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LAPPEENRANTA UNIVERSITY OF TECHNOLOGY  
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MASTER'S THESIS

A BUSINESS INCUBATOR, ACCELERATOR, OR COWORKING SPACE?

CASE HEALTH INNOVATION VILLAGE AT GE

Examiners: Professor Timo Pihkala  
Professor Marita Rautiainen  
Supervisor: Professor Timo Pihkala

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## ABSTRACT

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<p>Health Innovation Village at GE is one of the new communities targeted for startup and growth-oriented companies. It has been established at the premises of a multinational conglomerate that will promote networking and growth of startup companies. The concept combines features from traditional business incubators, accelerators, and coworking spaces.</p> <p>This research compares Health Innovation Village to these concepts regarding its goals, target clients, source of income, organization, facilities, management, and success factors. In addition, a new incubator classification model is introduced. On the other hand, Health Innovation Village is examined from its tenants' perspective and improvements are suggested.</p> <p>The work was implemented as a qualitative case study by interviewing GE staff with connections to Health Innovation Village as well as startup entrepreneurs and employees' working there.</p> <p>The most evident features of Health Innovation Village correspond to those of business incubators although it is atypical as a non-profit corporate business incubator. Strong network orientation and connections to venture capitalists are common characteristics of these new types of accelerators. The design of the premises conforms to the principles of coworking spaces, but the services provided to the startup companies are considerably more versatile than the services offered by coworking spaces.</p> <p>The advantages of Health Innovation Village are that there are first-class premises and exceptionally good networking possibilities that other types of incubators or accelerators are not able to offer. A conglomerate can also provide multifaceted special knowledge for young firms. In addition, both GE and the startups gained considerable publicity through their cooperation, indeed a characteristic that benefits both parties. Most of the expectations of the entrepreneurs were exceeded. However, communication and the scope of cooperation remain challenges. Micro companies spend their time developing and marketing their products and acquiring financing. Therefore, communication should be as clear as possible and accessible everywhere. The startups would prefer to cooperate significantly more, but few have the time available to assume the responsibility of leadership. The entrepreneurs also expected to have more possibilities for cooperation with GE.</p> <p>Wider collaboration might be accomplished by curation in the same way as it is used in the well-functioning coworking spaces where curators take care of practicalities and promote cooperation. Communication issues could be alleviated if the community had its own Intranet pages where all information could be concentrated. In particular, a common calendar and a room reservation system could be useful. In addition, it could be beneficial to have a section of the Intranet open for both the GE staff and the startups so that those willing to share their knowledge and those having project offers could use it for advertising.</p>

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<p>Health Innovation Village at GE on eräs uusista terveysteknologia-alalla toimiville aloitteleville ja kasvuyrittäjille tarkoitetuista yhteisöistä. Se on perustettu monikansallisen monialayrityksen yhteydessä sijaitsevaan tilaan edistämään aloittavien yritysten verkostoitumista ja kasvua. Konseptissa yhdistyy piirteitä niin perinteisistä yrityshautomosta, yrityskiihdyttämöistä kuin yhteisöllisistä työtiloista.</p> <p>Työssä verrataan Health Innovation Villagea näihin konsepteihin tavoitteiden, organisaation, kohdeasiakkaiden, tulolähteiden, infrastruktuurin, hallinnon ja menestystekijöiden suhteen. Lisäksi esitetään uusi luokittelumalli hautomolle. Toisaalta työssä tutkitaan Health Innovation Villagea siellä toimivien yritysten näkökulmasta sekä esitetään ehdotuksia, miten konseptia voitaisiin kehittää edelleen.</p> <p>Työ toteutettiin kvalitatiivisena tapaustutkimuksena haastatteleamalla GE:n työntekijöitä, jotka ovat olleet mukana Health Innovation Villagen toiminnassa, sekä siellä työskenteleviä yrittäjiä ja työntekijöitä.</p> <p>Health Innovation Village vastaa ominaispiirteiltään lähinnä yrityshautomon, vaikka se on epätyypillinen voitto tavoittelemattomana yksityisen yrityksen perustamana yrityshautomona. Uudentyyppisten yrityskiihdyttämöjen kanssa sillä on yhteistä voimakas suuntautuminen verkostoitumiseen ja yhteydet riskisijoittajiin. Health Innovation Villagen työtilat vastaavat yhteisöllisten työtilojen periaatteita, mutta sen yrityksille tarjoamat palvelut ovat huomattavasti monipuolisempia.</p> <p>Health Innovation Villagen etuja ovat erinomaiset tilat sekä poikkeuksellisen hyvät verkostoitumismahdollisuudet, joita muuntyyppiset hautomot tai kiihdyttämöt eivät pysty tarjoamaan. Suuryrityksellä on myös annettavana monipuolista erityisosaamista nuorten yritysten tarpeisiin. Lisäksi sekä GE että aloittelevat yrittäjät saavat merkittävästi julkisuutta yhteistoiminnastaan, mistä on etua molemmille osapuolille. Yrittäjien odotukset olivatkin pääasiassa ylittyneet. Haasteita tuovat viestinnän toimivuus ja yhteistoiminnan laajuus. Mikroyritysten aika kuluu omien tuotteiden kehittämiseen, markkinointiin ja rahoituksen hakemiseen. Sen vuoksi tiedotuksen tulisi olla mahdollisimman selkeää ja helposti kaikkien saatavilla paikasta riippumatta. Yrityksillä olisi myös halua huomattavasti enemmän yhteisölliseen tekemiseen, mutta harvoilla riittää aikaa vetovastuun ottamiseen. Yritykset odottivat myös että heillä olisi enemmän mahdollisuuksia yhteistyöhön GE:n kanssa.</p> <p>Yhteistoimintaa voisi edistää toimivien työtilojen mallin mukainen kuratointi, joissa kuraattorit vastaavat käytännön asioista ja yhteisöllisyydestä. Viestintäongelmia voisivat auttaa yhteisön sisäiset verkkosivut, johon kaikki tiedottaminen keskitettäisiin. Erityisesti yhteisestä kalenterista ja tilojen varausjärjestelmästä olisi hyötyä. Lisäksi siinä voisi olla sekä GE:lle ja yhteisölle avoin osio, jonka avulla voisi etsiä mahdollisuuksia yhteisprojekteihin.</p>

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When I applied to Lappeenranta University of Technology I did not know what to expect. The only reason I chose the school was because it offered a major in entrepreneurship. However, Lappeenranta University of Technology really opened my mind as it offered open, broad-minded, and multinational atmosphere. That was a positive surprise. Lessons were not comprised only of lectures; instead students of different ages and nationalities participated in lively discussions which made studying a true pleasure. The professors knew their students by name. My fellow students' work experience further deepened the theoretical lessons offered and their motivation and goal-driven attitude enabled my positive completion of innumerable exercises.

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Helsinki, 13.5.2016 Tuula Miettinen

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## 1 INTRODUCTION

Recently large corporations have started to regain interest in startup companies. For example Samsung has opened accelerators in California as well as in New York and is about to open one more in Israel (O'Dell, 2013; Tibken, 2013; Goldenberg, 2015). Likewise, Spanish telecom operator Telefónica has funded startups in London, Microsoft has opened an accelerator in Berlin, and perhaps unexpectedly Coca Cola has also joined in to connect with startups in San Francisco, Berlin, and Bangalore (Scott, 2013).

Another trend is the proliferation of coworking spaces. These are communities of self-employed persons and startups preferring to work independently but together. Although the trend started as early as 15 years ago, it is still going strong as last year the number of coworking spaces increased by 36 %. (Foertsch, 2015; Houni and Ansio, 2015)

The same trends prevail in Finland. Coworking spaces are mushrooming especially in downtown Helsinki (Raeste, 2016). Here, many of the new incubators and coworking spaces are health technology oriented, like Vertical, launched in the early 2015. It is an accelerator sponsored by Samsung Electronics, Sonera, and Ingram Micro, among others. (Santaharju, 2015; Lukin, 2015) The city of Helsinki will launch Startup Hub Maria together with the startup foundation Startup-säätiö and NewCo Helsinki by the summer 2016 in an old hospital (Kopola, 2016). However, GE Healthcare Finland Oy, an affiliate of the multinational conglomerate General Electric, seems to be the trendsetter as it opened Health Innovation Village at GE in October 2014 (GE, 2015).

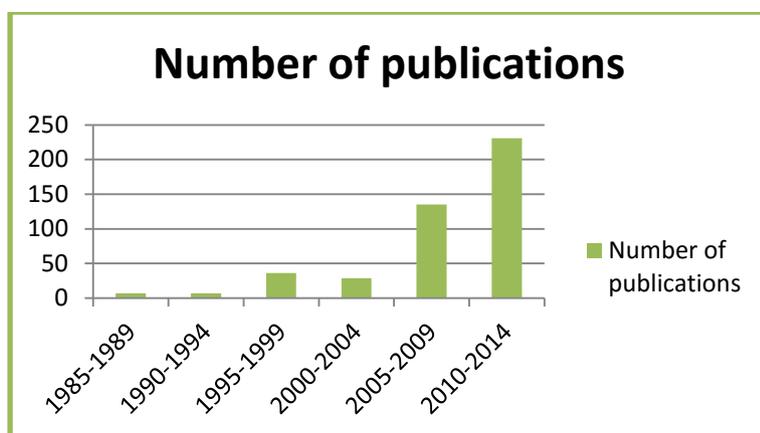
Health Innovation Village at GE is different from the others in bringing together a global corporation specialized in healthcare technology and startup companies under the same roof without the involvement of public bodies or educational institutions. Additionally, it incorporates features of coworking spaces. The tenants pay a nominal fee for a seat in an open office and get access to versatile networking activities. (Kauppinen, 2015) Besides, the concept is still evolving as Health Innovation Village at GE will also be housing an accelerator program StartUp Health Finland. It was launched together with the largest American health technology accelerator StartUp Health and the Finnish government in November 2015 (Gianelli, 2016).

The health technology industry is one of the few exceptions in the recent bleak economic situation in Finland since the sector has continued to rise steadily for years. Even in 2014 when the Finnish economy was in deep recession health technology export rose by unprecedented 8.3 % and it has already exceeded other high technology industries in volume. Although health technology covers only a minimal portion of the total 55.8 billion euros export it is expected to become one of the spearheads of the Finnish economy. (Fihta, 2015; Savolainen, 2015) According to Fihta (2015) there are over 300 companies in the Finnish health technology sector from large multinational corporations to startups and the sector is likely to grow as Finland has the highest concentration of health technology start-ups per capita in the world (Mörk, 2015).

A thorough exploration of Health Innovation Village at GE is indeed well justified due to its uniqueness, the emerging trend of setting up corporate incubators, and the growing importance of the health technology sector for the Finnish economy.

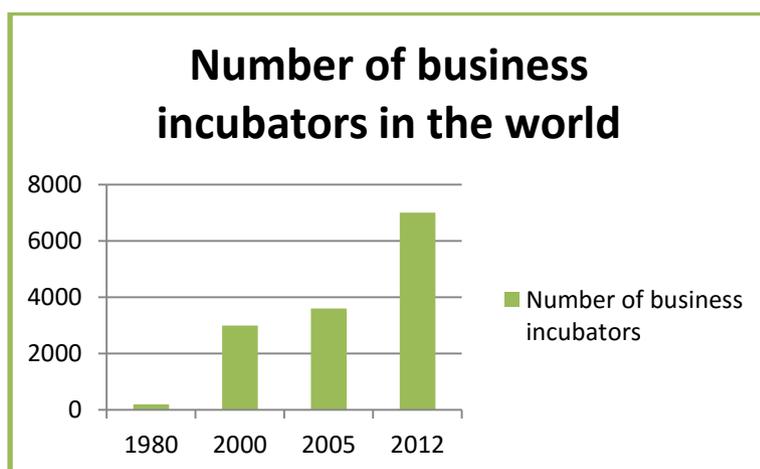
## **1.1 Background**

The first business incubator was established as early as 1959 in Batavia, New York by Joseph Mancuso (NBIA, 2015; Lewis et al. 2011). He could not find a single tenant for a massive business complex of Massey-Ferguson that was closed down; therefore he decided to rent it to separate small businesses, also providing them with business advice and assistance in raising capital. One of the tenant firms was a chicken company from where the jesting nickname business incubator originates. (NBIA, 2015) However, it was not until the 1980's that business incubators started to proliferate. Along with the growing number of incubators theoretical interest in the subject started to rise, although in the beginning most of contributions were descriptive or concentrated on classifications (Allen and McCluskey, 1990). Figure 1 illustrates how the number of articles written about incubation has increased after 2005.



**Figure 1. Number of publications (modified from Albort-Morant and Ribeiro-Soriano, 2015).**

Gradually the incubators also started to spread outside the United States. When there were around 200 incubators in the 1980s the amount had increased to approximately 7000 in 2012, as shown in Figure 2 (Lewis, 2011; Tavoletti, 2013). In Europe, the first incubator was established in the United Kingdom in 1975 (Aernoudt, 2004). Finland got its first science park and incubator in Oulu in 1982. Otaniemi Science Park and incubator in Espoo was the second one opened in 1986. But it took 10 years before the Helsinki region got its second incubator in 1996. (Abetti, 2004) However, in the following 3 years 15 more were created (Aernoudt, 2004).



**Figure 2. Number of business incubators in the world (Bøllingtoft and Ullhøi, 2005; Lewis, 2011; Tavoletti, 2013).**

The main task of incubators, to contribute to the survival and success of early stage enterprises, has remained the same (Shepard, 2013). Still, a few subtle changes have arisen in the course of time entitling the classification of incubators into three generations. Shepard (2013) considers the first generation to extend from 1959 to 1979, and the second one to cover the years 1980–1999 followed by the third generation beginning from 2000. However,

the first two generations are grouped differently in other sources. Often the first generation refers to the 10-year-period starting from 1980. The second one extends from 1990 till the turn of the century, as Table 1 illustrates along with the main goals and characteristics of each period. (Bruneel et al. 2012; Theodorakopoulos et al. 2014)

When the ultimate purpose of the first incubators was to revitalize the declining industrial regions and to advance the change from manufacturing to service economy, in the second generation of incubators it was to mitigate unemployment (Shepard, 2013). In addition the focus was directed to support fledgling technology-based companies. That entailed the involvement of universities and other research institutions, which gave rise to university incubators. In the 1990's the focus moved to specific industrial clusters, such as information technology. (Aernoudt, 2004) New technology incubators flourished at the end of 1990's along with the internet boom and fell with it after the burst of the bubble (Hackett & Dilts, 2004; Aerts et al. 2007). The contraction was reflected even in the publication of articles on incubation between 2000 and 2004, as can be seen from Figure 1. The new technology incubators were often virtual and moreover funded by venture capital companies. It means that some of them offered just consultancy services without an on-site space for incubatees in exchange for a stake in ownership. (European Commission, 2002). The third generation concentrates on providing networking assistance (Shepard, 2013). Bruneel et al. (2012) regard the first and the second generations as science parks in contrast to the third generation that, according to them, is the first one to actually enable new business creation.

**Table 1. Business incubator generations and their main goals and characteristics.**

<b>0 Generation</b>	<b>1<sup>st</sup> Generation</b>	<b>2<sup>nd</sup> Generation</b>	<b>3<sup>rd</sup> Generation</b>
<ul style="list-style-type: none"> <li>• Revitalization of the declining industrial regions</li> </ul>	<ul style="list-style-type: none"> <li>• Advancement of the change from manufacturing to service economy</li> <li>• Mitigation of unemployment</li> <li>• Focus on technology-based companies</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on specific industrial clusters, especially on information technology</li> <li>• New technology incubators</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on networking assistance</li> <li>• Enhancement of new business creation</li> </ul>
<b>1959-1979</b>	<b>1980-1990</b>	<b>1991-2000</b>	<b>2001-</b>

In addition to different incubator generations there are other classifications. Becker and Gassmann (2006a) introduced the division to for-profit and not-for-profit incubators. The latter is far more common than the former comprising from 80 % to 90 % of all incubators (Lewis et al. 2011). The non-profit incubators serve a social purpose such as job creation or regional economic growth whereas for-profit ones intend to gain financial returns. In addition to venture capital funded new technology incubators and service providers' incubators which wanted to extend their consulting and accounting services to their start-up clients, also corporate incubators belong to this group. They aim to accelerate new business development first by spinning off innovations that do not fit the overall company strategy and secondly by leveraging knowledge and networks to support external start-ups for possible spin-ins or for development of complementary technologies that increase the demand of their own products. (Becker and Gassman, 2006a)

## **1.2 Research problem, objectives, and delimitations**

It is hard to categorize Health Innovation Village at GE, a non-profit corporate community for health technology oriented start-up companies, since it does not fit into any of the existing start-up support models. Although its main goal of enhancing the local ecosystem is in accordance with that of non-profit incubators, it is rare that a single firm takes that role. Although it comprises a coworking space, it is not initiated by startups. Therefore, the aim of this thesis is to compare Health Innovation Village at GE with incubators, accelerators, and coworking spaces in terms of its goals, organizational structure, management, and success factors. In addition, the concept is explored from the perspective of its tenants and further development proposals are suggested. Accordingly, the unit of analysis in this study is Health Innovation Village at GE and it is examined from the perspectives of its primary stakeholders: GE Healthcare Finland and the tenant firms of the Health Innovation Village at GE. Hence, the research questions are the following:

- 1) How does Health Innovation Village at GE relate to incubators, accelerators, and coworking spaces in terms of its goals, target clients, income sources, organization, facilities, management, and success factors?
- 2) How do the tenants perceive Health Innovation Village at GE and how could it be further developed?

The scope of this study is restricted to the viewpoints of GE Healthcare Finland and especially the current tenant companies of Health Innovation Village at GE at this early phase

of its lifecycle. The theoretical contemplation is based on incubation and coworking space literature.

The basic reason to use classifications is to enable comparison between different types of incubators. However, as Hackett and Dilts (2004) reviewed incubation literature they could not find any taxonomy that could have explained variation in incubation outcome. Therefore they posed a call for a theoretically meaningful incubator classification. Hence, this study aims to respond to this call by introducing an adaptable classification table. Furthermore, in current literature tenants are addressed mainly in terms of success while the motives as well as expectations of start-up companies are mostly ignored. This research fills this gap by taking into consideration tenants' expectations and experiences. In terms of practical benefits this work hopes to provide valuable information for Health Innovation Village at GE for its further development.

### **1.3 The methodology**

Since the intention of this study is to explore a new phenomenon, I have chosen qualitative approach as it is most frequently used for this end (Hirsjärvi, et al, 2010, 191–193). According to Yin (2014, 9) there are three major conditions which ought to be taken into consideration when choosing a qualitative research method. These are 1) the form of the most common research questions, 2) the necessity to control the behavioral events, and 3) whether the focus is on current events. Yin (2014, 10–12) advises the use of case study when the typical research questions are either 'why' or 'how', when there is no need for controlled settings, and when the issues studied are contemporary. In addition, case study is recommended when the phenomenon is unique. Health Innovation Village at GE is indeed one of a kind as a non-profit corporate community for start-ups coming outside the host company. Neither is there reason nor possibility for controlled laboratory testing. Furthermore, as the topical issue is examined predominantly by why questions, I considered a single case study to be an appropriate research method for this thesis.

Data triangulation is recommended by Yin (2014, 118–121) for the purpose of compiling multiple sources of evidence and cross-checking. Hence, I used secondary data sources, such as articles, videos, Facebook and company home pages, and annual reports in addition to my primary data sources: interviews, casual conversations, and observations. For the main source of information I chose semi structured interviews, since they provided both flexibility to delve

into emerging issues and simultaneously thematic structure. I tried to select the interviewees based on representativeness in order to create as comprehensive a picture as possible.

Categorization and interpretation are two general types of data analysis methods. The former enables the construction of a holistic picture of the research problem and the latter is more about making sense of it. (Eriksson & Kovalainen, 2016, 122) I found, therefore, categorization more suitable for the present study.

#### **1.4 Organization of the study**

The rest of the report starts with a review on incubator literature including definitions as well as more elaborative classifications of incubators, chapters on incubators' structures and management, as well as on incubation success measurement. Separate chapters on both accelerators and coworking spaces are also incorporated. Then the methods used are explicated followed by descriptions of GE Healthcare Finland and Health Innovation Village. In the succeeding chapter Health Innovation Village is compared with incubators, accelerators, and coworking spaces. Thereafter the tenants' perceptions of the Health Innovation Village are examined. Then it is pondered how the cooperation could be raised to the next level. Finally the report ends with a discussion and a conclusion section.

## 2 DEFINITIONS

Startup companies, coworking spaces, business incubators, and accelerators are concepts that are closely related. Sometimes incubators and accelerators are used as synonyms whereas sometimes they are seen as different concepts. Startups may join coworking spaces or become tenants of business incubators or accelerators. Although these concepts may sound obvious, they are used in a variety of senses in the literature. As a result, a closer examination of these terms is desirable.

### 2.1 Definitions of a startup company

A startup can be understood in its dictionary meaning: '*a new business or a fledgling business enterprise*' (Merriam-Webster, 2016). However, it is common that not all new businesses are regarded as startups but only those that pursue growth. For example, Blank's and Dorf's (2012) definition is the following: '*A startup is a temporary organization in search of a scalable, repeatable, profitable business model.*' In addition, startup businesses are often considered to be so unique that they do not have a readymade concept to follow but they have to resort to a trial and error technique. Hence, Eric Ries (2011, 27) defines a startup as: '*A human institution designed to create a new product or service under conditions of extreme uncertainty*'. That definition is also used in this study with the exception that also expansive new businesses are included.

### 2.2 Definitions of a business incubator

Given the uncertain circumstances it is not surprising that the mortality rate of infant companies in Europe is in average 65 % during their first five years (Eurostat, 2014). This causes the need for the means to avoid unnecessary deaths of new-born businesses. Consequently, the essence of incubators is to hatch promising business ideas or startups through these vulnerable times by providing resources and support until the companies are ready for the fierce business world.

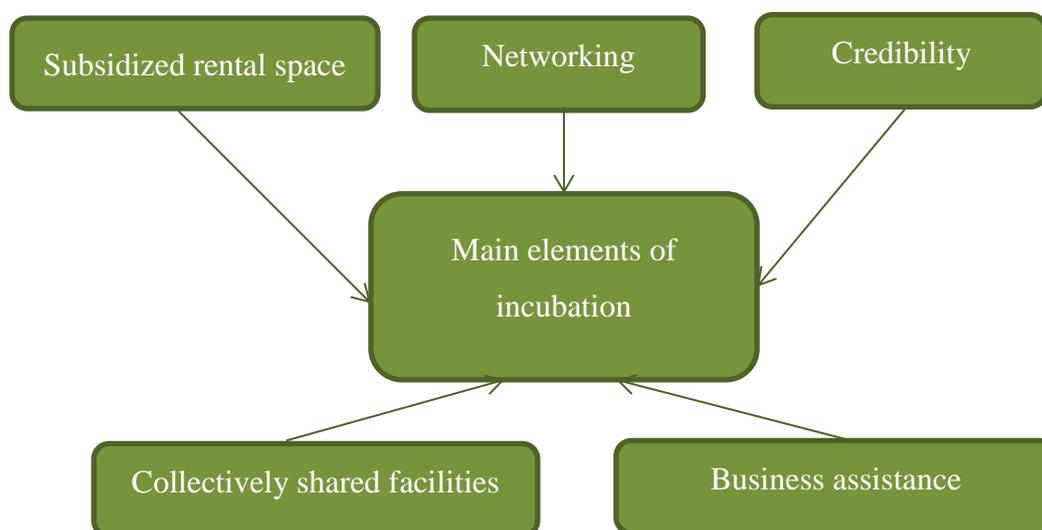
Business incubators go under a whole spectrum of names, like seedbeds (Felsenstein, 1994), innovation centers (Campbell, 1989), and technopoles (Castells and Hall, 1994). Furthermore, incubators choose specific names due to marketing issues (Schwartz, 2013). In addition to different appellations there is a considerable amount of definitions partly because the phenomenon is viewed from notably different angles and partly because of its evolving

nature. Even the scope of the terms 'incubation' and 'incubator' differ from one source to another. Sometimes the building is referred to as an incubator and the actual support program as incubation while at times the whole concept is called an incubator. For example, in an incubator Hackett and Dilts (2004) include, besides the office facility, also a network of individuals and organizations as well as industry and investor contacts.

Although everyone agrees that incubators support new enterprises or small growth oriented firms, the underlying motives have changed in time, which is also reflected in the definitions. Some classifications underline stakeholders, others the services provided. Swierczek (1992) understands incubators as a strategy and hence tells incubators and science parks apart by their strategic focus. And, some of the definitions concentrate on the programs or the offered infrastructure. Those who highlight the importance of colocation, interaction, and peer-to-peer networking, count out virtual incubators, in other words incubators based on on-line technologies and services (Hackett and Dilts, 2004).

In general, all definitions include the development of a new company, new innovation, or a small enterprise with growth intentions through activities that are conducive to the success of the incubatees. In addition, some kind of financial support should be provided whether it is in the form of reduced rent, free services, or direct investments, otherwise any consulting company could be classified as an incubator, as Hackett and Dilts (2004) noticed. On the other hand, venture capitalists offering comprehensive business support services can be termed incubators (Dee et al. 2011). Differences in the definitions derive from the emphasis, like the importance of location, stakeholders, industry, the primary goal, secondary goals, services offered, infrastructure, funders, exit criteria, incubation processes, and if the incubator aims at profit or not.

Dee et al. (2011) have accrued a list of the major characteristics of incubators. These include a selection process, mixed revenue streams, access to space, knowledge, and resources either through staff or networks, actively encouraged peer-to-peer networking, and 3–5 years incubation time. However, not all incubators limit the stay. In case the duration is bounded, passing a successful incubation process is called graduation (Gassmann and Becker, 2006). Schwartz (2013) simplifies incubation into five basic elements: subsidized rental space, networking, credibility, collectively shared facilities, and business assistance, as illustrated in Figure 3.



**Figure 3. Main element of incubation according to Schwartz (2013).**

A widely used definition concentrating on the core issues is that of Allen and McCluskey (1990): ‘A *business incubator is a facility that provides affordable space, shared office services, and business development assistance in the environment conducive to new venture creation, survival, and early stage growth.*’ Another common definition of an incubator is given by The National Business Incubation Association, an American organization advancing business incubation and entrepreneurship: ‘*Business incubation is a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts.*’ (NBIA, 2015)

### **Science and technology parks**

Autio and Klofsten (1998) define a science park as ‘A *facility that is located in the vicinity of a university or a research institute and has technology-based SMEs as tenants*’. Similar facilities are called research parks in the United States and technology parks in Asia. Incubators may be situated in a science or technology park as a separate organization (Lalkaka, 2002). Hackett and Dilts (2004) specify that research parks conduct basic research while technology innovation centers commercialize basic research. However, research parks, technology innovation centers, technology parks, and science parks, as well as business accelerators are often used as synonyms for business incubators (Hackett and Dilts, 2004; Phan et al. 2005).

### **2.3 A definition of an accelerator**

Although some equate accelerators to the third generation of incubators which emphasizes networking, there is a group of accelerators that have started to have distinguishable features. Even though both incubators and accelerators are targeted to companies in their early stages, their main goals differ. While incubators attempt to enhance firm survival rates accelerators aim to speed up either growth or failure. (Cohen and Hochberg, 2014; Hackett and Dilts, 2004)

According to the characteristic features of an accelerator Cohen and Hochberg (2014) define it as: *‘A fixed-term, cohort-based program, including mentorship and educational components, that culminates in a public pitch event or demo-day’*.

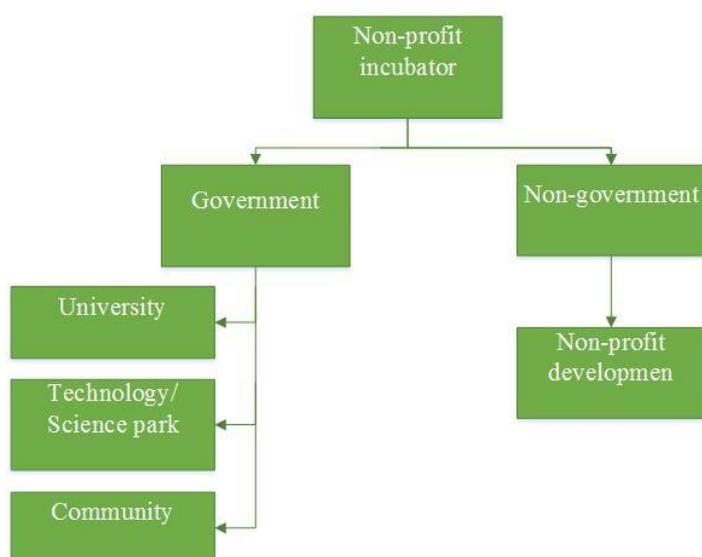
### **2.4 Characteristics of coworking spaces**

As teleworking has become more common as well as self-employment in knowledge intensive work, people have started to work in cafes and other public places. However, cafes are not the most appropriate places to print or negotiate confidential matters. Hence, the need for company and affordable office space has led to the emergence of coworking spaces. Some of them are organized by a group of likeminded entrepreneurs; others are established in the purpose of earning. As a group of people is working together, there is always someone to turn to when assistance is needed. Each one also has his own network which enhances the possibilities to find required information or even potential customers. The shared services and location decreases costs. (Merkel, 2015)

Although coworking spaces enhance the possibilities of networking, they are not incubators. There should be an intention to develop businesses in order to qualify as an incubator. The main purpose of coworking spaces is to reduce costs by sharing resources, not to educate, although information sharing can lead to new insights and improvement in business survival (Houni and Ansio, 2015). Another difference between incubators and coworking spaces can be found in the access criteria. While the incubators are targeted for start-up companies or small businesses, they expect the firms to want to grow or be in their initial stage. Instead of placing such demands coworking spaces are often populated by self-employed persons who do not have any growth intentions (Houni and Ansio, 2015).

### 3 INCUBATOR TAXONOMIES

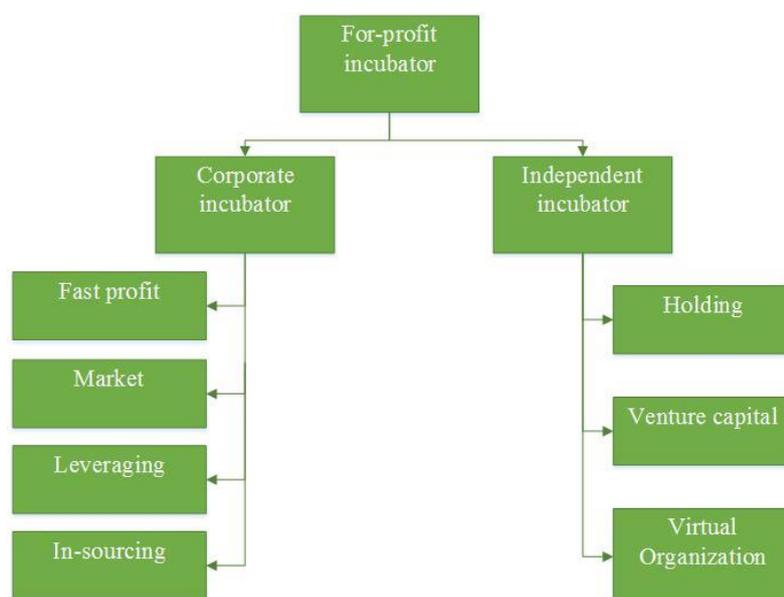
Incubator classifications abound. Incubator generations belong to the most used ones. The most common one is however the division to not-for-profit or for-profit incubators. The former group aims at more general social goals, like fostering entrepreneurship and enhancing regional economic development, while the latter expects financial returns (Miller and Bound, 2011). However, the largest body of incubators (77 %) is not-for-profit private-public-partnership projects sponsored by the state, city, university, or another public institution (Lalkaka, 2002; Phan et al. 2005; European Commission, 2002). Figure 4 depicts a classification of non-profit incubators.



**Figure 4. A compiled classification of non-profit incubators.**

Division based on sponsorship is also common. Academic incubators are associated with universities. They are also known under such names as university incubators, knowledge parks, and innovation centers. (Hackett & Dilts, 2004) Corporate incubators are sponsored by private corporations. They support external startups or spin-offs that do not fit the business strategy of the parent company. Becker and Gassmann (2006b) state that corporate incubators also have to take into account long term goals, but as an advantage they have the parent company's resources. Becker and Gassmann (2006a) classify corporate incubators into further four subclasses formed by two dimensions: core or non-core technology and internal or external source of technology. Fast-profit incubators rely on internal non-core technology capitalization. Market incubators strive to develop a market for complementary non-core external technologies. Leveraging incubators try to increase the utilization of internal core

technologies, and in-sourcing incubators screen external core technologies for potential spin-ins. Figure 5 illustrates these subclasses of for-profit incubators. The first level division is based on the founding organization. The subdivision of corporate incubator reflects that of Becker and Gassmann (2006a). Independent incubators comprise other privately owned organizations like holding, venture capital oriented, and virtual incubators.



**Figure 5. Classification of for-profit incubators partially based on Becker and Gassmann (2006a).**

Plosila and Allen (1985) separated product development, manufacturing, or mixed-use incubators based on target tenants. Also Schwartz and Hornykh (2008) use target groups as a classification ground but they divide incubators into sector-specialized and diversified business incubators. Other classifications are based on strategic objectives, service offerings, and competitive focus. The latter comprise divisions between industry sector, type of startup, phase of intervention, and geographical reach (Vanderstraeten and Matthyssens, 2012). Bøllingtoft (2012) introduced bottom-up incubators which are jointly established by the entrepreneurs. Actually, they have the typical features of coworking spaces as they provide startup initiated activities based on peer-to-peer consulting.

### **Taxonomies based on continuums**

Incubators can also be placed on continuums. A typical example is a continuum starting with real estate development and ending with business development. Allen and McCluskey (1990) divided this continuum into four classes: for-profit property development incubators, non-profit development corporate incubators, academic incubators, and for-profit seed-capital incubators. Bøllingtoft and Ullhøi (2005) added for-profit collaborative incubators in the

middle to underline collaboration and networking activities as value creators. In addition all these classes were further differentiated by their primary and secondary goals. Table 2 illustrates not only the continuum from real estate to business development but also the primary and secondary goals of these business incubator types. Furthermore, the table depicts their level of collaboration.

**Table 2. Real Estate versus Business Development continuum according to Bøllingtoft and Ullhøi (2005).**

<div style="display: flex; justify-content: space-between; align-items: center;"> <span>Real Estate</span>  <span>Business Development</span> </div> <p style="text-align: center;">Collaboration degree</p>					
	For-profit property development incubators	Non-profit development corporation incubators	For-profit collaborative incubators	Academic incubators	For-profit seed-capital incubators
Primary objectives	Real estate appreciation	Job creation and enhancing of the entrepreneurial climate	Capitalize collaborative and symbiotic potentials	Commercialization of university research	Capitalize investment opportunity
Secondary objectives	Sell proprietary services to tenants	Regional/area development	Network development and nurture	Capitalize investment opportunity	Secure availability to risk capital
Collaboration	No interorganizational collaboration	Interorganizational collaboration (Multistakeholder collaboration)	Firm-firm collaboration	University-Industry collaboration	No interorganizational collaboration

According to Becker and Gassmann (2006a) not-for-profit incubators provide more likely just physical resources, such as low rent, and secretarial services. Learning in not-for-profit incubators is based on ad hoc advice given by the incubator manager or peer incubatees whereas for-profit incubators are more professionally run in order to gain expected profits. Even so, Becker and Gassmann (2006a) found that for-profit incubators quite often had no special support programs and non-profit incubators used arranged feedback mechanisms twice as often as they did. Instead, for-profit incubators were skilled in gathering information informally through conversations, meetings, and surveys.

Other incubator subgroups include networked incubators and business accelerators. A networked incubator was introduced by Hansen et al. (2000). Bøllingtoft and Ullhøi (2005) considered networked incubators as a hybrid form of traditional business incubators. It is characteristic to networked incubators that they are based on territorial synergy, physical proximity, relational symbiosis, and economies of scale.

## 4 STRUCTURE AND MANAGEMENT OF INCUBATORS

Although incubators are an umbrella term for a variety of support arrangements, all of them have quite a number of common features as organizations (Bøllingtoft and Ullhøi, 2005). Aaboen (2007) associates incubators with firms. And indeed, many of them have business models, advisory boards, and strategies. Incubatees are associated with clients, and the incubation program with the services incubators offer. There are also differences between incubators and firms. Most incubators do not aim to make a profit; instead they have funders, often a combination of public and private stakeholders. Although incubators advertise their services, not all aspiring tenants are accepted but they have to go through a selection process.

### 4.1 Motives to establish incubators

Allen and McCluskey (1990) have listed primary and secondary goals of incubators. These are incorporated in Table 2 grouped by incubator type. Primary objectives comprise real estate appreciation, sale of proprietary services, job creation, entrepreneurial success possibilities, faculty-industry collaboration, university research commercialization, and investment opportunities. Secondary goals include technology transfer, sustainable income, economy base diversification, tax base bolstering, vacant facilities utilization, strengthening of service and instructional mission, good will creation between institution and community, and product development. Gassmann and Becker (2006) add to the benefits of a corporate incubator external prestige. Alsos et al. (2011) replenish the list by the growing interest in corporate social responsibility which may encompass incubation of startup companies. As an incubator may have several stakeholders, they may also have different goals.

Some of the most common reasons to establish incubators are that they are expected to foster entrepreneurship, innovation, and regional development. In Europe 78 % of the incubators strive to contribute to the competitiveness of the local economy and 76 % to stimulate the entrepreneurial spirit. In addition, brokering different technology and ideas by bringing together versatile knowledge is often (43 %) included in mission statements. (Aerts et al, 2007) However, these goals cannot be achieved solely by means of incubators. (Phan et al. 2005; Hussler et al. 2010; Dee et al. 2011) In terms of startups, incubators are supposed to address two main goals. The first one is to solve market failures which are seen to limit startups to overcome uncertainty in the first years (Phan et al. 2005). The other one is to accelerate entrepreneurial processes (Hansen et al. 2000).

## **4.2 Incubators' income sources**

Incubators finance their activities by a variety of means. These include rents, service fees, grants, and equity stakes in startups. However, it is usually difficult to charge for the services due to startups' lack of resources (Dee et al. 2011). Only 24 % of European incubators take a stake in their tenants and even fewer (17 %) get an income of dividends and royalties (Aerts, et al. 2007). Those incubators that take equity in startups may have delays in revenue which entices to prioritizing short-term returns instead of long-term success (Dee et al. 2011). In general, incubators are mainly financed by rents in Europe. (Aerts, et al. 2007)

Vanderstraeten and Matthyssens (2012) found out that some tenants prefer diversified incubators since they were looking for complementary activities while others liked those with focused scope. The latter group operated mostly in special fields where it was necessary to cooperate. Another reason for the attraction of specialized incubators is the core business network possibilities. Besides, Tötterman and Sten (2005) question the ability of diversified incubators to assist their tenants in industry-specific issues. However, Vanderstraeten and Matthyssens (2012) noticed that networking is equally effective also in diversified incubators.

## **4.3 Incubator management**

An incubator can be arranged as an independent unit or a totally separate organization. In case of a corporate incubator a close link to enabling resources has to be maintained. (Becker and Gassmann, 2006b) According to Shepard (2013) incubators in general have clearly formulated mission statements which are used to guide decision making. In addition, Becker and Gassmann (2006b) assert that corporate incubators as a rule have a board occupied by senior executives and internal technology experts. Zablocki (2007) asserts that by means of a board of directors incubation programs can be built and maintained. Besides, it strengthens commitment to the incubator. The boards' tasks include the clear articulation of missions and goals of the incubator. Without agreed-on goals different stakeholders tend to follow their own tacit mission statements which may cause trouble. Zablocki (2007)

Westhead and Batstone (1999) examined how managed and non-managed science parks differed from each other. A science park that had at least one full time manager who was in charge of it was considered managed. Others were regarded non-managed even if they had informal teams who divided the tasks between themselves. Non-managed parks were primarily property based initiatives which encouraged clustering of technology based firms.

These did not usually need extra services. Anyway, both types of science parks provided basic resources and services needed by small enterprises. Firms in non-managed parks tended to be older and larger in size and they were more often manufacturers than those in managed parks. Companies in managed parks operated in more risky fields and applied leading edge knowledge. The managers of managed science parks were seen as more approachable, easy to talk to, and accessible. In addition they were active in expanding both social and business networks of their tenants. In general their role was highly appreciated. (Westhead and Batstone, 1999)

The incubation strategies in the 1970's and early 1980's were twofold: either incubators concentrated on providing inexpensive space for startups or on developing businesses (Smilor, 1987). Currently, Vanderstraeten and Matthyssens (2012) suggest two differentiation strategies for incubators. The first one is for diversified incubators while specialized incubators can resort to the other one. The former strategy involves in-depth operational business support and administrative services. Incubators that have tenants from a specific sector should offer sector-specific services on-site as well as personal contacts instead.

Aerts et al. (2007) studied European incubators established between 1990 and 2000 and found out that they served only a limited number of sectors. Although there are several advantages in this kind of focused incubators, Aerts et al. (2007) also see specialization as vulnerability since the ups and downs of the sector equally affect focused incubators. In addition Vanderstraeten and Matthyssens (2012) suggest that incubators should attend to external and internal alignment for the sake of differentiation. While external alignment comprises tenants' service expectations and perceptions, internal alignment is concerned about how incubators are able to meet these expectations.

The main responsibilities of incubator managers include the selection of tenants, overseeing planning and policy implementation, overseeing marketing activities, staff recruitment, and incubator operations management (Zablocki, 2007).

Results of a survey administered by Hernández-Gantes et al. (1995) indicated that business incubator managers would prefer to spend their time in direct consulting (24.3 %), creating and maintaining external resources and networks (22 %) in order to support incubation. Instead they are busy maintaining business and fundraising. However, in a later study Shepard

(2013) established that the managers spend considerable time in direct services that are mentoring, counseling, training, helping and working with clients.

#### **4.4 Selection process, program, and exit process**

Incubation process described by Becker and Gassmann (2006a) includes four phases: selection, structuring, involvement, and exit. The terms ‘entry’ and ‘selection’ are used interchangeably but the latter elicits the screening process better. The structuring comprises the fixed configuration of an incubator while the involvement describes the incubation process and the related services. However, not all incubators have exit criteria. (Becker and Gassmann, 2006a)

##### **Selection process**

The selection process contributes to a better fit between the needs of incubatees and the services offered as most incubators are targeted to particular types of companies (Aerts et al., 2007; Dee et al. 2011). In general, the primary screening process tries to prune those applicants that cannot be helped by incubation and those that do not need incubation (Hackett and Dilts, 2004). Bergek and Norrman (2008) divide incubators between those that screen the business ideas of startups and those that focus on founders. In Europe, 61 % of the incubators screen market factors, 27 % management team, and only 7 % financial factors (Aerts et al., 2007). According to Vanderstraeten and Matthyssens (2012) sector-specialized incubators tend to select tenants according to their market-related features while generalists are more interested in personal and team characteristics. The two different strategies: ‘picking the winners’ or ‘survival of the fittest’ can be used both by those that focus on business ideas and by those that underline founders. The difference between ‘picking the winners’ combined with an idea-focus and ‘picking the winners’ combined with entrepreneurship-focus is basically that the former results in extremely narrowly screened ideas within a limited technological field and the latter in a bit wider portfolio of companies that have a looser technological coupling. (Bergek and Norrman, 2008) However Aerts et al. (2007) noticed that a wide set of selection criteria improved the possibilities of success.

Allen and McCluskey (1990) tabulated how different stakeholders influence public, academic, partnership, and private incubators regarding admission and exit policies. According to them there is no difference between the first three incubators concerning admission policies whereas private incubators tend to accept tenants capable of paying rent. Fit with the corporate technology is a characteristic feature of the selection criteria of corporate

incubators. A potential for high growth is often expected, although it is hard to assess. Only a small fraction of applicants are usually accepted. After the preliminary screening there may be a phase where it is determined how the offered services are paid. It is common that for-profit incubators take about 20 % stake in the companies or the services are chargeable. In order to cover the expenses of support activities the number of tenants has to exceed the critical mass (Chan and Lau, 2005). (Dee et al. 2011)

Shepard (2013) confirms that most tenants are either small business owners or students whose intention is to curb expenses. Most tenants dislike the presence of potential competitors in incubators since it might affect the open and trustful atmosphere. For example, incubatees might restrict sharing their ideas and visions. The major reason for companies to join an incubator is the rental subsidies since cost management is vitally important in the startup phase (Chan and Lau, 2005). Although small business owners have previous business experience they find incubators important when a new endeavor is launched or business practices are changed (Shepard, 2013).

**Table 3. Required benefits according to business phase (modified according to Chan and Lau (2005)).**

Setting up an office	Start of marketing	Start of selling
<ul style="list-style-type: none"> <li>➤ Rental subsidy</li> <li>➤ Share general resource support</li> </ul>	<ul style="list-style-type: none"> <li>➤ Pool of training resources</li> <li>➤ Need of market network &amp; customer database</li> <li>➤ Need of legal/business advice</li> </ul>	<ul style="list-style-type: none"> <li>➤ Public image</li> <li>➤ Media relation</li> <li>➤ Market network</li> <li>➤ Public funding (venture capitalist)</li> </ul>

### **Configuration**

Gassmann and Becker (2006) drew an analogy between an iceberg and knowledge flows in a corporate incubator. The visible part of an iceberg consists of tangible resources: financing, physical space, infrastructure, and production facilities. Underneath are intangible resources like management know-how, organizational skills and culture, reputation or brand name, and customer networks.

Out of the knowledge perspective Becker and Gassmann (2006a) identified four types of mainly tacit knowledge involved in knowledge transfer in corporate incubators: entrepreneurial, organizational, technological, and complementary market knowledge. The incubatees are not the only recipients of knowledge but the information flow is bidirectional. Fast-profit incubators provide entrepreneurial knowledge, like how to start a company and reach a market, while the leveraging incubators' asset is organizational knowledge. In-

sourcing incubators count on technological knowledge and market incubators exploit market knowledge. (Becker and Gassmann, 2006a)

The basic facilities, like office equipment, reception, meeting rooms and the like, are nowadays taken for granted (Chan and Lau, 2005). According to Tötterman and Sten (2005), in general tenants are pleased with the incubator premises. Especially appreciated are coffee rooms which give possibilities for socializing. Yet, spatial planning should even more attend to creating possibilities for casual encounters. In particular sole entrepreneurs find a common space important for meeting like-minded people.

### **Incubator program**

According to Becker and Gassmann (2006a) not-for-profit incubators more likely provide just physical resources, such as low rent, and secretarial services. Furthermore, learning in not-for-profit incubators is based on ad hoc advice given by the incubator manager or peer incubatees whereas for-profit incubators are more professionally run in order to gain expected profits. Physical proximity helps to get casual support when met by chance, Gassmann and Becker (2006) affirm.

However, in their research Becker and Gassmann (2006a) found that for-profit incubators had no special support programs. In addition, when 60 % of non-profit incubators used arranged feedback mechanisms, they were applied only in 30 % for-profit incubators, although dynamic and proactive feedback has been demonstrated important (Hackett and Dilts, 2004). Instead, for-profit incubators gathered information informally as well as held meetings and administered surveys. (Becker and Gassmann, 2006a)

In general incubators provide business support and coaching for free or at a reduced price. Services can be provided in varying degrees of quality, quantity, and intensity by incubator staff or external consultants. (Dee et al. 2011) Bøllingtoft and Ullhøi (2005) contend that business incubators alleviate liabilities of newness in three different ways: 1) by giving administrative support, 2) by increasing visibility on the market, and 3) by means of a community of peers. Often services are associated with the goals of incubators. For instance for-profit seed capital incubators focus on financing their tenants. (Bøllingtoft and Ullhøi, 2005)

Vanderstraeten and Matthyssens (2012) have classified incubators' services into four groups: administrative, logistics, business support, and networking services. In addition, they divide all of these services into two subclasses: those services that prevent failures and those that can be used to differentiate incubators.

The failure preventive administrative services include, besides all logistic services, also basic equipment and common secretary services. Those business support services that focus on operational activities are also seen as failure preventive, like access to high quality partners. (Vanderstraeten and Matthyssens, 2012)

Outstanding services in administrative class are in-depth secretarial services, like organizing agendas and business trips. Exceptional business support services comprise on-site operational business knowledge which might be for example human resource management. Personal network connections to support activities are also included in the specialist class. (Vanderstraeten and Matthyssens, 2012)

Instead, Shepard (2013) has classified services as direct and indirect. In addition to direct services, like counselling, indirect services are appreciated by tenants. These include establishing partnerships, locating resources, managing and searching for strategic relationships with external parties, and facilitating potential advisors, investors, and mentors (Shepard, 2013).

In general, it is essential that incubators' services reflect the needs of their customers as the needs of startups and established firms differ considerably. When new businesses focus on gaining resources in order to build a product and commercial base, established firms concentrate on value creation and capture. Also founders who have prior entrepreneurial experience look for different kinds of services than novices. Dee et al. (2011) referred to Lacher's survey that revealed that if companies had prior startup experience they mostly sought information on markets and opportunities (64 %), strategic information on customers (64 %), strategic information in general (57 %), related R&D activity (56 %), and strategic information on customers (46 %), but companies without startup experience needed support on a much wider spectrum and width. In addition, the types of industry in which startups operate reflect on the services needed. (Dee et al. 2011)

Bergek and Norrman (2008) highlight the mediating role of incubators. For example, incubators can provide linkage to strategic partners, suppliers, and customers, access to venture capital investors, angel investors, or networks as well as give advice on intellectual property rights and technology commercialization (Dee et al. 2011). Furthermore, incubators may help incubatees to understand and interpret the demands of regulations, laws, traditions, and norms through institutional mediation (Bergek and Norrman, 2008). Compared to diversified incubators sector-specialized business incubators have an advantage in that kind of field specific services. (Schwartz and Hornych, 2008) Finnish incubators that Tötterman and Sten (2005) studied partnered with local banks. In addition, one of the incubators had a venture capital contact person. However, the primary way was to assist the tenants to acquire government financing.

Vanderstraeten and Matthyssens (2012) have verified that networking is considered important in many ways. For example, startups desire access to possible partners in the same field as well as to personal networks. Tötterman and Sten (2005) noticed that some incubatees require more synergy with other tenants while others are pleased with the current mix of companies. Sometimes incubatees even share their networks and recommend each other to third parties, although in general tenants expect incubators to help them to create business network connections. And mainly relationships between tenants remain rather superficial. (Tötterman and Sten, 2005) According to Tötterman and Sten (2005) incubatees usually do not practice joint purchases or joint ventures but incubators have to encourage them to cooperative activities.

Tötterman and Sten (2005) discovered that meetings where tenants and the incubator staff discussed tenant specific issues were important for business development. These meetings were held on demand. Likewise tenants appreciated official meetings initiated by the staff since they promoted networking and sometimes even cooperation. Usually these events started with a formal event and continued with an informal program.

Many tenants also applauded tailored seminars although they were considered time-consuming. However, some of the incubatees preferred less formal events as they were more suitable for networking. (Tötterman and Sten, 2005) Chan and Lau (2005) advocate business related programs for technology entrepreneurs without a business background. Furthermore they benefit from the counselling and consulting services. Contrary to most incubation literature Chan and Lau (2005) did not find that networking and clustering promoted business

development. According to their study tenants did not have anything in common and therefore they did not discuss any work related topics with each other.

### **Exit**

After achieving certain milestones or failing to reach set results incubatees enter the exit phase. The overall incubation time depends on available space, rental income and whether the incubatees are incubator company spin-offs. (Becker and Gassmann, 2006a) However, according to Allen and McCluskey (1990) private property development incubators do not usually apply exit criteria. The two main reasons why tenants move out of them are the growth of a tenant or a violation of lease agreement. Non-profit incubators also have additional exit rules, like a limited duration of tenancy. It is also common that the rent is increased gradually. (Allen and McCluskey, 1990)

## 5 INCUBATION SUCCESS EVALUATION AND BENCHMARKING

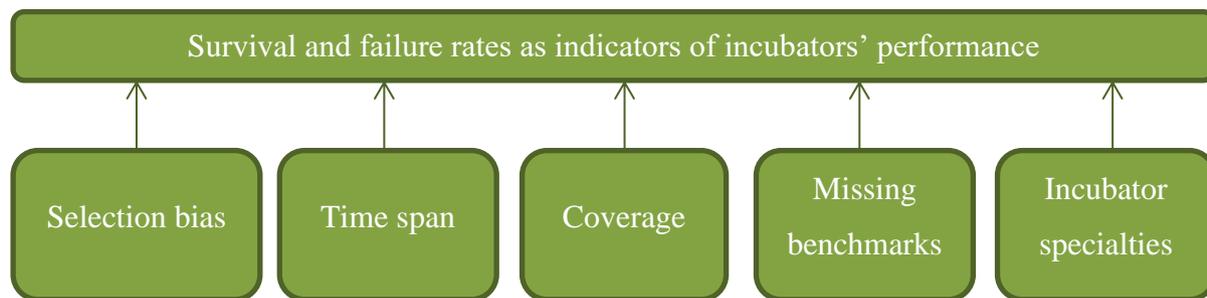
Success measurement is a common topic in incubation literature. Depending on different incubator types also success measures vary. The most common indicator is the number of graduates (Hackett and Dilts, 2004). Other typical measures are firm growth, research and development related measures, and employment generations costs (Barbero, et al. 2012). Incubators focusing on real-estate development evaluate success by leased space and ability to meet expenses. When the goal is to develop companies, business survival and growth rates are used. (Smilor, 1987) The number of patents is commonly used to measure innovativeness in science and technology parks. Unfortunately, quite often it is omitted to clarify what is meant by success (Autio and Klofsten, 1998).

### 5.1 Incubation success indicators

Dee et al. (2011) separate two kinds of business incubator effects: direct and indirect. Direct effects include the number of supported companies and jobs created. Indirect impacts comprise additional job creation and wealth generation. Furthermore, when the incubation period is short evaluations miss the longer term effects. Therefore, Dee et al. (2011) recommend that incubation success measurement should be extended beyond the incubation period although it may be hard to implement. Schwartz (2009) is one of the few who has studied survival rates after graduation. He could establish that business incubators do enhance long term survival rates although during a couple of years after graduation there is an elevated risk of failure. It could be explained by the deferred liability of newness and end of supportive measures. It may also imply that some firms are kept alive in incubators although they are not viable. (Schwartz, 2009)

Established companies can be assessed based on their share value or gross profit, but these measures are not applicable to startups, since they often have neither (Dee et al. 2011). Although a survival rate seems an easy means of evaluation it embodies a bias due to the selection process as firms with a high failure risk are usually not accepted. In addition, survival rates cover only a small dimension of the incubation process. Besides, there is no consensus on the acceptable baseline for the sufficient survival rate. (Sherman and Chappell, 1998; Schwartz, 2013) Firms' growth is also a poor success indicator since growth is not usually steady but occurs in spurs which may further complicate the assessments (Garnsey and Heffernan, 2005). Peters et al. (2004) would also like to preclude graduation rates from

success measures, since graduation depends on several factors, like income level, fixed incubation time, and increase in rent. Schwartz (2013) summarizes these challenges related to survival rates as a performance measure for incubators in Figure 6.



**Figure 6. Survival and failure rates as indicators of incubators' performance modified from Schwartz (2013).**

Bergek and Norrman (2008) noticed that outcome indicators have rarely been matched with incubator goals. They concluded that depending on the strategy of an incubator the best practices concerning the given support vary from *laissez-faire* to strong intervention. They recommend 'loose' or 'on demand support initiated by entrepreneurs' for incubators that apply 'entrepreneur' and 'picking the winner' selection strategies.

As most incubators are funded by public organizations the most common success criteria are consistent with their goals which are job and wealth creation and regional development. These measures have also been criticized widely (Dee et al. 2011). On the one hand they do not take into consideration external factors. And on the other hand incubation can also have negative impacts, like prolonging an evident business failure (Dee et al. 2011). In addition, long term effects are rarely mapped. For instance, individual entrepreneurs may gain substantial entrepreneurial knowledge, and establish large networks which can be beneficial for their subsequent startup companies despite the failure of that particular firm.

## 5.2 Incubators' success measurement

It is challenging to measure the performance of incubators, and even harder that of non-profit incubators. Yet, because most of them are publicly owned they have to demonstrate their success. According to Dee et al. (2011) this may be the reason why academic studies show more cautious estimates than industry studies. It is both difficult to estimate how much of a company's growth can be allocated to an incubator and how much it would have grown on its own. (Dee et al. 2011)

In general, the results on incubation success evaluations have been mixed and even contradictory. The issues stem partly from the differing definitions and partly from not taking into consideration the goals and strategies of incubators in relation to success indicators. Sherman and Chappell (1998) used several measures to evaluate incubators and they concluded that incubators are a cost-effective development tool. Their studies showed that incubatees' performance strengthened remarkably during the program. They also demonstrated growth in employment. In addition, both employment rates and tax income increased on the macroeconomic level. In the same way, Löfsten and Lindelöf (2002) noticed that firms in science parks created remarkably more jobs and had higher sales growth than outside companies. However, the financial performance of the firms did not differ from one another even according to their study.

European Commission (2002) used the survival rates as a measure and found out that incubators' tenants succeeded significantly better than other startups. On the contrary, Schwartz (2013) came to the conclusion that incubator firms do not have any better survival probabilities than other companies when four key factors were taken into account: location of firms, industry, age and legal form of firms. Likewise, Barbero et al. (2012) criticized that development incubators do not meet the objectives set to them.

Peters et al. (2004) studied the impact of services offered and noticed that non-profit incubators had the highest graduation rates. They also stated that access to networks and coaching are the best promoters of success. In addition, they could demonstrate that interaction between tenants and the incubator contributed to collective learning which resulted in more relevant coaching programs and networks in the incubatees' perspective.

Allen and McCluskey (1990) observed that business incubators are not successful in terms of real estate appreciation. Clausen and Korneliussen (2012) argue that incubatees' entrepreneurial orientation accelerates time-to-market and that it could be used as a first performance criterion.

Barbero et al (2012) compared the success of different types of incubators in Spain. They concluded that basic research and university incubators were successful but economic development incubators failed to reach their goals. Also private incubators succeeded to create high returns to their parent company. They attained the first position in sales growth,

the second in new product launch, and the third in patent generation. According to Lewis et al (2011) not-for-profit incubators outclass profit oriented incubators. Vázquez-Urriago et al. (2016) have studied cooperation in science and technology parks. They could notice intangible results of cooperation, like increase of innovation, but no evidence of economic results.

Sherman and Chappell (1998) asked tenants about the importance of incubation to the success of their firms. 65.9 % of respondents found it either important or very important. They also considered that incubation had facilitated partnership creation with other tenants. In Mian's (1996) study of university incubators the vast majority of tenants believed that the services they had received added value to the startup companies.

Success is not only about reaching the set goals but also struggling for existence. As the number of incubators tends to increase, competition to win customers accelerates. This forces incubators to use common strategic measures to position themselves. Vanderstraeten and Matthyssens (2012) claim that not only specialized but also generalist incubators can use differentiation to stand out. The differentiation strategies can be based on competitive advantage, strategic intent, and service offering differentiation.

### **5.3 Success factors**

Opinions on success factors differ almost as much as views on success indicators. There are advocates of management quality, networking possibilities, and tenant selection among others.

According to Hackett and Dilts (2004) the incubation success factors are based on cost reduction, fit between local needs and incubator configuration, collaboration of incubator manager and tenants, and the duration and intensity of the incubation program. Furthermore, network relations and institutionalized knowledge transfer are essential. Pauwels et al. (2016) state that in order to achieve results accelerator founders need a clear goal, vision, and strategy.

Allen and McCluskey (1990) found that the most important factors enhancing job creation and graduation of firms were the age and size of the incubators. In addition, only policy and available services could contribute to success. Allen and McCluskey (1990) argue that the age of an incubator affects results. They reason that the first tenants may be chosen by their ability

to pay rent, not based on their potential. Not until having reached the break-even point can the incubator focus on providing services. On the contrary, Lewis et al. (2011) could demonstrate that incubator quality variables were the best indicators of success predicting 72.9 % of the outcome leaving incubator age and regional factors far behind.

Tötterman and Sten (2005) advocate strict selection in terms of potential tenant mix as it has the potential to stimulate synergy and inter-tenant commitment. Moreover, some entrepreneurs are not capable of adapting themselves to startup communities, and therefore it is better to exclude them. (Tötterman and Sten, 2005)

Haapasalo and Ekholm (2004) emphasize management. According to them incubator managers should have not only technology related knowhow but also business management expertise and knowledge of relevant markets. Furthermore, they should have enough time and a comprehensive network of clients and other stakeholders. Dee et al. (2011) stress that managers should not spend too much time on monitoring, but focus on their core duties. However they conclude that without any performance indicators it is impossible to analyze and improve the outcome. Ratinho and Henriques (2010) argue that predetermined programs should not be used but they should be modified according to the tenants' needs. Listening to tenants, learning from their experiences, and adapting the program accordingly is essential corroborates Dee et al. (2011)

Proximity is gaining attention as a success factor. For example, Shepard (2013) found colocation extremely important. It not only reduces search and transaction costs but also uncertainty, increases the likelihood to find partners, contributes to building trust, and leads to longer and more stable relationships. Without trust valuable information is not shared. In addition to geographical proximity also technological and organizational proximity may be needed. (Scillitoe and Chakrabarti, 2010; Vásquez-Urriago et al. 2016)

Schwartz and Hornych (2008) corroborated the findings of Chan and Lau (2005) that tenants should operate in the same business sectors so that cooperation and knowledge sharing could be effective. Likewise, Tötterman and Sten (2005) have arrived at similar conclusions: communication and exchange of relationships are impeded if companies differ too much. Lalkaka (2002) adds to the advantages of focused incubators potentially better cooperation and competition among tenants, shared special equipment if needed, and concentrated technical assistance. However, he doubts if there are enough local startups in a single field so

that only the potentially successful ones could be selected. Schwartz and Hornyh (2008) also advocate sector specialization since it increases the likelihood of high quality advisers, equipment and premises, and it contributes to publicity. As a disadvantage they mention that it does not enhance connections between firms and universities.

According to Bøllingtoft and Ullhøi (2005) mechanisms that advance or complicate networking in incubators depend either on individuals and their relationships with each other or the construction of the incubator. They conclude that not only close physical proximity is essential in enhancing networking but there has to be potential for synergy between companies that leads to cooperation. They also paid attention to the increasing number of tenants, which turned out to be a prohibitive barrier in terms of networking.

Lalkaka (1996) corroborates the above mentioned observations in his list of ten success factors. They are compared with a success factor list of Smilor (1987) in Table 4. The list of Lalkaka (1996) begins with goal setting and fitting it with the needs of potential tenants. The second item highlights the proximity to knowledge sources for the sake of effectivity. The third point encourages planning the facilities in view for enhancing creativity. The layout should be flexible and provide spaces where to meet, communicate, and relax. The fourth factor supposes entrepreneurial friendly macro environment. The fifth is concerned about building a dynamic management team. The advantageous traits of a manager include broad entrepreneurial experience, a wide network of contacts, excellent communication and interpersonal skills, good counselling and teaching capabilities, integrity, dynamic leadership, and energy. Also some competent assistance is recommended. The sixth point advises to select the most likely firms to survive. The seventh factor lists required services in a hierarchical pyramid structure where the most expensive and rare services are on the top and basic facilities form the bottom. The eighth item addresses financing issues of incubators while the ninth one concentrates on performance monitoring. The last success factor stresses the importance of strategic planning.

**Table 4. Success factors by Lalkaka (1996) and Smilor (1987).**

	Lalkaka	Smilor
1	Sharp goals and considered selection of sponsors	In-kind financial support
2	Linkages to professional/business communities	Entrepreneurial network
3	Physical facilities that stimulate creativity	Tie to university
4	Policy and legislative support	Community support
5	Dynamic management team	Perception of success
6	Selection of firms that are most likely to survive	Selection process of tenants
7	Useful services	On-site business expertise
8	Financing	Access to financing and capitalization
9	Performance monitoring and impact assessment	Concise program milestones with clear policies and procedures
10	Strategic planning	Entrepreneurial education

Smilor's (1987) list partially complements that of Lalkaka's (1996) but they also overlap. Both share the importance of financial and community support, access to knowledge networks, useful services and education as well as selection and monitoring processes. While Lalkaka (1996) stresses characteristics of management and strategic planning, Smilor (1987) highlights ties to universities. Smilor (1987) means by 'perception of success' the overall attractiveness of an incubator which includes besides facilities also an experienced manager, a board of directors, and promising startup companies.

It is essential that the services provided by an incubator are aligned with the needs of incubatees. As incubatees benefit from different elements, it is advantageous to provide a variety of activities and services. Furthermore, at least the experience of entrepreneurs and the stage of the company should be taken into account in the incubation program. (Monsson and Jørgensen, 2016) If the program is preset startups tend to be dissatisfied with the services unless it is changed according to the requirements of tenants (Dee et al. 2011).

#### **5.4 Tenants' preferences as a success measure**

Shepard (2013) found out that the most important facilities include working space which enables co-location with other incubatees, internet connection, good office location, and laboratory space for product development. Other professional facilities like meeting rooms and a reception area lend credibility according to Dee et al. (2011). Chan and Lau (2005) advocate co-location as it enables information and knowledge sharing among tenants and makes work on joint projects possible. Furthermore, peer-to-peer networking can be

encouraged by appropriate design, like by provision of communal spaces and canteens (Dee et al. 2011). However, several researchers caution that mere proximity does not suffice to induce cooperation and establish networking relationships (Chan and Lau, 2005; Bøllingtoft and Ullhøi, 2005; Tötterman and Sten, 2005).

Vanderstraeten and Matthyssens (2012) have also verified that the brand image of an incubator may be reflected on startup companies and add credibility. Likewise, a way to demonstrate startup companies' trustworthiness and reliability as business partners could be accomplished by means of enhancing incubator brand names according to Salvador (2011). Chan and Lau (2005) also agree with the importance of the public image of an incubator in terms of marketing and partnership although all but one of the six entrepreneurs they studied considered administrative support and rental subsidies more substantial.

Gassmann and Becker (2006) argue that the most important advantage of corporate incubators is their close connection to corporate specialists comprising lawyers, technology experts and corporate customers among others. Schwartz and Hornyh, (2008) examined sector-specialized incubators and found that their advantage was special-purpose equipment.

Vanderstraeten and Matthyssens (2012) have listed tenants' expectations for services that incubators offer. These include, besides common secretary services and basic equipment, also sector or technology specific infrastructure services. In addition both operational business support services as well as sector or technology specific services are expected or at least some network of partners offering these services. Knowledge centers are appreciated as a form of more elaborate business support.

According to Tötterman and Sten (2005) incubatees seem to prefer practical business advice to mentors. Becker and Gassmann (2006a) claim that entrepreneurs value not only regular or ad hoc advice and exchange of lessons learned but also contacts to networks that provide access to new customers or suppliers. In a similar way Rubin et al. (2015) state that incubatees benefit not only from incubator's managerial business connections but also from their peers in case they work in a similar field.

Incubators provide the following benefits to incubatees: the development of credibility, the shortening of entrepreneurial learning curve, quicker solutions to problems and access to entrepreneurial network. Incubation may accelerate business development, so business

incubators not only help startup businesses to survive but also add value to companies. (Smilor, 1987; Dee et al. 2011)

### **5.5 Benchmarking and the best practices**

Both European Commission (2002) and U.S. Department of Commerce Economic Development Administration (Lewis et al. 2011) have compiled comprehensive reports on incubation benchmarking and the best practices. Besides recommended best practices they also address setting up and operating incubators, their key functions and services as well as the evaluation of impacts.

The report of European Commission (2002) recommends composing a business plan to give structure to the operations. Technology and business focus contribute to the success. Turnover of clients is also recommended but the after-care of graduated tenants should be attended. The opinions of client companies should be listened to and taken into account when evaluating incubation success. In general, business incubators should benchmark themselves and adhere to the best practices. They should be focused especially on entrepreneur training and financing but business and technology support are also important.

One of the key findings of Lewis et al. (2011) is that success is a result of multiple factors affecting each other and leading to a fortunate outcome. However, top performers share several management practices including a written mission statement, a multi-criteria selection of clients, a review of client needs at entry, and an introduction of tenants to each other and potential funders. Successful incubators also monitor tenants' outcome data at least annually. In addition, money matters, as incubation programs without budget constraints beat others. (Lewis et al. 2011)

## 6 ACCELERATORS

The new wave of accelerators is kind of an upgrade to business incubators. Closest to them are for-profit incubators since both of them take a stake in their tenants. However, incubators do not usually fund their tenants as accelerators do. The main goal of an accelerator is to speed up the successful venture creation. They also tackle the toughest shortages of startup companies: lack of time and money. In accelerator programs founders can concentrate on developing their products as they do not have to worry about their livelihood during the program period. Anyway, the funding is often pretty small as it is meant to cover only the selected teams' basic costs of living. (Christiansen, 2009; Miller and Bound, 2011)

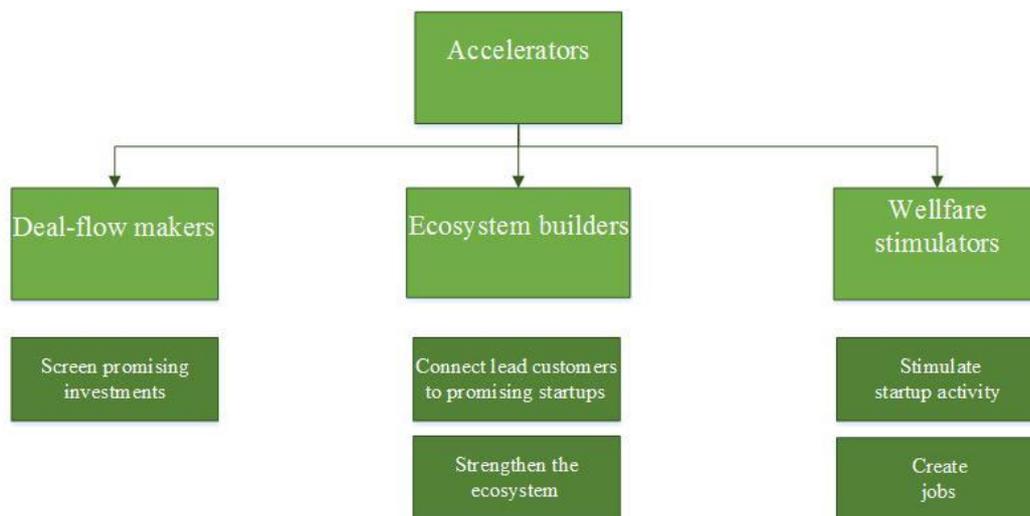
The key elements that characterize accelerators include seed funding of teams, not individuals, admittance in batches, both business and product related education, and networking. Office space and demo day are not necessarily included in the program, although they often are. (Christiansen, 2009)

Accelerators are financed by investors. The expenses include both the program and the seed funds for those startups that are accepted in the program. Accelerators take equity in the startups or they use soft loans or 'convertible notes' as compensation. Soft loans are repaid only if certain conditions are met. Convertible notes guarantee a discount on stock price. Since the main reason to establish an accelerator is to seek positive financial return, applicants have to pass strict evaluations in order to be accepted. Therefore, it is also essential to nurture startups as well as possible. This results to a generally high quality of accelerator programs. (Miller and Bound, 2011)

According to Christiansen (2009) an alternative goal of accelerators is ecosystem building. It may not be profitable at least in the short run but it contributes to the healthiness of an ecosystem. One should be aware of which of the goals is pursued since they may contradict. However, it is possible to switch the goals, for example if the set objectives, such as the strength of the ecosystem, have been reached. (Christiansen, 2009)

Pauwels et al. (2016) categorize accelerators into three types: ecosystem builders, deal-flow makers, and welfare stimulators, as is shown in Figure 7. Most of the first accelerators in Silicon Valley were deal-flow makers but in Europe ecosystem builders and welfare

stimulators are more common. Ecosystem builders wish to strengthen the ecosystem of customers and stakeholders around the corporates that founded the accelerator by connecting their lead customers to promising startups. These accelerators use internal members of the corporation to support and guide incubatees instead of mentors. It is also typical that they do not aim at profiting as opposed to deal-flow makers that are mostly funded by investors and whose goal is to screen promising investments. Governments and other public agencies are usually involved in welfare stimulators which engage in stimulating startup activity, and job creation. (Pauwels et al. 2016)



**Figure 7. Subclasses of accelerators and their primary goals according to Pauwels et al. (2016).**

Usually the clients are starting their first company and that is why they need advice from experienced entrepreneurs (Christiansen, 2009). Typically, high growth potential is an admission criterion and the target client group of accelerators is focused rather than general. Any startup team in the world can apply for entry to accelerator programs by filling in an application form. Those who pass the first selection are shortly interviewed by a selection committee. A common demand is a group size of two to four people since it is believed that there is too much work for a single person. On the other hand, larger groups become too expensive for seed funding. In general, only about 1 % of the applicants are accepted in a batch due to high quality expectations. The batch size varies depending on the available space and resources. However, it is essential that it is large enough to attract investors. (Miller and Bound, 2011; Pauwels et al. 2016)

The first accelerator programs were targeted for developers, which has influenced the short but intensive education period, as a web application takes only a couple of weeks to program

(Christiansen, 2009). However, nowadays the duration, according to Miller and Bound (2011), usually varies between three to six months. As mentors work intensively with their incubatees they are able to notice which teams work effectively together also under pressure and which are excellent pitchers. The market potential of products will also become clearer within that time. (Miller and Bound, 2011)

The quality of accelerator programs is generally high. Assistance may include helping fledgling entrepreneurs with all the formalities needed to set up a company. Mentors are consistently selected from experienced entrepreneurs. They are usually angel investors who provide face to face counselling. This not only enables personal feedback but also facilitates the creation of long term relationships as mentors may become investors and later members of the advisory board. (Miller and Bound, 2011)

Both business and product advice is usually provided including for example financial and legal issues, marketing, and public relations as most of the attendees are starting their first businesses and do not have prior experience in running a business. Issues facing growing companies are commonly discussed, such as how to hire employees. Part of the program may be general advice concerning everyone, and the other part individual product related mentoring. The range of education varies from thematic lectures to pitching exercises. Networking is an essential part of the program. Likewise peer-to-peer support is encouraged although there are also accelerators that do not provide office space. However, these programs arrange meetings once or twice a week (Miller and Bound, 2011). Accelerator programs typically end with a demo day when startups pitch their products to investors. (Christiansen, 2009; Pauwels et al. 2016)

The particular accelerator program is chosen according to its brand reputation since a highly valued accelerator enhances the possibilities for further funding. Christiansen (2009) believes that startup companies join accelerators since they appreciate long term benefits, such as the connections to investors. But of course, seed funding also appeals (Miller and Bound, 2011). Support that helps to improve the products is also esteemed. Some startups have learned to stick to deadlines. Others have learned to sell and to recognize market needs. (Christiansen, 2009)

## **7 COWORKING SPACES**

Brad Neuberg introduced the term ‘coworking’ in 2005, although shared workplaces have existed much earlier. Coworking spaces are flexible work settings rent out on a daily, weekly, or monthly basis to companies or individuals in order to enable working alongside each other. An integral part of coworking is its social dimension: interaction, mutual support, and networking. Moreover, their social make-up is changing continuously. Proliferation of the phenomenon started due to changes in the working culture after the global recession that followed the financial crisis of 2008. Another contributing factor is that work is not any longer restricted to time or place. Furthermore, precarious employment has increased. (Houni and Ansio, 2015; Merkel, 2015)

### **7.1 Motives to establish and join coworking spaces**

There are two basic ways to establish a coworking space. Either there is a group of friends who need a place where to work or there is a vacant space in need of tenants. Often coworking space is not only a physical space but a manifestation. It is based on an ideology that advocates openness, cooperativity and sharing. Even so, coworking space rental is becoming more and more an ordinary business. (Houni and Ansio, 2015)

Coworking places offer a peer community and office services at reduced prices as the tenants share the expenses. However, interviewees of Houni and Ansio (2015) did not mention low rent as a criterion to join. Instead, congenial company is a common reason to select a particular coworking space. Generally, coworking can be used to compensate loss of social contact to colleagues. Besides, when one works at home it is difficult to separate leisure time from work; therefore, coworking is used to give structure to workdays. (Merkel, 2015) Also practical reasons, like a location near home and good transportation connections, affect the decision. (Houni and Ansio, 2015)

### **7.2 Targeted clients**

The first tenants of coworking spaces belonged to the so called ‘creative classes’, a concept introduced by Richard Florida. It comprises not only artists and musicians but also representatives of knowledge intensive professions. The need of coworking spaces has also increased along with entrepreneurship. Houni and Ansio (2015) discovered that it is common that tenants are self-employed persons without growth intentions. Moreover, for most of them earning money is not the primary reason to work. (Houni and Ansio, 2015)

Most coworking spaces are open to anyone. Some are intended for certain fields, like musicians who have special requirements, such as a need for an environment that tolerates noise. Some coworking spaces select tenants based on synergy advantages due to different expertise. (Houni and Ansio, 2015)

### **7.3 Coworking space management**

Even coworking spaces have rules and norms to comply. Without a written list especially newcomers found it hard to recognize prevailing customs. Social media, for instance a closed Facebook group, is recommended as a useful forum to inform about rules as well as events. (Houni and Ansio, 2015) Usually coworking spaces have a host whose responsibility is to take care of practicalities and policies and introduce newcomers to common rules (Merkel, 2015).

According to Merkel (2015) hosts are also essential in inducing interaction amongst tenants. She noticed that in some places the interaction between coworkers remained as low as what is typical for customers in a coffee shop. In coworking spaces which had an active host she was immediately introduced to other tenants, invited for lunch, and asked about her skills and knowledge.

### **7.4 Facilities, services, and networking in coworking spaces**

Many coworking spaces are located in old buildings, whose rough esthetics is assumed to attract creative, young city dwellers. Nevertheless, coworking places tend to be furnished in a cozier way and more home like than ordinary offices. Sofas, kitchens and coffee corners are common. Some are intentionally designed to enhance interaction and cooperation so that there would be room for casual meetings and serendipity. One can usually choose where to work although it is common that people stick to their permanent places. Some coworking spaces have small office rooms. Conference rooms and phone booths belong to other regular facilities not to mention wireless internet, printers, and scanners. (Houni and Ansio, 2015)

Another common feature of coworking places is their multiform use. After office hours they can be used for events, happenings, seminars, or even private parties. According to Houni and Ansio (2015) some coworking spaces even organize lectures and give some business support, but that is rather rare. Merkel (2015), on the contrary, argues that business support is gaining popularity even in coworking spaces.

## **7.5 Coworking spaces as a work place**

Many self-employed persons long for workmates, someone to ask for an opinion or advice. In general, coworking spaces are chosen for social reasons, not for synergy advantages, although networking and information sharing contribute to reputation and market value for freelancers and self-employed persons. The majority of tenants also work at home. Some work mostly at coworking spaces while others use it mainly for meeting clients. (Houni and Ansio, 2015)

Although coworking spaces are often advertised as ‘cool’ they are primarily workplaces. Some people find it hard to concentrate on work in a noisy open office. Hence, headphones are commonly used as a remedy. Their use also signals a wish not to be disturbed. Another issue is privacy, especially concerning business secrets, confidential materials, and telephone communication. Therefore, tenants wished there would be more quiet rooms and phone booths. In addition tenants also wished for such interior designs that would enhance creative cooperation but also funny, exceptional design elements, like gym balls. (Houni and Ansio, 2015)

Coworkers most of all appreciate social interaction and communication. Also possibilities for random encounters and opportunities are valued as well as sharing information and knowledge. In effect, information sharing provides coworkers with possibilities for appreciation and recognition from their peers. In general, cooperation in coworking spaces is based on mutual giving and getting. Received favors obligate to return them. Sometimes it is buying consultation from fellow freelancers, sometimes giving advice. Friendship, fairness, and giving a hand when needed are the guiding cooperation principles. (Houni and Ansio, 2015; Merkel, 2015)

## **7.6 Curated coworking spaces**

Merkel (2015) paid attention to the differences in cooperation between coworking spaces. She noticed that those coworking spaces that had an active host collaborated remarkably more than others. As all of them had equal opportunities to interact due to proximity, it can be concluded that shared space does not suffice to promote cooperation. (Merkel, 2015)

Merkel (2015) calls hosts curators. The word originates from the art world, where it has meant caring and selecting but recently also mediating that is establishing a connection

between artists and the public. Using this analogy curators select and care for their tenants and bring them together. Merkel (2015) has identified two types of curators. She calls the first one 'service provider' and the second one 'visionary'. Service providers focus on creating a good work environment providing assistance in practical issues. Instead visionaries are more interested in building the community and cooperation. Their primary task is to stimulate interaction among coworkers and develop methods that contribute to collaboration. In addition, they help tenants to get to know each other by introducing newcomers to the others. But they may also facilitate the realization of coworking projects and events. (Merkel, 2015)

## 8 METHODS

I have tried my best to follow the advice of Yin (2014, 71–98) to do a high quality case study. First of all he recommends creating a case study database where all the evidence is collected. Accordingly I have created a folder where I have gathered all the study related data and documents. Yin (2014, 71–98) also advise using a case study protocol since it increases the reliability of the research and in addition gives guidelines to carry out data collection. Consequently, I composed a short case study protocol with four sections. The first section characterizes the overview of the study including the research questions and the theoretical framework to be used. The second section describes the data collection plan and the third one lists the research question themes and the actual questions. The fourth section is a sketch of the structure of the final report.

### 8.1 Study schedule

I started the research project by asking for permission to study Health Innovation Village at the beginning of December 2015. I held the first interviews shortly after that with the aim to complete the study by the middle of May 2016. The main purpose of these preliminary meetings was to get a better understanding of Health Innovation Village so that I could familiarize myself with the pertinent literature. Therefore, I did not plan to carry out the rest of the interviews until January and February. However, due to the difficulties of reaching all the tenants, the last interview was held at the beginning of April. Anyhow, I had transcribed most of the interviews by the end of March, as planned. Likewise, I had commenced to categorize and analyze the results during the latter part of March. At the beginning of April I started to write the report. The first version was ready at the beginning of May, and the final report was left for assessment on May 15<sup>th</sup>. Figure 8 illustrates the timeline of the research.



**Figure 8. Timeline of the research.**

## 8.2 Data collection

Data collection was conducted primarily by semi-structured interviews, as I explained in the introduction. My intention was to interview both GE personnel that had been involved with the establishment of Health Innovation Village and those who had given their time by organizing events, training or consulting. Likewise I wanted to get the opinions of as many tenant companies as possible since these are so few and also because the companies represent a wide variety of fields, although each one of them is somehow related to healthcare or health technology businesses.

However, it turned out to be difficult to find interviewees at GE. First of all Didier Deltort, country manager of GE and the other originator of Health Innovation Village, had resigned and the newly appointed country manager had not yet started. Apart from Mikko Kauppinen and Erno Muuranto, I had a chance to interview Sami Miettinen, Director of the Mobile unit, and Peter Green, who works part-time for Health Innovation Village at GE, as well as Tajja Sievänen, Communication Manager of GE who had been actively working along with the Health Innovation Village project since it was opened. She also agreed to invite those GE employees who had assisted Health Innovation Village to volunteer in my study. Unfortunately, only one representative of the young volunteers group agreed to get interviewed. Due to few GE opinions I had to turn to secondary information, like newspaper articles and GE reports, to collect further evidence.

Initially I was not given the full list of the startup companies; instead I was expected to interview the tenants while I visited the premises. However, after a couple of visits I noticed that most of the time the same individuals were present. Eventually, I managed to get a list by promising not to distribute it. Although it was not entirely up to date and some contact information was missing, it helped me to get a few additional interviews. I wrote an email to those companies I had not met at Health Innovation Village explaining who I was and why I would like to interview them. The following week I called those whose phone numbers I had or could find and held the interviews by phone.

A couple of tenant companies preferred to answer by email, and I sent them the questions. Only two refused to be interviewed, both of them were employees, not startup founders. All in all, I managed to interview 22 tenant companies, which I consider representative enough for reliability. The interviews lasted from about ten minutes to almost one hour each. Most of the interviews were held face to face and five of them were group interviews with companies

comprising a team of a couple of founders. The interviews with GE personnel took from 15 minutes to almost two hours. Altogether the interviews took over ten hours and resulted in over 200 transcribed pages.

The themes covered in the tenant interviews were the application process, perceptions of Health Innovation Village and suggestions for improvement in addition to the basic company information like when the company was established, the number of employees, and the products of the company. The questions about the application process addressed reasons to apply, where they had learned about Health Innovation Village, and whether they had any special doubts or expectations. The impressions of Health Innovation Village were found out by asking to compare it to their previous places of business and by asking their opinions about facilities, services, events, atmosphere, and co-operation. Additionally I asked what they valued the most in Health Innovation Village, and if their expectations had been met or if they had noticed whether Health Innovation Village had affected their turnover or number of employees. Suggestions for improvement were fished out by asking what they needed or missed in Health Innovation Village. Finally they were given the possibility to comment on anything they liked.

The themes dealt with the interviews of GE employees varied depending on the role of the interviewee in terms of Health Innovation Village. Mikko Kauppinen was asked about motives and goals, management processes, provided services, as well as future plans. I inquired Muuranto about innovation processes and whether Health Innovation Village has had any effect on them. The others were asked about their roles concerning Health Innovation Village, and how much of their time it took in addition to their opinions about the concept.

One of the case study principles Yin (2014, 71–98) promotes is the use of multiple sources of evidence in order to corroborate findings. As I had the possibility to visit Health Innovation Village on several occasions, I also made observations of the facilities, the way of working, the atmosphere, and interactions. Likewise I made observations in the Warrior Coffee House where I was usually taken to get a cup of coffee or the whole interview was held there. Additionally I started casual conversations in the coffee house to ask opinions about it and Health Innovation Village. I wrote down the remarks when I returned home and saved them in my study case database, as Yin (2014, 123–127) advises.

### 8.3 Data analysis

After transcription I started to screen the texts. First I addressed the interviews of the GE personnel and thereafter I started to read the tenant interviews. I highlighted all relevant information in the texts. Next I wrote down core information of the highlighted text parts by hand under different headings. I used different papers and colors for each theme in order to visualize the emerging themes and to make the process more intuitive and faster. I added new papers and colors as new themes appeared. Then I typed the handwritten papers simultaneously combining duplicate information and reorganized the data when I found it appropriate. The preliminary themes of the GE interviews were grouped as follows: ‘Starting point’, ‘Goals’, ‘Startup needs’, ‘Services offered’, ‘Management’, ‘Operating principles’, ‘Financing’, ‘Selection process’, ‘Achieved benefits’, ‘Future’, and ‘Issues’. Yin (2014, 135) advises to ‘play’ with the material in order to find emerging patterns. Hence, I followed that instruction by grouping and regrouping themes in several combinations until I found the structure coherent enough. In the final version ‘Starting point’ and ‘Goals’ were combined into ‘Motives to establish Health Innovation Village at GE’. ‘Operating principles’ and ‘Financing’ were grouped together under ‘Organization of Health Innovation Village’. ‘Services offered’ was divided into two parts. The first one was named ‘Facilities and resources’ and it became a separate subsection. The other part of it was included under ‘Management’ which also comprised ‘Selection process’ and ‘Issues’. In the final section of the chapter I included discussion about success measurement issues under the title ‘The success measurement of Health Innovation Village’ where I also incorporated ‘Future’ and ‘Achieved benefits’ themes.

I processed the interviews of the tenants in a similar way. First I attached each interview with a randomly allocated sequence number in order to preserve the confidentiality. I highlighted text parts with interesting information. Then I gathered the basic company information in a spreadsheet, like the number of the company, when the company and/or project was established, how many founders and/or employees it has, and how long it has been in Village. Then I started to copy paste the following information from each interview one after the other into equally titled documents: how they had learned about Health Innovation Village, why they decided to join it, where they had been previously, comparisons to the previous places, what expectations they had, how the expectations have been realized, did they have any doubts, as well as perceived advantages and improvement propositions in addition to if they had noticed any effects on the turnover or the number of employees. The next step was to compress the information into short sentences or a couple of words. The final structure of the

chapter 'Health Innovation Village from the tenants' perspective' comprises sections 'The tenants of Health Innovation Village', 'Location', 'Infrastructure', 'Program', 'Communication', 'Community', and 'Cooperation'.

#### **8.4 Ethical issues**

Yin (2014, 76–77) states that one has to pay extra attention to ethical issues especially in case studies since they involve a great deal of interpretations. Consequently, I have strived to conduct the study ethically and responsibly. The interviewees were selected as equitably as possible and they were asked for permission to participate. Likewise they were told how the results will be used. The manuscript was given for comments before publishing it. Since the number of the tenants is rather small and the members of the community and the closest GE employees know each other fairly well, I have decided, in order to protect confidentiality and privacy of the informants, neither to list the tenant companies nor the tenant interviewees. In the results I have not referred to the tenant interviewees in order to avoid inadvertent harm.

#### **8.5 Quality**

The quality of empirical social research is commonly estimated by four criteria: Construct validity, internal validity, external validity, and reliability. Construct validity deals with the right operational measures for the concepts to be studied. Internal validity establishes the causal relationship and therefore, mainly concerns exploratory studies. External validity addresses the generalizability of the results beyond the case study in question while a study is reliable when other researchers would get the same results in case they followed the procedures of the original study. (Yin, 2014, 45–49)

According to Yin (2014, 45–47) there are three tactics that can be used to meet the demand of construct validity. These are the use of multiple sources of evidence, unbroken chain of evidence, and review of the study by the key informants. As advised, I have followed these measures. First, I have used as many sources of evidence as possible. Secondly, I have created the evidence path from original research questions all the way to the final report by linking the questions to the case study protocol themes, and further to the given answers which were stored in the case study protocol and cited in the report. In addition, I have sent the report to Mikko Kauppinen for possible comments.

Yin (2014, 45) suggests pattern matching, explanation building, rival explanations, and logic models for keeping internal validity. I have tried to tackle the internal validity by contemplating the relevant issues from multiple angles and trying to find alternative explanations. In addition, I have applied pattern matching by comparing the results with literature findings.

According to Yin (2014, 45) in single case studies external validity should be corroborated by relevant theory. I have used both incubator and coworking space literature as reference literature. Reliability can be ensured by using case study protocol and database argues Yin (2014, 45) which I have also used, as I have already earlier described.

## 9 GENERAL ELECTRIC

The General Electric Company has never been a startup company, although it was established in 1892 by a true entrepreneur and an inventor Thomas Alva Edison. The company of 10 000 employees and \$20 million dollar revenue was a result of a merger of the two major competitors: Edison General Electric Company created in 1890 and The Thomson-Houston Company owned by Charles Coffin (GE Lightning, 2016a). The company was not small even at its birth but today it is a giant with a revenue of \$148.6 billion and 305 000 employees in about 100 countries (GE Annual Report, 2015). Although GE could never have been called a startup company GE's research laboratories stem from a typical startup environment—a garage of the time, in other words a carriage barn. It has grown into four dedicated research laboratories around the world with thousands of patents and two Nobel prizes. (GE Lightning, 2016b)

GE has remained pretty loyal to its heritage in terms of industry coverage. Power transmission, transportation, medical equipment, industrial products, and lighting are still the main fields of the company as they were in the beginning (GE Lightning, 2016a). But the company is changing direction. It is focusing on software business hoping to become one of the biggest by 2020. GE has already created its own operating system or an Industrial Internet oriented platform, called Predix to be used from trains to healthcare applications. The company will also increase the industrial focus and downsize financing (Kellner, 2015).

Even more remarkable is the cultural change. GE used to be a company that was famous for its harsh business culture: yearly 10 % of the employees who had the lowest performance ranking were fired. Now it wants to become a startup-like company attracting young people. In 2012, Eric Ries, was invited to educate GE executives on Lean startup methods. Thereafter he has helped GE to create its own version of the Lean methods called FastWorks. Now the message is widely deployed to all units. The main goal is to shorten development times. And some results have already been reached. For example previously it took five years to develop a new gas turbine while now it has been done in a year and a half. (Leonard and Clough, 2016)

## 9.1 GE Healthcare in Finland

General Electric has had industrial operations in Finland since 1990 when it acquired Hungarian lightbulb and vacuum tube producer Tungsram. In 2003 Instrumentarium was sold to GE. Nowadays Lighting, Capital, Energy Connections, Oil & Gas and Power sectors have activities in Finland. However, here the Healthcare unit specialized in patient monitoring systems and it is the most important accounting for the majority of the over 700 Finnish employees. The headquarters as well as most of the operations are located in the old industrial area of Vallila, three kilometers from the city center of Helsinki.

Still in 2012 the GE headquarters in Helsinki were a remnant of ancient times: pictures of the members of the board of directors were hanging on the walls, and the overall atmosphere was stagnant and depressed. In addition there were vacancies everywhere which amplified the gloomy look. It certainly did not correspond with the agile, lean, fast and innovative enterprise GE aspired to be (Kauppinen, 2015). The need for change was recognized by Didier Deltort who was appointed CEO of GE Healthcare Finland in December 2012. At first other options were also considered, like moving altogether out of Vallila to more modern premises. Yet, there were advantages in the region like it was located near all the major stakeholders: customers, financiers, and universities. Also, it took less than 20 minutes to the airport. Instead of moving Deltort launched an invigoration process of the company which included refurbishing of all working spaces with the aim of encouraging coworking, co-operation and team work. The project started by tearing down walls so that marketing people could work in a common open office with software and hardware developers. (Hietanen, 2014) An example of the new look is the 'hall of fame' shown in Figure 9. All the patents and their inventors of GE Healthcare Finland are mentioned there.



**Figure 9. Hall of fame.**

The change has been successful. Kauppinen (2015) mentioned that foreign visitors have told him that they had never before seen smiles on people's faces while visiting Finland. A considerable amount of software engineers and experts on wireless technology have been hired. The development of the future medical technology is concentrated in Finland. It will help GE surf on the waves of healthcare transformation that will turn vital functions monitoring appliances into wireless, wearable, miniature consumer products. Information from all these wireless sensors will be saved in the cloud and analyzed by means of sophisticated data analytics so that the data is available anywhere and healthcare personnel can make correct diagnosis. (Hietanen, 2014; Muuranto, 2016)

## **9.2 The origins of Health Innovation Village at GE**

The idea of Health Innovation Village popped up in the same connection with the overall GE Healthcare Finland change initiative. Not only was it in accordance with the press from the parent company to become more lean and start-up like but it also coincided with the rising startup buzz initiated by Slush that had drawn the attention of investors and made Finland a center of startup scene. Kauppinen (2015) had counted that there were 127 health technology or wellness related startups in the 2013 Slush happening. The other thing he paid attention to was that these firms did not know enough about healthcare business to succeed. Hence there was potential for a win-win situation: GE had deep domain knowledge, strong connections to hospitals and other healthcare organizations as well as to global markets while startup companies mastered the startup culture and knew technologies that GE was heading for. (Kauppinen, 2015)

Suddenly it was not only the startup companies but also Google, IBM, Apple, Facebook and UnderArmour in addition to telecom companies that had begun to show interest in health technology. This alerted to the possibility of disruption. (Kauppinen, 2015) As Deltort had also dreamed of creating a health technology ecosystem comprising appliance manufacturers, software developers, and service providers in Vallila, it was time to suggest building a startup campus (Hietanen, 2014).

The decision to establish Health Innovation Village was made in December 2013. Some of the vacant spaces were refurbished for Health Innovation Village, and in case of a need for extra space there is still plenty of it to take into use. Shortly after the first press release in January 2014, a flood of applications filled Deltort's email. The first tenants arrived at the newly refurbished premises only half a year later. (Hietanen, 2014)

One of the startup companies showing interest in Health Innovation Village was a coffee shop—not quite at the core of health technology business. Anyhow, Warrior Coffee House became an essential part of the change process. It was built in the place of the board meeting room where the decision to establish Health Innovation Village was made. It resembles any trendy coffee shop in Helsinki with baristas fabricating special beverages. The concept though is thoroughly calculated with the intention to entice people to socialize. The tables were installed in such a way that people would have to gather together and it would be easy to start a conversation. And the coffee is free so that people would prefer to come there instead of sipping filter coffee at their working places. As people gather there from different units, it is possible to meet a person one has tried to contact in vain and simultaneously handle the issue. (Kauppinen, 2015) So, it also contributes to efficiency. And indeed, it has succeeded in attracting people; during coffee breaks long queues are formed when people are waiting for their treats. Figure 10 shows a view of Warrior Coffee House.

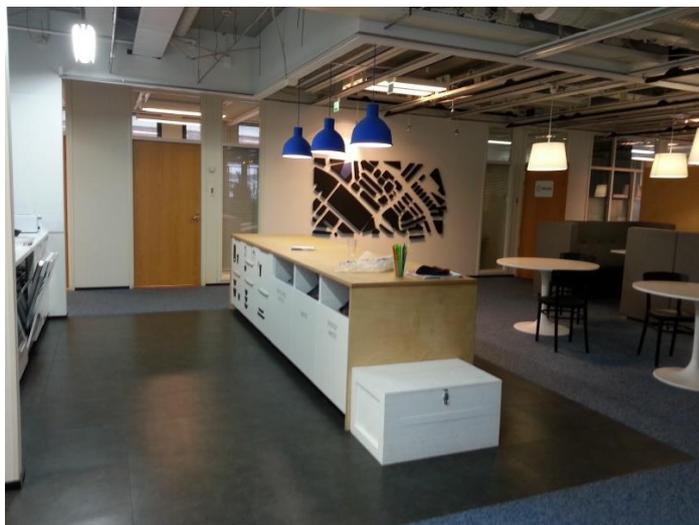


**Figure 10.** View of Warrior Coffee House at GE.

## 10 HEALTH INNOVATION VILLAGE COMPARED TO INCUBATORS, ACCELERATORS, AND COWORKING SPACES

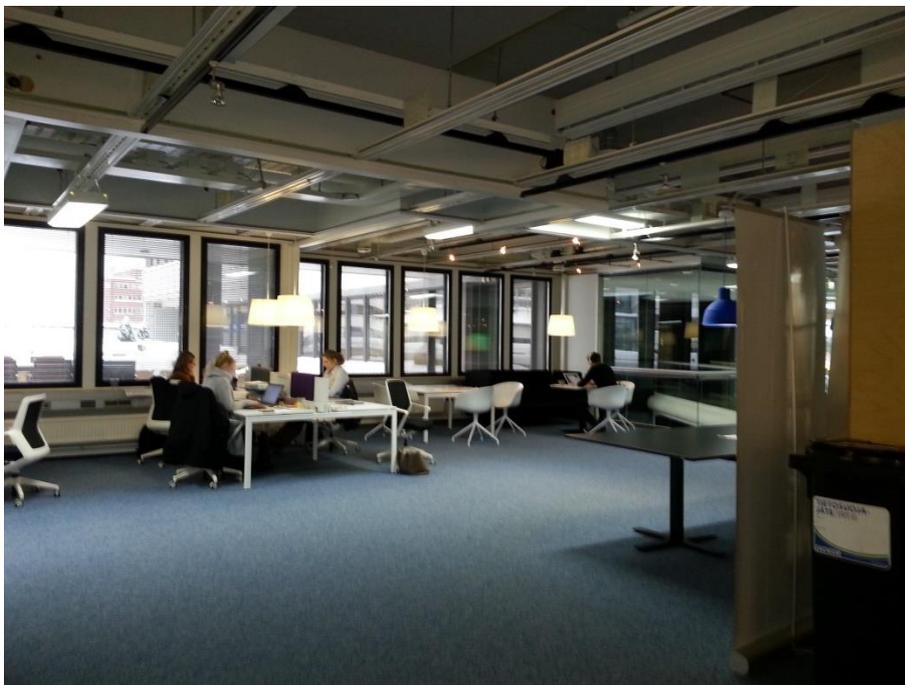
Health Innovation Village is located on the second floor of the GE headquarters in Vallila. A glass walled bridge leads from the elevators to the entrance of the Village, which is visible from the first floor reception area. Two television screens hang on a wall in the lobby: the first one runs a presentation of GE and the other one short presentations of Village companies. Like in any large office complex you have to register at the reception and wait for someone to pick you up if you want to visit some of the companies.

Health Innovation Village was refurbished in the old office premises like most of the coworking spaces. Straight ahead from the entrance to Health Innovation Village there is a kitchen equipped with a refrigerator, an oven, a microwave oven, water and coffee cookers as well as a dish washer. The lounge is furnished with a large worktop, tables, chairs and sofas, as can be seen in Figure 11. This cozy view could well be from one of the coworking spaces Houni and Ansio (2015) describe, as some of the tenants also use it as a working space. The kitchen was also designed to promote encounters and togetherness according to the coworking space principles (Kauppinen, 2016; Houni and Ansio, 2015). Behind the kitchen there are conference rooms and a space that can be closed with an accordion door and lectures and presentations can be arranged there. And the small offices are located to the left of the kitchen.



**Figure 11. The kitchen of Health Innovation Village at GE.**

The kitchen divides the open space into two sections. Both of them have desk rows like the one seen in Figure 12. Each of them has a low back screen where some of the companies have hung their logos. The left space opens at the end to its whole width. Just in front of it there is a Lego wall. This kind of an unexpected detail is also common in coworking spaces (Houni and Ansio, 2015). But according to Lalkaka (2002) also incubators should have creativity stimulating facilities. Furthermore, there are the glass walled phone booths, and a couple of conference rooms in the open space. Most of the back space does not have tenants and sometimes small groups are having internal meetings there. A group of visitors led by Mikko Kauppinen is also a common sight in the Health Innovation Village.



**Figure 12. View of Health Innovation Village.**

### **10.1 Motives to establish Health Innovation Village at GE**

Moore (1993) had noted that companies are not competing with each other any longer but they are involved in ecosystems that comprise both cooperation and competition. Such ecosystems need a variety of companies of different sizes in order to function properly. Iansiti & Levien (2004) have corroborated that the survival of individual companies is dependent on the whole ecosystem, not only on their own actions. This creates the assumption that the health of the ecosystem is crucial for all actors of the ecosystem. To this end Health Innovation Village was established. As health technology oriented startup companies are assisted to grow it contributes to a stronger health technology ecosystem and might further accelerate new product development (Hietanen, 2014). Currently the Finnish health

technology ecosystem comprises a couple of large companies and an increasing number of startups but the middle range is mostly missing (Fihta, 2015). Therefore it is advantageous for all parties to help the small players to grow.

According to Allen and McCluskey (1990) incubators are established for example to increase real estate value and to utilize vacant facilities as well as to enhance entrepreneurial success possibilities. These are also included in the main motives for establishing Health Innovation Village. In addition to providing inexpensive office space for startups Health Innovation Village creates a brand for GE's real estate business as the publicity accompanied by Health Innovation Village is presumed to arouse interest in small and medium sized companies which hopefully invigorates rental business (Kauppinen, 2016).

Proximity increases the possibilities of the success of incubators according to Shepard (2013). Likewise, Health Innovation Village is located in the premises of GE as it facilitates the mutual connections by accelerating relationship formation. Discussions can be arranged much easier and it is possible to meet in the coffee house without any special arrangements. That gives possibilities to co-operation in research and development as well as in marketing. In the same way, possibilities for potential acquisitions could be evaluated more easily since the companies learn to know each other well. However, acquisitions are not in the main focus. Preferably, some of the startup products could be incorporated in GE's own items in the future or they could be offered as complementary products since customers need a turnkey solution, not separate applications. (Kauppinen, 2016; Miettinen, 2016) These objectives are in accordance with the goals of Becker's and Gassmann's (2006a) market incubators which focus on creating a market for complementary technologies.

An additional motive was to cheer up the atmosphere and give the old fashioned image of GE a facelift since it was perhaps not attractive enough for young and talented professionals. Likewise, Gassmann and Becker (2006) considered external prestige one of the aims of a corporate incubator. Furthermore, technology transfer is another typical incubator goal which GE also has as it wishes to learn more about wireless technology and consumer products (Allen and McCluskey, 1990). But GE is also interested in the startup culture: how to be energetic and fast by developing minimum viable products. (Kiuru, 2015)

## **Mission**

Unlike most incubators and accelerators, Health Innovation Village at GE is not an independent organization (Becker and Gassmann, 2006b). It is a concept that includes a cheap co-working place for startups and services provided by different actors of GE Healthcare Finland. Hence, Health Innovation Village at GE does not have any written mission statement as the intention is to act like a startup company and experiment to see what happens. (Kauppinen, 2016) This also differs somewhat from typical incubators, as they tend to have mission statements and a board of directors (Becker and Gassmann, 2006b; Shepard, 2013). In this sense however, Health Innovation Village resembles coworking spaces as they do not have them either (Houni and Ansio, 2015).

## **Principles**

Instead of guiding mission statements, Health Innovation Village is run according to strict principles. In a similar way, coworking spaces use rules and norms (Houni and Ansio, 2015). The basic principle is that GE does not want to take advantage of the startup companies. GE employees are forbidden to spy on the tenants; therefore they do not have access to Health Innovation Village. The same applies to the tenants who do not have access to the laboratories and other production or development facilities of GE. If information between companies is changed nondisclosure agreements are signed. In case of common projects subcontractor agreements are used. Warrior Coffee House is meant to be the free zone where GE employees and villagers can meet and mingle with each other (Hietanen, 2014; Kauppinen, 2016).

Another principle is that GE does not want to patronize startup companies. That conforms to the 'laissez-faire' strategy described by Bergek and Norrman (2008). GE only gives the tenants access to opportunities, the rest lies with them. The startups are expected to be active and ask for assistance in case they need it. Accordingly, the active ones gain the most as they get the best service. As to the success of individual startup companies GE believes in the survival of the fittest where only the very best are selected, which follows the 'picking the winners' strategy of Bergek and Norrman (2008). Likewise, accelerators are also very selective about their clients (Miller and Bound, 2011). In addition, GE exercises a venture capital mentality by investing in several companies and hoping that some of them will succeed. However, the companies are not left on their own but are spurred on by being asked questions and guided to adequate contacts. Besides, GE wants to know what is going on in Health Innovation Village and that is why it is intended to visit the most interesting companies every now and then (Miettinen, 2016). (Kauppinen, 2016)

### **Sources of income**

Health Innovation Village is self-financed and its main source of income is rents, as it is for most incubators and coworking spaces (Hietanen, 2014; Dee et al. 2011; Houni and Ansio, 2015). It was considered important that tenants pay only the cost price so that it would not prevent startups to join Health Innovation Village. Furthermore, like most of the European incubators and unlike accelerators, GE does not take a stake in their tenants (Aerts, et al. 2007; Miller and Bound, 2011). Therefore, it is essential to keep the expenses down by minimizing red tape. GE Healthcare Finland covers salaries and occasionally other GE units sponsor events. Kauppinen (2016) explains that GE has reserved 1 % of the profit for this kind of projects, which is much more than what is actually spent. Also other co-operation organizations, like the city of Helsinki, may pay the expenses of fairs for example. (Kauppinen, 2016)

### **10.2 Facilities and resources**

Like in coworking spaces, tenants can hire a desk at the minimum of 100 euros per month (Houni and Ansio, 2015; Kauppinen, 2015). It is also possible to rent a small office room that can be locked. Everyone is allowed to use conference rooms of different sizes, glass walled phone booths, and all the public spaces. The basic services comprise reception, in and out going post, printers, a shredder, wireless network, free coffee at Warriors Coffee House, and the free use of a gym. (Kauppinen, 2015) However, most of these are basic facilities which are included in the rent of all incubators as well as many coworking spaces and accelerators (Houni and Ansio, 2015; Christiansen, 2009). Only the coffee shop and the gym are amenities which can be classified as a service that could differentiate Health Innovation Village. (Chan and Lau, 2005)

### **10.3 Management**

As there are only two part time employees working for Health Innovation Village: Mikko Kauppinen and Peter Green, it would be a non-managed incubator according to Westhead and Batstone (1999). Other typical characteristics of such a management type are informal teams and task division between the members, which is also how Health Innovation Village is operated. (Westhead and Batstone, 1999) Financial director Kauppinen is in charge of the overall operations. His main activities concerning Health Innovation Village include tenant selection and promotion which comprises lots of networking activities. He not only screens the applications but also looks for potential tenants in the startup events. Besides, he often leads visitors to GE to take a look at Health Innovation Village. (Kauppinen, 2016) These

activities are in fact the core duties that incubator managers should focus on according to Dee et al. (2011).

Green is employed from the startup community as a Community manager or a Cofounder. For example he has set up the social media networks of Health Innovation Village. His everyday tasks include activities that are common for hosts of coworker spaces according to Merkel (2015): he writes weekly information letters to the villagers, manages the Facebook pages of Health Innovation Village and serves as a liaison officer. On Tuesday mornings he briefs the weekly newsletter information. He also takes responsibility of the practicalities of event arrangements. (Green, 2016; Kauppinen, 2016) Taija Sievänen (2016), communications manager of GE, also spends a remarkable part of her time spreading information about Health Innovation Village both inside and outside GE.

Since both Kauppinen and Green also have other duties, it is clear that the efforts have been put on networking, not on the basic management of Health Innovation Village. However, GE personnel have the possibility to volunteer and use their work-time for public good purposes which include the support of the startup community. There is a group called Young Volunteers that is especially active in helping Health Innovation Village to organize events. For example there were around 40 volunteers giving a hand in last year's Slush. This kind of voluntary work is perhaps the best suited work to the concept of coworking spaces as they also arrange a lot of parties and happenings, but they organize these events for themselves unlike the volunteers of GE (Merkel, 2015). In addition, GE experts give lectures, among other things about legal issues, food and drug administration, usability, service design, and marketing. It is not uncommon either that accelerators and incubators use voluntary mentors, but specialized advisory services are usually provided either by internal or external experts (Dee et al. 2011; Christiansen, 2009). (Kauppinen, 2016; Green, 2016)

### **Entry and Exit policies**

Like the clients of accelerators, the potential tenants of Health Innovation Village are screened thoroughly (Christiansen, 2009). As GE can provide healthcare sector specific knowledge the target clients of Health Innovation Village are healthcare or health technology related companies. However, the technological fit is assessed rather regarding the needs of GE, not between the needs of tenants and the services offered as advised by Aerts et al., (2007). So, in the sweet spot are firms that understand technologies that GE is not familiar with and which it will need in its future products. Such companies are specialized for example

in cloud, wireless and sensor technology, industrial internet, big data and data analytics. Furthermore, knowledge of consumerism and small equipment are appreciated (Kiuru, 2015). From the ecosystem development point of view startups that have complementary products are also of interest. Likewise those who can boost the healthcare industry to change its processes necessary to adapt the future technology are welcomed to Health Innovation Village. (Kauppinen, 2016)

Bergek and Norrman (2008) divide incubators into two groups based on whether they use technological fit or personal characteristics as selection criteria. Instead of focusing on one criterion Health Innovation Village uses both of them. According to Vanderstraeten and Matthyssens (2012) a selection based on personal characteristics is typical of a generalist, not of sector-specialized incubators. The desirable characteristics of the tenants of Health Innovation Village include curiosity, willingness to network, startup mentality, openness, and search for feedback. These are features that coworking spaces also screen to some extent as they are building a community and a work environment that is conducive to co-operation, too (Merkel, 2015). Another important criterion is the growth orientation and the ability to succeed why the future intentions of the applicants are examined. (Kauppinen, 2016) These are features that accelerators are also interested in as they want to select the most promising clients (Christiansen, 2009).

Anyhow, the selection process is quite simple. Kauppinen interviews the most suitable applicants and in case of doubt concerning the technology fit he consults the engineering unit. In clear cases the selection is made in a day or two, more complicated cases may take a couple of weeks. Sometimes the applicants themselves ponder if they are willing to come or not. A few have declined to join due to the fear of rivalry because their competitors were already tenants in the Village. (Kauppinen, 2016) This corroborates the observations of Chan and Lau (2005) that startups dislike the presence of potential competitors in the same incubator.

The time range of tenancy varies most significantly between incubators, coworking spaces, and accelerators. A desk can be hired at the minimum of one hour in some coworking spaces while others do not have any time limits (Merkel, 2015). In general accelerators have the second shortest programs that last from a few weeks to a couple of months (Christiansen, 2009). Depending on the type of incubator the tenancy varies from a couple of months to unlimited time (Dee et al., 2011). According to Becker and Gassmann (2006a) the incubation time depends on available space, among other things. As there is plenty of space in Health

Innovation Village, the companies are allowed to stay as long as they pay rent. So far one firm has been expelled due to improper behavior. One has moved to the United States. Other exits have resulted, among other things, from changes in the needs of the companies. (Green, 2016; Kauppinen, 2016) These exit reasons are similar to those of coworking spaces (Merkel, 2015).

### **Services**

Health Innovation Village does not have a fixed program like most of the accelerators do (Christiansen, 2009). However, it offers a wide range of services unlike typical coworking spaces which resort mainly to peer-to-peer consulting (Houni and Ansio, 2015). Besides, the tenants of Health Innovation Village are also encouraged to cooperate and assist each other. In general, the overall service range of Health Innovation Village is based on what GE believes startups need and what GE considers rational to offer. (Kauppinen, 2016) These include both services that Vanderstraeten and Matthyssens (2012) classify as failure preventive and those that differentiate incubators.

Kauppinen (2016) regards affordable space so essential that it is guaranteed. It is also one of the most common failure preventive measures provided by not-for-profit incubators (Vanderstraeten and Matthyssens, 2012; Becker and Gassmann, 2006a). Kauppinen (2016) also regards funding as the biggest issue startups face but it is something he cannot promise. He also admits that distribution channels are important, but that they, too, belong to a ‘maybe’ category in terms of GE assistance. GE’s distribution channels can only be used if they are suitable for startup products and if they complement GE’s products concludes Kauppinen (2016).

Some typical incubator and accelerator features like advisory boards are deemed fruitless according to Kauppinen (2016) since he asserts that investors do not like them. According to him investors expect founders to lead a company and make decisions—not outside experts. Likewise, they consider voluntarily given help unfavorable since those advisors that do not have a share in a company are not committed to them. However, mentoring is assessed appropriate in case it is given to a special, concrete need. This kind of assistance is also, according to Gassmann and Becker (2006), the most important advantage of corporate incubators. (Kauppinen, 2016)

Sector-specialized business incubators are able to offer field specific services unlike diversified incubators (Schwartz and Hornych, 2008). Some of the services Health Innovation Village provides belong to these, like access to clinicians and other healthcare personnel. The startups are given feedback on their products by healthcare specialists and they have the possibility to pilot and learn the actual needs of their potential customers. (Kiuru, 2015) This is one of the things that GE is able to arrange since as a big company it has connections and access to large healthcare organizations (Kauppinen, 2016). Furthermore, GE can advise the tenants about the regulations and laws that concern health technology as startups are not usually aware of them (Savolainen, 2014).

Bergek and Norrman (2008) argue that incubators can act in the role of institutional mediator. GE has for example close connections among other things to the city of Helsinki and Tekes. (Kauppinen, 2016) In addition, GE Healthcare has the intention to assist in global marketing; especially as it can be a bridge to the United States and GE Ventures.

Physical proximity also enables casual support when met by chance as Gassmann and Becker (2006) have observed. Accordingly, the location at GE enables guidance and help at a short notice. If a startup company has a problem, the right mentor for it can be chosen among the innumerable experts of GE. But as Health Innovation Village is a peer community many issues can also be solved by fellow members, like Rubin et al. (2015) have stated. (Kauppinen, 2016)

Unofficial events and happenings are commonly arranged in coworking spaces (Merkel, 2015). Health Innovation Village often organizes both formal and informal events and visits. Some of the unofficial events held include a Back-to-work Party held in August and a Christmas staff party of Health Innovation Village in December. (Health Innovation Village, 2016) Some of the events are meant only for the tenants, some are open for all. The latter case requires registration on the Health Innovation Facebook pages. On Fridays Village underground events are held next to the Warrior Coffee House. These can include workshops which enable networking. Also accelerators and incubators strive to enhance networking (Vanderstraeten and Matthyssens, 2012; Christiansen, 2009). When GE receives visitors they are suggested to visit Health Innovation Village and possibilities are arranged for startups to give a short pitch. (Kauppinen, 2016)

#### 10.4 The success measurement of Health Innovation Village

The success of incubators is a complicated issue, as several studies have shown (Hackett and Dilts, 2004; Dee et al. 2011). Some of the researchers recommend that success criteria should be associated with the goals of the incubator (Bergek and Norrman, 2008; Sherman and Chappell, 1998). In case of Health Innovation Village the goals included ecosystem building, real-estate appreciation, and invigoration of the company. Therefore, the measurement of the success of the first objective calls for indicators that relate to the performance of the startup companies. In order to strengthen the ecosystem the incubation process should contribute to the long term survival of startup companies, the growth of the tenants in terms of revenue and number of employees, shorter innovation processes and the like. Instead, real-estate appreciation is successful when the number of vacancies diminishes and/or the rental income is increased while the invigoration could be measured by job satisfaction.

Not only success criteria but also success factors depend on the goals as not the same measures affect startup companies' survival and rental income. The typical incubator success factors, like management quality, access to networks, and the entry criteria are related to the first goal (Haapasalo and Ekholm, 2004; Tötterman and Sten, 2005). Likewise, a clear vision and strategy contribute to the same objective according to Pauwels et al. (2016). Publicity affects the real estate appreciation while the change of the organization culture to a more open, relaxed, and cooperative one may influence the atmosphere.

The features of Health Innovation Village include many of those in Lalkaka's (1996) and Smilor's (1987) list of success factors. Some of those that Health Innovation Village has are also listed below:

- In-kind financial support
- Networking possibilities
- Creativity enhancing physical facilities
- Strict selection process
- On-site business expertise
- Access to financing
- Large pool of experts

Health Innovation Village also has potential success factors that are not included in these lists. For example, the combination of a private founder and the intention not to aim for profit is a possible success factor. The rationale behind the argument is that a large base of sponsors also means differing goals which easily leads to principal-agent issues as Dee et al. (2011) have

remarked. Likewise, when an incubator strives for profit it usually has to accept also less appropriate tenants. Issues like these rise with public sponsored incubators since they have to report results to their funders which leads to short term policies. Instead, when there is only one funder and no need to show short term results, long term development is possible.

Those success factors that Health Innovation Village does not have are mostly related to the management processes, like performance monitoring and impact assessment of the startup companies. However, according to Westhead and Batstone (1999) real estate oriented incubators whose tenants have business experience perform well even without elaborate management systems. In addition, Health Innovation Village also has advantages regarding management. As a corporation managed unit it can resort to a much larger number of experts than regular incubators. Hence, Health Innovation Village managers do not have to have all the capabilities required for typical incubator managers. For example, in technical issues there is a pool of specialists from several fields at their disposal.

As Health Innovation Village at GE does not aim to profit and it does not have any external funders, it is not obligated to measure success. And so far it has not been measured either. However, some intangible benefits concerning invigoration of the company have been noticed, like increased publicity and an increased number of job applications. Likewise, small chats with GE employees in Warrior coffee house corroborated the enthusiasm and genuine joy and pride of working at GE.

## **11 HEALTH INNOVATION VILLAGE FROM THE TENANTS' PERSPECTIVE**

In general the tenants of Health Innovation Village are extremely satisfied with the whole concept. Most of them were only hoping for inexpensive premises next to a multinational conglomerate. It was almost a unanimous opinion that the expectations had been topped. However, in addition to some minor infrastructure issues, communication and cooperation leaves some room for improvement.

### **11.1 The tenants of Health Innovation Village**

The tenants of Health Innovation Village have the closest resemblance to those incubatees Shepard (2013) has studied. Usually they were either small business owners or students whose basic reason to join an incubator was to curb expenses. In general, the age range of the startups in Health Innovation Village varies equally from twelve years to those that have not yet been established. Only two of them represent new innovations of established companies. Three of the companies are small enterprises, the rest have less than ten employees. Although all of them have something to do with healthcare or health technology field, the range of products and services is wide. They vary from pure software applications or services to mechanical devices and high-technology products.

The majority of the tenants have joined in as early as in 2014. The entrepreneurs had learned about Health Innovation Village from articles, events or through their friends. Some of them were especially invited to join in. Two groups had won a limited term of lease in Health Innovation Village as a prize in a startup competition. Coworking spaces are joined in to have like-minded company, and in order to separate work from leisure, while applicants seek accelerators and incubators in order to develop and grow companies. However, all of them share inexpensive rent as a common motive. (Merkel, 2015; Christiansen, 2009; Dee et al, 2011) Instead, the most frequently mentioned reason to choose Health Innovation Village was GE as a company, as it was considered a prominent player in the health technology field that had good connections to hospitals. Other important motives were the need for work space. Inexpensive rent as well as work community with peers in the same field was regarded as other advantages. In addition, networking and support program had affected some decisions. The central location with functioning communications and a neat office also attracted.

Half of the entrepreneurs had been working at home while almost as many had an office in a science park. For a couple of companies Health Innovation Village is a branch office or they had moved from other premises. Especially those who had been working at home enjoyed the community of peers. But also some of those who had previously worked in science parks felt that it was easier to get to know other tenants at Health Innovation Village. In addition, for many tenants office facilities improved considerably after moving. For some Health Innovation Village enabled inviting customers or employ trainees for the first time. Furthermore, unlike at home there is often someone to give a hand, for example about computer issues or you can get company for a coffee break. These are also typical reasons to stay in coworking spaces (Merkel, 2015).

Cooperation with other startups and GE topped the expectations of the tenants. Otherwise the wishes concerned mainly facilities and cheap rent. However, a few were looking forward to events, happenings and new knowledge. On the other hand, many did not have any special presuppositions. Likewise, few had any doubts regarding the concept. The main concerns were related to moving, which was seen as a challenge. Commuting and parking facilities also worried people in advance. Location also matters a lot when people are choosing a specific coworking space (Houni and Ansio, 2015). Some had doubts about group cohesion, and in general the realization of promises. However, most doubts turned out to be uncalled-for. In general, due to the minimal expectations, the expectations have either exceeded or at least been fulfilled.

However, there are some disappointments especially concerning cooperation with GE. Tenants feel that GE is not open enough and it reacts too slowly compared to what the startups expect. Furthermore, some promises about assistance have dissolved and there have not been that many joint activities with other tenants as was expected.

Although, in the study of Sherman and Chappell (1998), the majority of incubatees admitted that the tenancy had contributed to the success of their companies, few of the tenants of Health Innovation Village believe that it has affected their revenue. However, the majority finds it difficult to assess the impacts of Health Innovation Village, except perhaps through the increased publicity. Besides, it may be too early to evaluate the impacts since Health Innovation Village has operated for less than two years.

## 11.2 Location

First of all, the location of Health Innovation Village is considered excellent especially because it is next to GE. In addition, public transportation provides good connections but car owners find parking difficult and expensive. Another advantage of the location is that most healthcare venues take place in the Helsinki region as well as the fact that most of the potential customers are located there. Therefore, it is far more inconvenient for startups having their premises in other parts of Finland to participate for example in fairs. Furthermore, 'Health Innovation Village at GE as an address gives an impression of a reliable and trustworthy company' as one of the tenants expressed himself.

## 11.3 Infrastructure

According to the tenants the facilities are excellent and they suit the startups well, which corroborates the results of Tötterman and Sten (2005) who found out that tenants are usually content with the facilities. Besides an auditorium there are conference and meeting rooms, which make it possible to host resellers, invite visitors, negotiate, and arrange product presentations. There is even enough space to invite all villagers if one wants to organize an event for all of them. As a working place Health Innovation Village is considered excellent, since there are multiple options where to work, the environment is neat and quiet, yet innovative. And 'the Lego wall helps to clear the mind', one of the tenants had detected.

The premises also please by their design which is called 'cool', 'nice', 'youthful', and 'stylish, not just a bunch of old furniture'. However, it was also criticized to resemble an ordinary office too much. On the other hand, the premises give enough credibility for a small company to hire trainees and employees. The infrastructure is not only assessed as being representative but also functional, since there are phone booths, printers, shredders and enough electric plugs.

In addition, the tenants were also pleased with the basic services. The post is both coming in and going out. It was applauded that printer issues were easily solved by calling the reception, and in general the reception staff was praised to be 'fabulous, kind, and excellent'. According to the tenants the canteen downstairs serves tasty food. In addition, almost everyone considered Warrior Coffee House an important part of the whole concept. Especially the coffee was praised, not only because it is free, but also because it is excellent. The only negative mention regarding Warrior Coffee House was that it closes too early.

The few complaints concerned persistent connection issues with the wireless network, the conference room reservation system, and poor parking possibilities. In addition an information system with a digital calendar was required. Furthermore, like in almost all offices, printers are often out-of-order and there are too few of them. Air conditioning issues were also occasionally mentioned, although it is presumably dealt with. Other complaints addressed inadequate sound insulation of phone booths and the auditorium.

In general, any desires were seen almost unreasonable, and for instance they were called 'Christmas presents'. Some of the items in these wish lists were printers and more cables in conference rooms, storage space, a workshop with tools, and more refrigerators as well as phone booths if the number of tenants increases. Additional small offices and/or rooms that allow privacy were also longed for. As cooperation and coproduction is one of the goals of Health Innovation Village, a project room was considered useful for collective brain storming and planning. It could be equipped with magnet boards on wheels and the walls could serve multiple functions. Also the list of Vanderstraeten and Matthyssens (2012) about tenants' expectations included this kind of specific infrastructure amenities.

#### **11.4 Program**

The services GE arranges can be classified in three main groups: thematic lectures, joint participation in fairs and happenings, and introductions to decision makers, potential customers, and investors who are visiting GE. In addition it is possible to get assistance in specific issues if asked for. The interview answers of this study verify the results of Mian's (1996) research that the services incubatees had received added value to the startup companies. Especially events were valued as can be noticed from the following comments: 'Versatile and useful events are absolutely the best of Health Innovation Village', and 'Events arranged by GE are invaluable'. In addition, networking possibilities and visibility in media were appreciated as well as the marketing possibilities. According to Dee et al. (2011) those who have prior startup experience gain the most from this kind of activities while inexperienced entrepreneurs need more versatile support.

The variety of opinions of different theme days arranged by GE are considered important in the information sharing perspective, especially regarding GE related knowledge, as they give information about new possibilities in the health technology field. Training on issues that are

challenging for startups, like marketing, is also longed for. In addition, entrepreneurship education and business development were considered interesting topics for future events. Some of the tenants did not think that they needed any business training while some thought that it is always possible to learn something new. The latter opinion is in accordance with the findings of Shepard (2013) which assert that even experienced small business owners can benefit from incubation.

Free stands in fairs were considered invaluable since startups do not afford to pay the high attendance fees. Besides, joint participation in fairs with shared stands enables participation with a small budget. Likewise special arrangements to meet investors in Slush were often praised since they enabled face-to-face contacts. Similar possibilities are offered when investors visit Health Innovation Village.

Visits were judged extremely useful which confirms Becker's and Gassmann's (2006a) observations that incubatees highly appreciate contacts to networks that provide access to new customers or suppliers. Visitors have also included, besides investors, potential customers and decision makers from communities and towns, such as representatives of the municipal board of health, and other firms. These events not only give opportunities for product and company presentations to decision makers and customers, but also possibilities to learn about the decision makers' plans, visions, and strategy. In addition, one of the tenants had noticed that his pitching skills were improved. 'Comprehension of my own product and positioning has deepened due to customers' reactions', he also asserted. However, it was also hoped to receive visits from healthcare employees, not only directors, so that startups could learn about the issues they face in their everyday work, issues that are short of a solution. Another wish was to have thirty minutes face-to-face negotiations with potential customers in order to present projects that one does not want to disclose.

Events arranged by GE in Warrior Coffee House were seen as excellent possibilities for networking. Besides, that kind of participation was considered easy, cost effective, and convenient. However, Thursday afternoons or the beginning of the week were preferred to Friday nights in terms of arranging presentations. Game jams, movies, and weekend programs, where financiers and game developers could meet, were other activities that would have inspired some tenants. Furthermore, programs like StartUp Health were appreciated.

In general, tenants try to attend as many events as possible. The main reasons for not participating are other overlapping activities, like customer visits or deadlines. In addition, events are selected based on the relevance to one's own company. Other services that tenants would need are for example direct investments in their firms. Also a solution for the distribution chain issue was regarded important.

### **11.5 Communication**

Although tenants were pleased with receiving the weekly newsletters, they were not considered an optimal method of communication. It was also noted that emails emphasized digital technology too much. Besides, it annoyed people that abbreviations were used in the emails without any explanation. Especially irritating was that information about events was received too late in terms of rescheduling other appointments, although the interviewees understood that it was not the fault of the sender. Another reason for missing the events was that the flood of emails tends to be so overwhelming that important details are lost or forgotten.

There was also unawareness of practices, like who should be contacted in case of a printer failure because sometimes tenants are working at hours when there is no one to ask for help. Likewise, many did not know whom they could contact if they wanted assistance in certain issues. Therefore, it was hoped that GE would inform them better about available resources and support possibilities. One of the suggestions was that Health Innovation Village could have its own intranet pages which would enable a bidirectional information flow: from Village to GE and from GE to Village. Another suggestion was a directory where one could look for information or suppliers and where everybody could advertise his or her expertise. Also Village meetings were advocated to be held once or twice a month so that practical issues could be discussed. For example, startups should be allowed to decide how they can be contacted and by whom. Currently Health Innovation Village as a group cannot be contacted by external companies. It was considered a disadvantage by some of the tenants as it hinders the joint orders of services for example. It was also feared that customers were missed due to the strict contact rules.

### **11.6 Community**

The general atmosphere of Health Innovation Village seems to be great. The tenants found it easy to ask for advice and get a second opinion when needed. 'Nice people, it is possible to

communicate with everybody’, ‘Relaxed and open atmosphere, people are not secretive although they are working in similar fields and in the early stages of developing their products’, and ‘Like-minded people, possible to learn from others’ are some of the comments. ‘To have a peer group releases mental stress’, added one of the interviewees.

Sector focus was seen to enhance the sense of community. ‘As everybody knows what the others are doing, it is possible to help them to find new contacts’ stated an interviewee. ‘Villagers market and advertise each other quite often, whenever there is a chance’, was also acknowledged. Without exception they all seemed to have received new ideas, contacts, or other useful information and/or given advice to others.

Warrior Coffee House was seen as the focal point of communication. ‘In Health Innovation Village one does not want to disturb others’ work but in the coffee shop it is easy to join in’ was admitted. Common interests helped to start a conversation: ‘It is easy to start talking about business as people do not know each other so well.’ Discussions were usually casual but occasionally something useful was learned or new insight was grasped while talking about topical issues. ‘Discussions with people from other fields are interesting, as people come from different branches of science’, was summarized about the benefits of heterogeneous backgrounds.

Few tenants knew any other GE staff except those whose duties were involved with Health Innovation Village unless they had previously been employed by GE, had friends working there, or had a co-project with GE. Not even Warrior Coffee House enhanced communication between startups and GE staff as people went there with fellow tenants or joined only groups of acquaintances. It was admitted that there is a threshold in talking to total strangers why there is a need for events and arranged activities where startups could socialize with each other and GE staff. Similar wishes were uttered by GE employees who hoped that their hobby clubs were open for Health Innovation Village people, too. ‘It is much easier to begin talking to someone if you have met before’ was admitted. In addition, as new employees were hired to startup companies, as a rule they were not introduced to the other tenants. These experiences are similar to the observations of Merkel (2015) about coworking spaces. She had noticed that physical proximity and simultaneous presence is not enough to lead to interaction.

In general, there seems to be contradictory opinions of the extent of intercommunication. Some said that they had daily contacts with other tenants and GE, while others admitted that there was little dealing with others. The most common comment was however that ‘we have a lot to do with the companies in the Village, not so much with GE employees, although there could be more intercommunication’.

### **11.7 Cooperation**

Some of the practices were considered to enhance cooperation, like the Tuesday morning coffee meetings at Warrior Coffee House. ‘The value of Health Innovation Village is in the community, cooperation, and the ecosystem of companies building the cooperation’, concluded one of the tenants. However, those who worked in the open space felt that there was less interaction with those firms that had offices. Usually they were a bit bigger firms and therefore they had their own colleagues to talk to. ‘A few words are exchanged in the kitchen but that is all’, was one of the comments. Those who worked alone or with only one coworker had the most interaction with each other.

Mostly people longed for more cooperation and joint projects, but cooperation seemed to depend too much on active persons. The tenants admitted that it was also up to them how many co-projects there were. On the other hand they pointed out that startup companies simply do not have time for other activities than their own business development. And it takes a lot of effort to organize co-projects. Therefore, it was felt that some kind of assistance was needed. For example GE could participate in Village Virtual Health Center co-project initiated and lead by startup companies.

Examples of cooperation that tenants wished for varied. Some tenants would find it nice to learn to know others better. Others would like to curb expenses by hiring experts together, for example to produce marketing materials. Some entrepreneurs wished for discussions on practical issues. These could be for example hints and best practices that successful firms give others or accounts of how they have tackled certain issues. This is what Becker and Gassmann (2006a) also learned when they asked what entrepreneurs mostly value, namely not only regular or ad hoc advice but also exchange of lessons learned. Due to varying and unmet requirements one of the tenants advocated a more purposeful orientation towards development of cooperation methods.

A tenant crystallized the startups' needs: 'As startups require knowledge, customers, and financing, all of the three should co-locate'. Therefore he suggested that HUS, Tekes and Ely centers should have their branch offices at Health Innovation Village. Another suggestion was that GE should hire tenants as consultants in its projects because entrepreneurs also have knowledge and skills other than what their products represent. It could also be advantageous for GE because startups could transfer lean and agile development methods, creative thinking, and budget developing as GE has announced a need of that. And startups in turn would get income, references, and health technology specific knowledge.

However, the first step may already have been taken to advance cooperation between GE and Health Innovation Village as a joint brainstorming session was held in March. As a summary, the above discussed advantages and disadvantages of Health Innovation Village based on tenant opinions are listed in Table 5.

**Table 5. The advantages and disadvantages of Health Innovation Village according to the tenants.**

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>➤ Excellent location</li> <li>➤ Multifaceted facilities</li> <li>➤ Stylish design</li> <li>➤ Good basic services</li> <li>➤ Events</li> <li>➤ Visits</li> <li>➤ Free participation in fairs</li> <li>➤ Access to investor networks</li> <li>➤ Access to customer networks</li> <li>➤ Theme days</li> <li>➤ Togetherness</li> <li>➤ Solidarity</li> <li>➤ Warrior Coffee House</li> </ul>	<ul style="list-style-type: none"> <li>➤ Problems with wireless network connections</li> <li>➤ Other minor issues with facilities</li> <li>➤ Communication issues</li> <li>➤ Missing contact information</li> <li>➤ Late notifications</li> <li>➤ Missing connections to GE</li> <li>➤ Scarcity of co-projects</li> </ul>

## 12 DISCUSSION

As the number of accelerators and coworking spaces are increasing in the Helsinki region, it is essential that Health Innovation Village stand out to be able to attract new tenants. It is also a worthwhile aspect as not only startups but also GE, benefits from the Health Innovation Village. First of all, it has gained a lot of visibility that can be used effectively to attract paying tenants and high class employees. Also, one should not forget the internal publicity which may be important for global companies. Health Innovation Village is a cost-effective way to monitor a startup scene for potential acquisitions and joint ventures. As GE Healthcare Finland pursues an ecosystem leader position, supporting startups not only strengthens startups and allow them to grow, but they also extend image of GE as an ecosystem leader.

In the future, tenant companies may also provide invaluable complementary products. To achieve this goal, more cooperation is needed between GE and the tenants. For example, none of the tenants mentioned Predix, the operating system of GE, although that system could function as a common platform that connects their separate applications to a desired turnkey solution. Further, the use of Predix would connect the startups more closely to GE which would alleviate its fear of losing the most prominent startups to competitors.

Further, one of the main reasons why startups joined Health Innovation Village was the expected cooperation with GE. Although the first step was taken by arranging the brainstorming session in March, much more could still be done. However, the issue is that neither GE nor the tenants know enough about each other's capabilities and needs, as the separation between GE and Health Innovation Village is too strong. The Warrior Coffee House was expected to be the connector, but it is apparent that it cannot accomplish this function.

Communication is another issue that can still be improved, for example, by adopting an electronic communication system. For example, Health Innovation Village could have its own Intranet that could improve not only the internal communication of Health Innovation Village, but also function as a welcome bridge between GE and the tenants. In coworking spaces, collaboration issues are solved best by using curators, and that choice might be a suitable option for Health Innovation Village.

However, the prospects do look promising since the startups' perceptions of Health Innovation Village were exceptionally good. Health Innovation Village seems to provide unique networking possibilities and publicity that are good enough that it is hard to surpass them.

Although Health Innovation Village at GE is not called an incubator, it clearly has its typical characteristics. For example, the features listed by Schwartz (2013), namely, subsidized rental space, networking, credibility, collectively shared facilities, and business assistance, are all provided by Health Innovation Village. In addition, this entity conforms well to the incubator definitions offered by Allen and McCluskey (1990) and NBIA (2015).

Instead, Health Innovation Village differs in other aspects from the new forms of accelerators. In particular, the limited time and intake of cohorts in addition to a common fixed program for all tenants is characteristic of accelerators according to Cohen and Hochberg (2014). This aspect separates them from Health Innovation Village. Further still, most accelerators pursue profit and take on equity in their incubatees (Christiansen, 2009). However, what Health Innovation Village and accelerators do have in common are their joint goals to enhance startup growth and have strict selection criteria as well as striving together for the enhancement of collaboration. The desired characteristics of the target groups are also very similar to those for the accelerators (Christiansen, 2009).

Health Innovation Village also has a lot in common with coworking spaces. In fact, incubators and coworking spaces are growing closer to each other as concepts. Bøllingtoft (2012) has even introduced a new class of incubators that have typical coworking space features. So far, however, the goals and services of such coworking spaces are more limited than are those of incubators.

To sum up, one can conclude that Health Innovation Village is not an accelerator. Instead, it resembles a lot of coworking spaces. However, the extent and value of support services that Health Innovation Village does offer place it instead in the incubator class. As there is also some variation between incubators regarding these mentioned differences, without a doubt, Health Innovation Village can be called an incubator. It does well even for typical incubator success factors.

Another issue is the incubator class that Health Innovation Village joins. I noticed that the traditional taxonomies of incubators are rigid in terms of evolution of the incubator concept, an aspect that Health Innovation Village also represents. Therefore, a new flexible incubator classification system is introduced.

### **12.1 Health Innovation Village at GE compared to incubators, accelerators, and coworking spaces**

The combined goals of Health Innovation Village are exceptionally broad, extending from the atmosphere invigoration of GE to promoting office rentals and ecosystem development. It has a real estate appreciation in common with coworking spaces and ecosystem building with incubators and accelerators. Although these goals are not contradictory, it might be good to deliberate which the primary aims are for GE and focus on these directly.

In terms of success factors, incubators and accelerators outperform the organizational structure of Health Innovation Village while being equal to that of coworking spaces. Health Innovation Village is rather an arrangement that fits real estate appreciation and what is practicable from GE's viewpoint. This 'laissez-faire' strategy suits experienced entrepreneurs the best. The more inexperienced tenants that are accepted, the more that further support and feedback are needed. Hence, the strategic issues should be reconsidered.

The main income sources of many incubators and all coworking spaces are rents, and that scenario also applies to Health Innovation Village. Incubators are also supported by their stakeholders, and some of these charge for services. (Dee et al. 2011) Instead, accelerators expect to profit by taking a stake in their tenants (Miller and Bound, 2011). The independent position of Health Innovation Village saves it from most agent-principle issues and the differing goals of stakeholders. As this support is based basically on spare resources, it is also cost effective. If stakes were taken in the tenants, these would bind GE to a much deeper commitment to those tenants. However, as incubation does not belong to GE's primary businesses, such engagement is unfounded. Charging for basic services might also just add more bureaucracy. However, in the case of special services, charging is worth taking into consideration.

The facilities of Health Innovation Village combine the best features of both incubators and coworking spaces since both are representative of and designed to enhance cooperation.

Although design aspects alone do not enable cooperation, as Merkel (2015) has observed, they indicate a signal that Health Innovation Village does advocate collaboration. However, GE seems to rely too much on facilities only to enhance cooperation.

The management of Health Innovation Village has a close resemblance to that of incubators and accelerators, and it is far beyond that of coworking spaces. Especially, the selection criteria follow best practices since several factors are taken into account. Likewise, services belong to the top class, particularly networking possibilities. The tenants seem to prefer an on-demand approach instead of the fixed program of accelerators, although some were also intrigued by StartUp Health. However, this interest in accelerators may result from their possibility to offer funding.

The unlimited tenancy at Health Innovation Village can be an advantage when compared to incubators and especially accelerators with short programs, because the health technology field has long innovation processes. Tenants do not have to move before they actually need larger premises. Prolonged life support is considered a downside of incubation by some researchers (Dee et al. 2011). However, that is an unlikely outcome in Health Innovation Village since the tenants there have better access to customers and receive more feedback on their products than if they were developing products at their home offices. On the other hand, it could be argued that long tenancies might result in a low turnover rate. This choice might cause stagnation in the absence of a flow of new ideas. However, as there is still plenty of room in Health Innovation Village, intake does not have to be restricted due to extant tenants.

As Health Innovation Village has several goals, its success factors also vary accordingly. However, it has quite a number of the typical features that contribute to the success of incubation, including access to client, investor, and expert networks, excellent facilities, and a strict tenant selection process. On the other hand, the organizational structure of Health Innovation Village is not as formal and purposeful as it should be according to the best practices of incubators. Even so, it is possible that this process is adequate when the business experience of average tenants is taken into full consideration.

Although there is no list of success factors on coworking spaces, the rate of cooperation could be one measure. In this respect, Health Innovation Village might place in the middle range. The atmosphere of Health Innovation Village is great, but there is more will present than there is action.

## 12.2 Position of Health Innovation Village in incubator classes

It is certainly possible to classify Health Innovation Village using extant incubator taxonomy frameworks, at least with only minor changes. It is clearly a non-profit incubator, as the income from rents covers only expenses and no other service fees are charged. The subclasses of non-profit incubators are government and non-government incubators. However, non-government incubators include those that are sponsored by private institutes or, for example, bottom-up-incubators. This kind of heterogeneity hardly contributes to a meaningful comparison.

According to the classification offered by Becker and Gassmann (2006a), Health Innovation Village belongs to the subclass of market incubators. However, the top class should be changed to that of a non-profit instead of a for-profit incubator. As the taxonomy was created originally based on for-profit corporate incubators, it can be questioned whether similar categories of non-profit incubators do exist. Further, if Health Innovation Village was classified based on its characteristics as a market incubator, would a non-profit aim affect its operation and success? The same issue arises with the classification of Bøllingtoft and Ullhøi (2005). Health Innovation Village fits in the class they introduced, but again it is assumed that the top category comprises for-profit incubators.

Often emerging incubators have a combination of features from different incubator classes. As can be seen, hierarchical taxonomies tend to be inflexible regarding this type of concept evolution. Therefore, an adaptable, non-hierarchical classification system that enables more rigorous comparisons between incubators is a viable possibility. According to this system, an incubator is characterized by selection of its pertinent features from the classification table. By no means does that free all comparisons from speculation, as there remain countless other factors that could affect the success or operation of an incubator. However, this table may facilitate paralleling the interesting combinations of features.

Unlike hierarchical classifications that bundle a fixed set of characteristics, this flexible system allows for focusing on relevant properties. In addition, new features can be added by adding new rows and/or columns, as needed, as each row with its own header represents an independent feature in relation to other rows. When two rows are sharing a header, then the upper row is a generalization of the features noted below it. However, several features may be chosen in a row, when applicable. As an example, Table 6 characterizes Health Innovation Village by a selection of green slots. For example, Health Innovation Village can be

characterized as a non-profit, corporate incubator that provides both basic and enhanced services.

**Table 6. Incubators' characteristics.**

Generation	First generation			Second generation		Third generation			
Profit orientation	For-profit				Non-profit				
Sources of revenue	Rent	Internal sponsorship	Equity and royalty agreements		External sponsorship			Service fees	
Funder type	Private funders			Public funders					Mixed
	Private	Corporation	Other	Commune	Region	State	University	Mixed	Other
Primary goals	Real estate development	Investment	Corporate spin-off	Job creation	Regional development	Networking	University spin-off	Ecosystem development	Startup culture, growth, survival
Target customers	University spin-offs		Corporate spin-offs		Startups		Growth companies		SMEs
Industrial Sector	Mixed	Technology	IT	Product development		Manufacturing		Other	
Phase of intervention	Business concept			Pre-establishment		Early stage		Growth	
Services	Basic services				Enhanced services				
	Coaching	Training	Mentoring	Seminars	Access to professional services	Access to client networks	Access to investor networks	Funding	Other
Facilities	Basic facilities				Enhanced facilities				
	No office	Basic office	Shared resources	Conference rooms	Quiet rooms	Laboratory	Workshops	Warehouse	Other
Management	Managed				Non-managed				
Entry policy	Ability to pay rent	Team characteristics	Financial state	Growth potential	Fit to corporate strategy	Fit to incubator strategy	Company phase	Other	
Exit policy	Breaking rules		Ability to pay rent		Rent increase		Time-limit		
Program	Fixed program		Ad hoc		On demand		Mixed		

### 12.3 Health Innovation Village from the tenant's perspective

Although most of the entrepreneurs of Health Innovation Village have prior business or startup experience, less experienced tenants are also there. Such heterogeneity is obvious also in many other ways, including the age of companies, the number of their employees, and their products. However, there is one connecting factor, and that is the healthcare or health technology sector. This combination is rather advantageous, since it provides an appropriate proportion of knowledge proximity and distance. Many researchers have concluded that the tenants should work in the same sector, so they can effectively cooperate (Schwartz and Horny, 2008; Tötterman and Sten, 2005; Chan and Lau, 2005) If the tenants share the same knowledge, no information exchange can happen; yet, on the other hand, if their knowledge base is too far removed from each other, they do not speak the same language, and that hinders their communication.

GE is indeed giving a lot of valuable assistance to the tenants in the form of reduced rent, networks, and other services. As it is not a charity organization, GE does not have any

obligation to support startup companies, and its tenants are well aware of it. Therefore, they express their gratitude for everything they have received, and they often even want to give something in return, which corroborates the findings of Merkel (2015) regarding favors in coworking spaces. Accordingly, the tenants are pleased with the facilities of Health Innovation Village, the only exception being the slow wireless connections. That is an important issue to be solved as a good network connection is one of the most important tools of startup companies.

### **Services**

The proximity to GE enables fast access to industry specific knowledge and support services. Besides, these services are based on demand which means that they conform to the actual needs of the tenants. Also, tenants preferred individual coaching to an obligatory pre-set program due to their heterogeneous needs and scarcity of time for such scheduling. As most of the tenants have either long work experience or previous startup experience, the fit between these kinds of support mechanisms is generally good. However, there was a broad unawareness of practicalities for how to demand assistance and who to contact. Usually only those that knew GE through prior contacts found it easy to get the help they wanted.

It is possible that GE does not realize how the almost total separation of GE and the startups affects even information search capabilities. The tenants are expected to be active in asking for help, but at the same time, they should not resort to the same contacts. As time is one of the scarce resources of startups, they cannot spend a lot of time in searching. It is neither practical nor efficient to start talking at random in Warrior Coffee House to try and meet the right people.

### **Networking**

A big conglomerate has extraordinary networking capabilities with client organizations and investors that academic incubators or even diversified incubators do not have. Especially contacts with customers and investors are highly appreciated as well as the possibilities to participate in fairs cost effectively and without undue effort. Particularly in the healthcare business where clients are large public organizations, small startup companies do not have any chance on their own to gain access to them. Furthermore as a global American company, GE can provide valuable access to the U.S. market and its venture capital funders. Possibilities like these are not offered by any public incubator.

## **Cooperation**

Unanimously, all tenants praised the open and cooperative atmosphere. It was common practice that they either helped each other to find contacts, or they received valuable assistance from their peers. However, many wished for more cooperation, although in general, the tenants did not have enough time to organize such collaboration.

The major issue was almost total separation between GE and the startup companies. Hence, co-location was not enough for information exchange, so other measures are needed. Since one of the main reasons why startups were interested in Health Innovation Village was the desire to cooperate with GE, these collaboration possibilities should be better screened.

### **12.4 Improvement propositions**

The major issues these tenants had concerned communication and cooperation. Startups spend their time developing their products, finding investors, or selling their products, which means that they do not have time to read long emails or look for a certain interesting announcement. Neither do they have time to look for help or participate in anything that takes a lot of their time. This issue and many of the other minor disadvantages could be solved by using a curator. Merkel (2015) noticed these same issues in certain coworking spaces seeing much more collaboration in others. The latter did have curators, employed by the coworking spaces to enhance socialization, organize cooperation activities, and take care of all practicalities that a part-time employee did not have the time to do.

In Health Innovation Village, a curator could take care of the information systems, look for the right experts to assist the tenants, organize Village meetings and brainstorming sessions, listen to suggestions, and act as a project manager. He could introduce new tenants to the other tenants and perhaps even handle basic support of fledgling entrepreneurs by determining their needs, arranging support, and monitoring their progress. All of these efforts would free the tenants from secondary tasks to spend more time on their essential duties. GE could perhaps support a curator financially, but alternatively, the tenants could contribute in these expenses, or some other form of funding could be arranged.

Although GE wants to encourage face-to-face encounters, the concept does not work because the tenants spend a lot of time on the road. In addition, communication should be as effective as possible. Therefore, a wider use of electrical media is necessary to enhance

communication, so it is accessible from anywhere. The simplest solution would be an Intranet for the tenants where all their relevant information could be stored. Such essential information could include the reservation of conference rooms, a calendar where all events and registration dead-lines are visible, and alarms pertaining deadline registering that could be sent automatically to the tenants' emails. There could also be a section for GE where startups could talk more about their capabilities and GE could call for tenders.

As the most common reason not to attend events was concurrent obligations, it would be beneficial if lectures were recorded, so those who could not attend could watch them later. In addition, there could be a possibility to note the reasons for not attending, so that a seminar would be seen as uninteresting or a failure due to low attendance because tenants had other appointments scheduled for the same timeframe.

A messenger application would also be useful, for instance, concerning requests for advice and calls for a coffee break. As it appears that those companies who have their own offices keep to themselves, they could even be reached by such an application.

Although the tenants of Health Innovation Village have better possibilities to pitch to investors, not all tenants are likely to get the financing they want or need. They need other measures to acquire income. So far, GE has mainly bought services that are openly advertised. However, entrepreneurs also have other skills and knowledge that GE could utilize. For example, the tenants could not only tender their substance knowledge, but also their knowledge about the startup way of working. That could be a win-win situation. Villagers could get both references and income, and GE would get external experts. The only way tacit knowledge is transferred is via coworking. GE could gain startup knowledge and the tenants could get more knowledge about the healthcare industry and its specific procedures. Hopefully this goal will be realized in the future, as the first step has already been taken at a common brain storming session held in March with the new mobile health division of GE and Health Innovation Village.

## 13 CONCLUSIONS

In recent years, due to the reshaping of work life, both incubators and accelerators have regained their popularity. In addition, coworking spaces are an emerging trend. All of these concepts address the issues of self-employed persons, startups, or small and medium-sized enterprises. However, each can have a slightly different focus. One of the new communities that support startup companies is Health Innovation Village at GE. It was established by GE Healthcare Finland, a subsidiary of the global conglomerate in the health technology business.

The purpose of this study was twofold. On the one hand, Health Innovation Village at GE was related to incubators, accelerators, and coworking spaces in order to decide which one of these Health Innovation Village most likely belongs to and how well it succeeds compared to them. As Health Innovation Village has a combination of their features, the goals, organization, financing, facilities, and management including entry and exit criteria and program, as well as its success factors were examined in parallel to those of incubators, accelerators, and coworking spaces. On the other hand the tenants' perceptions of the concept were also examined. Based on the results, specific propositions for improvement of communication and cooperation were then suggested.

As this study was focused on a new phenomenon, the qualitative research method was seen as most appropriate—and particularly a case study. The research questions asked were the following:

- 1) How does Health Innovation Village at GE relate to incubators, accelerators, and coworking spaces in terms of its goals, income sources, facilities, management, and success factors?
- 2) How do the tenants of Health Innovation Village at GE perceive it and how could the concept be further developed?

Data collection was based primarily on interviews but also on observations and casual discussions in addition to secondary data sources in order to have several sources of evidence. Representatives of GE and tenants of Health Innovation Village were both interviewed. As there were only about 30 startup companies in Health Innovation Village, the intention was to interview as many as possible to acquire a comprehensive picture of the opinions. Some of these interviews were held face-to-face and some were done via telephone. All interviews

were recorded and transcribed verbatim. Data analysis was based on thematic categorization found in the interviews.

Based on its primary characteristics, Health Innovation Village it is clearly an incubator, although it also has many features typical of coworking spaces. The least resemblance was in relation to accelerators. However, it was difficult to place Health Innovation Village in the existing incubator classes, which is why a new classification system was introduced here.

As the goals of Health Innovation Village are rather versatile, it might be advisable to prioritize them further. Real estate appreciation is a common goal of coworking spaces. It is also their main source of income. In addition, Health Innovation Village contributes to ecosystem building like some incubators and accelerators do. However, the organizational structure of Health Innovation Village mostly resembles coworking spaces. Although its 'laissez-faire' strategy suits experienced entrepreneurs, it may not work with inexperienced ones.

The facilities of Health Innovation Village are commendable, as they have cooperative features of coworking spaces and functionality and the representativeness of incubators. Like accelerators and some incubators, Health Innovation Village has excellent entry policies. As the Health Innovation Village program is focused on networking to provide access to customers and investors, it exceeds those of most incubators and accelerators not to mention those of coworking spaces. In addition, unlike for accelerators, the support is on demand, which is preferred by the tenants. Unlimited tenancy is shared with coworking spaces and some incubators. It may be advantageous for the health technology business due to a long time-to-market scenario.

Health Innovation Village implements several of the incubator success factors. These include access to client, investor, and expert networks, excellent facilities, and a strict selection process. However, it might be advantageous if the organizational structure became more purposeful.

In general, Health Innovation Village has exceeded the expectations of its tenants. The facilities were praised as excellent except for the issues mentioned regarding wireless network connections. The location was seen as being convenient. The services also met the needs of the tenants. Especially the possibilities to participate in fairs and pitch to possible customers

and investors were considered invaluable. The atmosphere in Health Innovation Village was also regarded great.

Instead, the extent of communication and cooperation shared their opinions. Most of the tenants said they had a lot of interaction with the other tenants, but hardly anything with GE except with those few who had visited Health Innovation Village. In general, only those that had prior connections to GE or had joint projects with that organization had any interaction with GE staff. It was expected that Warrior Coffee House could function as a connective link, but the tenants also admitted that most people tended to seek out the company of familiar peers.

Another disappointment was the extent of cooperation. Although there was general agreement on the will to collaborate, the tenants felt that they did not have enough time to take on leadership of collaborative activities. Many had also expected more cooperation with GE. Instead they saw an almost total separation between GE and Health Innovation Village.

Lack of time was given as one of the reasons for both communication and cooperation issues. The tenants need information that is both clear and accessible from anywhere at any time. The use of an electrical information system could resolve this communication issue. There could be, for example, a Health Innovation Village Intranet where all relevant information was available. Particularly a shared calendar was desired where the registration deadlines of events could be easily found. Likewise, a reservation system for conference rooms was requested.

These Intranet pages could also be used to bridge the distance between GE and the tenants. As not all the tenants will get their funding from investors although they do have better access to them than other startup companies do, they likely need other sources of income. GE could hire tenants not only based on their substance knowledge, but also to have tenants that teach Lean development methods.

Curators are often used to activate cooperation in coworking spaces. Health Innovation Village could also benefit from that concept. A full-time employee could act as a project manager, take care of many practicalities, look for information, give assistance to the tenants, and keep togetherness in place. Additional duties might include the introduction of new tenants to all the others, planning activities, and following up on the development and needs and successes of the startup companies.

## **Limitations**

This work undoubtedly has several limitations. The first one is that the researcher could not reach all the intended interviewees. However, I have tried to compensate this to the best of my ability by using other sources of evidence. The second limitation concerns qualitative research in general, since it is based on interpretations on several levels, namely, how the researcher understands the phenomenon and translates it into proper questions, how the interviewees conceive these questions and form their answers. Again, the researcher has to recognize the substance, draw the best or right conclusions, and articulate them clearly to readers. All these phases may produce erroneous interpretations.

## **Suggestions for further study**

Innovation processes take longer in the health technology field than in many other industries due to health regulations and the fact that its customers are often public organizations. Health Innovation Village at GE has been in operation for less than two years when this study was conducted. Hence, the results offered here may not become perceivable until years later. Therefore, it would be both interesting and informative to conduct a follow-up research at a later phase.

In addition, the concept is still effectively evolving. For instance, the StartUp Health accelerator has not yet been opened and the number of tenants is continuously increasing. These changes will definitely have an effect on Health Innovation Village at GE. It would be especially useful to know how the accelerator will affect the community as well as the provided services.

Another health technology oriented accelerator, Vertical, was established at approximately the same time as Health Innovation Village at GE, and the coworking space Startup Hub Maria for health industry oriented startups will open yet this spring 2016. A comparative longitudinal study could perhaps better unearth the advantages and disadvantages of these competing startup support models. Especially the opinions of the startup companies could be further explored concerning the alignment of their methods to actual needs. Possible measures to use to study their success could include the percentage of tenants who gain venture capital funding, the number of new client contacts, the number of client meetings, the time-to market, and the number of pilot projects undertaken. These would serve as very direct indicators of

incubator possible effects, more so, than simply the growth and survival of these startup companies.

In the Finnish health technology industry, there are today a limited number of players. The biggest health technology firms are located in the Helsinki region as well as the largest hospital complex HUS. Both the city of Helsinki and HUS co-operate with Health Innovation Village at GE and are partners in the future startup center Startup Hub Maria. In addition, as the number of new coworking spaces is continuously increasing, it would be interesting to learn how competition affects these provided services, the ease of getting high quality tenants, and the evolution of incubators.

To date, there is still astonishingly little information available on startup founders. A comprehensive study on entrepreneurs' knowledge, education, experience, and know-how of startup techniques could be enlightening. Further, more knowledge of how these characteristics affect the tendency to join a certain type of incubator and their needs for services would be useful.

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