

Open innovation platforms in regional innovation policy

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Ecosystems and emerging business lead policy framework in the case of Tampere, Finland

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1 Introduction

This paper aims to clarify the concept of “open innovation platform” (OIP) as a new mode of *innovation intermediaries* resulting from the socio-technical change drawing its dynamics from increasing efforts to adjust, deploy and enhance the opportunities that digitalization provides. Theoretical and conceptual base is developed by literature discussing about regional innovation system (Morgan 1997; Cooke 1998), ecosystem (Moore 1993), platform (Gawer 2009) and open innovation (Chesborough 2003) in the context of the most recent socio-technical change, characterized by digitalization.

OIPs as innovation intermediaries that foster the renewal of the ecosystems may be assumed to have some specific qualities based on discussion above. To functions or services of innovation intermediaries OIPs bring some new elements, but maybe more significant change may be found from the logics how and to whom they provide these services. Key aim of the paper is to define the OIP and understand its role in regional economic development, as orchestrator’s tool to facilitate and foster open innovation activities. We may assume OIPs to have at least (some of the) following qualities.

- *Global knowledge flows*: Serving globally linked ecosystems and not only locally embedded clusters or individual firms to execute the open innovation
- *Diverse knowledge sources*: Acquiring knowledge from citizens, cities (“open data”) users, and other non-usual suspects to foster innovation processes, in addition to universities and other firms
- *Digitalization*: Using digitalized platform to enhance the platform business model (e.g. multisided market place) and network effect, in addition to increased accessibility among the local actors
- *Private funding for the service*: Facilitating the *open innovation process* by providing an actual value creative co-creation with recognizable outcome and with external third party, by deploying MSP mode and thus becoming a part of the business ecosystem.
- *Viable role in the ecosystem*: What is the role of the actual open innovation service in the whole innovation ecosystem in the region and how it is linked to other parallel services as a whole.

After defining the OIP, the definition will be put into a test in action research based cases study, focusing on implementation of regional strategy to foster OIP approach among the traditional innovation intermediaries. Empirical study gathers data and analyses case of Tampere in Finland based on experiences from two years of intensive action research. Then we dwell into the case of an innovation platform network that is strongly initiated as a bottom-up development, but recently gained support also from the national policy. The study discuss the also more broadly as a change in logic of knowledge based regional development. Paper aims to increase the understanding concerning the evolving practices in increasingly open and user driven innovation processes that emphasis the role of companies in the policy process, instead of research institutes.

In last part we discuss the role and position of open innovation platforms in the context of regional innovation system, and especially as a new mode of innovation intermediaries in the context of business focused “ecosystem” as well as technology focused “smart city” solutions, that tend to narrow down the broader approach to socio-economic development provided by RIS. Interpretation of “platforms” as crucial tools to orchestrate the innovation activities, has important role how the socio-economic development is perceived and analysed.

2 From Clusters towards Ecosystems in Regional Innovation System

Regional innovation system (RIS) approach has been widely deployed as a framework for the regional economic development policy design in the knowledge based economy, and cluster policy has been its most frequently used tool for implementation (Martin 2013). RIS approach focuses on institutional settings of the region and specific policy needs in each region accordingly, instead of "one size fits all" solutions (e.g. Morgan 1997; Cooke 1998). Recently new regional innovation policy designs namely as "place-based policy" and "smart specialization", strongly promoted by European Commission, have emerged with emphasis on theoretical ideas of related variety and importance of different knowledge bases rather than on institutional setting of the region framing the economic learning. (see e.g. Asheim et al., 2011; Frenken et al., 2007; 2011; Foray et al., 2012;)

As a part of the discussion, the concept of innovation platform has been introduced in the regional economic development. According to Cooke and De Laurentis (2010) platform consists of a number of businesses and quite possibly knowledge or training and support services, agencies and firms that cross typical sectoral and even cluster boundaries. There is some spatial contiguity, as in case of clusters. In practice they provide examples from platforms by describing interaction models from small firms to clusters that enhance the unusual cross-fertilization by fostering knowledge flows not only within but also among the traditional clusters. (ibid. 2010, 273-303; 301.) Parallel way, regional innovation or development platform is defined as "regional resource configurations based on the past development trajectories, but presenting the future potential to produce competitive advantage existing in the defined resource configurations. The central power of the development platform can be found in exploiting distance as innovation potential, but synergy in the platforms is emphasized in terms of related variety. (Uotila, Harmaakorpi & Hermans 2012, 1590; Harmaakorpi 2004; 2006.) In these discussion, platform refers to environments that foster cross-pollination of knowledge bases, their border crossing international linkages and possibilities of private sector to lead the innovation policy in the region. (Cooke & DeLaurentis 2011, 330.)

Rinkinen (2017) links these discussions to platforms as business organization (e.g. Gawer 2009; Evans & Gawer 2016) and focus on companies and their ecosystems (e.g. Moore 1993). Both discussions are strongly related to digitalization and attempts to adjust this socio-technical change framing both societal and market conditions. She interprets regional innovation platform as academic notion and policy approach (e.g. Cooke & DeLaurentis 2010; Asheim, Cooke & Boscma 2007; Harmaakorpi 2006) to be a result of criticism towards the RIS concept, and its main policy designs, e.g. clusters. The key actors on the platforms are familiar from RIS literature (e.g. firms, technology or research centres, HEIs) as well as dynamics of self-organizing (Rinkinen 2017, 45) among the many other things. To simplify, rather than RIS itself the (innovation) platform and ecosystem approaches challenge the concept of "cluster" introduced by Porter in 1988. To simplify, platform and ecosystem approach may be seen as different modes of adaptation to socio-technical change, where in case of latter the digitalization is in the core of the change. Ecosystem and platform replaces, or complements, the cluster model of business network for co-operation within the broader RIS context. Bluntly, the difference is that in clusters the focus is on local networking of companies that aim to complement each other capabilities in order to produce more competitive products, and ecosystem and platform approaches emphasizes "keystone" companies and "platform leaders" who orchestrate and nurture the ecosystems consisting from firms that are more dependent from main company – often big MNC – that holds the key technology and orchestrate the system. As analytical tool, ecosystem approach hardly provides any novel insights as such, beyond new technical solutions to conduct SNA analysis, but it refocus the study, and emphasis the company point of view. As a policy approach, policy makers are not any more able than before to intervene the activities of companies, but they may create environment that enables the business and ecosystems to flourish, i.e. shape the institutional environment, knowledge sharing and interaction, as in case of RIS based policies.

Some differences in policy implications, due to some extent different understanding in economic development processes between the RIS and ecosystem approaches, should be applied. *Ecosystem development may be fostered partly different policy design than e.g. in cluster development*). Ecosystem policy may foster technology startups and emergence of new (business) ecosystems instead of existing industrial clusters. They evolve through trials and experimentation (experimentation culture) and policy may foster *this development* by offering (regional) innovation platforms for trials (e.g. support for the pilots, demos and prototyping aiming to enhance the innovations) including *user- and citizen-centric cooperation platforms*. (e.g. *living labs*). *However, there is a need to foster a long-term R&D work as well*. Quadruple helix cooperation, orchestration of ecosystem renewal (or death) and evolution should be in focus of the policy (e.g. case of Nokia mobile phones in Finland) surely includes overlapping elements, especially with RIS, but it provides some new elements to innovation policy discussion as well (compared to IS, Smart specialization, Clusters). (Rinkinen 2017, 45-46, and 53-54.) In terms of policy, differences on the basis of the conceptual comparison between the cluster, smart specialization and innovation system compared to the ecosystem approach are:

- Members of ecosystems may be any organizations that involve the creation of customer value.: enable to provision of customer value (e.g. Crowdsourcing, shared value creation, peer-to-peer activities)
- The *key actor is keystone company or platform company* (often big foreign company) that offer platform (e.g. technology) for others to innovate and to create value: (e.g. by enabling the diffusion of scalable innovations to the market) foster the engagement of platform leaders to local socio-economic activities to capture the value (e.g. platform-enabling creativity skills and nurturing entrepreneurship)
- open innovation processes are at the center of the ecosystem activities; foster open innovation
- networks of ecosystem are primarily global and border crossing and they have a fairly thin connection to certain places : increase the local linkages (e.g. value networks) (Rinkinen & Harmaakorpi 2014)

However, there is need for further empirical research concerning the innovation policy implications of the business ecosystem concept and we aim, by a small part, to answer this demand with this paper.

Ecosystems place the companies as orchestrators of the system. When sharing activities – including innovation - within and outside the firm, with partners or the open market, the platform leader has to understand the incentives and capabilities in the ecosystem in order to orchestrate it. It may have an active role in ecosystem development, and aim to align the development of other firms to support its own strengths. Keystone companies (Iansiti & Levien 199x) or platform leaders (Gawer & Cusumano 2002) are well established and researched concepts that define the role of major company in the ecosystem. Risks in leadership position relates to *massive resource investments over long periods* of time before you find out whether the opportunity is real and whether you have managed to secure the orchestrator role. Also other roles in ecosystem are related to leaders (e.g. who to follow, how strongly to commit) and thus, *understanding of the ecosystem and its dynamics, instead of one organization, is critical for successful strategy (and business)*. (Adler 2006, 9.)

Due to information technologies that have significantly reduced the costs of coordination innovation ecosystems have become a more central for the growth strategies of firms. Most well-known cases are from high-tech environment (e.g. Intel, Nokia, SAP, and Cisco), but also industries including printing, financial services, basic materials, or logistics have utilized the approach. The possibility of ecosystems to create value more than any single firm could have created alone, but the benefits of these systems (acquired through e.g. platform leadership, keystone strategies, open innovation, value networks, hyperlinked organizations) may also easily fail due to complexity of the system and thus, challenges in its orchestration. (Adler 2006, 2-3.)

Ecosystems also need “platforms” such as services, tools, or technologies, which are open for other players in the ecosystems to enhance their own performance, or to orchestrate the system. Consequently, keystone players are involved with the creation of value within the ecosystems as well as sharing the value with the other participants. In absence of keystone companies (e.g. Nokia, Samsung) public procurement in the USA has been used to foster this development, but it is much complex in EU due to regulations securing competition. However, without these actors, or if they do not take active role in the ecosystem building, it is not likely that knowledge ecosystem turns into business ecosystem, with significant economic impact. (Clarissy2014) Clarysse et al (2013) distinguish knowledge ecosystems from business ecosystems as follows;

- primary activity in knowledge ecosystems is the generation of new knowledge whereas the focus in business ecosystems is on value for customers.
- players in a knowledge ecosystem are typically connected in a dense, geographically clustered network while business ecosystems are represented by value networks which can be globally dispersed.
- knowledge ecosystems are centered around a university or PRO whereas large companies are the leaders of business ecosystems. (Clarysse et al 2014)

The division resembles the RIS approach, which by definition include at least two subsystems; one for the knowledge generation and diffusion and the other for knowledge application and exploitation The first one includes learning and research institutions, and the latter the firms and their clients, suppliers, competitors and partners who deploy the knowledge for business purposes. (Autio,1998). Importantly, these systems *also include various intermediary organizations to link the two subsystems* (Rinkinen 2017, 29.)

2.1 Open innovation

Importantly, especially in open source software development the motivation to engage the innovation process is enjoyment of problem solving rather than getting paid (Ghosh, 1998; Hars & Ou, 2002; Hertel et al., 2003; Bonaccorsi & Rossi, 204; Lakhani & Wolf, 2005). When individuals give up all the intellectual property rights the information becomes a public good. (von Hippel, 2005.) This ideal of openness and free sharing may be applied beyond the software development communities, but with varying degrees and frequently there is a lot of discussion what part is free and fully open and what elements brings financial benefits and to whom. It should be bear in mind, that customers as innovators also lower the development costs of the company and may make the R&D more cost-effective and agile. (Thomke & von Hippel, 2002).

Internet has enabled numerous new mechanisms for firms to collaborative innovation with customers and virtual customer environments enhance the process (Dahan & Hauser, 2002; Nambisan, 2002; Sawhney et. al, 2005). However, the open innovation processes have been operationalized also beyond the virtual platforms with specific tools developed for this purpose. A few most frequently used concept are discussed here more in detail in order to illustrate the practices of open innovation environment, and various degrees of openness. These are practices broadly defined by the concepts like *crowdsourcing*, *co-creation* or *living labs* that all aim to foster joint value creation process.

In-bound and out-bound innovations both include non-pecuniary and pecuniary types. (Dahlander & Gann 2010, 706)

Incentives for individuals vary from crowdsourcing based problem-solving activities of non-experts and amateurs (Brabham, 2008). According to Howe (2006) “*crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job*

is performed collaboratively), but is also often undertaken by sole individuals. (ibid., 5.) In crowdsourcing the crowd does not get paid for their participation, but maybe a small compensation and the excitement to join the process.

However, Brabham (2008) reminds that team-based and multidisciplinary problem-solving, or wider globally distributed *crowdsourcing* that is an online, distributed problem-solving and production model, *is not* an open-source innovation practice but a business model, if the problems solved or products designed by the crowd become the property of companies or the problem initiator: the results are not freely distributed to all parties interested, as was the case in open source software (ibid., 76-77). Then, it is important to note that there are various levels in openness, and different actual beneficiaries to the “wisdom of the crowd

In short, co-creation is about joint creation of value by the company and the customer; allowing the customer to co-construct the service experience to suit his/her context; joint problem definition and problem solving; and creating environments for active dialogue between the customer and the company. In order for co-creation of value to take place, the firm has to create co-creation environments that enable a diversity of experiences. (Prahalad and Ramaswamy 2004a). These environment are usually considered as internet-placed environments. Sawhney et. al (2005) have recognized that these online collaboration mechanisms may (1) enhance idea generation within virtual communities and tap to the competencies of lead users¹. This is supported by creating an environment in which the users/customers feel that they are a part of. (2) They also find that organization needs to go through a change in order to adapt to a new way of collaborating and co-creating with customers. This calls out for both new tools and a change of mind-set among the staff. (3) Sawhney et. al also recognize the importance of *intermediators in co-creation*. With these intermediators they refer to companies or organizations that *facilitate collaborative innovation*, allowing the firm to expand its vision of customers. This mediated process complements the traditional processes of direct innovation controlled by the individual firm. Mediated activities of innovation represent an interesting and profitable extension of the traditional business of innovation intermediaries. (ibid., 14-15.) This role of facilitator may be seen a relevant also for the intermediaries in regional development as well as careful planning of value-creation process with users, that is one of the key tasks of these facilitators, or intermediaries in regional economic development field.

Living-labs are clearly a concrete policy tools that link the innovation activities to users and citizens in regional economic development practices and local innovation policy applications. Although in case of Finland it seems that living lab activities have not been able to deliver what was expected. (Xxx2009), they, without doubt, serve the opening innovation activities and engage new groups to the process and especially in field of urban development. It seems that living labs and similar services (e.g. prototyping platform, testbed, field trial, living lab, market pilot, societal pilot: (Ballon, Pierson & Delaere 2005, 2-3) have challenges to organize a continuous market based services. In turn, SMEs have four recognized barriers to adopt open innovation approach recognized by Bigliardi & Galati (2016) are lack of know-how, difficulty in finding the right partner and trust, lack of managerial skills to establish an effective collaboration with external partners, and lack of strategic vision. (ibid., 877.) Instead, big companies are increasingly deploying the OI model in their innovation processes (Chesborough et al 2016).

¹ Lead users are people who are ahead of the majority of users in their population with respect to an important market trend, and they expect to gain relatively high benefits from a solution to the needs they have encountered there. A number of studies have shown that many of the innovations reported by lead users are commercially attractive and/or have been commercialized by manufacturers. (von Hippel, 2005.)

2.2 Innovation intermediaries within and between the ecosystem as OIPs

However, our focus is not on the ecosystem or platform leaders, but on open innovation platforms, that are used as a tool to orchestrate the ecosystem, and harness its innovative potential to provide. We position the concept of *open innovation* platform to the context of regional economic development as innovation intermediary.

The role of intermediaries in a systemic setting for innovation is to foster interactions, learning and partnerships among the actors. Intermediaries diminish “asymmetric information on the market”. Intermediaries aim to fix the question of market failure (Arrow 1962) in the economy and thus they have acquired many forms over the history. Due to interpretation according which innovation is considerably hindered by a market failure the role of public sector to fix the problem of asymmetry has been strong with focus on SMEs with limited resources (e.g. technology transfer offices, business incubators, entrepreneurship centres). Due to prevailing public funding innovation intermediaries frequently has a legal and governmental non-profit structure locating strategically vicinity of universities and research institutes to support especially high-tech based start-ups, or as in case of science parks or development agencies local or regional SME networks may provide the base for the intermediaries.

The “triple helix” models (e.g. Ezkowitz & Leydesdorff, 2000) fostered by intermediary activities have preceded a more strongly pronounced opening and “crowding” of the knowledge production and deployment. Interaction and linkages created among the actors are important because they increase knowledge spill-overs and learning, strengthen absorptive capacity, and provide companies with helpful input from other actors (Wise, 2014) and in case of regional economic development even foster the emergence of “constructed regional advantage” (Asheim, Boschma & Cooke 2011).

Science parks (or technology or research parks) as physical environments fostering university-industry and government collaborations may be found from the Stanford Research Park in California set up in the 1951. Science parks have three overlapping functions: 1) ‘land use profitability’, 2) ‘commercialization of the science base’, and 3) as a component of local, or regional or national governments’ strategies (cluster programs), to foster the growth of indigenous firms and to attract inward investment. The latter included e.g. *Regional centre program* or *Centre of expertise program* in Finland. Despite the similarities there are also considerable variations especially how to select their tenants, build networks, link with local universities and how to organize the business development, or business incubators or, during 2000 increasingly, accelerators. Of these activities the cluster and business development were usually non-profit activities whereas real-estate business may be very profitable. (Lindholm & Lawton-Smith x ; Halme 2005, 81-82.)

Cohendet, Grandadam, Simon and Capdevila (2014) describe that intermediaries as *platforms for communities that link creative individuals with formal organizations and institutions*. Providing the necessary cognitive structure to make creative material economically marketable and viable is relevant for their analysis (ibid., 2014). A parallel way, Steward and Hyysalo (2008) refer innovation intermediaries as actors who create spaces and opportunities for appropriation and generation of emerging technical or cultural products *by others who might be described as developers and users*. They identify innovation intermediaries by *their engagement in activities, in which they gather, develop, control and disseminate knowledge, collect and disseminate financial, technical and institutional resources, and attempt to regulate uses, development, participation* and the actions of others in the innovation network. Intermediaries may be organizations, or individuals grounded in an institutional, technical and often physical context that facilitates their activities.). By operating strategically on the interface between the public and the private sector, innovation intermediaries as platforms may offer infrastructures for innovation networks. (Steward & Hyysalo 2008.)

According to Howells (2006) there has been a growing need for pointing attention to the direction of nodes and links in innovation processes as innovation has become more open or distributed over time and collaboration has been emphasized. (ibid, 2006.) He recognized a several fairly detailed types (and functions) for the innovation intermediaries:

1. Foresight and diagnostics
2. Scanning and information processing (e.g. scanning and selecting collaborative partners)
3. Knowledge processing, generation and combination (e.g. combining the knowledge of partners)
4. Gatekeeping and brokering (e.g. matchmaking, contractual advice)
5. Testing, validation and training (e.g. prototyping and pilot facilities, scale-up manufacturing)
6. Accreditation and standards (e.g. advice, or verification of standards)
7. Regulation and arbitration
8. Intellectual property (e.g. IP advice and management)
9. Commercialization (e.g. marketing and sales support, finding capital funding)
10. Assessment and evaluation (e.g. technology evaluation) (Howells 2006, 721-722)

Bathelt and Cohendet (2014) point out that there has been relatively little research over co-creation processes of knowledge through communities that meet in physical spaces. They stress that in recent years, different types of spaces have been identified as *local platforms for knowledge creation* related to concepts such as "co-working spaces", "maker spaces", or, "co-design labs". One niche of these platforms is *not targeted at commercial goals* (like hacker spaces). Second type of these platforms represent organizational initiatives that focus on *accelerating the process of collective creativity towards a commercial solution* (like co-design laboratories), and the third type is open to the general public and encourages the *participation of citizens* (like living labs) or targets at a specific group of actors such as entrepreneurs sharing co-working spaces. They also point out, that the processes of knowledge creation through these platforms, as well as the dynamics between actors, have not yet received much attention in the literature. Especially the *physical space –aspect* is rather invisible in the recent literature. Balloon et al (2005) make distinction between the in-house R&D, *open innovation platforms* and pilots based on the maturity of the innovation developed. Open innovation platform in their interpretation provides services especially in form of living labs, proto-shops and test-beds. These categories above imply, that (open) innovation platform is clearly practice that serve the purpose of the innovation intermediary, but may take various forms as an actual service. Openness and co-creation closely link to ecosystem thinking, as well as user and citizen orientation, as the business ecosystem is eager to shape their products for consumers, and to markets.

Rannikko and Kajanus (2014) introduce a definition of an open innovation platform that provides experimental environments to enhance development capability, and strengthens the area by creating and forming personal ties between entrepreneurs and universities. According to their definition open innovation platforms are able both to attract creative entrepreneurs, and to help them prioritize development activities and offer them with suitable students teams (in the university context) to foster the firm's development. In addition, potential student teams may be attracted by offering them practical learning experiences and potential future earnings.

Ecosystems emphasis that the competition takes place between the business ecosystems, not individual firms, which requires a new approach from policy as well. (Rinkinen 2017xx) although one could claim, that thinking is fairly close to idea of cluster policy, that also, considered the networks and interaction within the cluster to be crucial, rather than singular companies as such.

At service level, few early empirical studies focus on collaborative innovation models (Ojansalo & Kauppinen 2016), cities and their service development (Ojansalo & Tähtinen 2016), on-line innovation services as IT-

based open innovation tools (Hallerstede 2013) and inclusive sides (Anttiroiko 2016) of the open innovation platforms

Relevance lies in the capability to integrate the new knowledge bases to innovative processes, by extending the intermediary activities to new sources of knowledge with help of new information and communication technology that enable the knowledge creation processes among the many more actors than ever before.

The platform in regional economic development literature (e.g. Cooke et al 2010; Harmaakorpi 2006) do not fully resemble the platform discussion in business ecosystem (e.g. Moore 1993) or platform economy (e.g. Gawer 2009) context, however, both bring parallel elements to research, and policy. Our aim is to define the concept of open innovation platform (OIP), and link it with ongoing socio-technical change with specific qualities that makes it possible to recognize one when you see one (Markusen 1999).

We may acquire some basic qualities of OIPs from the discussions above, but even more detailed definition may be found from Hallerstede (2013), who defines OIPs more in detail as a combination of open innovation (Chesborough 2003; von Hippel 2005) and IT-platforms that organize the open innovation processes among the parties who has a problem to solve and those who has a capacity to solve to the problem. (Hallerstede 2013, 18.) He extends the definition to *open innovation intermediaries* which have a long history in bringing together those who has a problem to be defined and those who have – or who seek – the solution for the problem. In his interpretation innovation intermediaries may use the open innovation platform for this purpose, but he still keeps the IT based OIP and actual open innovation intermediaries as actors separated entities. (ibid., 34) (Figure 2)

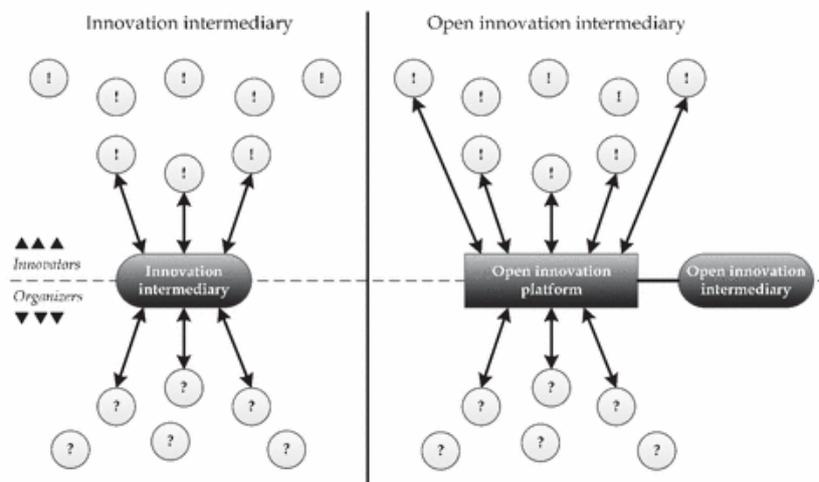


Figure 9: Innovation intermediary versus open innovation intermediary bridging the gap between organizers and innovators

Figure 1 Innovation intermediary vs IT-based OIP and open innovation intermediary (Hallerstede, 2013, 36.)

Innovation intermediaries such as the *NineSigma* or *Innocentive* have a commercial structure as they operate on the basis of reward fees that they receive for exchange deals between knowledge and technology supplier and customers. Their success and diminishing public budgets increase the relevance to better understand the logics of innovation intermediaries providing "*engaged innovation process management*, matching complementary resources of the network partner and integrating them into a coordinated innovation process is an important capability; and *valuation of innovation projects at all stages* to potentially provide

a funding model for the intermediary. (Katzy et al. 2013, 296; 302-303) They may be seen as open innovation platforms that are not used by the innovation intermediaries, but they are intermediaries de facto.

Katzy et al. (2013) explored open innovation processes where innovation intermediaries contributed to the establishment of the collaboration *and the management of operations with digitalized tools (e.g. online innovation market places at some stages) but also physical environments with explicit coordination*. They found some strategic changes in their behavior; intermediaries provided coordination for the various networks offering wide range of consulting and facilitation services (e.g. Howells 2006). "*Instead of typical public funded agencies without commercial incentives, intermediaries intentionally searched a role in the innovation value chain through which they could be clearly part of the business ecosystem.*" This development is understudied in research on open innovation. In sum, "prevailing facilitating rationale for intermediaries is replaced by a value creation rationale in the innovation value chain". *In practice intermediaries moved towards specific service provision (e.g. matchmaking, innovation management and innovation valuations) and made them visible in deals between innovation suppliers and customers. In terms of revenue models they also moved from publicly funded facilitation towards business service model and collected transaction fees and took co-ownerships of innovations. They conclude that more research is needed to generalize these findings, and one supportive case study is our study discussed in empirical part, how platforms work in the ecosystem, linking the different actors through the (open) innovation activities.* (Katzy et al 2013, 306.)

2.3 Qualities of OIP as innovation intermediary

It should be noticed that innovation intermediaries work one-to-one-to-one basis (between supplier and customer), many-to-one or even more complex many-to-many collaborations forming both vertical and horizontal relationships. The network effect is likely to occur, as the intermediators gains more power over the individual clients depending on the number of their clients. Not only suppliers initiate the process with intermediaries and foster the innovativeness of their supply customers, but also customers increasingly start the process. (Howells 2006, 724.). In platform discussion "multi-sided platforms" work similarly as market intermediaries, but are not limited to foster innovation. A 'multi-sided' platform or MSP (e.g. Sony's PlayStation, Visa credit cards, Microsoft's Windows, eBay) is both a platform and a market intermediary (Hagiu 2007). However, same logic utilized in innovation activities (e.g. *Innocentive*) makes service multisided innovation platform, or innovation intermediary, or even open innovation platform. Platforms that foster innovation without multisided platform model, are products, services or technologies that serve as foundations upon which other parties can build complementary products, services or technologies (Gawer and Cusumano, 2002; Gawer, 2009). However, also consumers and 'complementors' may interact through MSPs in order to foster the innovation on these technological platforms. Therefore, two simplified models for platforms may be recognized, one facilitating transactions of third parties, and other fostering the development of platform (technology, services, etc.) of its own.

According to Boudreau and Haigu (2009) many studies have explored the roles of platform owners; coordinating technical development, interactions, fostering investments, nourishing the ecosystem. Frequently, beyond economic activity are rule making and regulating practices for the ecosystem members, as monopolist platform owners have *incentives* to foster the market formation for the complementary service providers, as it benefits their success. It may then works as *MSPs going beyond price formation and aim to solve potential (multi-sided) 'market failures'*. They studied both digital MSPs (Facebook and TopCoder) and non-digital MSPs (the Roppongi Hills 'mini-city' and Harvard Business School) to emphasize the general nature of the market failures in all of MSP cases. Externalities, information asymmetries, complexity, non-pecuniary motivations and uncertainty were evident in all cases and hinder the proper functioning of the MSP ecosystems. They found evidence from non-pecuniary externalities and contrary to earlier studies suggested, that the role of public authorities on regulating was maybe less relevant than role the MSP itself. (Boudreau & Haigu 2009, 164-165.)

Platform model is not then restricted to digital environments only, and it has some impact on behavior of the actors within the ecosystem. Open innovation platform is simply a platform – multisided fostering the transaction of others or industry platform developing its own services – that foster innovation related interactions. Innovation intermediary then well resembles the MSP, and digitalization has made MSP as important mode of operation, of which network effect digitalization may be accelerate significantly.

In sum, OIPs as innovation intermediaries that foster the renewal of the ecosystems may be assumed to have some specific qualities based on discussion above. To functions or services of IIs OIPs bring some new elements, but maybe more significant change may be found from the logics how and to whom they provide these services. We may assume OIPs to have at least (some of the) following qualities.

- *Global knowledge flows*: Serving globally linked ecosystems and not only locally embedded clusters or individual firms to execute the open innovation
- *Diverse knowledge sources*: Acquiring knowledge from citizens, cities (“open data”) users, and other non-usual suspects to foster innovation processes, in addition to universities and other firms
- *Digitalization*: Using digitalized platform to enhance the platform business model (e.g. multisided market place) and network effect, in addition to increased accessibility among the local actors
- *Private funding for the service*: Facilitating the *open innovation process* by providing an actual value creative co-creation with recognizable outcome and with external third party, by deploying MSP mode and thus becoming a part of the business ecosystem.
- *Viable role in the ecosystem*: What is the role of the actual open innovation service in the whole innovation ecosystem in the region and how it is linked to other parallel services as a whole.

From these premises, we may discuss the “platformization” of intermediary activities in practice, and if these requirements do not apply, there is not much novelty in living labs, test-beds or innovation hubs mushrooming in various regions.

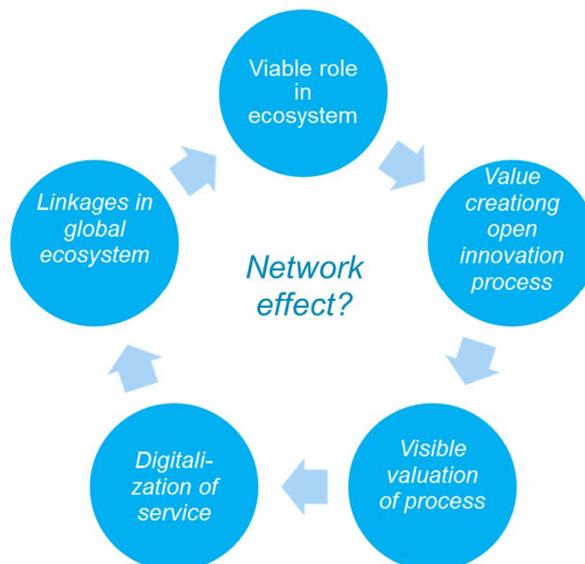


Figure 1. Specific qualities of OIP as innovation intermediary

These qualities and tentative definition provide a starting point to our empirical analysis in case of Tampere, and evolution of OIPs in this context

3 Methodology

This paper is based on action-based research conducted as a part of Six Cities Strategy on Finland (EAKR 2015-2017). The Six City Strategy of Finland involves the six biggest cities in the country and illustrates the newest trend of Finnish policy making: The strategy is the first one in Finland to focus on *open innovation platforms* as incubators for economic growth and public sector renewal. The Six City Strategy illustrates a *bottom up development* as the strategy is fostering the renewal of national policy through the six cities as the key change agents and facilitators of the policy implications. The strategy is nationally significant: the six largest cities in Finland are home to some 30% of the population. The highest decision making body of the strategy is the board of directors that consists of the representatives of the six cities. This assures that the strategy improves the service processes of all cities involved and their functionality over municipal borders. The utilisation of the largest urban regions as development environments for new innovations also strengthens Finland's competitiveness. The strategy involves universities, industry and government working for a common goal.

The Six Cities Strategy is divided to three focus areas: open innovation platform, open data and open participation. The data analysed in this paper has been gathered as a part of the open innovation platforms project that aims to develop management tools for innovation platforms. This is done in active interaction with the platform actors.

The research conducted in this paper is based on action-based research methods as the authors are both active in the Six Cities Strategy. Action-based research method was chosen because we believe that its methods such as observation and participatory research may shed light to dimensions that would be lost by using other research methods. In addition, action-based research offers us a way to examine the evolutionary process of the Six City Strategy as a whole. We leave roles as plain observers behind and play and active part in the innovation process.

The material analysed in this paper comprises activities concerned with the project from the first eight months in action (March 2015 to October 2015). The data gathered focus on case of Tampere region, which may be considered as a forth runner in innovation platform activities in Finland. Data has been gathered from altogether

Data includes

1. Data focuses on three open innovation platforms that facilitate collaboration between university, industry and public sector including 13 interviews with platform owners or other people relevant to the platform activities in Tampere region.
2. Seven platforms active in Tampere but the focus is on three distinctive platforms that facilitate collaboration between university, industry and public sector...
3. Altogether 34 interviews + 10 workshops together with platform actors + 27 meetings with the Six City Strategy implementers from universities, industry and public sector.

The themes in the interviews with the platform actors concerned how and why the platform had been set up, who were involved with its activities and what was the overall purpose and value of the platform. As the aim of the development project is to develop management tools for the platforms, the workshops arranged for the platform actors aimed to do this by raising discussion on the matter and giving some suggestions what to consider in platform management. All interviews, meetings and workshops were open in nature, allowing participants to freely contribute to the discussion and express their questions and suggestions. The open innovation platform is the conceptual tool to study the phenomenon.

work-in-progress

4 In search of open innovation platforms: case of Tampere (to be analysed)

In our analysis we focus on *new collaborative practices that aim to organize a dynamics of (industrial) knowledge flows through platforms by facilitating co-working and co-creation processes*. A new roles of regional intermediating organizations are discussed based on the observations from literature discussed above. Open innovation platform as a policy fostering the crosspollination over the sectoral and cluster boundaries (e.g. Cooke & De Laurentis 2010, 273) and further as a scalable service to implement the crosspollination in an efficient way by deploying digitalized “platform business model” (e.g. Haigu 2014). In the literature these approaches are fairly distant from each other, but both are resulting from the socio-technological change and blurring of boundaries between the sectors and even clusters, mostly due to digitalization and other new technologies as well as provision of more complex products and systems.

The roles of intermediaries are extended from science and business collaborations towards more user driven and co-creation, as already living lab concepts have done to some extent. As suggested in previous chapter, experiences from living labs suggests, that it is hard to set up a functional business model for them as it is also fairly difficult to find customers with willingness to pay from the service.

In this analysis the case of Tampere is scrutinized and attempts to take a step beyond the living labs towards open innovation platform models are discussed. In Finnish policy discussion there are fairly fuzzy and overlapping definitions of development platforms, innovation platforms and open innovation platforms, as well as references to platform economy or ecosystems.

For example in Tekes report (2017) focusing on recent developments in Innovative Cities program the concept of “platform” is loosely defined as *“open research infrastructure and development environment that is jointly used by the business and research organizations refers to physical or other ensemble of research and research services, of which aims to strengthen the interface between the research and business and often develop the research results to business for the companies.”* Further, by “platform” they refer to research infrastructures (e.g. laboratories, devices, instruments, knowledge bases and datasets), development environments (e.g. demonstration and testing environments for the new technologies) and services related to these infrastructures and environments. They emphasize, that there is no existing definition for the concept of platform at national or international level in this context. In their practical definition they aimed to focus on ensembles that are wider than one instrument but narrower than regional innovation ecosystem. (Hjelt, Sepponen, Palomäki ja Luoma 2017, 15-17.) We aim to define OIP with dynamics of development that make them recognizable, and then test the definition with strong empirical evidence based on action research conducted during the 2015-2017.

The innovation intermediaries are in search of more collaborative or participatory models to organize open innovation platforms, and also more sustainable funding models. The focus of the analysis is on the new collaborative practices of innovation and how these change the innovation environment on the context of university-industry-government collaboration. The analysis will also discuss the pros and cons of the new participatory practises: what has worked and what has not?

Four intermediaries from Tampere will be discussed:

- Hermia Group is a development company owned by the Tampere University of Technology and its support foundation, the City of Tampere, Tampere Technological Society, and the Technical Research Centre of Finland. It founded an innovation environment Demola in 2008 that operates in the New Factory with two more “engine rooms”. Demola offers a co-working space, co-creation process and proto-labs (?) for the use of industry by engaging university and polytechnic students into innovation activities in its projects. The following qualities of Demola will be studied:
- *Global knowledge flows:*

- *Diverse knowledge sources;*
 - *Digitalization:*
 - *Private funding for the service:*
 - *Viable role in the ecosystem:*
-
- Technopolis is a private real-estate company that has been renting out office facilities along with business services from 1982. In 2014 Technopolis expanded its operations with the establishment of Mediapolis campus. Mediapolis is a new centre and network for digital business and story-telling, or content producing, and provides related services for its clients. Mediapolis was founded because the national broadcasting company YLE was seeking more co-operation with its partners to support the vitality of the creative business in the region. Technopolis bought their old facilities and Mediapolis campus was launched together with YLE and the support from the city of Tampere and polytechnic (muita?) Mediapolis has brought the various actors together for example in a co-creative Living Lab project Lintukoto – an interactive game, that offered the companies a way to test their products and get feedback both from the students using their equipment (and getting experience) and gamers playing the game. The following qualities of the Mediapolis are discussed:
 - *Global knowledge flows:*
 - *Diverse knowledge sources;*
 - *Digitalization:*
 - *Private funding for the service:*
 - *Viable role in the ecosystem:*
 -
-
- University properties of Finland Ltd is the owner of newly established Campus Arena. Campus Arena is the co-designed concept of University properties of Finland Ltd (UPOF) and Tampere University of Technology (TUT), that steamed from TUT´s increased needs for more facilities and a lack of landmark within the university campus area. Campus Arena facilitates university-industry collaboration within the Campus Arena where the premises have been designed to support co-working. UPOF and TUT also offer co-creation processes to increase companies´, researchers´ and students´ collaboration with their activities such as Campus Club. The following qualities of Campus Arena are discussed:
 - *Global knowledge flows:*
 - *Diverse knowledge sources;*
 - *Digitalization:*
 - *Private funding for the service:*
 - *Viable role in the ecosystem:*
-
- FinnMedi Oy is a local hub of biotechnology, healthcare technology, and medical expertise. Its premises are located in the Finn-Medi Science Park area in Tampere. The company has twenty-years of expertise in intermediation and development activities. In 2015 it launched the HealthHUB, a co-working space bringing actors in health sciences together. HealthHUB is a continuum to Idea Clinique, that was a concept ordered by the regional development agency Pirkanmaan liitto to facilitate collaboration in the health sector and to engage more consumers and users to development activities. The following qualities of the Health Hub are discussed:

- *Global knowledge flows:*
- *Diverse knowledge sources;*
- *Digitalization:*
- *Private funding for the service:*
- *Viable role in the ecosystem:*

This section will describe how these innovation intermediaries organize their activities, and whether or not they may be considered as OIPs facilitating the open innovation activities for the ecosystems they belong.

5 Discussion and conclusions (to be finalized)

Open innovation platforms are physical or virtual spaces that facilitate open co-creation processes. With the emerging activities (crowdsourcing, co-creation, co-working) the actors have reacted to the opening of innovation activities by providing the open innovation platforms to engage various groups to innovation and development processes. However, this has created a fairly rich set of open innovation platforms, the conceptualization of the concept lags behind. Therefore, this paper has aimed to clarify the concept of an open innovation platform in this context, and reposition the activities and practices labelled under this category in order to better map the emergence of these new and more open practices as a part of regional innovation system and policy. This paper has defined the case of Tampere region in Finland and the emergence of an innovation platform network, and discussed its role and position in regional innovation system, (ecosystem) as well as aims to reflect the practices provided by the public or semi-public intermediaries with new private sector actors offering similar or close to similar services in co-creation, crowdsourcing and related services.

One motivation to clarify the concept of an open innovation platform is that platform-based policy initiatives have been strongly promoted by organizations such as OECD, EU, World Bank, different development agencies and aid organization across the world. In these initiatives, also the university-industry-government –initiatives are addressed to engage different actors to innovation or any development activities. However, the term innovation platform is used in many contexts and thus remain ambiguous and there is a need to define what an open innovation platform in the policy-context is.

In 2015, The Six City Strategy (2015-2017) was launched in Finland. It involves the six biggest cities in the country and illustrates the newest trend in Finnish policy making: The strategy is the first one in Finland to focus on *open innovation platforms* as incubators for economic growth and public sector renewal. The Six City strategy is based on bottom-up initiatives and turning them to national policies. The utilisation of the largest urban regions as development environments for new innovations also strengthens Finland's competitiveness. The strategy involves universities, industry and government working for a common goal.

The examples provided above, describe the variety of organisations involved in promoting platform-based approaches throughout the world, as different inclusive approaches have been implemented not only in the developed countries but also in the developing ones. Open innovation platforms may also work as *urban development tools*, as they do not necessarily have to promote only new ITC solutions, but they may try to find solutions to meet with any regional needs, in fields such as agriculture, too. Also in these cases, innovation platforms have been formed to bring different stakeholders together to form communities, share experiences and come up with new solutions to benefit the whole community. Even though many of the initiatives promoted globally have similar characteristics, the concept of an innovation platform has still remained fuzzy and the need of further conceptualization is important for the concept to be used as a more structured tool in policy-making.

Based on policies of innovation platforms, it may be said that they seem to offer problem-solving solutions in the form of co-creation, crowdsourcing and participatory policy-models depending on which organization or institution is responsible of launching the innovation platform. The practice in innovation platforms is that the problem solving focuses on *application* and *distribution*. In this paper we have recognized four different "platform owners": (1) A company sets a platform to open its innovation process in order to boost development process of products or services; (2) A service company sells the platform model as a service to a variety of companies in order to facilitate their innovation processes with open initiatives; (3) Public sector sets up the platform in order to develop its services in open innovation processes (engaging e.g. the citizen); or (4) universities and companies set up a platform in order to develop university-industry-government collaboration that enhances the use of knowledge in business purposes

Despite the different owners or managers in common to all these models, seem to be that innovation platforms offer agile, cost-efficient and effective problem-solving tools. They are open (or at least bring together a variety of actors) and thus enable out-of-the-box –thinking and nourish new idea generation. Innovation platforms seem to take a facilitators' role in regional development by providing opportunities to others, educating, gathering and distributing resources, influencing regulations and setting local rules.

Innovation is an interactive learning process that is executed naturally by geographic proximity (Wise 2014). It entails the coordination of distributed knowledge across diverse organizations. When planned carefully, innovation infrastructures provide innovation systems with governance mechanisms to create and sustain complementarities across otherwise dispersed competences. Innovation platforms may offer such infrastructures. Operating strategically on the interface between universities and industry innovation platforms enable capacity and capability building for individuals, teams and organizations (Consoli & Patrucco 2008).

There are four conclusions based on the literature review and policy reports:

- Open innovation platforms seem to offer open, agile and cost effective policy-models but they may be challenging to find sustainable funding models.
- Open innovation platforms operate strategically at the interface between the university, industry and civil society and enable capacity- and capability-building for individuals and teams participating them.
- Open innovation platforms seem to take a facilitators' role in regional development by providing opportunities to others, educating, gathering and distributing resources, influencing regulations and setting local rules. Innovation platforms also take a facilitators' role by 'creating spaces' of various types: social, cultural, economic (providing funds), and regulatory (creating rules to guide activities and reduce uncertainty).
- OIPs may be the manifestation of wider socio-economic changes characterized by the inclusive innovation and sharing economy discussion demanding the new modes of participation and distribution of wealth; not only through redistribution through social policies, but also in organization of production and R&D processes.

Innovation intermediaries such as innovation platforms are a mean to access knowledge. They enable spatial proximity and contribute to the creation of cognitive and social proximity and knowledge creation in an affordable way. They build in participants' own interests and objectives. At the same time innovation platforms serve the companies and local/regional economy, they also serve the individuals (e.g. users, students, unemployed, citizen) taking part in the activities.

Innovation platform has been acknowledge as a policy-tool; however, its possibilities are yet to be discovered. Policy relevance is related to the globalization of innovation practices and how local and global

are linked together. Innovation platforms may offer a policy response to the lack of linkages and collaboration between universities, industry and government and work to catalyse stronger linkages and collaboration to enhance economic development. This positions innovation platforms as one of the alternative policy mechanisms that may be used to strengthen university-industry-government collaboration and thus contribute to economic development.

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