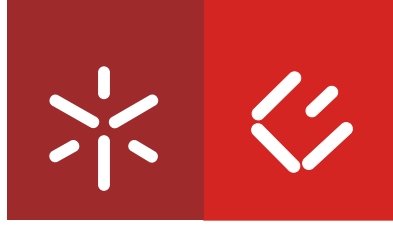


**Universidade do Minho**  
Escola de Economia e Gestão

Nuno Miguel Costa Ferreira Dias

**Failure Factors of Technological Driven  
Start-ups – Datris Solutions Case Study**



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## **Failure Factors of Technological Driven Start-ups – Datris Solutions Case Study**

Internship Report  
Masters in International Business

Supervisor:  
**Professor Elisabete Maria Sampaio Sá**

October 2018

## **Declaration**

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Failure Factors of Technological Driven Start-ups – Datris Solutions Case Study

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# Abstract

This internship report reflects the status and evolution of the technological driven start-up, Datris Solutions, which is a start-up focused on exploring opportunities in the open data and membership management applications sectors.

Datris was created in 2015 and presently, in 2018 has yet to release a finished product that can be used to generate revenue. Continuous issues afflict the development of the start-up's team and products which resulted in the slow progress and evolution of the two. In an attempt to pump fresh ideas and motivation into the current start-up's team members, additional personal was hired, in this case a marketing research intern to assist the team in every marketing related effort with special focus for marketing research. This created the adequate scenery for an internship in the area of International Business since it allowed a look into the development and evolution of a young technological driven start-up in a foreign country. The knowledge gained during the regular theoretical modules of the International Business masters classes provided the necessary tools to assess an international business/start-up health and the insight to provide advice on what would be the best suggestions to increase the start-up's productivity, development and how to develop an accurate market research.

With that in mind, this internship report will focus on assessing the current factors that are inhibiting the development and growth potential of technological driven start-ups. By identifying, analysing and comparing them to the literature research findings regarding failure factors that inhibit technological start-up development, we hope to contribute to the current literature. In addition, we will suggest an action plan to reduce the influence of these negative factors to ensure a better survivability rate for the start-up for the years to come.



## Resume

Este relatório de estágio reflete o status e a evolução da start-up tecnologicamente orientada, Datris Solutions, que é uma start-up focada na exploração de oportunidades nos setores de aplicativos abertos de gerenciamento de dados e de membros. A Datris foi criada em 2015 e atualmente, em 2018, ainda não lançou um produto acabado que pode ser usado para gerar receita. Problemas contínuos afligem o desenvolvimento da equipa e dos produtos da startup, que resultaram no lento progresso e evolução dos dois. Na tentativa de impulsionar novas ideias e motivação para os atuais membros da equipa da start-up, foi contratado um membro adicional, neste caso um estagiário de marketing para auxiliar a equipa em todos os esforços relacionados ao marketing com foco especial para pesquisa de marketing. Isso criou o cenário adequado para um estágio na área de Negócios Internacionais, uma vez que permitiu analisar o desenvolvimento e a evolução de uma jovem startup tecnológica num país estrangeiro. Os conhecimentos adquiridos durante os módulos teóricos regulares das aulas de Mestrado em Negócios Internacionais forneceram as ferramentas necessárias para avaliar a saúde de uma empresa internacional / start-up e a visão para fornecer conselhos sobre quais seriam as melhores sugestões para aumentar a produtividade, desenvolvimento e desenvolvimento. e como desenvolver uma pesquisa de mercado precisa. Com isso em mente, este relatório de estágio será concentrado na avaliação dos fatores atuais que estão limitando o desenvolvimento e o potencial de crescimento de startups tecnologicamente orientadas. Ao identificá-los, analisá-los e compará-los com os o que nos diz a pesquisa bibliográfica sobre a falta de start-up tecnológico, esperamos contribuir para a literatura atual. Além disso, sugeriremos um plano de ação para reduzir a influência dos fatores negativos para garantir uma melhor taxa de sobrevivência para o início dos próximos anos.





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# 1. Introduction

Start-ups, and more specifically technological driven start-ups, such as software star-ups, are on the spotlight of interest for entrepreneurs and investors. Industry giants such as Google, Facebook, Amazon, Uber AirBnB and Spotify all started as digital ventures with humble beginnings from a garage or similar (Zaheer et al, 2017). There is a growing market for these organizations which operate at a low cost producing high quality innovative items, usually with a short development cycle (Pompermaier et al, 2017). Especially now, with the continuous evolution of new and updated frameworks and processes such as Lean Start-up and Agile frameworks, which lowered failure rates of software start-ups, these ventures are a less risky option which contributes to the rise in their numbers (Grimpe, Martin & Wolfgang, 2017). In western Europe, although start-ups constitute only a small part of small businesses, policy makers see them as important drivers of economic growth and innovation (Weele et al, 2016).

Though vast amounts of studies have been made with the purpose of aiding the development of start-ups and increase the survivability of these institutions, the matter of fact is that the situation is almost the same as decades ago as technological driven start-ups are still associated with high risk of failure. As Bosch et al. (2013) state “(...) contrary to what media portraits far from all software start-ups succeed (...) If looking at a new product ideas, over 98% fail” (p. 2). The assessment of failure factors that afflict every stage and dimension of a technological driven start-up, either being internal or external, is crucial to augment the understanding of this complex issue in an effort to reduce the very harsh probabilities of failure that these institutions (Wang et al, 2016). The authors note that, although some of the factors are predicated on attributes that define a start-up, such as immaturity, little or no operating history and lack of resources and experience, plenty of external/internal factors can be analysed and action plans can be presented to aid the insufficient literature that surrounds failure factors that afflict technological driven start-ups. Starting with what makes up a start-up.



## 2. Literature Review

### 2.1. Start Ups

The role of start-ups in our global economy has never been more important (Marmer et al, 2011). The previous authors defined these recent institutions as temporary organizations designed to scale into large companies with the success cases being industry giants such as Facebook, Snapchat, Google that started as small start-ups with less than 10 members and are now market leaders with thousands of employees under them. These are also responsible for replacing old and outdated firms that some years back seemed impossible to surpass, each being now worth billions of dollars with networks reaching across every continent (Cantamessa et al, 2018). In the light of these events, a renewed focus has been placed on start-ups which have been in their general form subject to a variety of studies across the years as their importance steadily became more and more prominent in leading economies such as the ones of the European Union (EU). Kollmann et al. (2016) highlight that “Start-ups are vital to our economy, job market, and digital future. They are drivers of European innovation. No one creates more opportunities for employment than start-ups and other young companies; they provide around 50% of all new jobs” (p. 3). However, only over the past few decades has their importance taken a strong foothold in the modern societies and, as such, many definitions have been formulated about them. Many scholars differ in their definition as the focus differs from author to author. Some focus on the end goal such as this definition provided by Blank and Dorf (2013): “temporary organization formed to search for a repeatable and scalable business model” (p. 648). This definition puts more emphasis on the medium that the start-up creates and designs to achieve long term success. Other contributions to the literature focus on their transformation process: “firms which are designed to grow from existing small and medium-sized and newly created nongrowth oriented firms” (Hemmert et al, 2016, p. 4). Others focus on the context in which start-ups find themselves: “Start-ups are newly created companies that aspire to grow fast in extreme uncertainty” (Wang et al, 2016, p. 1). Moreover, with the media spotlight shining so bright on to start-ups, with their inspiring success cases, these

institutions are now considered indicators of the health of the economy and workforce of the host country (Kollmann et al, 2016). A distinction of start-ups is made by Marmer et al. (2011), who identify two types of start-ups: early start-ups and late start-ups. According to the authors, “Early stage start-ups are designed to search for product/market fit under conditions of extreme uncertainty. Late stage start-ups are designed to search for a repeatable and scalable business model and then scale into large companies designed to execute under conditions of high certainty” (p. 10). The evolution of the definitions has not changed to remarkable levels. We found that a noticeable number of definitions of start-ups exists in the literature and the one most practitioners and organisations agree and base their own definitions is the one provided by Reis et al. (2011) as he defines it as institutions that are constructed for the purpose of creation innovative products while working in conditions of very low certainty.

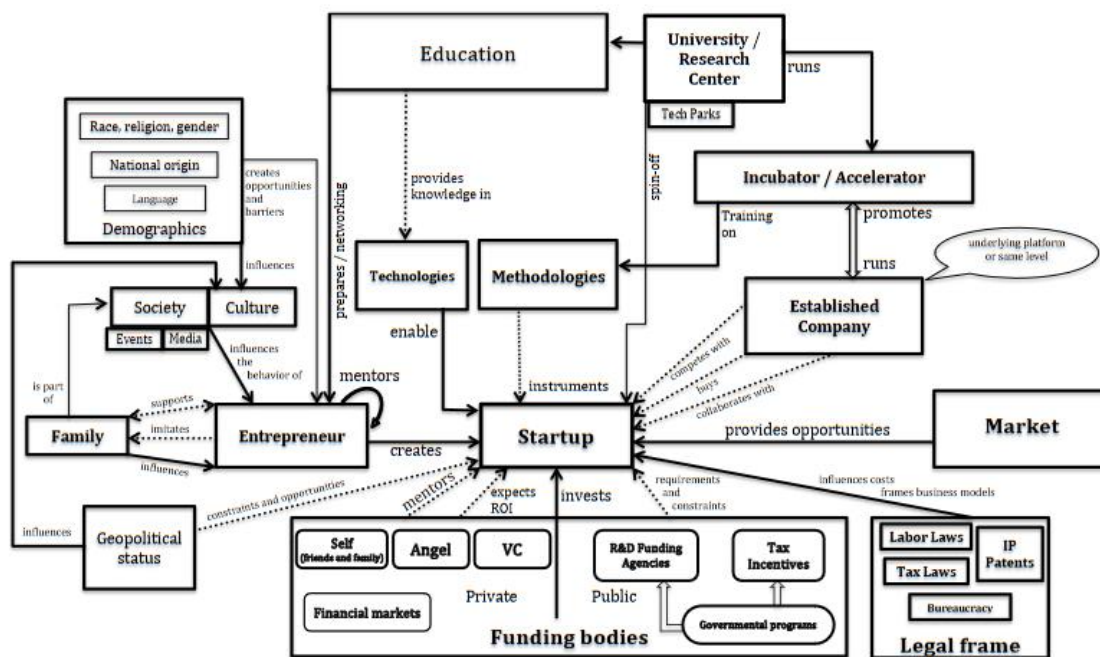
Nonetheless, the definition provided by Reis et al. (2011) is not very descriptive and serves more as a basis for start-up definitions by other authors in more recent studies. The most descriptive definition is provided by the Kollmann et al, (2016) which also recognized the growing trend of these being tech orientated and defined a start-up as a company that fills the following three characteristics; i) Start-ups are younger than 10 years; ii) Start-ups feature (highly) innovative technologies and/or business models and; iii) Start-ups have (strive for) significant employee and/or sales growth. The same document considers start-ups to be “gazelle companies”, growing young ventures that are built to create wealth” (Kollmann et al, 2016: 15).

Developing economies have been found to rely heavily on start-ups for their innovation and development, with countries that have more start-ups been correlated with having relative economic stability (Okrah, 2018). This is particularly fascinating considering that the overall agreement in literature is that start-ups are very high-risk ventures with sixty percent of start-ups failing to survive in the first five years, whilst seventy-five percent of venture capital funded start-ups fail (Giardino et al., 2015).

The environment in which such high percentages of start-up failure occur is characterized by high uncertainty, little to no operating history, lack of funds combined with an unexperienced team (Laitinen, 2017). Moreover, they are commonly



exploratory in nature, lacking clear requirements, customers and even business models (Bosch et al., 2013). In addition, such start-ups are often expected to produce high quality innovative products while having a small inexperienced team with very few resources in a very small-time frame (Laitinen, 2017). The ecosystems where start-ups develop their products are very complex social structures where entrepreneurs and their tech ventures are the main actors, which are affected by a variety of factors from the internal and external environment (Laitinen, 2017). Some of these high-tech ventures will evolve to high-growth firms, making a disproportionate impact on the economic growth (Cukier, Kon & Krueger, 2015). The start-ups' environment is most clearly portrayed in the figure 1.



**Figure 1** Start-up Ecosystem Conceptual Framework

**Source:** Cukier, Kon and Krueger (2015, p.6).

This work by Cukier, Kon and Krueger (2015) serves to highlight how complex a start-up really is and the intricate web of the environmental, internal and external factors that affect the development of the same. These are paramount for the creation of resilient economies and are comprised of union localized cultural outlooks, social networks, investment capital, universities, and active economic policies that together

make the backbone of an ecosystem capable of sustaining and promoting entrepreneurial innovation (Spigel, 2015). The same author highlights different attributes that affect the start-up outside its boundaries. These being the how similar cultural understandings ease the share of knowledge and mobility; spill overs of tech and knowledge through social networks and lastly government policies and universities ensure the sustainability of the environment that supports these cultures. (Spigel, 2015). Van Weele et al. (2017) amplify this notion by identifying six actors from which the ecosystem surrounding the start-up depends upon. These being a pool of talented individuals; accessible domestic and foreign markets; opportunities to gather financial capital; support services (i.e incubators); universities and physical infrastructure. When sustained these ecosystems have been found to be a breeding place of business ecosystems as human capital is concentrated in cities and knowledge spill overs are local (Acs, Stam & Audretsch, 2017). In addition, the quality of surrounding support infrastructure is very relevant especially at the earliest stage, business angles, incubators and accelerators are key factors in overcoming experience, financial and human resources gaps in early stages of the start-up, the strength of these institutions contributes to higher survival rates (Salamzadeh & Kasim, 2015).

The processes that support the creation and sustainability of the production of new innovative products by start-ups are often heavily reliant on experimentation, testing and even failure, which in some countries like the U.S has been embraced and recognized as a necessary step towards the solidification of more efficient processes within the start-up (Bajwa et al., 2017). This is further highlighted with the evolution of business churning in some economies such as the U.S, which are designed to be able to fail fast, and to be cheap to open expecting failure in the first attempts, which reduces the impact on the resources of the start-up (Haltiwanger, Hathaway & Miranda, 2014). Nevertheless, the lack of established processes and high risk of failure have not blunted the increase in start-up creation and development. For instance, in the USA alone in 2016, 550 000 new businesses or start-ups have been established each month, showing just how much the innovation and development of the US economy is related to these organizations (Edison et al., 2018).

Start-ups during their existence pass through a multitude of stages from very early development to later stage transformation into a normal company. Understanding this development is crucial to understand what hurdles appear and how they affect the start-up.

## 2.2. Start-up Life Cycle

Start-ups must deal with a variety of very different problems across their life span that required specific answers to be solved. Based on Marmer et al. (2011), who founded the start-up Genome project, a new framework for understanding the start-up lifecycle set 6 stages of the start-up life cycles was created.

1. **Discovery** – discovery of a problem that needs to be solved.
2. **Validation** – testing your hypothesis and product to see if it fits the market needs.
3. **Efficiency** – establish processes and teams that provide innovative solutions and are capable of tackling multiple problems.
4. **Scale** – scaling the start-up into an actual company increasing the market reach and resources available.
5. **Sustain** – sustaining development and growth of the company.
6. **Conservation** – reduce rotation of crucial employees and retain valuable resources.

First stage discovery is aimed at discovering an issue that is worth to be tackled and shows signs of good market reception and profitability if explored. This stage involves team building and market testing by forming a founding team, interviewing potential customers, finding the value proposition, setting minimal viable products, joining an accelerator or incubator, having a round of friends and family financing, and having the first mentors and advisors come on board. The second stage validation seeks to validate that the market is indeed interested and willing to pay for the service/product. Continuous verification often comes with a refinement of core features, implementing initial user growth, metrics, and analytics, seed funding, the first

key hires, pivots (if necessary), acquiring the first paying customers, and product market fitting.

Third stage is efficiency, from which the start-ups start resembling more and more a regular company by refining their business model and improving customer acquisition processes which provide more financial stability and less uncertainty. Actions usually undertaken at this stage are: refining the value proposition, overhauling the user experience, optimizing the conversion funnel, achieving viral growth, and finding repeatable sales process and/or scalable customer acquisition channels. The fourth stage is scale, the end goal of every start-up to drive growth aggressively. This often comes in the form of a massive customer acquisition, back-end scalability improvements, the first executive hires, process implementation, and the establishment of departments. With the establishment of processes, departments, and the beginning of the scalability focused activities the company is no longer considered a start-up and has now all the elements of performing standard enterprise or almost at least because stability and retention might still afflict the start-up even at this stage. This is where the sustainability and conservation efforts kick in and it is when the focus shifts toward sustainable growth and conservation of the intellectual property and reducing the rotation of personnel at the higher levels of the start-up (Marmer et al, 2011). Davila et al. (2015) pointed that the growth stage of start-ups is often at the cost of the growth of other start-ups. The same author used Facebook as the example for growing at the expense of MySpace which is no longer available in 2018.

Other researchers have taken a more holistic perspective and focus on offering a better understanding of the lifecycle of start-ups by dividing them into three stages: bootstrapping, seed and creation stages. Table 1 shows what resources are usually available on each stage of the start-up life cycle.

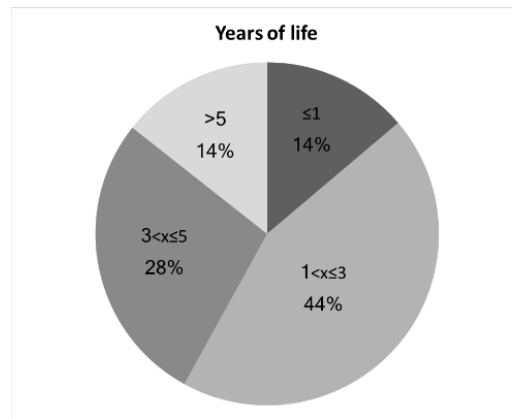
**Table 1 – Lifecycle of start-ups**

<b>Bootstrapping Stage</b>	<b>Seed Stage</b>	<b>Creation Stage</b>
Individual Effort	Team work	Organizational arrangements
Family and Friends	Valuation	Corporate Finance
Low investment	Average Investment	High Investment
Angel Investors	Accelerators, incubators, etc	Venture Capital

**Source:** adapted from Salamzadeh & Kesim (2015, p.5)

In the very early bootstrapping stage, it is often the entrepreneur itself that must push and validate the idea with close relatives and friends and gather often meagre investment from the same which is the essence of bootstrapping. In this case being a way of acquiring customers and resources while burrowing without losing equity. The seed stage is where the interest starts picking up as decent level investment in team work, prototype development, entry into market, valuation of the venture, seeking for support mechanisms such as accelerators and incubators are all a part of this stage (Salamzadeh & Kesim, 2015). Lastly, the creation stage is when the company hits the market, starts selling its products and hiring more and more personal. At this point it stops being considered a start-up just as beforehand mentioned when a start-up is operating under a proven process that delivers value that is sold to the market it is then a normal company.

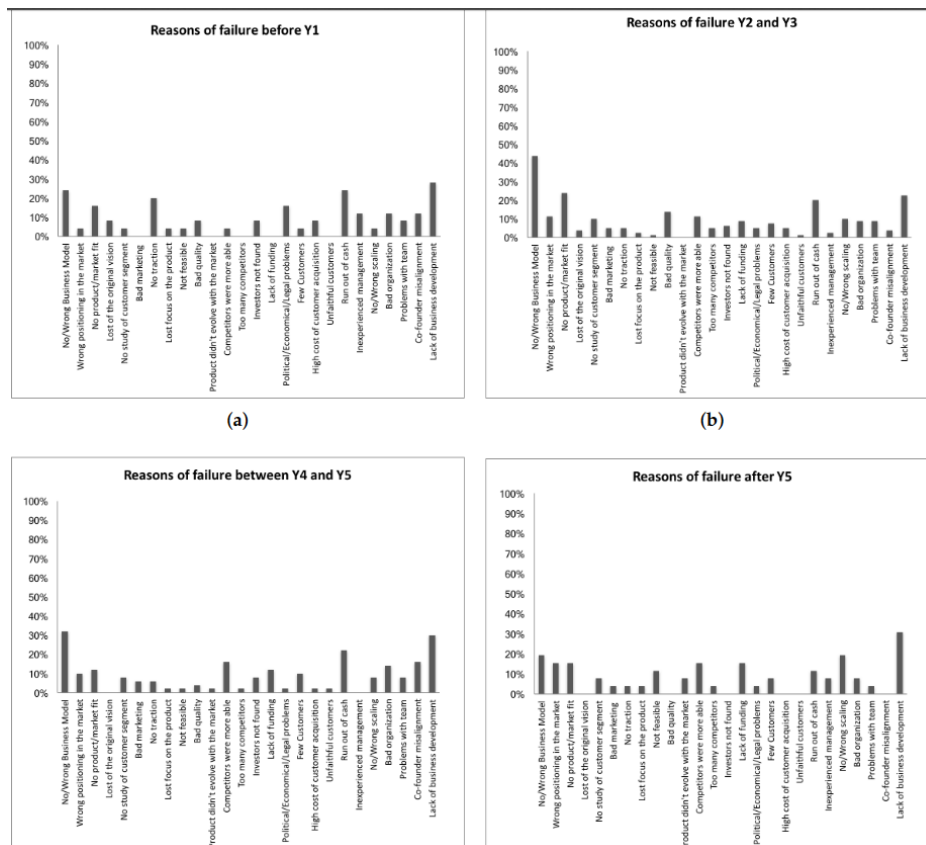
The SHELL (Software, Hardware, Environment, Livewire People and Livewire Environment) Model was originally used for the classification of aviation accidents and errors and was adapted for the classification and analysis of start-up development through their lifecycle by Cantamessa et al. (2018). This model aims at identifying how failure factors change across the life span of the start-up providing relevant findings. From their study, a variety of important points were understood and quantified. One of these was analysing in what year the majority of start-ups were closing their doors (Figure 2). Their finding on this matter contributed to the ongoing effort of understanding, how the risk of failure changes according to the years of life of the start-up.



**Figure 2** – Years of life of start-ups

**Source** : Cantamessa et al (2018: 13)

Keeping in line with what the literature tells us concerning the high risk of failure of start-ups, taking the example of the western European Start-ups “about one-third of Western European start-ups do not survive their second year” (Van Weele et al., 2016). The majority failed between the first and third year where the uncertainty and development issues are at their peak. Furthermore, an analysis of the evolution of how the failure factors which hinder the start-up development across the years one to five was conducted by Cantamessa et al. (2018). The reasons for failure are presented in figure 3.



**Figure 3** – Reasons for failure between Y1 and Y5

**Source:** Cantamessa et al (2018: 14)

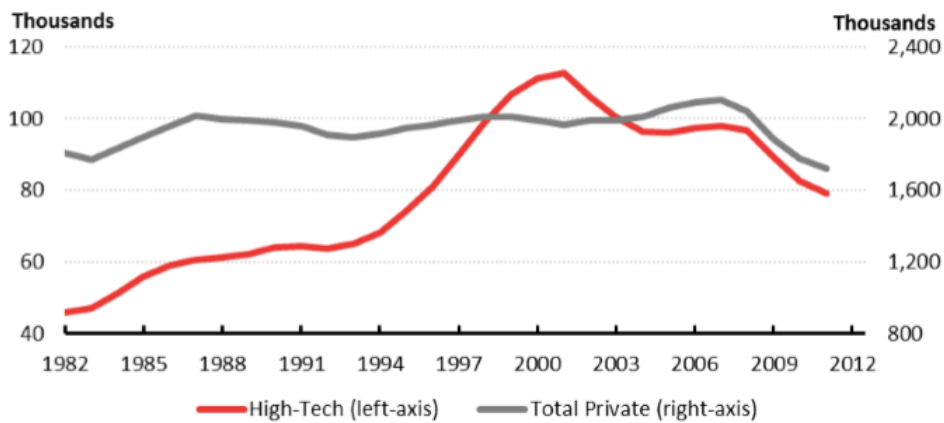
In the first year the lack of business model, running out of cash and no/wrong business model with no traction were found to be the biggest hurdles to the development, inexperienced management from the founders and generally very young team with no established processes and lack of fundraising opportunities are the main issues underlying these factors. On the second-year the major concern is that the company has committed too much resources in the first year into establishing a business model that is not aiding development instead being a major hurdle which can be quite hard to reverse and carries the risk of wasting a huge amount of resources and time with the ever present running out of cash risk close by. After the third year the lack of business development, internal management start posing a serious problem as the threat of a slow building of market shares builds up frustration among the team members. By the end of year five lack of business development is still the main issue followed by wrong positioning in the market, no market fit and wrong scaling as the market is as

competitive and dynamic as ever in 5 years the key attributes of the target market might have been altered, a new competitor might have entered the market first, new development technology makes the current platform outdated and so on, the more time is spend in activities that yield no benefit for the company the further away the company is from market standard.

### 2.3. What are Tech Start-ups?

As our society advances towards being progressively more dependent on technology, innovation takes centre stage as the main factor that can meet the consumers increasingly high demands for cheaper and better innovative products (Cantamessa et al, 2018). New products must be better, cheaper and ground-breaking to stand a chance of making an impact on today's competitive market landscape (Hemmert et al, 2016). Taking advantage of this, more and more start-ups focus on the development of new technologies to take advantage of the growing trend of technology-based customer-oriented products (Pérez & Fierro, 2018). Start-ups are fast becoming one of the main drivers of innovation and economy, rapidly replacing well established firms due to their considerable impact on the host countries economy and innovation capabilities (Edison et al., 2018). IT firms have become the main driver of economic growth, created innovative products and have changed how people live their lives (Huang & Xu, 2017) which is exacerbated by the exponential growth in the US between 1982 and 2011 in which high tech firms aged five or bellow surpassed the numbers of all total private firms, as the Figure 4 shows.





**Figure 4.** Young Firms (aged five years or younger) by Sector (1982–2011)

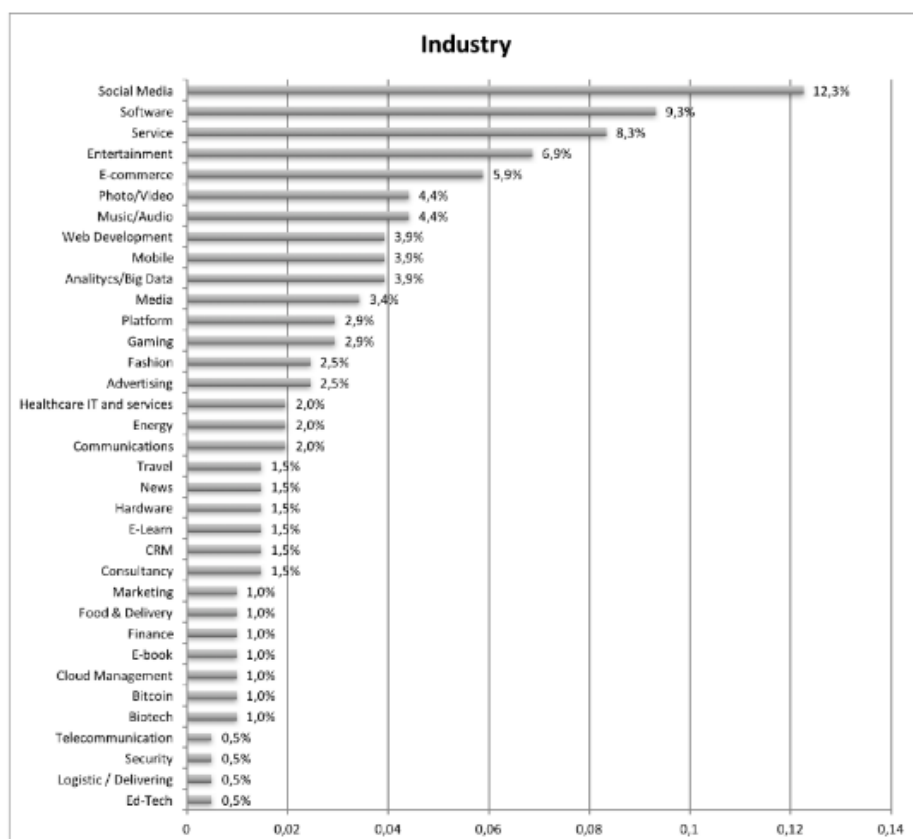
**Source:** Haltiwanger, Hathaway & Miranda (2014, p.7)

The simplest distinction of tech start-ups from regular start-ups is the one provided to us by Bajwa, et al. (2017) where software start-ups are used as an example to highlight the differences between tech driven start-ups and regular start-ups: “Software start-ups are start-ups that build software-intensive products/services” (p.3), which simply separates regular and technological driven start-ups by the different markets these serve. However, this places these start-ups in one of the most aggressive market environments, where a single mistake could ruin the start-up since generally technological focused start-ups have been found to focus on a single project at a time and windows of opportunity for launching new products are very short, making a mistake could end up being extremely costly and able to close the start-up (Bajwa et al, 2017). These must compete with local players, as well as international players that have many more resources and experience (Haug & Xu, 2017).

Tech start-ups are very challenging endeavours and like normal start-ups, are associated with high risk high reward ventures which are typically associated to high failure risks (Krishna, Agrawal & Choudhary, 2016). Nowadays, that is no longer the case, it has never been easier or cheaper to create a new technological start-up due to infrastructure like open source, software as a service, cloud hosting, global ubiquitous payment processing, viral distribution channels, a regular technological start-up dimension has been found to have 1,7 founder, employ 4,89 employees, and be on average 3.82 years old (Grimpe et al., 2017) . On the other end of the extremes,

“Unicorn” start-ups which are characterized by their platform business model have been propelled to enormous success, being now worth around 1 Billion dollars, with companies such as Google, LinkedIn, Facebook as example of the same (Acs et al, 2017). The same authors highlight that new firms although important for the employment growth a small fraction of the same hold most of the employment creation percentage. Moreover, employment by start-ups is on the rise in the USA and it is now correlated with most of the job growth, especially in places such as Texas and California where the tech start-ups in Silicon Valley is located (Marmer et al.,2011). In addition, it was found that young firms had a higher risk of failure relative to their counterparts (Baum, Calabrese & Silverman, 2000), in Europe 1/3 do not survive their second year (Van Weele et al. 2016). Moreover, these are expected to create new cutting-edge technology products with little to no operating history which stakes the odds against them from the very beginning (Giardino et al. 2015).

In Figure 5 by Cantamessa et al. (2018) it is possible to compare how the technological oriented start-up’s fare against non-technological orientated start-ups in their failure rates. Technological driven start-ups, such as social media and software, represent the top two industries, which report the highest percentages of start-ups failure from the sample gathered, having 12.3 % and 9.3% respectively of all start-up failures with the bottom ones on the list being Security, Logistics/ Delivering and Telecommunication (Cantamessa et al., 2018). Furthermore, it would be needed to go through all the categories to reach the fashion sector which is the first category that relatively devoid of technology. Other categories such as Entertainment, Service, E-commerce, Photo/Video, Music/Audio, web development, mobile, analytics/big data, media, platform, gaming all rely in innovative software focused products to meet customers’ demands and expectations. From Cantamessa et al (2018) work concerning this matter software focused or partly software focused start-up are associated with the highest percentages of risk of failure showing a clear pattern on which sectors the major risks reside.



**Figure 5** - Start-ups failures by industry.

**Source:** Cantamessa et al (2018: 9)

### 2.3.1. Types of internet start-ups

Marmar, et al. (2011) conducted a study called “Start-up Genome Report Extra on Premature Scaling” in which they described four different types of internet start-ups. The Type 1, the Automator, are product centric with a self-service customer acquisition strategy. Moreover, these are focused on the execution and automation of a previously manual process, examples are Dropbox and Kickstarter. Type 1N, the social transformer, focuses on developing a customer acquisition strategy and as their name imply, they tend to steer towards innovation that affects the way people interact with others which makes them very dependent on reaching critical mass to survive in the market. Furthermore, the market where these firms operate is of very rapid expansion when critical mass is reached, winner-take-all type of market approach as the target market is rapid to absorb however being resilient to change. This gives a sizable advantage to early

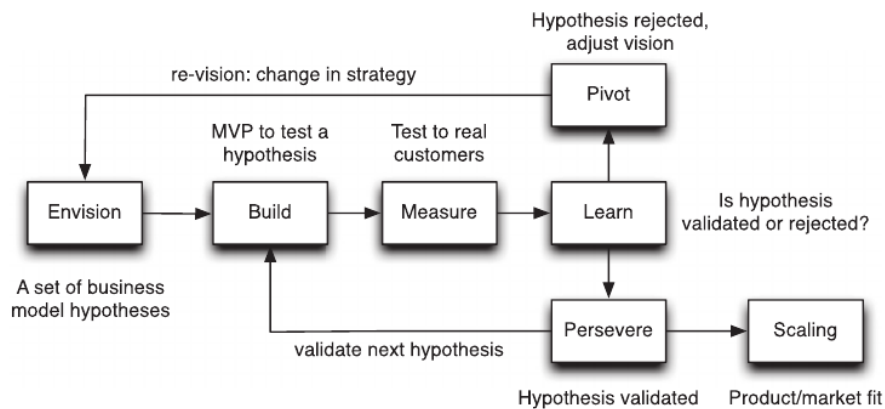
birds, from which Ebay and Skype are examples. Type 2, the integrator, is characterized by the firms' orientation towards generating leads with marketing and closing them with inside sales reps. Early monetization with subscriptions services in small markets are very common strategies, examples of this type are Adobe and Square. And lastly, type 3, the challenger, is recognized by the firms' focus on closing high paying customers in large however fragmented markets which, in turn, makes them highly dependent on securing these niche complex in rigid markets. Success lies on establishing a repeatable and scalable sales process, examples are, Oracle, Salesforce.

The distinction and categorization of internet start ups shows how start-ups, although being in the same general category, can vary heavily in their goal and purpose. Software Start-ups in this case can have completely different processes and goals with their target markets being also very different and share almost no common traits, so a one size fits all solution is not feasible.

### **2.3.2. Lean Start-up**

Technology oriented start-ups are very challenging endeavours sharing all the regular major risks present in all types of start-ups. Nonetheless a new set of principles called lean start-up principles were developed to change the focus of development. Now instead of focusing on the product which leaves start-ups most vulnerable to environment changes the focus is on the customer which ensures development is driven by the market need minimizing the risk (Melegati & Goldman, 2015). The logic behind waterfall type business plans that preceded the Lean Start-up were based on the idea of causation, which relied on accurate predictions of the future which resulted in unsatisfying results by not being able to keep up with the fast-changing market (Ripsas, Schaper & Tröger, 2015). Based on Toyota manufacturing and production system lean start-up presents a new vision for what is the best way for start-ups to operate with the focus on creating value for customer and eliminate waste during the development phase (Bajwa et al, 2017). Companies shifted from the causation logic to the effectuation logic that stipulated a proactive planning process mainly based on assumptions and constant

interaction with the external environment Ripsas, Schaper & Tröger, 2015). Eric Ries (2011) was the pioneer of this change since he advocated that a constant flow of information is needed to continuously justify and correct development of a product, “I’ve come to believe that learning is the essential unit of progress for start-ups. The effort that is not absolutely necessary for learning what customers want can be eliminated. I call this validated learning because it is always demonstrated by positive improvements in the startup’s core metrics.” (Ries, 2011, p. 49). The idea is to constantly verify the metrics to ensure that as sustainable start-up is being created, if these are failing it would be an indicator that the start-up may need to pivot (Frederiksen & Brem, (2017). It proposes that the development is made in a different new way that would prove better results than any process that had come before (Bosch et al, 2013). By advocating building the product iteratively and delivering to the market for earlier market feedback regarding customers’ needs and visions for the product, which helps shaping the product for the market needs right from the start (Bosch et al, 2013) . This is usually achieved by creating a minimum viable product through where the idea is made into a product that can be used to measure customer response fuelling the data that can be used for the development of the product, this is called validated learning, where the idea is tested and validated by the market before a decision to develop it has been made (Frederiksen & Brem, 2017). The time and flow from which the start-up obtains this data is usually quite short. Lean Startup is defined by Eric Ries as it represents a synthesis of Customer Development, Agile software development methodologies, and Lean (as in the Toyota Production System) practices. A visualisation of this process is offered by Edison et al. (2018) to better understand how this process works in figure 6.



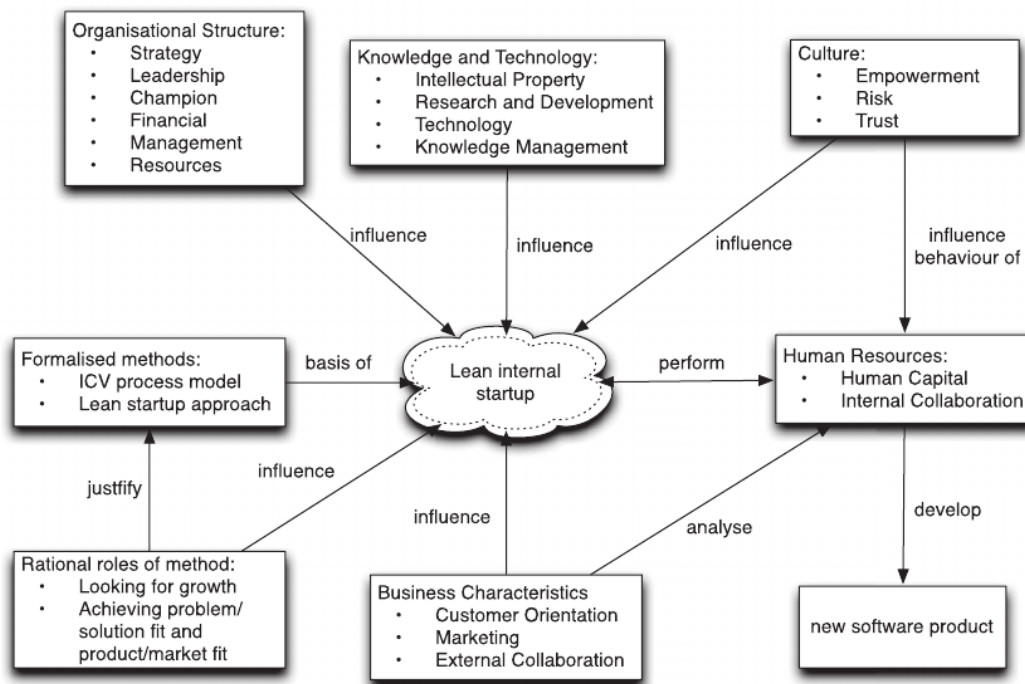
**Figure 6–** Lean Start-up Process Steps

**Source:** Edison et al (2018: 3)

The lean start-up process, as described by Edison et al.(2018) divides the product development in several stages which focus in coming up with the idea and setting the model hypotheses, testing the feasibility of the product that usually comes in the form a minimum viable product (MVP) measurement which equates to validation of the idea by testing with real clients to validate the next hypothesis. If the hypothesis is rejected the firm needs to pivot so the vision is adjusted to learn from its mistakes and eventually through trial and error to finally achieve the perfect fit for the market. Furthermore, this allows the start-up to fail often and at a low cost, which some companies are actively aiming for, as they recognize that the percentage of success on the first try is astronomically low and aim to take to learn from mistakes that will be committed without losing too many resources. This is encompassed in the set of five patterns and anti-patterns described by Melegati and Goldman (2015, p.2) “Have a Plan, Copy What Works or Better Practices, Remove Waste or Flow, Consider All Factors or System Thinking and Incorporating Feedback and Learning (...) (and a Miracle Occurs, Buy a Silver Bullet, All Problems are Nails, and Solutions must be General” these help to keep the development at its max efficiency while wasting little time and resources on tasks that yield no value.

Lean start-up processes affect all aspects of a start-up either directly or indirectly. As shown in figure 7 the conceptual framework for Lean Internal Start-up all aspects of

the start-up, not just product development, need to be optimized to serve the common goal and achieve the desired results. All different aspects must come together to optimize the team members and produce a product that serves the needs of the market in time (Edison et al, 2018).



**Figure 7** – Conceptual framework for Lean Internal start-up

**Source** - Edison et al (2018: 5)

We can take from Edison’s graphic that for a Lean Start-up to be fully operational, the external environment needs to be receptive of the solution provided by the start-up for the market’s problems. Furthermore, the established processes and hierarchy within the start-up must be stable enough so that missed deadlines and errors are infrequent and do not prevent the solution readability for the market. The communication line between the start-up and the market must always be kept open and responsive to achieve a steady flow of useful user provided information.

From all these factors that influence the regular development and evolution of a Lean Start-up, a number have been found by Edison (2018). In the author’s study, start-

ups were tested to see which factors were found to be enabling of productivity and evolution and which ones were inhibitors (Table 2).

**Table 2** – Factors that enable and inhibit Lean Start-ups

<b>Factors that enable lean start-ups</b>	<b>Factors that inhibit lean start-ups</b>
Explicit Strategy on innovation	Policies and Guidelines
Top management support with permission to break the rules	Changes in corporate strategy with no permission to break the rules
Organisational champion, Company's brand and reputation; branch offices and departments	Reliance on technology or platform developed by other teams (internally or externally)
Coaching, mentoring and training	Lack of freedom to experiment and pivot
Autonomy in decision-making process	No personal stake in the outcome
Personal Stake in the outcome combined with free to experiment and pivot aligned with a cross-functional team	Job description, routines. Balancing the long-term vs short term issues

**Source :** Edison et al ( 2018, p.11)

Activities that restrict creativity, fast decision making, and teamwork were found to be the main factors that inhibit Lean Start-ups. Usually a consequence of very rigid hierarchies that slow down decision making and lowers the responsiveness and capabilities of the start-up for adapting to rapid changes in its environment.

While the Lean Start-up presents a variety of useful and thought-provoking ideas and concepts, it is precisely this variety and complexity that makes it hard to understand, especially in the matter of how to best apply these to a particular context of a start-up considering how different they can be. Unfortunately, many do not fully implement (or adequately) this process due to a limited understanding of its fundamental concepts (York, 2018). Several guides have been crafted for this very reason. However, the one we will focus our analysis on is the one provided by Maurya (2010), which is considered to be one of the more influential guides. The author offers a guideline for applying Lean Start-up principles when compiling a road map for maximizing speed, focus and learning.:



1. Document your Plan A
2. Systematically Test Your Plan
3. Build a Validated Learning Loop
4. Iterate Your Way to Product/Market Fit

In the initial stages of a start-up, the strong passionate vision that allowed the creation of the same is moulded into a plan that will achieve the goals and dreams set when creating the start-up, this would be plan A. However Lean Start-ups were created to uphold a strong vision with facts not faith or hope and the fact is that the clear majority of plan As do not work and with that multiple flexible plans must be made to keep up with the evolution of the idea and start-up when tested by the market in a systematic way that enables the company to focus on doing the right task at the right time. The way to ensure the testing of the plan is systemic is to use the validated learning loop created by Eric Ries (2014) which states that a cycle of the following three tasks is completed: Build, Measure and Learn. By repeating this, the start-up is ensuring that creating a prototype to test and measure the feasibility of an idea and market reaction is the most effective way to validate or refute a hypothesis, which in turn drives the next set of actions. When this process is completed and redone several times with different iterations the product is tested and optimized for the market and it is ready to be launched at the most opportune time (Maurya, 2010). Understanding how start-ups take advantage from work practices and frameworks is essential to support the number of new businesses launched everyday (Paternoster et al, 2014).

## 2.4. Product Development in Technological Driven Start-ups

### 2.4.1. AGILE methodology

In general, the management of software development is achieved through the establishment of software processes, which are defined as a set of policies, standards, structures and artefacts that are needed to ensure the development, deployment and maintenance of the software product (Paternoster et al. 2015). Vijayalakshmi et al. (2018) depicted these processes in two categories. The traditional method, that focus on comprehensive planning, heavy documentation, and big design up-front, from which Waterfall type is an example. The other method is a lightweight method also known as agile methods, which focuses on how individuals work and how they interact rather than kind of tools and methods used, it values customer collaboration more than contract negotiation. Recently the shift from product focused development to customer focused development has becoming more evident, the Waterfall approach, with its sequential phases and heavy upfront planning is getting outdated as it cannot produce relevant results in this customer focused market environment (Balaji & Murugaiyan, 2012). A new framework must be built to solve the issues regarding unpredictability and change by relying on people and close customer collaboration rather than formalized processes (Bosch et al., 2013).

The agile manifesto focuses on customer collaboration and working software, as the principle behind it is to satisfy the customer through early delivery (Dingsøy & Lassenius, 2016). These principles can be easily accessed in the Agile Manifesto Website (<http://agilemanifesto.org/>) and it was created by Mike Beedle, Arie van Bennekum, Alistair Cockburn, Ward Cunningham, Martin Folwer, Jim Highsmith, Andre Hunt, Ron Jeffries, Jon Kern, Brian Marick, Robert C.Martin, Ken Schwaber, Jeff Stutherland and Dave Thomas as a group that had several management and product development experience in the software development field and recognized that there was a need to adapt to satisfy the markets rising needs in the near future. To achieve their goals they created the Agile Manifesto which is comprised of four major tenants depicted in Table

3 and 12 principle highlighted in Table 4 below. These break down the base of the agile methodology for practical application by start-up, which directs these towards a more agile project development and management.

Table 3 – Major Tenants of Agile Methodology

<p><b>Individuals and interactions over processes and tools</b></p>	<p>Processes and tools when misused can hinder the company’s potential more than they help. Ensure a motivated workforce and promote interactions between teams have an agile workforce that can adapt at a moment’s notice.</p>
<p><b>Working software over comprehensive documentation</b></p>	<p>If your software is working as intended your customer and stakeholders will trust you and heavy emphasis on documentation will hinder the development of the software.</p>
<p><b>Customer collaboration over contract negotiation</b></p>	<p>Customer collaboration is made usually through analysis of the software however less intrusive means are also available such as surveys, interviews and discussions.</p>
<p><b>Responding to change over following a plan</b></p>	<p>As start-ups are expected to pivot multiple times across their existence it is crucial that the environment in the start-up allows it to be responsive to any change or opportunity.</p>

Source <http://agilemanifesto.org/> accessed in 05/10/2018

The major tenants serve as general guidance for the adaption of the methodology and highlights the main ideas that popularized this methodology., with the emphasis on user rather than product. The major tenants are followed by the principles that support this methodology and justify it’s use over more antiquated methodologies such as the Waterfall.

Table 4 – Principles behind the Agile Manifesto

Our highest priority is to satisfy the customer through early and continuous delivery of valuable software	Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.	Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
Business people and developers must work together daily throughout the project	Build project around motivated individuals. Give them the environment and support they need, and trust them to get the job done	The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
Working software is the primary measure of progress	Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.	Continuous attention to technical excellence and good design enhances agility.
Simplicity is the art of maximizing the amount of work not done is essential	The best architectures, requirements, and designs emerge from self-organizing teams.	At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly.

**Source** <http://agilemanifesto.org/> accessed in 05/10/2018

The principles shown before were ground-breaking in the evolution of project management and product development when it comes to software development with its short development cycles, collaborative decision-making, rapid feedback loops and continuous integration of code changes into the product baseline avoided cumbersome and time-consuming processes that added little value to the customer. These provided great benefits as continuous delivery increased visibility, faster feedback loops and empowered stakeholders (Dingsøy & Lassenius, 2015). However even in today's context start-ups find it difficult to assimilate and follow every principle especially maintaining these in the development phase and usually end up following only a couple of them resulting in a sub optimal effort (Marmer, 2011). Furthermore, with the passage of time new agile methods are being developed resulting in many different variations of the set presented above such as Scrum and XP, which complicates the process of deciding the most appropriate process that fits the specific necessities of each company (Dingsøy & Lassenius, 2015).

However as much as Agile helps to mitigate the issues stated before, new companies are still having difficulty to deliver products in progressively lower spans of time to keep the company competitive in today's market drawbacks of adopting Agile Methodology do exist and can have a lasting negative impact (Turk & Rumpe, 2014). As the focus shifts from set processes that push to the side the role of analysis, design models and documentation, the software development cycle will suffer from a potential side effect which is the loss of corporate memory since it has done little to ensure good documentation and models to support complex and long software creation (Turk & Rumpe, 2014). However potential gains achieved by using the agile methods the justifies the acceptance of these risks. Turk, France and Rumpe (2014) discovered that the effectiveness of the agile processes is predicated in 11 assumptions depicted in table 5 that cause companies to apply and follow agile processes that do not fit their own specific environment and can lead to catastrophic results in loss of interest time and resources, namely.

Table 5 – 11 Assumptions underlying agile processes

<b>1</b>	Easy and constant source of feedback and information between developers and customers and reliance on face to face communication.
<b>2</b>	Marginalization of documentation and software models in software development.
<b>3</b>	Software requirements and environment in which the software is developed evolves as the software is being developed.
<b>4</b>	Development processes that increase dynamism and agility produce higher quality products.
<b>5</b>	Highly skilled workers in the company.
<b>6</b>	Project visibility can be achieved primarily through delivery of increments and a few metrics.
<b>7</b>	Rigorous evaluation of software artefacts (products and processes) can be restricted to frequent informal reviews and code testing.
<b>8</b>	Reusability and generality should not be goals of application – specific software development.
<b>9</b>	Cost of change does not dramatically increase over time during development.
<b>10</b>	Software can be developed in increments
<b>11</b>	There is no need to design for change any change can be effectively handled by refactoring the code.

Source : Turk, France and Rumpe (2014, 2)

All these assumptions regarding internal and external environment conditions lead companies to make incorrect assumptions regarding whether Agile processes is the best tool for their product/market needs (Turk et al., 2014). Moreover, if the product in question requires a big team of highly skilled individuals to produce a very complex system, it will become unsuitable for agile development and instead of adding value, it will inhibit the development of the product (Coleman & Connor, 2008). Furthermore, if the team and product fits the agile requirements, depending on the product and market that is being targeted, an incremental iteration approach like Agile might still not be the correct approach as the results gained from following Agile might not be the best fit to

engage the target market (Kopera et al, 2018). Bosch et al. (2013) points out that that certain elements of the Agile processes cannot be used to further increase the overall competitiveness of the company and product. And that it is slowly it is coming into realization to several companies that some parts of agile processes can repurposed for their requirements and objectives while others might limit or jeopardize their efforts.

Key hurdles have been identified when attempting to implement Agile processes in a start-up. Beaumont et al. (2017) found that the major hurdles arise due to the team members failing to operate to the level expected under uncertainty, lack of unity inside the company, which reduces its agility and rigid hierarchy which limits fast decision making. The same author highlights the same issue that is often focused on the literature, start-ups when completing projects the main issues arise from internal team issues. It was to diminish the impact of the challenges that affect technological driven start-ups, with an emphasis on software, that the methodology was completed.

#### **2.4.2. Challenges of Product Development in Software Start-ups**

“For software start-ups, one of the key influencers of success is an ability to build a working product that solves some meaningful customer problem. If developing working software is not a core competency of the start-up, it’s unlikely that the start-up will succeed” (Shah, 2006, p. 37). The study from which this quote was taken also showed that, 84% of the 8000 software projects surveyed did not finish in time or budget with all features installed and 30% of all projects were cancelled before completion. Although the study is from 12 years ago, with Agile processes taking centre stage the issues and percentages of failure are still very much present in everyday of every software start-up.

Software product innovation is quintessential to the development of technological start-ups as these are the bargaining chips new companies must use to gain a share of the highly competitive market. In the software development industry, innovation could be either process or product since the focus has shifted from product to customer (Edison et al, 2018). Furthermore, with the evolution of the international

markets, waterfall type-based start-ups are now having more difficulty surviving the harsh unpredictable environment that made product focused frameworks a liability since it does not reflect the market demands nor it produces customer focused products (Edison et al, 2018). Historically the innovation of the “waterfall” approach to software development was quite useful and successful (Chowdhury, 2018). It served mainly to standardize development and guarantee quality and consistency through very strict sets or predefined stages in a very linear fashion, which was centred in the notion that each one of the team’s members in a project should be doing highly structured tasks and, as a result, minimizing the degree of resources spent on coordination across projects and teams and minimizing development risks (Shah, 2006). The same author suggests that the waterfall approach to software development might not be the best choice for more contemporary projects as it assumes that it is possible to capture all requirements and complete analysis before design begins. If one adds to this the enormous risk of project and start-up failure, this dependence on a single process and structure becomes a liability that reduces heavily the agility of the company to be able to pivot (Shah,2006). The desire to eliminate this liability and promote agility in the firms was what inspired the creation of Agile methodology. (Turk, France & Rumpe, 2014). Which upon completion shifted the focus from the product to the customer while breaking the projects into multiple iterations making it possible to receive feedback on these from customers. This feedback proved crucial when building future iterations as it reduces heavily the dependence on a single iteration of a product or project (Vijayalakshmi et al, 2018).

Marmer et al. (2011) highlights that issues on product development take the form of building a product without problem/solution fit, investing into scalability of the product before market fit and adding many optional “nice to have” features. Another factor that affects the product development is highlighted by Crowne (2002) who conducted a study on the evolution of software development in start-up companies. The author found several factors, which are unique to start-ups, impeding the development of the product (Table 6)



**Table 6 – Literature on development issues that affect technological Start-ups**

<b>Developers are inexperienced</b>	Young inexperienced developers often find themselves with more work that they can do. This results in mistimed schedules, unreliable results and longer development times.
<b>Product Isn't Really a Product</b>	Products often are shaped with the customer in mind. Different costumers require different functionality. Time and resources are spent on constantly upgrading versions.
<b>Product has no owner</b>	"Authority over who decides what features go into the product is not set. "An elephant is a mouse designed by a committee" (Crowne, 2002: 2)
<b>No strategic plan for product development</b>	Business plan of the company does not mirror the product development. Failure in that means limited cash reserves are focused on little return endeavours
<b>Product Platform is Unrecognized</b>	Components that support the project development are given little notice prior to implementation and left for the product developers to decide.
<b>Founders won't let go</b>	Although people have been hired to manage the projects, founder and executives do not let go of their influence on these blocking team developments.
<b>Development Team Fails to Gel</b>	Early birds and late joiners' developers' conflict in interests and prestige, the first demanding higher benefits and resist changes.
<b>Unreliable Product</b>	Defects and costumer issues plague the product which halts development of new features.
<b>Requirements become unmanageable</b>	More request is present them the team has resources to handle. Team is overwhelmed.
<b>Product Expectations are too high</b>	Product is unreliable nonetheless continuous new features are added to development chain.
<b>Service provision delays development</b>	Product developers instead of completing new features and bug fixes are providing services to the rest of the organisation.
<b>Skills Shortage Delays Development</b>	Small number of employees are responsible for the majority of development which blocks flow of development through them.
<b>Platform Creep Delays Development</b>	Multiple platform compatibility and availability is required with no idea of what it means in terms of resources-
<b>Product Pipeline is Empty</b>	Innovative features ran out and ordinary add ons and fixes become common place affecting retention rates.
<b>No process for product introduction</b>	Coordination and cooperation deuterate which make a coordinated program of activities hard to achieve.

Source - Author

Few studies acknowledge the issues put forward by Crowne (2002) as the focus of the literature is leaning more towards success assuring factors. Nonetheless the issues presented above are still very present in today's technological start-up reality as

companies struggle to follow lean/agile methodologies. While using the SHELL model to assess failure factors of start-ups, Cantamessa et al. (2018) found that the loss of focus on the product, not being feasible and bad quality did not evolve with the market, as proven negative factors on product development.

All the issues put forward by literature show just how much start-ups and product development is affected by external and internal factors. As start-ups are very sensitive, small changes turn into major ones with astounding speed. Giardino et al (2015) surveyed entrepreneurs and start-ups in an attempt to ascertain the challenges start-ups owners perceived to be the worst inhibitors of success. Only two out of the top 10 factors blamed product development, namely Thriving in Technological Uncertainty ( top 1 perceived challenge) and Defining Minimum Viable Product ( sixth place). The remaining eight were linked to team building and development processes issues; lack of experience and resources. According to the authors, this further highlights that product development is not perceived to be as impactful on the development as business and team building by the entrepreneurs. Meanwhile in the top 10 of perceived factors that inhibit success the lack of business and social networks was an area that was not included in the major concerns for the surveyed (Giardino et al, 2015). This is despite social networks such as Twitter being found to increase a start-up's chance of closing financing rounds (Jin, Wu & Hitt, 2017). Sustaining these networks allows the start-up to gain access to valuable resources and knowledge that would otherwise be off the start-ups ability to reach. (Centobelli, Cerchione & Esposito, 2017).

#### **2.4.3. Importance of Networking Creation for Technological Start-ups**

Starting a new business and developing it into a major success is very complicated and only a select few make ever reach their target goals (Baum, Calabrese & Silverman, 2000). Much of the research acknowledges the importance of networking for the success of the start-up venture due to the capability of the same to provide cheap resources and knowledge that would otherwise be unavailable. (Mattsson, Helmersson & Standing, 2018). Start-ups very often find themselves in a situation where they need

help to overcome a barrier that usually strikes a weakness that they cannot easily surpass internally which can be the primary motivation for seeking out a network. (Mattsson, Helmersson & Standing, 2018). This can take many forms, however usually networks serve as a way of helping start-ups to gain access to markets, knowledge and resources that they would not have access to or would take a much longer time to obtain (Turkina, 2018). Social networks have been correlated to a reduction in transaction costs, business opportunities, and generating knowledge spill overs (Turkina, 2018). Although small organizations such as start-ups tend to view other organizations as potential partners instead of rivals (Vanhala & Saarikallio, 2015), however, knowledge protection has been found to hinder business cooperation, which suffocates the development of the start-up (Centobelli, Cerchione & Esposito, 2017). Baum, Calabrese und Silverman (2000) assessed the importance of network alliances for start-up performance in Canadian Biotechnology and found that start-ups would be able to enhance their performance if they completed the following tasks: "(..) 1) Establishing an alliance network, 2) configuring the network to provide efficient access to diverse information and capabilities with minimum cost of redundancy, and 3) allying with potential rivals that provide more opportunity for learning and less risk of intra-alliance rivalry." (Baum et al, 2000, p. 2). these are much sought after however they are in more pressing need when the start-up has founding members covering multiple roles due to resource scarcity and environment as new companies have less to offer and such are at a disadvantage at the negotiating table. (Stinchcombe, 1965). Moreover Weele et al. (2015) stated the importance of these networks since without using these the resources of the ecosystem surrounding the start-up cannot be enjoyed to their full extent. Further noting that the 2 primary points shown in entrepreneurial ecosystem literature defended that regulation and culture as the two most important aspects that influence standard start-up activity.

According to Baum et al. (2000), the value of a great network incites start-ups to establish and force these prematurely, potentially causing more harm than good. The authors state that duplication of rivalry and difficulty in assessing the value of the relation plagues the negotiation tables. Furthermore, in recent history spotlight

networking alliances between large enterprises resulted in heavy losses for both companies, in time a profitable alliance can turn out very costly for the company. As the authors put it “Strategic alliances are inherently incomplete contracts in which the property rights associated with alliance output and profits may not be well defined “(Baum et al., 2000, p. 5).

It is also worth noting that networking in today’s age of technology does not necessarily entail corporate networking where assets, resources and information are exchanged through the acquaintance of a market player interested in doing so (Turkina, 2018). Having a strong presence in social media, although often not directly and often at a slower pace, has been linked with higher percentages of fundraising success and higher margins. Jin, Hitt and Wu (2017) found that “start-up firms active on social media have higher chances of getting funded, receive large amounts of funding, and have a larger number of investors all consistent with the idea that social media provides information that facilitates venture funding “(p 2). The authors indicate that the reason for this is that social media presence enables a potential investor to assess a great deal of aspects of the start-up before actually approaching it, such as quantity of followers, how does it interact with its customers, what the feedback of the customer to its new product is and so forth which can be quite reliable information when assessing a start-ups health.

## 2.5. Start-up Failure

### 2.5.1. Failure Factors

Studies analysing the risk factors that start-ups face when developing new business ventures increased in frequency following the rise in start-up creation and popularity. Either identifying the perceived weaknesses of these recent organizations when compared to more traditional ventures (Bruno & Leidecker, 1998) or measuring the internal and external sensibility to risk of start-ups (Everett & Watson, 1990). The latter suggested the biggest hurdle for small businesses to be their incapacity to diversify and rely on a very small pool of management expertise. “A source of success is rarely technological superiority alone, but rather a business model that stays behind” (Kopera, et al, 2018, p. 1) stating even that there is a deficiency of market-management related competencies. This is one of the reasons why these organizations are so sensitive to their surrounding environment. With the advent of the Lean Start-up and Agile methodologies start-ups tried to synchronize more with their surrounding environment to minimize the risk of failure (Edison et al, 2018) although the adoption of these methodologies also brings forward new issues as start-ups have difficulties adjusting to the new content (Crowne, 2002). When attempting to gather a basic sample of literature concerning the failure factors these were often bound to specific contexts such as case studies or processes such as Agile/Lean Frameworks which removed any generalist categorization of these. Methods to measure and improve start-up efficiency and survival rates have been developed with the most prominent example being the “Lean Start-up” strategy adopted by several start-ups. However even with the focus on lean/agile frameworks the failure rates in the first years regardless of region and market remain high, as 9 in 10 are expected to fail as the industry standard. (Krishna et al., 2016). Starting with the right people is particularly relevant, since it is the human capital that has been found to be linked directly with the quality of product and services that a firm offers (Bendickson et al, 2017).

In Table 7 we highlight points from some of analysis and investigations regarding assessments of failure factors in start-ups that we found were considerable used as sources of other investigations.

**Table 7** – Literature Points on Start-up failure factors.

<b>Conti, Thursby &amp; Rothaermel, 2013</b>	“little or no observable history of performance and uncertainty about their technology, a major issue for these entrepreneurs is how to signal their value to potential investors.” (Conti, Thursby & Rothaermel, 2013: 2).
<b>CB Insight (2014)</b>	The main reasons of start-up failure – (top 4) No market need (42%), run out of cash (29%) not the right team (23%), get outcompeted (19%); bottom 4 – Legal challenges (8%), Don t use network/advisors (8%), burn out (8%) and Failure to pivot (7%).
<b>Giardino, Bajwa, Wang &amp; Abrahamsson (2015)</b>	(...) general lack of resources, high reactiveness and flexibility, intense time-pressure, uncertain conditions and tackling fast growing markets. (...) A large-scale survey, with 5389 complete responses, shows that thriving in technology uncertainty (21,01%) and acquiring first paying customers (16,14%) are among the top challenges that most software startups are facing at their early stage” (Giardino et al, 2015 : 2).
<b>Wang et all (2016)</b>	“thriving in technology uncertainty, acquiring first paying customers, acquiring initial funding, building entrepreneurial team, delivering customer value, managing multiple tasks, defining minimum viable product, targeting a niche market, staying focused and disciplined, and reaching the break-even” (Wang et all, 2016 : 3 )
<b>Okrah, Nepp &amp; Agbozo (2018)</b>	“Many business failures are mostly attributed to lack of financing, internal market dynamics and lack of innovations. there is a concern over declining” (Okrah et all, 2018 :2)
<b>Kopera, Wszendybyl-skyulska &amp; Cebulak (2018)</b>	“top setback causes are related to lack of business and management knowledge and competencies in new tech ventures” ( Kopera et all, 2018 : 1).

Source: Author

The literature presented above serves to highlight which are the main factors that afflict start-up development. From these we can see that across a span of seven years in these studies some factors related to the very nature of start-ups remain constant. Namely operating in extreme uncertainty, lack of resources and proven processes as the start-up is trying to build a minimum viable product and validate its idea and market. The need to constantly evolve and perfect the development of young yet competent market players and making sure that every effort and resource is spent in activities and tasks that yield measurable value.

Furthermore, if the hurdles do not halt the development of the start-ups it might consider the option of investing into scaling activities. Depending on the timing investing in scaling can be catastrophic as it has long been recognized to be dangerous as rapid growth can result in the death of the firm (Steinmetz , 1969). Incapacity for sustaining and managing the growth of the company can leave it underperforming and losing its gains, which in aggressive markets can happen overnight (Maurya, 2010).

### **2.5.2. Premature Scaling of Start ups**

Marmer, et al. (2011) developed the STARTUP GENOME using data from 3200+ high growth technology start-ups. They compiled a 67-page analysis that focused on describing factors that affect start-up growth and lead to eventual failure. One of the major factors that was put forward in their study was the fact that start-ups were often rushing out their scaling activities. The authors state that the “Premature scaling is the most common reason for start-ups to perform worse. They tend to lose the battle early on by getting ahead of themselves. Start-ups can prematurely scale their team, their customer acquisition strategies or over build the product” (Marmer et al, 2011, p. 8). Their study offers insights on the failure factors of start-up when these surpass the first barriers and start scaling which is a whole different context and stage of their life cycle.

Furthermore, Start-ups usually exhibit several of the examples of inconsistency showcased on table 8 that divides the inconsistencies into five dimensions namely:

Customer, Product, Team, Financials and Business Model. “Start-ups need 2-3 times longer to validate their market than most founders expect. This underestimation creates the pressure to scale prematurely.” (Marmer et al, 2011 :8)

**Table 8** – Example of Inconsistencies on Startups.

Dimension	Examples for inconsistency
<b>Customer</b>	<ul style="list-style-type: none"> <li>• Spending too much on customer acquisition before product/market fit and a repeatable scalable business model</li> <li>• Overcompensating missing product/market fit with marketing and press</li> </ul>
<b>Product</b>	<ul style="list-style-type: none"> <li>• Building a product without problem/solution fit</li> <li>• Investing into scalability of the product before product/market fit</li> <li>• Adding “nice to have “ features</li> </ul>
<b>Team</b>	<ul style="list-style-type: none"> <li>• Hiring too many people too early</li> <li>• Hiring specialists before they are critical: CFO’s, Customer Service Reps, Database specialists, etc</li> <li>• Hiring managers ( VPs, product manager, etc) instead of doers</li> <li>• Having more than 1 level of hierarchy</li> </ul>
<b>Financials</b>	<ul style="list-style-type: none"> <li>• Rasing too little money to get trough the valley of death</li> <li>• Raising too much money. It isn’t necessarily bad, but usually makes entrepreneurs, undisciplined and gives them the freedom to prematurely scale other dimensions. I.e over hiring and over – building. Raising too much is also more risky for investors than if they give start how much they actually needed and waited to see how they progressed</li> </ul>
<b>Business Model</b>	<ul style="list-style-type: none"> <li>• Business Model</li> <li>• Focusing too much on profit maximization too early</li> <li>• Over-planning, executing without regular feedback loop</li> <li>• Not adapting business model to a changing market</li> <li>• Failing to focus on the business model and finding out that you can’t get costs lower than revenue at scale</li> </ul>

**Source** : adaptaded from Marmer et al (2011 : 11).

From all the inconsistencies and the issues categorized we can gather several points. First that time is being spent on tasks that yield no benefit to the company. Second, knowledge gathering is not being an effective practice as gathered information is often outdated and unusable which could lead to catastrophic decisions. Third is the



failure to assess the resources needed, human, financial and more for the completion of a project or task. It has been shown how hard it is to assess the time and resources needed especially as the clear majority of technological start-ups that are created have a considerable number of inexperienced members. Premature scaling has been found to be the most common reason for start-ups to perform at a worse pace than what they are capable of and unorganized efforts to assess start-up capability for scaling ends up taking 2-3 times longer on market validation which causes them to miss the opportunity window for the launch of their product or launch too early without being ready (Marmer et al, 2011).

Within all these factors that affect and jeopardize the scaling venture of start-ups premature fundraising is a rather polarizing subject. The common perception in start-ups is that these institutions are often held back and fail because they are not able to fund their efforts and end up closing (Filho et al, 2017). However often premature fundraising can accelerate the destruction of a start-up and lock the institution in a spiral of bad decisions validated by achieving premature scaling.

Maurya (2010) compiled a series of points that we find adequately highlights the main issues of attempting and achieving premature fundraising.

- 1. Getting funded is not a validation** – Early stage start-up potential assessments are very often wrong either made by the owner of the start-up or the investors. At this stage product is not refined and the best is made on team potential and backgrounds which can be very volatile.
- 2. Without Validation you have no leverage** – Validation is the best bargaining chip without it the valuations skewed towards investors decisions.
- 3. Investors Measure Progress Differently** – Growth data is the most popular toll by investors to measure progress of a Lean Start-up. Early stages validations and growth can be hard to measure and take time.
- 4. Getting funded always takes longer than you think** – Start-ups operate under strict schedules as they must make the best out of little resources they have, and fundraising can require considerable amount of time and resources that could be allocated to other areas such as product validation/development.

5. **Too much money can actually hurt you** – Money accelerates progress however if progress is not being made it could accelerate and increase issues already present.
6. **What about all the advice and connections?** – Networking events are one of the make events that provide opportunities for advice and even partners that do not require much equity, search for these hubs that are less risky for you and provide quality advice.

We found this area to be relatively unexplored in literature compared to other facts as successful fundraising is usually seem as a very positive boost to the start-up's survivability and development and not the potential drawbacks of "too much of a good thing".

## 3. Activity Report

### 3.1. The company



**Figure 8** – Datris Logo

Established in 2015, Datris is an agile, specialist venture that is developing commercial opportunities in Big Data Analytics for businesses and organisations including aerospace, defence and education as well as developing its own selected specific end-user applications. Datris stands for Data > Transformation > Insight and means hope in the Welsh language.

In its early stages it would provide contracting services in the fields of consultancy, open data technology innovation and internet security with the aim of storing up money to fund itself. However nowadays Datris is focusing on the projects set up by the vision of its two founders. The company's main projects are the clubbetter project, building a membership management app is the main one and the unofficially named Seeker project is building an analytics engine. These two projects are where the investment money, time and resources are mostly focused on.

Datris is currently developing new web-based and mobile software of clubbetter for beta test in Q2 2018 and launch by Q4 2018, starting in the Welsh market and then the rest of the UK. Reaching all the developed world is a long-term objective.

Currently with seven employees divided into three directors (one Commercial Director and two Technical Directors) one marketing executive, one marketing assistant

intern, one front end developer, one back end developer and one lead developer is currently headquartered in the small city of Caerphilly, Wales.

What differentiates Datris from every other start-up currently operating in the open data technological sector is the experience and knowledge that the three directors can put forward. All of them worked in reputable companies such as Nestle, Boeing and Airbus which are well know for tested and confirmed processes that deliver value using complex systems and tasks.

In both an effort to mitigate cost and insert Datris into the networking environment, the company's current offices are located at the Lodge building inside the Welsh ICE, the innovation centre for Welsh start-ups, which has opened many new prospects and potential for Datris. Currently 200 plus businesses are based on the ICE campus and range from financial and technological focused to service and restauration sectors.



**Figure 9** - Welsh ICE Installations.

**Source:** [www.welshICE.com](http://www.welshICE.com)

Datris was created to tackle issues and exploit opportunities in the Open Data market more specifically membership management software and internet scrapping bots while focusing on establishing productive working processes based on the director's previous experiences with an emphasis on Agile principles and Lean Start-up ideals which keep the company alert to its market, customers and dynamic to adapt in

a heartbeat to the markets demands. Moreover, it is based in a community of start-ups where ideas and resources are never too low.

### **3.1.1. Identification of the Company**

Social Name: Datris Solutions

Fiscal Number 9523787

VAT 209 3123 38

Address: Welsh ICE, Caerphilly Business Park, Van Road, Caerphilly, CF83 3GG

Telephone: 029 22 093 094

Managing Director: Dafydd Davies

Email address: [contact@datris.solutions](mailto:contact@datris.solutions)

Website: <http://datris.uk/index.html>

Founding Date: 2015

Juridict Form: Lt

Sector/Subsector : Open Data

### **3.1.2. Mission and Vision**

**Mission** “Turning data into knowledge to enable better informed decisions is one of our primary goals. By using innovative visualisation techniques, we provide a view on the data that is intuitive and flexible because we understand that data is only the start of the journey, but the information and insight that it can provide is the destination.” (Source : <http://datris.uk/> accessed in the 10<sup>th</sup> of August 2018)

**Vision** “Running a club or group with a few resources is a real challenge. Like many others we do it anyhow because we are passionate and committed. So we made clubetter to help us all achieve more” (Source: Figure X, promotional flyer created , Dave 2018).

### 3.1.3. Company Organogram

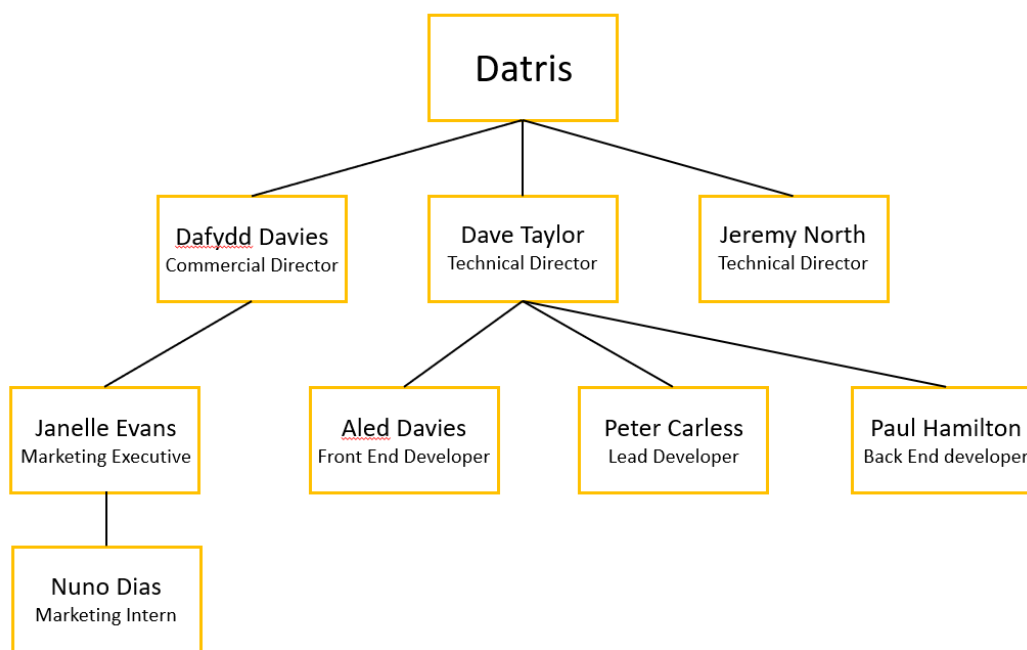


Figure 10 – Datris Organogram

Source - Author

### 3.1.4. Internal and SWOT analysis

Being Datris a start-up it suffers from the usual start-up issues such as the lack of human resources. During my internship as a marketing assistant I was tasked with helping and contributing to whichever important task was being handled at the time. Nonetheless, as the product was still in its infancy there was no sense of urgency to the tasks. It is worth noting that the three directors all work in a part-time regime in the company, some of them are rarely in the office. The permanent staff of the office was the marketing executive, the senior developer, the front developer and me the marketing assistant. The directors rely on phone calls, communication software such as Slack and Gmail to establish communication between the members of the staff when they are not

physically present in the office. As a note, although there were only eight official members, there were plans for hiring three new interns, two as developers namely android and CSS and a marketing assistant.

To better understand current strengths, weaknesses, opportunities and threats of Datris, one must take a closer look at the flagship project Clubetter since most of the focus of the company was in this project during the six-month period in which I was present to observe their actions.

Clubetter, the flagship, project was set to be a membership management software that would take parts of successful products and combine them to into an affordable package with the emphasis on ultimate ease of use by its users. Its goal is to target low-income organisations, clubs, societies and groups that cannot afford a full customer management system for themselves and need a cheaper tool optimized for their needs.

By the time this report was written, the application has not yet been completed and only a very few beta testers were looking promising. Much of the app is yet to be completed and fine-tuned for the users to take full advantage of it. Nonetheless, such tests were indeed conducted, and a variety of competitor research tasks enabled a direct comparison with the competitors that highlighted the flaws in the systems as well as their strengths.

The Clubetter application is aimed at a relatively new market, the not for profit organisations that have avoided being focused by the market by being a hard market to explore with low income of most of its institutions and general suspicion of intervention by government or private sector organisations. By being a free application that grows alongside the organisations, it seeks to win over the low income and reputation issue in the attempt to grab hold of this new market by satisfying their needs in a cheaper and more user-friendly way. Moreover, as the test and expectations continued, the capability of the app to manage even larger groups was highlighted.

However, opportunities to reach this market have always existed, other competitors tried and failed to grab hold of this niche market. Companies with many

more resources and experience have failed at gaining sustainable gains which showcases how hard it is to gain root in such an unstable market. The weaknesses shown in the company are represented in table 9, make it so that quick and rapid actions are very unlikely. Lack of project management focus adds up to an unorganized focus which could derail the efforts inputted into the project. Either taking so long to reach the market that another competitor has taken all of it already or failing to complete the application until the company runs out of money.

**Table 9 – SWOT Datris Solutions**

<b>Strengths</b>	<b>Weaknesses</b>	<b>Opportunities</b>	<b>Threats</b>
<p>Highly experienced set of directors with proven backgrounds in project management and technology development.</p> <p>Agile and Lean Start-up based project framework</p> <p>Stable financial situation</p> <p>Director networks</p>	<p>Lack of general focus regarding long term objectives</p> <p>Friction between directors.</p> <p>Unexperienced team</p> <p>Part time directors</p> <p>Slow development</p> <p>Project management is lacking</p> <p>High Rotation of employees</p> <p>Low market awareness</p>	<p>Open data sector is still very young with a lot of room for new ventures</p> <p>Not for profit sector focus</p> <p>Net crawling bot's area is still very recent with ample space for new ventures</p> <p>Social Prescribing is an area which could benefit from the software developed in Datris,</p>	<p>Few but strong competitors on the membership management software market</p> <p>First come first served time of market, delays can mean failure to grab any meaningful market share</p> <p>Lack of public relations experience</p> <p>Investment into R&amp;D is very expensive</p>



### 3.2. Tasks implementation and research process

The research developed during the implementation of my internship tasks was focused on the identification and description of already identified in literature failure factors while searching to add to current literature by looking for new avenues of potential exploration for future studies or adding to lesser explored areas. In such an early stage of the start-up, a considerable amount of quantitatively data gathered is not as reliable as it expected, as the instability of the start-up compromised some of the data. The consequences of certain actions could only be measured in longer timelines (2-5 years) than the one of my internships. For that reason, this work has a stronger focus on subjective comparisons of the findings on the development of the company with the current literature. Therefore, I developed predictions using current literature findings so as to shed light on the failures and successes factors that this technological start-up should be aware of in order to improve its survival chances.

Basing on the current literature the comparison and identification was broken down into three sets: marketing issues, product development issues and project management issues. This division allowed me to provide an equal overview of the different factors that affect the organisation.

In regard to the processes that were followed to report the implement the activities, the approach was mixed. While some aspects were able to be measured in a quantitative way (e.g. how many projects were completed in the expected time limit) the majority are reported in a more qualitative way, as the company is still very young, and no tested processes have been applied. With that in mind, a comparison between what the literature suggests as success and failures factors for technological driven start-ups was needed to reflect on how the current practices were affecting the performance of the company.

The objective of my internship was to gather first hand data and experience of everyday life issues of a technological driven start-up. The assessment of the relevance of the activities developed is based in a deductive approach as predictions of the

consequences of the decisions made in the company were based on literature findings given the limited data. Furthermore, a conceptual and theoretical structure was built to standardize the process and tested through empirical observation. My internship tasks and research were developed according to the following steps:

Table 10 – Task planning and research method

<b>Research Method</b>	<b>Task Planning</b>
Identification of the research subject	Identification of the needs of the company to be addressed through the internship tasks
Planning of the research project	Definition of the tasks
Data Gathering	Tasks implementation
Analysis and Interpretation of data	Assessment of the tasks results

Source: Author

### **3.2.1. Identification of the research problem and the needs of the company**

The problem was conjured up from the subject of the masters that I am a part of, International Business, where the factors that impeded the success and evolution of start-ups affect international markets were deemed a viable exploration area as these afflict the development of business in international markets. The definition of the problem came from direct exposure to the environment from which Datris operates the technological driven type of start-ups, which gave ample space to reflect on the “Why”, “How”, “Where”, “Who” that defined the failure and success factors of technological start-ups.

Bellow I have divided the tasks in which I was the responsible or and I had a part in the development in two projects, clubetter the main Datris project where the main bulk of activities was concentrated and Seeker the analytics engine which was a side project expected to be ready and launch much latter than clubetter.

# Clubetter

## Marketing tasks developed

- Review and assimilate the knowledge and processes which provided a brief overview to the work framework of Datris.
- Market research orientated tasks such as competitor research, potential customer's database creation and scouting of potential partners.
- User Journey mapping.
- Clubetter presentation PPT.
- Designing of branding material such as logo, flyers and step by step guide.
- Alongside the commercial director and marketing executive, conducted client prospecting which if successful evolved into on boarding activities.
- Customer support in the form of direct contact and online support.
- Leasing with potential clients for the implementation of the software in their organizations (Scarlets Rugby, Whitchurch Social and Sports club).
- Assistance with fundraising attempts (business angels and fundraising programs such as Data Pitch and Active Lab).
- Review and continuous development of design implementations with our collaborators in India.
- Scoping numbers of Not for Profit Organisations in the UK separated by country and category.
- Testing clubetter in its Alpha stages with the objective of creating a report identifying current issues (bugs) and suggestion for the enhancement of the functionality of the same.
- Development of updated and new functionality for clubetter.
- Improving user experience by updating overall user experience by enhancing existing user journeys.

## **Analytics Engine (Seeker)**

- Competitor research with the objective of finding main strengths and weaknesses
- Fleshing out a user journey document of the competitors.

Within Datris Solutions my work was primarily focused on market research revolving around not for profit organizations and clubbetter competitors while testing the clubbetter platform for issues. However, as those tasks were completed the focus then shifted to, assisting in the development of the platform as I was taking an active role testing and ensuring that the functionality in development was optimized for the users. In addition, at this stage the prospecting attempts for beta testers for the clubbetter platform were starting and I was tasked with designing promotional material for the platform, namely flyers, step by step, presentations and a video. These were used while prospecting for new users which, although largely unsuccessful, managed to get a few users (i.e. Whitchurch Rugby and Social Club) to utilize the app. From these users, a user journey was created to better understand how users would interact with the app as well as, material to brainstorm future needs and features that would be of value to clubbetter users. Following contact with the beta testers, customer support was a temporary task where I managed calls and emails detailing issues with clubbetter. At a later stage a new client, a large rugby club in Wales was interested in clubbetter in which I participated in the meetings that set out the objectives of the cooperation. One of the subjects of the discussion was the re-branding of the clubbetter platform to the branding guidelines of the rugby club which Datris had no internal capacity to handle such request opting to outsource the task to India while I was overseeing and aiding in the design changes.

Whenever there was free time in between the tasks presented above I was tasked with market research of the secondary project SEEKER, mainly competitor research while using the competitors' platforms as a base for the user experience for SEEKER. Furthermore, assistance with the attempts at fundraising contest which Datris participated was required, I usually contributed in the form of research of the requirements and participation in webinars for the same reason.

My participation in these tasks that provided me with information concerning the management, marketing and product development side proved essential to later construct this report as it provided the best angle to assess the start-ups health.

### **3.2.2. Planning of the research project and definition of the tasks**

When contemplating how to best gather and assess the information relevant to analyse the current state of Datris Solutions, a research plan was formulated. It was decided that the best plan to record the relevant information, was to capture the tasks and corresponding objectives in which I participated. By identifying the tasks and their objective and by later analysing their progress, outcomes and hurdles, we would be able to gather enough data for analyse the development of Datris projects. The hurdles and issues encountered related to internal issues were the basis to analyse how Datris Solutions status compares to what literature tells us to be failure factors to be weary off. In addition, the data was essential to be able to provide an action plan for Datris Solutions to remove the current hurdles that hold its development back.

Table 11 – Tasks and Objective during internship

<b>Task</b>	<b>Objective</b>
<b>Clubbetter competitor’s analysis</b>	Gather data of the major clubbetter competitor’s and general information about the same in the market
<b>Not for profit market research</b>	Gather information of how many not for profits exist in Wales, how many are non-registered and how many umbrella organizations for Not For Profits exist in Wales
<b>Clubbetter presentation</b>	Construct a clubbetter application presentation to present clubbetter to potential investors/partners
<b>Clubbetter promo video</b>	Create a short promotional video for clubbetter
<b>User journey description and mapping (clubbetter)</b>	Map the user journey of current users and map the same to understand how the app is being used and how to improve the user experience
<b>Design of the Clubbetter flyer</b>	Design a clubbetter flyer in English and Welsh
<b>Step by Step Guide</b>	Create a step by step guide of how set up in clubbetter
<b>Prospect of beta testers</b>	Get 10 beta tester organizations using clubbetter to its full extent
<b>Investment programs research</b>	Enter investment programs to earn financial aid in the clubbetter development
<b>Competitor Research Seeker</b>	Create a document capturing the major competitor for seeker alongside general information of their reach in the market
<b>Clubbetter “Re Skin” for Scarlets Rugby</b>	Re design a clubbetter version for Scarlets Rugby
<b>Testing clubbetter</b>	Identify and report bugs and areas for improvement in clubbetter
<b>Clubbetter functionality development</b>	Assist in the development of new functionality

### 3.2.3. Data gathering and tasks implementation

A mixed approach was needed to grasp as much data from many different areas that comprise and affect a technological start-up. The gathering of the data started as soon as the internship started as multiple environmental factors were already in plain sight to gather and only ended at the last day of the internship. This enabled a closer look at the extent to which these perceivable factors inflicted damage in the start-up.

During the internship board meetings and company days were held, this meant that knowledge about the company’s status, aims for the future and issues were laid bare alongside everyone’s perspective as to what the company should aim for, what they thought the main issues were and suggestion on how to tackle them.

Using all the data gathered, adding personal experiences to the mix plus recording the insight of all the members as to what the main issues are gave the elements needed to analyse and reflect on the factors that affect the success of a technological start-up, in this case Datris Solution.

#### **3.2.4. Analysis and interpretation of data and assessment of the tasks results**

The data gathered from the tasks was then separated into marketing (table 12) and product development tables (table 13), as these were the areas where I had substantial interaction and data. By analysing the development of the tasks, namely if they accomplished their target goal and if not, what hurdles affected the development of each task we were able to get a clear picture of the current status of the start-up. The issues that affected the tasks were broken down to Objective/Outcome/Hurdles as to better picture how the hurdles affected the outcome of each task and how far is this outcome from the original objective. This gave the basis to analyse the development of the clubetter and seeker projects by comparing the hurdles with the literature findings on failure factors of start-ups. Then, I was able to interpret how these issues affected the evolution and development of the start-up across the six months of the internship.

Table 12 – Marketing Tasks development

<b>Objective</b>	<b>Outcome</b>	<b>Hurdles</b>
<b>Clubetter competitor's analysis</b>	Report of clubetter competitors categorized in 3 degrees	No selection of aspects to analyse/ Change of the dimension of evaluation mid development/ Change of format mid development / inaccurate databases
<b>Not for profit market research</b>	Variety of Documents and an excel spreadsheet with numbers of umbrella organizations	Goal for the task changed several times / No formats was specified / Inaccurate information was prevalent / cold calls and emails methods yielded no data however took half of development time/ several changes of the reach of the research.
<b>Clubetter presentation</b>	Presentation was not finished	No review or correction of the presentation was made / Several changes of design mid development/ branding of clubetter was non
<b>Clubetter promo video</b>	1 min promotional video uploaded to YouTube	Lack of experience / Reliance on outdated methods / Script changes mid development / New functionality to be added mid development / Sections of the video were outdated representations of the clubetter app
<b>User journey description and mapping (clubetter)</b>	User description and mapping was not finished	Lack of samples / Lack of beta testers/ major functionality still in development/ lack of requirements for the task
<b>Design of the clubetter flyer</b>	1 flyer was produced in English and Welsh	Substantial copy of outdated work dating 2004 / lack of experience in design / no branding guidelines / lack of agreement between commercial director and marketing executive
<b>Step by Step Guide</b>	3 step by step PDFs were created with 10 steps	Major functionality was still in development / no branding guidelines
<b>Prospect of beta testers</b>	Several meeting and demo's but no user were retained	Lack of experience / Reliance on cold calls and emails / lack of assistance from the directors /
<b>Investment programs research</b>	Application for Data Pitch with no success	No agreement between directors in which program to apply / Product was not finished / lack of marketing material for Datris Solutions.
<b>Competitor Research Seeker</b>	Document depicting the major players in the area was created	Product still undefined / Lack of knowledge concerning spiders/crawler tools /



Table 13 – Product Tasks Development

Objective	Outcome	Hurdles
<b>Clubetter “Re Skin” for Scarlets Rugby</b>	Several clubetter application pages were re branded to fit Scarlets branding	Lack of methodology to standardize work and guaranty quality / Lack of experience / Lack of agreement regarding design / Miss communication between directors / No defined set of tasks / Reliance on outsourced work
<b>Testing clubetter</b>	Several bugs and functionality updates were found and described	Lack of methodology to record and optimize testing and fixes /
<b>clubetter functionality development</b>	New functionality was developed and added into clubetter	Lack of methodology to record requirements and optimize their development / priorities were not agreed upon / constant mid development requests/ very short deadlines / no clear understand of objectives /



## 4. Results of the tasks and research implemented during the Internship

### 4.1 Competitor Analysis - clubetter

One of the major benefits of starting a technology driven start-up, especially one that uses the cloud and open data, is that these are cheap to create and maintain to a certain extent. This results in constant new players trying to enter the crowded market. Although the market which clubetter is trying to find its niche is relatively devoid of competitors as its harsh characteristics, resistant users and low immediate returns make it not so appealing to many companies, there is still a limited number of start-ups and companies that tried and succeeded in this space. From the review of membership management software in Capterra (<https://www.capterra.com/> accessed from 2<sup>nd</sup> of January to the 15<sup>th</sup> ) only the top three shown in table 14 have sizable user feedback that is also mostly positive, while below that very low amounts of applications have actually reviews and if they have they are not favourable. In the competitor research that was conducted the competitors were divided into three degrees. First would be the competitors which are developing their apps in the same fashion aiming for the same target market. Second degree are products which have a similar role, although they are aimed at a different target market. Third degree competition offers products that can be used to fulfil the same goal, although they were not developed for the purpose or aimed at the target market.

Development of this task was hindered by the lack of established parameters of analysis which resulted in the capture of then irrelevant information. Lack of methodology and frameworks for this task resulted in constant changes of the format the information was presented in. While the company tries to implement Agile framework for task development this would be an example of the lack of communication and standards for work which hinder the same

**Table 14** – clubetter competitor research table

1°	2°	3°
Your Memberships	Brilliant Directories	Facebook
Wild Apricot	Perfect Gym	Meetup
Membernova	Pitchero	LinkedIn
Raklet	FitnessForce	
Memberleap	HiveBrite	
Memberplanet	NeonCRM	
BigTent	ZenPlanner	
GroupSpaces	Teamer	
Tendenci	ClubExpress	
Zenbership	VeryConnect	
	Gym assistant	
	EZfacility	
	Admidio	
	ClubMaster	

After an in-depth analysis of these competitors and comparing their current endeavours with the development of the clubetter app, the following five were deemed the most direct competitors:

### Facebook



**Figure 11:** Facebook Logo

Facebook is currently the app with most active and registered users in the world by a large amount. Having such a massive database of almost 1 Billion users makes Facebook far too convenient not to use. Despite its many faults concerning member management and services, the convenience cannot be ignored as a major factor. Part of

our target market using Facebook groups as it is a free tool that has already everyone signed up eliminating the difficult step of getting everyone into the same system.

## Wild Apricot



**Figure 12** : Wild Apricot Logo

Wild Apricot is our main direct competitor as their product is very similar to ours and seeks to satisfy the same target market. Furthermore, Wild Apricot already holds a substantial amount of the paying market. For now, they are primarily focused on Canada. Founded in 2000 and still ongoing they have racked up a considerable amount of funds, reputation and networks, which enable them to access many markets and investigate expanding to new markets with relative ease which can pose a serious issue to Clubbetter if it has to face directly against it.

## Teamer



**Figure 13**– Teamer logo

**Source** : <https://teamer.net/>

Founded in 2008 in the United Kingdom, Teamer is a club management application that provides a variety of cloud-based tools that ease the administration and management efforts of administrators of clubs. Already existing since 2008 they are a respected player in the United Kingdom market with a high number of users and resources. Although they do not focus on the same market as Clubbetter, the Teamer app is versatile enough to be used as a management tool for a wide variety of organisations including not-for-profit organisations. It is this factor with the combination of being a

United Kingdom based company with networks already established which make it a very dangerous player in the market.

## Raklet



**Figure 14**– Raklet Logo

**Source :** <http://blog.raklet.com/en/>

Raklet founded in 2014 in the United States provides a membership management tool that has already gathered a wide array of users and focuses on the not for profit market which makes it a direct competitor to clubbetter. Although their share of the market in the UK is rather small with low amounts of users the applications functionalities mirror the ones from clubbetter. If the UK market starts being more relevant to Raklet, a direct confrontation would be costly for Datris Solutions as Raklet is already an established business with investment funds capable to undermining any marketing effort.

## Membernova



**Figure 15** – MemberNova Logo

**Source:** <https://www.g2crowd.com/products/membernova/details>

Membernova founded in 2015 in the United States shares the similar threats posed by Raklet, however it has an addition edge of having very high and positive reviews on many of the go to software applications website such as Capterra.

## 4.2 Market Research Clubetter

After being introduced to the company's members and finishing reviewing standard working procedures and assimilating knowledge from previously work conducted by other members on the clubetter marketing part, namely a competitor research and market research conducted some months ago, I was able to get ready for the first task. The previous market research was rather superficial and only produced very generalist data of little value. Plenty of important aspects were not explored to their full potential and only served as a light tool to assess market reception to a membership management application. The next objective was to assess the scale of the market available for exploration and for that a market research with the objective to find how many not for profit organisations were currently operational in the whole of the UK and after categorizing them by which country they are headquartered in, are registered in or not registered plus how many sub organisations do they manage.

The main sources of knowledge were the databases found on the general web for the not for profit organisations. However the main research findings were too general to be put into use and only accounted for the registered organisations (i.e. NCVO). To dive deeper, local council's website and academical studies were probed into to see if there was any possibility of assessing with accuracy the size of the organisations, especially the non-registered ones, which, according to some studies, could comprise from 300 000 to 900 000 organisations in the UK alone. However, soon it was realized the main issue that was affecting the quality of the market research was the same that other studies had pronounced, the difficulty in finding these so called "Bellow the radar organisations" that serve very localized community areas and have no need to be on the internet or publicize themselves making it almost impossible to access even a general grasp of the amount of not for profit active organisations in the UK.

In the end only a very general overview was achieved nonetheless it served to point out that their numbers were significant and allowed the company to explore the concept of "bellow the radar organisations" (see Appendix 1).

During the development of this tasks several factors hindered the development of the same. Starting from the lack of established goals that left the analysis to be far to expansive and resulted in a constant alteration of the focus of the task. The lack of expectations and methodologies as well as standard format resulted in the constant change of the format the findings were presented in. Nevertheless, the major concern close to the end of the tasks was the inaccuracy of the government databases and local councils as well as research institutions, expected half of the data to be inaccurate.

### 4.3 Clubetter presentation

A presentation was requested regarding presenting clubetter and Datris Solution. The objective of this presentation was to give a brief overview of Datris and the flagship product clubetter. The presentation was set to be used in presentations with sport wales and other umbrella institutions. However, as development was delayed the presentation was never used in any prospecting attempt.

The creation of the presentation was plagued by the lack of goals for the same as it was created for a predicted use which meant it was at the bottom of the priorities list throughout its development. No supervision or correction was made by the directors and supervisors leaving the quality of the same as uncertain. The issues that affect the presentation are depicted in literature as issues that result from waterfall type project development that focuses on company internal request instead of user needs which means that Datris is having difficulty adopting a Lean Start-up methodology.

### 4.4. Clubetter promo Video

To help with the overall effort to fundraising and creating marketing material for the clubetter application the creation of a promotional video was requested both to me and the marketing executive. This task was broken down into three sub tasks: creating



of a script for a voice actor, creation of several pages of the application pages in illustrator and review of video assets and layout to fit the established limit of one minute.

Development of the promo video had a series of issues that affected overall quality, namely the lack of experience by the marketing executive and intern on video creation and very restrictive practices which left no space for the marketing team to use their own ideas while developing the scrip, illustrator pages and layout (table 15). This is once again a waterfall type methodology which leaves little room and responsibility for the development team and uses the companies’ vision primarily rather than market compatibility. The lack of experience combined with a restrictive environment and lack of framework/standards resulted in a 1 min low quality video which as of passing 4 months has very few views.

Table 15 – Sub tasks and description

<b>Script Creation</b>	A first script was constructed alongside the marketing executive to explain keys points of clubetter and showcase its functionality.
<b>Page Creation in Adobe Illustrator</b>	To animate and ensure quality of the application pages shown in the video the intern was tasked to recreate the pages present in the application. Due to the lack of experience and knowledge about design processes, this task took more time than expected with several corrections made across its completion time.
<b>Promo Video Layout</b>	After some test about what would be the best way of showing as much as possible about clubetter in a 1-minute video, it was decided to have a short introduction about clubetter. After that, showing in very short segments what functionality clubetter offers ending with an image of the clubetter flyers.  The promotional video was completed and used for fundraising and publicity efforts, namely Data Pitch application and promotional video for the website, the video can be found on YouTube following the following link <a href="https://www.youtube.com/watch?v=d0a2n6CdNbw">https://www.youtube.com/watch?v=d0a2n6CdNbw</a> ( Uploaded on 17/01/2018 ).

#### 4.5. User journey description and mapping (clubetter)

As part of the overall effort of understand the personas and optimizing the user journey of the normal user in the platform, along with the current marketing executive, I was tasked with mapping out the user journey and describing it as much as possible, so that in the future it can analysed and improved upon.

To map out the user journey, a report was filled describing each step that a user would have to take to complete an action in the clubetter platform. Screenshots were taken for each step and then glued to the wall to create the user journey map. Unfortunately the records of this event were lost regarding the images.

The main finding was that the user journey for simple tasks was far too complex and needed to be reflected upon as the standard user is already used to much easier journeys on everyday apps such as social media apps like Instagram. Furthermore, closer inspection to the user journey revealed opportunities for improvement in the functionality of the application and by comparing the user journey to the one of the competitors' applications it highlighted the spots which were prone to error and needed to be addressed soon.

Creation of the user journey and mapping attempt were done while the application was still in development rendering the findings outdated a few weeks after. By completing tasks that yield no immediate value to the user Datrix falls into the Waterfall methods while at the same time tries to apply agile methodologies and Lean Frameworks. The lack of focus on the users needs results in wasted development time for tasks that the market gave no signs of needing.

#### 4.6 Clubetter flyer

To aid the marketing effort and especially prospecting beta testers, a need to have a flyer to showcase the company and clubetter was commissioned to me. The main guidelines were to follow an example provided by the commercial director and make sure to show as much of the app as possible while giving it a "homemade" feel to avoid portraying Datrix as a soulless corporate. During development more, requests were

added to the list after those were the main guidelines that were followed when designing the new flyer with the final product being a quite similar to the example provided in layout however with added elements to give more of a tech feel to the flyers (See Appendix 2). Around 200 flyers were printed, although we were unable to measure any kind of data concerning the effectiveness of the same. The lack of research and innovation attempts whilst restricting marketing team input on the design of the flyer resulted in a tense cooperation between the team that was not motivated for the goal in mind. This is another example of a waterfall type development where the goals are set with no expectation of change, which leaves the start-up unable to react to the market changes lowering overall quality of the work and poor market reception.

#### 4.7. Step by Step Guide

As part of the overall effort of analysing and improving user experience a step by step guide of how to use Clubbetter to its fullest was requested to me. The main objective was to create a simple document with few steps to ease the user experience and provide some clarity to the user in case it got stuck performing any action on Clubbetter.

To achieve this I recorded first my own user experience detailing how many steps it took me to complete any of the considered crucial actions on the system such as taking payments, creating events and so forth. Once this was completed, the steps were written down and constantly reviewed to minimize the text needed to describe each step ensuring the document would not be too large to frighten the users. After its completion it was sent to a few current beta testers, although no measurement of its impact was performed (See appendices 4,5 and 6).

As the step by step guide was constructed mid Clubbetter app development some of its points were outdated weeks after it was completed. The focus on tasks that are expected to add value once the critical mass is achieved can be interpreted as attempts of scaling the project prematurely as tasks are requested, completed and weeks after outdated as the main project is still in development.

#### 4.8. Prospect of beta testers

At this stage of the internship, the exit of the marketing executive of the company pushed priority marketing related tasks into my hands. Furthermore, as the development of the application had suffered several delays, the financial burden was starting to increase. To push out the interest for the platform I was tasked to use cold calls, direct approach, emails and social media to seek out potential beta testers. Around 2/3 weeks were spent chasing organisations and individuals to be beta tester of clubetter. From the relatively low amount of interest around 10 demonstrations were made to chairman's, group members and other individuals of increasingly varied backgrounds. However, from the 10 demonstrations little feedback was received and no new user stayed in the platform.

No formal report was made to analyse issues with the steps taken to conduct this work leading to a lack of data to analyse the failure of getting new users on board of clubetter. Reflection on the matter suggests my lack of experience and the platform not being developed enough for the users were the main factors that limited the prospecting attempt. Which resulted in an attempt of steering development into an Agile orientated framework failing as no constant feedback source from the users was achieved.

#### 4.9. Investment programs research

Datris Solution with its new in development product clubetter, attempted several times to be a part of investment contests and challenges. Most notably Data Pitch which was doing an investment round for new start-ups in the open data area. Within this context I was tasked with gathering information concerning the deadlines, requirements and available funding rounds for Data Pitch. To complete this task a gathering of data from the Data Pitch website was completed. Also I participated in a few webinars hosted by Data Pitch personal with the intent of explaining the steps and requirements needed to apply.

Datris did not win the contest in Data Pitch however none of the tech-start-ups did. Further attempts for the same type of contest were delayed until 2019.

Considering the under development of the project and low resources available to the company a considerable amount of resources and time was spent chasing these programs. This could be considered an attempt to scale prematurely as Datris had no framework and methodology or minimal viable product. A minimal viable product is essential to showcase the capabilities of the start-up and their product, without it it would be very hard to win any investment contest.

#### 4.10. Clubbetter “Re Skin” for Scarlets Rugby

At the beginning of the 4<sup>th</sup> month of the internship, although my direct prospecting attempts to recruit new beta testers were not successful, the newly appointed marketing executive offered a contact of a prominent figure in a renowned Welsh rugby club, Scarlets Rugby. After a few meetings, an agreement was reached between Datris and Scarlets and one of the points established was the so called “Re-skin” of the clubbetter platform to the Scarlets branding guidelines. The following work to transform the design of the clubbetter applications to a Scarlets branded version began with a transformation being supervised by me and conducted by an outsourced developer in India. The only guidelines to follow were the ones provided by Scarlets, being these their corporate branding guidelines. Furthermore, as the company had no in-house designer to transform the clubbetter pages into Scarlets branded pages, I was tasked with using Illustrator to produce mock-ups of these pages and work with our outsourced collaborators to mirror the designs as much as possible.

This task was not completed during the duration of my internship as a series of delays and miscommunications between the Datris Team and the Scarlets contacts delayed the progress. Moreover, cultural and language barriers between the Datris Team and the collaborators (located in India) made this issue even more noticeable after several incidents where the collaborators misunderstood the task, resulting in low quality designs being implemented into the application demanding extra resources and time to correct. Nonetheless a decent number of pages with the emphasis on the mobile look

were completed and showcased to the scarlets rugby representatives and positive feedback was received.

The lack of communication between the directors and the team concerning the development of this task and the lack of framework to ensure the quality amidst development meant a general struggle to keep an agile methodology. The feedback received was insufficient and communication between the directors and team was often incorrect as several databases were used to track the development of the task.

#### 4.11. Testing clubetter

One of my first tasks was the testing of the clubetter platform. Main objectives were the identification and description of bugs and potential improvement areas for the platform. Since this task was conducted at a very early stage of development of clubetter, several issues were found and reported to the lead developer in charge of fixing them. Moreover, several suggestions were made regarding possible opportunities for the enhancement of the platform. However, as very few processes and standards were established by this point in the company, no actual report was required. As soon as an issue or opportunity was identified, a discussion with the marketing executive and the lead developer would commence with the decision of the appropriate action being done immediately. However, although no official records were kept about this task, rough records kept by me allowed a glimpse of the results of this task, as table 16 illustrates.

**Table 16:** clubetter bug report

<b>Issues/Enhancement</b>	<b>Performed Action</b>
Payments are was not working	Reported to the lead developer
Events Attendees feature was non-existent	Reported to lead developer
Messages were not working	Reported to lead developer
Invitation of new members took multiple steps	New approach was proposed
Privacy Compromising Bug was detected	Reported to lead developer
Rules functionality was non-existent	Reported to lead developer
Cover photo cropping was not working properly	Reported to the lead developer

From this small list one can formulate the idea that many features were being requested. However, no actual development had been done regarding these (i.e. attendees and rules). Furthermore, platform and user safety issues were still being discovered and highlighting how much in early stages the application was and that several fixes and enhancements had to be addressed in the future to have a minimum viable product available to present to investors and potential beta testers.

The lack of methodology such as Agile to optimize the development of these tasks as user stories resulted in a lack of focus trying to fix these issues leaving them operation for months in the worst cases. Miscommunication, no clear framework left the development underperforming taking longer to fix issues as communication lines and bureaucracy was taking time that could be spent correcting the issues.

#### 4.12. Clubetter functionality development

Clubetter was on its Alpha stage and considering that no new users were using the platform, it was very hard to get an outside perspective on the platform. So, my internal feedback was used to enhance already existing functionality.

Functionality that was augmented at this stage was described as three user stories

1. As a user I would like an easier process to import my members.
2. As a user I would like to assign roles to my members.
3. As a user I would like to invite members to my club in clubetter.

Working under the supervision of the technical director I was tasked with the supervision of the development of these user stories and ensuring the experience of the user was the focus.

Main changes to the functionality are described in Table 17.

**Table 17:** Current and Updated Status of Functionality

Current Status	Updated Status
User import members by uploading an excel file to the platform. Mandatory fields 4.	User is provided an Excel and CSV template. Import members instructions are provided to the user. Mandatory fields reduced to 2.
User cannot create or assign roles	User can create unlimited roles and assigned them to users
User could only receive request from clubetter users to join the club	User can now send invitation by email/SMS to individuals outside of clubetter.

Enhancement of the functionality to satisfy the user stories reflecting back was a slow and unorganized task. No standards or procedures were specified. This means that explaining why certain changes were made and what process was followed to ensure their completion was difficult. No clear trail of records was being kept, which resulted in an unfocused effort that was slow and not as efficient as it was projected to be. Furthermore, when encountering new issues in the future the lack of records to trace back steps made it very hard to understand what was the cause of this new issue.



#### 4.13. Competitor Research Seeker

Codename “Seeker” is the analytics engine that is being developed by Datris Solutions as a secondary project. While it is still in its very early stages, it has shown promising results by gathering fast amounts of information about not for profits operating in the United Kingdom. The interest regarding the project rose up and I was tasked with the objective of obtaining data about the main players regarding data gathering robots, “Spiders” or “Crawler” as they are often called.

A report was build focusing on gathering data about the organisations that developed the products and the products themselves (Appendix 3) . The later was one of the primary focus as information gathered on how these were operated and interacted with the user could be used as a point of reference for the user experience of “Seeker”. Furthermore at this point development of “Seeker” had been focused on creating a minimum viable product and not much consideration or thought was given to the marketing side of it, especially concerning pricing and demand for such products was scarce and not explore at all up to this point.

Development of this task was hindered due to the lack of agreement of the parameters to analyse as the directors had different points of view as to what was the priority resulting in extra time being spent on the task while the clubetter project was more in a need for development.



## **5. Datris failure factors assessment and proposed action plan**

Regardless the specificity of the environment where a start-up is created and developed and the resources available to it, the probability of failure is always very high, locking these in the category of high risk ventures. With the widespread adoption of Lean Start-up principles and agile frameworks to optimize the product development, start-ups are now expecting to miss the target, although recently they are getting themselves more and more ready for it. Instead of compiling long projects and set out to complete the same, following the Waterfall process, they are now aiming at being ready for changes as instead of preparing for prediction of user demand and expectation these are now ready to react to it at any moment's notice. This is reflected in the amount of times tech start-ups are expected to pivot and consequently change their project to meet the users demands and market changes.

The action plan was divided into three main areas namely marketing, product development and project management as there were the focus points of the data. Within each issue is identified as well as the sources and a course of action is presented. The course of action is based on what literature presents as positive practices that contribute for the stability and development of the start-up.

## 5.1. Marketing

**Table 18** – Datris Marketing Issues assessment + action plan

Issue	Source	Course of Action
Non-existent brand	When developing the flyer, cover photo, step by step and presentation no official branding guidelines were followed resulting in the result showing different versions of the company to the market	Set brand guidelines before marketing material is built up to maintain one strong singular image and idea
Absence of creators and reliance of supervisors	Currently the marketing department has no asset creator and only relies in overseeing outsourced work	Hire does instead of supervisors to create the marketing base of the company and then have them supervise
Outdated prospecting methods	Cold calls, flyers and emails were used in the prospecting attempts. Very reduced success was achieved	To achieve a personal connection with the first testers more personal approaches are necessary as direct contact, participation in events and more investment in PR with prospecting focused on the local community first.

## 5.2. Project Management

**Table 19** – Project Management Issues + Action Plan.

Issue	Source	Course of Action
Using too many project management systems	Currently Google Drive, Taiga and Slack are used for project management which triples the documentation leads to loss of information and increased time searching for documentation	Choose the project management tool most compatible with the work flow that you desire and ensure everyone uses. In additional monthly clean-ups of the information is useful to avoid useless info.
Too much documentation	As a consequence of the many project management tools duplicates of documents can be found in multiple places	Promote regular good practices regarding storage of information and do a clean-up every month.
No single project manager	No singular team members or directors are managing the projects which leads to an unorganized effort that results in avoidable faults	Have one single project manager take charge of a project to keep the team focused
Fragile communication	Communication between the directors is especially bad, often they don't speak to each other	Hold a briefing meeting every 2 weeks to keep the communication updated
Premature Scaling	Investing into scaling activities without feedback from the market or finished product	Achieve critical mass of users before starting to scale. Plus completion of the business plan is a must before scaling activities start.

### 5.3. Product Development

**Table 20** – Product Development Issues + Action Plan

Issue	Source	Course of Action
No lead developer	Lead developer left the company in December leaving inexperienced developer in key positions	Hire or train current developers to take on the role to ensure quality and consistency to development
Reliance in outsourced work to speed up development	Design implementation was outsourced to India, Android iOS version outsourced to a company in London, PR related to a company in London. Delays and results bellow standard were often occurrences.	Tech market is based on innovation. Innovation is often made in house since outsourced parties have no passion for your project or vision for its future. Create a MVP with internal team and for less important tasks use outsourced developers.
Lack of interaction with the end user	As a consequence of the lack of beta testers a steady flow of user feedback to enhance the products is not being maintained lowering overall quality.	Gather a critical mass of beta testers before developing batches of product features t justify market need and adapt them to the user’s needs.
Not committing to agile software development	Agile frameworks are being set however there has been no push to standardize their use in the company.	Train all the developer and hire a product manager to keep the effort consistent

## 6. Conclusion

Reflecting on all the set objectives of this internship I certainly consider it a very positive experience. At the professional level, I was able to have first-hand experience working in a very busy and stressful environment (UK), in a foreign country. These conditions required the assimilation of a variety of new and challenging realities such as the living and professional standards in a different environment combined with a different mentality and language. Being part of a small tech start-up team focused on producing a minimum viable product to meet consumers demands in a very limited time frame was very positive experience. Working with a lack of established processes under a great deal of pressure as resources, either time or financial, were being spent from the director's investment fund. As a first step into the work market it provided ample experience on various international business aspects.

Several aspects analysed under the modules of the international business masters were applied. Especially marketing principles that served to analyse how to best market the company and how plan for the development of the product and user experience, how to market the product, how to market the company, branding principles and a variety of more specific principles were applied during the internship. Very important is also the fact that during the six months period, apart from testing all the previously gained knowledge from university, a variety of new skills were discovered and honed to professional. This greatly enriching the individual and team working capabilities with the objective of handling effective fast changing environment and requirements that flow from the highly volatile first testers of the applications.

With regards to the internship objective, I consider it a success, as I believe it was possible to analyse the data that was set to be analysed plus more crucial data that was considered a bonus. The situation of the company alongside with my strategic position as a marketing research intern provided the best angle of observation. Since the tasks developed encompassed every part of the project in the same company they provided the best available source of information regarding the issues that afflicted technological

start-ups. As factors that were discovered in literature were identified and analysed to identify the main inhibiting factors that are holding the tech start-ups development.

Nevertheless, limitations that reduced the quality and quantity of the data collected were identified. One of the main limitations found to affect this was the fact that, although I had received key knowledge and training in the marketing area, in regard to product and project management there was no previous knowledge gained in the Master of International Business. Due to the lack of human resources and deadlines for the projects and the exit mid internship of the marketing executive, my efforts were consequently focused on project management and product development. The marketing namely design focused tasks at this point were requests for flyers, cover photos and other assets. Furthermore, management of design implementation, product testing, creating of user stories and a whole other set of agile framework specific tasks were to be assimilated and executed. This resulted in an exhaustive process of gathering and treating new data that had a set of characteristics that although valuable for failure factors assessments were at their essence very different from the marketing knowledge that the intern gained at the international business masters.

With the important assistance of the commercial and technical directors, a better understanding of the objectives and issues affecting the completion of these objectives in the later months of the internship. This provided the support needed to fit the various parts that made the start-up. Furthermore, an action plan to the major to analyse the issues and propose solutions affecting the, the marketing effort, the project management efforts and product development efforts.

It is always very hard and comes at a great cost, even if the start-up is prepared for it, to pivot the start-ups processes and objectives to better fit their market. Making sure their development processes in such a way as they produce quality iterations in a reduced timeline to satisfy the demanding market. However, basing on the literature on this matter and adding my personal observation only by attempting to address a majority of the points identified on the action plan would the start-up make itself agile. And by adopting Agile it would then be able to better deal with the rapid changes of the



market plus the rough competition while providing value adding applications that make a sounding impact into the market.

In conclusion, the curricular internship and the post redaction period of this report were invaluable for my personal and professional evolution. A vast amount of knowledge and experience was gained by being exposed to such a large variety of tasks with real consequences that could be felt and analysed. We consider that the knowledge gained in marketing, human resources and entrepreneurship which had a bigger relevance on the first year of the master were the modules which the knowledge was best perfected by the experience of this internship.



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## **Appendices**

## Appendix 1 - Bellow the radar organisations market research

Umbrella Organisations				
Organisations	Clubs/Associations	Number of People	Extra info	Website
Scottish Sports Association	13000 sports clubs	900 000 sports member + 195 000 volunteers	52 governing bodies ( Scottish Rugby Association etc)	<a href="http://www.thessa.org.uk/">http://www.thessa.org.uk/</a>
Youth Scotland	1209 youth clubs	60 841 young people and 7 396 youth workers		<a href="http://www.youthscotland.org.uk/">http://www.youthscotland.org.uk/</a>
Voluntary Action Scotland	11,800	824 staff (451 full time 373 part time) + 40000 volunteers	Partner with NHS/32 local third sector interfaces (11 part time)	<a href="http://www.vouthscotland.org.uk/">http://www.vouthscotland.org.uk/</a>
Scottish Environment Link	37	hundreds of volunteers	thousands of local groups	<a href="http://www.scotlink.org/">http://www.scotlink.org/</a>
SCVO	1800		45 intermediary bodies	<a href="http://www.scvo.org.uk/">www.scvo.org.uk</a>
Association of Chief Officers of Scottish Children in Scotland	500 members	over 400 20 000 staff members and 50 000 thousand volunteers		<a href="http://www.acosvo.org.uk/">www.acosvo.org.uk</a>
Early Years Scotland	1000 member playgrounds and pre school services			<a href="http://www.childrentinScotland.org.uk">www.childrentinScotland.org.uk</a> <a href="http://www.earlyyearsScotland.org">www.earlyyearsScotland.org</a>
Play Scotland				
Scottish Out of School Care Network	1000 school-age childcare services			<a href="http://www.soscn.org">www.soscn.org</a>
Scottish Parent Teacher Council	1800 parent council and parent teacher associations			<a href="http://www.sptc.info">www.sptc.info</a>
Youth Link Scotland	over 100 national and regional org			<a href="http://www.youthlinkScotland.org">www.youthlinkScotland.org</a>
Engender	56 organisations		is part of UKJCW (Uk Joint Committee on Women)	<a href="http://www.engender.org.uk">www.engender.org.uk</a>
Scottish Women's Aid	40 organisations			<a href="http://www.scottishwomensaid.org.uk">www.scottishwomensaid.org.uk</a>
Age Scotland	over 1000 groups			<a href="http://www.agescotland.org.uk">www.agescotland.org.uk</a>
Inclusion Scotland	70 org	700 disabled individuals		<a href="http://www.inclusionScotland.org">www.inclusionScotland.org</a>
Scottish Disability Equality Forum				<a href="http://www.sdef.org.uk">www.sdef.org.uk</a>
ARC Scotland		25 almost 4000		<a href="http://www.arcuk.org.uk/scotland">www.arcuk.org.uk/scotland</a>
Health & Social Care Alliance	1848 total memberships (total memberships), 11 corporate, 294 standard, professional 1130, associate members 159, involvement network			<a href="http://www.alliance-scotland.org.uk">www.alliance-scotland.org.uk</a>
Befriending Network Scotland	250 befriending services			<a href="http://www.befriending.co.uk">www.befriending.co.uk</a>
Carers Scotland				<a href="http://www.carersuk.org/scotland">www.carersuk.org/scotland</a>
Coalition of Care & Support Providers	80	Supports over 380 000 people, employs 40 000, 7000 volunteers,		<a href="http://www.cpscotland.org/">http://www.cpscotland.org/</a>
Homeless Action Scotland	100			<a href="https://www.homelessactionscotland.org.uk/">https://www.homelessactionscotland.org.uk/</a>
Relationships Scotland	22			<a href="http://www.relationships-scotland.org.uk">www.relationships-scotland.org.uk</a>
Scottish Mentoring Network	150			<a href="http://www.scottishmentoringnetwork.co.uk">www.scottishmentoringnetwork.co.uk</a>
Voluntary Health Scotland				<a href="http://www.vhsScotland.org.uk">www.vhsScotland.org.uk</a>
Scottish Partnership of Palliative Care	40			<a href="http://www.palliativecareScotland.org.uk">www.palliativecareScotland.org.uk</a>
Scottish Drugs Forum				<a href="http://www.sdf.org.uk">www.sdf.org.uk</a>
COSCA (Counselling & Psychotherapy)	over 100			<a href="http://www.cosca.org.uk">www.cosca.org.uk</a>
Scottish Association of Mental Health	60			<a href="http://www.samh.org.uk">www.samh.org.uk</a>
Black and Ethnic Minority Infrastructure in Scotland				<a href="http://www.bemis.org.uk">www.bemis.org.uk</a>
Black and Ethnic Minority Infrastructure in Scotland				<a href="http://www.bemis.org.uk">www.bemis.org.uk</a>
Council of Ethnic Minority Voluntary Sector Organisations				<a href="http://www.cemvo.org.uk">www.cemvo.org.uk</a>
Interfaith Scotland	32+16 associate members			<a href="http://www.interfaithscotland.org">www.interfaithscotland.org</a>
Citizens Advice Scotland	61	over 3,300 paid staff and volunteers		<a href="http://www.cas.org.uk">www.cas.org.uk</a>
Equity Network	182			<a href="http://www.equity-network.org/">http://www.equity-network.org/</a>
Scottish Independent Advocacy Alliance	70 independent advocacy org	787 volunteers and 518 paid workers		<a href="http://www.siaa.org.uk">www.siaa.org.uk</a>
Poverty Alliance	210		Key networks: Energy Action Scotland, Scottish Drugs	<a href="http://www.poverlyalliance.org">www.poverlyalliance.org</a>
Archaeology Scotland				<a href="http://www.archaeology-scotland.org.uk">www.archaeology-scotland.org.uk</a>
Museums Galleries Scotland	450 museums and galleries			<a href="http://www.museumsandgalleriesScotland.org.uk">www.museumsandgalleriesScotland.org.uk</a>
Scottish Civic Trust	100 civic societies			<a href="http://www.scottishcivictrust.org.uk">www.scottishcivictrust.org.uk</a>
Scottish Community Drama Association				<a href="http://www.sdda.org.uk">www.sdda.org.uk</a>
Voluntary Arts Scotland	over 10 000 art groups		networking body	<a href="http://www.vascotland.org.uk">www.vascotland.org.uk</a>
Build Environment Forum Scotland	20+ 5 associated org			<a href="http://www.befs.org.uk">www.befs.org.uk</a>
Community Resources Network Scotland	120	700 full time + 3000 volunteers		<a href="http://www.crnscot.org.uk">www.crnscot.org.uk</a>
Federation of City Farms and Community Gardens	84			<a href="http://www.farmgarden.org.uk/scotland">www.farmgarden.org.uk/scotland</a>
Association of British Credit Unions Ltd				<a href="http://www.abcul.org">www.abcul.org</a>
Community Development Alliance Scotland	102			<a href="http://www.communitydevelopmentalliancescotland.org">www.communitydevelopmentalliancescotland.org</a>
Community Transport Association	160 community transport groups			<a href="http://www.ctauk.org/">http://www.ctauk.org/</a>
Development Trust Association Scotland	over 200 Scottish trusts			<a href="http://www.dtascot.org.uk/content/directory-of-members">http://www.dtascot.org.uk/content/directory-of-members</a>
Scottish Fair Trade Forum	73		Partners: fairtrade foundation, fair trade wales, NDOS,	<a href="http://www.scottishfairtradeforum.org.uk">www.scottishfairtradeforum.org.uk</a>
Scottish League of Credit Unions	31	38 000 members		<a href="https://www.scottishcu.org/">https://www.scottishcu.org/</a>
Social Enterprise Scotland	125+35 startup members + 30 associates			<a href="http://www.socialentreprisescotland.org.uk">www.socialentreprisescotland.org.uk</a>
Social Firms Scotland	102+90 associate names			<a href="http://www.socialfirms.org.uk">www.socialfirms.org.uk</a>
SURF	over 200		partners:	<a href="https://www.surf.scot/">https://www.surf.scot/</a>
Scottish Federation of Housing Associations	140			<a href="http://www.sfha.co.uk">www.sfha.co.uk</a>
Network of International Development Organisations	97			<a href="https://www.intdevalliance.scot/">https://www.intdevalliance.scot/</a>
International Development Education	17			<a href="http://www.ideas-forum.org.uk">www.ideas-forum.org.uk</a>
Learning Link Scotland				<a href="http://www.learninglinksScotland.org.uk">www.learninglinksScotland.org.uk</a>
Volunteering Scotland				<a href="http://www.volunteerscotland.net">www.volunteerscotland.net</a>
USA Scotland	48			<a href="https://us3sites.org.uk/scotland/members">https://us3sites.org.uk/scotland/members</a>
National Ex Services Association	more or less 50000	50		
Creative Scotland		118		



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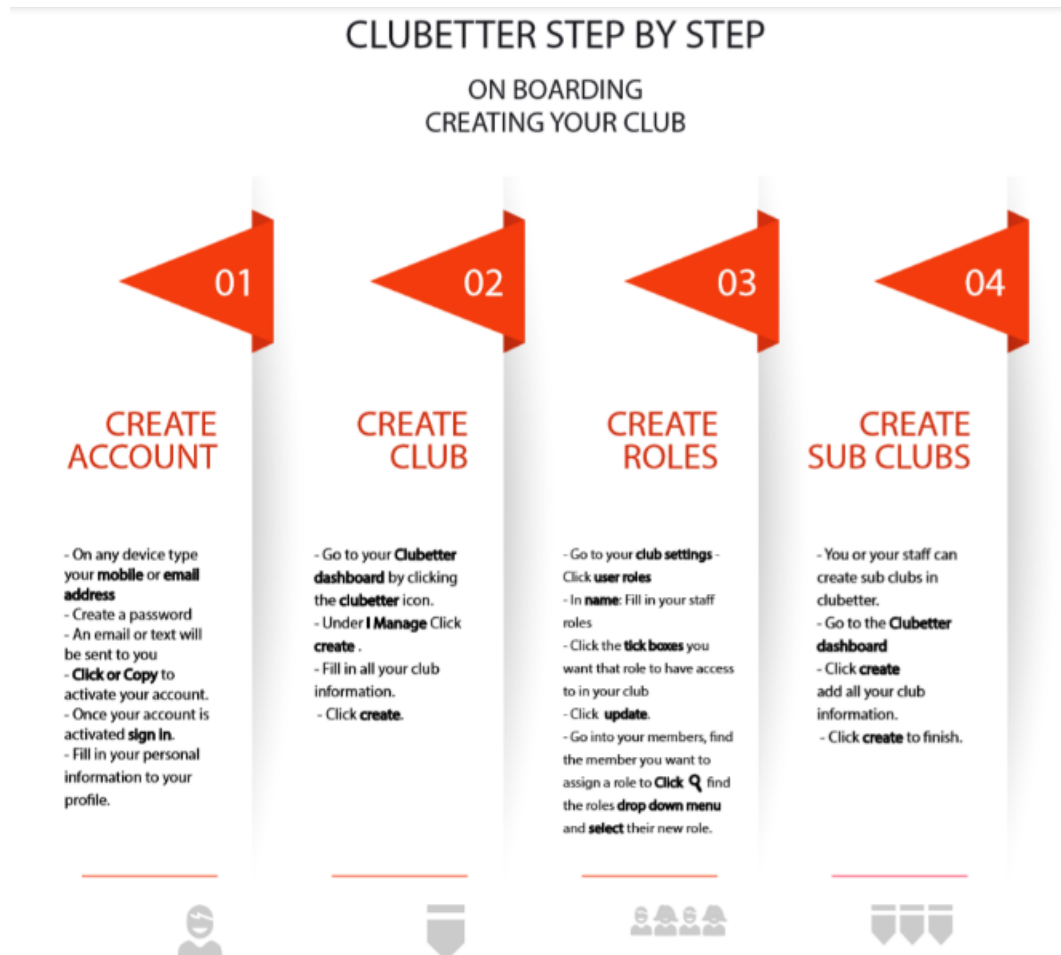
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### Appendix 3 – Seeker Competitor Research Table

0/1 Origin		Key Features	Price	Key Issues	Contacts	Reach	Extra	Website
Astera	USA - California	User friendly, high performance, flexibility and moderate price	By request	Some inconsistencies on video performance	Mobile: +1 805 579 0004 Address: 310 N	International	very high levels of customer support	<a href="https://www.mozenada.com/">https://www.mozenada.com/</a>
Mozenada	USA - Provo in Utah	Rapid deployment, ease of use, scalability	Professional - starting at \$100 to \$250 Standard \$119/mo	Can be expensive, hard to set up, limited number	Mobile 801 995-4550	International	Office in London and Copenhagen	<a href="https://www.mozenada.com/">https://www.mozenada.com/</a>
Dexi.io	USA	Automation, flexibility,	Professional \$399/mo Starting Price \$3,990.00	Lacks some advanced functionality, the "dexi" No ability to input own code. UI becomes slow to near/user	Jai@dexi.io	International	They have Offices in every continent	<a href="https://dexi.io/">https://dexi.io/</a>
UPath	USA - New York	<b>accurate, open and extensible, and allows you to</b>	starting price			International		<a href="https://www.upath.com/">https://www.upath.com/</a>
Content Grabber	Australia	scalable, easy to use, reliable	\$995.00/one time			International		<a href="http://unbouncepages.com/content-grabber-orm/">http://unbouncepages.com/content-grabber-orm/</a>
Full Contact	USA - Denver	flexibility, advanced systems, ease of use	Free - For developers 100 machines a month Basic Plan - free,	There is no way to import contacts with Slow to start/couldn't extract the images	+1-888-330-6943, 1755 Blake St, Suite #460 Octopus Data Inc.	International	Large media coverage	<a href="https://www.fullcontact.com/">https://www.fullcontact.com/</a>
Octoparse	USA -	ease of use customer service	Standard Plan per unit, Basic Edition	All features don't work as advertised. Their model Field definition needs to include more options to	THENS 103 Kallitris st. mobile: +1 800.445.331	International	High Popularity in China	<a href="http://www.octoparse.com/">www.octoparse.com/</a>
WinAutomation	United Kingdom	ease of use, high tech, scalable	US\$ 399, Pro US\$ 699 \$1,695.00 per unit			International	Substantial bad Feedback and outdated large old company,	<a href="http://www.winautomation.com/">www.winautomation.com/</a>
DataWatch	USA - Massachusetts	Access all data including multi-structuredHas	Free version, into			International	Seems to be more focused on few big	<a href="http://www.datawatch.com/">http://www.datawatch.com/</a>
80 legs	USA - Austin	Feature:Advanced data requests,Has Rate Limiting, multiple IP addresses, RESTful API, Scraper Customization,	Free version, into Express - \$250 per site, Custom - \$89/mo.			International		<a href="http://80legs.com/">http://80legs.com/</a>
Scrapping Hub	Ireland	variety of scrapping tools	\$29/mo. Phs - \$89/mo.			International		<a href="https://scrappinghub.com/">https://scrappinghub.com/</a>
Webharry	India	Point and Click Interface, Auto Pattern	Webharry Single User License - \$99.00, Web	Time spent on this project definitely bottle-necked	Address:SysNucleus 2-C, Second Floor.	International		<a href="https://www.webharry.com/">https://www.webharry.com/</a>
Fminer	China	Detection, Export data to file database, Scrape Visual design tool	License - \$99.00, Web			International		<a href="http://www.fminer.com/">http://www.fminer.com/</a>
Visual Scraper		Design a data extraction project with the easy to	Basic - \$168, Pro - \$248			International		
Automation Anywhere	USA							<a href="https://www.automationanywhere.com/">https://www.automationanywhere.com/</a>
Hellum Scraper		<b>No Programming Required</b> No Configuration Req	Basic - \$99, Pro - \$199, Business - \$399, Essential - \$289/mo,		Contact Us USA Headquarters website: email		Custom Automation Services . clients with	
Import.io	USA - California	Extract data without learning to program, Record and playback website interaction.	Professional - \$169/mo, by request		20 S. Santa Cruz Avenue, #102 San Francisco	International	Large companies, considerable numbers of Suppliers major players (Microsoft, IBM etc)	<a href="https://www.import.io/">https://www.import.io/</a>
Trapit	USA - San Francisco		insight - \$250/mo, Mask insight+ \$416/mo.		599 3rd St. Abacus House, Caxton Place. +442921 432 125	International		<a href="http://trapit.it/">http://trapit.it/</a>
Innovantage UK		<b>Real-time smart search, Advanced filtering, Mask</b>				International		<a href="https://innovantage.co.uk/">https://innovantage.co.uk/</a>

## Appendix 4 - clubetter – Step by Step 1-4



## Appendix 5 - clubetter – Step by Step 5-7

### CLUBETTER STEP BY STEP ON BOARDING





## Appendix 6 - Clubbetter - Step by Step 08-11

