Leonardo Barreira Santarino

What is the difference between business incubator and business accelerator programs?

Relatório de Estágio de Mestrado em Gestão, apresentada à Faculdade de Economia da Universidade de Coimbra para obtenção do grau de Mestre

Coimbra, Janeiro 2017

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Universidade de Coimbra

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Entidade de acolhimento: Instituto Pedro Nunes (IPN)
Orientador académico: Professor Doutor Miguel Torres Preto
Supervisor profissional: Dr. Paulo Santos

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Acknowledgments

This report was not achieved alone, so I leave here a few notes about my sincerest thanks to the people that supported me on this amazing journey, and made me a more mature human being.

To start, I want to give my warming appreciation to my family: my irreverent father, my patient mother, my beloved uncles and brother in law and to my two beautiful sisters.

A special greeting for the people that represent Instituto Pedro Nunes, who welcomed me very well and for that I am lost for words, namely for the individuals of my department – IPN Incubator: Ana Seguro, Jorge Pimenta, João Paulo, and my supervisor Paulo Santos.

It cannot forget the people representing the faculty of economics from University of Coimbra, who gave me the tools to integrate the labour market and allowed me to obtain the knowledge I keen to.

An honest recognition to my academic supervisor, Dr. Miguel Torres Preto, regarding my acceptance and for all the great advices and mentoring during all the process.

Lastly to Mariana Taxa, not only for being my voice of conscience, but for all the driven motivation.

From the bottom of my heart, a thank you to all my friends.

“I’ve missed more than 9,000 shots in my career. I’ve lost almost 300 games. 26 times I’ve been trusted to take the game winning shot and missed. I’ve failed over and over and over again in my life and that is why I succeed.” –

Michael Jordan, NBA Legendary Basketball MVP

Content

Abstract

This report was achieved in the scope of an Internship concluded at Instituto Pedro Nunes – Incubator, since 1st of February till 3st of June 2016, with the goal of obtaining the masters' degree.

Startups are the engine for the jobs creation, products, disruption, lifestyles and dreams, having the ability to change the world, increasing economic and social stability. Incubator and accelerator programs can be considered as strategic players that act as pillars of ideas' development, forward turned into businesses. With a wide range of experienced business people, they leverage the knowledge and skills needed to bring success for emerging innovators. Alone, they cannot secure firm's survival, but are a huge asset to mitigate and prevent the predictable failure.

This report shows the emerging process of these industries, namely the characteristics, the value proposition, the different type of models and structure as well as the impact they have on all the economic agents involved. After a description about the goals, the tasks and the competencies developed, it is presented a final assessment and a critical overview of the internship. The conclusion gathers a brief comparison about these two programmes and an analysis about the goals foreseen.

Key words: Startups; Incubator programs; Accelerator programs; Business Models, Entrepreneurs;

Resumo

Este relatório foi elaborado no âmbito de um estágio concluído no Instituto Pedro Nunes – Incubadora, desde o dia 1 de Fevereiro até dia 3 de Junho, com o objetivo de obter o grau mestre.

As startups são o motor para a criação de empregos, produtos, disrupção, estilos de vida e sonhos, oferecendo a capacidade de mudar o mundo, aumentando a estabilidade económica e social. Os programas de incubadoras e aceleradoras podem ser considerados elementos estratégicos que atuam como pilares de desenvolvimento de ideias, com o objetivo de as tornar em negócios. Com uma ampla gama de empresários experientes, eles estimulam as competências e habilidades necessárias para trazer sucesso aos inovadores emergentes. Não conseguindo isoladamente garantir a sobrevivência das startups, são uma grande mais valia para mitigar e evitar as falhas previsíveis.

Este relatório mostra o processo emergente destas indústrias, nomeadamente as suas características, a proposta de valor, os diferentes tipos de modelos e suas estruturas, bem como o impacto que têm sobre todos os agentes económicos envolvidos. Após uma descrição sobre os objetivos, as tarefas e as competências desenvolvidas, é apresentada uma avaliação final e uma análise crítica ao estágio. A conclusão reúne uma breve comparação entre os programas de incubação e de aceleração, bem como uma análise sobre os objetivos previstos.

Sendo este fenónemo emergente, cada vez existe mais práticas de sucesso, que levam outras entidades a assumir processos de benchmarking com o objetivo de proceder a um apoio de excelência às startups que pretendem vingar num mercado cada vez mais globalizado.

Palavras-chave: Startups; Programas de incubação; Programas de aceleração; Modelos de negócios, Empreendedores

List of abbreviations

BI – Business Incubator

BIC – Business Innovation Centre

CBI – Corporate Business Incubator

CMS – Content Management System

EC – European Commission

EIT – European Institute of Innovation & Technology

ESA – European Spatial Agency

EU – European Union

GDP – Gross Domestic Product

K - 000

IBI – Independent Business Incubator

IP – Intellectual Property

IPI – Independent Private Incubator

IPN – Instituto Pedro Nunes

IPO – Initial Public Offering

IT – Information Technology

LP – Limited Partners

M&A – Mergers & Acquisitions

MIT – Massachusetts Institute of Technology

MVP – Minimal Viable Product

NBIA – National Business Incubation Association

PI – Private Incubator

PR – Public Relations

QSE – Qualified Scientific Engineers

R&D – Research & Development

RTD – Research and Technology Development

Seed-DB – Seed Database

SWOT – Strengths, Weaknesses, Opportunities, Threats

UBI – University Business Incubator

USA – United States of America

VC – venture Capital

VRIN – Valuable, Rare, Inimitable and Non – Substitutable

YDM – Y Digital Media

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1. Introduction

This internship report is included on the curricular structure of masters in management lectured in the Faculty of Economics at University of Coimbra. It is one of the steps required to obtain the graduation's degree.

The curricular internship was placed on IPN – Instituto Pedro Nunes, a private non-profit organization which promotes innovation and transfer of technology, linked to the University of Coimbra. To be coherent and to deepen the knowledge obtained with the functions as well as the ecosystem involved in, I have decided to write about incubator and accelerator programs. I became very curious about the way these two have evolved until now across the globe, how they can establish the connection between the scientific and technological environment with production sector, how they provide the tools to develop startups and how they can impact the world.

With the aim of giving answers about these phenomenon, the literature review approaches the evolution of the programs, the characteristics they possess as a network of individuals and organizations that provides valuable tangible and intangible assets and the value proposition inherent to those references. Next it is compared the different types of business incubators: which are considered the business innovation centres (BIC), university business incubators (UBI) and the private incubators (PI), branching in corporate business incubators (CBI) and independent business incubators (IBI). It is explained the different phases of the tenant's cycle, divided into pre-incubation status, incubation and post-incubation as well as the possible viable parameters to measure the performance of this program.

In the accelerator framework, the business model is heavily defined, such as the key goals, the sector and geographic focus, the mentoring package, the standardised curriculum, the different types of funding, the selection process, the screening criteria, the alumni interaction, and post-program support analysis. The accelerator cycle and key performance measures will be also analysed. The archetypes mentioned in this report are venture-backed, government-backed and corporate-backed accelerators. These three types are transversally approached on the evaluation of the business model's parameters. The impact on society, founders and investor will also be referred.

The second part of the report contains the internship review, which is going to explore the mission of the host entity - IPN- the goals proposed by this organization, the tasks fulfilled and forward, a final assessment with critical analysis.

The conclusion approaches the limitations of the work, a comparison between the incubator and accelerator programs and a brief summary about all the content analysed previously.

2. The development of the incubator and accelerator industries

In 1959, the first incubator was established in Batavia, New York in the United States of America (Aerts, & Vandenbempt, 2007).

> In the 1980s and 1990s governments worried about economic growth unleashed a range of actions of political nature to back investment in knowledge and increase cooperation based on such knowledge between the universities, state laboratories and companies with technological development in view. In Portugal, government have encouraged the creation of both science and technology parks and business incubators as fundamental infrastructures for creating habitats par excellence in the context of encouraging entrepreneurship and cooperation with universities (Marques, & Diz, 2006, p. 538).

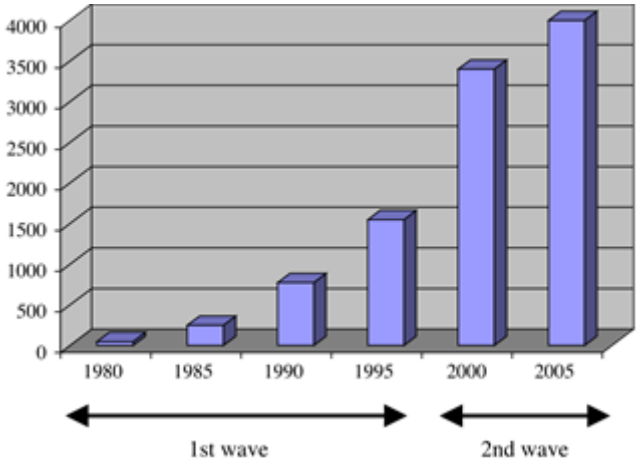
"The incubation concept seeks effective means to link technology, capital and know-how in order to leverage entrepreneurial talent, consequently to accelerate the development of startups, and thus speed the exploitation of technology" (Grimaldi & Grandi, 2005, p. 111).

> Startup is understood as a company or a human institution that is built on different branches and that spontaneously arises the condition of extreme uncertainty, has at its core innovation to create products and services which they wish revolutionize the market. A startup should not be focused on the product only, but also in its market, competitors, users, suppliers in order to identify real business opportunities. For this, a strategic long-term vision is important, with objectives outlined for the young entrepreneurs to have a guiding instrument of their actions (Moroni, & Araujo, 2015, p. 2200).

Startups can be successful against rival firms, if they create new benefits or improve extant ones to customers (Paradkar et al., 2015).

BIs became widespread in the 1980s, primarily as providers of office space, agglomerating companies under the same roof (Adkins, 2002 apud Bruneel et al, 2012). This value proposition evolved quickly during that decade when lack of business expertise became evident as a similarly important barrier to new firms' success. Throughout the 1990s, BIs expanded their value proposition beyond offering infrastructure, providing in-house business support services geared towards accelerating new firms' learning process (Lalkaka and Bishop, 1996 apud Bruneel et al., 2012). Recently, the value of networks constituted a value proposition, that formed a new category of BIs (Hansen et al., 2000), known as the second wave.

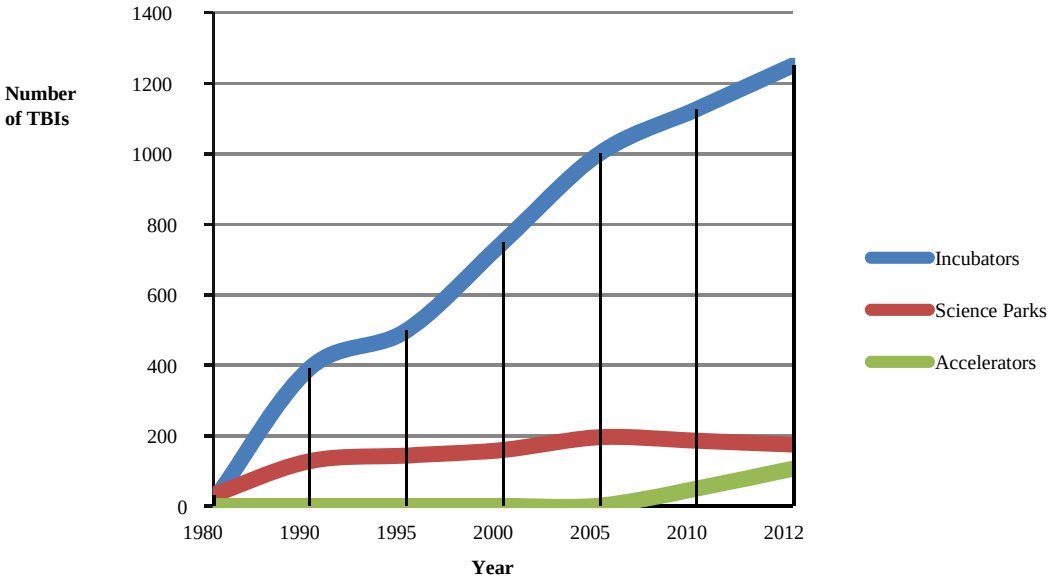
Figure 1 – Two waves of business incubation



Source: Barrow, 2001 apud Bøllingtoft & Ulhøi, 2005

"In 1980, there were 20 research parks and 11 business incubators in the USA. By 2000, an estimation of more than 600 incubators and 160 research parks was projected to USA" (Mian et al., 2016, p. 2) as it is exemplified in Figure 2.

Figure 2 - Growth of USA business incubation mechanisms



Source: InBIA, 2015 apud S. Mian et al., 2016

Globally there are about 7,000 incubator programs, one third of which are technology-oriented. In Europe alone, NBIA estimates there are more than 1,800 business incubation programs[1].

[1] Content available on: http://www2.nbia.org/resource_library/faq/. Accessed on 20th of December

Research has shown that for every $1 of estimated public operating subsidy provided the incubator, clients and graduates of NBIA member incubators generate approximately $30 in local tax revenue alone.[2]

> Most entrepreneurs rely on bootstrapping when they first start a business. That is, before they seek debt or equity funding, they first use personal savings and loans from friends or family to get their businesses ongoing. Debt financing is rarely a workable option for early-stage entrepreneurs due to the need for collateral and a defined repayment schedule (Anderson, 2012, p. 22).

Angel investors and venture capitalists are others sources of obtaining financing which are presented in the following table:

Table 1 - Angel Investors and Venture Capitalist (VC's) in USA

	Angel Investment	Venture Capital
Source of investment	Individuals investing their own money (though they often join networks to make larger investments)	Institutions – pension funds, insurance companies, foundations, etc.
Stage of investment	Seed, early and startup stage	Expansion and later-stage
Total investment	$20 billion per year on average	$30 billion per year on average
No. of businesses funded	60,000 ventures on average	4,000 ventures on average
Average investment per company in 2011	$340,000	$7.7 million
Ratio of companies funded	1 in 10 companies considered	1 in 100 companies considered
Expected rate of return	25% or higher	As high as 50% annually
Follow-up rounds of investment	Typically none	Staged financing schemes based on company reaching agreed milestones

Source: Anderson, 2012

Other platforms can be used to support enterprises besides the previous ones mentioned: impact investment firms, challenge funds, grant-making organizations, and crowd-funding (Dassel et al., 2015).

The collapse caused by the dot com bubble, originated a lot of losses for investors that could not be able to create value besides high expetations (Barrehag et al., 2012).

"Crisis causes vulnerability of small companies due to a high dependency on investors, lower consumer purchasing power, lower corporate purchasing power, lower consumer investments, and lower corporate investments" (Bueren, 2014, p. 55).

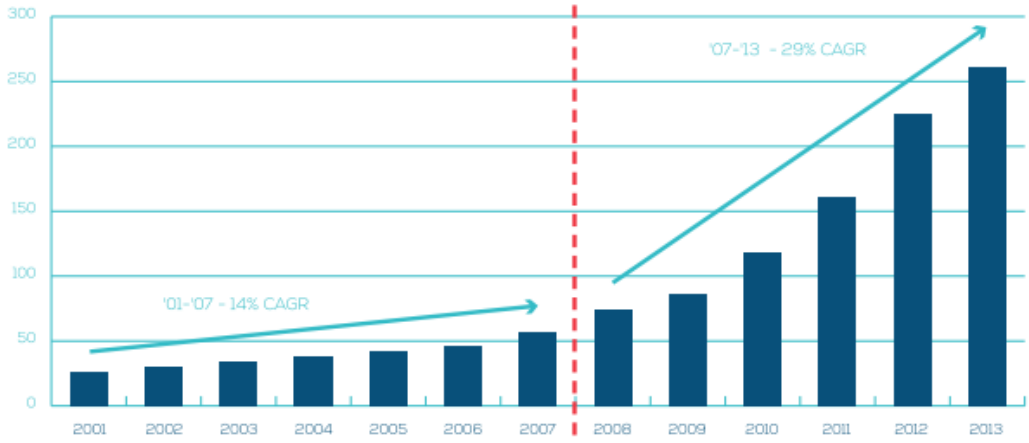
[2] Content available on: http://www2.nbia.org/resource_library/faq/. Accessed on 20th of December

Also, the growth inflection point in 2007-2008 noted both in the US and Europe, impacted negatively the development of companies, which limited the financial borrowings for companies to get funded. This recession affected the survival, number of investment rounds, and total funding of accelerated startups (Bueren, 2014).

Accelerator programs appeared due to the need of due diligence processes on startups to investors, avoiding the allocation of capital randomly. Accelerators emerged mid-2000 through the shortcomings of the resources the previous incubation models (Bruneel et al., 2012). Nowadays accelerator programs can be sponsored by private investors, governments, universities and large corporations (Rueda, 2016).

As we can see on the following picture, most programs on the main European countries were launched after the financial crisis in late 2009:

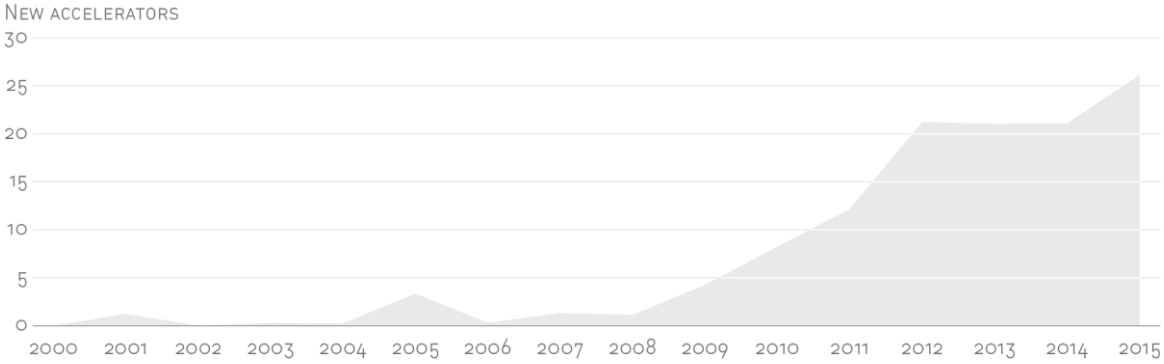
Figure 3 – Accelerator and incubator programs on 10 European countries (France, Germany, Italy, the Netherlands, Spain, Sweden and the United Kingdom, Czech Republic, Slovakia, Ireland)



Source: Salido & Freixas, 2013

Between 2009 and 2015, the number of European accelerators grew consistently annually (Brunet et al., 2015)[3].

Figure 4 - Evolution of the accelerator industry in Europe



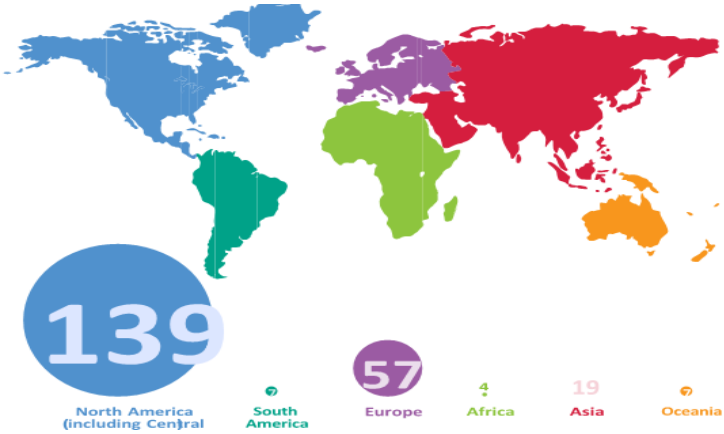
Source: Brunet et al., 2015

"Lower technology costs, easier routes to customer acquisition and better forms of direct monetization have paved the way for high technology teams to quickly bring a product to the market" (Huijgevoort, 2012, p. 24).

The decrease in startup costs allowed the investment of smaller amounts of money than previously (Hochberg, 2015).

In 2016, Seed-DB has estimated 187 programs world-wide**,** 6495 companies accelerated, with 869 exits for $ 5,334,648,600 and $ 22,699,099,145 regarding funding scenes[4]. In 2014, Seed–DB shows where the programs are based, with the majority – almost 62 per cent – located in North America and another 25 per cent in Europe (NESTA, 2014). Figure 5 represents the 225 accelerators worldwide:

Figure 5 - 225 accelerators worldwide



Source: NESTA, 2014

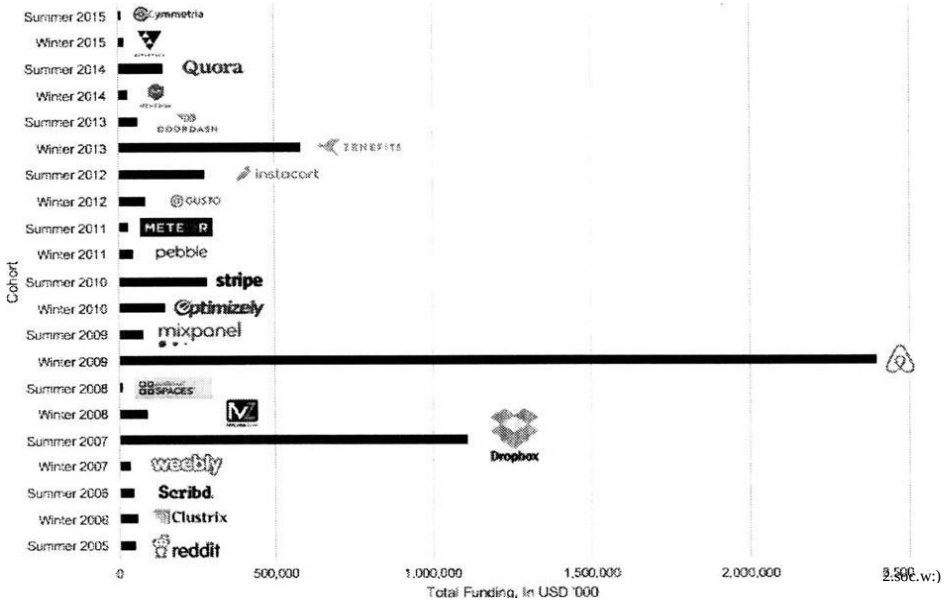
[3] Content available on: http://www.fundacity.com/european-accelerator-report-2015. Accessed on 10th of January

[4] Content available on: http://www.seed-db.com/accelerators. Accessed on 5th of December

According to Salido & Freixas, (2013) Europe and the USA are comparable in number of accelerators per capita.

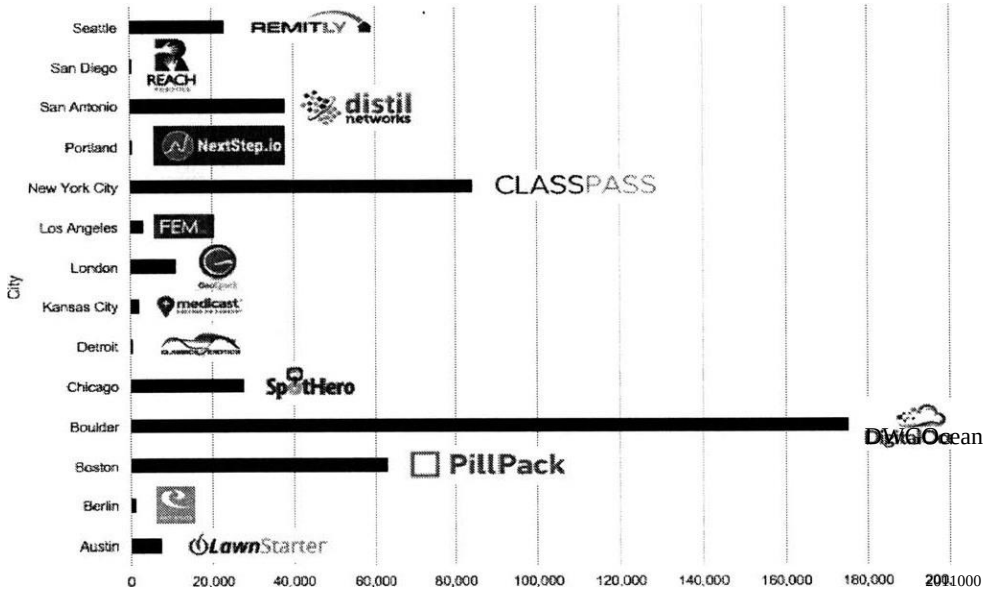
Y Combinator was launched in 2005 in Boston, being the first accelerator program and followed by Techstars, which was founded the next year in Boulder, Colorado. They are traditionally considered the most programs recognized (Tasic & Cano, 2013, p. 6)**.** The following pictures demonstrate the companies funded on Y Combinator and Techstars.

Figure 6 – Startups funding on Y Combinator



Source: Bueren, 2014

Figure 7 – Startups funding on Techstars



Source: Bueren, 2014

"In 2010, an important European accelerator, Startupbootcamp, opened its doors in Copenhagen. It has hosted more than 200 startups across Europe and the United States. Its model

is comparable to the Techstars', as both set up industry focused accelerator programs across Europe and the US. By now Startupbootcamp has run accelerator programs in 14 different cities on three different continents" (Bueren, 2014, p. 6)

2.1 Characteristics and value proposition of incubators

"An incubator is a network of individuals and organizations including the incubator manager and staff, incubator advisory board, incubated companies and employees, public authorities, local universities and university community members, industry contacts, and professional services providers such as lawyers, accountants, consultants, marketing specialists, venture capitalists, angel investors, and volunteers" (Hackett & Dilts, 2004, p. 57).

NBIA (National Business Incubation Association) defines business incubation as a business that supports process that accelerates the successful development of startup 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. A business incubator's main goal is to produce successful firms that will leave the programs financially viable and freestanding. These incubator graduates have the potential to create jobs, revitalize regions, commercialize new technologies, and strengthen local and national economies[5].

The common goal of universities, industries and government is to develop an innovative environment. This would be achieved by fostering and creating a general climate of entrepreneurship, for instance: setting up spin-off companies from universities, technology transfer offices and licensing agreements; partnerships between innovators and large corporations to develop their business units, signing c with government laboratories and academic research groups or promoting the economic development structures based on knowledge, such as science and technology parks and business incubators. These various trilateral university-industry-government combinations – Triple Helix - will generate a dynamism that promotes and creates an equilibrium between the different systems (Leydesdorff, 2010 apud Marques et al., 2006). Business incubators represent the fruit of this dynamic, helping innovators to obtain sustained competitive advantage through the providence of tangible and intangible assets that new firms lack for developing their products. These resources become crucial since new firms cannot absorb failure in comparison with other mature ones, as they don't rely on the same capacity. It reduces their error margin. Tangible assets include financial and physical (office equipment, shared offices service, space and building capabilities conference or meeting rooms, office service

[5] Content available on: http://www2.nbia.org/resource_library/faq/. Accessed on 20th of December

(involves day-to-day office tasks, such as answering phones and entering data into spreadsheets, word processing and typing, photocopying and collating, record keeping and appointment scheduling), cafeteria and lunchroom, building security). Tenants profit from existing economies of scale within BIs when renting office space together with shared resources which allows the reduction of overhead costs. Some of them include energy, water, telecommunications and cleaning (Bruneel et al., 2012). They also help the startup by providing the right network, either internal or external, to outsource their resource needs, making them more are able to perform better and commercialize on a faster way (Baraldi & Ingemansson Havenvid, 2016). On this level capital, proprietary, equipment and plants are taken into consideration.

Intangible assets include business assistance such as business planning, grants, tax and government regulations assistance and grants, product enhancement, personnel recruiting, marketing and management skills, accounting, intellectual property expertise, accessing financial capital (equity or debt), and accessing business contacts, (Hansen et al., 2000; Mian, 1996), such as relationships with other firms, like partners, suppliers, buyers.

An Australian incubator referred that "In general, companies entering our incubator must have a prototype of the product and a deep understanding of the market. Those that approach us with only a business plan are required to complete an extensive application form. If they are accepted then we will spend up to six months helping them do market research, in which we will identify target markets, find the first set of potential customers and validate the product idea"(Rubin et al., 2015, p. 18).

Incubators act as a broker to the public policies incentives for entrepreneurship. The different types of instruments, used widely in recent years in Europe include subsidies and grants, tax incentives, funding for networking with companies and research institutes, and facilitating information on market conditions (EC, 2009).

> Subsidies are common innovation policy instruments that consist of economic grants that are not repaid and undiluted. The lengthy process of applying for a subsidy typically involves elaborating complex research project and budgetary proposals, meeting standards of quality, passing a number of technical reviews and eventually satisfying public economic conditions and controls regarding expenses related to the project, which allied with the lack of knowledge about structuring the projects, the specific address and communication with reviewers can difficult the calls applications. This type of activities can be only successful with *learning by doing* process provided by experienced people as incubator managers (R. Antolín-López et al., 2015, p. 27).

The incubator helps the firm understanding tax incentives systems that reduces the costs of innovation by the deduction of the resources invested from the total amount of taxes that the company must pay at the end of the fiscal year. (Yang et al., 2012).

As they have negative cash-flows in the initial years, in the EU, regulations frequently allow tax reductions to be carried forward for a certain number of years until the firms can obtain benefits from the tax incentives.

Public policies may also facilitate and fund attendance at trade fairs to obtain marketing information, and access to potential customers and suppliers (Antolín-López et al., 2015).

Technical assistance includes the access to university research activity and technologies, laboratory and workshop ativities (Mian, 1996), industry contacts (Hansen et.al., 2000), technology transfer processes, intellectual property protection (Hannon, 2005 apud Scillitoe & Chakrabarti, 2010) like patents, copyrights, trademarks and trade secret, which establish competitive advantage through the incremental revenues by selling and licensing IP (Brigl et al., 2014), and technological know-how skills, design and production skills (Scillitoe & Chakrabarti, 2010).

Social capital is a valuable intangible capital that can be defined as the goodwill or benefit available to the people within a social network (Adler & Kwon, 2002). Incubators encourages cooperation that allows the division of a project into parts, avoiding costly investment in resources such as laboratories, equipment and/or experts. Collaboration accelerate "learning by doing" processes. In most cases, established, developed and independent firms may prefer to conduct research in-house to gain control of the research process and ensure ownership of the innovative results (Sakakibara, 2002). The ability of the incubator management to act as a developer for the venture depends on the time allocated, the intensity of engagement or interactions with the venture, and the readiness of the venture to gain such support (Rice, 2002).

> There are different types of counseling: (1) Reactive and episodic counseling, which is entrepreneur initiated—the entrepreneur requests help dealing with a crisis or problem and the assistance is focused on this problem and is generally of limited duration. (2) Proactive and episodic counseling, which is incubator initiated—the manager engages entrepreneurs in informal, ad hoc counseling. (3) Continual and proactive counseling, which is incubator initiated—the venture is subjected to an ongoing review and "intense-aggressive" intervention by incubator managers (Rice, 2002, p. 175).

With this, the mutual benefits can be reached since the venture can learn from the incubator management support and incubator management can learn about the needs of the venture to offer relevant assistance (Scillitoe & Chakrabarti, 2010). It is demonstrated in the following examples:

> The firm was facing a series of negotiations with potential alliance partners related to licensing of its proprietary technology. The incubator manager not only delivered the entrepreneurs his knowledge related to negotiation, he also engaged in role-playing and sat in on the initial negotiating sessions. This allowed him to provide on-the-spot counsel. In addition, later on he provided

> feedback to the entrepreneurs on their performance—which assisted their development as negotiators, thereby leading to improved performance in subsequent negotiations (Rice, 2002, p. 164).

From this social capital perspective, incubatees can utilize two kinds of networks: internal and external. Internal networking is a service provided by the incubator that foster the relationships among companies inside the incubator (Bøllingtoft & Ulhøi, 2005). Such interactions help address the liability of newness that all incubator firms experience, through the exchange of resources and knowledge (Soetanto & Jack, 2013). It is figured in two categories: vertical and horizontal cooperation.

In horizontal cooperation companies combine their competencies from related businesses which create the possibility of offering a customer an overall solution. This enables the small companies to compete with large companies (Bøllingtoft, 2012). Examples are mentioned below:

> We are going to visit a customer tomorrow and present next year's strategy for their internet and discuss it with them. Without doubt, what they really want next year is a content management system. This is a system, where the customer himself can maintain everything. And we don't have any CMS solutions. But Company B has. And because we have no experience with CMS, we could say to Company B: 'If you make this for us, we will sell it to the customer'. But we will also have to – if we should be a part of it – know how it is done. So, we choose to bid for the job together (Bøllingtoft, 2012, p. 311).

Vertical cooperation takes place when a firm lets another company in the incubator run its own servers or serving as suppliers. Second, the companies also engage in vertical cooperation with the other firms in the incubator in order to serve their own customers (Bøllingtoft, 2012).

The advantage for the customer is the fact that the customer only needs to have contact with one company (Bøllingtoft, 2012):

> Basically, you buy a service available. We have e.g. used Company C for translation. We were at a customer presenting a web solution and suddenly realized that some of their pages should be in English they [the customer] say that they have a secretary who is a language specialist in their company and she would translate whatever it is necessary into English. We say 'If you suddenly realize that you do not have the time for translation anyhow, we know someone able to help you out' 10 days later we receive a mail because the secretary has realized that her qualifications were not up to date, and would we be so kind as to help them. We go down to Company C. They use 10 min. For the customer, it has been a piece of cake. All expenses in one invoice and no trouble at all (Bøllingtoft, 2012, p. 311).
>
> We do have here some dentistry equipment for example, but if needed heavy equipment is needed, our firms rent hours in universities' laboratories by the hour. The same is done for with other R&D processes, if a firm doesn't think

> it need a full-time engineer, it can outsource the development process to an independent engineer or a university consultant. Most of our R&D is conducted outside; you cannot really do much in house with our budget per firm (Rubin et al., 2015, p. 17).

External networks, however, are also crucial to incubatees as they link companies with external agents, such as potential partners, customers, employees, university researchers and financiers (Bøllingtoft & Ulhøi, 2005). Examples of external networks are shown below from an Australian and an Israel Incubator, first and second respectively:

> One of our selling points for independent entrepreneurs is having access to university experts. Our strong relationships with universities allow us to provide this advantage to our firms" (Rubin et al., 2015, p. 17).
>
> We use consultants from universities for evaluating new tenants when the technology is not in our area of expertise. At times, they become involved in the firm once they enter the incubator, sometimes even chairing them (Rubin et al., 2015, p. 17)
>
> We had a venture that developed a children's educational software that was promising but was having trouble distinguishing itself in the market. There was a lot of educational software on the market already. I connected the founder with a voice recognition expert within the university, making introductions and arranging meetings, and the outcome was educational software for the disabled. The additions of the voice recognition technology helped the firm stand out in the market and generate sales (Incubator Manager, New York State, 2003 apud Scillitoe & Chakrabarti, 2010, p. 164).

An Israel company states that

> with our budget we cannot conduct all the work in-house, we rely on outsourcing our R&D projects, we have our people that we work with outside the incubator, it's easy, fast and saves a lot of efforts to our firms (Rubin et al., 2015, p. 18).

An Australian firm talked about using a mechanical prototype manufacturer whose services are often used by the incubator firms, saying

> Working with a contractor that the incubator has worked with before makes the process easier to manage as they understand the needs of incubator firms (Rubin et al., 2015, p. 18).

The marketing assistance needed by incubated ventures involves the dimension of the marketing, by understanding who will buy their products or services, in what form, and for what price (Rice and Matthews, 1995):

> For marketing support, we try to offer two sources: access to library with electronic databases, periodical and journals and also, through the Small Business Development Center, a team of researchers in the state that work with

> them on market research. Many firms are frustrated with finding market information and many are not concerned; we try to challenge them. I ask them to identify ten people who would buy their product and then call them. Need to be specific in that regard (Incubator Manager, New York State, 2003 apud Scillitoe & Chakrabarti, 2010, p. 165).

Typical incubators offer training or educational services such as short courses, seminars, or workshops (Abduh et al., 2007 apud Wang et al., 2008) as well as coaching. 'Coaching' refers to one-to-one support initiatives geared to accelerate tenants' learning and skill development processes, generally involving tenant firms being assigned coaches or mentors, either for a fee or free of charge (Barrow, 2001 apud Bruneel et al., 2012). The performance of incubated firms is the key measure for the credibility, reputation and influence of an incubator (Wang et al., 2008).

The incubator network lowers the transaction cost for the tenants, through reducing resource and/or information costs (Williamson, 1975 apud Aerts et al., 2007). Founders have the possibility to gain access to resources more cheaply by using their network contacts than if they were in a situation where they had to resort to market transactions, as well as the same credibility and reputation the incubator offers (Bøllingtoft, 2012).

In relation with industrial sector, incubators might focus on a specific industry and develop a capacity to attract startups in the same industrial sector or in different ones. A generalist incubator attracts startup companies that are active in a wide variety of sectors or technologies. Thus, the generalist incubator's strategic intent is to offer onsite, in-depth operational business activity services and personal contacts to startup firms active in a wide variety of sectors or technologies.

"For example, one of the generalists in our sample employs an incubator manager who previously worked for a large, nonprofit advice organization and thus can suggest personal network connections related to tenants' operational business activities" (Vanderstraeten & Matthyssens, 2012, p. 661). "In contrast, focusing on specific industries, provides high quality advisory services, premises and equipment, which benefit both the incubator (cost reduction) and the incubatees (quality of advice, tailored premises)" (Barbero et al., 2012, p. 889).

2.2 Types of BIs

In a knowledge based economy, the university plays an active role in the innovation system, by being the innovator and the manager, acting as both suppliers of human capital and innovations as well as physical space for companies The goals are dividends accruing from business and job creation and from the stimulation of commercial and industrial activity (Marques et al., 2006).

In Europe, the first and most popular public incubators were the **BICs (Business Innovation Centers)**: their origin dates back to 1984, when the first Business Innovation Centers (BICs) were set up on the initiative of the European Commission in Belgium. They are non-profit oriented. The basic services of BICs consists in offering space at low prices, commodities, infrastructure, communication channels, information about external financing opportunities, visibility not available in-house. The impact on regions are very significant since they are able to revitalize them. The major aim of incubatees is targeting local markets. The biggest problems consist on acquiring advanced technological knowledge, access to funding, lack of contacts with universities, and limitation on advanced management and economic/financial skills. The funding comes from national, regional or international entities and by charged fees for the services (Grimaldi & Grandi, 2005).

Another example of public incubators is represented by **University Business Incubators (UBIs),** a non-profit oriented entity. Government policy-makers increasingly view science as a vehicle for energizing national and regional economies and with increasing frequency ask universities to lend resources, learning times and talent to economic development efforts (Mian, 1996). That's why some of these incubators are located near university campus. Although the main goal of universities is education, they can still make substantial contributions to local economies through faculty *spin-off ventures*, and other technology transfers mechanisms: *informal discussions of research resu*lts and techniques between individuals supported by government funds (transferors) and individuals working in the private or public sector, *formal dissemination of research results*, for example, at conferences, workshops, *licensing* of university and national laboratory patents to the private or public sector, *joint venture* of R&D and joint research projects, *cooperative R&D agreement* between a university or laboratory and the private or public sector, *a contract research* between a research center and a firm, a *transfer of personnel* can be used to exchange expertise and information either from industry to laboratory or from laboratory to industry (Purushotham, 2013). There are two main categories of services offered by UBIs:

> (a) typical incubator services including shared office services, business assistance, access to capital, business networks and rent breaks; and (b) university related services based on the technology transfer programs including faculty consultants, laboratories, student employees, university image conveyance, library services, labs/workshops and equipment, mainframe computers, related R&D activity, employee education and training, and other social activities (Mian, 1996, p. 327):

The link university incubators have with regional government institutions makes it easier to help firms succeed in the participation in European R&D programs which are more competitive then national ones. University Technology Transfer Offices help university incubator firms by

providing information on how to structure proposals, how to cooperate with external agents that are interested in jointly participating on a call proposal. University incubator firms become more competitive when accessing funds from European R&D programs (Grimaldi & Grandi, 2005). University incubator firms can also easily reach a large pool of qualified scientists and engineers within the university (Barbero et al., 2012).

The IT revolution on the second half of the 1990s enabled the speed to market, quick access to capital, synergy, network which changed the incubator industry (Chinsonboon, 2000); These market changes led to the growth of private incubators, e.g. profit-oriented institutions, fee/equity as the means of revenue with short-term oriented. The equity may go up to the total control of the company as well as taking a percentage of revenues from incubated companies or liquidity events of incubates (Grimaldi & Grandi, 2005). A liquidity event occurs when an incubated company either goes public or is bought by another firm, and the incubator has the opportunity to sell its stake. They aspire to help entrepreneurs by providing pre-seed, seed and other early investments that have been traditionally offered by angels and early-stage venture capitalists.

According to Grimaldi & Grandi, (2005, p. 113),

> they offer business guidance, connections to their network of contacts, the ability to take on the tasks of managing an office, hiring and payroll. Finally, they can shorten the time a startup needs to prepare itself for a trade sale or IPO. The main services offered include the efficient completion of the entrepreneurs' business models, validation and vetting, the provision of experienced operation staff, recruiting mechanisms, instant infrastructure, networks of relations with key strategic actors; access to a network of domain experts for all aspects of business. Private incubators do not benefit from public grants.

Their management teams are deeply involved and offer management advices day-by-day (Barbero et al., 2012).

Private incubators can be divided into two main categories: **Corporate Business Incubators** and **Independent Business Incubators** (Grimaldi & Grandi, 2005).

These new business units (corporate spin-offs) requires an entrepreneurial culture that challenges existing technical competencies and requires a redefinition of what the company's business is supposed to be.

> The R&D pipeline is optimized for ideas that fit into dominant business and technology strategies, so unwanted projects are often eliminated or spun off. Company-internal incubators offer the opportunity to retain and gather projects that do not fit in the company but are still attractive from a profit/revenue point of view. Incubators were given a certain amount of autonomy and were removed from traditional hierarchical lines of command. The access to a

> number of corporate functions, such as legal services, accounting, common distribution, marketing knowledge, operations and purchasing helped internal startups obtain vital professional and business services under favorable conditions (Von Zedtwitz, 2003, p. 189).

It is quite common for the source-organization company to control all the new ventures by holding equity stake of as much as 25%. They gain benefits through the outsourced R&D and also to enhance employee recruitment. (Brigl et al., 2014). Generally, these incubators, like university incubators, intervene during the early stages of the business development cycle (Grimaldi & Grandi, 2005).

IPIs are incubators set up by single individuals or by groups of individuals, who intend to help rising entrepreneurs to create and grow their business (Von Zedtwitz, 2003). They invest their own money in the new companies and hold an equity stake, which might choose for industrialized areas, varying of the area of expertise (Grimaldi & Grandi, 2005). The key advantage of incubators lay in adequate on-site management such as the allocation of time and resources, quality of management assistance, and distribution of investment funds across a variety of startups. They attract a preferred profile of an entrepreneur and help the development of companies in a particular environment (Von Zedtwitz, 2003).

> We believe that UBIs could be placed somewhere between the other two types of incubator. Their incubating model is similar to that of BICs, since they rely on incubatees' fees and on public subsidies". They are less 'time sensitive' than the new breed of private incubators in terms of reducing their incubatees' time-to-market, provision of capital, advanced management, financial competencies and speeding up liquidity events (Grimaldi & Grandi, 2005, p. 114).

2.3 Process of Incubation

The incubation industry gathers three phases of its process to the incubatee:

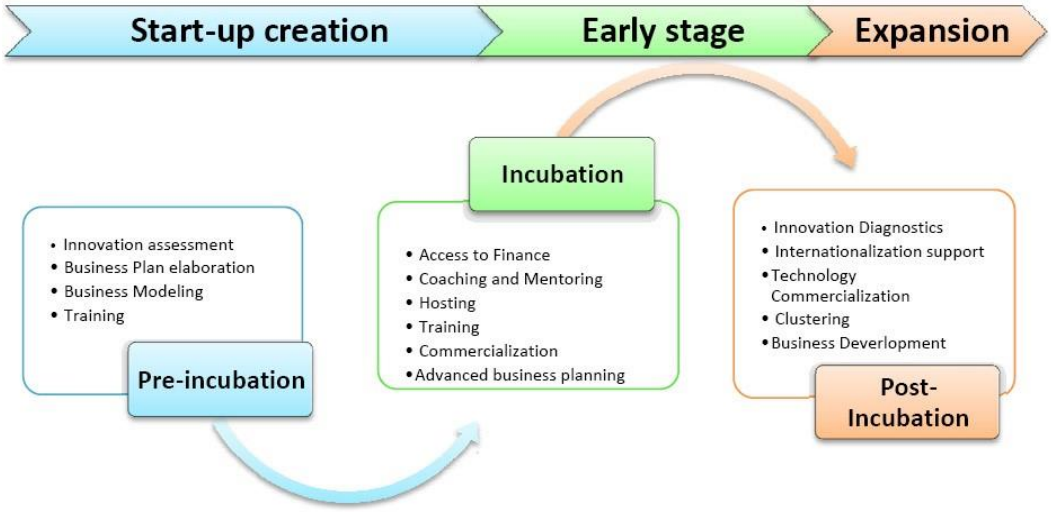
Pre-incubation phase – Relates to the overall activities needed to support the potential entrepreneur in developing his business idea till the creation of startup (EC, 2010). Starts with the application form, followed by an informal meeting between the innovators and the incubator managers, until the availability of the formal incubation (Caetano, 2012). The application gathers relevant factors such as the business idea, potential market, industry competitiveness, technological requirements, entrepreneurial team, sector of activity and end years of existence. This phase also gathers the constitution of the company, physical installation and the definition of the business plan.

Incubation phase – It's a mid-term process that concerns the support given to the entrepreneur with the aim of expansion (EC, 2010). This phase includes the tangible and intangible services referred above, and lasts 3-5 years of development.

Post–Incubation – concerns the activities carried out when the company has reached the maturity phase. Services might be needed to improve its sales, productive process, internationalization and product innovation. Incubators positioned as post incubators sometimes are renamed as accelerators (EC, 2010). IPN is a clearly example of that, and a role model for this process. This phase finishes with the "graduation", either by the income level or by deadlines or even by the increased rent as an incentive for non - performing startups to leave. They gather one of these five levels:

> The incubatee is surviving and growing profitably; the incubatee is surviving and growing and is on a path toward profitability; the incubatee is surviving but is not growing and is not profitable or is only marginally profitable; incubatee operations were terminated while still in the incubator, but losses were minimized; incubatee operations were terminated while still in the incubator, and the losses were large (Hackett & Dilts, 2004, p. 74).

Figure 8 – Business incubation process



Source: EC, 2010

Growth measures include examining increases in number of jobs created, sales over time, number of incubatees supported, innovations patentable, strategic alliances formed, financing obtained, survival rate and exports rate.

2.4 Business accelerator model and archetypes

Startup accelerators support early-stage, growth-driven companies through intense, rapid and immersive education and mentorship with the access to financing. Startups enter accelerators for a fixed-period of time, and as part of a cohort of companies, gathering competencies on few months instead of getting them for years of learning (Hathaway, 2016).

According to Cohen, (2013) the distinct factors of accelerators are: fixed-term orientation, cohort-based, and mentorship-driven which culminate in a graduation or "demo day". An application process is open to all community but highly competitive. It provides a pre–seed investment, usually in exchange for equity, focusing on small teams (Tasic & Cano, 2013).

The accelerator model is exposed and explained forward:

Table 2 – Accelerator model

Strategic focus	***Programme Package***	***Funding***	***Selection Process***	***Alumni Service***
Key objectives	Standardised Curriculum	Funding of the accelerator	Screening criteria	Alumni interaction
Sector focus (diversified vs specialisation	Mentoring Package	Funding of startups	Selection processes	
Geographic focus (local vs global)				

Source: Clarysse et al., 2015

Strategic focus

"**Venture–backed** accelerators typically exist to provide **better deal flow** for investors (NESTA, 2014, p. 7)".

> From the perspective of the VC investors, accelerators serve a dual function as deal sorters and deal aggregators. The accelerator typically raises a fund in the form of a Limited Partnership, similar to the structure used for a VC fund. These VCs serve as mentors in the program thus getting an early look at the startups, business plans, team dynamics and progress over the term of the program and looking at the best companies in each cohort often close funding before they ever reach demo day. Rather, the investment in the accelerator limited partnership is viewed as a fee to fund the deal screening and aggregation, with the costs split across multiple VC funds (Fehder & Hochberg, 2015, p. 7).

The investments in the accelerator program are made by the VCs with the aim of getting access to the portfolio of companies accepted, which allows the VCs to place larger bets when they acquire more information about them during the program stablished. The accelerators fund their activities and salaries directly from the fund capital they raise, as well as sponsorship from other service organizations that aim to get access to the early selected companies (Hochberg, 2015).

"A **government–backed** accelerator may be established with the goal of **local economic development**" (NESTA, 2014, p. 7).

"Agencies have an interest in supporting local, regional, or national startups activity in order to foster the regions competitiveness in terms of technology and jobs. Compared to investor accelerators and corporate accelerators they are less risk averse and prefer investing in very early stage companies" (Bueren, 2014, p. 10).

Impact accelerators can increase social impact which can be measured through some metrics such as the number of beneficiaries reached or the number of incidences from malnutrition that could be reduced (Dassel et al., 2015). "For governments, social investment foster the economic growth, support public service delivery and encourage social innovation. For charitable foundations, it can be a way to further their mission, and for large private companies, to enhance corporate social responsibility commitment" (NESTA, 2014, p.8).

> At this point startups, have rarely developed a complete value proposition and a team might only be in the ideation stage. EforAll, for example, is an ecosystem builder that is dedicated to revitalize mid-sized US inner cities that are suffering of poverty and unemployment by supporting local entrepreneurs. EforAll is based in Lowell, where they support 15 to 20 entrepreneurs through mentorships and workshops. Also, they have access to a $ 30,000 funding pool at the end of the three-month acceleration period. EforAll is funded by different private institutions, foundations, and the City of Lowell (Bueren, 2014, p. 10).

Inner cities (economically distressed parts of a city) can be helped by impact accelerators as they integrate the inner city by fostering the connection with industries to strong regional clusters, through inputs, outputs and skills, fostering employment outcomes (Delgado & Zeuli, 2016).

"A **corporate–sponsored** accelerator emerged in 2010 and may be established either to help **tackle specific research issues**, or else to help **develop an ecosystem** around a core technology" (NESTA, 2014, p. 7).

> In Europe, today, there are already plenty of corporate accelerators, and their number is growing; some invest for equity, others don't, some impose commercial preference rights, while others just financially sponsor the accelerator. Startups are, in many ways, the complete opposite from large corporations. Startups are often described as nimble, cost-conscious, fast-

> decision making, fail fast, risk-taking organizations, with overworked (and often underpaid) but super motivated employees. Large companies, on the other hand, are complex organizations, with lots of cost-controls, but are not necessarily cost-conscious, slow at making decisions, and in general, promoting a careful approach to change. These types of corporate cultures don't necessarily promote entrepreneurial mindsets (Rueda, 2016, p. 9).

Corporate accelerators provide in-house mentors to collaborate with the startups, by supporting the startup in learning processes about the corporation and creating potential win-win collaboration, but at the same time, with the priority of learning about the startup, by understanding their thinking, attitude, processes and technologies (Rueda, 2016).

> Determine if equity stakes in startups are necessary. Corporates should think hard before investing in an early stage startup. Setting up pilots to test the commercial viability of collaboration between the startup and the corporate probably makes sense before an investment is committed.
>
> An accelerator can't be an M&A strategy. For those corporates who have implemented an accelerator as an M&A strategy, they often do not appreciate the early-stage nature of the startups that ordinarily participate – many of whom are still trying to achieve product market fit and have little or no traction.
>
> A corporate accelerator should recruit startups with functional prototypes. It is easier to identify commercial opportunities within the corporate if a startup's product or service has moved past the conception and ideation stage and there is more than an MVP in place.
>
> A corporate accelerator must engage all the organization. The best ambassadors of the program will be its employees. Employees across the whole company should get a chance to meet with the startups at showroom events or participate in talks and events organized at the accelerator. Finally, there is a delicate balance between the corporations' objectives and those of the startups participating in the program. These can be aligned and the corporation must strive not to harm participating startups by demanding excessively (Rueda, 2016, p. 12).

"For example, Accenture runs the Fintech Innovation Lab in order to provide a platform where Fintech startups and the financial industry can collaborate on current innovations, which strengthen the client relationships of Accenture" (Bueren, 2014, p. 11).

> Other model, "Powered by," consists in corporations contracting with others to run an accelerator for them. The most prominent organization engaged in "powering" corporate accelerators is Techstars, and notable such programs are the Disney Accelerator Powered by Techstars, Barclays Accelerator Powered by Techstars, Sprint Accelerator Powered by Techstars, and the Kaplan EdTech Accelerator Powered by Techstars. In this model, the outside powering organization provides services such as program creation and management,

> staffing, marketing and back office services, as well as physical space where requested. A third model has corporations creating their own, internally-run and led accelerators, as is the case for Microsoft, Telefonica and others (Hochberg, 2015, p. 24).

What is the sector/specialization focus? Specialization can be a way of differentiating a particular program by creating a selling point attractive for startups and investors. For a particular industry, accelerators partner up with relevant industry players, including executives and external experts. A credible and related network is required (NESTA, 2014).

> For example, Blueprint Health in New York City was founded to address the unique difficulties of trying to build a healthcare business, such as navigating the healthcare industry's unique workflows and payment models. It now has the largest healthcare-specific mentor community of any accelerator, including 150 healthcare entrepreneurs, investors, industry executives and clinicians (Anderson, 2012, p. 12).

It is also a considerable advantage to work with web or mobile based startups, because the program last only few months and the changes that affects the products have to be done on a faster way (Barrehag et al., 2012). According to Miller & Bound, (2011), web-based technologies can be quickly and cheaper developed.

"To obtain revenue, some accelerators organize events and workshops. For example, TheFamily sells tickets for events, which has turned into a profitable event business. A paid learning program was introduced by L'Accélérateur's 'School for Entrepeneurs'" (Pauwels et al., 2016, p. 19).

Pursuing the wrong type of venture, with an inadequate program, without the potential to scale will spell failure (NESTA, 2014).

What is the geographic focus? Local programs (running in only one location, such as Y Combinator in Silicon Valley) or in multiple locations (running "franchises", such as the Techstars program) (Tasic & Cano, 2013).

Program package

"The accelerator takes about three months of duration and the educational and social network components are cornerstones of all acceleration programs, being used as a competitive advantage to attract and retain the best startups and founders" (Tasic & Cano, 2013, p. 7). The program follows shape, build and selling phases: the initial phase focuses on the mentoring of the teams to form ideas into a scalable business. After the initial shape process the teams start building their idea. The third part is sell, which is all about demo-day and pitching practice (Barrehag et al., 2012). In the program is approached the *lean startup* concept which is inspired by Steve Blank

whose methodology is about process of finding a scalable and viable business, through the combination of ideas to the management of customer development and agile software development. The aim is to create a minimum viable product (MVP) which is the most basic product features attempting to solve the customer's problem. Once it is created the startup should start to measure and learn through repeated customer interactions and learning feedback. This iterative process will guide them in building the right product for their final user or whether to pivot (start over) (Ries 2011 apud Barrehag et al., 2012).

The accelerators offer different activities, according with NESTA, (2014, p. 22) such as:

> **Co–working space** – important for knowledge sharing and collaboration (although some accelerators only bring their businesses together occasionally, such as Y–Combinator). **Regular interactions with the management team** – to review progress and provide business advice. **Peer mentoring -** This is a huge benefit of incubating ventures in cohorts – since they are experiencing the same issues, they can help each other out, on everything from how to hire their first employee to solving complex coding problems. **Networking opportunities** – Besides mentors, startups do not need investment alone, but also access to markets. Successful accelerator programs have, or can create, access to key customer networks – both nationally and internationally. **Training programs** – which typically include seminars and vocational training courses covering topics such as financing, design, PR, marketing, logistics, human resources, legal aspects and other subjects. The package gathers also inspiration talks. **Office hours with mentors:** navigating a large network of mentors with varied skills can be difficult for early–stage ventures, so some programs offer open sessions with mentors that startups can sign up to as and when they need. **Demo days** – these may also be arranged by the accelerators, where ventures graduate and pitch in front of qualified investors.

Customers can also be present and assess startup pitches, with presentations of MVP.

Even if investors don't want to invest immediately, they can act as a valuable source of counseling and connections for the startups involved. Mentors and mentees are matched through speed dating or matchmaking events, which enable teams and mentors to find interests compatibility.

Mentors follow a culture based on the ambition of helping create a better ecosystem of entrepreneurship – altruistic mentality. "Many of the mentors have also an active interest in keeping up to date with the latest developments in the startup community. By creating mutual

trust with startups, there is a chance of becoming later-stage investors and advisors" (Barrehag et al., 2012, p. 45)

The accelerator trainings focus on:

> *market research* which consists on research and analysis on market dynamics, relevant policies, customers, and potential competitors. *Business development and strategic planning* that includes all the needs of an enterprise as they establish and develop their business, such as the procurement of physical office space, establishment of back-office functions such as IT support and human resources, recruitment of human capital, and any legal support. In addition, this category includes the development of a business plan and ongoing business strategy. In terms of *financing*, entrepreneurs should care about seed funding, funds for ongoing operations, such as equipment, raw materials, marketing, and inventory; and funds for expansion. *Supply sourcing and production* is based on sourcing raw materials and create an efficient production of goods. *Sales and marketing* gathers the promotion and sales of goods or services. *Distribution and market access* relates to the activities of access the appropriate distribution channels - both individuals and organizations - to reach target markets and consumers. *Monitoring and evaluation* analyze performance and impact metrics of the enterprise that provide insights on how to adjust and optimize the business model. *Leadership skills* addresses the inherent qualities that make an impact enterprise leader not just a social visionary (in context of impact accelerators), but also someone who has the skills to commercialize an idea and perform basic management tasks, such as conducting meetings, overseeing employees, and coordinating disparate work streams (Dassel et al., 2015, p. 5).

Funding

Accelerators can obtain the working capital to invest in startups through private investors (angels, venture capitalists), large companies and public authorities such as regional economic development agencies) (Tasic & Cano, 2013). "The venture-backed accelerator programs usually take equity in the startups and hope to make a return on those shares" (NESTA, 2014, p. 17). The equity stake taken in the startups is view as a fee to gain access to the package that the program offers (Barrehag et al., 2012). Some programs take ordinary shares, while others take a convertible note. "A convertible note is short-term debt that converts in to equity or more specifically into preferred shares, upon closing a follow-on round of financing" (Bueren, 2014, p. 16).

The biggest advantage of convertible debt is that the company wish to delay the valuation process at an early stage until a later round of financing (Anderson, 2012).

Others stablish the investment into a soft loan with the repayment being executed at below–market rates of interest and returned if certain conditions are met (NESTA, 2014).

> Startupbootcamp takes an equity stake of 6% in each startup, which is just an ordinary investment strategy and Startupbootcamp does not demand any board positions in its startups. Parts of this equity are sold to investors to finance the operations of the accelerator and the funding of the teams. One program costs about €500 000 and the investors pay €50 000 each to get an equal amount of equity in all of the ten startups of the program. The equity can then be divided between those funding the program and a small part for the accelerator organization. The batching of companies makes the investments fairly large, which makes it a more interesting investment for VCs (Barrehag et al., 2012, p. 32).

"Public funding may come from local, national or international schemes. For example Climate–KIC, which focuses specifically on climate change, was launched by the European Commission in 2010" (NESTA, 2014, p. 17).

Differently from what happens in venture capital firms, accelerators don't charge "management fees" from investors (charge levied by an investment manager for managing an investment fund), but expect to obtain nice returns from the portfolio of companies invested, as they grow, either by dividends, appreciation from follow-on investment or an exit such as an IPO or acquisition (Dempwolf et al., 2014). Impact accelerators exploring more sustainable funding models are often cautious about embracing forms of equity stakes because the goals consist on creating social impact. Besides that, many of them are nonprofit or generate minimal revenues. To turn out this issue, accelerators pursing self-sustaining models, explore revenue sharing options, payback models where companies repay the cost of services over time, or equity stakes that enterprises can buy back over time under certain terms (Dassel et al., 2015).

In the following table is represented some examples of financing from the different types of accelerators programmes.

Table 3: Examples of financing from accelerator programmes

Accelerator	*Location*	*Date created*	*Length of programme*	*Investment size*	*Equity stake taken*
Techstars London	UK, London	2013	3 months/opt conv. loan	$20000	6%
HealthBox Europe	UK, London	2012	4 months	£50.000	10%
Fintech Innovation Lab	UK, London	2012	3 months	/	/
Bethnal Green Ventures	UK, London	2011	3 months	£ 15.000	6%
Microsoft Venture Acc.	Germany, Berlin	2013	4 months	/	/
Axel Springer Plug & Play Acc.	Germany, Berlin	2013	3 months	25k Eur	5%
ProSiebenSat.1 Acc	Germany, Berlin and Munich	2013	3 months	25k Eur & 500k TV ads	5%
Startupbootcamp Berlin	Germany, Berlin	2012	3 months	15k Eur	6%
Le Camping	France, Paris	2010	6 months	£ 3600	3%
The Family	France, Paris	2013	Indefinite	/	3%
L'Accélérateur	France, Paris	2012	4 months and option for more	£ 50.000	7-10%
Scientipôle Croissance	France, Paris	2002	6 months	Loan 120k Eur/no rate	/
Climate-KIC Europe	Europe	2010	12-18 Months	Max. of 95.500 Eur	/

Source: Clarysse et al., 2015[6]

[6] Content complemented with the accelerators website: www.startupbootcamp.org; www.p7s1accelerator.com; http://www.techstars.com; https://angel.co/axel-springer-plug-and-play-accelerator; https://bethnalgreenventures.com/; http://www.scientipole-idf.com/; www.climate-kic.org/for-entrepreneurs/accelerator. Accessed on: 5th December

The selection process

Most accelerators spend between one to three months recruiting each cohort. This investment of time is necessary, due to the complexity involved in identifying early–stage ideas or ventures with potential. Business plans may not be asked as companies are in early stage (NESTA, 2014). Although it is important to know if the company has a strong team, strong product and a big market are main selection criteria's (Anderson, 2012).

Top accelerators like Y Combinator and Techstars have typically an acceptance rate of 3% or less in each cohort batch (Miller and Bound 2011). As a result, it enforces a highly selective admission process (NESTA 2014) usually organized with an online application. After shortlisting, preliminary Skype meetings can be helpful to learn more about the applicants. Following on from these, startups have face–to–face interviews and are being asked to pitch and present their business (NESTA, 2014). The **due diligence** stage follows, when a team of member investors and industry specialists investigate the entrepreneur and the business including the management team, market opportunity and amount of funding required.

"The final stage involves **negotiating a term sheet,** which guides lawyers in preparing investment agreements and which determines the relationship between the company and investors" (Anderson, 2012, p. 26).

In each stage, experts from outside the program can belong to the selection committee as individual advisors, such as strategic partners, investors, alumnis and experts or mentors (NESTA, 2014).

Alumni service

"In larger programs the alumni network is actively used by startups to test their MVPs in real customer scenarios, get support in recruiting new founding members or accessing complementary technologies that will enhance their competitive advantage in the short-term" (Tasic & Cano, 2013, p. 9).

The business model is structured in so-called venture cycles, which starts on raising funds from investors and then invest the raised funds into the startups admitted to the program, supporting them during the entire process, helping them on the follow-on rounds, exiting successful deals and returning capital to investors. The initial cycle begins when accelerators raise additional funding to start a new fund (Bueren, 2014).

From another point of view, an accelerator cycle can be represented in the following way:

Table 4 - Accelerator cycle

The accelerator cycle				
Awareness	**Application**	**Program**	**Demo Day**	**Post Demo Day**
Social media	Web based	Focus on mentoring	Pitch the product	Startup on its own
Events and community	Focus on the teams	Build the product	Connect to investors	Take part in alumni network

Source: Barrehag et al., 2012

The types of post – program support services include: public relations opportunities, connections with investors, board participation, HR/recruitment support, regional meet–ups, online communities to get access to funding and promotion, office space.

Accelerated startups still struggle with gaps between seed funding and successfully raising Series A investment. To help combat this, some accelerators offer follow–on investment after the program. (NESTA, 2014).

The amount of engagement of the accelerator in startups depends on how much equity is retained, with the aim of increasing the value for future deals, although they can have a passive attitude as the stake is not so high. (Barrehag et al., 2012).

The metrics used by accelerators may include the number of applications to programs; number of ventures supported; follow–on investment raised by ventures; survival rate of ventures and number of employees of ventures.

2.5 The impact of accelerators on society, startups and founders

Opening an accelerator is a strategic decision that allows big *corporates* to stay relevant and competitive in a rapidly changing economy and internalize innovation, new ways of working and talent that thinks differently. David Fogel mentioned Kodak as an example of a company who failed to catch the disruption train and was left behind. It seems many enterprise companies realize they need to engage with startups if they want to be exposed to advances in technologies and new methodologies, and ultimately be able to secure their future[7].

Startups have the opportunity to build solid assets such as industry and market knowledge, scalability proof and financing. They get presented with some methodologies, like

[7] Content available on: http://www.forbes.com/sites/groupthink/2016/02/23/corporate-accelerators-whats-in-it-for-the-big-companies. Accessed on 1st of December

building a minimum viable product, learning customer development or *agile* project management, which is valuable at a pre-seed stage. The mentorship they get can create connections to future commercial deals. From the other side, a startup may have a unique technology the larger company is searching for. Therefore, the speed at which a startup can operate can be very useful for corporations.

Bayer's Grant for Apps, for instance, looks for health technology or IT solutions that can connect and empower patients or healthcare stakeholders. Another excellent example is Mahou San Miguel's Barlab in Spain seeking to recruit startups that can help transform the customer experience at the bar (Rueda, 2016, p. 10).

Figure 9 - Corporate accelerator virtuous circle of digital transformation

Source: Rueda, 2016

Types of win-win collaborations terms according to Kohler, (2016, p. 349):

> **Corporation supports pilot project**: funding the development of innovative solutions and products by startups rather than attempting to do so internally affords corporations the opportunity to explore innovation prospects at a lower cost, in a shorter time frame, and with fewer risks in relation to the core business. Corporations may develop new products together with startups, explore market opportunities through startups, or solve business challenges via startups 'technology or talent. **Corporation becomes startup customer**: interaction with multiple startups during an accelerator program allows corporations to learn about different solutions to their business challenges. Mutual benefits result if the startup wins the company as a high-profile customer, and the corporation finds a solution to its pain points. Working with a large corporation can be an important step for startups to test their product-market fit and scale their operations. **Corporation becomes distribution partner**: channel partnerships can be mutually beneficial in that they provide joint solution for both the corporation and the startup. Rather than build out their own distribution networks, startups can thus offer their products through

the companies. **Corporation invests in startup**: backing and supporting startups is beneficial for corporations as this provides them - at lower capital requirement and higher speed compared to internal R&D - with access to new markets and capabilities. At the same time, startups benefit from favorable terms relative to traditional sources of venture capital. **Corporation acquires startup**: acquiring startups facilitates the access to new markets by having a solution for business problems. Rather than time-consuming scouting for individual startups, corporate accelerators allow for the rapid exploration of many startups that could be a target for acquisitions. For startups, acquisition is an appealing exit strategy.

Below is represented the advantages that rise from the cooperation:

Close innovation gap, avoiding the pressure of investing in disruptive innovations and at the same time s*olve business challenges* by stimulating activities from startups around a product platform: Nike's accelerator, invited startups to build products and services on the company's digital activity tracking platform. It allows the e*xpansion to new markets* by competing in newly emerging sectors (Kohler, 2016). It also enables the avoidance of new market entrants, or aggressive moves by competitors (Brigl et al., 2014). *Rejuvenate the culture of corporations*: Either through mentoring or attending classes at the program, employees and executives are exposed to the startup culture. "Public commitment to supporting innovation sends strong signals to internal staff and external partners. Connecting the corporate work force with fresh talent and ideas inspires innovative thinking, and can result in employees becoming effective change agents" (Kohler, 2016, p. 351). When Windows 10 was launched, it passed through dozens of iterations with real customers providing feedback through a program called Windows Insider. The official product was released before it was 100% done, taking into account that iterations and adjustments will happen on an ongoing basis, based on customer feedback. The result was an outstanding success. Windows 10 continues to be on the fastest growth trajectory of any version of Windows[8]. *Increase credibility and visibility*: Partner up with a large company allows validation for future customer acquisition (Kohler, 2016).

Other example of collaboration: Telefonica Group and Queue management technology provider Qudini. The startup, which was part of the Wayra accelerator program, is helping Telefonica strengthen their relationship with customers on a global scale.

[8] Content available on: http://www.forbes.com/sites/groupthink/2016/02/23/corporate-accelerators-whats-in-it-for-the-big-companies. Accessed on 1st of December

Another great example is Rallyteam, one of the alumni from Seattle accelerator whose talent management platform is now used by Microsoft's Applications and Services group for matching projects with technical talent.[9]

An accelerator enables corporations to learn about a large number of ventures before investing on them, allowing the choice to the ones that are in line with strategic goals.

Coca-Cola's Bridge program which focus on software solutions in the areas of (1) consumer engagement, (2) consumer retail, (3) supply chain, (4) marketing innovation, or (5) health and wellness, links the entrepreneurial community with the corporation's major global markets. Ventures can share expertise by working on related issues.

> Being bound to a big corporation could limit startups' freedom to pivot, and it is not always clear if the corporate accelerator has a hidden agenda that contradicts the startup's goals. Second, corporate involvement might stifle the progress of startups. In addition to achieving product—market fit, startups must achieve product—corporate fit incorporate accelerators; hence, they could end up with a fitted solution to one company's challenges rather than building a scalable solution to a general industry problem. Third, there is the risk of over protection through corporate backing, which leads to dependency or increases the likelihood——and sunk costs—— of later failure. If corporations shield startups from market forces, they could miss out on important feedback that would enable them to adapt. Fourth, close ties to the corporation hosting the accelerator could prevent startups from pursuing partnerships with competitors or from developing competing products that might disrupt the corporate backer (Kohler, 2016, p. 356).

"For corporate programs that end up taking equity stakes, long-term structures that support their investees and provide ongoing support beyond the program must be put in place, but in the opposite side can avoid raising future investment from other entities" (Rueda, 2016, p. 12).

On the side of **venture-backed accelerator model**, there are several benefits in the *startup's* perspective according to NESTA, (2014), which are the initial funding to help the development of the business idea; access to experienced mentors; the development negotiation, presentation and sales skills; peer learning and support from the cohorts – "What you get from people around you is motivation and determination, because you see these people make steps in their startup. You need to be in an environment where people move, and where people struggle with the same things of being an entrepreneur, as where you struggle with" (Huijgevoort, 2012, p. 45)*;* the intensity of the program gives startups the chance to really develop their idea; they provide hands on experience and education; they help defining the target market, the value proposition and the choice of product features; they provide startups validation; they allow the

[9] Content available on: http://www.forbes.com/sites/groupthink/2016/02/23/corporate-accelerators-whats-in-it-for-the-big-companies. Accessed on 1st of December

connection to future capital – "connections with investors throughout the program is essential to receiving funding, as knowing the right people means everything. This goes hand-in-hand with the main purpose of a business accelerator, which is guiding the startup firms to receiving a follow-up investment and expand internationally" (Huijgevoort, 2012, p. 43); they offers the chance to meet customers, suppliers, investors and strategic partners; it provides pressure and discipline – "Startup firms need the amount of pressure as some kind of motivation. If this period would be extended, the startup firms wouldn't proportionally achieve more in terms of business progress. This implies that it is efficient to take a period between 3 and 6 months" (Huijgevoort, 2012, p. 45).

For *investors* by participating in an accelerator, the benefits include: the opportunity to filter talent; the potential to build a pipeline from the portfolio of companies; the opportunity to invest smaller amounts of money into a range of startups; the ability of providing hands on support, guidance and information, and to connect startups with strategic resources; the prospect of creating economies of scale for angel investors; it reduces the need for due diligence process; reduces the cost and time required to find new companies to work with (NESTA, 2014). Brand reputation works for both of investors and startups **–** "possible investors are more approachable, if your firm has been through an accelerator, because the risk of investment goes down massively for the investor" (Huijgevoort, 2012, p. 42).

The potential benefits for **accelerator founder** include: the creation of an ecosystem of startups, affecting the overall number of companies getting started. It fosters long term employment from those companies; a positive financial return by selling the stakes they hold at a high valuation; high quality deal for personal angel investing; increases the local/regional influence in case of success. While Paul Graham was influential through his essays[10], he became recognized by leading Y Combinator; other benefit is the startup excitement without startup pain. Incubation programs have been started by individuals who truly enjoy startups. In most cases, the founders are private investors (Christiansen, 2009).

"For *service providers* **(**e.g. accounting firms, law firms, PR firms**):** offers access to potential new customers (the startups that the accelerators supports)" (Anderson, 2012, p. 12).

"In a larger context, **societies** and governments benefit from a flourishing and viable innovation system, where companies can grow and jobs be created. It contributes to technology development and the rise of future startups." (Barrehag et al., 2012, p. 46).

Impact accelerators may have the possibility to affect a particular social or environmental challenge (Dassel et al., 2015)**.** "Just as accelerators are hoping to own a stake in a future billion-dollar company, regions are hoping to realize the substantial tax revenues and broader economic benefits that come with successful entrepreneurs" (Porat, 2014, p. 2).

[10] This essays can be found on: http://paulgraham.com/articles.html. Accessed on 4th of January

Negative impacts could be caused by the location of the program. Entrepreneurs typically would rather stay where they have roots, but they also want to give their business the best possible chance for success. For startups to start and stay there has to be enough resources (money and talent) in the city to ensure they don't leave when they get to their next growth stage. Some accelerator programs have focused on location as a high-priority non-financial goal, which can make it difficult for programs and entrepreneurs to find the best fit. Regarding follow-on funding, Y Combinator, Techstars and SeedCamp all operate similarly in this vein. The programs fund startups only at acceptance into the program but no further financing is available. However, the program founders and mentors do invest personally in future rounds. David Cohen of Techstars mentioned that he was initially worried about the startups in which he did not personally invest after the program. His concern was that these startups would have a difficult time finding funding if the founders of the program that knew them best decided not to invest. When VC's with significant resources choose not to invest in companies which they solely incubated or initially funded, the potential danger signal to other investors is much stronger (Christiansen, 2009, p. 18).

3. Entity presentation

Instituto Pedro Nunes (IPN) was created in 1991 through a University of Coimbra initiative. IPN is a private non-profit organization which promotes innovation and transfer of technology, establishing the connection between the scientific and technological environment and the production sector.

IPN's mission is to leverage a solid university-enterprise relationship for the promotion of innovation, rigor, quality and entrepreneurship in private and public sector organizations by acting in three complementary areas, such as:

Research and technological development, consultancy and specialized services;

IPN's technological infrastructure includes a set of six laboratories in several technological areas (automation, materials, informatics, phytopathology, electroanalysis, and geotechnics). They establish connections with higher education institutions, Research Technological Development (RTD) organizations and with national and international companies. In the past 3 years, the laboratories supported 300 companies, 30 countries were involved in the projects, creating more than 150 jobs. The labs' fields of activity are:

LAS - Laboratory for automation and systems – This unit operates in the following fields of activity: environment assisted living, health, quality of life, mobility of people and goods to the development of a fleet of fully autonomous electric vehicles to enable their transportation. It also has a role on precision agriculture, instrumentation and monitoring.

LED&MAT - Laboratory for Wear, Testing & Materials which develop RTD activities on the field of surface engineering, materials for energy (insulation), micro-fabrication (ex: powder injection molding of metallic and ceramic materials, 3D printing, rapid prototyping by machining of different materials, recovery of inorganic waste, technology consulting in processes and materials (examines diverse situations related to the production processes and the characteristics of the materials/products), and lastly they test the characterization of physical, chemical and biological properties of materials.

LIS – Laboratory for Informatics and Systems – works in two ways: on the first hand, LIS collaborate in national and international consortium projects; on the other hand, develops projects as services to public and private entities. It also operates on the following fields: logistics, pharmaceutical industry, industrial production, civil engineering and construction, health, transportation and mobility, precision agriculture and telecommunications. Examples of projects delivered: SOUL-FI: Startups Optimizing Urban Life with Future Internet.

FITOLAB – Phytopathology - is dedicated to the detection and research of plant pests and diseases affecting horticulture, fruit production and forestry. It assesses the presence of microorganisms in plants and substrates, through biochemical, microscopy techniques.

LEC - Laboratory for Electro analysis and Corrosion - Develops activities related to electro analysis for the quantitative determination of toxic metals in waters and effluents and also on the electrochemical corrosion of metallic materials and its inhibition. They also build electrochemical biosensors, with DNA and enzymes.

LABGEO – Laboratory for Geotechnics – This lab provides service on the geotechnics area, supporting the demand of small and medium companies. The fields of activities are: geological and geotechnical studies (ex: transport infrastructure, engineering structures); laboratory testing (soils, aggregates, rocks and natural stone) and field testing (geotechnical prospection, geotechnical instrumentation and construction controlling)[11]

Incubation and acceleration of businesses and ideas;

Promotes the creation and development of innovative and technology-based companies. IPN Incubator was created in 2002 and this Association for the Development of Incubation Activities for Ideas and Businesses is a private, non-profit institution on the initiative of IPN and the University of Coimbra. The IPN incubator which competed among more than 50 incubators from 23 different countries, reached the 1st place in the world contest "Best Science Based Incubator" in 2010. Currently, it has more than 40 virtual, physical and co-working companies. Annually, in average the Incubator receives 50 applications and has 75 million on business turnover. The institute has supported more than 200 companies, with a survival rate of 75% and an export rate of 35%, 1800 highly qualified jobs have been created already settled. The accelerator follows the incubation stage and it is directed for companies already establish in the market which foster growth and internalization. Created in 2014, has the potential for hosting 20 companies.

IPN Incubator offers a range of services, including technical guidance, business plans development, logistic services (meeting room, internet, phone and photocopying), access to scientific knowledge such as the Labs. The Incubator also offers consultancy in specialize areas (management, investment applications, health, transport, marketing, technology and tax systems) as well as accounting services.

The Accelerator offers also logistic services, access to funding opportunities (business angels, bank, venture capital, national and European funding), consultancy on market research, marketing plans, intellectual property management, technological validation and management

[11] Content available on: https://www.ipn.pt/assets/centroimprensa/materiais/Brochura.pdf. Accessed on 15th of November

training. The entity fosters partnerships between the companies and national/international soft-landings networks as well as access to scientific knowledge[12].

Highly specialized training and promotion of science and technology;

Provides high level continuous training with special emphasis on action-training programs that will foster the companies' development.

Since 2009 to 2014, 206 companies were supported in programs of action-training, with 813 trainings sessions, and 1184 trainees involved[13].

IPN, since late 2014, incubates the centre of the ESA in Portugal (ESA BIC Portugal). It supports startups that use space technology for industrial and commercial non-space uses, crossing several sectors such as energy, transport, health, security and urban life. Active aerogels, Airborne projects, Spacelayer, Inanoe, D-Orbit, Bluecover, Connect Robotics, Eye2map, Bluecover and Findster are incubatees of ESA BIC Portugal, being present in IPN the first 5 companies[14.]

VCI, department of Knowledge Valorisation and Innovation is transversal to all IPN structure. VCI focus on technology commercialization, by reaching customers and partners for technological as well as co-funded projects by supporting applications to R&D activities. In intellectual (IP) issues, the department act on research patent databases, as well as IP fundamentals, protecting trademarks, design, external appearance of products, copyright, software and drafts of the patent application. Support with business model development (Business model canvas and value proposition definition), access to business mentors and technological mentoring (know-how, laboratories and equipment). VCI is also responsible for INEO Start - a five-week acceleration program[15]

[12] Content available on: https://www.ipn.pt/assets/centroimprensa/materiais/Brochura.pdf. Accessed on 15th of November

[13] Content available on: https://www.ipn.pt/assets/centroimprensa/materiais/Brochura.pdf. Accessed on 15th of November

[14] Content available on: https://www.ipn.pt/incubadora. Accessed on 15th of November

[15] Content available on: https://www.ipn.pt/vci. Accessed on 16th of November

3.1 Internship Goals and tasks fulfilled

3.1.1. Internship goals:

The internship goals were: to understand Pedro Nunes Institute (IPN) and its operating model; to be able to identify and promote business opportunities/partnerships between business and technological structures of the IPN; to learn how to prepare the business model plans of the IPN Incubator; to know the main systems/programs to encourage internationalization, investment in innovation and research and technological development at both national and European level; to provide support to companies located in the incubator and accelerator, namely in areas from economics to management: marketing, strategy, internationalization and finance; to support the planning and promotion of events related to the IPN, the IPN incubator, as well as companies in the incubation and acceleration programs.

3.1.2. Tasks fulfilled

3.1.2.1 Understanding the IPN working model;

The main goals of the first three weeks in IPN were perceiving the dynamics and the structure of the IPN's working model, through brochures, websites, magazines, trainings and visits. It enabled the understanding of the entire ecosystem, such as the core work of the laboratories as well as the activities developed by incubator, accelerator, co-working space and the companies integrated. These are mostly present in the following industries: energy, environment, health, mobility, automation, electronic commerce, building, aerospace, education, software, tourism, cosmetic and high tech.

I was able to perceive how the research and technological innovation and development can be linked into business opportunities. The skills acquired allowed me to notice how the technology push and market pull strategies are conducted, such as spin-offs, consortium projects or services and products providence.

Exemplifying, LAS created a Networked Access Control System that uses wireless iButtons that was sold for Dynasys as well as a Wigateway product, that consists on the development of a system for bringing data from sensors through a Wireless Local Area Network to a client application, a Micro Fugas GGg system that allows the detection system for low flow gas leaks which operates automatically while the use of the equipment is maintaining. LAS also cooperates with the Municipality of Fundão and with Municipality of Penela on consortiums projects.

LIS has already provided services for Eneida Wireless & Sensors, General Direction for Natural Resources, Security and Maritime Services, *DF transportes and MVCC Arquitectos*.

From 1999 to 2010, IPN created 182 spin-offs, with the most renowned companies like Active Space Technologies, Critical Software and Infogene.

IPN integrates several national and international soft landings networks that may foster internationalization, through research and development centres, universities, incubators, accelerators and sciences parks, such as: *EBN - European Business & Innovation Centre Network* is constituted by over 160 innovation centers and incubators certified as BIC's (Business Innovation Centres), in addition to more than 100 associate members that support the development and growth of innovative projects, startups and SMEs; The *UTEN program* (University Technology Enterprise Network) that was created in 2007 between the Portuguese Government and the IC2 Institute at the University of Texas at Austin (UT Austin) to help promote the commercialization of science and technology produced in the country. *Red Emprendia* that joins the more than 20 leading Latin American universities and aims to promote innovation and responsible entrepreneurship. *European 3H network* - incubating Internet Innovation Hubs that brings together more than 20 incubators and accelerators European and aims to promote entrepreneurship and innovation based on the Future Internet technologies.

3.1.2.2. *Understanding the IPN integration model to companies/business ideas;*

The IPN integration model for startups and projects is divided into two stages of development:

The first one is the admission model that differs regarding the three programs in IPN: Incubator, where I exerted my tasks, accelerator and co-working space. My goal was to accurately follow-up if a company or business idea intends to apply to the Incubator program. The factors that influence the business admission availability include the technological degree of development, the concept of the business idea (s), the potential market available, the amount of investment required for the initial 2 years as well as the competitive industry.

The second one consists in projecting the business plan through a template form and fill a financial availability and forecast which allowed me to assimilate the theoretical learning with real cases. The business plan template gathers information regarding the service and product analysis (competitive advantages, productive process, technology evolved and intellectual property dependence), market analysis (historical and forecasted market evolution, micro-segment analysis, target market characterization, competition and supplier's analysis), marketing strategy (segmentation orientation and definition of 4 P's), management and organization (promoter experience, functional specialization, profile and function matching, decision process,

human resources management), business risks (SWOT analysis, 5 forces analysis from Michael Porter), implementation plan (Gantt diagram). Lastly, the economic availability analysis requires a set of metrics and indicators that has to be forecasted in short, medium and long run, like sales, cost of goods sold, supplies and external services, personnel expenses, working capital, investment required, sources of financing, break-even point, profit and loss statement, cash-flow, financial and liquidity indicators, Internal rate of return and net present value.

How to make a competition assessment analysis - throughout IPN competition assessment model, I was able to perceive what are the central questions to be asked when a business model is developed. The company needs to understand who are the direct competitors in the same market segment (micro-level) and the ones on a macro-level (global market) - Industry analysis. After this understanding, the entrepreneur should choose what type of competitive advantage should follow (leadership based on costs reduction or differentiation to obtain a strong position in the value chain. The company strategic assessment can be based on the SWOT model that gathers the strengths, weaknesses as internal factors and opportunities and threats as external factors. All these points are related and the dynamics enable the company to identify and qualify strategic goals by making judgment calls about where the company stands in the present and what it can reach in the future.

3.1.2.3. *Assisting, and supporting the planning and promotion of events;*

Preparation and logistics management of the FI@Coimbra Event, as well as the final balance of participants - The "*Fi@te Coimbra* Event- Boost Cities and Startups with Future Internet" took place in IPN- Coimbra, and it consisted in the presence of 54 European startups innovative projects in the field of smart cities: government, energy, mobility, building, environment, quality of life, with the aim of showing innovative products and services, using FIWARE technology platform through training and coaching activities, as well as presentations directed to investors and municipal officials. This initiative was organized by SOUL-FI (Startups Optimising Urban Life with Future Internet), an European acceleration program led by IPN and funded by the European Commission.

I was part of the logistics team and my tasks consisted of ordering the mentoring/investing meeting agenda for the companies, gathering all the information digitally and establishing the synergy with the designer. During the event, my responsibility was to receive, follow and engage the participants according to the agenda set and assume the role of time manager during the meetings. Once finished, I made the statistic balance about the attendances expected versus reality.

Due to these activities, I was able to develop my communication, logistic and time management skills and be aware of the FIWARE essence: a program that creates a digital single

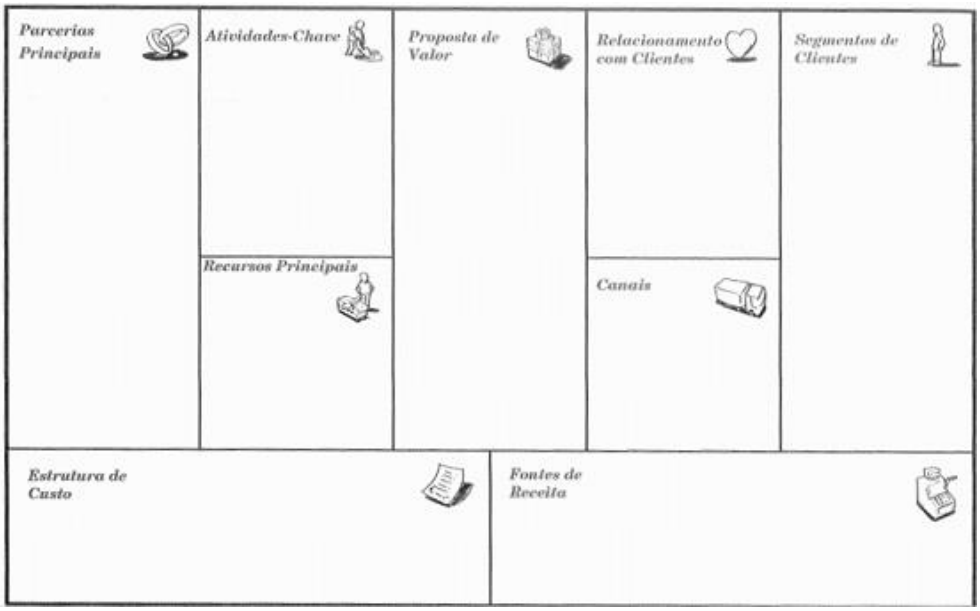
market and gives the opportunity for companies to develop and deploy IT solutions through a platform in a global economy.

Preparation and logistics management of INEO Start 2016 event - The *INEO Start 2016* is a five-week acceleration program, where trainers and mentors help entrepreneurs to turn technologies and ideas into business by seeking capitalization through investors and municipalities[16].

As an intern, I participated in the weekly meetings with the facilitators that extended for 3 weeks, with the aim of providing inputs for the management of the event. Besides that, and similar to *FI@te Coimbra*, my job was to take care of the logistic(s) and be the mediator to participants during the trainings and the demo day (when entrepreneurs pitched to investors). As I had the opportunity to follow the five-week training, I acquired experience and skills from the pitches and sessions above mentioned:

Innovation and business models - presentation of strategic management tool developed by Alexander Osterwalder, which allows entrepreneurs to define the conditions of their business model in one scheme ***(Business model canvas)***;

Figure 10– Business model Canvas

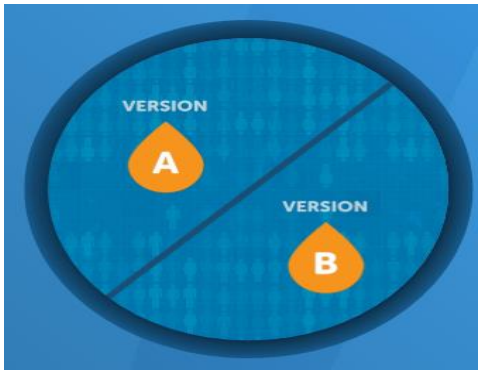


Source: Osterwalder, A. et al., 2011

Customer Development and Lean Prototyping – Testing assumptions for product/service to potential customers (A/B Test or Test Card). Lean prototyping is inspired on the methodology developed by Eric Ries presented on "The Lean Startup", which after customer discovery, allows entrepreneurs to optimize and validate their ideas with less investment and in (a) faster way, through alpha/beta tests:

[16] Content available on: http://start.ineo.pt. Accessed on 20th of Novemeber

Figure 11 - A/B Test or Test Card



Source: The Ultimate Guide to A / B Testing. Unbounce

Marketing for startups: this session provided by a marketing consultant associated to IPN, explored the ways of product dissemination tools and services, as well as generation metrics to gauge the interest of the target market. It approaches the strategies to identify, discover and satisfy customers.

Startups and investment: It consisted on the preparation of the financial component of the project, such as measure accurately the amount of investment needed, where will it be used, the sources to find it and what milestones are associated.

Organization of the documentation, the webpage and the application form of the FIWARE Bounty Programme - The *Bounty Program* was created with the goal to engage external contributors to the development of new FIWARE open source technologies, which include permanent and temporary bounties. New technologies developed by developers and security researchers, that will improve security, performance and quality are rewarded.

My abilities were required to make its documentation: introduction, guidelines, general terms and conditions, responsible disclosure policy, bounty shortlists. The remaining tasks included the formalization and disposal of the website content as well as the application form of the program to contributors. It allowed me to develop my capacity content synthesis in order to make an appealing presentation.

Assisting to the Building Global Innovators & EIT Digital pitches presentation - I had the opportunity to assist at several pitches from IPN incubator and accelerator companies, within MIT Portugal program, from Building Global Innovators (transnational accelerator directed at aspiring entrepreneurs and tech-based startups and/or spin-outs, working on a technology based solution to a global problem) and the European Institute of Innovation and Technology.

This event relied on the program presentation with the achievements among the last 6 editions, and included advices and recommendations for the company's business model through pitches, along with international expert's meetings.

*3.1.2.4. Supporting to companies***;**

Research of the Y Digital Media competitors - *Y Digital Media* (YDM) is a global agency for digital marketing and advertising that creates, manages and optimizes campaigns with the focus on mobile advertising. The company develops digital applications, brands and social media interactions. The analysis of YDM competitors was focused on a global level and included the types of campaigns (cost per mile; cost per click; cost per impression; cost per action; cost per install and cost per view), mobile ad formats (interstitial - full screen ad that covers the interface of their host application, banner - banner advertising is a rectangular graphic display that stretches across the top or bottom of a website or down the right or left sidebar; native – Content based ads that are integrated within the editorial feed and offer wall - *advertising* platform to promote websites or apps via offers. Lastly the data reporting parameters and type of targeting. I gathered knowledge on the study of mobile advertising industry including ad servers and affiliate networking mechanism.

Be aware and translate the IPN contract clauses with incubated companies - **o**ne task proposed was the study of the incubation contract clauses, with the aim to know how IPN establish the relationships with second parties.

As I have never had the chance to know the internal information about contractual clauses that Incubators use to set, this experience taught me how terms and conditions are set and what type of services are guaranteed.

Structure and analysis of business model upon investors' interest - as IPN gathers a huge number of companies (more than 40), it is hard to make a continued track to the business model execution. It becomes more complicated when the projects managers spend a lot of time on consultancy and applications for financial incentives. Due to these constraints, I suggested to prepare a detailed, qualitative and quantitative assessment of their business plans, considering factors that would interest investors: product development, market penetration, competition comparison, marketing channelling, intellectual property, customer acquisition, funding, team culture and IPN relationship. This document is present in the appendix.

Communication skills were developed, as well as a perspective on the investors vision framework, considering the factors that would influence the investment chances. As the data was organized statistically, I developed my Excel skills, increasing my ability on project management software programs.

3.2 Final assessment and critical analysis

IPN was the first choice for my first professional experience. I have known this Institute since my first year as a student in the university and I had a slight idea about IPN's operational model, but I wanted to better understand, by becoming a member of the ecosystem.

My expectations were based on growing my professional and personal maturity since I would have the opportunity to interact with multidisciplinary companies and people, and represent a huge entity that marks a huge influence in the science and technological world.

According to the goals of the internship, It turned out to be very exciting since I would have the chance to execute everything I learnt from my academic background. In my mind, I knew that was risky for an executive to give so much autonomy and responsibility tasks to a current student, due the lack of experience and decision process. The professional training has to be progressive and its development depends on the person attitude. My competencies rely on the ability to learn fast, to understand the methodology of the work, to have the character to face errors as a stimulus for growing and get results efficiently.

Besides, I set very high expectations about my work contribution. It is a dangerous though, since the more expectations we set, more difficult is to fulfil all of them.

Positive things about my internship were the possibility to understand how the machine works and how it is so dynamic and interrelated, from the 6 laboratories to the training department, until the companies that integrate the programs of incubation and acceleration. That was what amazed me the most.

The way they integrated and welcomed me was a very good factor for my personal satisfaction.

Other positive thing was the fact that I had the chance to realize how the project managers prepare the ideas evaluation, and how they support the entrepreneurs to turn them into businesses. They really provide the means to leverage the company, by organizing events that gather not only mentors, but municipalities and investors such as business angels and VCs. They provide specialized sessions and reflections that guide the company to the right track. If I wanted to develop a business idea, I would know what are the steps I should follow.

A less positive aspect about my internship was sometimes the absence of my supervisor due to national and international affairs. It was really difficult to interact and learn with him gradually. It is the perks of collaborating with a person on a high ranked position, such as the director of one of the best incubators in the world.

About the "structure and analysis of business model upon investors' interest" task, the output wasn't as good as I expected due to the absence of information the companies had at the time, the amount of similar data analysis' work they use to receive and the extension of the application. Another problem was also the difficulty on receiving the e-mail.

A helpful advice to the IPN as a host trainee entity would be the development of a trainee induction policy that would gather the expectations since the first day of arriving, the work that should be developed and the results achieved. All of it integrated with a weekly meeting.

My work was developed at project management department in IPN Incubator and I contacted with three project managers. The thing that was not so positive during the 4.5 months' internship was the lack of collaborative work. Also, most of the time was difficult to see more detailed information due to the restrictive policy of internal content.

Summarizing all this aspects and activities developed, I can honestly say I am privileged man by making part of one of the best emblematic and historical institution worldwide.

I would recommend IPN as host entity, but the expectations and guidelines should be very clear, to avoid the isolation of the intern. The intern should be considered as an active member because it only brings advantages to the organization.

4. Conclusion

The goals of the proposed work plan were greatly achieved. The only negative aspect was the limitation to work on case studies as it would extend the writing to a non-supported capacity. However, due to a variety of scientific sources aligned with practical experience, my work became facilitated and I could perceive the role these programs have on great minds and on great solutions with no capabilities to take ideas off the ground. Examples like Airbnb, Dropbox and Stripe in the US are very well know companies that reached the unicorn level by enjoying the resources that accelerator programs provide (Hochberg, 2015).

Europe has experienced both strong and continued private and public sector support and investment in the startup industry. This has enabled the growth and strength of existing accelerator programs, fostering the launch of new accelerator programs. In total, €37,533,632 was invested into 2,574 startups by 113 accelerators in 2015. Portugal is also a very active startup hub and is the fourth most active in terms of number of startups that completed an accelerator program in 2015. The United Kingdom, Spain, Germany, Italy and Denmark rank among the top five countries measured by the amount invested through accelerators and startups (Brunet et al, 2015).

There are 172 U.S.-based accelerators in existence during the 2005–2015 periods which invested in more than 5,000 U.S. startups. Companies have raised a total of $19.5 billion in funding along this period. When matched with a comparable group of companies that didn't participate in accelerator programs, those that graduated experienced certain advantages from time to raising venture capital, exit by acquisition until gaining customer traction (Hathaway, 2016).

Access to capital is a critical part of a startup's development. However, funding for startups can be unfairly distributed. As a result, conventional funding sources may concentrate funding to specific groups of people, geographies or even industries. This centralization of funding puts startups from overlooked geographic areas or industries at a disadvantage and that's why policymakers have experimented using the accelerator model as a way to support non-profit and socially-responsible startups. It can decentralize startup funding (Porat, 2014).

According to Clarysse et al., (2015), most accelerators invest in their startups in contrast to some traditional incubators, to make sure that the selected startups can survive and expand. According to Anderson, (2012) accelerators have spread so quickly that there is a bubble – that consumer and business markets can't absorb all of the products and services offered by the amount of new startups that accelerators help develop. Only the stronger ones can survive.

Accelerators help fledging nascent ventures as well as incubators. In contrast, accelerators speed up market interactions in order to help startups adapt quickly and learn fast. The limited duration of accelerators, usually three months, and incubators lasts from one to five years.

Ventures enter and exit the programs in groups, known as cohorts or batches, while in incubators enter and exit on an ongoing basis. Startup founders develop strong bonds by entering at the same time and by facing the same pressure and intensity, in opposite with incubators. Most of the original accelerators are privately owned, retaining equity stakes while incubators are publicly owned and managed by managers. On incubators, mentorship is typically offered by the experienced managers or for a fee by professional service providers, such as accountants, marketers and lawyers. Intense mentorship and education are valuable factors that define accelerator programs attraction. Meeting with four or five mentors a day for nearly a month provides a unique opportunity for ventures to build their social network and learn about strategic methods and goals (Cohen, 2013).

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Appendix

IPN - Companies Q&A

The aim of this work is to do an evaluation of the business model execution through a quantitative and qualitative survey about IPN companies, considering the following parameters: Company, Product, Market, Competition, Marketing and Customer acquisition, Funding, Team, Culture, Intellectual Property and IPN relationship.

It only takes a few minutes to fulfill the survey.
I will be very grateful.

Contacts:Leonardo.santarino93@gmail.com

Company name

Incubation status: *

When was the company created *

What were the reasons to create it? *

- ☐ Income potential
- ☐ Pursuing a passion
- ☐ A good idea
- ☐ New lifestyle
- ☐ Self-Expression
- ☐ Others

If others, please describe them

What problems does the company product solve? *

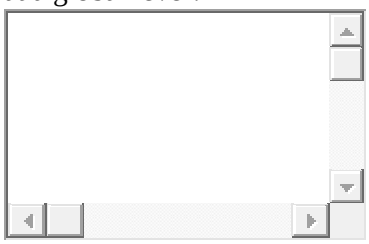
What are the benefits? *

What after-sale services does the company provide? *

- ☐ Delivery
- ☐ Warranty
- ☐ Support
- ☐ Follow-up
- ☐ Others

What could be done to improve this product? *

If possible to quantify in € or in volume, what is the current size of the market at a national and at a global level? *



How did the company set the product's price? Factors to consider: *

- ☐ Customer-based pricing (e.g. penetration pricing; price skimming; psychological pricing)
- ☐ Cost-based pricing
- ☐ Competitor-based pricing

What are the different segments of the market you are focusing on? *

Is the market focused on B2C, B2B or M2M? *

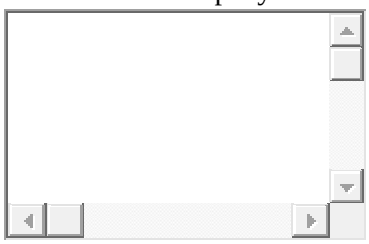
- [ ] B2C
- [ ] B2B
- [ ] M2M

At a national level, what barriers to entry are you facing / will you face? *

- [ ] High capital cost
- [ ] High production costs
- [ ] High marketing costs
- [ ] Consumer acceptance and brand recognition
- [ ] Training and skills
- [ ] Unique technology and patents
- [ ] Shipping costs
- [ ] Others
- [ ] There aren't barriers to entry

If others, please describe them

How will the company overcome these barriers? *



At a national level and from 0 (without) to 5 (intense), how do you evaluate the competition you are facing/you will face? *

In which countries the company is represented? *

Does the company have plans to target new geographical markets? *
If Yes, what are the reasons?

- [ ] Potential demand
- [ ] Track competition
- [ ] Acess to distribution channels
- [ ] More suitable institutional and legal framework in host country

- [ ] Benefit from economy of scale and scope
- [ ] Lower tax burden
- [ ] Better access to skilled and educated labour
- [ ] Increase technological, management and marketing expertise
- [ ] Others

If others, please describe them

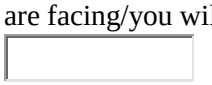
What is the timescale? *

At a global level, what barriers to entry are you facing / will you face? *

- [ ] High capital cost
- [ ] High production costs
- [ ] High marketing costs
- [ ] Consumer acceptance and brand recognition
- [ ] Training and skills
- [ ] Unique technology and patents
- [ ] Shipping costs
- [ ] Others
- [ ] There aren't barriers to entry

How will you overcome these barriers? *

At a global level and from 0 (without) to 5 (intense), how do you evaluate the competition you are facing/you will face? *



What direct channels does the company use to market or plan to market its products or services? *

- [ ] Retail outlets
- [ ] Mail order selling
- [ ] E-commerce websites
- [ ] Others

If others, please describe them

What indirect channels does the company use to market or plan to market its products or services? *

- [ ] E-commerce platforms
- [ ] App platforms
- [ ] Retailers
- [ ] Distributors
- [ ] OEM - Original Equipment manufacture
- [ ] Others

If others, please describe them

What type of advertising is the company using to reach the customers? *

- [ ] Print advertising (e.g: newsletter, magazines, booklets, flyers, brochures…)
- [ ] Guerrilla advertising
- [ ] Broadcast advertising (e.g: television, radio)
- [ ] Outdoor advertising (e.g: billboards, digital boards, Bus Shelter Poster)
- [ ] On-line advertising (e.g: websites, social network, apps)
- [ ] Direct advertising (e.g: Calls, E-mail, Face to Face)

What is the cost of a customer acquisition in €? (Total marketing campaign costs related to acquisition/Total customers acquired) *

What is the size of the company customer portfolio in a B2B relation? *

What is the size of the company customer portfolio in a B2C relation? *

On average, how long does the company take to turn a stranger into a promoter? *

What is the capitalization structure? *

How did company get funded *

- [ ] Personal investment
- [ ] Business Angels
- [ ] Venture Capital
- [ ] Crowdfunding
- [ ] Incentive systems
- [ ] Loans
- [ ] Others

If others, please describe them

In €, How much equity and debt has the company raised so far? *

Is the company profitable today? *

If no, when does company expect to turn profitable?

- [ ] < 1 year
- [ ] 1 to 2 years
- [ ] > 2 years

In €, How much future equity or debt financing do you expect to be necessary in 1 year? *
Which are the most common backgrounds company members have? *

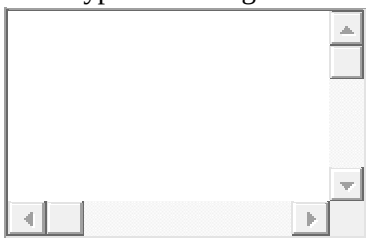
- [ ] Marketing
- [ ] Financial
- [ ] Engineering
- [ ] Management
- [ ] Human resources
- [ ] Architecture
- [ ] Other

If others, please describe them

What competencies does the company need in short term? *

What competencies does the team need in long term? *

What type of training skills did the company need to receive? *



What type of training skills would the company need to receive? *

How many team members does the company have? *

How is the company members work-life balance? *

How often do people stay late at work? *

How often do people work on the weekends? *

Do the company members have extra-work activities? *

Which key intellectual properties are pending? *

- ☐ Patent
- ☐ Copyright
- ☐ Trademarks
- ☐ Trade secret
- ☐ Domain names
- ☐ Design standards
- ☐ Others
- ☐ Nothing is pendent

If others, please describe them

What are the benefits you consider the most important of being incubated in IPN? *

- [ ] Marketing support
- [ ] Sales and market research support
- [ ] Financial support
- [ ] Projects application support
- [ ] Network access
- [ ] Scientific and technological support
- [ ] Fundraising opportunities
- [ ] Juridical support
- [ ] Others

If others, please describe them

Do you think this relationship can improve? *

If so, what role can IPN have? *

If so, what role can the company have? *

Would you recommend IPN to start a business? *

Anexos