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Exploring the coworking space as an innovation intermediary: a case study in Amsterdam

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Abstract: This qualitative study investigates the role of coworking spaces as innovation intermediaries, focusing on a specific case study in Amsterdam. We introduce a comprehensive framework that integrates five key coworking space units and delineates three primary innovation intermediary roles: facilitation, configuring, and brokering. Our research underscores the significance of both online and offline managerial interventions that stimulate social interaction, content configuration by staff and community members, active brokering through community managers, and formal/informal events. These strategic interventions collectively enhance information flows and knowledge exchange among entrepreneurs. This study contributes valuable insights into the mechanisms through which coworking spaces facilitate innovation intermediation in support of entrepreneurial endeavors.

Keywords: Innovation intermediary, Coworking spaces, Entrepreneurs, Social networks

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1. Introduction

Over the past two decades, there has been a growing entrepreneurial interest in coworking spaces (Gandini, 2015). These spaces provide flexible work environments coupled with social settings that foster social interactions and innovation (Gandini 2015; Spinuzzi et al., 2019; Cabral, 2023). While entrepreneurs possess promising ideas and innovation aspirations, they often lack the necessary network connections (Weiblen and Chesbrough, 2015). This deficiency can be addressed by innovation intermediary-like settings, making coworking spaces suitable for such entrepreneurs. Coworking space managers typically employ strategies to build a sense of community, thereby encouraging social interaction, collective efforts, and innovation (Fuzi, 2016; Cabral and van Winden, 2016, Garrett et al., 2017). From the perspective of innovation intermediaries, coworking spaces stand out as relevant cases due to their established mechanisms that facilitate social interaction, especially knowledge sharing within their communities (e.g. Gerdenitsch et al., 2016). This paper delves into the role of coworking spaces as innovation intermediaries, focusing on the processes within these spaces and how they facilitate knowledge sharing among entrepreneurs.

The literature on innovation intermediaries has witnessed rapid growth in recent years. Howells (2006) defines innovation intermediaries as agents or brokers that operate within the innovation process between two or more parties (Howells 2006: p. 720). Innovation intermediaries seek to generate value for their clients (e.g. Tran et al., 2011; Landry et al., 2013; Knockaert and Spithoven, 2014; Tremblay and Yagoubi, 2014), particularly in promoting collaborative innovation (Pisano and Teece, 2007) and knowledge sharing (e.g. Van Den Hooff and De Ridder, 2004; Kamasak and Bulutlar, 2010). Several studies discuss the impact of various types of intermediaries such as incubators (Han et al. 2022), accelerators (Kulkov et al. 2021), and coworking spaces on innovation management (e.g. Bouncken and Reuschl, 2018; Bouncken and Tiberius, 2023), or identify managerial mechanisms that stimulate interaction and innovation (e.g. van Winden and Carvalho, 2015; Cabral and van Winden, 2016; Randhawa et al., 2017). However, a gap remains in comprehending in more detail how specific managerial interventions contribute to knowledge sharing. This paper aims to fill this gap by exploring three roles of innovation intermediaries—facilitating, configuring, and brokering (Stewart and Hyysalo, 2008)—by researching a coworking space and to uncover how coworking mechanisms stimulate knowledge sharing. The choice of a coworking space as a case of innovation intermediary stems from the recognition that coworking spaces have the capacity to foster innovation (Cabral and van Winden, 2016), and many incorporate mechanisms that implicitly or explicitly align with innovation intermediary roles. To the best of our knowledge, this specific aspect has not yet been thoroughly researched.

This article enriches the literature on innovation intermediaries by thoroughly analysing coworking spaces as innovation intermediary, focusing on

their knowledge sharing enhancing capacities. It also contributes to our understanding of coworking spaces as emblematic contemporary locations of the urban knowledge economy.

The societal contribution is twofold: Its findings enhance the capability of innovation intermediaries to evaluate and establish mechanisms that promote the exchange of knowledge more effectively. Secondly, it may assist clients of innovation intermediaries in recognizing and valuing the specific elements of their intermediary which can be advantageous to them.

The main research question is “*How do coworking spaces foster knowledge exchange through facilitating, configuring, and brokering between entrepreneurs?*” To answer it, this study takes an embedded case study approach. We studied the case of StartDock, a coworking space in Amsterdam that garnered multiple nominations from its coworking members, affirming its status as a top Amsterdam coworking space. Our unit of analysis is the coworking space, with two embedded units: the entrepreneurs who are located there, and the coworking space itself (represented by the physical/online space as well as the founders, community managers, and events). The focus is on the roles of the coworking space as innovation intermediary i.e. facilitating, configuring, and brokering (Stewart and Hyysalo, 2008). Data was collected through interviews with a founder, entrepreneurs, and a community manager; analysis of content from a mobile chat application; and direct participation within the coworking space.

The paper is structured as follows. First, it discusses literature on innovation intermediaries and its relationship to coworking spaces. Next, the StartDock case is analyzed. The paper ends with a discussion and concluding remarks.

2. Literature review

Innovation intermediaries

The literature on innovation intermediaries has experienced a rapid growth in recent years. Broadly defined, innovation intermediaries are 'organizations that provide a supportive role for collaboration between two or more parties during various stages of the innovation process' (Howells, 2006, p. 721). These intermediaries can take the form of organizations or individuals, such as consultants (Wood, 2002), that facilitate interactions among multiple parties, aiming to provide both contextual and content-related assistance (Steward and Hyysalo, 2008).

Within the realm of innovation systems literature, intermediaries stand out for their dual focus: not only do they pursue their own business development, but they also add value to clients by sharing information and fostering knowledge exchange (Dalziel, 2010; Landry et al., 2013; Knockaert and Spithoven, 2014; De Silva et al., 2018). Examples of innovation intermediaries span various forms, including digital platforms. For instance, in the domain of technological innovations, online knowledge marketplaces have gained prominence, connecting buyers and

sellers. These digital community platforms offer accelerated outreach, extending opportunities to a wider audience through intermediation (Sieg et al., 2010).

Innovation intermediaries can also take the form of physical spaces where people gather, such as cybercafes (Stewart and Hyysalo, 2008), as well as in dedicated entities like incubators (Han et al., 2022), accelerators (Kulkov et al., 2021), and coworking spaces (Bouncken and Reuschl, 2018; Bouncken and Tiberius, 2023). Notably, innovation intermediaries possess the capacity to facilitate knowledge transfer (e.g. Kolesnikov et al., 2019). Explorative qualitative studies have identified ways through which innovation intermediaries facilitate such knowledge exchange (e.g. van Winden and Carvalho, 2015; Cabral and van Winden, 2016, Randhawa et al., 2017). However, the precise identification of the specific tools or mechanisms managed by innovation intermediaries and how they manifest innovation intermediary roles leading to knowledge sharing remains an area that warrants further exploration and investigation. In the following sections, we will explore how coworking spaces function as innovation intermediaries, with a focus on their embedded units and the roles they play in facilitating, configuring, and brokering innovation.

Coworking spaces as innovation intermediaries

In this study we focus on coworking spaces in their role as innovation intermediaries. Coworking spaces can be described as “open-plan office environments where workers work next to other unaffiliated professionals for a fee” (Spinuzzi, 2012). Coworking spaces provide, next to basic office infrastructure, the opportunity for social interaction and matchmaking (Gerdenitsch et al., 2016). Such spaces are relevant for entrepreneurs because they have a concentration of knowledge in the coworking communities in which individuals interact and share ideas on the basis of physical and cognitive proximity (Boschma and Frenken, 2009). This allows entrepreneurs to efficiently identify, interpret, and exploit new knowledge (Amin and Cohendet, 2004). In line with previous work (e.g. Bouncken and Reuschl, 2018; Bouncken and Tiberius, 2023), coworking spaces can be seen as innovation intermediaries because they act as agents, and facilitate the process of knowledge and technology transfer across people, organizations and industries. This means that the coworking space acts as a ‘broker’ and assists in bridging structural gaps (Burt, 2004). Next, we discuss the embedded units of coworking spaces as put forward in this study, which are an incorporated element of the conceptual framework of this study.

Coworking space embedded units

Coworking spaces can be dissected into five embedded units that may foster knowledge exchange: the physical space, the digital space, the coworking space staff members, the tenants, and events (e.g. Cabral and van Winden, 2016).

The physical space With regards to physical space and its relationship to establishing human interaction and knowledge exchange, there is a vast body of literature that demonstrate how space can facilitate the establishment of connections. Hornecker and Buur (2006) introduced a framework that focuses on the

interweaving of the physical environment and social interaction. The framework highlights how physical qualities in space “...predetermine and guide interaction, affecting how space becomes appropriated, inhabited, and experienced...” (Honecker and Buur, 2006 p.445). Sailer and Penn (2007) revealed the influence of spatial configurations within office environments on the architecture of intra-organizational networks. Distinct office layouts correlated with discrete network structures. Building upon these insights, Williams (2013) introduced the 'engage/disengage' model. The 'engage' facet pertains to active involvement with individuals, information, and concepts through purposeful searches as well as serendipitous encounters. Physical settings that amplify engagement encompass communal spaces, lounge alcoves, dining areas, and coffee nooks. Conversely, 'disengage' pertains to a deliberate withdrawal from others to stimulate contemplation. Spaces conducive to disengagement include private booths or quiet relax areas.

The digital space In the realm of digital space, coworking spaces are progressively integrating digital tools into their operations to facilitate communication and knowledge exchange within their communities. These tools include a range of platforms, such as Skype, WhatsApp, Microsoft Teams, Google Meet, and Zoom, as identified by Cabral and Van Winden (2022).

Coworking space staff members Coworking spaces increasingly adopt having staff members in the role of community managers. In their research, Cabral and van Winden (2016) highlighted the role of facilitators, moderators, and community managers. These individuals play an important role in orchestrating member interactions and forging connections, particularly to foster the generation of new products or services. A similar concept is highlighted by Hargadon and Sutton (1997) who term them 'connectors' due to their contribution to the formation of networks. Through their coordination and networking efforts, coworking space community managers act as bridges among tenants, facilitating the exchange of knowledge and driving collaboration.

Coworking space tenants Coworking spaces frequently orchestrate the composition of the tenant community through selection procedures, thorough admission processes, and the deliberate promotion of users spanning various related or unrelated industries (Moriset, 2013; Fuzi, 2016; Frenken et al., 2007). Given the emphasis of numerous coworking spaces on fostering effective communication and shared learning among users, tenant community curation serves as a strategy to ensure proximity in the cognitive foundations of participants (Boschma and Lambooy, 1999). By doing so, coworking spaces can aim to influence interaction practices which in turn can enable knowledge exchange and cross-fertilization (Parrino, 2015).

Events Coworking spaces can host a diverse range of events, effectively fostering networking and encouraging interaction and knowledge exchange among their members (Capdevila 2014; Parrino 2015). These events come in various forms, including networking gatherings, corporate presentations, and business pitches

(Parrino 2015). Within these contexts, participants engage, network, exchange knowledge, and mutually learn from one another.

Having established a foundation in understanding the embedded units within coworking spaces, the next section presents how coworking spaces may contribute to the manifestation of innovation intermediary roles: facilitating, configuring, and brokering.

Innovation intermediary roles

Stewart and Hyysalo (2008) have identified three distinctive roles of innovation intermediaries roles—facilitating, configuring, and brokering—that this study applies to the context of coworking spaces.

Facilitating Stewart and Hyysalo (2008, p. 306) describe facilitating as “...providing opportunities to others, by educating, gathering and distributing resources..” In the case of coworking spaces, the facilitative role of the coworking space and it’s managers is to provide a social workspace (Spinuzzi, 2012), facilitate interaction (Cabral and van Winden, 2016), facilitate connected learning (Bilandzic, 2013), and provide social support (Gerdenitsch et al., 2016). Coworking spaces are open, inclusive workspaces with an informal atmosphere that provide areas for work and socializing. Coworking space managers offer the basic office amenities, such as a desk, chair, free wifi, but also, areas where people can socialize, play, and learn (Moriset, 2013). Opportunities for participation in workshops, trainings, and social networking with the coworking community are important facilitation services that coworking spaces provide.

Configuring Stewart and Hyysalo (2008, p. 307) explain that configuring relates to the creation and configuring of content, the setting of rules on use and usage, and the goals and form of the projects of the members in the network. With regards to coworking spaces, the social environment offers access to different stakeholders that can actively be involved in configuration, such as, the coworking staff, the coworking community, and external firms. Coworking environments present many opportunities for the sharing of business processes and often associated ideas and problems. The coworking space then provides an environment that allows to hear and see what people do and make an interpretation of the situation and meanings that people give to a product/service/technology. In turn, the coworking staff, community members, and externals offer help, give advice, and modify the project to reflect their interpretations. Hence, coworking spaces provide configuration opportunities because of the knowledge dynamics between the different stakeholders that may result in business opportunities and/or improvements (Capdevila, 2014). Of course, by helping and encouraging coworkers to improve their activities, coworking spaces gain legitimacy by demonstrating the configurative value of the social workspace, and as a result, appeal to more people.

Brokering A third role of an innovation intermediary is brokering (Stewart and Hyysalo, 2008). Stewart and Hyysalo (2008, p.307) report that innovation intermediaries may represent individuals and institutions, and sometimes even negotiate on their behalf. They assist in expanding the innovation network by e.g.

helping to connect with new sponsors or suppliers into the projects of clients. The brokering role of intermediaries aims increasing access to resources and knowledge which can be necessary for the business activities of their clientele. In coworking spaces, the coworking staff and community managers have a strong role as a broker (e.g. Hargadon and Sutton, 1997). The staff often has relationships with business communities, local communities, municipalities, and sponsoring companies. Whenever possible, coworking space staff can choose to connect and even represent the interest of their coworkers to such stakeholders. But more importantly, the coworking community itself, and the various coworking events bring users, suppliers, sponsors, and other relevant actors together, where ample brokering opportunities take place amongst themselves (Cabral and van Winden, 2016).

3. Conceptual framework

Based on insights from the coworking literature (Spinuzzi, 2012; Moriset, 2013; Gandini, 2015; Fuzi, 2016; Cabral and van Winden, 2016), we frame a coworking space as an environment composed of five embedded units: 1) the physical space 2) the digital space 3) the tenants 4) the coworking space staff members, and 5) events.

In practice, the units are not isolated but interact. For instance, the tenants make use of the physical and online space, may visit events and/or organize events themselves. Similarly, the coworking space staff members may host an event, provide an own event, and at the same time work amongst the tenants and be part of the coworking community. Thus, the embedded units of the coworking space are not seen as static units, but rather as system of elements that are constantly evolving and interacting.

Following the conceptualization of Stewart and Hyysalo (2008), we distinguish three intermediation roles: facilitating, configuring, and brokering. In this particular context, 'facilitating' refers to providing opportunities to the tenants, by educating, gathering and distributing resources. 'Configuring' refers to creating and configuring business content, listen, provide feedback to individuals, and modify projects to reflect interpretations. 'Brokering' refers to exhibiting a bridging role in setting up connections between parties, providing entrance to new sponsors or suppliers into projects, and occasionally negotiating on behalf of individuals. Such roles can be performed by any of the individuals of the embedded units within the coworking space.

In this study, we take a close look into the mechanisms that promote knowledge exchange among coworkers. We view knowledge exchange as a fundamental aspect of innovation (e.g., van den Hooff and de Ridder, 2004; Kamaşak and Bulutlar, 2010; Castaneda and Cuellar, 2020) and explore the potential of coworking space to foster knowledge exchange and innovation (Cabral and van Winden, 2016). In this study, knowledge sharing is viewed in accordance with Van Den Hooff and De Ridder's (2004) conceptualization, which defines it as a process wherein individuals engage in mutual exchange of knowledge to collectively generate new insights. Notably, it's important to clarify that our study doesn't evaluate the content of the information transferred to determine its classification as 'knowledge'. What holds significance is the interplay among the diverse embedded

units within the coworking space, and how this dynamic brings forth the manifestation of innovation intermediary roles.

We also want to note that the current study delves into these roles specifically within the domain of coworking spaces as opposed to the work of Stewart and Hyysallo (2008) who examined cybercafes. This differentiation is relevant, particularly because coworking spaces inherently cater to entrepreneurs seeking collaborative work environments, thereby distinguishing them from the context of cybercafes. Entrepreneurs who are drawn to coworking spaces often lean towards flexible contract arrangements, be they short or long term. This is in contrast to strategies employed by cybercafes, which are designed to extend customer visits.

Figure 1 shows the conceptual framework.

(Insert Figure 1 about here)

4. Methods

This study takes a qualitative exploratory approach in order to answer the main research question. An Amsterdam branch of ‘StartDock’ was chosen as a research case. The coworking space has a rich diversity of users (i.e. entrepreneurs and SMEs in various business stages and with a variety of business backgrounds), and displayed the essential coworking strategies that stimulate interaction and network facilitation (in line with Spinuzzi, 2012; Moriset, 2013; Gandini, 2015; Fuzi, 2016; Cabral and van Winden, 2016). A rationale for selecting the StartDock case stems from its track record of fostering successful startups and entrepreneurs (co-founder, personal communication, November 19, 2019). The achievements of the startups and entrepreneurs within the StartDock case serve as a testament to the space's efficacy in nurturing effective knowledge exchange and fostering entrepreneurial success. Concrete evidence of these achievements can be found in the form of successful product launches, and partnerships that showcase the innovation intermediary role of StartDock (co-founder, personal communication, November 19, 2019). Intrinsically, the case shows to be in an instructive case with the essential aspects that are necessary for this research, and in parallel exemplifies a context that relates coworking characteristics to innovation outcomes (Gerring, 2007).

We intentionally opted for a single case study to facilitate an in-depth exploration of a specific coworking context, allowing us to achieve a comprehensive understanding of how coworking spaces can function as innovation intermediaries (Yin, 2003). While we acknowledge that not all coworking spaces share the same target demographics or characteristics as our case, our objective is to offer insights that can inform coworking spaces with varying focuses.

Data was gathered in three ways: 1) semi-structured interviews, 2) extracted data from a mobile chat application 3) participant observation. Interviews were held with five entrepreneurs (owners of start-up ventures and SMEs, self-employed workers), one of the founders of StartDock, and one community manager. The interviews were semi-structured on key topics regarding knowledge sharing, innovation, and results achieved from working in the coworking space. In total the

interviews lasted from 20 to 50 minutes. In addition to the interviews, data was extracted from an internally used mobile chat application of a period of 9 months. The application is used by all entrepreneurs who rent a workspace at StartDock. In total, around 125 entrepreneurs are linked to the application. The application allows the entrepreneurs to send text messages, share images, documents, and other media. Also, data was collected regarding the events that were organized through the coworking space during a period of 9 months. The research also had a participatory observational angle. The observations arose out of one of the researchers working 1 day per week at StartDock for a period of 1 year, attending workshops, and interacting with the local community on day-to-day matters. This made it possible to collect different types of data. Being on site over a period of a year enabled becoming part of the community, thereby facilitating involvement in various activities to which one generally would not be invited. Overall, the data was triangulated comprising the interviews, digital data, as well as the participatory observations. Using a variety of sources ensured looking at the coworking space through a variety of lenses, allowing for multiple angles of the phenomenon to be revealed (Baxter and Jack, 2008). Figure 2 displays the different sources of data.

(Insert Figure 2 about here)

Analysis of the data

Data from all sources were analyzed using Atlas.ti. The semi-structured interviews were transcribed and afterwards discussed with the interviewees, in order to prevent misinterpretations. The data of both the events page of the coworking space and mobile chat group were extracted, and reformatted in order for it to be compatible with Atlas.ti. In particular, the research made use of one of the researcher's presence in the coworking space. Notes made by the researcher during participation at events and email exchange were reformatted for data analysis in Atlas.ti. In all cases the data collection and usage for research purposes were discussed with both the coworking space founder and the respective stakeholders.

Next, data of all sources was codified and quotations were analyzed per key source that were linked to the innovation intermediary roles: 'facilitation', 'configuring', and 'brokering'. In this process, recommended tools were followed (Miles and Huberman, 1994), such as classifying the information in tables, creating matrix categories in order to cross check the data and classify the information per key source. Figure 3 shows the total number of quotations that were analyzed per code, organized per key source. Figure 4 provides an overview of the data structure based on the intermediary roles and embedded units within the coworking space, a non-exhaustive list of developed codes, and the associated mechanisms as identified in the StartDock case.

Finally, per section, the primary data was scanned for words/terms/situations most commonly used per key source. In this step, the most noteworthy quotations that emerged from this study were highlighted.

(Insert Figure 3 about here)

(Insert Figure 4 about here)

5. Introducing the case study

StartDock was launched in 2016 by 5 young entrepreneurs who were working on their individual businesses, but lacked a proper office. Besides the need for office space there was also the need to be around other start-ups, to share physical resources and to share knowledge and ideas. As a result, the founders opened a coworking space with a total surface of 300 square meters. Now, the vision of StartDock is providing workspaces that at the same time offer co-creative communities based on visionary fundamentals of joint growth, friendship, and entrepreneurship (StartDock.nl, 2020). In 2018, StartDock won the “best coworking space of Amsterdam” at the Coworker Members’ Choice Awards (CMCA) (a global coworking industry competition to recognize the top coworking spaces in each city, based on feedback from coworking space members around the world.). By 2023, StartDock has grown to four locations in Amsterdam, and one in Rotterdam. It now offers various types of office spaces, business and social events, and a coworking community.

Figures 5,6, and 7 present some (non-exhaustive) visual examples.

(Insert Figure 5 about here)

(Insert Figure 6 about here)

(Insert Figure 7 about here)

6. Findings

The following part presents the results of the data retrieved from a combination of the key sources including the researcher participatory observations. The results are organized per innovation intermediary role and associated embedded units as found in the StartDock case. Illustrative quotations were extracted from the data to highlight the perspective role of the coworking space. After each role we present a figure displaying how each innovation intermediary role manifests itself through the embedded units and how knowledge sharing is promoted through the applied mechanisms.

Facilitation: “A place to facilitate interaction”

The StartDock model implies offering affordable work space combined with the conditions to access a coworking community. StartDock facilitates connections to others through an array of mechanisms within the following embedded units: physical and digital space, events, and a carefully managed coworking tenant base.

Physical space From the perspective of StartDock's management, a key aspect involves providing essential office amenities to tenants, encompassing features like desks, meeting spaces, lunch areas, and wifi. Beyond these essential amenities, coworking spaces distinguish themselves from traditional office settings by creating conditions that actively encourage engagement within the coworking community. This is achieved, in part, through careful management of the physical environment, strategically crafting 'social meeting spots' like coffee corners, relaxation areas, and communal lunch spaces with shared tables.

For entrepreneurs, being able to socially interact with other professionals is helpful because it stimulates exchanging business knowledge and experience. StartDock, recognizing this need, is purposefully designed to foster social engagement. Various 'flex areas' featuring work islands with four desks each facilitate proximity among diverse, unaffiliated entrepreneurs. Complementing this, StartDock provides communal spaces such as coffee corners, shared lunch areas, and designated gaming areas, reinforcing the commitment to creating a vibrant and collaborative workspace.

Digital space In the online sphere, StartDock provides a mobile chat application, facilitating connectivity among coworkers—approximately 125 individuals. Through this platform, coworkers can easily connect, showcase their business backgrounds, share specializations, and discuss business challenges. For entrepreneurs, such a space is useful because it is an environment where help can be asked regarding any issues and where prompt responses can be provided. The following quote highlights how the physical and digital environment promotes and enhances social interaction.

“This place really stimulates establishing contact with people who are very accessible. People also come to me with questions. This happens on the work floor, but also in the chat group. In particular, it is the interaction that makes you think about your business.” Entrepreneur 1

Events Providing access to social networks is facilitated through organizing formal and informal events. At such events the coworking community, founders, community managers, and external parties have a chance to socially interact. Informal events can range from Friday afternoon drinks, to boat rides, pub quizzes, yoga sessions, and video gaming afternoons. Formal events are professional events that provide the means to foster and grow the business networks of the tenants. Such events facilitate the coworking community to socially interact with others, gain additional knowledge, present themselves, ask for feedback and advice regarding their businesses. From a business perspective of the tenant, such occasions provide opportunities to be matched up with mentors, investors, students, corporates, and other companies within the coworking space. Formal events range from various informational sessions on various business topics (e.g. effective use of Marketing/PR, improving SEO/SEA, law and tax regulations), to workshops on upscaling, becoming ‘investment ready’, to personal development (e.g. how to pitch to investors).

Tenants Another facilitative aspect of StartDock is providing access to a carefully managed community. The coworking space management team aims establishing a community based on complementarity of business domains. In addition, StartDock has a non-competition policy. The idea is that entrepreneurs can feed off the knowledge of other community members and exchange ideas without restraints because of the fear of competing with each other.

“We want entrepreneurs to be able to learn from other knowledge domains. When people apply for a spot in our coworking space we have an on-boarding talk and find out what the background is of that person. What we want is, for instance, that if someone has no understanding of accountancy, that we have an accountant within the community that can help or give advice.” Community manager

Researcher participatory observations From the researcher's participatory angle the StartDock case provided several facilitative aspects. First, the coworking space provided a comfortable working place, with all the necessary amenities, i.e. a desk, wifi, spaces for private calls and business meetings. The desks are situated in such a way that one is physically connected to 2 /3 other coworkers. This makes interacting with other workers easy and inherently brings a social component to the working day. Second, the coworking space facilitated access to social events, to which the researcher was frequently invited. Social events that the researcher attended ranged from a boat trip through the canals in Amsterdam, to a pub quiz, to various Friday afternoon drinks. As a result from attending such social events, the feeling of belonging to the community was enhanced. Besides the entertaining component of such events, these were moments where people would pick each other's brains regarding the view on business, entrepreneurship, and how to grow as a person and entrepreneur. A consequence of frequently attending such events, was that in following occasions, the barrier of talking to others, asking for help, asking for requests, was considerably lower. People felt more comfortable addressing each other. Third, the researcher also attended various business events, such as PR events, marketing events, and various business feedback events. During such events, the researcher interacted with other participants, and was able to contribute to the content of the event and provide feedback to other coworkers. This led to a sense of reciprocity, where other coworkers also provided input to the researcher's project.

In sum, the managers of StartDock provide a coworking space that optimizes the customer's usage of both the physical and online space. This is done through a carefully managed social environment, encouraging people to meet, share and exchange knowledge, and consequently value spending time in the coworking space. In line with the facilitation role outlined by Stewart and Hyssalo (2008), the StartDock case emphasizes the requirement for a combination of varied units—physical spaces, digital platforms, events, and strategic tenant management—across an extended duration in distinct realms (i.e. physical and digital). This convergence contributes to fostering a comfortable environment among coworkers, encouraging knowledge sharing.

(Insert Figure 8 about here)

Configuring: "Together we know more"

The StartDock case unveils a range of mechanisms that facilitate configuring through its diverse embedded units. This section accentuates key components, including digital space, events, tenants, and the coworking space staff members within the coworking space.

Digital space The chat application functions as a medium where tenants not only present challenges and opportunities but actively contribute to resolving them as well. It becomes a collaborative digital space where participants share their experiences, seek insights, and extend assistance to one another on content-related issues. The example below is just one instance among the various requests posed on this chat application, reflecting the diverse and supportive nature of the community.

This interactive exchange not only enriches the collective knowledge base but also underscores the cooperative spirit within the community, where individuals come together to help each other navigate content-related challenges.

“X: Hi guys! Anyone in the house who can make nice infographic animations for one of our clients? Please let me know! Y: Hi X! I can help you out :) Z: Hi X, Same here! But I’m sure that Y also has a good solution. ;-)”

The chat application is also a place where tenants can reach out to the community regarding requests and opportunities of their private network. The coworking space network becomes an extended network for third-party ties. The requests can range from business related requests (a coworker who knows someone who is looking for a job, an assignment, an internship position) to personal requests (e.g. a coworker who knows someone who is looking for an apartment).

“X: Hi guys, my girlfriend has just arrived to Amsterdam and is looking for a good dentist. Anyone has any suggestions or knows a good one? Y: Google dentalzorg.nl. X: Thank you!!”

Events Business events, which are frequently organized by StartDock, are ideal moments to help each other on content-related issues. Such events are moments when externals, tenants, and coworking staff coincide, learn from externals, give each other tips, and feedback on respective business situations. The themes and content of the events are based on what is needed by the coworking community.

“In everything we do the tenant is extremely important. Therefore, we listen very carefully to the community. What do they want? They help us coming up with various events. So it is not us who make up the events but it is the community. Otherwise you have a social event or a very nice speaker and nobody shows up. That is a bit of a shame for everyone.” Founder

StartDock organizes ‘Feedback Friday’ on a regular basis. During these sessions entrepreneurs present business challenges and ask for feedback of the coworking community. As an example, one entrepreneur volunteered to present his pitchdeck that he was struggling with (a presentation of a business aimed at attracting funds from investors).

“Hello community, as you may know, X will take the stand during the next ‘Feedback Friday’ session. He would like to get feedback on his pitch deck as he finds it hard to explain shortly what his company does. If you want to help X, please join the session.” Announcement by the community manager on the mobile chat application

During this session there were eight entrepreneurs (incl. a copywriter, political coach, online marketer, community manager, and the researcher himself), who witnessed the presentation and gave immediate feedback and tips on how to improve the presentation, simplify the communication strategy, and work on the presentation techniques. In conversations after this event, and other events,

entrepreneurs revealed that they constantly seek others in order to learn from their experiences and to receive help with unfamiliar business domains.

“We received our very first grant through someone we met in the coworking space. We ourselves had no idea about grant requests. We only knew that we were working on beautiful techniques, and were constantly wondering whether there weren’t any governmental subsidies for this. During an event, we came in contact with another tenant and he said “I do this for a living! I do this all the time for companies”. He didn’t charge us that much, and set it up for us in a period of only a few weeks.”

Entrepreneur 2

Tenants The interviews with the entrepreneurs revealed that within the coworking community, there is a constant dynamic environment where people with complementary knowledge and/or skills meet and discuss business opportunities. This often leads to discussing new ideas, opportunities, potential partnerships, and/or servicing the same clients. Since people continuously cross each other on the work floor and meet each other during events, they often know what the others are dealing with, leading to sharing knowledge amongst the community.

“I met X here from company Y. He is working on a new customer review system, and I speak to him regularly here on the floor and during lunch about my work. His system is not really compatible with what I work with, but he makes me think about whether I can apply it to my e-commerce business. We regularly discuss this and exchange ideas.” Entrepreneur 3

Coworking staff members Interestingly, when the coworking staff members are consulted by the coworking community, they also try to think along strategically, or help with specific business issues that the coworkers are dealing with. Even though interviews with the coworking staff members themselves revealed that they view their role primarily as a facilitative one, there were occasional instances mentioned by the entrepreneurs that entailed configuration by coworking staff members. The following quotation exemplifies an occasion:

“Well, I had a horrible situation in which I had to fire my first employee. I had never done this before and had no idea how to deal with this. So one of the cofounders, who had vast experience with this, helped me out and gave me advise on how to deal with this. He explained how to approach it and how to structure the conversation. So it was basically HR advice.” Entrepreneur 1

Researcher participatory observations From the perspective of the researcher, there were multiple occasions of configurative involvement with various coworking space stakeholders. First, because of the researcher’s experience with the topic of coworking and the umbrella view thereof, there were various instances that the community manager wanted to discuss the coworking approach regarding community building with the researcher. Second, during social events, there were many entrepreneurs who addressed the researcher with questions about their

respective business, and used the opportunity to validate ideas. Because of the marketing and management background of the researcher, entrepreneurs saw social events as a relatively easy way to approach a domain specialist and discuss business matters. The social atmosphere, coupled with the notion that one is in an environment centered around 'helping each other out,' makes it evident that individuals naturally engage in collaborative thinking, assistance, and advice-sharing. In one specific case an entrepreneur was facing problems with scaling-up and the researcher agreed to meet up and brainstorm about possibilities to grow as a business. In exchange, during such talks, entrepreneurs expressed the will to help out the researcher regarding the sharing of coworking experiences. Third, the researcher attended business events related to the business subjects taught by the researcher. Such moments provided practical input for the researcher which could be used during lectures. In return, during such events, feedback was given by the researcher to both the organizing party as well as to the participating entrepreneurs.

In summary, StartDock presents various occasions of configuring of both content and form of projects of its community members. On the one hand, when possible, the coworking staff is able to provide input and content to its members. On the other hand, the coworking community itself provides occasions for configuring. This happens on the work floor, during formal and informal events, and in the mobile chat application. Building upon Steward and Hyysalo's (2008) description of the configuring dimension, the StartDock case demonstrates how the interaction between coworking staff members and the community, spanning different realms over time, effectively configures the coworking space, fostering opportunities for knowledge exchange.

(Insert Figure 9 about here)

Brokering: “Stop competing and start connecting”

In the StartDock case, the brokering role is identified by commonly shared values of ‘growing by sharing’ and ‘together we are stronger’ in the coworking space context among different stakeholders. Many entrepreneurs go to StartDock in order to meet other people and various entrepreneurs mentioned that from the first moment that they set foot in the coworking space, they started meeting others. In this section we highlight how the following embedded units manifest the brokering role: coworking space staff members, digital space, and events.

Coworking space staff members The important role of the community manager extends beyond the introduction of newcomers to the coworking space. At the forefront of the responsibilities, the community manager strives to forge meaningful connections, acting as an essential broker within the coworking space. Beyond the initial welcome, the community manager actively works to cultivate awareness regarding various opportunities and foster connections that align with the diverse needs of coworkers. With a primary objective of facilitating a vibrant and supportive community, the community manager is dedicated to offering assistance

wherever possible, ensuring that each member feels integrated and informed about the resources and relationships available within the coworking space.

“I had seen various coworking spaces and they all looked beautiful but it is all about the connections you make. I really liked it when the community manager gave me a tour, and started right away to introduce me to people in the building. He immediately said that I was becoming a part of a family, and that we are not competing against each other, but rather helping each other out.” Entrepreneur 5

Digital space Entrepreneurs revealed to witness brokering in the mobile chat group. Entrepreneurs post any type of question whether someone knows someone who can provide assistance or a specific service, and oftentimes people are connected to a relevant party. In this context, for entrepreneurs it is important to have quick and useful information regarding potential business networks. The mobile chat group is then a means to quickly spread a request and get an answer rapidly.

“X: Any Germans in the house who can help me translate some short texts from English to German? Y: Perhaps Z. can help you? Z: Absolutely! Send it to me! X: Great, thank you so much!”

“X: Hi everybody, I am making a promotional video. Does anyone know a good free programme to easily put subtitles on a video? Y: You can use VLC. Just Google 'hardcode subs with VLC'. Z: You can also upload your video to YouTube and then let it auto generate subtitles. X: Thanks so much guys!”

The chat application also facilitates the coworking community introducing requests, opportunities, and challenges of third-level contacts. Third-level contacts consist of friends, family, or external business contacts of the coworking community. The topics can range from asking for help of friends or family looking for jobs/housing to requests for different types of (business) support for acquaintances. The following quotation exemplifies a situation in which a coworker shared a business opportunity in the mobile chat group and brokered between an acquaintance and the coworking community.

“I knew someone from Paris who wanted to follow online English classes and she emailed me for help. So I sent a message in our chat group stating that this person was looking for English classes. So a young lady working at the coworking space liked it and got the job. This same lady is now giving other English classes to other coworkers.”
Entrepreneur 1

In the following quotation, a coworker used the mobile chat platform to broker between a private connection and the coworking community:

“X: Hi guys! Question: A friend from the USA will be moving to Amsterdam in September. He's a digital marketing and advertising professional and is seeking roles in sales, customer success, project management, or digital strategy. He is looking for a job here so it would be great if one of you knows something for him. Please let me know if you have or know any positions that you feel would be a good fit. Thanks! Y: We might be looking for a person like that!”

Events In the StartDock case, events also serve as good opportunities for brokering. Brokering can occur among the entrepreneurs attending the event or between entrepreneurs and the organizing parties. The forthcoming announcement of an event, where startups and other entrepreneurs receive information about funding opportunities, highlights potential brokering opportunities between the tenants and the event organizers:

“You are talking to different investors, your business plan is ready to go – but does the investor agree? And what is the investor actually looking for? During this masterclass, we guide you through the process and we give you the opportunity to talk one-on-one to an experienced investor, so come prepared to pitch your business idea. During this masterclass, investor X. tells you the do’s and don’ts of talking to investors. For tickets and more info check...” Event on the StartDock online event page

Researcher participatory observations The researcher experienced several examples of brokering as well. First, there were a number of entrepreneurs who got in contact with the researcher during lunch and/or social events. During these moments, two entrepreneurs stated to be scaling up their respective business and mentioned to be seeking interns to do research on market expansion. In order to help out the respective entrepreneurs, the researcher brokered between the entrepreneur and the university that employs the researcher. Second, during regular work moments, entrepreneurs who shared the desk with the researcher, introduced the researcher to many other tenants with the aim to provide input for the research.

In sum, the results reveal various ways in which StartDock assists with the social networks of the coworking community. The community manager of StartDock is important in establishing relevant connections between people. The mobile chat application provides opportunities to connect with indirect or third party contacts of community members. The physical space as well as the formal and informal events provide vast opportunities to make connections with relevant others. Building upon Stewart and Hyysalo's (2008) work on the brokering dimension, our findings highlight the specific tools, both in physical and digital realms, that play a relevant role in brokering knowledge.

(Insert Figure 10 about here)

Discussion

This study analyzed the coworking space in its role of innovation intermediary. While prior research has investigated coworking space roles in innovation management, a knowledge gap persisted regarding how specific managerial interventions translate into knowledge sharing and subsequently nurturing distinct innovation intermediary roles. This paper addressed this gap by in-depth examining three innovation intermediary roles—facilitation, configuring, and brokering (Stewart & Hyysalo, 2008) in an Amsterdam-based coworking space. The coworking space serves as a relevant case study to illustrate the practical application of these mechanisms by and for its tenants.

Building upon previous research on innovation intermediaries (Howells, 2006; Stewart and Hyysalo, 2008), this study focused on the knowledge exchange process as a fundamental aspect of innovation (e.g., van den Hooff and de Ridder, 2004; Kamaşak and Bulutlar, 2010; Castaneda and Cuellar, 2020). It specifically investigates how coworking spaces perform innovation intermediary roles, which are important for tenants seeking to connect, share information, and expand their social networks (e.g., Burt, 2004) to enhance their business activities. Notably, this research highlights that intermediation plays out in a combination of online and offline mechanisms, along with individuals who act as network facilitators (e.g., Hargadon and Sutton, 1997; Burt, 2004) over an extended period of time.

In relation to the facilitative role, the StartDock case reaffirms that coworking spaces play an important role in cultivating relationships among various stakeholders within the coworking community. To achieve knowledge sharing, it is essential that coworking space managers carefully design both their physical and digital environments to align with the specific needs of the entrepreneurial community they serve. Moreover, the case underscores the significance of offering a combination of physical interactive platforms, such as dedicated meeting spaces and social or business events, alongside digital platforms, to effectively address both internal and external networking requirements.

In terms of the configurative role within the StartDock case, the study emphasizes the importance of a shared willingness to collaborate among the coworking community, driven by a sense of mutual support without immediate expectations of reciprocity. StartDock has cultivated this culture through a carefully designed coworking environment, both physical and digital, fostering a sense of empathy among its tenants. This active engagement, involving coworking staff, tenants, and external stakeholders, aligns with the common goal of promoting business success. As a result, the coworking space transforms into a network of collaborators, simplifying the identification of opportunities and facilitating idea exchange within the ecosystem. This approach resonates with the concept of stakeholder co-creation in innovation processes (Kazadi et al., 2016). This complements the work of Stewart and Hyysalo (2008) by illustrating the examples of innovation intermediary embedded units that contribute to the promotion of this innovation intermediary role.

In terms of the brokering role, the StartDock case exemplifies how community managers play an important part in tenant support, with a primary goal of fostering a thriving community. Their role within the coworking space structure is prominent, as they actively participate in the network, providing them with a clear understanding of the community's composition and its associated brokering needs. Additionally, the case underscores the importance of the mobile chat application in addressing the coworking community's brokering requirements. This online platform facilitates brokering opportunities among different network groups, enabling optimal matches between internal and external market demands. To enhance the success of brokering opportunities, careful community management is essential, promoting diversity among users, whether related or unrelated to specific industries (Frenken et al., 2007).

In conclusion, the StartDock case provides empirical evidence that highlights the roles of coworking spaces as innovation intermediaries and the impact of their embedded elements on promoting knowledge sharing among tenants (Stewart and Hyysalo, 2008). The case underscores how the interaction between these embedded units within the coworking space creates opportunities by leveraging various innovation intermediary roles.

7. Concluding remarks

We aimed at examining the role of a coworking space as an innovation intermediary. The study shows that the innovation-enhancing potential of coworking spaces is the outcome of the coexistence of various embedded units: coworking space staff members, coworking community, events, and off/online space that favors knowledge sharing. The combination of these units result in coworking spaces being places that provide entrepreneurs with access to valuable information sources.

This study offers valuable insights into the roles of coworking spaces as innovation intermediaries (Steward & Hyysalo, 2008), benefiting both the academic and managerial domains. Scientifically, it underlines the growing importance of coworking spaces in driving innovation. Specifically, it deconstructs the coworking space model and illustrates how various embedded units can manifest specific innovation intermediary roles. Furthermore, this study lays the groundwork for further research on how the proliferation of collaborative workspaces, as highlighted by Gandini (2015), can contribute to entrepreneurs' innovation agendas. From a managerial perspective, it demonstrates how the curation of coworking spaces can facilitate knowledge sharing, benefiting both current users and those contemplating coworking as an option.

This study sets the stage for future research, including comparative studies or multiple-case analyses, to validate our findings' applicability. However, the study has a number of limitations. We focused on a specific branch of coworking spaces in Amsterdam, known for its strong community and entrepreneurship focus since its inception. To strengthen research results, future studies should consider diverse coworking spaces, various value propositions, and sample sizes to explore differences in innovation outcomes or broaden generalizability. Validating the conceptual model in future studies can enhance empirical reliability and validity. Lastly, this study didn't address potential drawbacks of coworking spaces (e.g. Waldinger, 1997; Portes, 2014). Future investigations could explore such issues from a critical perspective.

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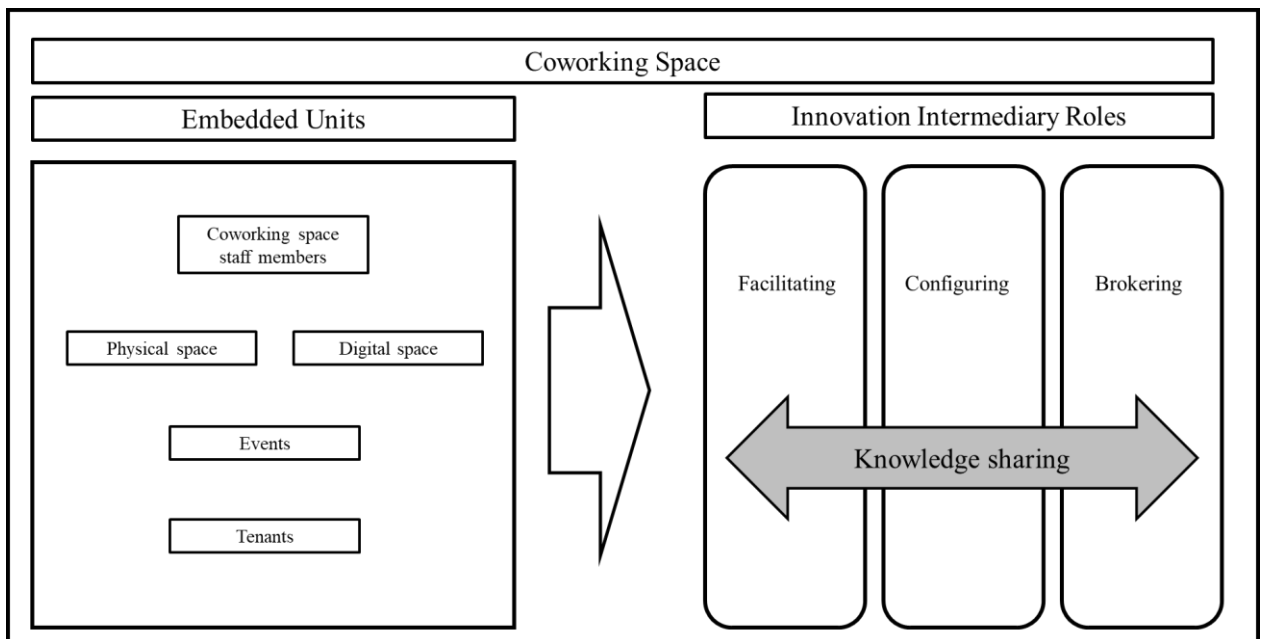


Figure 1: Conceptual Framework (adapted from Cabral and van Winden, 2016; Stewart and Hyysalo, 2008)

Overview of the different data sources

Key informant	Type of source	Source description	Description of data
Community Manager	Semi-structured interview	2 years active as community manager. Main activities: day to day community management, on-boarding, and organization of social and business events	Interview audiotaped at StartDock on 29 November 2019
Entrepreneur 1	Semi-structured interview	Startup: CEO/owner of an online social platform	Interview audiotaped at StartDock on 10 January 2020
Entrepreneur 2 and co-founder	Semi-structured interview	Co-founder emiritus of StartDock and CEO of a web development firm	Interview audiotaped at StartDock on 31 January 2020
Entrepreneur 3	Semi-structured interview	Self-employed: Owner of an E-commerce shop and sales of online customization packages	Interview audiotaped at StartDock on 24 January 2020
Entrepreneur 4	Semi-structured interview	SME: CEO/owner of a marketing design and consultancy firm	Interview audiotaped at StartDock on 6 March 2020
Entrepreneur 5	Semi-structured interview	Startup: CEO/owner of an online marketplace in healthcare	Skype interview recorded (audio) on 26 March 2020
Co-founder	Semi-structured interview	One of the 5 original co-founders. Focussed on business development.	Interview audiotaped at StartDock on 20 February 2020
Events	Content analysis	Coworking community event page	Content analysis of events between the period of 06-2019 until 03-2020
Digital social chat platform	Content analysis	Digital messaging service with approx. 125 members	Content analysis of 3.398 texts in the period 06-2019 until 03-2020 Approx. 240 hours presence at the premises in the period 06-2019/ 04-2020. Notes made and digital interaction analyzed.
Physical space	Direct observation	Participant observation during work, social, and business events	

Figure 2: Overview of the different data sources

Nr. of analyzed quotations organized per innovation intermediary role and key source

	Community Manager	Founder	Entrepreneurs	Mobile chat application	Events	Researcher observations
Facilitation	13	12	19	148	45	5
Configuring	9	8	15	32	23	5
Brokering	4	5	13	54	4	3

Figure 3: Nr. of analyzed quotations organized per innovation intermediary role and key source

Data structuring			
<i>Role</i>	<i>Coworking space embedded units</i>	<i>Developed Codes</i>	<i>Mechanisms at the StartDock case</i>
Facilitation	Physical space	coffee corner for social encounters; relaxation areas; communal tables; desk islands	coffee corners; relaxation areas; communal tables; desk islands; living room; area for leisure sports
	Digital space	chat application provided by StartDock	chat application connecting StartDock coworkers
	Events	Friday afternoon drinks; boatrides organized by StartDock; sports organized by Startdock; video gaming afternoons; workshops organized by StartDock	a variety of informal events; formal events
	Tenants	access to the coworking community; strategic curation of business domains by StartDock; non-competition policy; on-boarding procedure	access to a community of coworkers; entry-policies; non-competition policies
Configuring	Digital space	interactive exchange of information; helping each other; personal requests; business related requests; support	chat application connecting StartDock coworkers
	Events	providing feedback to each other; learn; present challenges	a variety of formal events
	Tenants	availability of complementary knowledge; awareness of what others do; access to complementary knowledge	strategic curation of the coworking community
	Coworking space staff members	community manager helping coworkers; providing assistance; helping	community manager as consultant
Brokering	Coworking space staff members	community manager fostering connections; brokering resources; community creating awareness amongst coworkers	community manager as broker
	Digital space	chat application as a tool for brokering; tool to foster connections	chat application
	Events	events to meet investors; events about fundng opportunities; formal events	a variety of formal events

Figure 4: Data structuring: innovation intermediary roles, embedded units, developed codes, and mechanisms as identified in the StartDock case



Figure 5: Shared office space at StartDock (Source: Deskbookers.com)



Figure 6: Communal space at StartDock for lunch and social events (source: Deskmag.com)



Figure 7: Example of a social event at StartDock (Source: StartDock.nl)

Innovation intermediary role, description, embedded units, and examples from the StartDock case				
Role	Description (Stewart and Hyysalo, 2008)	Embedded units	Promotion of knowledge sharing	Examples of applied mechanisms
Facilitation	Providing opportunities to others, by educating, gathering and distributing resources.	Physical space	The physical environment encompasses designated social areas and communal tables strategically oriented to facilitate interpersonal interactions and foster socialization among individuals.	Coffee corners; Relaxation areas; Joint lunch areas.
		Digital space	StartDock's mobile chat app enables rapid knowledge exchange among 150 coworkers, promoting quick collaborative problem-solving for business challenges.	Mobile chat application.
		Events	Formal and informal events within the coworking space foster social interactions, knowledge exchange, and networking opportunities, enabling engagement with mentors, investors, and diverse entities for business growth.	Workshops; Personal development events; Informal drinks; Boat rides; Yoga sessions.
		Tenants	StartDock strategically curates a non-competitive community, promoting unrestricted knowledge exchange among entrepreneurs.	On-boarding procedures aimed at creating a community based on complementary business domains; Non-competition policy.

Figure 8: Innovation intermediary role: facilitation, description, embedded units, and examples from the StartDock case

Innovation intermediary role, description, embedded units, and examples from the StartDock case				
Role	Description (Stewart and Hyysalo, 2008)	Embedded units	Promotion of knowledge sharing	Examples of applied mechanisms
Configuring	The creation and configuring of content, the setting of rules on use and usage, the goals and form of the projects of the members in the network.	Digital space	The community chat application serves as a platform offering opportunities for both practical private and business-related assistance, driven by community input.	A constructive coworking community in the chat application with the aim to help each other out.
		Events	The community generates topics for events, which are subsequently organized to offer assistance and deliver practical knowledge.	User-generated content events; Business feedback events.
		Tenants	Complementary knowledge bases and heightened awareness of peers' activities enhances knowledge exchange and configuring content effectively.	Having a dynamic environment where coworkers are aware of what others are occupied with.
		Coworking space staff members	Staff members, when approached and capable, participate in collaborative problem-solving, offering insights to address community members' concerns.	Staff members as consultants.

Figure 9: Innovation intermediary role: configuring, description, embedded units, and examples from the StartDock case

Innovation intermediary role, description, embedded units, and examples from the StartDock case				
Role	Description (Stewart and Hyysalo, 2008)	Embedded units	Promotion of knowledge sharing examples	Examples of applied mechanisms
Brokering	Assisting in expanding the social network of members by e.g. helping to connect with new sponsors or suppliers into the projects of clients. Representing individuals and institutions, and sometimes even negotiate on their behalf.	Coworking staff members	Coworking staff members facilitate connections among members while communicating projects of mutual interest.	Community manager as a broker.
		Digital space	The chat application serves as a space for swiftly connecting members and aligning their interests, both internally and with external contacts.	Mobile chat application as a space for brokering between coworking members and external people.
		Events	Specific events are organized to connect knowledge suppliers with those seeking particular expertise.	Coworking space events that forge brokering connections, e.g. Masterclass linking coworkers with potential investors.

Figure 10: Innovation intermediary role: brokering, description, embedded units, and examples from the StartDock case