centre City Development Corporation, 2006).
"East Village is at the center of much of the growth proposed under the Community Plan, and it will experience considerable (dynamic) transformation over the next 20 years", redeveloping as a residential district that push on the creation of new jobs, through areas with flexible uses and public spaces (Centre City Development Corporation, 2006). The East Village is surrounded by diverse neighborhoods, such as Barrio Logan and Golden Hill and some of the oldest residential spots of the city, adding an important role in the future interventions of the area, in terms of spurring the economic prosperity and favoring the inclusion of the diverse communities through the cultural offerings and events (Hirsh, L., 2016).

Socio-Economic Data Analysis

The population of Downtown San Diego has grown by 97 percent since 2000, accounting "less than one percent of residents in San Diego County" (Downtown San Diego partnership & UCSD Extension, 2016). Its total household population counts 36,295 individuals (U.S. Census Bureau, 2015), living with high density standards with about 15,022 residents per square mile (Downtown San Diego partnership & UCSD Extension, 2016). The Downtown area presents a diversified population, younger and better educated than the other cities in the Nation (Major, R., 2017). As a matter of fact, the 28% of downtown's population ages between 30 and 39, yet, because of the lack of children in the area (counting only the 10% of the population, compared to the 23% in the county), the median age is moderately higher than the median age of the County (Downtown San Diego partnership & UCSD Extension, 2016). "Roughly one third (31%) of downtown's population are Millennials" (Downtown San Diego partnership & UCSD Extension, 2016), which is symptomatic of the cultural shift that is currently in the hands of "young people looking to live, work and play in the city" (Gmur, R., 2017), grasping the new opportunities for growth. Downtown San Diego is where this "talent base can grow", also thanks to the "range of educational institutions that cluster in and around the urban core" (Downtown San Diego partnership & UCSD Extension, 2016). The residents of downtown are highly educated, with the 55% recording a bachelor's degree or higher (U.S. Census Bureau, 2015), compared to the 34% of the residents of the County and the 36% of the closer neighborhoods (Downtown San Diego partnership & UCSD Extension, 2016). Furthermore, a great number of students are in the STEAM fields, which is an important element to innovative companies (Downtown San Diego partnership & UCSD Extension, 2016). The high number of young and middle-aged professionals living in the downtown area explains why the average annual income of downtown residents is higher than the County level, with $73,756 against $59,414 (Downtown San Diego partnership & UCSD Extension, 2016). The presence of a young population explains also why only 1% of the 24,744 total housing units of downtown are single-family homes and the rest is multi-family units, against the 60% of single family homes in the San Diego County (Downtown San Diego partnership & UCSD Extension, 2016). In addition, for the same reason, about the 76% of the units house a renter's community, compared to the 46% of the County. "The large proportion of high-income renters in downtown indicates that the intense demand for home ownership in San Diego may continue" (Downtown San Diego partnership & UCSD Extension, 2016), overcoming the supply. Most cities are based on a system

where people live out in the suburbs and come into the downtown center for work and the traffic goes that way. San Diego, on the opposite, is interested by a reverse commute, because the employment hubs are mainly located outside of the downtown area (personal communication, May 18, 2017). As a matter of fact, even if downtown San Diego appears as the second largest employment hub of the region, with only the 4.5% of unemployment rate (U.S. Census Bureau, 2015) and its companies employ roughly 137,379 people, only 81,237 jobs are located there (Downtown San Diego partnership & UCSD Extension, 2016). Furthermore, the population below the poverty level is high if compared with the one of the County, namely 17% against 10% (U.S. Census Bureau, 2015). The four main sectors located in downtown by employment are the professional, scientific and technical services, accounting for about 23% of the total downtown jobs, then the Educational services, and health care and social assistance, with the 16% of the total, the sector of arts, entertainment and recreation with the 14% and the sector of Finance, Insurance and real estate with the 13% of the total downtown jobs (U.S. Census Bureau, 2015). The most popular occupations regard the Management, business, science, and arts occupations (58%), Sales and office occupations (22%) and the service occupations (15%), (U.S. Census Bureau, 2015). Currently, the downtown area is growing an ecosystem of tech and startups, focused mainly on software, digital market and mobile applications. For this reason, in 2014 downtown San Diego was considered the number one hotspot in the region in terms of "Innovation Startup Creation" (Downtown San Diego partnership & UCSD Extension, 2016). All the essential elements for building an innovation ecosystem are already put in place in the downtown area, including the incredible rate at which new companies emerge and the diversity of innovation spaces to incubate, meet-up and host a variety of events. They all speak of "a networked culture of creatives and innovators who are driving the development of new products and services that represent economic value not just to downtown, but to the entire region" (Downtown San Diego partnership & UCSD Extension, 2016).

I.D.E.A. District

Downtown San Diego represents the innovation economy attempt to create another hub for innovation with different features than the science parks and labs previously mentioned concerning the suburban research cluster on the Torrey Pines Mesa. Following the 1980s Centre City Development Corporation's general strategy targeted at densifying specific parts of Downtown San Diego, in order to revitalize the 'dormitory' character which distinguished most of the city center, in 2010, developers David Malmuth and Pete Garcia brought forward the I.D.E.A. District as solution to create a vibrant city center driven by a "Design jobs cluster, nourished by Education, enriched by the Arts and focused on Innovation" (IDEA, 2011). To implement the vision, 35 blocks located in the Upper East Village neighborhood - traditionally home to a mixture of light industries and warehouses beginning to attract a large community of artisans and artists in the late 1990s - have been chosen, given the presence of several major educational institutions, such as the City College, the New School of Architecture and Design, the Urban Discovery Academy, the e3 Civic High, the FIDM and the Thomas Jefferson School of Law that emphasize design and multiple small but growing design-related businesses (Figure 8).

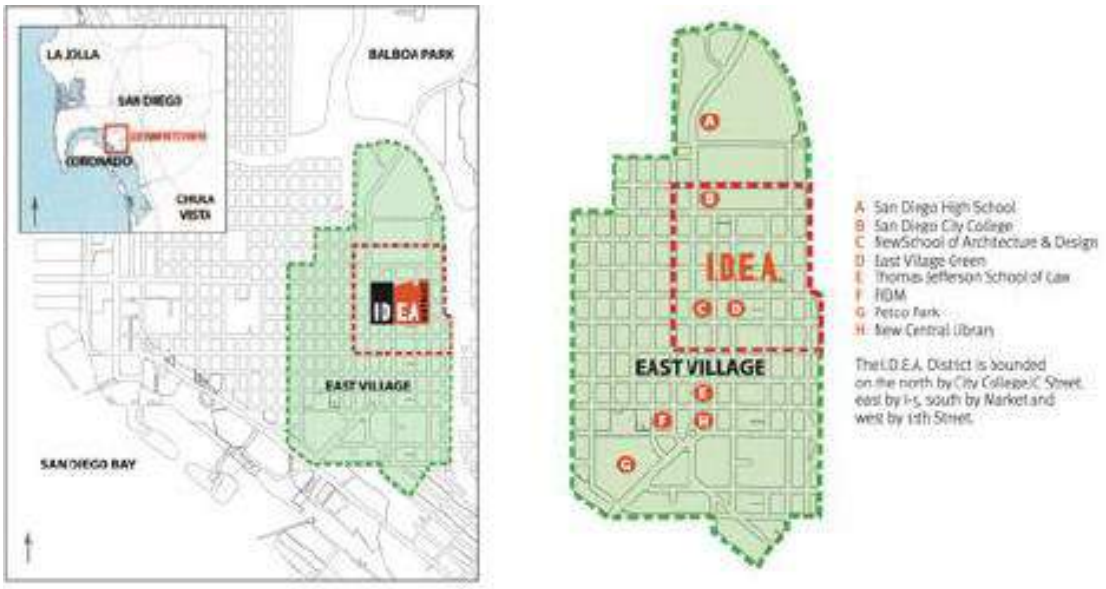

Figure 11 - The Location of I.D.E.A. District within San Diego's East Village. (Source: I.D.E.A., 2011) (Figure 8 in Annex 1i – Laura Biancuzzo, Luana Parisi)

As a matter of fact, "East Village is one of the major educational clusters in the regio The focus and approach of many of the curriculums is on the Arts, Design and Innovation and they complement, and are complemented by, the same activities in the neighborhood" (Adams, B., 2016). Besides the presence of those notable anchor institutions, East Village showed a physical environment with the appropriate character to foster innovation activities: the compact neighborhood consisted of small blocks that were easily walkable, the appropriate zoning and allowable density were already in place - following the Community Plan 2006 directives, and several vacant lots and empty warehouse buildings provided clues for the optimal building form for creative uses.

The Vision

Thus, as stated by I.D.E.A. Partners, the undeniable convergence of technology and design, the presence of growing design businesses and educational institutions hungry for collaboration, and available urban land with great 'bones' all conspired to build an urban design vision, rather than a master plan, based on a new design industry cluster. This specific cluster has been chosen since design was considered to be a perfect complement to San Diego's already strong technology base, according to the principle that the most successful regions will not only grow new clusters, they also understand how to facilitate collaboration across clusters (Delgado et al., 2014). Indeed, "the design process brings together art, technology, business, and science, integrating a range of considerations that are crucial to human potential, environmental sustainability, wealth creation and innovation" (DSC, 2008). In addition, the CONNECT Innovation Report (2010) emphasizes the capability of San Diego design cluster in producing clean and high-paying jobs - the cluster ranks second only after telecommunication and technology, highlighting its potential in thriving the economic growth of the entire region. Furthermore, the San Diego high base of design jobs, as compared to five of the major metropolitan areas in the Western United States, has been stressed by the 18,531 jobs that the design service sector was offering in 2007 (Figure 9). Thus, the county was the second largest operator in the design industry behind only at Orange County at a total of 20,614 jobs. It follows that, it proved to have a strong base of design service jobs together with an unquestionable room for growth (I.D.E.A., 2011).

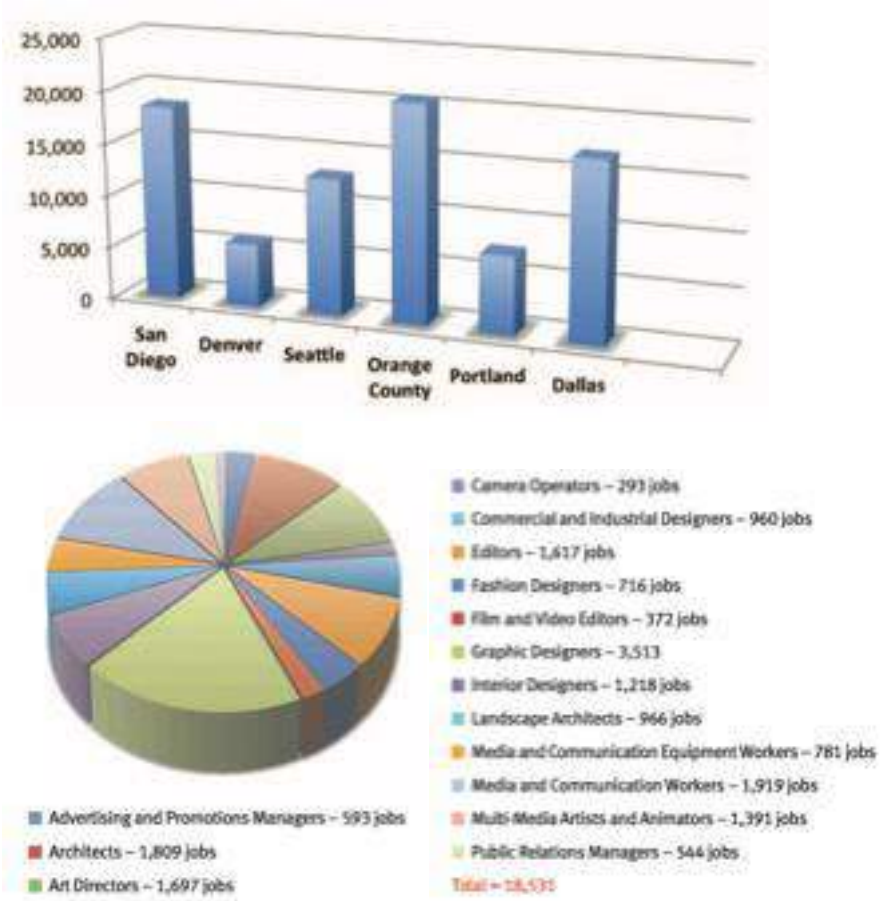

Figure 12 - The Design Service Jobs by City; The Design Industry Composition. (Source: I.D.E.A., 2011) (Figure 9 in Annex 1i – Laura Biancuzzo, Luana Parisi)

Regarding the design firms' location, there were a variety of entrepreneurial and established companies, that can be grouped in five macro categories, which were spread across the wide reach of the overall county, and a particular concentration in the downtown area was observed (Figure 10). The clustering of cultural institutions and design businesses has naturally created an ecosystem of collaboration and innovation in Downtown San Diego, which suggested the opportunity to build a vibrant commercial and residential hub, anchored by them.

Figure 13 - The 5 Components of a Design Cluster and its Location within the San Diego County. (Source: I.D.E.A., 2011) (Figure 10 of the ESRs report 10 attached)

Therefore, the I.D.E.A. District was conceived as a vibrant, urban neighborhood acting as a magnet for a community composed of designers, architects, scientists, students, engineers and artists whose economic function and personal passion is to create new designs, new technology, and new creative content. Six have been the pillars of the vision (Figure 11): The I.D.E.A. District

is seen as ever-changing, with the synergy of creative individuals and firms building off each other's thoughts and ideas. The compact, transit-friendly, mixed-use development can achieve high sustainability standards through the adoption of green infrastructures and building technologies in order to reduce the neighborhood's carbon footprint while saving long-term energy costs and creating healthy environments for workers and residents. A key component of the District is its ability to act as a stage for designers and innovative new concepts: the outdoor is seen as a public urban laboratory for pioneering ideas in design, art, education, entertainment, while inside the buildings young designers and entrepreneurs can take advantage of business incubation spaces. Old industrial spaces are considered precious structures to host innovative activities being well-suited for adaptive reuse. At the same time, the building architecture should communicate the creative content within and be open and transparent to involve the surround into the inside creative environment. Community space plays also a key role in providing a platform for experimentation and expression within the District; therefore, a network of parks and plazas is ensured within a short walk of every resident and employee, where performances, exhibits, and art installations can occur allowing informal interactions.

Figure 14 - The six pillars of the urban design vision (I.D.E.A., 2011) (Figure 11 in Annex 1i – Laura Biancuzzo, Luana Parisi)

The overarching goal of the vision was to attract and retain young, creative and educated citizens to ensure San Diego competitive position moving forward in the 21st century globalized economy. Hence, any region that aspires to grow an innovation economy is player in a race for talent, depicted as highly educated 24-35 year-olds, as known as "young and restless" (Cortright, 2011), who represents the tomorrow's workforce and entrepreneurs, essential ingredients of a successful innovation ecosystem (ULI, 2012). According to Florida (2012) "compared with previous generations, today's younger techies are less interested in owning cars and big houses. They prefer to live in central locations, where they can rent an apartment and use transit or walk or bike to work, and where there are plenty of nearby options for socializing during non-work hours". Therefore, the I.D.E.A. District vision stems from the need to make Downtown attractive for the emerging workforce in order to bring jobs back to the city center, by creating an innovative design cluster.

The Innovation District Development

In an attempt to provide a global overview of local practices that addresses the innovation economy current challenges, Professor Clark et al. (2016) compiled a report supported by the case study analysis of dozens of cities around the world. Specifically, the key role played by public and private sectors in nurturing the innovation ecosystem and then activating and supporting specific locations as urban innovation districts has been investigated, leading to the conclusion that districts, in order to develop and flourish, require combined and precise actions implemented by city governments and investors at different points in their development.

According to the framework provided (Figure 12), the roles of public and private sectors in the different stages of the I.D.E.A. District development will be scrutinized.

Figure 15 - Roles of Public and Private Sectors in Different Stages of Innovation District Development. (Source: Clark et al., 2016) (Figure 12 in Annex 1i – Laura Biancuzzo, Luana Parisi)

In the Start-up stage, coordinated actions between city government, landowners and developers are critical to transform the innovation district vision into reality. However, San Diego experience depicted unbalanced efforts since the private sector made several of the most important enabling interventions. Indeed, the I.D.E.A. Partners have been the lead agents in the process of change, by replacing the public sector in understanding the city's competitive advantage and identifying the innovative industries to attract in order to create the critical mass capable of driving economic growth, together with the selection of the most appropriate location for the development. Furthermore, they started developing a shared vision by involving residents, local businesses and civic leaders in order to build consensus around the principles of the plan. Engaging the community of residents and innovators, trough an effective outreach strategy, turned out to be crucial given the little support demonstrated by the local administration from the outset. City leaders, on the contrary, failed in defining a long-term strategy tailored to the innovation district needs, as well as in simplifying the urban regulations to speed up the planning process. The private sector leadership was paramount also in the innovation district Activation stage. The mixed-use IDEA1 is the first building block in the establishment of innovation activities within the East Village neighborhood, and represents a joint venture development intended to act as a magnet to attract new tenants and bring further investment into the area. Beside this catalytic investment, significant were the efforts to draw the attention of some anchor firms, universities and innovation hubs (such as the Qualcomm Institute) to settle in the district, so that a critical mass of innovators and additional companies could take shape. Partnerships with other investors and developers have been established, leading to further development initiatives, such as the Makers Quarter, in order to foster the work-live-play environment required by startups, tech companies, and young talents. But, even more important, the I.D.E.A. Partners never disrupted the communication with the community, by adopting a tactical urbanism approach: the developers re-shaped the image of the

neighborhood as a more vibrant location through the strategic use of cultural projects and events; specifically, by inviting both existing residents and the next generation of potential innovators to raise awareness, experience a creative East Village neighborhood, and strengthen social bonds, on the one hand, this strategy was essential to test new ideas with the users continuously, and better define the district vision; on the other hand, it was a way to create value and sense of place within the community, which led to an increase in the demand for the district itself. However, also in this stage the public sector role can be defined somehow idle; the East Village neighborhood didn't benefit from a centralized plan and the zoning requirements of the Community Plan 2006 remained unchanged. So that, the city government didn't undertake any effort to facilitate the mixed-use development and make the area more attractive to new businesses, since neither financial tool nor system of development rights have been used in order to encourage strategic firms to re-locate. The I.D.E.A. District is still at the very beginning of the third stage of its development, therefore, the actions further implemented by the public and private sector can be deduced by the current state of affairs.

Present Situation

The above analyzed I.D.E.A. district (Figure 13) is becoming the catalyst project for the transformation of the area. The 35 blocks of the Upper East Village neighborhood, in fact, include the seeds of innovation that are changing the socioeconomic profile of the whole city. As illustrated in Figure 13, several innovation initiatives - that include the Makers Quarter, the UCSD Extension, the Urban Discovery Academy and the Smarts Farm, that will be explored in the section 3.3.2 – overlap to the existing strong educational cluster, that is one of the main hub of the region. The existing educational institutions are all situated along a sort of axis on the 14th street, that connect them to each other, but also to Balboa Park and the surrounding neighborhoods, especially Barrio Logan (Adams, B., 2016). "This collection of educational institutions not only promotes collective support, but is reinforced by the surrounding context of innovative activity" (Adams, B., 2016). Furthermore, the area is particularly active in terms of concentration of startups, which is symptomatic of its innovation growth potential, together with "the array of coworking, incubation and meet-up spaces downtown and in surrounding communities that are connecting talented people and nurturing new business opportunities" (Downtown San Diego partnership & UCSD Extension, 2016). This combination between academia and "innovation" employers are creating a fertile ecosystem that is shaping the new job engine for the whole region.

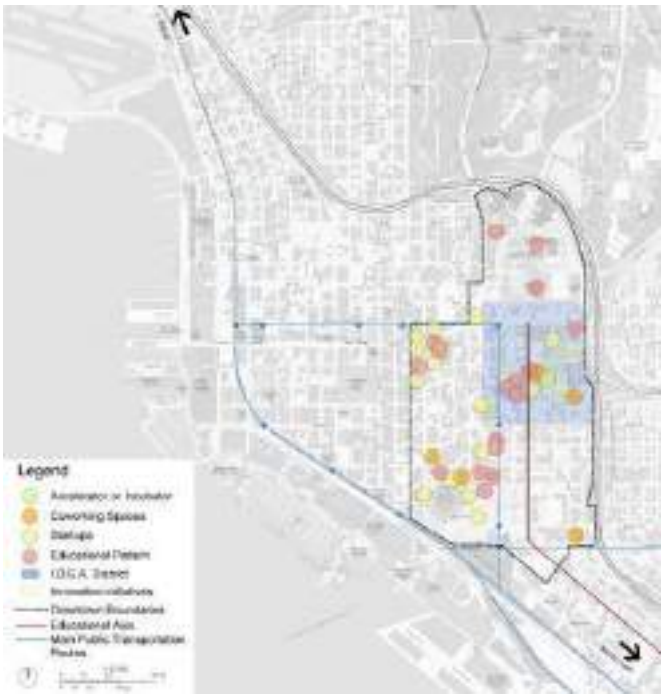

Figure 16 - Present Situation Map. (Source: Authors' elaboration) (Figure 13 in Annex 1i – Laura Biancuzzo, Luana Parisi)

IDEA1

The mixed-use IDEA1 is a joint venture development between the I.D.E.A. Partners and Lowe Enterprises that occupies a full city block, owned by the Community College District, which is bounded by E, F, Park and 13th Streets. It was conceived as the first catalytic project able to attract a rising number of innovative firms and talented workers and bring further investments into the innovation district. Indeed, the place embraces conceptually the unique combination of economic, physical, and networking assets which, brought together stimulate the idea generation facilitating the entrepreneurial activity. Specifically, the six-story building, still under construction (Figure 14), will provide public and privately owned spaces such us co-working and socializing spaces, housing and commercial areas to host firms and institutions that drive an innovative environment. Moreover, the spaces have been designed and organized to stimulate collaboration and connectivity in order to accelerate the exchange of ideas and flows of knowledge. Following these purposes, the enclosed spaces are located around the 'HUB', a courtyard that connects the community of innovators inside the building, and brings the citizens into the innovative environment from outside through a multi-use public square and entertainment facilities (Figure 15).

Figure 17 - The IDEA1 Construction Site. (Source: Authors' pictures) (Figure 14 in Annex 1i – Laura Biancuzzo, Luana Parisi)

Figure 18 - The IDEA1 mixed-use development. (Source: I.D.E.A., 2011) (Figure 15 in Annex 1i – Laura Biancuzzo, Luana Parisi)

The Ferment of the Initiatives in the Area*:*

As clear from the previous sections, the city of San Diego cannot rely more on its unsustainable model of growth, keeping building the employments outside, because it will no more attract companies, talents or innovation. It is a full regional goal to get an employment hub downtown (personal communication, May 18, 2017). "In more than 40 years of redevelopment, downtown San Diego has added pricey as well as affordable housing, high-rise office and hotel towers, convention, shopping and sporting meccas and dozens of trendy bars and restaurants" (Showley, R., 2016). The area has recently been going through a process of revitalization of the urban cores, even if in 2012 governor Jamie Brown got rid of all the Redevelopment Agencies, representing a big hit to redevelopment areas, such as the East Village, which was a former storage base, warehouse district (personal communication, May 18, 2017). Its overall character is going under a transformation process through the Community Plan, which foresee a mixed residential and employment area, "taking advantage of the academic atmosphere for research and high-tech business opportunities" (Centre City Development Corporation, 2006). The interventions reflect the current phenomena existing throughout the world belonging to the Innovation Economy based on the willingness to have strong downtowns able to attract and retain talents (personal communication, May 18, 2017). Innovation in San Diego, so far, developed around the Life Science sector (personal communication, May 18, 2017), within suburban "Innovation Districts 1.0", classically driven by Universities (personal communication, May 03, 2017). The current "Innovation District 2.0" is more grassroots, more of the Digital Era Urbanism (personal communication, May 03, 2017) and opens up a vast array of new possibilities based on the two sectors of Design and Technology (personal communication, May 18, 2017). Unfortunately, despite the efforts to draw some anchor institutions attention to settle in the district, so that a critical mass of innovators and additional companies could take shape, neither large nor highly innovative firm moved into the area. However, the Innovative Cultural and Education Hub of UCSD Extension puts forward groundbreaking promises about its ability to cope whit this specific challenge by standing as a driver for the innovation economy of

downtown San Diego. In particular, it is located at the corner of Park and Market, where currently the Quartyard is, in order "to connect its wide range
of programs to the downtown innovation community as well as to diverse neighborhoods throughout San Diego's urban core" (Davies, J., 2016), showing the entrepreneurial spirit of this University hub (Figure 16). The 65,000 SF hub "will offer educational and cultural programs as well as house a 3,000 square foot restaurant on the ground floor and an outdoor amphitheater space. The center will be home to:

- Academic and outreach programs for middle and high school students from surrounding communities.
- Business incubation and entrepreneurship resources for entrepreneurs throughout the urban core.
- A venue for arts events and exhibits to showcase the university's and the larger community's cultural offerings.
- A hub for civic engagement, including applied research and volunteer opportunities.
- Course workshops and seminars relevant to downtown's growing workforce" (Davies, J., 2016).

The new downtown location will meet the expectations of both students and community members (Fidlin, D., 2017), supporting the Economic Development of the area, offering new educational opportunities for them (Hirsh, L., 2016). The move to Downtown of UCSD is full of risks, yet, the city made it economically attractive, mainly because it owns a small part of the block, which determines to build something that serves the public (personal communication, May 16, 2017). Besides the economic imperative, the university selected the location because of the proximity to the Trolley line, "which will run from San Ysidro to University City and connect its main campus in La Jolla with the greater San Diego region" (Davies, J., 2016). This fact makes sure that everybody who lives in the city or in the neighborhoods close by can have an easy way to reach the UCSD Campus and discover it, feeling part of its community. The Public Transportation allows to previously excluded communities or marginalized communities to have easier access to the university and all its assets. Young people, professors, students have to participate in the city and, vice versa, thus, the trolley is important for opening the city with its community to bigger issues (personal communication, May 16, 2017). Being able to link the employment hub in Torrey Pines Mesa with the downtown's new employment hub via metro for a city as San Diego, that uses to live on Freeways, is a big step (personal communication, May 18, 2017). "No state funds will be used to finance the construction of the project and ongoing financing for the facility will come from a combination of program underwriting, contracts and grants, fees for services and lease revenues, all of which UC San Diego Extension will manage" (Davies, J., 2016). Advantageously, the hub is near the San Diego's small, business startup scene (Fidlin, D., 2017), developing within growing pockets of innovation, that reflect the dynamic ferment of the area.

Figure 19 - The Innovative Cultural and Education Hub. (Source: UCSD Extension) (Figure 16 in Annex 1i – Laura Biancuzzo, Luana Parisi)

Makers Quarter is ¼ of the total surface of the Innovation District (personal communication, May 03, 2017). The main difference with IDEA1 relies on the fact that the Makers Quarter's developers own the land, partnering with the landowners, which allows them to build more easily (personal communication, May 18, 2017) (Figure 17). It is privately financed and privately owned land (personal communication, May 18, 2017).
The overall goal of Makers Quarter is to be a downtown employer hub and to give to Millennials the opportunity to access jobs and the lifestyle that they want (personal communication, May 18, 2017).

Figure 20 - Makers Quarter Construction Site. (Source: Authors' pictures) (Figure 17 in Annex 1i – Laura Biancuzzo, Luana Parisi)

Makers Quarter is trying to take the last chunk of downtown and redevelop it, through a program that includes:

- 1 million SF of creative office;
- 700 SF of residential use, which come out to approximately 800 residential units;
- 14,000 SF of retail;
- 72,000 SF of open space (personal communication, May 18, 2017), comprehending a network of parks and plazas centered around the East Village Green, a city planned park, that will represent the largest urban park in downtown San Diego, with its 4.1 acres (personal communication, May 18, 2017) "offering ample active and passive recreation opportunities to serve not only this neighborhood, but downtown as a whole" (Centre City Development Corporation, 2006) (Figure 18).

Makers Quarter started by taking the empty lots and engaging the community on what they wanted to see (personal communication, May 18, 2017).

Figure 21 - Makers Quarter mixed-use development. (Source: Makers Quarter) (Figure 18 in Annex 1i – Laura Biancuzzo, Luana Parisi)

A lot of classes already take place within the Makers Quarter, engaging the community of innovators and, mainly, the academic institutions of the surrounding area, such as the ***Urban Discovery Academy***, opened in 2014, that is the out scripts of the Makers Quarter (personal communication, May 18, 2017). It "has a focus on individual student support and project-based learning" (Adams, B., 2016) (Figure 19).

Figure 22 - Urban Discovery Academy. (Source: Authors' pictures) (Figure 19 in Annex 1i – Laura Biancuzzo, Luana Parisi)

and is among the temporary tenants, within one of the blocks of the Makers Quarter (personal communication, May 18, 2017) (Figure 20). It really embodies what Makers Quarter is, namely, a non-profit Maker space designed for people from all backgrounds both from small startups and big companies, like Qualcomm, and from schools, such as the City College (personal communication, May 18, 2017). There is a renting system at the base and it is nominal compared to the big picture (personal communication, May 18, 2017). "The hope is to incubate companies and support startups and their growth, in order to be able one day to afford and move into one of the office buildings" (personal communication, May 18, 2017).

Figure 23 - Fab Lab. (Source: Authors' pictures) (Figure 20 in Annex 1i – Laura Biancuzzo, Luana Parisi)

The *SILO* Makers Quarter is an event space, showing the importance of Art for spurring innovation (personal communication, May 18, 2017). 125,000 artists rotated around this space, creating art pieces and several events have been promoted, mostly pop-up. This allowed to gain important feedback from the community about what they want to see in the built environment. A lot of them surrounded around the activation of open space and Art (personal communication, May 18, 2017). *Smarts Farm* is the first community garden in downtown San Diego, that really shows the power of the so-called tactical Urbanism (Figure 21). It started as a test idea, so it was temporary and now it is starting to become more permanent, being relocated into 10,000 SF close to the Makers Quarter (personal communication, May 18, 2017). It shows the success when a community come together to support something that at a certain point grows and become part of the build out of the future community (personal communication, May 18, 2017). There are about 10,000 students working on this intervention, coming from all the different academic institution of the area. Every week there are some after school programs and they go through gardening with the students at every level (personal communication, May 18, 2017). "Before the built environment came, this is a real community, with real relationships, mutually beneficial partnerships. For instance, every month there are some community meetings, where representatives from the New School of Architecture and Design, Urban Discovery Academy, Smarts Farm, Fab Lab all the other disciplines meet and talk about how to collaborate better, how to deal with the community issues, how to better promote each other and organize events. It is about a creative, cultural collaborative community" (personal communication, May 18, 2017). The community is highly involved in the process, so that their thoughts, voices, ideas, have been already incorporated within the vision (personal communication, May 18, 2017). Considering the ferment of the area and its community engagement goal, it is possible to state that the Innovation District has the potential to augment people's life (personal communication, May 03, 2017).

Figure 24 - Smart Farm. (Source: Authors' pictures) (Figure 21 in Annex 1i – Laura Biancuzzo, Luana Parisi)

Preliminary Findings and Evidence

The I.D.E.A. District case study has been analyzed through the application of a framework for assessing the roles of public and private sectors throughout the different stages of the innovation district development. Following the investigation of the secondary data collected and the direct analysis performed, some issues related to the development project put in place within the East Village neighborhood in San Diego need to be highlighted.

The lack of Private Public Partnership

The I.D.E.A. District provides clear evidence that the multi-stage strategic approach, implemented by concerted actions of public and private sectors, is crucial to create and nourish a successful innovative environment. Undoubtedly, the landownership issue played a key role in discouraging any collaboration between the actors: since the city owned a considerably small portion of downtown land - around the 20 per cent, the prevailing private interests led the entire intervention of redevelopment within the East Village neighborhood. The lack of a private public partnership turned out to be challenging for the district, resulting in a sluggish development as a whole. Although, some personal communications highlighted that the partnership with the San Diego city government, most of the time, doesn't accelerate urban regeneration processes, instead leads to even more time-consuming and complex practices due to a lot of red tape. It follows that, the series of vibrant initiatives currently happening in the area, reflecting the efforts of developers and private investors, are a concrete expression of the values on which the innovation district is built, they act individually and do not take advantage from co-locating, so that the ecosystem of collaboration and innovation does not occur.

The role of City in spurring Innovation

Given the shift of the geographical distribution of innovation from suburban corridors and science parks to inner-cities areas, cities must constantly reinvent themselves in order to provide an environment that is conducive to innovation and remain competitive in the 21st century globalized economy. Although, on the one hand downtown San Diego naturally provides a compact urban structure - which is vital for productive collisions to take place between firms, people, capital, and ideas - on the other hand the city government has not been a lead partner on boosting the innovation ecosystem by providing the institutional and regulatory framework in order to manage the re-urbanization and influence the amount of innovative activity through the adoption of designated policies. The exception is represented by the UCSD Extension moving to downtown, where the city government put some regulations and guidelines given its ownership of a small property within the block subject of intervention. As a result, the lack of innovation-oriented economic urban policies and economic development measures to foster the ecosystem preconditions and control the cities urban regeneration has proved crucial to the attraction and retention of anchor institutions and the development of human capital. Indeed, the high rents and the lack of any tax incentives are the main factors discouraging companies from locating on this area.

The role of Real Estate

All the interventions undertaken within the I.D.E.A. District are driven by private interests trying to redevelop empty shells left by previous private interests due to the economic downturn. The innovation economy, indeed, took over from the manufacturing industry sector located in the downtown area, and the role of real estate turned out to be essential for the physical

transformation of it. The reasons are well explained by the rate and capability of the real estate to adapt to the new innovation market requirements, determining a strong competitive advantage for the innovation system in which they operate (Clark and Moonen, 2015). New users' needs significantly differ from the previous ones; given the talents quest for urban settings that offer the unique experience of attractive and vibrant 24/7 neighborhoods to work play and live, is investors and landowners task to provide spaces characterized by an efficient transportation system that brings together a mix of public spaces, cultural amenities, creative work environments and a targeted housing offer. Therefore, the set of private initiatives currently happening in the East Village neighborhood pursue the same objective, although they operate independently from one other, to deliver an inspiring and accessible environment to attract talents and foster innovation. In addition, The I.D.E.A. Partners continuous communication with the community through the tactical urbanism approach as to be highlighted; cultural projects and events turned out to be paramount in tailoring the district vision to the specific need of the future users, creating value and sense of place within the community, at the same time.

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Public Spaces as drivers for social innovation: reflections from the context of San Diego Downtown case as a cultural district.

Israa Hanafi[5]

Introduction

This paper investigates the role of public spaces in spurring innovation and promoting entrepreneurial activities in Downtown San Diego urban context as a prominent cultural district. The idea that in creative cities, flourishing human capital when coupled with incremental quality of life could be the driving vehicle to social innovation and economic prosperity. On that, public spaces are a cross cutting phenomenon, in a lifetime cycle, through which their success could be evaluated contextually based on their formation and implementation policies and how they work-out to be social innovation catalysts. The first part of this paper draws on the understanding of the place-based approach to analyze the key factors shaping the ecosystem of social innovation. Then, it explains how that approach works as input for the role of public spaces as cultural hubs/districts, how they are developed, formed as creative spaces and how they turn to be strategic assets in urban planning development. This part includes as well, the notion to public spaces as a holistic approach, how are its' uses, people, identity and stakeholders are interconnected and orchestrated as well as the role of human capital attraction to explain the vibrancy of places whereas the effective implementation-based approach would rely on a diversity of public private partnerships to create such successful cultural districts model. Secondly, the research studies contextually the Downtown San Diego Partnership (DSDP) and their role to activate and regenerate different public spaces in downtown area to foster economic development. Leaning on a strong Art and culture cluster in Downtown area and how it is connected to San Diego tech ecosystem, San Diego innovative economy, and software industry, as well as using the place-making urban movement together with tactical urbanism trends to foster economic and cultural community development. Thirdly, two successful exemplar cases are studied as a guide to better understand the dynamics by which the cultural programming through intensification of events occurrence in Downtown as vibrant cultural hub; as well as the focus on a co- working/ incubator space as a successful model to interpret the justification of human capital attraction to the Downtown area. The conclusions draw on an evaluation matrix of analysis that investigates the Catchment area/ sphere of influence that fall in the San Diego Downtown area and helps to reach the envisioned opportunities and the policy measures applied to foster social innovation in those public spaces and evaluate the success or failure of the Downtown San Diego partnership to boost the innovation ecosystem in downtown.

Introduction to place-based governance approach

While the role of public spaces in catalyzing entrepreneurial activities and spurring innovation is undebatable, the correlation between the social innovation and territorial milieu remained under investigation for an academic decade. However, the need for a place-based approach to better understand the spatial dimension in perceiving and accelerating that opportunity for innovation remained significant. Yet, different key-factors interfere when it comes to social innovation and its' territorial milieu such as governance of public spaces, localization of innovation spaces, as well as the space territorial connectedness and network (MAPS-LED, 2017,

[5] Mahmoud I.H., Bevilacqua C. (2019) Make Public Spaces Great Again Using Social Innovation Reflections from the Context of Downtown San Diego as a Cultural District. In: Calabrò F., Della Spina L., Bevilacqua C. (eds) New Metropolitan Perspectives. ISHT 2018. Smart Innovation, Systems and Technologies, vol 101. Springer, Cham

p. 9). In a controversial article on place-based policies, Robin Hambleton (2015) articulates the role of civic leaders to frame the governance of their places. Whereas various powerful forces shape the context within which they operate, such as: environmental limits, socio-cultural framing, governmental framing, and economic framing rather than limiting the impact of forces in any place locality. While the environmental limits are non-negotiable, the socio-cultural forces- that comprise people such as: activists, entrepreneurs, community-based groups, and their cultural values- may drive the place governance. Nonetheless, the horizontal economic forces that drive localities to compete arise the need for inward in- vestment and to attract talented people. The top down approach manifested in governmental framing for place-based governance includes planning policies obligations in different contexts. In a matter of fact, the place-based governance approach with its' zones – when orchestrated in an adequate way- promotes a potential for reshaping the context that can, in turn, lead to innovation in a place.

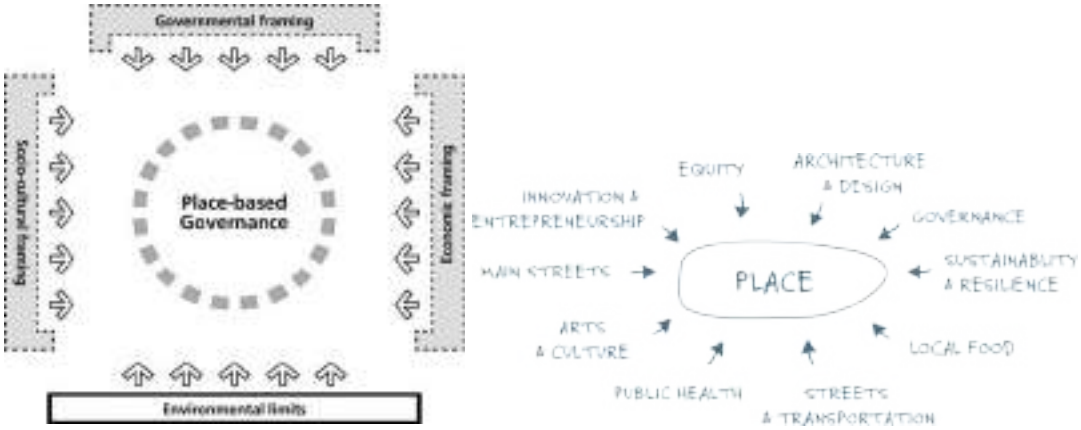

Figure 25 - Framing the place-based approach governance (a), Shared values of Public Spaces at the crossroads of economic development (b) (Figure 1 and 2 in Annex 1I – Israa Mahmoud Hanafi)

A softer approach to the role of public places at the crossroads of social innovation is deployed by PPS (2016), whereas the innovation and entrepreneurship aspect is manifested in entrepreneurial hubs, like arts and cultural clusters to forge new place-led economic development. Moreover, many literature reviews drop on the place-based approach to rely on innovation ecosystems, entrepreneurial strategies, and economic development prosperity; on one hand, understanding the areas of governance, organizational and human resources management, how people move, partner and business firms cluster is fundamental (Durst & Poutanen, 2013; Porter, 1998). On the other hand, few reviews base their understanding on the implementation of urban planning policies around the role of creative places and public spaces -in se- to foster innovation and its' correlation to urban policies where new knowledge -based urban development (KBUD) meets city regeneration practices at on-site urban fabric levels (Yigitcanlar, 2011, 2014)

Public spaces role as cultural hubs/ districts as catalysts for social innovation

A promotional approach in the field shows a specific interest in cultural hubs /Districts where public spaces formation act as a melting pot for creative industries clusters. The role that creative city spaces act behind scientific policy rationales, claims the share in the knowledge economy and the cultural ranking of a city (Evans, 2009). Meanwhile, those cultural hubs develop themselves in a later phase – in basis of their context, quality of life, identity, uses and programming- to act as catalyst, physically and virtually, for inward investment, business location decisions and most importantly for human capital attraction that shape the social innovation environment and ecosystem attached to those cultural hubs later, see Figure 3.

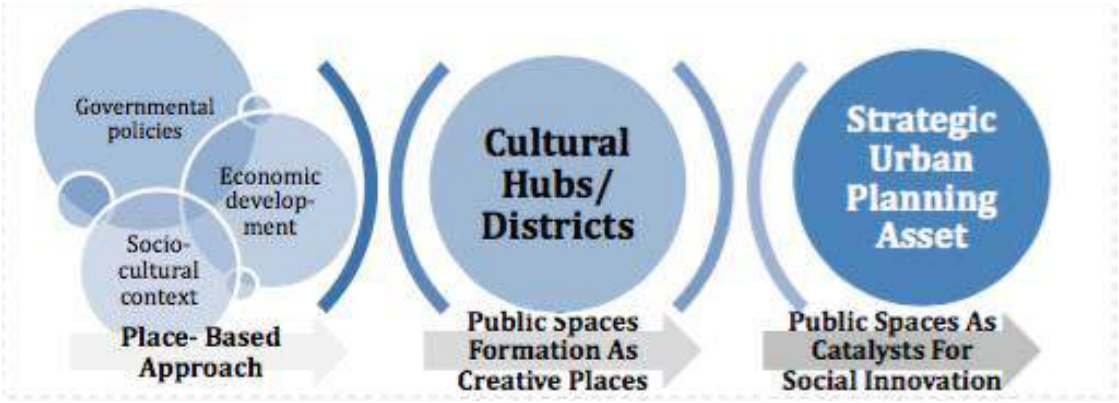

Figure 26 - Understanding the Role of Public Spaces in Social Innovation. Source: the author, May 2017. (Figure 3 in Annex 1I – Israa Mahmoud Hanafi)

Accordingly, with the role that public spaces should keep tenure of some combined factors of technological innovation, amenities, facilities, and a certain level of social and lifestyle diversity; in a broader sense, those cultural hubs/ Districts come to be seen as a strategic urban planning asset (Deffner & Vlachopoulou, 2011; Florida, 2002; Mercer, 2006). Those assets, later, affect certain public spaces from another based-on context formation policies, cultural programming, sphere of influence/catchment area and stakeholders, as shown in the following model.

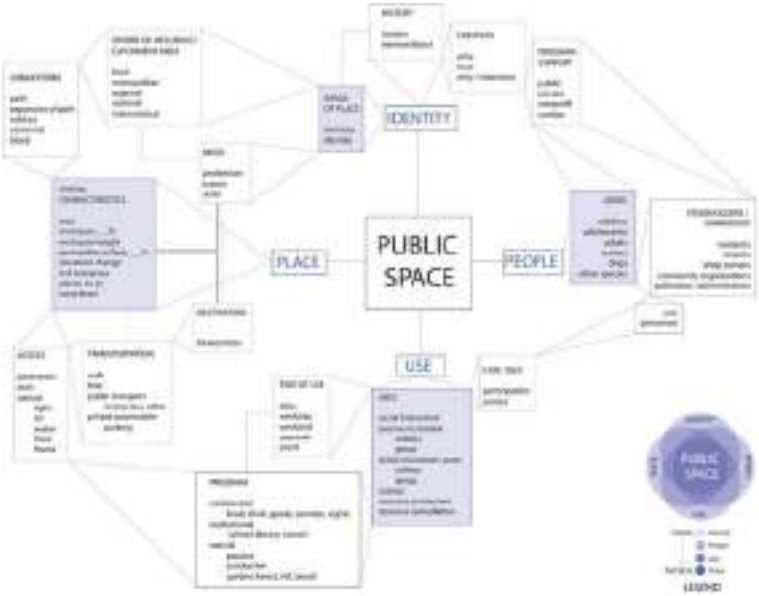

Figure 27 - Relationships between the Characteristics of Public Space Source: the author after CoLab, MIT-DUSP, 2011. (Figure 4 in Annex 1I – Israa Mahmoud Hanafi)

While the academia has many models to understand the connectedness be- tween social and physical aspects of public spaces, the most adequate to this research methodology was the model introduced by CoLab in (2011) that grasps the relationships between the varied tangible and intangible elements of public spaces. The areas highlighted in yellow, *see Figure 4,* show the sphere of influence public spaces could have on a local, metropolitan till even international level. In a more holistic way, beside the physical programming, the identity of public spaces for users and in a city, get affected by the stakeholders supporting it. Hence, be- yond the type of programming adopted in public spaces either commercial, institutional, or natural, the most arguable aspect remains the people, the human capital, that perceive the space, deal with it on a daily basis, affect it or get affected by it. In the urban planning realm, this diluted relationship

between the users and their spaces is regulated by public, private, non-profit, or combined policies. However, at its best, public space become implicitly pluralistic and inherently complex- with the slippery terms of policies and regulations added-up- that only certain qualities of public space would keep it distinguished and user-appealing. The UN-HABITAT (2016) amends the measurement of quality of public spaces by anchoring the urban policies, governmental synergies, and usage of public spaces as a catalyst for economically growing vibrant cities. Quality public spaces- including streets, urban parks, courtyards- are multi-functional joints for social interaction, economic exchange, and theatre for cultural diversity expression. The role of quality public spaces is pivotal in living conditions of urban populations. Locational factors attract knowledge, industry businesses, qualified and creative workforce, and tourism as highlighted in Leipzig Charter for Sustainable cities (European Commission, 2007). Therefore, the interaction between public spaces together with planning policies coupled with infrastructure must ultimately improve in order to create attractive, user-oriented public spaces and achieve a higher standard living environment.

Public spaces driving higher living standards towards entrepreneurial spark

Within the same set of ideas, Feldman (2014) argues that, in social sciences re- search, academic motive pales in comparison to public policy imperatives; whilst significant resources invest in policies and initiatives with the objective of creating well-paying jobs and providing a higher quality of life. Hence, by observation, entrepreneurs are in constant motion towards searching for that higher quality of life, that when entrepreneurs act upon place-based opportunities, they are in strong position to apply those gained skills and potentiality to create prosperity, eco- nomic change, and transform public spaces into creative places consequently. Thus, the entrepreneurial spark that rises certain regions is not automatically set nor deterministic; hence yielding successful places requires a mattering human capital whereas public and private strategic decisions determine the character of places. While the impact of these types of entrepreneurial spark actions- as part of strategic decisions -is absent in considerations to regional ecosystems, it has an undeniable contribution to the economic regional vibrancy. Mainly, the urban policies would prescribe the so called 'Silicon Valley Model' where the factors associated with its current successful functioning are based on a heavy dose of venture capital funding, research universities as a driving force, concentrations of skilled talent, and an open diversified cultural scene. However, many places attempt to create vibrant economies by following the rather simple recipe of Silicon Valley Model for success, whereas they notably miss the private sector from consideration and follow the easy-go governmental cluster-building incentives spatially. In the meantime, failure to fulfill governmental transformation to regional economies usually lies in mismatching with the right approach to implementation. The successful recipe works best when there is significant involvement between private sector and beyond public-private partnerships where entrepreneurial sparks harness the natural tendency for social innovation (Lerner, 2009).

Literature Review Summary

From the literature review it is evident that the role that public spaces play in fostering and spurring innovation does not follow a linear process from formation to evaluation. If the point of departure is set to be the place-based approach in order to form creative places, that, leads to cultural hubs/districts that turn gradually to be strategic urban planning assets in themselves when correlated to an urban context. More in depth, based on the characteristics of those public spaces contexts as well, they tend to be catalysts for social innovation if entrepreneurial factors spark; that phenomenon occurs when two criteria are realized: i) the increase in quality of life – through higher living standards and lifestyle diversity- and ii) the attraction to certain human capital – knowledge- based workers, entrepreneurs and creative industries gurus that

use those spaces to linger- where on that Gilmartin (2012) verifies:
The tip of the cap lies in transforming those two criteria into enacting effective public policy, whereas the measure for that success / or failure is to match / or mismatch the place-based approach -through partnerships- with implementation- based approach. Having that said, public spaces engraved in their own context and characteristics put in place, the evaluation of the implementation-based approach is being observed by the three following key factors:

I. Cultural programming and events diversity for those cultural hubs/districts,

II. Stakeholders involvement in activation of creative places through partnerships,

III. Sphere of influence/ Catchment area for those creative places to thrive and develop.

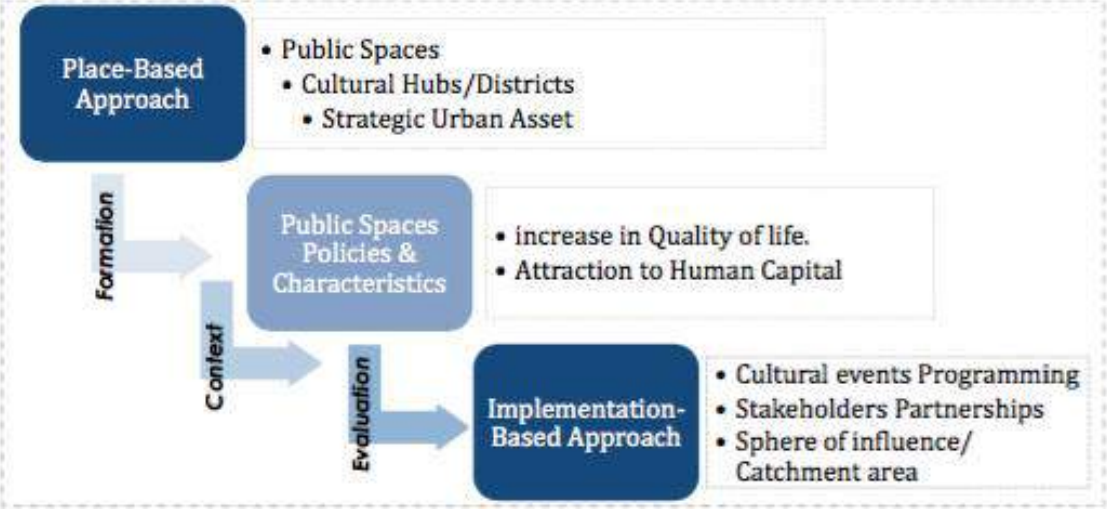

Figure 28 - Public Spaces "Lifetime Cycle from Formation to Evaluation" as Social Innovation Catalysts Source: the author, May 2017. (Figure 5 in Annex 1I – Israa Mahmoud Hanafi)

A spatial focus on Downtown San Diego Urban Context

The urban fabric of San Diego- either as a county or MSA- is very diverse and merely, touristically, vivacious in some areas. The contextual study showed the verification of the two criteria that create the vibrancy that attracts the professional pool of labor. Downtown San Diego offers the cultural and social amenities around-the-clock that explains the reason why downtown is exponentially growing as a regional urban core (DSDP, 2016). The spatial focus in this research paper goes to the Downtown area; geographically defined as the Downtown Community Planning Area (CPA), Zip Code 92101, Roughly an area of 1,450 acres and encompasses seven thriving neighborhoods, each with its own unique identity, *see Figure 6.*

Figure 29 -: Downtown San Diego seven Neighborhoods. (Figure 1 in Annex 1I – Israa Mahmoud Hanafi)

Statistically speaking, Downtown is home to 35,000 residents and a growing population of 97% since 2000, notably a dominance of 51% for highly educated residents and 73% high-earning professionals, see Figure 7. A remarkable attribute to downtown San Diego area is the constant physical and economic development in progress, the city efforts to develop a walkable (live, work and play) urban core. Nonetheless, the area has a potential growth, the city government hired one of highly ranked architectural and urban design firm to overlook the redesigning of the downtown skyline from North to South (Showley, 2017).

	RESIDENTS	MALE-TO-FEMALE RATIO	BACHELOR'S DEGREE OR HIGHER	AVERAGE INCOME	RENTERS	STARTUPS PER 10,000 PEOPLE
DOWNTOWN	34,550	60:40	51%	$73,756	76%	15.34
COUNTY	3.3 M	50:50	34%	$69,414	46%	1.35

Figure 30 - SD Downtown residents' in comparison to SD county, are more educated, well-paid, more male. Source: Data of US Census Bureau, American Community Survey, 2015. (SanDiego Magazine, 2017a) (Figure 7 in Annex 1I – Israa Mahmoud Hanafi)

In a matter of fact, Downtown San Diego has a 90% score in walkability; 78% of residents enjoy its central location. Proximity to different venues of arts and culture as well as other amenities in downtown area makes it attractive to entrepreneurs: "People usually move to Downtowns seeking community, experience and make a life, not just a living", Jon slavet, general manager at WeWork". The San Diegan Downtown vibrancy is unmistakable; that noted, leads to social innovation; in fact, the evidence-based is demonstrated through the increase in quality of life and the attraction to human capital, as described as "creative class" and Knowledge-based workers in the literature review as aforementioned.

Downtown San Diego Partnership Focus Area

One of the most prominent cases of those cultural districts in the Downtown area, whereas the Downtown San Diego Partnership (DSDP) is spatially focused and operating. That, in reality, adds up to the model explained earlier of public spaces lifetime cycle where the place-based is transformed into implementation-based through partnerships and stakeholders. The following

part of this paper examines on the ground scale of the downtown area whereas the evaluation of key factors for the creation of the Cultural Hub / District is observed to verify the role that public spaces are playing in forming creative places that turn to be catalyst for social innovation in San Diego area.

Figure 31 - Arts and cultural organizations Cluster in Downtown San Diego, year 2016. Source: https://dsdp2015.carto.com/viz/4bb5a924- fd10-11e5-92ce-0e3ff518bd15/public_map (Figure 8 in Annex 1I – Israa Mahmoud Hanafi)

In a study conducted by UC San Diego extension center for research on the regional economy in (2016) about the San Diego Downtown prosperity, the area demonstrated a concentration of 92 arts and cultural destinations and organizations in the urban core. A diversity of venues types between 31 art galleries, 4 museums, 6 live performance theatres, 12 music venues and 10 performing arts groups, including a symphony, an opera, and a professional ballet company. The neighboring Balboa Park CPA boasts upwards of 30 arts and cultural destinations within its boundaries as well, See Figure 8. While Downtown San Diego demonstrates itself as a cultural hub and performance arts hotspot, 79% of residents enjoyed being to a proximity to that ambient. These individuals attend activities such as musical entertainment (74%), museums (74%), movies (69%), performance arts (67%) and art galleries/events (61%), (DSDP, 2016).
The Phenomenon that is occurring in downtown San Diego being transformed in an arts and culture hotspot nowadays in not a laissez-faire. The American planning association (APA) coined the concept in 2015 by highlighting the facts that entrepreneurial activities seek out communities that inspire creativity and push boundaries. That, being correlated by business firms location with artists and cultural facilities together, a multiplier effect results, driving further the innovation economy and economic vitality by measurable outcome (Dwyer & Beavers, 2015). In fact, the role that Downtown San Diego Partnership plays in forming and pushing the cultural scene vitality is undeniable, relating between cultural-sector firms and creative professionals, along with improving and developing physical facilities deliberates a shared economic advantage to downtown area in that sense.

Increase in quality of life

Meanwhile the formation process of Cultural Hubs/ Districts, the two criteria of occurrence could be verified in the downtown area extensively; the increase in quality of life as well as the attraction of human capital, that is now visible in downtown San Diego, is distinctive. On a similar note, urban core areas flourish with open spaces, markets, parks, etc. whereas people could meet, enjoy nature, and get together; on that Downtown San Diego is a physical anchor,

see Figure 9

Figure 32 - Public spaces, open and active parks in Downtown SD, year 2016. (Figure 9 in Annex 1I – Israa Mahmoud Hanafi)

In 2013, the Downtown San Diego Partner- ship released a blue print document (Imagine Downtown) mandating the common action plans and policies put in place to develop the downtown area for the next 20 years. That held, one of the main aims for the visionary plan is to understand the economic growth out the region and provision of a world-class cultural scene to Downtown area through cooperation and collaboration between Downtown San Diego neighborhoods and communities and a variety of arts and cultural anchor institutions (DSDP, 2013). In an interview with Alexandra Berenter, Downtown Planning & Public Policy manager in DSDP, conducted May 19th, 2017, she highlighted the role of the partnership to strengthen the core of Downtown San Diego as the region's cultural center, stressing the fact that downtown area is driven by a vibrant arts and culture scene. That scene, however, is imperative to support the local economic development, arts institutions, as well as advancing the creation of amenities to attract investments in convention center – bringing 24 million dollars to the region in last fiscal year 2016- and nurture a distinctive creative culture by consequences. Within the same focus area of "Create the Vibe" in Downtown San Diego, an interview with Lise Koerschgen, Head of Urban Spaces Committee in DSDP, demonstrated the use of comprehensive place-making strategy to bolster Downtown's public spaces with a renewed emphasis on fostering a distinct arts and cultural scene. For that purpose, a variety of Tactical urbanism techniques such as: "Lighter, Quicker, Cheaper" is used as a tool to recreate and reimagine communal spaces around Downtown to foster and build communities at little cost. A variety of initiatives were drawn out in the interviews conducted, Moving Parklets, amongst, See Figure 10.

Figure 33 - Moving Parklets as seen around the Downtown San Diego area. Source: http://downtownsandiego.org/make-your- place/placemaking/ (Figure 10 in Annex 1I – Israa Mahmoud Hanafi)

A mobile parklet which is a small urban park about the size of a parking space, that could be easily moved around to create a pop-up public space as needed in whichever area. Nonetheless, the role of the partnership remained intact to execute the processing of permits of the mobile parklets around the city downtown area that, according to lise, was an exhaustive process to transform asphalt into an opportunity of public space. Another distinguished example for such technique of innovative placemaking was in collaboration with Fred Kent, president of Project for Public Spaces, to activate and create the -so called- "Pocket Park" at the 13th and J street, see Figure 11. A privately-owned and underused parking lot by Horton Plaza, was transformed in an innovative community gathering spot in the east village area (DSDP, 2015).

Figure 34 - Pocket Park at corner of 13th & J streets, Downtown San Diego area. (Figure 11 in Annex 1I – Israa Mahmoud Hanafi)

Another distinguished example for such technique of innovative placemaking was in collaboration with Fred Kent, president of Project for Public Spaces, to activate and create the -so called- "Pocket Park" at the 13th and J street, see Figure 11. A privately-owned and

underused parking lot by Horton Plaza, was transformed in an innovative community gathering spot in the east village area (DSDP, 2015). The Cultural role of DSDP didn't stop here, in fact, the partnership continues to push forward the collaboration between different local cultural venues and organizations to coordinate, organize and put in favor the residents' preferences. In summer 2016, the focus shifted to musical events, the partnership promoted a first of a kind "Sounds of Summer" pop-up concert series, offering performances by local musicians on street corners and in parks and plazas throughout Downtown, see Figure 12.

Figure 35 -: Horton Plaza during "Sounds of Summer" musical festival, Summer 2016. Source: http://downtownsandiego.org/sounds-of- summer/ (Figure 12 in Annex 1I – Israa Mahmoud Hanafi)

Even though the placemaking approach is a fairly new trend in Urban planning (Mackenzie & Storring, 2016). Earlier, Markusen (2006) argued the effective role of Public Spaces activation to boost the vitality and cultural programming in urban development projects through it; that said, there are evidence that public policies affect the creative class clusters and their ambient sphere of influence. On that front, The Downtown San Diego is not lagging, the latest San Diego regional "Quality of life indicator" thumbed up the improvement of innovative economy growth due the ability to attract talented individuals and businesses to the region relying on cultural attractiveness of Downtown area in particular (Equinox, 2017a).

Human capital attraction

There are evident indicators that the Downtown area has a certain appealing for entrepreneurs and startups. Overlooking the US census bureau data from the earlier section for the year 2015, the zip code 92101 (Downtown area) scored 15.34 startups for every 10,000 people while the whole San Diego County scored 1.35 for the same ratio, see Figure 7.

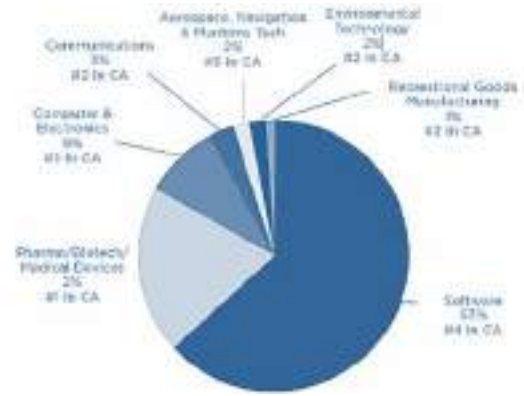

Figure 36 - San Diego Startups by industry sector, year 2015. (Figure 13 in Annex 1I – Israa Mahmoud Hanafi)

While the data on the employment opportunities as well as the kind of jobs in Downtown indicate that there is a growing creative class and innovation economy in the urban core; the reality is that there is a growing array of diverse startups and growth of IT & Software companies' in downtown area. A special focus on the growth of Science and technology-based startups in San Diego region highlights that software sector made more than 60% of the industry, see Figure 13, with 255 new software companies created, and 906 jobs created in the sector pushing San Diego County to the 4th Rank in California in 2015. CONNECT in (2016) reported Downtown area as the "Top Hotspot" where the new Startups are created and located; quantitatively speaking, 32 startups in 2014, 54- 68 startups in 2015; and nearly double that number in 2016, 110 startups just within the 92101 downtown Zip Code. A virtual Software Startup Cluster could be easily eye-tracked in Downtown area, see Figure 14. The fact is that Computer science, and especially software development, is at heart of innovation economy, every industry and services affecting our lives today, makes the Downtown area by consequences a regional innovation hotspot and one of the most essential clusters that has the potential to grow exponentially because of its IT and software profile (DSDP, 2016).

Figure 37 - Growth of software Startups cluster in Downtown SD till year 2014. (Figure 14 in Annex 1I – Israa Mahmoud Hanafi)

The software sector in itself is accounted for more than 8% of startups creation yearly between 2014 and 2016 (Equinox, 2017b), that denotes a correlation with the privileges of the innovation ecosystem in downtown area such as competitive labor pool and easier commuting facilities.

That highlighted, the prominent factors essential to a boosted innovation ecosystem in Downtown area are easily benchmarked. The rate at which new companies are being formed, the variety of incubation spaces and meet-up groups as well as the number of events held annually downtown speak to a networked culture of creatives and innovators who are driving the development of new products and services that represent newly added-economic value not just to downtown but to the entire region. What is especially encouraging about the innovation growth potential of downtown is not just the number of startups, but also the array of coworking, incubation and meet-up spaces downtown and in surrounding communities that are connecting talented people and nurturing new business opportunities, see Figure 15.

Figure 38 - Incubators, accelerators, co-working spaces, and startups in Downtown, year 2016. Source: https://dsdp2015.carto.com/viz/b09e6e4a- (Figure 15 in Annex 1I – Israa Mahmoud Hanafi)

In downtown today, there are seven incubators/accelerators and eight coworking spaces that serve a variety of industries, however; they all speak to the needs of growing tech startups looking for flexible office space options. An overlay between, the horizontal physical concentration of tech startups cluster in downtown (in red) and the co-working spaces and services provided to startups (in orange), unveils a heat map of a strong concentration in Columbia district, civic/core, West and South-East village neighborhoods, see Figure 16.

Figure 39 - Heat Map of Startups and tech firms Cluster in Downtown area, year 2016. Source: the author after Downtown San Diego Startup Directory data, year 2016. (Figure 16 in Annex 1I – Israa Mahmoud Hanafi)

That physical concentration is explained by the flexible and creative coworking suites presence as well as the vertical focus of Software Startups and digital marketing services (45 tech

startups in just 101 west Broadway). Another indicative factor of human capital attraction to downtown san Diego area is the wage multiplier in San Diego innovation economy Clusters, that comprises knowledge-based sectors and development of technologies services. In a cluster breakdown, the Software industry amongst, with a majority of 34% of companies in all San Diego County Innovation economy portion; has a multiplier of 2.4X more than average annualized salary, that is $119,600 yearly (CONNECT, 2016, p. 13). In the Interview with Alex Waters, a board member in Startup Weekend San Diego and Program manager of committee of Startups & technology in DSDP, he high- lights an interesting fact that nowadays, a strategic approach for human capital (Creative Class or knowledge-based workers) attraction to Downtown San Diego by targeting a big number of higher educational degree-owners or STEM individuals, is needed. For that to become a reality, some of anchor educational institutions are lending a new footprint in downtown area nowadays such as University of California (UCSD), in order to connect the innovation in research to Software and design, marketing services, and life and science bio-tech newly formed and based firms in Downtown San Diego area. While many reasons come to hand on the attractiveness factor of San Diego Downtown area, it is crystal clear to eye sight that office rent prices are way lower than San Francisco, New York City, and Boston innovation districts. Even though the loss of some direct locational competitive advantage, a noticeable trend of Startups started migrating from Silicon Valley to San Diego. Currently, Downtown San Diego is being favored as a "tech heaven of tomorrow"; Andrew Gazdecki (2016), the CEO of Bizness Apps, a Business DIY mobile app leader company, in an interview with TECH CRUNCH, unveiled the trading advantages of relocating the startup to San Diego. A lower cost of living for employees means a 30% wage raise, escaping the over-saturated market of San Francisco to instant growth fresh ground in San Diego, approaching the fast-blossoming entrepreneurial tech scene is San Diego Downtown, bringing 100 local jobs to Downtown area market, and finally, benefit from an incremental quality of life with a potential for exponential expansion and a more lasting business competitive advantage effect. However, cutting down the cost of office spaces is not the only indicative factor, being a Downtown startup has its perks as well; it gives the company a competitive edge in hiring from the tech sector because of the highest concentration of innovators. The "territorial" flexibility of connectedness to individuals or businesses that create the vibe of work-life experience, easier commutes, walkability, a variety of arts and cultural scenes, and at last but not least, a diversity of food choices (SanDiego Magazine, 2017b). On the same note, Darin Andersen, Chairman and Founder of CyberTECH, states on his favorite part of locating in downtown san Diego: I think it's the vibrancy of being in a creative, technology-driven, urban space - and seeing all the things that make up the fabric of our city. We have the bay, a great restaurant and hospitality scene, and a world-class urban technology hub. We are a great alternative to Silicon Valley - San Di-ego is a highly supportable, modern, and sustainable urban model that does not need to be Silicon Valley" (DSDP, 2017)

Cultural programming scene as measured by events occurrence

While the understanding of cultural districts success or failure is fundamental to analyze the effectiveness of cultural policies adapted and whether the socio- cultural development mechanisms are creating "the good people climate" and further building the knowledge-based society; the missing part of the puzzle is to intensify the cultural events occurrence to boost the entrepreneurial scene out. Spatially focusing on the downtown area, the patterns of cultural scenes showed a high diversity spectrum starting from startup weeks, days, and incubation events, and ending with free yoga and rock and roll marathons. As an example, an entrepreneurial turmoil yearly event takes place in San Diego, this year in June 19th, 2017 that will be the fifth in a row, is the San Diego Startup Week. It works more like a melting pot that brings together entrepreneurs, startups, developers, mentors, students, community visionaries, and success stories to share progress, exchange resources, and celebrate the thriving local

innovation community. On the side tracks of this event, the Downtown crawl takes place, see Figure 17, It is a site walk to downtown locations for different startups locations where people get to discover the co-working spaces, incubators, and to showcase the diversity of innovation ecosystem in San Diego.

Figure 40 - The dynamic crawl of Downtown san Diego startup scene, June 2016. (Figure 17 in Annex 1I – Israa Mahmoud Hanafi)

Within the same notion, the manifestation of diversity in cultural events is easy to track by eye sight; San Diego Downtown area has a potential arts and culture District, by connecting the various performance venues (Bennett, 2017). In a walkable distance expanding from A street till Horton plaza, see Figure 18, a diversity of theatres (civic theatre, Balboa theatre, etc.), opera houses, Copley Symphony hall, and arts centers are spatially concentrated.

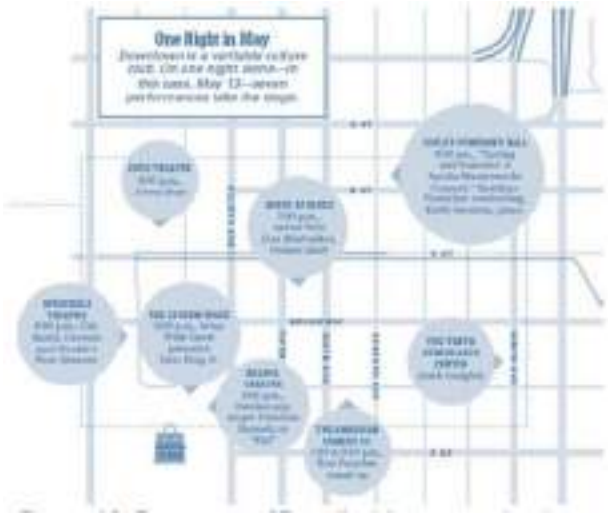

Figure 41 - Source: http://www.sandiegomagazine.com/San- Diego-Magazine/May-2017/The-New-Downtown- San-Diego/Downtown-Has-an-Unofficial-Arts- District/ (Figure 18 in Annex 1I – Israa Mahmoud Hanafi)

Urban Parks model: The Quartyard case Study

Another example for the spatial concentration of cultural events occurrence in Downtown area is observed in the – so called- "urban park" namely "Quartyard". A 25,000-square foot city owned lot at 1102 Market street, constructed in 2014 from repurposed shipping containers in

east village at downtown, see Figure 19.

Figure 42 - Quartyard designed urban park. Source: http://quartyardsd.com/about (Figure 19 in Annex 1I – Israa Mahmoud Hanafi)

The public space, with a 1000 persons' minimum capacity, is home to a coffee shop, restaurant, dog park, beer garden, music venue and a rotating assortment of food trucks. Basically, promoting themselves as a venue that brings people together, celebrates community, coffee, food, music, and cultivates the culture of unique social gatherings. Open 7 days a week, Quartyard plays host to a number of cultural events from farmers', pop-up markets to movie nights, film festivals and music outdoor concerts, see Figure 20 & Figure 21

Figure 43 - Views from inside the Quartyard urban park. Source: the author, May 2017 (Figure 20 in Annex 1I – Israa Mahmoud Hanafi)

Figure 44 - Variety of cultural events occurrence in Quartyard urban park. Source: http://www.quartyardsd.com/concerts-events (Figure 21 in Annex 1I – Israa Mahmoud Hanafi)

The interesting attribute in the Quartyard urban park example is its' formation as a communal public space. As reported by Lothspeich (2017), three senior architectural students in 2013

(Philip Auchettl, David Loewenstein and Jason Graut- en) concepted the idea of a “movable urban park” in their master’s thesis for the NewSchool of Architecture + Design. The idea was simple: Transform vacant city land into a thriving communal space that could be assembled quickly, and torn down just as fast, using shipping containers as structural components instead of spending the time, money and effort required to develop an actual building. While missing on financial means, the trio (now operating as RAD LAB) raised funds on kickstarter (an online crowd sourcing platform), $60,000 were campaigned online and in person to prove residents’ interest in the project to the city, after gathering investors, partnering with contractors, and receiving legal approval from the city, the urban park was born to light. The gathering space is mainly successful because of its rippling influence effect; it serves an average of 9,000 residents and visitors a month and hosted more than 160 events during the last 15 months (Lothspeich, 2016). The flip coin of that success was the land ownership issue; the lot publicly owned by the city (Downtown community planning Council) was sold in late 2016 to a developer. Civic San Diego, Downtown’s local planning agency, together with east village residents picked up steam on social media to petite the end of the deal. Despite the public support to the continuation of the Quartyard, the founders incepted it as movable active space: "Quartyard was built as a placeholder for future development with the intention to activate a vacant, publicly owned lot, then relocate once the city sells. Quartyard was set up to be a temporary activation that could last one year or 10 years," said Auchettl on behalf of founders to San Diego NBC7. The premise of the Quartyard has never changed, nonetheless: It was meant to be a temporary space on an empty lot. When Quartyard came to fruition in 2014, it was never meant to stay in one place. The beauty in its concept is the venue’s ability to adapt and evolve throughout various relocations. Indeed, The Rad Lab announced their re-open at a new location in a couple of blocks away in late 2017, the so called “your city block” had a wider community funds support to help out their presence in downtown area. Whereas since its’ start as an urban park, it has served as a community platform to immerse in arts, music, and culture. That, in itself, is a strong demonstration that such projects -as the Quartyard- could act as an emerging model of how the activation of vacant lots as cultural hubs could be, and have an impact on future developments on public spaces of downtown; when the right innovative ideas are coupled with stakeholders’ efforts and public policy support.

Co-working spaces model: Downtown Works case Study

Nonetheless, the same importance of cultural events occurrence is equally measured by successful co-working spaces, the diffusion of these spaces in the San Diego downtown area nowadays is remarkable. One of the highly ranked amongst the entrepreneurial community is Downtown Works, physically located in 550 West B Street 4th Floor San Diego, CA 92101, see Figure 22.

Figure 45 - Downtown Works location, Spring 2017. Source: tha author after Here maps (Figure 22 in Annex 1I – Israa Mahmoud Hanafi)

The two floors, 5,000 square feet co- working space offers tailored services for entrepreneurs and companies located in the venue; plans vary based on startups size and budget. Monthly, daily, permanent, or virtual offices are amongst options; open-desks, exclusive desks, or private offices and meeting rooms as well, see Figure 23. Members benefit from a diversity of amenities, a healthy life style (gym included in membership), a pet friendly space, on site market and a 24/7-member access (SDtechscene, 2016).

Figure 46 - Exemplar Networking events in Downtown Works Co-Working Space. Source: tha author, May 2017 (Figure 23 in Annex 1I – Israa Mahmoud Hanafi)

Figure 47 - Views from inside the Downtown Works Co-Working Space. Source: the author, May 2017 (Figure 24 in Annex 1I – Israa Mahmoud Hanafi)

Beside the physical amenities and the proximity to public transportation, and having the view of the San Diego port; Downtown Works (2017) has an in-house accelerator program for startups. Weekly lunch-n-learn meetings with tech industry experts to promote the startups exposure to the business community, and to provide hands on experience with advisors and funders to startups, see Figure 24. In an Interview with one of the space founders, Wolf Bielas,

conducted May 23rd, 2017; he highlighted the importance of co-working spaces venues to the vibrancy of the entrepreneurial scene in San Diego Downtown that matches with live, work, play vision of the city and with entrepreneurs needs above all. Another crucial factor of co-working spaces in his opinion was the collaboration between venues in the startups scene.
Within the same concerns of Bielas, he highlighted the fact that the cultural diversity and walkability atmosphere of Downtown San Diego is significantly high in comparison to other cities. Yet, the downtown San Diego area is relatively cheap in office rent prices for newly created startup and companies to get located: "Nonetheless, there is an attraction of slowly growing investments in the area due to connection to software engineers labor pool, even if the wage is 30% less than San Francisco, for example, but the cost of living is 50% less than Bay area". Interestingly, he stressed the cross-border relationship connection with Tijuana and how this territorial proximity helps the software, hardware, and firmware talented labor pool in common to develop and prosper. Same notion happened around the dynamics of economic activities and local services clusters (food, art and cultural venues, and shopping, etc.) affected the community gatherings scene. As well as the missing effect of educational anchor institutions in spreading the diffusion of startups, coupled with the missing fact of an anchor company headquarter that would attract other startups to cluster in downtown area and develop it further. Another interesting fact in this interview was about the public policies and local governmental approach to facilitate the investment in Co-Working spaces and real estate development around Downtown area. Bielas referred to downtown area being exposed to a "perfect storm", whereas the mayor, the city strategic plans are very pro-development and are supporting permits facilitations to have mixed-use buildings available for housing, small businesses, and a diversity of arts and cultural venues, together with a variety to retrofitting facilitations for existing buildings in the Downtown area. In sum, the successful model of Downtown Works gives an important retrospective about how the innovation ecosystem of startups and entrepreneurs is flourishing in Downtown area and its' impact over the territorial milieu and social innovation.

Findings

It is visible to eyesight the uniqueness art and cultural hub of Downtown San Diego; the social demographics data show an attraction to certain art hotspots where the urban vibrancy could be easily measured and perceived such as urban parks models. While the evidences explain the human capital attraction phenomenon, the closest measurable and tangible criterion was the multiplier of startups in downtown area and how innovation ecosystem is pacing out in Downtown area.

Matrix of Evaluation

Table 1: Evaluation Analysis Matrix for Downtown San Diego Case study

Downtown San Diego Case Study Summary			
Concept	**Criteria of evaluation**	**Measurement tool**	**Assessment results**
Place-based Approach	• Socio-cultural context • Governmental policies • Economic development	• Demographical context • Arts and cultural hotspots • Open spaces and Parks	• Proximity to transportation, high walkability score, vicinity to amenities
Cultural Hubs/ Districts	• Quality of life increase • Human capital attraction	• Vibrant spaces in area • Startups located in area	• Effective planning strategies with small scale defective land ownership issues. • High wage multiplier for certain sectors.
Implementation – based Approach	• Cultural Programming • Stakeholders involvement • Sphere of influence/ catchment area	• Cultural Events occurrence • Variety of cultural scene • The rippling effects of innovation scene.	• Diversity in implementation techniques • Wider Cultural impact • Cross-border labor relations, missing Educational Anchor institution

Figure 48 – Matrix Evaluation (Table 1 in Annex 1I – Israa Mahmoud Hanafi)

The above-mentioned matrix of evaluation, shows the measurement tools used in this research to identify the success or failure of criteria of evaluation that follows the conceptual model of cultural districts introduced earliest. Through the verification of implementation based approach, the physical attributes in Downtown San Diego area showed a proximity to transportation, high walkability score, vicinity to different amenities; and that, fortifies the fact that a strong cultural District is flourishing, giving way to prosper economic development.
The hurdles to public spaces development are mostly financial, however, the city tapping into local redevelopment funds, private donations, and economic recovery act to strengthen and transform the downtown area into ("A city of great public spaces," 2011).
Meanwhile, apart from the strengths in the territorial context, the wage multiplier effect for innovative jobs, lower rent prices and competitive advantages for startups are striking reasons, and for that, the downtown area has a wider sphere of influence and catchment area and is "baby-booming" in some specific innovation economy sectors such as software, tech & IT.
Nonetheless, the rippling effects of innovation scene is not limited to downtown area, the latest published Kauffman Index about metropolitan areas and city trends in startup activity unveiled a growing drift in San Diego metropolitan region. Among 39 innovative regions, San Diego ranked 4th based on the rate of new entrepreneurs in market, opportunity share and startups density; thus looking willingly to join the parade of innovative cities (Morelix, Fairlie, & Tareque, 2017).

Conclusion

Fundamentally, Social innovation is deeply intertwined with socially – oriented human urban design, where the public spaces are proved to be the granular catalysts for sharing knowledge and building innovation. While Cultural Hubs/ districts are proven to be a driver for cultural-led urban policies (Hesmondhalgh & Pratt, 2005), it is undeniable that the context diversification in Downtown San Diego area affect whether positively the two measurable criteria of human capital attraction and increase in quality of life. In the second part, two criteria were used to

verify the implementation-based approach in the Downtown area, that are: the increase of quality of life and Human Capital attraction. For the first criterion, there is an evidence that: i) the placemaking approach is changing the facets of public urban spaces (drawn from 2 examples), ii) how those tactical urbanism techniques are supported from a public policy point of view and iii) what are the measurable economic outcome of the process. For the second criterion, the dynamics between the growth of startups scene vertically and the heat map of Startup Sphere of influence/ Catchment area horizontally in downtown is investigated. The attraction of tech firms moving from Silicon Valley to downtown San Diego and how the later exponential growth of IT and software cluster is catalyzing the innovation economy in the area and having a 2.4X wage multiplier effect, thus vibrating the local economic development in downtown area. On one hand, Downtown San Diego Partnership plays a protagonist role as a public-private partnership in terms of public policies and community development through different engagement techniques to regenerate and activate different public spaces that are connected to art and culture venues in downtown. On the other hand, the private sector is still digging down the road to pace out the changes in the area, yet the cultural vibrancy is undeniable. Two notable outcomes from the interviews and the physical observation analysis show that i) downtown area lacks an educational anchor institution and that drives a lot of economic activities to neighboring areas such as La Jolla or La Mesa areas, ii) governmental facilitations to business development either in urban planning policies or land-use zones differ based on projects, private businesses have an easier trend for permission than small public parks projects, spatially when land ownership issues rise. In sum, the Downtown san Diego area is a set stage to development of public spaces that bring to renaissance a vibrant urban core; constraints are many but assistances are more practical and doable. The cultural district in downtown area is distinguishable, the human attraction and life quality play a turmoil role in fostering that development forward with no hesitation.

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Social Innovation and Territorial Milieu: the San Diego's craft breweries as a potential case study.

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Introduction

Social Innovation and Territorial Milieu are the main topics within the MAPS-LED project's Work Package n. 3 (WP3). According to the MAPS-LED project's Grant Agreement (Annex 1, page 4), "the MAPS-LED project's place-based framework will include two important drivers: 1. Cluster policy, 2. Innovative milieu in terms of the local value chains based on the urban-rural linkages, and it will connect three important key factors: territorial networks, governance and localization". In order to find a suitable case study for the WP3's main objectives, our main task during the second- half of the research period was to analyse the economic context of San Diego region through the lens of the innovative milieu concept. The investigation was not linear. While the extensive work of Michael Porter led to the identification of precise industry clusters, allowing to pick up several specific case studies within the MAPS-LED project's WP1 and WP2 - the concept of innovative milieu has not had such an "academic success" within the worldwide research. Its fuzzy and intangible nature - "a whole" (Maillat, Quevit & Senn, 1993), "a cognitive set" (Camagni, 1991) or "a complex" (Maillat, 1998) – makes its identification within a specific context. Such a condition represented a risk for the research, since the only observation of economic figures could lead us to the choice of a local production system based on a functional logic rather than a milieu's one. What we needed, instead, was a localized production system where we could identify […] a cognitive set on which the functioning of this system depends (Maillat, 1998). For this reason, we chose to, firstly, deepen the concept of milieu and break it down in its main characteristics and, secondly, identify the San Diego industry with the specific behavioural patterns that matched the milieu's features the most. After several studies, fieldworks, formal and informal interviews with key informants, we chose the craft beer industry as potential case study to analyse within the WP3. As follows, we report our preliminary findings that allowed us to consider the San Diego craft brewery industry as the most suitable case study to analyse within the ongoing MAPS-LED WP3. As Annex to this report, we attach all the interviews we made with several key informants – politicians, policy makers, etc. - in order to draw insights about the rightness of the choice and the main characteristics of the phenomenon.

Breaking down the concept of innovative milieu in its main characteristics

The concept of milieu, related to regional sciences, appeared for the first time during the half of the '80s thanks to the research work of the GREMI group - European Research Group into Innovative Milieus (see Aydalot, 1986; Camagni, 1991; Maillat, Quevit & Senn, 1993). The notion belongs to the overall field of research that emerged at the end of the '70s aimed to investigate the issue of endogenous development. The idea of the scholars involved was to abandon the neoclassical approach to economic development and build an understanding concerning the relationships between production systems and the territories where these systems were located (see Becattini, 1979; Stohr & Taylor, 1981; Brusco, 1982; Coffey & Polese, 1984; Garofoli, 1992, 1993, Slee, 1993). Within this research context, the innovative milieu approach was developed in order explain the success of certain regions where the presence of district economies and the synergistic relationships among the local

[6] Cappellano F., Spisto A. (2019) Innovative Milieu in Southern California: The Case of the San Diego Craft Breweries. In: Calabrò F., Della Spina L., Bevilacqua C. (eds) New Metropolitan Perspectives. ISHT 2018. Smart Innovation, Systems and Technologies, vol 100. Springer, Cham

actors boosted the innovation processes (Camagni, The concept of innovative milieu and its relevance for public policies in European lagging regions , 1993). The word milieu comes from French and it means context or environment. According to the own field of research several scholars have contributed to understand what are the aspects characterizing such a context. It is possible to identify a linear spectrum of approaches within the academic debate concerning the definition of innovative milieu: from a pure industrial economic-based approach to a more sociocultural one. As already mentioned, the GREMI group was interested mostly in the ways innovation is generated and diffused, thereby its definition of innovative milieu: "[…] a territorialized whole in which interactions between economic agents develop through the learning processes stemming from multilateral transactions which generate externalities that are specific to innovation, and through the convergence of such learning processes towards increasingly effective forms of joint resource management" (Maillat, Quevit & Senn, 1993; in Matteaccioli 2008). From this perspective, the innovative milieu represents a coordinated and functioning institutional environment constituted by universities, research laboratories, public institutions and firms. Within the same research field but employing a more sociological perspective, Camagni defines the innovative milieu as "[…] the set, or the complex network of mainly informal social relationships on a limited geographical area, often determining a specific external 'image' and a specific internal 'representation' and sense of belonging, which enhance the local innovative capability through synergetic and collective learning processes" (Camagni, 1991). In his definition, Camagni, enriches the concept of innovative milieu by suggesting the nature of the interactions occurring among the economic agents: informal. Similarly to the social capital concept, the milieu's socially embedded relationships between organizations determine a successful regional development in terms of growing agglomeration of innovative firms (Fromhold-Eisebith, 2004). However, Camagni also recognises that these informal social relationships have more than a functional economic role, rather they generate a sense of belonging and identity which benefits the local innovative capability. The similarity with the social capital concept is also demonstrated by the Maillat's interpretation of milieu: "[…] it corresponds to an outwardly open territorialised complex, that is, to the technological and market environment, which incorporates and masters know-how, rules, standards, values and relational capital. It is attached to a localised production system, that is, to a set of players and to human and material resources (Maillat, From industrial district to the innovative milieu: contribution to an analysis of territorialised productive organizations, 1998). This similarity – also deepened by the study of Fromhold-Eisebith (2004) - is further reinforced by the Maillat's argument on the word "innovative". Indeed, according to the author, a milieu can be either innovative or innovation-inhibiting, depending on the players' behaviour whether they defend individual interests and seek short-term profit, or they look at the big picture, collaborating with the community for long-term collective gains (Maillat, From industrial district to the innovative milieu: contribution to an analysis of territorialised productive organizations, 1998). In the same way, also the social capital can be development-inhibiting. As argued by Portes (1998), It can bring to the exclusion of outsiders, excess claims on group members, restrictions on individual freedoms, downward levelling norms (Portes, 1998). The milieu are innovative when 1) there is an effective actor relationships within the regional system; 2) social contacts enhance learning processes among the actors; 3) there is and image and sense of belonging (Fromhold-Eisebith, 2004). Moving through the spectrum of the different approaches defining the innovative milieu, we find a more sociocultural description of the concept given by Dematteis. In particular, the Italian scholar defines the milieu "[…] as a permanent set of sociocultural features developed in a specific geographical area. The features come from the progressive changes of intersubjective relationships, also connected the ways the local natural ecosystem is exploited" (Dematteis, 1994). This definition highlights three essential dimensions: the sociocultural dimension, the temporal dimension, the ecosystem dimension. They all contribute to create a local milieu. Governa (2001) points out that such an idea of milieu can be seen from two different

perspectives: one more static and another one more dynamic. As a localized and specific whole of specific natural and sociocultural conditions stratified in a certain place within time, the milieu defines the collective local identity. This perspective looks at the past, and sees the the milieu as something produced in the past rather than being an evolving entity changing also in the present and future. On the other side, Governa (2001) argues that the milieu is is a set of components in certain place and time but, along with defining the specific local identity, it is also the starting point for development and progress. Crevoisier (2004) argues that the concept of milieu allows to explain three different paradigms concerning economic development: technological change (innovation due to the mobilization of a diversified local know-how), organizational aspects (the role of local networks, cooperation and competition, rules) and the territory (role of proximity and distance between the actors).

Milieu, Clusters and Regional Innovation Ecosystems

Despite the different perspectives and approaches, our investigation allowed us to identify several key components characterizing the concept of milieu:

- Informal nature of relationships;
- Local behaviors, cognitive models, rules, and tacit knowledge;
- Collaboration and competition;
- Specialization in specific productions;
- Territorial Identity and sense of belonging;
- Innovation as an occurrence rather than an aim.

All these concepts emerged can easily meet some of the characteristics of other spatial-based economic approaches, such as clusters and regional innovation ecosystems (see the previous section for the comparison). By drawing insights from the work developed by Pichler (2015), we built a comparison matrix between all the three concepts that have been the focus of our research within the MAPS-LED project:

Table 4: Comparison between Regional Innovation Ecosystem, Cluster and Milieu concepts (Table. 1 in Annex 1a - Francesco Cappellano, Alfonso Spisto)

	Regional Innovation Ecosystem	***Cluster***	***Innovative Milieu***
Author	Mercan & Goktas (2011); Lappalainen & Markkula (2013)	Porter (2000); Dicken & Malberg (2001); Lindqvist, Ketels & Solvell (2013).	Maillat (1998); Camagni (1991); Dicken & Malberg (2001); Maillat & Lecoq (1992).
Definition	"[…] consists of economic agents and economic relations as well as the non-economic parts such as technology, institutions, sociological interactions and the culture".	"[…] geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate".	"[…] territorial set, integrated in network fashion, of material and non-material resources, dominated by an historically constituted culture, a vector of knowledge and knowhow and based on a cooperation/ competitiontype relational system of local actors".
Actors	Quadruple Helix	Triple Helix	Quadruple Helix
Relationship between the actors	Both vertical and horizontal	Functional, mostly vertical logic	Horizontal

Relationship with the territory	No explicitly indicated	Functional	Sense of belonging and identity due to a historically constituted culture.
Flows of knowledge	Codified	Mostly codified	Mostly tacit
Key determinants affecting the performance	Institutional support and orchestration role of public sector (universities should have the leading role); Collaboration between actors, Open Innovation	Proximity and agglomeration of the actors; degree of collaboration with R&D institutions; high skilled workforce;	Cohesion, trust, reciprocity, mutual assistance, openness to the outside world.
Geographical scale	Regional	From district to National scale	Regional
Objectives expected by the actors involved	Private sector: competitive products and innovation; Universities and R&D Institutions: Innovation and training; Civic society: regional needs fulfilment; Public sector: regional competitiveness, prosperity, to address societal challenges.	Firms' higher productivity; competitiveness of services and products; increasing returns due to proximity.	Agglomeration externalities resulting from the actors' behaviors rather than the actual agglomeration.
Boundaries	Regional but not in terms of jurisdictions (it can be transregional) - the regional scale is meant as "territorial", so relational space - Thus, the boundaries are blurred.	Blurred - they are defined by linkages and complementarities across industries belonging to the cluster	Defined (also in cognitive terms as internal and external image).
Strategies applied by the actors	Innovation Hubs, Collaboration and cocreation platforms; Open Innovation; Living lab establishment	Cluster initiatives (private-led); Cluster policies (public-led)	More than strategies, the milieus are characterized by common behavior (common rationality, common time frames, common objectives).

What appears to be the prominent feature that innovative milieu exhibits – and what makes it different from regional innovation ecosystem and cluster concepts - is its identity as a localized productions system and the sense of belonging to a territory - and what the latter represents: "[…] space meant as just geographical distance is substituted with territory – relational space -, defined as the context where common cognitive models operate and tacit knowledge is created and transmitted" (Camagni, 1995). Our fieldworks, study on desk and interviews allowed us to identify the San Diego craft beer industry as the one with abovementioned behavioural patterns that match the identity features the most. In the next section we will provide an understanding of the craft beer industry in order to support our argument in choosing this sector as a case study.

The American craft beer industry: identity, place and collaboration.

The notion of identity in the American craft beer industry seems to emerge in two different but

connected ways: from an organizational perspective – namely, how they define themselves, the rules they have to follow and, thus, how they differ from large beer producers – and from a more sociological perspective – identity as a way to reconnect to a place within a globalized society.

Industry identity and collaboration

According to the American Brewers Association, an American brewer has to meet the following specific criteria in order to be considered as craft (Brewers Association, n.d.):

- Small: Annual production of 6 million barrels of beer or less. Beer production is attributed to the rules of alternating proprietorships.
- Independent: Less than 25% of the craft brewery is owned or controlled (or equivalent economic interest) by an alcoholic beverage industry member who is not themselves a craft brewer;
- Traditional: A brewer that has a majority of its total beverage alcohol volume in beers whose flavor derives from traditional or innovative brewing ingredients and their fermentation. Flavored malt beverages (FMBs) are not considered beers.

Depending on the production size, the place where the beer is produced and whether the brewers sell food or not, the American craft beer industry is divided in four market segments: brewpubs, microbreweries, regional craft breweries and contract brewing companies. The Brewers Association provides a more detailed distinction among the different sectors (Tab 2.):

Table 5: Craft beer industry market segments (Brewers Association, n.d.). (Table. 2 in Annex 1a - Francesco Cappellano, Alfonso Spisto)

Microbrewery	*Brewpub*	*Regional Craft Brewery*	*Contracting Brewing Company*
produces less than 15,000 barrels (17,600 hectoliters) of beer per year with 75 percent or more of its beer sold off-site. Microbreweries sell to the public by one or more of the following methods: the traditional three-tier system (brewer to wholesaler to retailer to consumer); the two-tier system (brewer acting as wholesaler to retailer to consumer); and, directly to the consumer through carry-outs and/or onsite tap-room or restaurant sales.	A restaurant-brewery that sells 25 percent or more of its beer on site. The beer is brewed primarily for sale in the restaurant and bar. The beer is often dispensed directly from the brewery's storage tanks. Where allowed by law, brewpubs often sell beer "to go" and /or distribute to off site accounts. Note: BA recategorizes a company as a microbrewery if its off-site (distributed) beer sales exceed 75 percent.	A business that hires another brewery to produce its beer. It can also be a brewery that hires another brewery to produce additional beer. The contract brewing company handles marketing, sales and distribution of its beer, while generally leaving the brewing and packaging to its producer-brewery (which, confusingly, is also sometimes referred to as a contract brewery).	An independent regional brewery with a majority of volume in "traditional" or "innovative" beer(s).

The definitions and categories listed above have not a normative nature. They just represent the way the Brewers Association define themselves, thus are by no means regulatory. As it is possible to see, two out of three of the criteria to be considered as craft relate to firm's ownership and beers' production size. Beside guaranteeing a high level quality product, these criteria - which define the identity of the craft brewery industry – seem to have also the aim to protect the industry itself. The question is "from whom"? In theory, a massive establishment owned by a multinational corporation, producing 100 million barrels of beer could label itself as "craft". However, this scenario is not just theoretical, but rather it occurs more and more. The American drink-local shift that has been occurring in the past ten years, has "stolen" a large amount of the market share to the four firms accounting for the half of sales in the global

market, namely AB InBev, SABMiller, Heineken, and Carlsberg (Howard, 2014). For this reason, the strategy adopted by these big corporations is being "if you can't beat' em, buy' em" (Hernandez, 2017). As it happened for the San Diego born craft brewery "Ballast Point", large constellation of brands – or even just one multinational corporation, as for the case of the Oregon born "10 Barrel Brewing" – are starting to buy successful craft breweries or to label their beers as craft in order to enter a market seen more and more profitable. Within the interview we made with Sheldon Kaplan – the director of "Suds County, USA", a movie telling the rise of the craft breweries in San Diego – this phenomenon is pointed out: "[…] From 1996 to early 2000 the micro brewery industry collapsed all over the country. At the time there was the rise of fake craft beers: big macro breweries started to launch beer with other names saying that was craft beer. They just wanted to enter the market and conquer it" (S. Kaplan, Personal Interview, July 24, 2017, San Diego, CA – USA). The problem of the "rise of fake craft beers" relies in the assets that these big corporations have – either financial and infrastructural. These resources are way larger than those available for local (or even regional) craft breweries. It allows the large beer companies at the same time to benefit from the brand built by local brewers, not facing the challenges that those brewers experience. This condition is considered unfair by craft brewers. When asked how 10 Barrel – which is owned by ABinBev - can be a threat for craft brewers, Christianne Penunuri – a researcher in the economic development field at San Diego State University and owner of the craft brewery "Groundswell Brewing Company" – answers: "[…] by being part of the largest beer company in the world, they don't have to worry in contracting hops while we have to do it almost one year before. If they need a certain type of hops to produce a beer, it will take three of four days for them through ABinBev. If we ask for the same amount and type of hops, it can take 6 to 8 months for us to have it through traditional methods, or we have to make several call to breweries throughout the community to see if anyone has the product we are looking for" (C. Penunuri, Personal Interview, June 27, 2017, San Diego, CA). For this reason, the creation of an identity taking in consideration criteria related to ownership and production size turns out to be a way to inform the consumers whether they are drinking craft beer or not. Most specifically, whether the consumer is supporting a business respecting certain ethical competition rules that large brewers do not need to respect.
This "internal representation" (Camagni, 1991) the craft brewers have built it is not just formal or aimed to information reason. Rather it translates into the creation of a big collaborative environment among all the participants. In facts, Craft brewers help each other in several ways: by lending hops, advice in beer production, time and machinery and sometimes even man power. Our interviewees all report this type of behaviour when it comes to the production or even the start-up phase of the business: "[…] For breweries to share ingredients, to be collaborative, to work together to support not profits organizations or just to support the industry is very common. I think one of the things I like the best in the industry is that I will have three or four craft breweries' owners sitting at the bar. We don't drink just our products; we drink also others'. This industry is holding each other. If someone is not doing a good product and his/her business is not going well, the industry says "Let us help you, let us take your beer or yeast and doing an analysis on it, because something went off on this brew". The industry is very focus on the success of the industry itself. The success of one is success for all" (C. Penunuri, Personal Interview, June 27, 2017, San Diego, CA).

Identity and sense of place

The second aspect of craft beer's notion of identity concerns "the external image" (Camagni, 1991) and the connection the industry builds with the places they are located. As already mentioned, the identity - also due to sociocultural features developed in a geographical area (Maillat & Lecoq, 1992) - determine the milieu's characteristics. However, as argued by Governa (1998), this identity may "look at the past" and being static or being the starting point for the future development and progress of both the industry and region. This argument is supported

by Schnell & Reese (2014), who apply it specifically for the craft beer industry. They highlight that identity and sense of place have been generally treated as something that places simply have. However, they argue that within a technological, highly mobile, and globalized society, identity and sense of place should be also seen as an active and conscious process. Thus, the creation of an identity becomes a way to "[…] break away from the smothering homogeneity of popular American culture, and reestablish connections with local communities, settings, and economies. This tendency is a movement termed "neolocalism," defined as the conscious attempt of individuals and groups to establish, rebuild, and cultivate local ties, local identities, and increasingly, local economies" (Schnell & Reese, 2014, p. 168). Flack was the first in using to use the term neolocalism in order to describe the "self-conscious reassertion of the distinctively local" (1997, p. 38) occurring through microbreweries. He argues that as businesses mainly serving their communities they are the most suitable example of this broader phenomenon occurring in the U.S. as a way to resist the homogenising force of globalization (Flack, 1997). At the first glance, the way craft breweries contribute to this phenomenon - both anti wild globalization and places detachment - is by using imagery, stories, features associated with a particular place as a way to promote their beers (Fig. 1).

Figure 49 – Some logos of several American craft breweries. Adapted from Schnell & Reese (2014) (Figure 1 in Annex 1a – Francesco Cappellano, Alfonso Spsito)

Pike argues that "brands and branding embody an inherent spatiality" (Pike, 2011, p. 8). However, someone may think that the contribute of local brewers to foster identity and sense of place in the local is just a branding and marketing strategy. Indeed, along with such a kind of approach, local brewers adopt also an active a conscious civic engagement with the local communities and NGOs. Eberts (2014) identifies three main broad categories of activities that breweries undertake in order to connect with their communities: the brewing of special events beers, tourism and community economic development (Eberts, 2014). While the first two categories are easy to understand, the community economic development practices are several. The following are just some of the activities the craft breweries carry on within the communities they serve:

- Training Programs to empower women in Craft brewing (Karl-Strauss Brewing Company, n.d.);
- Donation to local charities and NGOs (Personal Interview with several San Diego breweries, July 2017);

- Clean up initiatives within the neighbourhoods they are located (Karl-Strauss Brewing Company, n.d.; Craftalliance, 2016);
- Providing scholarship opportunities to attend craft brewing courses (American Brewers guild, n.d.);
- Providing free of charge spent grain to local famers to use as feed for livestock (Hobby farms, n.d.);
- Commitment in sourcing local (Brewery Climate Declaration, n.d.);
- Community engagement with local charities and no-profits (Arcadia Ales, n.d.);
- Advocacy to raise money for good causes such as literacy, local food, conservation, and food banks (Freemont Brewing, n.d.);
- Public Art (Freemont Brewing, n.d.).

By looking at Karl-Strauss Brewing Company's website, they highlight the involvement with thei communities as follows: "We regularly support local grassroots non-profit organizations based in San Diego through a combination of fundraising and participation. Our commitment to being a sustainability-focused company means going beyond the walls of our brewery and brewpubs and personally contributing to causes we believe in" (Karl- Strauss Brewing Company, n.d.).
The rise of the craft breweries in US The history of craft beer in the United States of America has not been an honeymoon throughout the last century. Nationwide, the consumption and the production of beer, more than other alcoholic drinks, was completely banned during the prohibition era. However in 1965, the first US microbrewery was set in San Francisco, CA. The first wave of brewers were completely unexperienced, and most of the times, their businesses were far from success nor even viable. Brewing was an hobby for the majority them, so they were considered pioneer "not only for micro-brewing but the entire DIY movement" (Hindy, 2015). Since the very beginning, the craft beer movement featured a collaborative environment where brewers were teaching each other and helping each other regardless any economic competition. By doing so, they pushed the demand of unique product which was completely different from industrial beer produced by large companies. Additionally, a political friendly environment supported the movement. In 1976, the US Senate enacted the small beer differential which allowed a tax deduction for those business who used to brew less than two million barrels per year. For their first 60.000 barrels, those breweries pay 2$-per barrel reduction in the $9-per barrel federal excise tax (ib). In 1979, the home-brewing activity was legalized despite several people used to brew clandestinely in their backyards. Moreover, the craft beers were facilitated by another important change in tax policy. In 1991, the tax fees rest of the beer were doubled (18$ per barrel), instead no change in taxation hit the craft beer. Nonetheless, the taxation played a significant role in supporting the rise of the craft beers nationwide reported below:

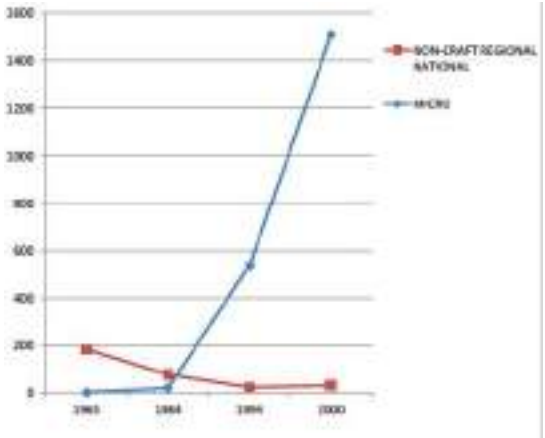

Figure 50 – The number of the craft beers in US in a chronological perspective. Authors' elaboration (Figure 1 in Annex 1a – Francesco Cappellano, Alfonso Spisto)

However, other elements supported the explosion of the phenomena in US and more specifically in California. Nationwide the trend in market segments shows that the tastes have been changes since the mid 1980s: craft beers have been growing their consumers' base. Consumers started to look for a more sophisticated taste, rejecting the industrial mass-produced goods. At this regard, a specific "media war" began against the industrial beer coming overseas. A number of events regarding US beers, namely Great American Beer Festival, started during this period, supported by the first organization of brewers. Despite it was not completely a financially remunerative business, the people willing to brew beers by their own were not in short supply. The reasons behind this great success are more connected to lifestyle choices along with awareness of taste and health culture. In fact, the craft beers were proudly sold as naturally crafted using only natural preservatives. In this view, we can see the strong link with the foodie movement who raised during the late 1990s. Moreover, the link between the brewery and the local clientele has been entrenching over time, building a sense of place as discussed earlier. In California, specifically San Diego region featured a boom for the craft breweries in the last decade.

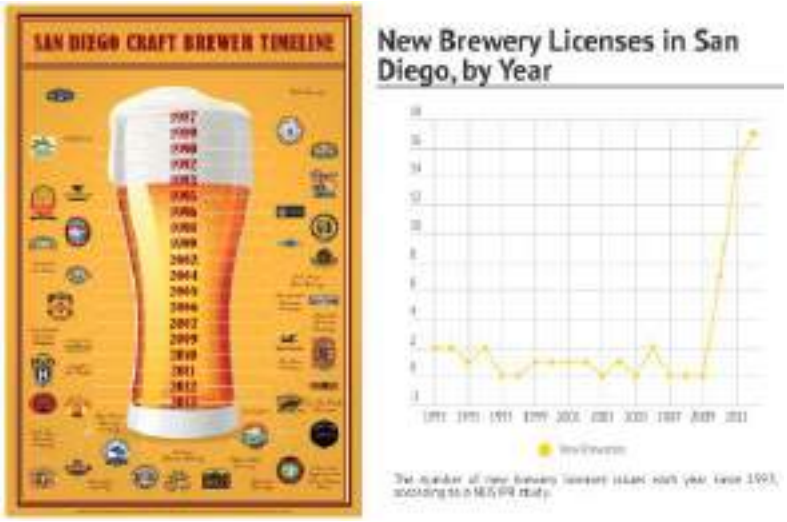

Figure 51 – The number of new brewery licenses issued each year since 1993, according to a NUSIPR study (Figure 3 in Annex 1a – Francesco Cappellano, Alfonso Spisto)

As said, California played a first-tier role in the spread of the craft beer industry in the United States since all political efforts behind the tax policy stemmed from this state. The San Diego region particularly featured a strong history in craft brewing even in 19th century. In fact, the San Diego Brewing Company, established in 1896, was the first pre-prohibition brewery in San Diego. Recently, the San Diegans breweries gained much popularity due to their goods' quality certified by the 18 medals awarded during the last Great American Beer Festival (2016). The steady pattern of breweries birth rate discloses the strength of the industry which in 2015 has generated $851 million in 2015, and employed 4,512 workers only in San Diego. However, looking only at the breweries would offer only a partial snapshot of the phenomena. In fact, the industry has been supported by a complex related services which were developed in the region. For instance, the High Educational Institutions who tailored specific programs for teaching how to brew beers. This is the case of both San Diego State University and University California of San Diego which deliver courses fully recognized at academic-wise and professional-wise. Additionally, there is a significant pursue towards innovation in that industry. This is the case of the frontrunner R&D center, the White Labs which brew yeast for all the breweries in San Diego. Aside from that, the most remunerative industry related to the craft

brewery is the tourism sector. Several tour operator offer service for touring breweries. In fact, this sort of tourism services consolidate San Diego as the 8th city for number of tourists in the United States. Additionally, many events regarding the beers happen in San Diego bringing more emphasis on the role of the breweries as tourist attractions. Hereby we list the principal events with the estimated attendance:

Table 6: Events in San Diego. Source: NUISPR - San Diego Craft Brewery Economic Impact, 2016 (Table. 3 in Annex 1a - Francesco Cappellano, Alfonso Spisto)

EVENT	DATE	EST. ATTENDANCE
SAN DIEGO WINTER BREW FEST	Early Feb	2000
EPICE BEER FESTIVAL	Mid-March	2000
CITYBEAT FESTIVAL OF BEERS	Late April	2000
BEERFEST AT PETCO PARK	Early May	270548
SAN DIEGO INTERNATIONAL BEER FESTIVAL	Late June	9700
SAN DIEGO BREW FEST	Early July	2500
STONE BREWERY ANNIVERSARY CELEBRATION & INVITATION BEER FESTIVAL	Mid-August	
BEERFEST AT PETCO PARK	Early September	254039
SAN DIEGO FESTIVAL OF BEER	Early September	5000
SAN DIEGO BEER WEEK	Early November	20000

At urban planning perspective, a study focused on the role of craft beers in the urban fabric. In particular, it analyzed the relation among craft beers and the gentrification. The results show there was a relation when "comparing the chronological and geographical spread of both craft beer consumption and gentrification in San Diego" (Lenhoff, 2016). However, it is undeniable, some biases could undermine the causality relationship since the neighbourhoods were interested by other programs, namely Main Street, which were probably the driving forces of the land price increase.

Conclusions

The concept of milieu provides an essential approach in understanding the territorial dimension of economic development. The collaborative environment and the material and immaterial relationships it establishes with the places is located creates a place/industry identity which emerges as the most prominent feature characterizing the milieu itself. Furthermore,

depending on the level of openness to the outside world, the milieu can lead to innovation through mutual learning processes and tacit knowledge among those part of it. Our research within the MAPS-LED project led us to consider the craft beer industry as the most suitable case study for the continuing of the WP3 “Social innovation and territorial milieu”. In the interviews, study on desk and fieldworks during our staying in San Diego, clearly emerges that identity and collaboration are the main features characterizing the American craft breweries. Besides the high quality and innovative products, the shared behaviour towards collaboration and the promotion of the local dimension make the San Diego craft breweries the idle case study in order to understand in depth the social innovation practices and spatial consequences of innovative milieus.

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Part II

San Diego Local Clusters Territorial Analysis

Clusters In Designing S3-Oriented Policies

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During the last decades, the concepts of competitiveness and innovation, at the regional level, gained a growing consideration becoming key topics of both academic and political debates. The urge to enhance regional economic performances, through the creation of appropriate context-conditions, is perceived as a priority, which would enable territories to tackle the challenges posed by globalisation (Farrell et al., 1999; Doloreux and Parto, 2005; Foray et al., 2009; Camagni and Capello, 2013). Given these emerging needs, the role of regional clusters has become progressively more significant (Porter, 2000, 2003; Martin and Sunley, 2003) and recently it has been coupled with the policy concept of Smart Specialization Strategy (S3). The latter is a relatively new academic idea, which has enjoyed a fast success towards suddenly turning into a crucial element of the EU 2020 innovation plan (Dominque Foray, David, and Hall, 2011). S3 brings into prominence an innovative territorial development policy framework, which enhances the place-based approach. S3 policies are mainly advocated in EU regions. The attention is pushed on whether the core toolkit provided by the experience with clusters and cluster policies could potentially guide the challenging design and implementation of S3. As much research confirms, while Cluster policy and S3 are not completely corresponding, it is still reasonable identifying many synergies between the two policy constructs (Foray, David, and Hall, 2011; Foray et al., 2012; Aranguren and Wilson, 2013; Castillo, Paton and Saez, 2013; Ketels et al., 2013). Notwithstanding the valuable contribution of many scholars on the subject of Cluster and S3, the academic debate still falls somewhat short of addressing some issues. In particular, various scholars observed that one of the S3's policy principles, the so-called Entrepreneurial Discovery Process (EDP), is affected by significant implementation gaps (Hermosa and Elorduy, 2015; Rodríguez-Pose and Wilkie, 2015; Gheorghiu, Andreescu, and Curaj, 2015; Capello and Kroll, 2016). The emerging issue, mentioned above, calls attention to the need to disclose new perspectives on the relationship between Cluster and S3. This work aims at exploring new perspectives on the role of clusters in S3 design and implementation, with a focus on EDP. The theoretical constructs, presented in the following sections, are meant to provide policymakers with valuable insights to adequately tackle EDPrelated challenges. The authors believe that S3 and, particularly, EDP implementation could highly benefit clusters' stage-specific and spatial analysis. Considering the research purpose, the article structure is the following. The second section reflects on the concept of S3, its relation with clusters and the emerging EDP gap. The third section investigates the potential role of the clusters life cycle (CLC) and spatial analysis in the way of EDP. The fourth section presents the conclusions.

A Background On S3 And Clusters: Concepts And Challenges

The discussion on S3 has originated from the work of the Knowledge for growth experts group, which highlighted the need for re-thinking EU regional development policies to bridge the so-called transatlantic gap. Accordingly, the academic concept of S3 defines an innovative, place-based development policy framework. S3 primary objectives pertain to (i) production of smart, sustainable and inclusive growth, (ii) promotion of research potential, and (iii) maximisation of

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the usage of innovations (Foray et al., 2009, 2012; Foray and Goenega, 2013). This strategy also emphasises the urge to prioritise policy initiatives by operating with a vertical logic and defining methods to "identify (…) desirable areas for (…) intervention"(Foray and Goenega, 2013: p.1). Since its birth, the concept of S3 has had an extraordinary career and rapidly became a crucial element of the EU 2020 innovation plan. However, translating such academic idea in practice is not a trivial matter and poses many implementation barriers. In the way of facilitating the operationalization of S3, the EU Commission has produced a sort of implementation handbook, entitled "Guide to Research and Innovation Strategies for Smart Specialization (RIS3)" (Foray et al., 2012). This guide sets a quite demarcated implementation framework, including six steps (Foray et al., 2012): (i) analysis of the national/regional context and the potential for innovation, (ii) set-up of a sound and inclusive governance structure, (iii) production of a shared vision for the future of the country/region, (iv) selection of a limited number of priorities for national/regional development, (v) establishment of suitable policy mixes, and (vi) integration of monitoring and evaluation mechanisms (Foray et al., 2012). Besides the implementation steps mentioned above, the work of Foray et al. (2012) also offers an important reflection on the relationship between clusters and S3. Clusters are intended by the authors as a valuable source of knowledge, which has to be cautiously deployed in the way of S3. EU Regions' experience with clusters and cluster policies is seen as an essential "building block" to implementing S3 policies. The importance of clusters' contribution to S3, is particularly acknowledged for: (i) identifying regional competencies and assets, (ii) meeting the objectives of S3, and (iii) reinforcing local and international cooperation (Foray et al., 2012). Comparable arguments are later recalled in the EU Commission's report on "The role of clusters in Smart Specialisation Strategy" authored by Ketels et al. (2013), which defines similarities and differences between clusters and S3. This report claims that, while both clusters and S3 focus specifically on productivity and innovation as drivers of competitiveness and aim to foster regional embeddedness, there are still many differences in emphasis between the two policy constructs. Clusters, it is said, focus more on: (i) the critical mass of economic activities, ii) the performance of a set of linked companies (iii) the external effects through shared infrastructure and input markets, and (iv) the groups of companies operating in related industries (Ketels et al.; 2013). Instead, S3 refers to (i) the exploration of emerging market opportunities, (ii) the facilitation of knowledge spillovers between knowledge domains, (iii) the exploitation of related variety, and (iv) the generation of structural changes in regional economies (Ketels et al.; 2013). After comparing clusters and S3, the report of Ketels et al. (2013) streamlines clusters' potential support to S3 implementation, through a six-leveragepoint framework. The latter includes : (i) prioritization process (ii), design of integrated policy mixes, (iii) evidence-based policy-making, (iv) multi-level governance, (v) crossborder dimension, and (vi) stakeholders engagement (Ketels et al., 2013: p.5). Finally, the report on "The role of clusters in Smart Specialisation Strategy" provides some early suggestions on the need to take into consideration the level of clusters development as an element potentially supportive to S3 implementation. On a similar line of thoughts, Araguren and Wilson (2013) observed correspondences and distinctions between Cluster and S3. The latter authors report three key differences between the two policy constructs, namely (i) scale, (ii) focus and (iii) tools. Araguren and Wilson noticed that cluster policies usually aim at supporting cooperation among distinct groups of agents, focusing on the enhancement of competitiveness at the cluster level by employing relatively narrow tools. Instead, S3 has a broader scope than cluster policies and aim at fostering processes of economic prioritization which will eventually lead regions towards economic restructuring. However, Araguren and Wilson (2013) still affirm that there are potential synergies between clusters and S3. Indeed, the two scholars observed that both the policy constructs have a place-specific feature, seek to promote cooperation among actors that develop complementary economic activities and aim to support the existent and building new competitive advantages. In conclusion, Aranguren and Wilson (2013) actualize the study about clusters and S3 on the case

of the Basque country. In contrast whit the studies mentioned above, an on-field analysis conducted by Perło (2015), in the Polish regions, reveals that "the development of clusters with smart specialisations (…) proves that it is difficult to detect a practical correlation between these concepts" (Perło, 2015: p.107). Despite the extensive literature on the subject, the operationalization of S3 remains arduous. The difficulties are due both to the experimental nature of the concept, and the complexity of the policy construct itself. The most severe challenges seem to concern the EDP, which is discussed in the next subsection.

EDP: process and gaps

EDP is undoubtedly the peculiar element of S3 policies. According to Foray's perspective, EDP is the key engine enabling the success of S3 by disclosing regions' hidden potential to specialise (Foray et al., 2009, 2012; Foray and Goenega, 2013; Bevilacqua et al., 2015). Foray stresses that the key EDP inputs are "framework conditions for innovation", "relational density", and "diversity of economic actors" (Foray, 2015: p.61). These inputs should drive EDP towards the (i) integration of entrepreneurial and economic knowledge, (ii) engagement of stakeholders, and (iii) exploration of new economic domains at the regional level. Tersely, EDP is meant to territorially detect economic priorities, by engaging a broad group of local stakeholders (entrepreneurial agents, policy makers and the remainder of the society), to enlarge the local knowledge-base and produce relevant information to S3. Given these considerations, it has to be observed that EDP requires a bottom-up approach, which implies a paradigmatic shift in the traditional conception of "administration and politics [as] omniscient planners" (Foray, 2015: p.3). Accordingly, the significance of administrators' role is downscaled, while the position of other local actors (particularly, entrepreneurial agents) is enhanced. Because of its very nature, EDP is as much essential as challenging to S3. Foray first, observed that the identification of entrepreneurial discoveries "[is] not [an] easy empirical investigation" (Foray, 2015: p.61). Since then, various academics noted the difficulties associated with EDP implementation. Recently, Capello and Kroll (2016) extensively discussed the barriers limiting S3 implementation. The same academics highlighted that, among other factors, "the lack of concrete elaboration of the entrepreneurial discovery process (…) c[o]me[s] to play a hindering factor"(Capello and Kroll, 2016: p.6). Gheorghiu, Andreescu, and Curaj (2015) offer a similar finding, by lamenting the lack of a "functional blueprint for the entrepreneurial discovery process" (p.2). The pieces of evidence, mentioned above, call for consideration from both scholars and practitioners to tackle such EDP-related issues. It reasonable to affirm that disclosing new perspective on the relationship between clusters and S3, could potentially contribute towards resolving EDP implementation gaps.

Exploring New Perspectives: Clusters' Life Cycle And Spatial Analysis

The processes of policy design and implementation are rarely concerned with the different phases of the clusters life cycle. However, considering that clusters dynamics and spatial configurations change over time, it is expectable "that different policy measures vary in their effectiveness over the clusters life cycle" (Brenner and Schlump, 2011: p.1364). The latter idea seems to apply, to some extent, also to S3. Consistently, it is reasonable to suppose that some clusters' stage-specific attributes (in term of innovative dynamism, cooperation among firms, diversity of knowledge and actors, and spatial significance) can be considered, much then others, suitable to support the operationalization of S3, and in particular of EDP. This theoretical argument, which is the core of the present study, is tested through the methodological approach that follows. Firstly, the study of the literature on the CLC allows the authors to understand which are the leading indicators accounting for the evolution of clusters. Secondly, the indicators drawn from the literature study, are used to build a theoretical model, and a qualitative judgment is assigned by the authors to each indicator at every stage of the CLC.

Thirdly, the discussion on the model logically compares stage specific features (in term of innovative dynamism, cooperation among firms, diversity of knowledge and actors, and spatial significance) of clusters with key inputs and characteristics (according to Foray) of EDP, in order to test if and which stage of the CLC display a potential towards inputting EDP.

Literature study

While the academic literature has plenty of studies dissecting the functioning of clusters, there are still relatively few pieces of work adequately explaining the dynamics of clusters evolution. Various academics claim that clusters evolve through a precise life cycle consisting of different stages. However, such stages are not univocally identified yet. The literature indeed, offers different models, which treat clusters' evolution according to threestage- (Bianchi, Miller and Bertini, 1997; Mario A Maggioni, 2004; Maskell and Kebir, 2006), four-stage- (Press, 2006; Bergman, 2008; Menzel and Fornahl, 2009; Handayani et al., 2012) or even five-stage-based frameworks (Andersson et al., 2004; Brenner and Schlump, 2011). This article describes the CLC, according to a three-stage taxonomy, including the phases of (i) emergence, (ii) development and (iii) maturity of clusters. This study does not consider the stage after maturity as it is not precisely predictable whether clusters are going to transform or decline after reaching the mature stage. Emergence. This stage is usually triggered by an exogenous economic shock, caused by the introduction of a process- or product- innovation (Mario A. Maggioni, 2004). The exogenous shock induces the take-off of the clustering process and consequently drives a limited number of small companies to agglomerate in certain geographical areas (Bianchi, Miller, and Bertini, 1997; Andersson et al., 2004; Maggioni, 2004; Menzel and Fornahl, 2009). Such early agglomeration phenomenon presents a scattered spatial configuration and lacks consistency because the locational benefits are not evident yet (Mario A Maggioni, 2004). However, the more the innovation, which sparked the clustering process, spreads out, the more firms enter the cluster being encouraged by involuntary knowledge spillover. Indeed, the flow of knowledge and information at this stage is mainly involuntary and informal as it does rely nor on structured networks neither on consolidated partnerships. Despite the lack of sharpened inter-firm organisational forms, nonetheless, a stock of heterogeneous knowledge circulates among insider businesses. At this stage, it is reasonable to identify four key factors potentially leading the new-born cluster to success, namely: (i) number of start-ups and imitative businesses entering the market (Brenner and Schlump, 2011; Suire and Vicente, 2014); (ii) heterogeneity of accessible knowledge which “facilitates continuous adjustment to changing external circumstances”(Shin and Hassink, 2011: p.1390); (iii) local political/institutional context, in terms of policy environment and the presence of high quality Public Institutions, Universities and research centres (Menzel and Fornahl, 2009); (iv) local industrial context, in terms of the presence of related industries (Porter, 1998). The two former factors function actively to support clusters development. Instead the two latter play a background role (Brenner and Schlump, 2011). This explorative stage of the CLC is also characterised by significant Venture Capital (VC) and Research and Development (R&D) investments. To summarise, the emergence is a very early, upstream and explorative phase of the CLC and it is featured by a marked tendency of firms towards innovativeness. The role of start-ups, as well as the values of creativity, and willingness to risk added by entrepreneurs, are crucial to further the prosperity of clusters. The benefits deriving from network activities and knowledge spillovers are somehow available, and the stock of accessible knowledge is highly heterogeneous. Development. In this stage clusters expand through both a substantial proliferation of the companies entering the market and a significant increase in employment. The locational benefits become incredibly high towards fostering up the spatial agglomeration phenomenon. Accordingly, the profitability of insider businesses rises, reaching its peak. In this phase, the agglomeration economies, theorised by Marshall, are the key engine enabling the endogenous growth of the cluster (Mario A Maggioni, 2004). Consequently, many positive externalities take place, including (i) specialised labour pooling; (ii) interactions among stakeholder, and (iii) knowledge spillovers. In addition to

the Marshallian externalities, another factor contributing to the cluster prosperity is the medium/high level of heterogeneity of available knowledge within the clusters' environment (Shin and Hassink, 2011). Tersely, the success of clusters at this stage seems boldly rooted in regional self-reinforcing processes (such as networking activities, interactions, and cooperation) occurring among local firms and institutions. The number of Start-ups and entrepreneurs is still relevant but no longer crucial. The R&D and VC investments remain significant as well as the level of heterogeneity of accessible knowledge. Maturity. In this stage clusters reach a stable configuration, towards focusing on specific business segments, consolidating networks' structure and acquiring cooperative routines (Menzel and Fornahl, 2009; Brenner and Schlump, 2011). This state of quasi-equilibrium of clusters is featured by a severe decrease in frequency and number of entries, which in turn makes the clusters' growth rate dropping down. At this point, while locational benefits and self-reinforcing effects are still somehow accessible, they tend inevitably to attenuate and slowly dissolve (Mario A. Maggioni, 2004; Brenner and Schlump, 2011). Moreover, clusters at this stage are usually featured by a tendency towards high specialisation (if not overspecialisation), which narrows the variety of economic activities as well as the heterogeneity of available knowledge (Shin and Hassink, 2011). To sum up, in the maturity clusters reach the maximum size, have a well-shaped network structure, and a precisely-defined core business. In this context, the entry of Start-ups in the clusters becomes irrelevant, R&D and VC investments decrease, and the knowledge accessible becomes homogeneous. In conclusion this literature study provides a description of clusters stage-specific attributes, allowing the authors at deducing that clusters evolution can be explained, to some extent, by variations in the following indicators: R&D investment; VC investment, new firms (start-ups) birth rate (Bergman, 2008; Brenner and Schlump, 2011); intensity of network activities (Brenner and Schlump, 2011); heterogeneity of available knowledge (Menzel and Fornahl, 2009; Shin and Hassink, 2011); specialization and agglomeration (Maggioni, 2002; Maggioni, 2004). These elements will be deployed to outline a theoretical model which is ultimately meant to present the potential of CLC and spatial analysis in inputting EDP.

Theoretical model

Outlining such a theoretical model presents some difficulties. Firstly, because the lack of established conventions on indicators for the study of clusters makes the selection of the variables a relatively arbitrary process. Secondly, because nor clusters neither the CLC can be satisfyingly explicated through a single model. Given these premises, while the model cannot fully explain the CLC and the related spatial dynamics, it can still adequately present the potential of CLC and spatial analysis in inputting EDP. Accordingly, the model is designed as follows: (i) a set of indicators is selected by drawing insights from the literature study (see subsection 3.1). This set includes: R&D investment, VC investment, new firms birth rate as indicators of clusters dynamism (Bergman, 2008; Brenner and Schlump, 2011), intensity of network activities as indicator of cooperation (Brenner and Schlump, 2011), heterogeneity of available knowledge (Menzel and Fornahl, 2009; Shin and Hassink, 2011) specialization and agglomeration as indicator of spatial significance (Maggioni, 2002; Mario A Maggioni, 2004); (ii) the strength of each indicator at each stage of the CLC is qualitatively scored. The scores are assigned by the authors on the base of the insights drawn from the literature. For the scoring, the authors used a scale based on five degrees of intensity: low, medium/low, medium, medium/high and high. Tersely, the model both systematises clusters' stage-specific and spatial attributes, and opens to a discussion.

Table 7: Strength of the indicators by CLC stage (Table 1 in Bevilacqua C., Pronestì G., Clusters In Designing S3-Oriented Policies, 13th International Postgraduate Research Conference 2017 Conference Proceedings 14-15 September 2017, Manchester, Uk. ISBN 978-1-912337-05-7)

	DYNAMISM			COOPERATION	VARIETY	SPATIAL SIGNIFICANCE	
	R&D investment	VC investment	Start-ups birth rate	Intensity of network activities	Heterogeneity of available knowledge	Specialization	Agglomeration
Emergence	high	high	high	medium	high	low	low
Development	medium/high	medium/high	medium/high	medium/high	medium/high	medium	medium/high
Maturity	low	low	low	medium/high	low	high	high

Discussion on the model

The model presented in Table 1 opens to a discussion: firstly, provides an interpretation of the indicators and their variation in strength over the CLC stages, and secondly, highlights the relevance of clusters stage-specific and spatial features relatively to EDP's key inputs and characteristics (according to Foray). The finding emerging from the discussion are summarised in Table 2.

Table 8: Findings (Table 2 in Bevilacqua C., Pronestì G., Clusters In Designing S3-Oriented Policies, 13th International Postgraduate Research Conference 2017 Conference Proceedings 14-15 September 2017, Manchester, Uk. ISBN 978-1-912337-05-7)

	DYNAMISM			COOPERATION	VARIETY	SPATIAL SIGNIFICANCE		COMPARISON TO EDP
	R&D investment	VC investment	Start-ups birth rate	Intensity of network activities	Heterogeneity of available knowledge	Specialization	Agglomeration	Potential input to EDP
Emergence	high	high	high	medium	high	low	low	high
Development	medium/high	medium/high	medium/high	medium/high	medium/high	medium	medium/high	high
Maturity	low	low	low	medium/high	low	high	high	low

R&D investments target a broad range of creative activities, including "basic research, applied research, and experimental development" (OECD, 2013: p.1). These activities aim at expanding "the stock of knowledge (…) and the use of this knowledge to devise new applications" (OECD, 2013: p.1). According to the literature R&D investment is considered as a reliable indicator of clusters innovativeness (Davis et al., 2006), and as a determinant of entrepreneurship (OECD, 2013, 2016). Tersely, R&D catalyses the generation and diffusion of new knowledge, towards creating a vibrant entrepreneurial environment and supporting inventions. The benefits of R&D spread over regions by availing entire groups of firms. However, it has been found that R&D

seems to play a particularly prominent role “during the early life course of (…) firms” (Stam and Wennberg, 2009: p.79). Furthermore, new-born firms (such as start-ups) tend to use the innovative inputs (investment on R&D) more efficiently than the old ones. Consequently, clusters featured by a high number of start-ups, attract and call for R&D investment, which in turn generate remarkable innovative outputs. Given these considerations, it seems logically more convenience to operate R&D investments during the initial phases of the CLC, namely emergence and development. These two initial stages appear to be more suitable for entrepreneurial discoveries, because of a high start-ups' birth rate (which will be discussed in the next paragraph) within a flourishing innovative environment. Conversely, clusters in their maturity rely on aged firms, which operate according to consolidated, if not stagnating, industrial practices. Henceforth, envisioning that EDP is meant to “(...) logically identify (…) the domains where new R&D and innovation projects will (…) create future domestic capability” (Dominque Foray, David and Hall, 2011:p.4), it is reasonable to conclude that emergent and developing clusters offer optimal context conditions for EDP implementation. The same conclusion is also valid when taking in consideration Venture Capital (VC) investments. VC investments refer to “a form of equity financing particularly important for young companies with innovation and growth potential but untested business models and no track record”(OECD, 2016: p.142). This funding system is seen both as a marker of clusters innovative potential, as well as an essential factor nourishing clusters’ entrepreneurial environment (Breschi and Malerba, 2005). Indeed, VC is especially advocated in, and attracted by, highly pioneering territorial contexts (Bevilacqua, Pizzimenti and Maione, 2017). Such setting coincides with those of emerging and developing clusters. Therefore, VC investments, by focusing especially on the explorative stages of the CLC (Bergman, 2008), trigger potential innovations which could be intercepted in the way of EDP. Both the indicators discussed so far, R&D and VC investments, are tightly related to the presence of entrepreneurs and new businesses within the clusters’ environment. Specifically, the incidence of start-ups birth rate, within clusters’ environment, seems to be particularly relevant. Start-ups include all newly born firms that are up to two years old (OECD, 2016). Such “young” and usually small-sized businesses, because of their very explorative, and potentially innovative nature, are crucial endogenous drivers of territorial development. Indeed, start-ups birth rate is an important indicator signalling both the dynamism of clusters (Davis et al., 2006) and the overall goodness of the entrepreneurial environment (OECD, 2016). High values of the indicator start-ups birth rate also mean that entrepreneurial actors (the holders of entrepreneurial knowledge) are particularly active. To sum up, there is a positive correlation at the territorial level between high values of the indicator start-ups birth rate (which usually attributes emerging and developing clusters), high density of entrepreneurs and high availability of entrepreneurial knowledge. Given that EDP has a “(…)special focus on the regional entrepreneurial environment, assessing whether it is lively and can generate a significant flow of experiments, innovation ideas (…)” (Foray et al., 2012: p.20), it is reasonable to deduce that emerging and developing clusters could provide valuable inputs in the way of entrepreneurial discoveries. As already stressed, high values of the indicator start-ups birth rate are a marked feature of clusters' emergence and development stage. Instead, the entry of start-ups, and their importance in the functioning of the cluster, drastically decreases during maturity. This theoretical evidence suggests that EDP can be effectively supported by the bold entrepreneurial, innovation-oriented, cross-sectoral environment manifested at the two initial stages of clusters' evolution. Networks activities embrace the broad range of actions aiming at generating or nourishing "organisational forms] of economic activities that may allow firms to cope with market failures (…).” (OECD, 2004: p.20). The intensity of network activities provides a measure of knowledge exchange and firms connectedness, within certain geographic boundaries (which are mutable and permeable). Empirical studies demonstrate that increases in network activities are positively correlated with the rise of firms' innovativeness (OECD, 2001). However, the same studies also prove that the willingness to engage in knowledge-based

networks has a negative correlation with firms' size. These two latter pieces of evidence, suggest that network activities are more intense in the presence of new-born, small-sized firms (such as start-ups). The latter (usually concentrating in emergent or developing clusters) orientate towards more flexible, sometimes informal, network forms. On the contrary, big firms (usually concentrating in mature clusters) rely on routine-based, formally-regulated networks. These differences in the structure and willingness to engage in networks make small firms' more innovative, more adaptable and less sector-specific than big ones. The features of networks are also tightly tied to Marshallian spillovers. In a life cycle perspective, one should consider that networks and the related knowledge spillover evolve over the different stages of the CLC. As previously highlighted (see subsection 3.1), networks are mostly informal, and spillovers often happen involuntarily during clusters' emergence. This is due both to the scattered configuration of the spatial agglomeration of firms and to the explorative nature of the businesses entering the market (mainly start-ups). When clusters move on to the development stage, networks get gradually more structured and spillovers more formal. This condition evolves further on during the maturity stage. At this point clusters are composed mainly of big firms, there is no start-ups entry, and consequently, networks become rigid and spillovers significantly decrease. Given these considerations, it is reasonable to affirm that EDP should focus on emergent and eventually developing clusters, which are featured by the “relational density” postulated by Foray. Indeed, the significant density of start-ups and entrepreneurs, the marked attitude of firms towards innovative activities and knowledge sharing, make emergent and developing clusters an exceptional source of various entrepreneurial and economic knowledge. The heterogeneity of knowledge (Shin and Hassink, 2011), indicates the variety of the available knowledge-stock inside clusters. Considering that knowledge is detained by entrepreneurial actors, the variety of accessible knowledge seems also indicating, to some extent, the assortment of entrepreneurial actors. The more such assortment is diversified, the more clusters manifest a marked attitude towards adjusting to changing conditions. It has been said (see subsection 3.1) that the heterogeneity of knowledge and actors evolve over the CLC. Specifically, while the initial phases of the CLC are featured by high and medium heterogeneity of accessible knowledge, during maturity, this variety tends to attenuate toward homogenization. This shift from heterogeneous to homogeneous knowledge is due both to a decrease in the number of diverse entrepreneurial actors entering the clusters and to an increase in specialisation. Considering that EDP calls for a diversity of economic actors and knowledge, the best match in the way of EDP operationalization seems to be manifested by the features of emerging and developing clusters. Specialisation is expressed through a location quotient. The latter defines the share of regional employment in a sector, relative to the national context. This indicator is widely endorsed in literature as a marker of spatial concentration of industries (Mayer, 2003; Mario A Maggioni, 2004; Maggioni and Riggi, 2008). The discourse on specialisation presents a split-screen view. On the one hand, low specialization: (i) prevents clustered firms from exploiting the full potential of competitive advantages and (ii) allows clustered firms to benefit a vibrant, cross-sectoral and diversified entrepreneurial environment (typical attribute of emergent and developing clusters). On the other hand, high specialisation leads clustered firms to exploit competitive advantages fully, while eventually leading to stagnation and lock-in (a common attribute of mature clusters). Tersely, high specialisation can lead towards flattening clusters' economic vibrancy and innovativeness as well as losing the positive effects of the variety externalities theorised by Jacob. Once again, the best fitting ecosystem for EDP is expectedly the one provided by emergent and developing clusters. Indeed, considering that EDP pertains to the detection of potential domains for future regional specialisation, targeting already specialised clusters would mean pointing out traditional industrial sectors instead of S3-type domains. Another indicator accounting for the spatial configuration of clusters is the agglomeration. The latter indicates the number of firms concentrating in some geographical regions (Mario A Maggioni, 2004). This

indicator's value increases as clusters get holder, till reaching its peak during the maturity stage. At this point, the mass of economic activities located in a specific geographic area reaches its maximum. As a consequence, the attractiveness of such areas starts decreasing due to a scarce availability of locational benefits (Mario A Maggioni, 2004). Conversely, in cases when spatial agglomeration presents a configuration not saturated yet, businesses from outside are encouraged to locate inside clusters because of potentially high locational benefits. These considerations reveal that the locational attractiveness should be found in clusters that have not reached the spatial agglomeration peak yet, namely: emerging and developing clusters. In conclusion, this discussion theoretically confirmed that the CLC and spatial analysis have a potential to impact EDP operationalization. In detail, the authors find that emergent and developing clusters can provide a number of significant inputs towards implementing EDP: (i) the significant strength (medium and high) of dynamism and innovativeness (in terms of R&D and VC investment, and start-ups' birth rate) signal high quality framework conditions for innovation; (ii) the medium and high strength in intensity of network activities indicates a significant relational density among clusters insiders and a tendency towards innovative, cross-sectoral cooperation; (iii) the medium and high heterogeneity of available knowledge, which also indicate the variety in the assortment of economic actors, enables the opportunity to enlarge the regional knowledge-base, gathering economic and entrepreneurial knowledge; finally, (iv) the low/medium levels of firms' agglomeration and specialization suggest the existence of a territorially localized economic potential, which has not been fully exploited yet.

CONCLUSION

This article presented a theoretical discussion on the role of clusters and cluster policies to support S3 and specifically EDP implementation. Although a significant body of scientific literature confirms that EU experience with clusters and cluster policies is a crucial element towards supporting the implementation of S3, nonetheless many operational gaps keep standing out. One of the most problematic factors pertains to the operationalization of the EDP. Consistently the authors intended to test whether the CLC and spatial analysis could eventually guide the discovery of regional economic potentials. This problem is approached theoretically and discussed on the base of literature evidence. Firstly, the concept of S3, its relation to clusters and the emerging EDP gap is presented. Secondly, the potentials of clusters' life cycle and spatial analysis is tested by: (i) deducing from a literature study a set of indicators accounting for clusters stage-specific and spatial attributes. (ii) framing the indicators into a model and providing a qualitative judgment of their strength at each stage of the CLC, finally (iii) interpreting the model to test if and which stages of the CLC display a potential towards inputting EDP. The authors conclude that the EDP implementation could significantly benefit the framework conditions for innovation, relational density, and diversity of knowledge and actors provided by some specific stages of the CLC. Moreover, the identification of the variations in the spatial configuration of clusters, during different phases of the CLC, can offer valuable information about the existence of a territorially localised economic potential. Particularly, the authors find that, according to the logical comparison of clusters' stage-specific attributes and EDP's key inputs and features, it is reasonable to target emerging and developing clusters as a suitable breeding ground towards favouring EDP implementation. These findings call for consideration of policy-makers, to reflect more consciously both on clusters' evolution and spatial configuration, to overcome EDP implementation issues, and consequently get to a fully effective implementation of S3.

The Contribution of a "Spatialization-based" approach to plan Smart Specialisation Strategies (S3): The case of local clusters in San Diego (CA). Methodological note

Giada Anversa[9]

Project Summary and Theoretical Underpinnings

Smart Specialization (RIS3) is a novel policy rationale, designed and endorsed by the EU as a means to promote a more efficient and effective use of public spending in research and innovation throughout European State members (Foray, 2009; 2011; 2014; MAPS-LED, 2015). Accordingly, the main goal of RIS3 strategies is to encourage a more inclusive and sustainable economic development process and governance across EU regions, underpinning the principle of place-based innovation (EC, 2014). The approach entails an integration of industrial, educational and knowledge- awareness that the territorial dimension - and embedded institutional, political, social and environmental structures – is relevant to the nature and outreach of regional diversification (McCann, & Goddard, 2016), hence substantially having affecting the geography of innovation (Camagni, & Capello, 2013). As argued by McCann, & Goddard (2016), the capacity held by territories to intervene in the so called 'entrepreneurial discovery process' (EDP) widely varies across European regional settings. Given the lack of understanding of the impact of the intensive policies to suggest that European regions should identify and focus public investments on each region's relative strengths or comparative advantages (specialization) and emerging priority areas or domains of specializations upon which regionally-embedded entrepreneurship could build on (diversification), hence overtime boosting diversified specialization (EC, 2014; MAPS-LED, 2014; McCann, & Ortega-Argiles, 2013; OECD, 2013; Foray, 2010). However, Smart Specialization is acknowledged as a non-spatial policy concept, whose implementation still entails several challenges for regional policy practice, in turn potentially affecting the scale of benefits captured by local communities. There is increasing territorial dimension on the effectiveness of S3, more evidence is needed to substantiate the fore-mentioned claim as a means to translate an ongoing policy concept into a feasible and successful strategy to spur growth across European regions. In light of the present gap in knowledge, the joint Exchange programme - based on a research project integrated with a higher education agenda (URED, International Doctoral Program) - explores the geographical and territorial foundations of Smart Specialization Strategies in Europe (MAPS-LED). Characterized by a strongly exploratory approach, the study is designed to build and test a novel, multidisciplinary (and mixed methods approach) methodology aiming at investigate how Smart Specialization Strategies (S3) can be appropriately translated into a practical, regionally-oriented development policy (MAPS-LED, 2017). By embodying the principles of the place-based approach (Barca, 2009), the main aims of the study might be summarized as follows:1) to identify and examineS3 in terms of spatial, social and environmental factors; 2) to take into account local needs and opportunities driving regional policy interventions not only as a means to emphasize 'Key Enabling Technologies', but further to stimulate 'local innovations' processes (i.e. tacit knowledge, embedded social networks, innovative milieu) (MAPS-LED, 2017). In addition, a significant body of work has widely investigated (Foray, 2013; 2012; 2009; Ketels et Al, 2013; Aranguren, & Wilson, 2013) the nexus between cluster policy and Smart Specialization Strategies (S3) policy, ergo recognizing the beneficial contribution of clusters10 and cluster policy to support policy makers in defining S3 regional innovation strategy both in terms of

[9] ESR Research Activities Report. Annex 1b

[10] Clusters are acknowldgeded as "agglomerations of closely related industries by knowledge, skills, inputs, demand and/or other linkages" (Delgado, Porter, & Stern, 2016; 2010).

design and practice. Typically underpinning the concept of concentration and relatedness as well as high specialization, employment and patenting (innovation) level (Delgado, Porter, & Stern, 2016), for the purpose of the present contribution clusters might be defined as an economic artifact used to measure the degree of a region economic success. Nonetheless, as observed by Feldman and Francis (2001), clusters provide only an look on the intensity of development achieved in a given regional system at the time (ex-post), providing no information on the ex-ante circumstances that stimulated entrepreneurship in turn eventually evolving in clustering activities. According to Foray (2014), alike cluster policy, S3 emphasizes the principles of local concentration of resources and the provision of complementary capabilities to enhance local systems of innovation. Both cluster policies and Smart Specialization Strategies are policy approaches with a place-based dimension, aiming at exploiting advantages of proximity to promote economic growth and competitiveness. On the other hand, unlike cluster policy, S3 focuses on the early efforts, the opening of a novel domain or the emergence of a novel activity which certainly anticipates clustering phenomena. With European Regions currently committed to design and implement their Smart Specialization Strategy tailored on their regional capacity, the question on whether and how clusters and cluster policies can be harnessed in this endeavor is highly relevant to public policy. The lessons learned from the long history of cluster policies can provide concrete inputs into the development of Smart Specialization Strategies (Ketels et Al, 2013; Aranguren, & Wilson, 2013). Given the relevance of clusters and cluster policy within the framework of S3 strategies (EC, 2013), the MAPS-LED place-based approach underpins the role of Clusters and Cluster policy as a fundamental pillar within its methodological framework. However, since clusters account for the composition of a regional economic system, putting a spot light on the high specialization pattern of a given regional setting, gaining knowledge on clusters formation could potentially contribute to stimulate the Entrepreneurial Discovery Process (EC, 2013). In light of the fore-mentioned set of assumptions, the economic geography and morphology of Clusters– in the matter in question 'Traded Cluster' -has been the subject of a previous investigation conducted by the MAPS-LED team in the context of Boston and Cambridge, Massachusetts. Bringing insights from existing successful Clusters in the context of the U.S., the main aim of the study was to highlight and analyze the nexus of cluster-oriented, innovation-intensive policies and spatial planning policies, in other words the implications of cluster policy for the physical transformation of urban systems (MAPS-LED, 2017). Evidences from earlier research activities indicates how a 'spatialization-based' methodology of the U.S. high specialization pattern could meaningfully contribute to recognize and evaluate emerging and potential of Smart Specialization Strategies (S3) by translating them into spatially-oriented development policies (MAPS-LED, 2017).

A Context-Based Research Analysis: The case of Local Industries, San Diego County (CA)

The present study investigates the case of local industries in the San Diego county, California. Drawing insights on previous research activities carried out by the MAPS-LED team on Traded industries, the final aim is to define the economic geography of selected Local clusters representative of the regional high specialization pattern.

In order to justify the focus of the research on local industries, it is meaningful to introduce the reader to the deep dissimilarities between Local and traded clusters. Based on Delgado, Porter, & Stern (2016), the composition of the US economy is exemplified by two categories of industries: traded and local economic activities. By definition, 'Traded industries' are activities predominantly intended to produce goods and services for the global market (also indicated as export-oriented economic activities, i.e. Aerospace and Defense Cluster), hence typically established in few regions holding a peculiar competitive advantage and benefiting from geographical concentration. Conversely, 'Local industries' (or import-based) are those that primarily serve local markets (i.e. local households goods & services) whose employment is evenly distributed across regions in proportion to regional population and for whom

concentration (density of establishments in a given local system) is not a necessary requirement, since their occurrence is generalized to (nearly) every geography, region or economy (as opposed to traded industries which are located in few regional settings holding a greater competitive advantage). While export-based industries are regarded as driving regional growth (Delgado, Porter, & Stern, 2016), arguably on import-based industries drive local prosperity. Further, Local industries typically manifest a strong dependency on local demand, while Traded industries are not constrained by the local market size (Delgado, Porter, & Stern, 2016). In light of the above, traded industries reach higher productivity levels as opposed to local. Nonetheless the latter are high likely to have a direct Impact on local well-being (i.e. local labor pool creation/retainment, local supply of services such as health and education).
Therefore, the role of local industries is regarded as highly supportive and complementary to the one of traded clusters in every region's economy. The San Diego's regional economy is widely recognized as one of the fastest growing and diverse of the nation as a whole. The composition of the regional economy variously includes strong traded and local industries which have vitally contributed to the success of the region. The historical success of its Military industry has over time allowed the region to gain capacity, thus reaching a highly-competitive position in traded industries such as Bio-technology and Pharmaceuticals. (Porter, n.d.)11. Nevertheless, local clusters strongly drive San Diego's local prosperity, covering approximately two-third of the regions' employment (fig. 1.1).

Figure 52 - The composition of the San Diego Regional Economy: Employment Share (Fig. 1.1 in Annex 1b – Giada Anversa)

Indeed, the economic pattern of San Diego is predominantly characterized by a 'small and medium size' business pattern of economic activities serving local market, hence locally producing and distributing goods and services (Porter, n.d.). Based on the 'Cluster Mapping Project, the composition of San Diego local economy includes 15 local industries (fig. 4):

[11] http://www.hbs.edu/faculty/Publication%20Files/COI_SanDiego_0077428b-c9b2-4527-abcf-4a9769e530c8.pdf

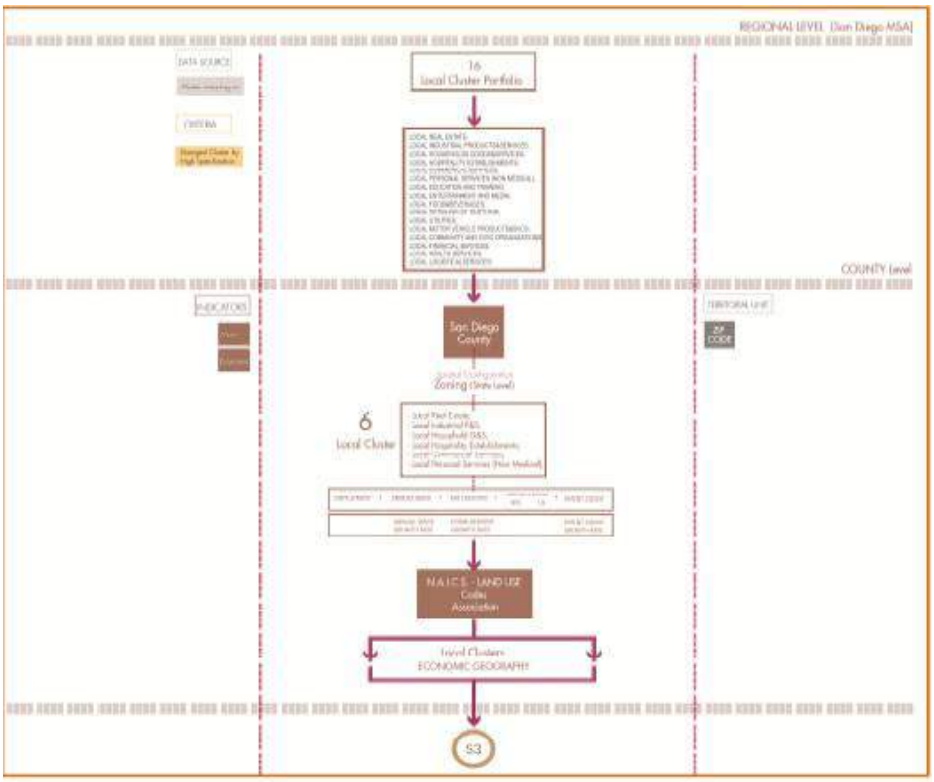

Figure 53 The composition of the San Diego Local Industries (Fig. 1.2 in Annex 1b – Giada Anversa)

Given the exploratory nature of the study, the sample size determination is based on the criterion of high-specialization (Location Quotient, LQ >1). As a result, the preliminary list of Case Studies – content of the present investigation - includes the 'six Local Industries' of the San Diego county selected by high-specialization (first six positions in the ranking). Sample size issues are deeply discussed in the Limitation's section.

Land Use Planning in San Diego

The core of the cluster 'spatialization' process is represented by the connection between the above explained NAICS codes and the Land Use categories of the San Diego County. The developed methodology aimed at displaying where clusters are physically localized within an urban territorial scale. Its rationale is based on the acknowledgment that each Land Use code can be combined with the economic activities that are classified within NAICS codes, allowing to create a morphology of sub-clusters and, in turn, of Clusters, according to Porter's definition (Delgado, M., Porter, M. E., & Stern, S., 2016). As a matter of fact, drawing insights from the idea developed by the Land Development Code Commerce City of Colorado (2015), which combines Land Use development codes and NAICS, it has been possible to build up a descriptive and updated picture of clusters at the Local level. It has been used the open access Land Use of the County of San Diego provided by SanGIS together with the San Diego Association of Governments (SANDAG), a public agency serving the role of regional decision-making, coordinating 18 cities and county governments (SANDAG, 2015). The regional Land Use data source is up to date as of the year 2013 and reflects the land resources and types of land use in the national economy. Its pattern is based on the Regional Growth Forecast of the SANDAG Public Agency, guided by the principles of Smart Growth, that push to have more efficient and environmentally-sensitive pockets of development, able to spur compact communities, reducing the existing suburban sprawl phenomenon (SANDAG, 2015). The Regional Growth Forecast, "in turn, draws its information from the general plans of the region's local

jurisdictions" (SANDAG, 2015). This results in having Land Use decisions taken at the local level, which is more easily manageable and can potentially have an impact on all the sources of emissions (SANDAG, 2015) and on the micro commercial and industrial realities too. The big-picture land use pattern is composed by the following "macro categories", coming from the SANDAG Vision for the future development of the County:

- Residential;
- Mixed Use, Commercial, and Industrial;
- Public Facilities and Utilities;
- Open Space Parks and Recreation;
- Agriculture and Rural Residential;
- Indian Reservations;
- Other (SANDAG, 2015).

They incorporate 122 specific Land Use destinations, which have been matched with the above listed "macro" categories. Table 1 shows a sample of this correspondence:

Table 9 -: Sample of the association Land Use Macro Categories/Land Use Destinations. Source: Authors' elaboration based on the data from SANDAG (2015) and SANDAG (n.d.). (Table 1 in in Annex 1b – Giada Anversa)

1000		
1100		
1110		
1120		
1130		
1200		
1210		
1300		
1400		
1410		
1420		
1430		
1440		
1450		
1460		
1500		
1510		
1520		
1530		
2000		
2100		
2101		
2103		
2104		
2200		
2201		
2300		
..		
..		

The Land Use has been built through the GIS software, starting from the zoning provided by the Parcel data available from the Assessing Department (Figure 5).

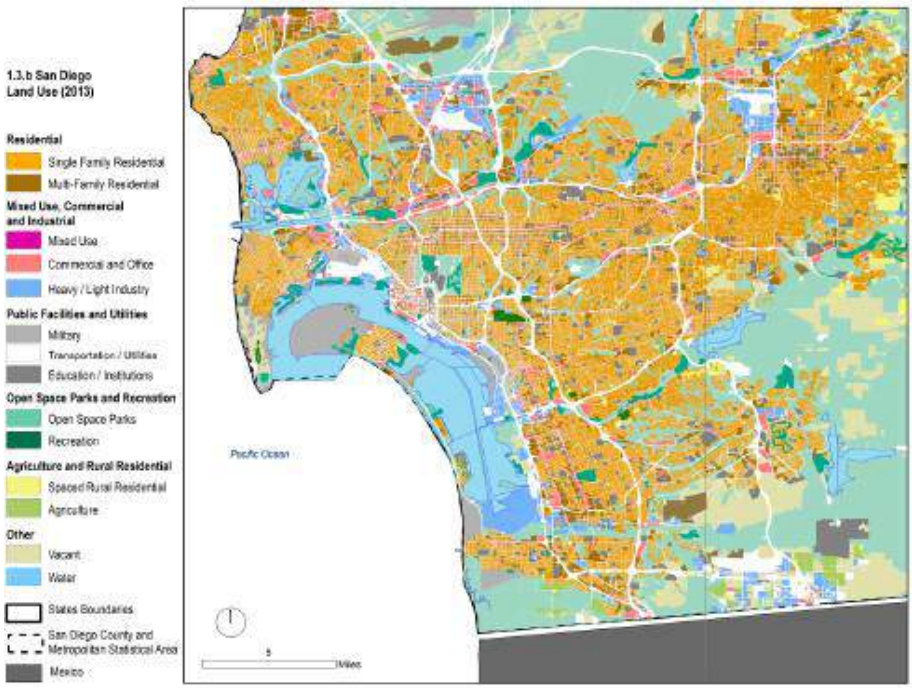

Figure 54 - San Diego Land Use Map. Source: Authors' elaboration based on the data from SANDAG (2015) and SANDAG (n.d.). (Fig. 1 in Annex 1b – Giada Anversa)

Each 4-digit Land Use Land Use destination included within the parcels of the city has then been put in relationship with the NAICS codes of the year 2012. By using the Parcels as reference unit, it has been possible to detail more the clusters localization on the map. Since Porter's methodology of the U.S. Cluster Mapping website refers to the 2007 6-digit NAICS code classification, which cover the length of time 2007-20133, 2007 NAICS data have been revised with the 2012 ones. From this stage, it did not emerge any significant change concerning the selected clusters.

Land Use – NAICS Association

The Land Use/NAICS association moved from the consideration of each Industrial sector description derived from the Bureau of Labor Statistics (n.d.) and the SICCODE (n.d.) websites. In particular, they provide, for each NAICS code, the general industrial field, the description, the cross references, the industries included, some data series about workforce statistics based on either employer or establishment surveys, and the industry leaders associated to the specific American cities, through the zip code as the main spatial unit. The match has been done on the basis of both the descriptions of the Land Use Category, provided by the SANDAG agency, and of the NAICS code, provided by the above mentioned sources. The GIS has been used as a supportive tool, searching and localizing some leader industries on the map of the Land Use. Moreover, in order to do a double-check, it has been conducted a search on the SICCODE.com website based on the Land Use "macro" category. The result was a list of the matching NAICS codes, that allowed to reconfirm the undertaken association. Once the match between Land Use category and NAICS was made, it came out, consequentially, the link with the relative subclusters and clusters. This has been possible thanks to the fact that each NAICS code is linked to a unique industrial sector that corresponds to a specific subcluster, that "help (s) describe the content of each cluster" to which is associated (Delgado, M., Porter, M. E., & Stern, S., 2016) (Figure 6).

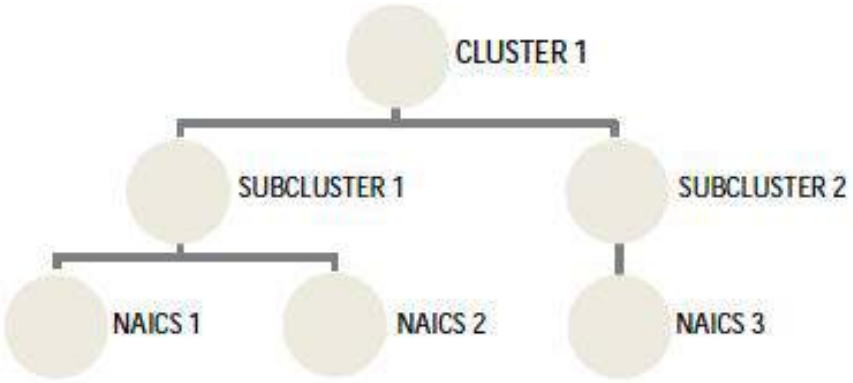

Figure 55 - Hierarchy Cluster-Subcluster-NAICS. Source: Authors' elaboration based on the data from the U.S. Cluster Mapping Methodology. (Fig. 2 in Annex 1b – Giada Anversa)

Table 4 illustrates one example of the Land Use-NAICS association, referred to the "Local Industrial Products and Services" Cluster. As clearly visible, the 6 NAICS that are comprised within the Cluster are associated to 5 Land Use Categories.

Table 10 - Land Use Category/NAICS Association. Cluster Name: Local Industrial Products and Services. Source: Authors' elaboration based on the data from the U.S. Cluster Mapping Methodology and SANDAG (n.d.). (Table 4 in Annex 1b – Giada Anversa)

Local Industrial Products and Services			

Clusters' Morphology

Following the previous stages, each subcluster has been reassembled thanks to the GIS software, then clusters came out by putting them together accordingly. The Land Use parcels and clusters, in this way, have been matched, linking the parcels corresponding to the selected blocks with the property type codes coherent with the cluster selection.
The final result consisted in mapping the urban morphology of the best performing Local Clusters, that were selected in the first stage. This research activity, conducted at the parcel level, allowed to give a physical meaning to the abstract units of the industrial sectors and to observe their level of concentration in specific areas of the city of San Diego.
These results have the potential to give to the policy-makers a real picture of the existing trends at the urban level, that, if paired with the socioeconomic data, can help as a supportive tool in taking place-based decisions for the future pockets of development, within the Smart Growth Framework.

Local Personal Services' (Non-Medical) Cluster, San Diego County (CA)

Giada Anversa[12]

Synopsis

The present study investigates the case of local industries in the San Diego County, California (U.S.). Drawing insights on previous research activities carried out by the MAPS-LED team on Traded industries, the final aim is to define the economic geography of selected Local clusters representative of the regional high specialization pattern. The present section is intended to analyze and summarize key facts and figures resulting from the Case Study analysis of identified and selected best-performing local industries located in the San Diego County. Clusters to be included in the sample size are determined according to the high-specialization criterion (Location Quotient, LQ>1). In particular, the Local Personal Services cluster (Non-Medical) case study is examined and presented in the following section in relation to cluster's subsets (a), geography (b), innovation ecosystem (c), and community plan development (d).

Local Personal Services' Cluster (Non-Medical): Sub-Cluster Composition

The 'Local and Personal Services' (LPS) sub-cluster composition consists of seven segments of specialization, including miscellaneous industry-types which - geographically located within the San Diego County - are intended to provide a varied array of non-medical, personal care services to the local communities. The fore-mentioned local cluster is hence "internally" composed and characterized as follows by a wide range of service industries for personal care, including Cleaning Services, Hair Care Services, Child-Care Services, Photographic and Photofinishing Services, Repair Services, Other Personal Services, Personal Products and Retailing; Before lingering on the distributional factors and key facts of each sub-clusters, fig. 1.1a[13] - 1.1b outline the geographical concentration of the LPS' cluster per Zip Codes within the San Diego County; respectively identifying jurisdictional boundaries of the city and county of San Diego. Analyzing the sub-cluster occurrence within the San Diego County as a whole[14], 2013 estimates of the total number of establishments per sub-cluster and by County[15] suggest that the industry segments registering the highest 'density of establishments' at the local level is Hair Care Services, HCSs (1,014), followed by Other Personal Services, OPSs (954) and Child Care Services, CCSs (689). Conversely, Cleaning Services providers lag behind the other local personal care segments, registering the lowest number of establishments in the San Diego County (80).

[12] ESR Research Activities Report (Annex 1c)

[13] The number of figures and tables is referred to those of the case studies reports attached to this report

[14] Scores result from the association of the data provided by the North American Industrial Classification System (N.A.I.C.S) per Zip Codes, whose codes are inherently matched with data by Sub-cluster (For reference see MAPS-LED, 2017). Cluster/Sub-clusters classification is available at: http://www.clustermapping.us/content/clustermapping- methodology [accessed 04/26/2017]).

[15] Number of establishments and Zip code to NAICS code table - US census bureau website, available at: http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t [accessed 04/26/2017]. Figures based on U.S..Census Bureau Data are available in Table 6.3 - Zip Code to NAICS_2013.

Figure 56 - The Geographical Framework: Spatial occurrence of the 'Local Personal Services' (Non-Medical) Cluster at the County Level, San Diego County (CA). (Fig. 1.1a in Annex 1c – Giada Anversa)

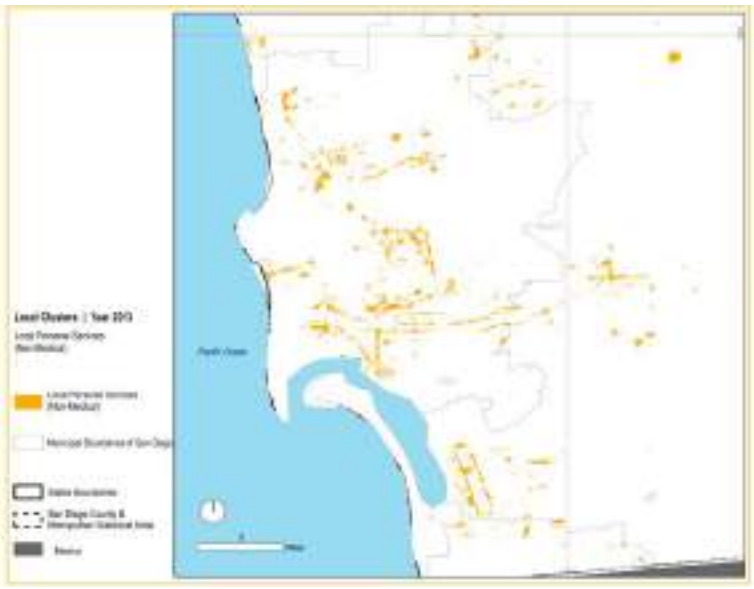

Figure 57 - 'Spatialization' Methodology's (Phase 1): The Geography of the 'Local Personal Services' (Non-Medical) Cluster and the geographical nexus with jurisdictional boundaries, San Diego County (CA). Source: GIS elaboration MAPS-LED Team, 2017. (Fig. 1.1b in Annex 1c – Giada Anversa)

Cluster Localization and Morphology: Key Features In Reference To The Urban Structure

The geography of the 'Local and Personal Services' Cluster in San Diego, CA (fig. 1.1b) draws extensively on the 'Spatialization' methodology earlier designed and adopted (MAPS-LED WP1-WP2, 2017) to trace the morphology of Traded Industries in the context of the Boston MSA, MA. Further adjustments and refinements applied to the fore-mentioned rationale (MAPS LED, 2017) have led to the development of a descriptive and accurate morphology of clusters at the local level, in turn paving the way to further studies on selected Case Studies. Observations based on GIS elaborations (fig. 1.2; fig.1.3) suggest that the morphology of the 'Local and Personal Services' Cluster (Non-Medical) exhibits the following key features:

a) a scattered or diffused (rather than concentrated) spatial distribution;
b) a moderately higher concentration in proximity to a few major hubs (Downtown, Uptown, Greater North Park, Pacific Beach and Mission Valley Areas);

Innovation Ecosystem:

The analysis of the innovation ecosystem is coherently shaped on the indication provided by Porter16, thus conducted by examining each case study in terms of 'performance'. Albeit showing a relatively higher performance in comparison with other local clusters (i.e. the patenting level significantly exceeds the one of local industrial products and services), overall the Local Personal Services cluster exhibits a weak innovative capacity, with an average of 9 utility patents every 10,000 employees working in the industry (Part II, Table 1.a). In addition, estimates of patenting growth rate (provided in Part II, Table 1.b on Cluster performance) indicate that the personal care industry overtime faced decreasing levels of inventions embodied by the number of utility patent from 2011 to 2013, dropping from 19.0% to 13.0% growth rate. Secondly, Job Creation figures (Part II, Table 1.c) unveil an overtime diminishing trend within the personal care industry, while Venture Capital (VC) figures (Part II, Table 2.a) confirm the poor level of private investments conveying into a local industry for personal care, reasonably due to the either absent or extremely low level of start-ups flourishing within such an industry.

Innovation Initiatives

- SAN DIEGO Regional Economic Development Corporation (ECD) - Regional Level -The San Diego Regional Economic Development Corporation (EDC) is a non-profit organization whose key objective is regional promotion, pursued by both maximizing corporate expansion across miscellaneous economic sectors operating in San Diego, as well as providing tremendous support to the 'pool of talents' which successfully drives the regional economic prosperity (San Diego Regional EDC, n.d.).
- EL CAJON BOULEVARD BUSINESS IMPROVEMENT ASSOCIATION (BIA) - Neighborhood Level (North Park District University Heights, North Park, Normal Heights, Kensington, Talmadge and City Heights communities).
- The El Cajon Boulevard Business Improvement Association is an organization of local businesses established in the 1988 and whose key objectives are the followings:
- General Local Economic Development (Long-Term):
- Improvement of PHYSICAL and ECONOMIC conditions along the El Cajon Boulevard cultural and commercial corridor and adjacent districts in Mid-City San Diego (El Cajon Blvd BIA, n.d.);
    - 1.a - Local Economy / Small Businesses Advocate and Development (El Cajon Blvd BIA, n.d.):
        - Advocate for the small local economic activities' needs of the membership;
    - 1.b - Built Environment / Address Urban Planning / Infrastructure and Transit Issues (El Cajon Blvd BIA,n.d.):

Land Use Planning in San Diego: Community Planning

The overlay of b) the Local Personal Services (LPS) Cluster's morphology built at the County Level with a) the current Community Plan pertaining the municipal boundaries of San Diego examines whether a nexus occurs between the geography of the personal care industry and the pattern of growth in San Diego; identified by community plans.

16 For a detailed description please refer to the: 'Clusters Performance' defined on the Clustermapping website. Available at: http://www.clustermapping.us/region/msa/san_diego_carlsbad_ca/performance

In terms of location and geography - as earlier discussed in paragraph b. - the LPS' cluster exhibits a moderately scattered morphology, further featuring a higher density of establishments within few major hubs around the areas of: Downtown, Uptown, Greater North Park, Pacific Beach and Mission Valley. By examining the spatial boundaries identified by the current community planning (fig. 2.1a - 2.2a), the local cluster under analysis fits within the areas of Otay Mesa, Downtown, Midway/Pacific Highway, Uptown, Greater North Park, Mission Valley, Kearny Mesa, Pacific Beach, University, Mira Mesa. The area of Kearny Mesa constitutes a major industrial and commercial hub, occupying a relatively central location citywide (City of San Diego Planning Department, 2011). Overall, it is found that the Community Plans of Downtown San Diego, Uptown, Greater North Park work jointly envisioning and strengthening local economic activities, achieving a balance with future commercial developments. In addition, they encourage walker-oriented uses, including the establishment of art-intensive activities which catalyzing the community after business hours are high likely to support lifestyle personal care services (i.e. yoga, dance, pilates, health clubs, rock climbing, martial arts, and art classes)" (City of San Diego, 2016).

The analysis of the planned Land Uses included in the Community Planning document demonstrates that the Local Personal Services Cluster geography fits within the below listed main Land Use designations:

- Commercial and Office;
- Education/Institutions;

Besides outlining a greater agglomeration of activities within some of the main desirable areas of the city, in addition the local personal care industry localizes in proximity to major shopping facilities such as shopping centers, and retail parks.

Relevantly, it is found that the geography of the examined case study develops and concentrate in linear patterns (see fig. 1.1b- 1.1c), hence markedly tracing 'peculiar paths :

- across various districts;
- along major freeways and roads (Mission Valley and Cabrillo freeway, and ultimately along the roads of Kearny Mesa and Miramar belonging to the Community Planning of Mira Mesa);

The observed linear morphology is therefore visible in areas such as:

- Downtown (along Central 4th and 5th Avenues, part of India street, and Kettner Boulevard);
- North park district (along University and Adams Avenue, Park Boulevard);

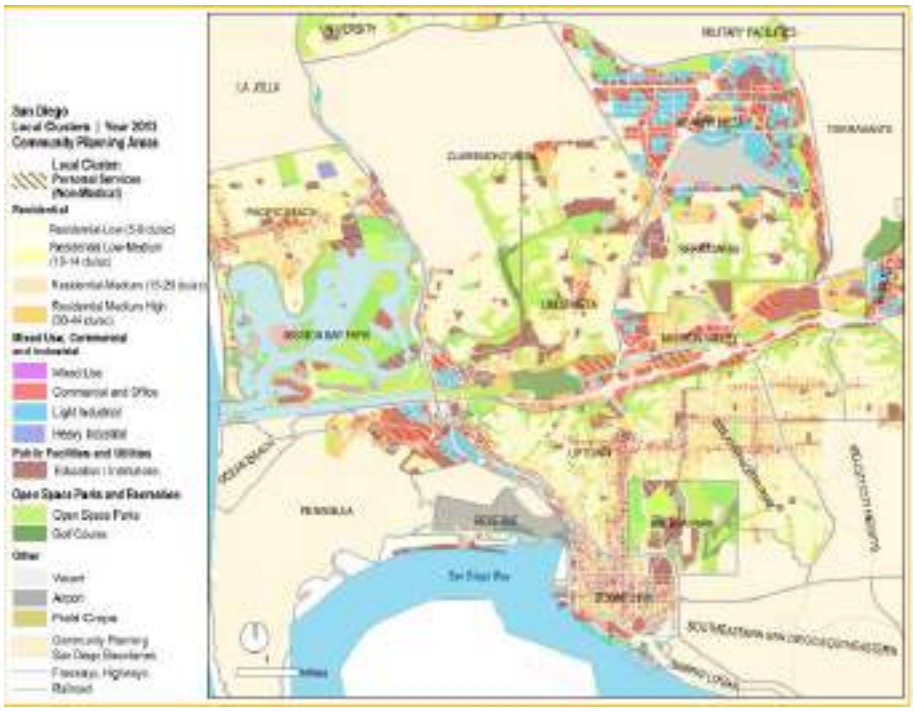

Figure 58 - Match between Community Planning and the Local Industrial Products and Services Cluster morphology. Source: Authors' elaboration. (Fig. 2.2a in Annex 1c – Giada Anversa)

Dynamic S.W.O.T Analysis (D-S.W.O.T.)

The application of the Dynamic S.W.O.T Analysis technique is primarily aimed to investigate and assess how the expectations of future development (Opportunities) provided by the implementation of Smart Specialization Strategies (S3) could contribute to tackle:

- Weaknesses inherently associated to the 'Local and Personal Services' Cluster (Endogenous Factors);
- Threats observed in reference to the decision-making process underpinning clusters policy (Exogenous forces);

Analyzing the Local Personal Services (Non-Medical) Cluster, evidences arising from the comparative analysis (Dynamic S.W.O.T) suggest that overall when Weaknesses inherent to the selected cluster are 'determined' (fig. 1.1b, Characteristic Matrix) the latter are moderately contrasted by associated Opportunities and Threats. In particular, weaknesses (Job disruption and moderate poverty rate) are significantly hindered by the opportunity of implementing regional innovation strategies (i.e. favoring Intersectorlal activities development, Modernization). Vice-versa, if weaknesses become the 'determinant' (fig. 6.1a, Characteristic Matrix) thus the efficacy of innovation strategies is slightly influenced (i.e. Poverty rate contrasts with modernization), eventually leading to trigger 'Risk-adverse' behaviors. The assigned scores are specified in the following 'Characteristic Matrices' (see fig. 2.1b – 2.2b)

ENDOGENOUS FACTORS	
S	W
Wages	Job destruction
Innovation	Poverty rate

EXOGENOUS FACTORS	
O	T
Modernization	Lock-in
Intersectorial activities	Risk-Adverse behavior

- **2** – line item is heavily hindered, or even canceled, by column;
- **1** – Line item is blocked by column, but it still fails develop their own effects, even in a reduced form;
- **0 [zero]** – the two elements are independent or the same;
- **+ 1** – The line item sees to increase its effects due to synergy made by the column element;
- **+ 2** – Line item achieves a remarkable increase due to the element of columns;

Local Personal Services

		S		W		O		T		
		Wages	Innovation	Job destruction	Poverty rate	Modernization	Inter-sectorial activities	Lock-In Dynamics	Risk-Adverse behavior	Tot
S	Wages	-----	1	-1	-2	2	0	-2	0	-4
	Innovation	1	-----	0	-1	2	1	-1	-2	0
W	Job destruction	-1	0	-----	2	-1	-1	1	2	-1
	Poverty rate	-2	0	1	-----	-2	-1	1	2	-1
O	Modernization	1	2	-1	-1	-----	2	-2	-1	-2
	Inter-sectorial activities	1	2	-2	-2	2	-----	-1	-1	7
T	Lock-In Dynamics	-2	-2	1	1	-2	-1	-----	2	1
	Risk-Adverse behavior	-1	-1	1	1	-2	-2	2	-----	3
	Tot	-3	2	-1	-2	-4	-2	2	0	

Figure 59 - Dynamic S.W.O.T. analysis: 'Comparative Matrix' of Endogenous and Exogenous Factors (Fig. 2.1b in Annex 1c – Giada Anversa)

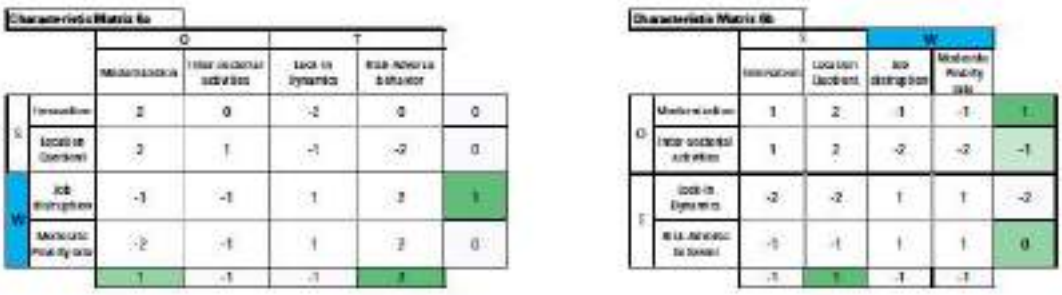

Figure 60 - Characteristic Matrices (Quadrants Q2, Q3 of the Comparative Matrix). Source: MAPS-LED Team elaboration (Fig. 2.2b in Annex 1c – Giada Anversa)

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Local Industrial Products and Services Cluster, San Diego County (CA)

Virginia Borrello[17]

Synopsis

The Local Industrial Products and Services cluster includes firms that provide maintenance, wholesaling, and distribution for local industries, but also comprises consumer rental and leasing for electronics, appliances, and general equipment.
The cluster is composed by four sub clusters: Industrial Repair Services; Industrial Products and Services Wholesaling; Industrial Machinery and Distribution; and Miscellaneous Equipment Rental and Leasing. The largest employment sectors in the cluster are Industrial Repair Services (2,629 jobs in 2013) and Industrial Machinery and Distribution (2,511 jobs in 2013; see table 1.2b). The cluster Local Industrial Products and Services can be considered a "mature cluster" since it has a declining employment growth rate (see table 1.1e) but, at the same time, it continues to be one of the most specialized cluster in the San Diego County (U.S. Cluster Mapping Project, 2015; The San Diego Association of Governments, n.d.). The analysis of the Specialization data (Location Quotient and National Employment Share) over the last years shows a rising trend from 2008 to 2010, followed by a declining pattern until 2014 (see table 1.1a and 1.1c); in particular, the National Employment Share reached a peak of 1.55% in 2010.
The innovation performance of the cluster is low (see table 2.1a and 2.1b) as well as the amount of venture capital attracted in the area where the cluster occurs (see table 2.2a).

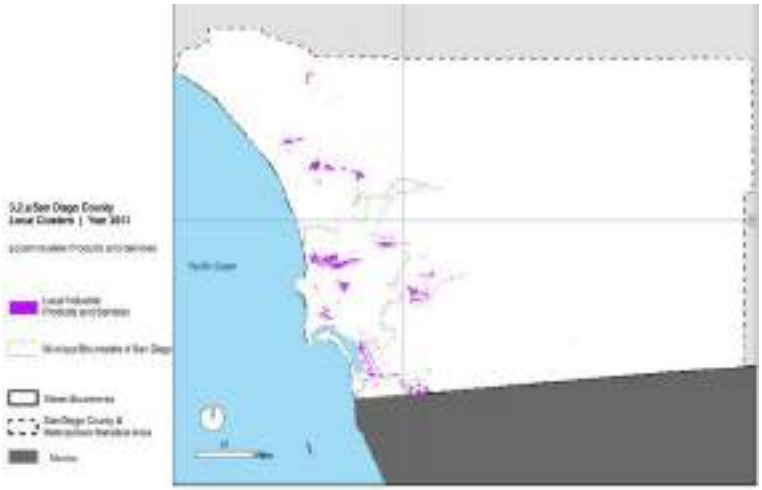

Figure 61 - Cluster Spatialization at County level Local Industrial Products and Services. Source: Authors' elaboration. (Fig. 1 in Annex 1d – Virginia Borrello)

[17] ESR Research Activities Report (Annex 1d)

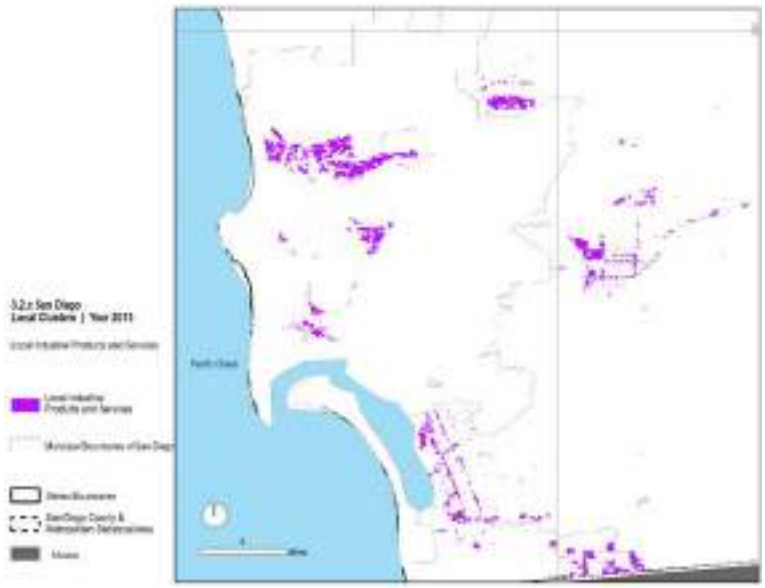

Figure 62 – Cluster Spatialization at Municipal Level – Local Industrial Product and Services. Source: Author's elaboration (Fig. 2 in Annex 1d – Virginia Borrello)

From the figures 1 and 2 it is possible to notice that the cluster Local Industrial Products and Services is concentrated in few specific areas; in particular, at the municipal level, the local cluster falls within three main hubs located in the Community Areas of Otay Mesa (community area near the Mexican border), Kearny Mesa (industrial triangle), and Mira Mesa/Torrey Pines/University (high concentration of establishments located in the north part of the city; see also figures 3 and 4).

Innovation Initiatives

- Small Local Business Enterprise (SLBE) Program: "This policy is intended to further the City's compelling interest to stimulate economic development through the support and empowerment of the local community. It also strives to ensure that it is neither an active nor passive participant in marketplace discrimination as well as to promote equal opportunity for all segments of the contracting community" (City of San Diego, n.d.).
- Small Business Enhancement Program (SBEP) – Citywide Grants: "This program focuses on expanding economic opportunities for small businesses by supporting not for-profit organizations which provide specialized services to small businesses citywide. It is expected that Small Business Enhancement Program funds will be leveraged by recipients to enhance small businesses services with the purpose of creating, growing, and retaining small businesses in San Diego. Examples of the services and training provided include business development, contracting and procurement, disability accommodations and technical assistance training" (City of San Diego, 2014a).
- San Diego's Neighborhood Businesses: "Tactical Objectives: 1. Increase the number of locally-owned small businesses in San Diego 2. Strengthen the business base of existing older business districts 3. Target city investment in older business districts and adjacent neighborhoods, especially those in traditionally underserved neighborhoods. 4. Maximize the effectiveness of the City's neighborhood and small business programs" (City of San Diego, 2014a).
- San Diego Regional Economic Development Corporation (San Diego EDC): "San Diego Regional Economic Development Corporation's mission is to maximize the region's economic prosperity and global competitiveness. As an independently funded non-profit organization, EDC promotes the region, facilitates corporate expansion across diverse

industry sectors and supports the talent pool that drives their success" (San Diego Regional EDC, n.d.).

- Innovate 78: Innovate78 is "the collaborative outcome of five cities - Carlsbad, Escondido, Oceanside, San Marcos and Vista - coming together with a shared vision to boost economic prosperity and innovation along the 78 Corridor" (Innovate 78 website, 2017). The five

Community Plans

Otay Mesa comprehends 9,300 acres located at the southern limit of the city of San Diego. The specific Community Plan designates a quarter of the land area for industrial uses (City of San Diego, 2014b). The industrial establishments of Otay Mesa "help drive the bi-regional economy through the production of goods and the development of intellectual products and processes which are exported to national and international markets" (City of San Diego, 2014b, p. LU-23). The greatest spatial agglomeration of establishments of the local cluster is in the Sorrento Valley, an industrial area and hub of tech, biotech and scientific research that is part of three Community Planning areas, i.e. Mira Mesa, Torrey Pines and University. The Mira Mesa community area encompasses approximately 10,500 acres and it has residential and business zoned areas that includes shopping and recreational facilities as well as technology facilities and office spaces; the 2,600 acres of the Torrey Pines area are mainly designated for industrial development (15%), residential areas (24%) and parks and open spaces (42%; City of San Diego, 2014c); while the University community is a mixed-used area that includes industrial, education, life sciences/research, commercial and residential uses (The University Community Planning Group and City of San Diego Planning Department, 2014). Another area that includes a large concentration of establishments of the examined local cluster is the Kearny Mesa community, "major industrial and commercial center occupying a central location in the City of San Diego" (City of San Diego Planning Department, 2011, p.3). The Kearny Mesa area is considered a "regional employment center" and the current Community Plan intends to preserve and enhance this center designating the majority of the land for industrial, office and commercial uses, ensuring also an efficient circulation system (City of San Diego Planning Department, 2011). By overlapping the map depicting the morphology of the local cluster with the current Community Plans of the city of San Diego it is possible to notice how the cluster Local Industrial Products and Services fits into two main land use categories: "Light Industry" and "Commercial and Office" (see figures 3 and 4). In particular, the "Light Industry" land use category "allows a wider variety of industrial uses by permitting a full range of light manufacturing and research and development uses, and adding other industrial uses such as storage and distribution and transportation terminals"; while the "Commercial and Office" category allows "shopping areas with retail, service, civic, and office uses for the community" (City of San Diego, 2014b). The establishments of the local cluster are concentrated along the main transportation corridors of the Community Areas and near residential zones; "the central location, freeway accessibility, and relative proximity to residential areas are qualities equally sought by industrial and commercial developers, including developers of office buildings" (City of San Diego Planning Department, 2011, p. 21). In particular, the cluster develops along the Otay Mesa Road within the Central Village area of Otay Mesa, the Railway Line and the Mira Mesa Boulevard in the Sorrento Valley, and along the main roads of the Kearny Mesa community.

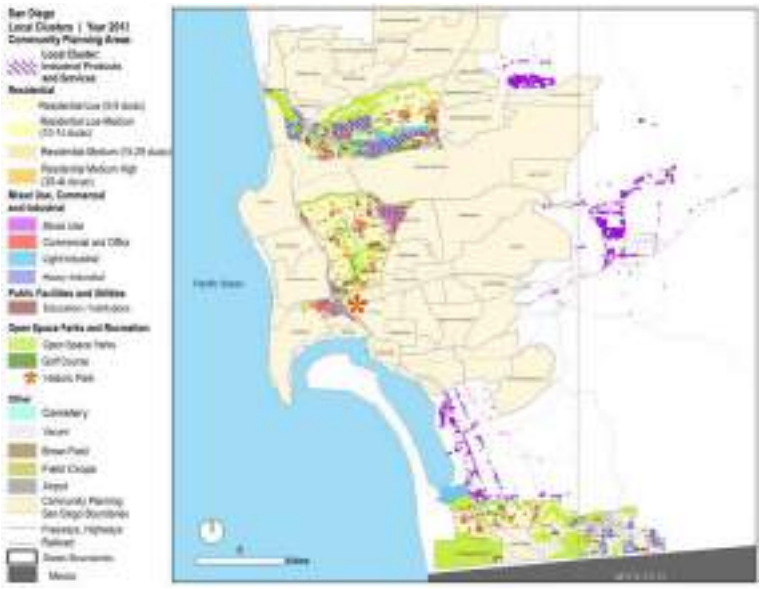

Figure 63 - Match between Community Planning and the Local Industrial Products and Services Cluster morphology. Source: Authors' elaboration. (Fig. in Annex 1d – Virginia Borrello)

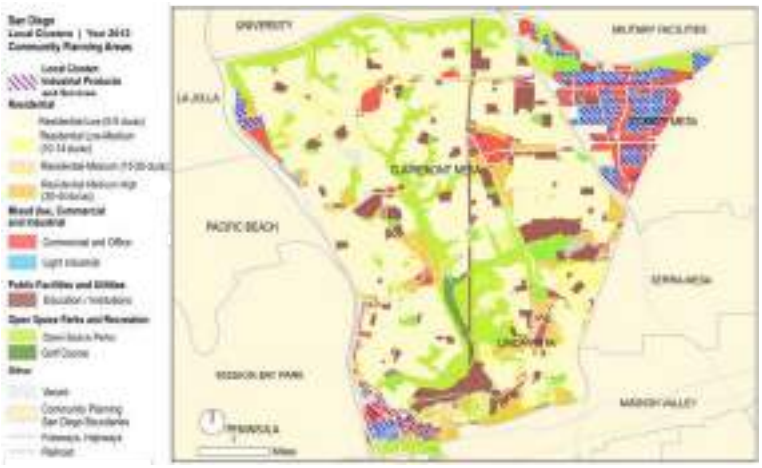

Figure 64 - Focus on one of the most significant areas. Source: Authors' elaboration. (Fig. in Annex 1d – Virginia Borrello)

Dynamic Swot Analysis

The dynamic S.W.O.T. analysis of the cluster Local Industrial Products and Services suggests that when Weaknesses are 'determined' (figure 5) the latter are slightly influenced by the Opportunity to introduce regional innovation strategies (i.e. Modernization, Intra-sectorial activities). Coherently, while Smart Specialization Strategies (S3) would scarcely contribute to tackle the cluster-related Weaknesses (low innovation and relatively high poverty rate), the latter are likely to be affected by the entrepreneurial capacity of the local actors. The assigned scores are indicated in the 'Characteristic Matrices' (see figures 5 and 6).

ENDOGENOUS FACTORS	
S	W
Job creation	Low innovation
Location Quotient	Moderate poverty rate

EXOGENOUS FACTORS	
O	T
Modernization	Lock-in Dynamics
Intersectorial activities	Risk averse behavior

- 2 = line item is heavily hindered, or even canceled, by column;
- 1 = Line item is blocked by column, but it still fails develop their own effects, even in a reduced form;
0 [zero] = the two elements are independent or the same;
+ 1 = The line item sees to increase its effects due to synergy made by the column element;
+ 2 = Line item achieves a remarkable increase due to the element of columns;

Industrial Product

		S		W		O		T		
		Job creation	Location Quotient	Low innovation	Moderate poverty rate	Modernization	Intersectorial activities	Lock-in Dynamics	Risk averse behavior	tot
S	Job creation	-----	2	0	-2	2	1	-1	-1	0
	Location Quotient	1	-----	0	-1	2	1	-2	-1	-1
W	Low innovation	0	-1	-----	1	-1	-1	2	1	-1
	Moderate poverty rate	0	0	0	-----	-1	0	1	0	-2
O	Modernization	2	2	-2	-1	-----	2	-1	-2	-1
	Intersectorial activities	2	2	-1	-1	2	-----	0	-1	2
T	Lock-in Dynamics	-1	-2	2	1	-2	-1	-----	2	1
	Risk averse behavior	-1	-2	1	1	-1	-1	2	-----	-1
	tot	-1	2	0	0	-2	0	-1	0	

Figure 65 - Dynamic S.W.O.T. analysis: 'Comparative Matrix' of Endogenous and Exogenous Factors (Fig. 5 in Annex 1d – Virginia Borrello)

Characteristic Matrix 2a

		O		T		
		Modernization	Inter-sectorial activities	Lock-in Dynamics	Risk-Adverse behavior	
S	Job creation	2	1	-1	-1	1
	Location Quotient	2	1	-2	-1	0
W	Low innovation	-1	-1	2	1	1
	Moderate poverty rate	-1	0	1	0	0
		2	1	0	-1	

Characteristic Matrix 2b

		S		W		
		Job creation	Location Quotient	Low innovation	Moderate Poverty rate	
O	Modernization	2	2	-2	-1	1
	Intersectorial activities	2	2	-1	-1	2
T	Lock-in Dynamics	-1	-2	2	1	0
	Risk-Adverse behavior	-1	-2	1	1	-1
		2	0	0	0	

Figure 66 - Characteristic Matrices (Quadrants Q2, Q3 of the Comparative Matrix). (Fig. 6 in Annex 1d – Virginia Borrello)

Local Commercial Services Cluster, San Diego County (CA)

Laura Biancuzzo[18] *and Luana Parisi*[19]

Synopsis

The Local Commercial Services Cluster is composed by eight subclusters, namely, Local Professional Services, Commercial Photography, Printing and Signmaking, Laundry and Linen Services, Miscellaneous Repair Services, Security Services, Testing Laboratories, Stationery and Office Supply Retailing. They comprehend a total of thirty-three specific NAICS industries. The Local Professional Services subcluster is the most consistent one in terms of number of establishments. This cluster, which serves the local market, "contains local professional establishments that provide legal services, accounting services, temporary help, and office administrative activities. This cluster also contains building support and security services, commercial printing and signmaking, professional laundry services (including drycleaning), testing laboratories, and office supply stores" (Delgado, M., M.E. Porter, and S. Stern, 2014). The Selected Local cluster presents over the analyzed period that consider the years 2008, 2011 and 2013, a Location Quotient above 1, indicating a consistent degree of specialization. In terms of employment, the sector remained constantly and moderately important for the Local Economy of the city. In the year 2011, the sector saw an important employment growth rate, but, at the same time, this is the year in which the annual wage growth rate registered a negative number. This can be explained by the high number of low payed jobs that are included within this cluster. The Local Professional Services emerges as the most important subcluster in terms of employment and job creation. Regarding the localization aspects, looking at the San Diego County level, it is clear that the greatest concentration of the number of establishments is within the metropolitan area and, in particular, close to the city center (Figure 1).

Figure 67 - Local Commercial Services number of establishments at County level. Source: Authors'elaboration (Fig. 1 in Annex 1e – Laura Biancuzzo, Luana Parisi)

Since the same attributes that make the considered areas desirable for industrial development, are likewise valid for commercial development, such as the freeway accessibility and the central

[18] ESR Research Activities Report (Annex 1e)

[19] ESR Research Activities Report (Annex 1e)

location (City of San Diego Planning Department, 2011), it is important to highlight the main urban fabric characteristics that relate to the specific Local Cluster. From the Figure 2, at the city level, it emerges a physical spatial concentration of the examined industrial sector within some main hubs around the areas of Downtown, Midway, Kearny Mesa and Mira Mesa.

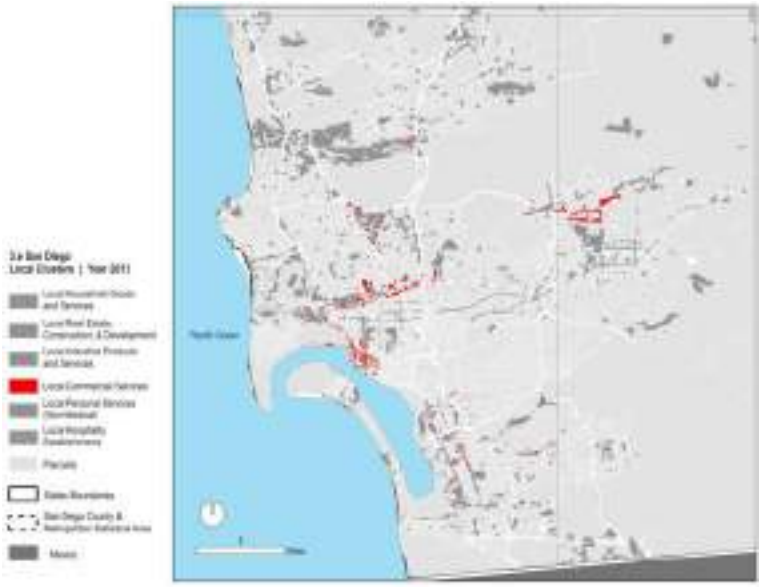

Figure 68 - Local Commercial Services at City level. Source: Authors'elaboration. (Fig. in Annex 1e – Laura Biancuzzo, Luana Parisi)

Besides presenting a particular dust of activities within some main points of interest that make the city attractive to tourists, the specific sector concentrates on the main shopping centers and malls, strip malls and retail park. It is traceable a clear path along the central Fourth and Fifth Avenues, India street and Kettner Boulevard, Mission Valley Freeway, Kurtz street within the Midway area, Convoy Street within Kearny Mesa and the Interstate 805, which is one of the major North-South Interstate Highways in Southern California. The Railway Line and the Mira Mesa Boulevard trace further the path of the specific Local Cluster. Its 4,000 acres have traditionally "functioned as an industrially based, regional employment center" (City of San Diego Planning Department, 2011). The area of Mira Mesa comprehends about 10,500 acres located in the northern coastal region of the City of San Diego and constitutes one of the main region's employment hubs (City of San Diego Planning and Development Review Department, 2011). The University area has undergone an important change in the last years going from "a student-oriented college town" to an important urban node (The University Community Planning Group and City of San Diego Planning Department, 2014). On the basis of the planned Land Uses of the above explained Community Plans, the Local Commercial Services Cluster matches with the main Land Use categories of Light Industrial, Commercial and Office, Mixed Use.

Innovation Initiatives

The Innovation Initiatives have been investigated as well, finding three main programs:

- San Diego's Neighborhood Businesses: "Tactical Objectives 1. Increase the number of locally-owned small businesses in San Diego 2. Strengthen the business base of existing older business districts 3. Target city investment in older business districts and adjacent neighborhoods, especially those in traditionally underserved neighborhoods. 4. Maximize the effectiveness of the City's neighborhood and small business programs" (City of San Diego, 2014).

• Small Local Business Enterprise (SLBE) Program: "This policy is intended to further the City's compelling interest to stimulate economic development through the support and empowerment of the local community. It also strives to ensure that it is neither an active nor passive participant in marketplace discrimination as well as to promote equal opportunity for all segments of the contracting community" (City of San Diego, n.d.).
• Small Business Enhancement Program (SBEP) – Citywide Grants: "This program focuses on expanding economic opportunities for small businesses by supporting not for-profit organizations which provide specialized services to small businesses citywide. It is expected that Small Business Enhancement Program funds will be leveraged by recipients to enhance small businesses services with the purpose of creating, growing, and retaining small businesses in San Diego. Examples of the services and training provided include business development, contracting and procurement, disability accommodations and technical assistance training" (City of San Diego, 2014).

Community Plans

By overlapping the Community Planning related to the municipal boundaries of San Diego with the morphology of the Local Commercial Services Cluster, it emerged a physical spatial concentration of the examined industrial sector within three main hubs around the areas of Downtown, Midway, Kearny Mesa and Mira Mesa. Considering the community planning framework, the specific Local Cluster fits within the areas of CentreCity/Downtown, Midway/Pacific Highway, Mission Valley, Linda Vista, Kearny Mesa, Mira Mesa and University.
The community plan of Downtown San Diego "seeks to bolster downtown's position for future economic activity" (Civic San Diego, 2005). It further attempts to balance "future commercial development, neighborhood dynamics, circulation, waterfront access, the downtown arts community, and quality of life" (Civic San Diego, 2005). "The Midway/Pacific Highway Corridor community encompasses approximately 800 acres of relatively flat land which is situated north of the Centre City area between Old Town and Point Loma… The central Midway area consists of an urbanized commercial core containing numerous shopping centers and institutional facilities which cater to the commercial needs of nearby residential and visitor populations" (City of San Diego Planning Department, 2010). Furthermore, the Mission Valley planning area comprehends about 2,418 acres, located close to the city center (The City of San Diego & The Mission Valley Unified Planning Committee, 2013). The main land use regards the commercial activities, encompassing approximately the 26% of the whole area (The City of San Diego & The Mission Valley Unified Planning Committee, 2013). The Kearny Mesa community, instead, can be considered a major "industrial and commercial center occupying a central location in the City of San Diego" (City of San Diego Planning Department, 2011). Its 4,000 acres have traditionally "functioned as an industrially based, regional employment center" (City of San Diego Planning Department, 2011). The area of Mira Mesa comprehends about 10,500 acres located in the northern coastal region of the City of San Diego and constitutes one of the main region's employment hubs (City of San Diego Planning and Development Review Department, 2011). The University area has undergone an important change in the last years going from "a student-oriented college town" to an important urban node (The University Community Planning Group and City of San Diego Planning Department, 2014). On the basis of the planned Land Uses of the above explained Community Plans, the Local Commercial Services Cluster matches with the main Land Use categories of Light Industrial, Commercial and Office, Mixed Use. The same attributes that make the considered areas desirable for industrial development, are likewise valid for commercial development, such as the freeway accessibility and the central location (City of San Diego Planning Department, 2011). Besides presenting a particular dust of activities within some main points of interest that make the city attractive to tourists, clearly, the specific sector concentrates on the main shopping centers and malls, strip malls and retail park. It is

traceable a clear path along the central Fourth and Fifth Avenues, India street and Kettner Boulevard, Mission Valley Freeway, Kurtz street within the Midway area, Convoy Street within Kearny Mesa and the Interstate 805, which is one of the major North-South Interstate Highways in Southern California. The Railway Line and the Mira Mesa Boulevard trace further the path of the specific Local Cluster.

Figure 69 - Match between the Community Plans and the Local Commercial Services Cluster morphology. Source: Authors' elaboration. (Fig. 3 in Annex 1e – Laura Biancuzzo, Luana Parisi)

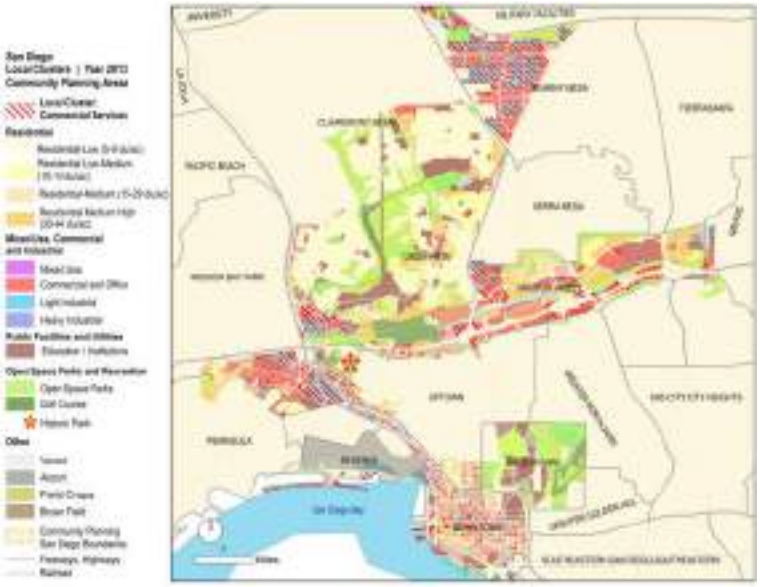

Figure 70 - Focus on one of the most significant areas. Source: Authors' elaboration. (Fig. 4 in Annex 1e – Laura Biancuzzo, Luana Parisi)

Dynamic SWOT Analysis

It has been performed a SWOT Analysis of the specific Local Commercial Services Cluster; evidences arising from the comparative analysis (Dynamic S.W.O.T, see fig. 5.0) suggests that when weaknesses are 'determined' (see fig. 5.1b, Characteristic Matrix), those are slightly defeated by the opportunity of introducing innovation policy. In contrast, associated threats

would have a relatively strong impact on weaknesses, foremost by reinforcing the observed phenomenon of 'Job disruption'. Coherently, if weaknesses become the 'determinant' (see fig. 5.1a, Characteristic Matrix), thus, the efficacy of innovation strategies would be partly or moderately compromised, in turn leading to the associated threats (Risk-adverse behavior). The assigned scores are included in the 'Characteristic Matrices' (see fig. 5.1 a – 5.1b). Analyzing the Local Commercial Services Cluster, evidences arising from the comparative analysis (Dynamic S.W.O.T, fig. 5.0) suggests that when weaknesses are 'determined' (fig. 5.1b, Characteristic Matrix), those are slightly defeated by the opportunity of introducing innovation policy. In contrast, associated threats would have a relatively strong impact on weaknesses, foremost by reinforcing the observed phenomenon of 'Job disruption'. Coherently

ENDOGENOUS FACTORS	
S	W
Wages	Poverty rate
Location Quotient	Low Job Creation*

EXOGENOUS FACTORS	
O	T
Modernization	Lock-In
Inter-sectorial activities	Risk-Adverse behavior

- **2** = line item is heavily hindered, or even canceled, by column;
- **1** = Line item is blocked by column, but it still fails develop their own effects, even in a reduced form;
0 [zero] = the two elements are independent or the same;
+ 1 = The line item sees to increase its effects due to synergy made by the column element;
+ 2 = Line item achieves a remarkable increase due to the element of columns;

Low Job Creation*
The figure is assumed 'low' with respect to the other clusters included in the sample;

Local commercial Services

		S		W		O		T		
		Wages	Location Quotient	Poverty rate	Low job creation*	Modernization	Inter-sectorial activities	Lock-In Dynamics	Risk-Adverse behavior	Tot
S	Wages	-----	2	-1	-1	2	1	0	-1	2
	Location Quotient	2	-----	-1	0	2	2	-2	-1	2
W	Poverty rate	-2	-1	-----	1	-1	-1	1	2	-1
	Low job creation*	0	0	1	-----	0	0	0	1	2
O	Modernization	2	2	-1	-1	-----	2	2	2	0
	Inter-sectorial activities	2	2	-1	-1	2	-----	-1	-1	2
T	Lock-In Dynamics	-1	0	2	1	2	-1	-----	2	1
	Risk-Adverse behavior	-1	-1	2	1	2	0	2	-----	1
	Tot	2	4	1	0	1	3	-2	0	

Figure 71 - Dynamic S.W.O. T: 'Comparative Matrix' of Endogenous and Exogenous Factors. (Fig. 5 in Annex 1e – Laura Biancuzzo, Luana Parisi)

Characteristic Matrix 5a

		O		T		
		Modernization	Intersectorial activities	Lock-In Dynamics	Risk-Adverse behavior	
S	Innovation	2	1	0	-1	2
	Location Quotient	2	2	-2	-1	1
W	Job distruption	-1	-1	1	2	1
	Moderate Poverty rate	0	0	0	1	1
		3	2	-1	1	

Characteristic Matrix 5b

		S		W		
		Innovation	Location Quotient	Job distruption	Moderate Poverty rate	
O	Modernization	2	2	-1	-1	2
	Intersectorial activities	2	2	-1	-1	2
T	Lock-In Dynamics	-1	0	2	1	2
	Risk averse behavior	-1	-1	2	1	1
		2	3	2	0	

Figure 72 - Characteristic Matrices (Quadrants Q2, Q3 of the Comparative Matrix). (Fig. 5.1 in Annex 1e – Laura Biancuzzo, Luana Parisi)

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Local Households Goods and Services Cluster, San Diego County (CA)

GianMarco Cantafio[20]

Synopsis

Starting by the methodology exposed in the Maps-Led WP2, to investigate a cluster into its geographical dimension in a region, it's crucial start to identify the cluster' composition (sub-clusters) and find the link between sub-clusters and industrial sectors and firms in the considered region. The classification starts from data concerning different NAICS – North American Industry Code System, each NAICS CODE represent one industry sector. Thus, the Cluster mapping site provides the cluster subdivision into sub-cluster, NAICS provide the subdivision in industrial sectors of a region' industry so different NAICS, are aggregated into a "sub-cluster". More sub-clusters are grouped into a single "cluster", this procedure provides to describe the level of concentration of firms of the same sub-cluster in a specific area. After the procedure showed before, it's now possible investigate the effective distribution of firms into the region. The follow tabs and figures shown the distribution and concentration of local clusters into the San Diego area, this elaborates are crucial into the comprehension process of local cluster distribution and creation. Following the Delgado' definition of local clusters, "Local clusters generally serve the local market" (Delgado 2013)., is clear the dependency of local clusters by the local conditions in terms of infrastructures and market structure, otherwise the firm localization is strictly dependent by the "rules" of regional and urban economics. This appear in almost every region, regardless of the competitive advantages of a particular location in terms of proximity with important "arteries" and railways, or in terms of land costs and transportation costs.

Innovation initiative

San Diego's Neighborhood Businesses: "Tactical Objectives 1. Increase the number of locally-owned small businesses in San Diego 2. Strengthen the business base of existing older business districts 3. Target city investment in older business districts and adjacent neighborhoods, especially those in traditionally underserved neighborhoods. 4. Maximize the effectiveness of the City's neighborhood and small business programs" (City of San Diego, 2014a).

Small Local Business Enterprise (SLBE) Program: "This policy is intended to further the City's compelling interest to stimulate economic development through the support and empowerment of the local community. It also strives to ensure that it is neither an active nor passive participant in marketplace discrimination as well as to promote equal opportunity for all segments of the contracting community" (City of San Diego, n.d.).

Small Business Enhancement Program (SBEP) – Citywide Grants: "This program focuses on expanding economic opportunities for small businesses by supporting not for-profit organizations which provide specialized services to small businesses citywide. It is expected that Small Business Enhancement Program funds will be leveraged by recipients to enhance small business services with the purpose of creating, growing, and retaining small businesses in San Diego. Examples of the services and training provided include business development, contracting and procurement, disability accommodations and technical assistance training" (City of San Diego, 2014a).

Community Plans

[20] ESR Research Activities Report (Annex 1f)

The overlap of the Community Planning areas with the specific morphology of the Local household goods and services cluster, highlighted a spatial, physical agglomeration of the specific industrial sector within two areas, namely, Clairemont Mesa and Otay Mesa; among them, the latter revealed a greater concentration. The area concerned comprehends 9,300 acres located at the southern limit of the city of San Diego, bordering with the Mexican Nation (City of San Diego, 2014b). According to the planned Land Use of the Community Planning of the Otay Mesa area, which designates a quarter of the land area for industrial uses, the Local households goods and services Cluster matches with the two main Land Use categories of Light Industrial and Commercial and Office. Specifically, the Light Industrial use "allows a wider variety of industrial uses by permitting a full range of light manufacturing and research and development uses, and adding other industrial uses such as storage and distribution and transportation terminals"; while the Commercial and Office designation "provides for shopping areas with retail, service, civic, and office uses for the community" (City of San Diego, 2014b). Following the main strategies of the area that forecast the connection between the main employment centers with the transit system using a compact, pedestrian-friendly orientation, the concentration of the pattern of the Local Cluster can be observed along the Otay Mesa road within the Central Village area and the 125 State Highway, connecting with the downtown of the city.

Figure 73 - Match between the Community Plannings and the Local households goods and services Cluster morphology. (Fig. 1 in Annex 1f – Gianmarco Cantafio)

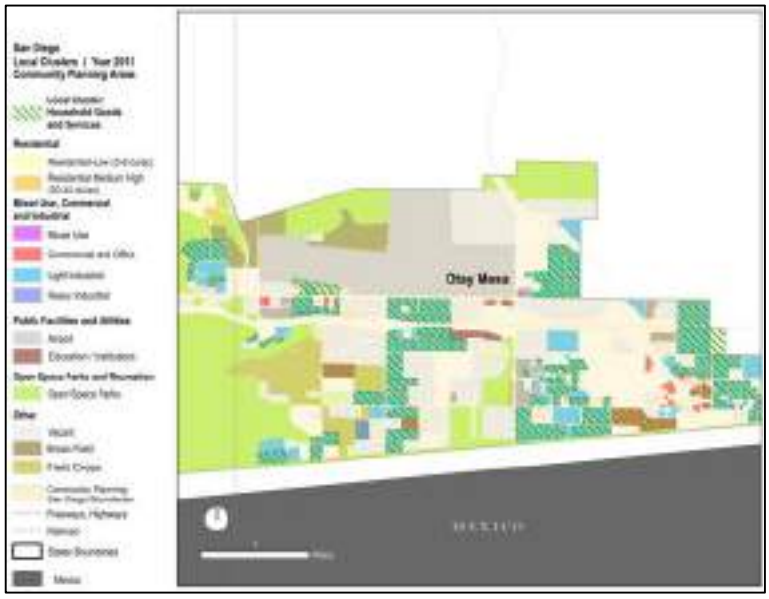


Figure 74 - Focus on one of the most significant areas. Source: Authors' elaboration. (Fig. 2 in Annex 1f – Gianmarco Cantafio)

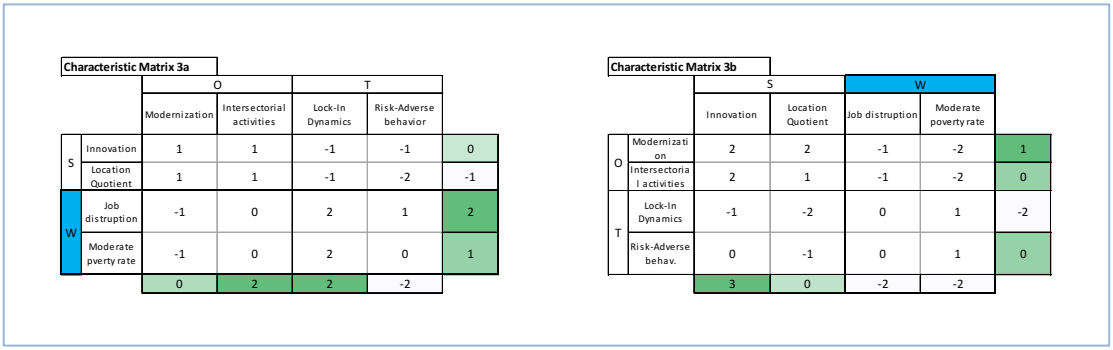
SWOT Analysis

Local Household Goods and Services could be classified as non innovative local cluster. Analyzing the key factors who characterized this particular cluster, it's possible to figure out that it's based on the production of less innovative goods (household furniture) using workforce not specialized. Another consideration is the patents count that is the lesser of the 6 sub-clusters analyzed in this study. Nevertheless, Local Household Goods and Services represent a strong sector for local economy with a good ductility inside its workforce, and good connections with other important sectors, (e.g. logistic). Analyzing the *Local Households Goods & Services Cluster*, evidences from the comparative analysis suggest that if the weaknesses distinguished of the cluster are 'determined' (fig. 3.b, Characteristic Matrix) the latter are significantly contrasted by the opportunity of adopting smart specialization strategies (exogenous factors). While innovation policies are strongly effective on weaknesses inherent to the cluster (*Job disruption* and a *moderate poverty rate* in the Matrix characteristic 1.3b, whereas when weaknesses become the 'determinant factor' (fig. 3.a) would make innovation strategies ineffective, and in turn associated threats become high-likely to occur (Lock-in). The assigned scores are indicated in the 'Characteristic Matrices' below (see *fig. 3.a – 3.b*).

Local Households goods and services

		S		W		O		T		
		Job Creation	Wages	low Location Quotient	lack Patents	Modernization	Intersectorial activities	Lock-In Dynamics	Risk averse behavior	tot
S	Job Creation	-----	2	0	0	1	1	-1	-1	0
	Wages	2	-----	0	0	1	1	-1	-2	-1
W	low Location Quotient	-1	-1	-----	1	-1	0	2	1	-1
	lack Patents	0	-1	0	-----	-1	0	2	0	-2
O	Modernization	2	2	-1	-2	-----	2	-1	-1	-1
	Intersectorial activities	2	1	-1	-2	2	-----	-1	-1	2
T	Lock-In Dynamics	-1	-2	0	1	-1	-1	-----	2	1
	Risk averse behavior	0	-1	0	1	-1	-1	1	-----	-1
	tot	-1	2	-2	0	-2	1	-1	0	

Figure 75 - Dynamic S.W.O. T: 'Comparative Matrix' of Endogenous and Exogenous Factors. (Fig. 3 in Annex 1f – Gianmarco Cantafio)



Characteristic Matrix 3a

		O		T		
		Modernization	Intersectorial activities	Lock-In Dynamics	Risk-Adverse behavior	
S	Innovation	1	1	-1	-1	0
	Location Quotient	1	1	-1	-2	-1
W	Job distruption	-1	0	2	1	2
	Moderate pverty rate	-1	0	2	0	1
		0	2	2	-2	

Characteristic Matrix 3b

		S		W		
		Innovation	Location Quotient	Job distruption	Moderate poverty rate	
O	Modernization	2	2	-1	-2	1
	Intersectorial activities	2	1	-1	-2	0
T	Lock-In Dynamics	-1	-2	0	1	-2
	Risk-Adverse behav.	0	-1	0	1	0
		3	0	-2	-2	

Figure 76 - Characteristic Matrices (Quadrants Q2, Q3 of the Comparative Matrix). (Fig. 4 in Annex 1f – Gianmarco Cantafio)

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Local Local Real Estate, Construction, and Development Cluster, San Diego County (CA)

Giuseppe Pronesti[21]

Synopsis

By overlapping the Community Planning that fall within the municipal boundaries of San Diego and the morphology of the Local Real Estate, Construction, and Development Cluster, it emerged a spatial agglomeration of the examined industrial sector within three main areas, that are Mira Mesa, Torrey Pines and University. The first one comprehends about 10,500 acres located in the northern coastal region of the City of San Diego close to the MCAS Miramar, which constitutes one of the main region's employment hubs (City of San Diego Planning and Development Review Department, 2011). The 2,600 acres of the Torrey Pines area, instead, include all the research spin-offs of the UCSD campus (City of San Diego Planning Department, 2014), while the University area has undergone an important change in the last years going from "a student-oriented college town" to an important urban node (The University Community Planning Group and City of San Diego Planning Department, 2014). This shift happened thanks to the development of a regional shopping center within the University Towne Centre, the expansion of the Torrey Pines science hub and the improved accessibility to the regional transportation system (The University Community Planning Group and City of San Diego Planning Department, 2014). The three community planning together try to "encourage the location of scientific research, biotechnology, and light manufacturing uses in Sorrento Valley because of its proximity to UCSD and the University and Mira Mesa communities' industrial areas" (City of San Diego Planning Department, 2014) In accordance with their planned Land Uses, the Local Real Estate, Construction, And Development Cluster fits into the two main Land Use categories of Light Industry and Office Low rise, which allow "office, research and development, and light manufacturing uses" (The University Community Planning Group and City of San Diego Planning Department, 2014). According with the main strategies of the area, the greater concentration of the Local Cluster texture can be traced along the Interstate 805 and the Interstate 5, two major North-South Interstate Highways in Southern California. The Railway Line and the Mira Mesa Boulevard trace further the path of the specific Local Cluster.
The Local Real Estate, Construction, and Development Cluster morphology in this area reflects the old typology of the industrial park.

Innovation initiative

- *San Diego EDC*: "San Diego Regional Economic Development Corporation's (EDC for short) mission is to maximize the region's economic prosperity and global competitiveness. As an independently funded non-profit organization, EDC promotes the region, facilitates corporate expansion across diverse industry sectors and supports the talent pool that drives their success" (San Diego Regional EDC, n.d.).
- *INNOVATE78*: "Innovate78 is the collaborative outcome of five cities - Carlsbad, Escondido, Oceanside, San Marcos and Vista - coming together with a shared vision to boost economic prosperity along the 78 Corridor" (Innovate 78, n.d.).

Community Plans

[21] ESR Research Activities Report (Annex 1h)

Figure 77 - Match between the Community Planning and the Local Real Estate, Construction, and Development Cluster morphology. Source: Authors' elaboration (Fig. 1 in Annex 1g – Giuseppe Pronestì)

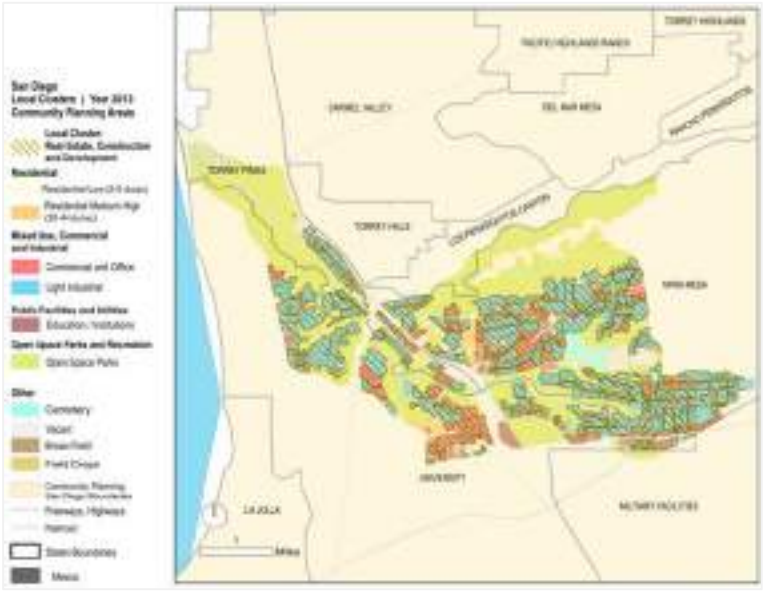


Figure 78 - Focus on one of the most significant areas. Source: Authors' elaboration. (Fig. 2 1 in Annex 1g – Giuseppe Pronestì)

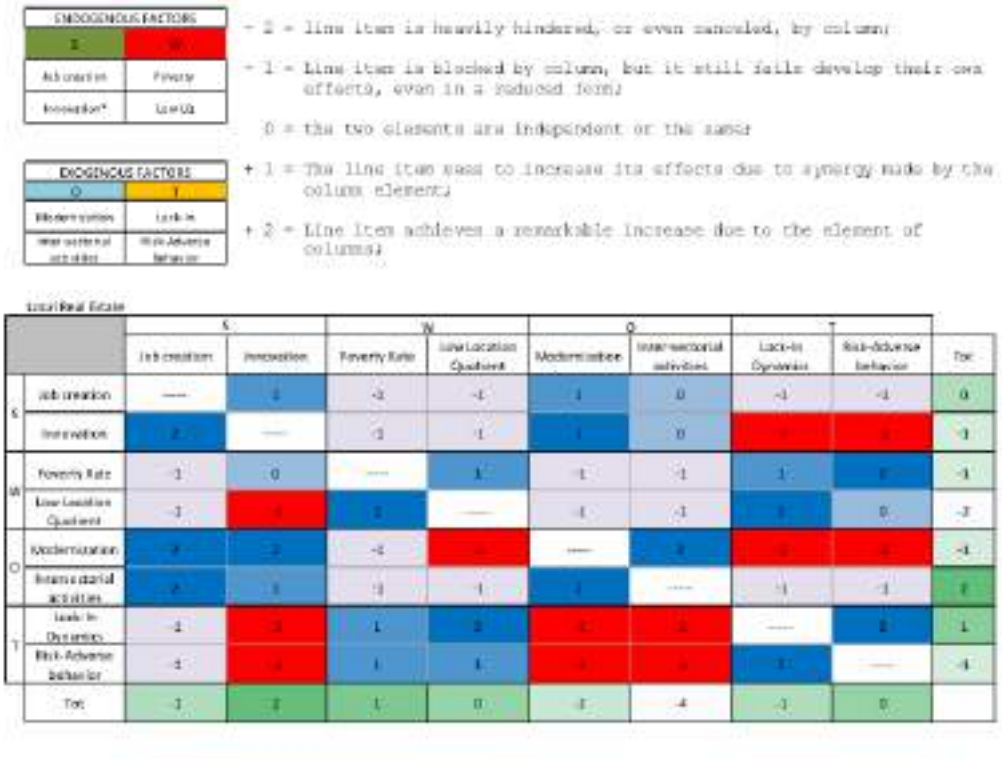


Figure 79 - Dynamic S.W.O. T: 'Comparative Matrix' of Endogenous and Exogenous Factors. (Fig. 3 in the Report 6 Annexed to this Report) (Figure 1 in Annex 1g – Giuseppe Pronesti)

Endogenous Matrix 1b Loc. Real Estate

		S		W		
		Job creation	Innovation	Poverty Rate	Low Location Quotient	
S	Job creation	-----	1	-1	-1	-1
	Innovation	2	-----	-1	-1	0
W	Poverty Rate	-1	0	-----	1	0
	Low Location Quotient	-1	-2	2	-----	-1
		0	-1	0	-1	

Exogenous Matrix 1a Loc. Real Estate

		O		T		
		Modernization	Inter-sectorial activities	Lock-In Dynamics	Risk-Adverse behavior	Tot
S	Modernization	-----	2	-2	-2	-2
	Inter-sectorial activities	2	-----	-1	-1	0
W	Lock-In Dynamics	-2	-2	-----	2	-2
	Risk-Adverse behavior	-2	-2	2	-----	-2
		-2	-2	-1	-1	

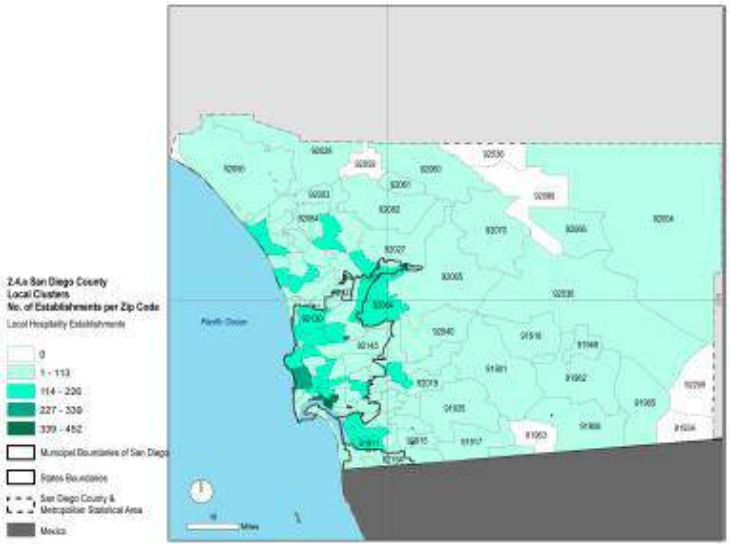
Figure 80 - Characteristic Matrices (Quadrants Q2, Q3 of the Comparative Matrix). (Fig. 4 in the Report 5 Annexed to this Report) (Figure 1a in Annex 1g – Giuseppe Pronesti)

Local Hospitality Cluster, San Diego County (CA)

Giuseppe Cantafio[22]

Synopsis

The Local Hospitality Establishment is one of the most important local clusters of the metropolitan area of San Diego, being the fourth most specialized local cluster, with a location quotient (LQ) of 1.13 in 2014, which is the most updated year in terms of statistics. The LQ presented a slight decrease in the last years, in facts the change in LQ in the last two recorded years was negative, with a rate change of -3.06% in 2013 and -0.29% in 2014. Anyway the local hospitality establishment is still one of the most specialized of the San Diego Metropolitan Statistical Area. In terms of employment, the number of jobs of the cluster kept growing over the last 15 years, apart from the years 2009 and 2010, when a slight decrease in the employment rate was registered (respectively -4.16% and -1.89%). This was mainly an effect due to the economic crisis of the 2007. Regarding the average wage of the cluster, in 2014 it was around $18,000, lower than the San Diego average for local clusters. The cluster is divided in three subclusters: Hospitality Establishments, Recreational facilities and Instruction, and Gifts and Souvenirs Retailing. The Hospitality Establishments subcluster is the most important one among the three, as it is composed by seven NAICS codes, while the Recreational Facilities subcluster is composed by five NAICS code, and the Gifts and Souvenir Retailing subcluster is composed by only one NAICS code. By looking at the number of establishments per zip code of the local hospitality cluster, it is possible to appreciate how the establishments are located all over the metropolitan area at the county level. Inside the city boundaries of San Diego every zip code has at least one local hospitality establishment in it. The darker the color, the higher the number of establishments in the zip code. As can be seen from the fig.1, the zip code with the highest number of establishments is the 92101, in which is located Downtown San Diego.



[22] ESR Research Activities Report (Annex 1g)

Figure 81 - San Diego Local Hospitality Cluster - number of Establishments per zip code. Source: Authors' elaboration (Figure 1 in Annex 1h – Giuseppe Cantafio)

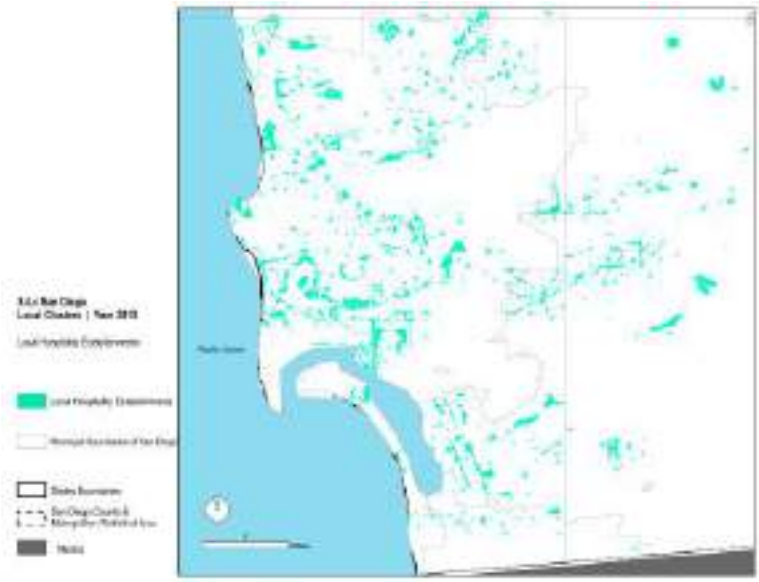


Figure 82 - San Diego Local Hospitality Cluster spatialization. Source: Authors' elaboration. (Figure 2 in Annex 1h – Giuseppe Cantafio)

Looking at the cluster spatialization (fig.2), it is possible to see how the local hospitality cluster (depicted in light blue) is more dispersed than the other local clusters, mainly localized where are located the important touristic sites: on the coastal area, but also in the downtown area, la Jolla area, and in the inland area. Regarding the Innovation Ecosystem indicators, in terms of patent count and patent count growth rate, the cluster is improving its performances, even though we can see that the Local Hospitality Cluster is not a really innovation-related cluster, with a maximum of 15 patents produced in 2013. Concerning the job creation, the year 2011 is particularly significant, presenting more than three times the value of the year 2013. The Venture Capital is increasing after the decrease in Venture Capital in 2011, while the Cluster Strength data are increasing especially considering the last two years analyzed. The areas in which the Cluster insists present a growing poverty rate, similarly to the other clusters and an increasing number of people with some college degree; in parallel, the total number of people completing a bachelor's degree is decreasing, together with the number of people receiving high school diploma or more. From this analysis emerged that the innovation and socioeconomic data show an improving situation for the present cluster, but still there are some issues linked to the poverty of the area where the cluster is located. Regarding the main innovation initiatives found, related to the Local Hospitality Cluster, they are:

- San Diego's Neighborhood Businesses: "Tactical Objectives 1. Increase the number of locally owned small businesses in San Diego 2. Strengthen the business base of existing older business districts 3. Target city investment in older business districts and adjacent neighborhoods, especially those in traditionally underserved neighborhoods. 4. Maximize the effectiveness of the City's neighborhood and small business programs" (City of San Diego, 2014).
- Small Local Business Enterprise (SLBE) Program: "This policy is intended to further the City's compelling interest to stimulate economic development through the support and empowerment of the local community. It also strives to ensure that it is neither an active nor passive participant in marketplace discrimination as well as to promote equal opportunity for all segments of the contracting community" (City of San Diego, n.d.).
- Small Business Enhancement Program (SBEP) – Citywide Grants: "This program focuses

on expanding economic opportunities for small businesses by supporting not-forprofit organizations which provide specialized services to small businesses citywide. It is expected that Small Business Enhancement Program funds will be leveraged by recipients to enhance small businesses services with the purpose of creating, growing, and retaining small businesses in San Diego. Examples of the services and training provided include business development, contracting and procurement, disability accommodations and technical assistance training" (City of San Diego, 2014).

- INNOVATE78 : "Innovate78 is the collaborative outcome of five cities - Carlsbad, Escondido, Oceanside, San Marcos and Vista - coming together with a shared vision to boost economic prosperity along the 78 Corridor" (Innovate 78, n.d.).
- IDTS : "The City's Economic Development and Tourism Support (EDTS) Program provides Transient Occupancy Tax funds through a competitive merit based application process, to qualified nonprofit, tax exempt organizations that produce programs and events that improve the City's economy by boosting tourism, attracting new businesses, and increasing jobs in the area" (City of San Diego, 2014).

By analyzing the Community Planning Areas of the municipal boundaries of San Diego and overlapping it with the morphology of the Local Hospitality Establishments Cluster, it emerged a much less concentrated pattern of the examined industrial sector, if compared with the other Clusters. Examining the Local Hospitality Establishments Cluster by means of the SWOT analysis, findings of the comparative analysis indicate that when the weaknesses are 'determined', the opportunity of introducing S3 (i.e. Modernization, Intra-sectorial activities) scantly affects the weaknesses associated to the specific cluster (Job disruption and moderate poverty rate), thus revealing the inefficacy of the selected innovation strategies to tackle weaknesses characteristics of the Local Hospitality cluster. On the other hand, when weaknesses are the 'determinant', they scantly affect the efficacy of innovation strategies. The assigned scores are illustrated in the 'Characteristic Matrices'.

Community Plans

By analyzing the Community Planning Areas of the municipal boundaries of San Diego and overlapping it with the morphology of the Local Hospitality Establishments Cluster, it emerged a much less concentrated pattern of the examined industrial sector, if compared with the other Clusters. As a matter of fact, the sector is spread all over the city, since it represents one of the pillars of its Local Economy. Accordingly, it is agglomerated around the main points of interest, comprehending historical spots, natural beauty and reserves, scenic routes, historic parks, natural parks, beaches and cliffs and all the other natural assets that make the city attractive to tourists.

Figure 83 - Match between the Community Planning and the Local Hospitality Establishments Cluster Morphology. Source: Authors' elaboration (Figure 3 in Annex 1h – Giuseppe Cantafio)

Considering the community planning framework, the specific Local Cluster fits within the areas of Centre City, Balboa Park, Uptown, Greater North Park, Mission Bay Park, Kearny Mesa, LA Jolla, Mira Mesa, Carmel Valley, Torrey Pines and University. On the basis of their planned Land Uses, the considered industrial sector matches with the main Land Use categories of Golf Course, Open Space Parks, Commercial and Offices, explained by the presence of hotels, motels and resorts. Beside presenting its concentration around the above mentioned points of interest, such as Balboa Park and Old Town Historic Park, it is traceable a clear path along the Mission Valley Freeway and Friars Road, the central Fourth and Fifth Avenues, University Avenue and El Cajon Boulevard within the Greater North Park area and Garnet Avenue within the neighborhood of Pacific Beach. The Railway Line and the Mira Mesa Boulevard tracks some further paths of the specific Local Cluster.

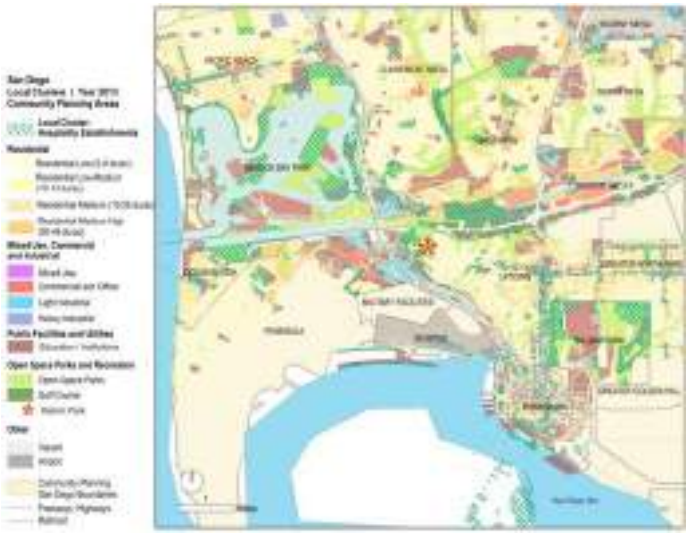
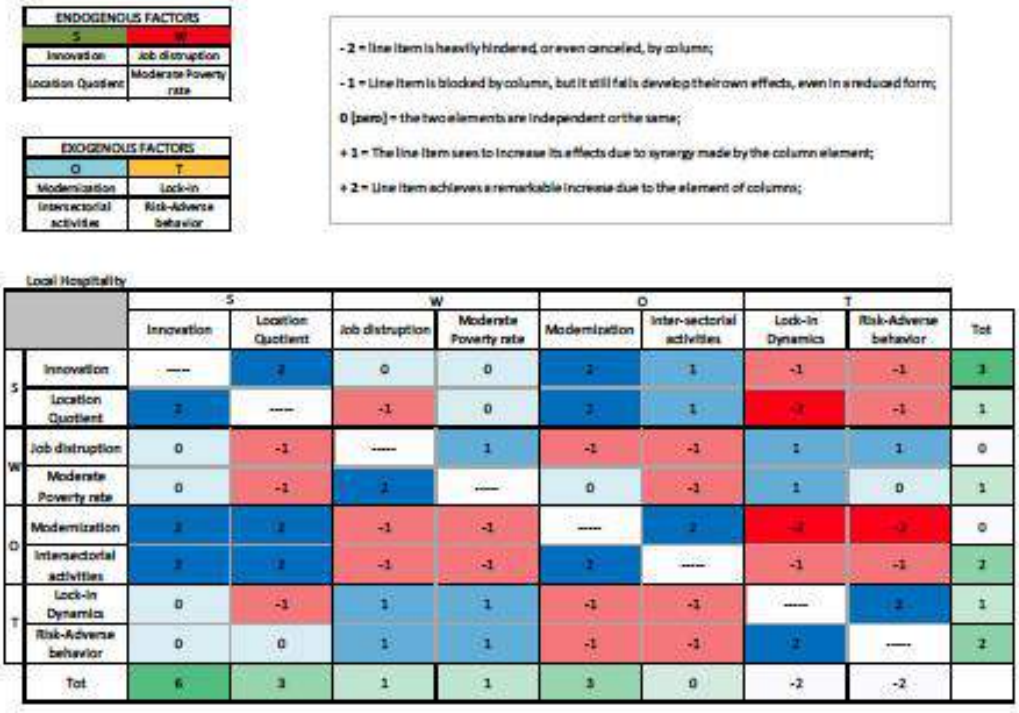


Figure 84 - Focus on one of the most significant areas. Source: Authors' elaboration. (Figure 4 in Annex 1h – Giuseppe Cantafio)

SWOT analysis

Analyzing the Local Hospitality Establishments Cluster, findings of the comparative analysis (Dynamic S.W.O.T, fig. 5) indicate that when the weaknesses are 'determined' (fig. 6, Characteristic Matrix), the opportunity of introducing S3 (i.e. Modernization, Intra-sectorial activities) scantly affects the weaknesses associated to the specific cluster (Job disruption and moderate poverty rate), thus revealing the inefficacy of the selected innovation strategies to tackle weaknesses characteristics of the Local Hospitality cluster. On the other hand, when weaknesses are the 'determinant' (fig. 6 - Characteristic Matrix), they scantly affect the efficacy of innovation strategies. The assigned scores are illustrated in the 'Characteristic Matrices' (see fig. 5 – 6).



ENDOGENOUS FACTORS	
S	W
Innovation	Job disruption
Location Quotient	Moderate Poverty rate

EXOGENOUS FACTORS	
O	T
Modernization	Lock-in
Intersectorial activities	Risk-Adverse behavior

- 2 = line item is heavily hindered, or even canceled, by column;
- 1 = Line item is blocked by column, but it still fails develop their own effects, even in a reduced form;
- 0 [zero] = the two elements are independent or the same;
+ 1 = The line item seen to increase its effects due to synergy made by the column element;
+ 2 = Line item achieves a remarkable increase due to the element of columns;

Local Hospitality

		S		W		O		T		
		Innovation	Location Quotient	Job distruption	Moderate Poverty rate	Modernization	Inter-sectorial activities	Lock-in Dynamics	Risk-Adverse behavior	Tot
S	Innovation	----	2	0	0	2	1	-1	-1	3
	Location Quotient	2	----	-1	0	2	1	-2	-1	1
W	Job distruption	0	-1	-----	1	-1	-1	1	1	0
	Moderate Poverty rate	0	-1	2	----	0	-1	1	0	1
O	Modernization	2	2	-1	-1	-----	2	-2	-2	0
	Intersectorial activities	2	2	-1	-1	2	----	-1	-1	2
T	Lock-in Dynamics	0	-1	1	1	-1	-1	-----	2	1
	Risk-Adverse behavior	0	0	1	1	-1	-1	2	-----	2
	Tot	6	3	1	1	3	0	-2	-2	

Figure 85 - Dynamic S.W.O. T: ' Comparative Matrix' of Endogenous and Exogenous Factors. (Figure 5 in Annex 1h – Giuseppe Cantafio)

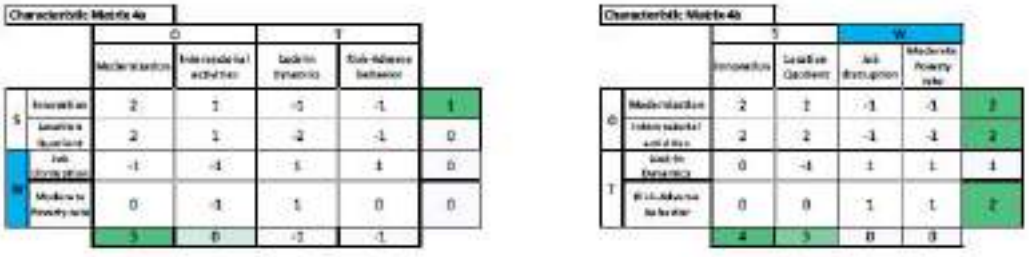


Figure 86 - Characteristic Matrices (Quadrants Q2, Q3 of the Comparative Matrix). (Figure 6 in Annex 1h – Giuseppe Cantafio)

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b) The Contribution of a "Spatialization-based" approach to plan Smart Specialisation Strategies (S3): The case of local clusters, San Diego, Methofological note - Giada Anversa

c) Local Cluster Personal Services (Non-Medical) – Giada Anversa

d) Local Cluster Industrial Products and Services – Virginia Borrello

e) Local Cluster Commercial Services – Laura Biancuzzo, Luana Parisi

f) Local Cluster Household Goods and Services – Gianmarco Cantafio

g) Local Cluster Hospitality – Giuseppe Cantafio

h) Local Cluster Real Estate, Construction and Development – Giuseppe Pronestì

i) Preliminary Findings on Innovation District San Diego – Laura Biancuzzo, Luana Parisi

j) Public Spaces as drivers for social innovation: reflections from the context of San Diego Downtown case as cultural district. Israa Mahmoud

k) San Diego Local Clusters Territorial Analysis