Master Thesis

PitchMe: YouTube meets LinkedIn

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Abstract

In times of economic crisis and budget cuts, it is hard for many to find a job. Talented people apply for job positions but due to inability to stand out from the crowd using just a plain CV and resume, their efforts are often unsuccessful.

We propose a business model and technical specification for developing a mobile service to help tackling the unemployment problem by innovating the way job seekers present themselves to potential employers.

PitchMe is a mobile app, which sole purpose is to connect job seekers and employers. Job seekers use smartphone to record and upload a short video, where they promote themselves and their services. They can also connect their LinkedIn profiles to further enhance their presentation. The job seekers are encouraged to be creative and best utilize their video time. Employers, on the other side, browse, search and watch videos of interest, and further establish contact with job seekers of choice.

In this master thesis we will refine a feasible business model and build technical requirements for executing the development of the mobile app and the service as a whole.

Acknowledgements

I would like to thank my mother for the constant support during all those long academic years. Without her pressure I would probably not have even a bachelor yet. Thank you mother, big love!

I send big thanks to my late father, who I hope would have been proud of what I have achieved.

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Contents

CHAPTER 1

Introduction

Smartphone ownership and usage is exploding. We are now seeing smartphones in the hands of nearly everybody – including small kids and elderly people, from all countries, social groups, religion or race. The smartphone is a powerful computing device, all time connected to the Internet, and packed with sensors for capturing its position, location, video, audio and proximity. The smartphone is the default all-in-one communication device of today.

The biggest advantage of the smartphones is the apps that they can run. Apps are essentially applications that the user can download and run on her device. Apps are made to extend the device functionality. There are apps for almost everything - connect people using social networks, messaging and video streams, help us with basic tasks like sketching or reminding about our schedule, as well as more complex tasks like presenting us with all the news we like aggregated from different sources or play 3D games fighting scary monsters with stunning details. Apps can notify us on new news article that we might find interesting, apps can notify us when there is a friend around our location. Apps are useful for both business and leisure. Successful apps solve problems.

We will ride the apps wave and try to help solve a problem by developing a mobile app. The problem is maybe one of the biggest problems in the modern western society, more evidently than ever in the years after the financial and economic crisis – unemployment. We will develop a mobile app called PitchMe, which will try to help unemployed people get recognized and get a job, by helping employers find, see and get to know those people.

1.1 Vision

The PitchMe app will be a mobile platform for job seekers and employers to connect. While there are many such solutions already available, our solution will go a step further by proposing that a job seeker should create not only a text resume, but enrich the experience by recording a video resume, which will act as a self-pitch. By encouraging creativeness and openness by using video for default medium, we hope to connect as many job seekers and employers as possible.

1.2 Thesis Goals

This master thesis aims at describing the processes of developing an idea to a product. We will analyze and discuss the business model generation process – how do we transform an idea to a feasible and sustainable business model. We will look into the transformation of a business model to a product prototype – how do we translate the business model into product requirements and product features. We will develop the prototype to become a mobile application – how do we go from paper drawing of the user interface to a mobile application prototype.

The scope of this work will be the definitions of a venture and how it will work, including definition for the business model, the requirements for the service as a whole and the app technical requirements.

With the contents of this work we aim at providing a complete framework for starting a business venture based on an idea for solving a concrete problem.

CHAPTER 2

Motivation

In this chapter we discuss the motivation behind the PitchMe business model and mobile service. We analyze the user needs and how our solution will help with solving the unemployment problem.

2.1 User needs

2.1.1 Market downfall and the job market

Since the current economic crisis hit, finding a job has become a tough challenge for many. Eurostat estimates that 26.217 million men and women in the EU-27, of whom 18.998 million were in the euro area (EA-17), were unemployed in January 2013. Compared with December 2012, the number of persons unemployed increased by 222.000 in the EU-27 and by 201.000 in the euro area. Compared with January 2012, unemployment rose by 1 890 000 in the EU-27 and by 1 909 000 in the euro area.[1] According to U.S. Bureau of Labor Statistics, there are over 12 million unemployed persons as of February 2013 in the USA.[2]

2.1.2 Digital Job Market

The current application and recruiting process has been around for many years. Everybody knows that one need to write a CV and a job resume in order to apply for a specific job. However, the world has gone digital and most of the western population have access to the Internet. A digital job market nowadays is usually perceived as an online website where unemployed browse job postings from employers. The traditional paper-based jobs listing directories found in newspapers, message boards in shops or on street pylons are near obsolete and might work only for very low qualification jobs. According to the Labour Force Study from U.S. Department of Work and Pensions, in April to June 2009, just over four in five job seekers made use of the Internet to look for work.[3]

2.1.3 Why this platform will be useful

As MIT's David Autor suggested, the information obtained by employers about job seekers can be grouped into low and high 'bandwidth' data: "Low bandwidth data are objectively verifiable information such as education, credentials, experience, and salaries. High bandwidth data are attributes such as quality, motivation, and 'fit' that are typically hard to verify except through direct interactions such as interviews and repeated contact. The Internet makes low bandwidth data cheap, dramatically reducing the cost of learning about and applying for jobs. For

[1] http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Unemployment_statistics
[2] http://www.bls.gov
[3] http://research.dwp.gov.uk/asd/asd5/rports2011-2012/rrep726.pdf

example, browsing job boards is almost always free and the opportunity to transmit job applications to multiple employers is commonplace."[4]

We aim at making this high 'bandwidth' data cheaper – an employer can view multiple job seekers profiles in a matter of minutes and assess qualities, which can only be assessed on an interview.

2.2 Mobile Video

2.2.1 Mobile video is here to stay

YouTube is one of the most widely used websites and 3rd in the Alexa Top Websites rank list.[5] According to Cisco, mobile video will make up 71% of mobile data traffic in 2016.[6] The recently popular mobile app Vine, which allows users to share a 6-second video with their followers, has already been used as a video resume.[7] Thus, we consider mobile video as the next wave of innovation in the digital world.

2.2.2 Mashup - LinkedIn meets YouTube

The service will combine the job seekers' video resumes with the profile information from their LinkedIn profiles and create a browse-able and search-able catalog of video-enhanced profiles of people looking for a job. Employers will browse the catalog, watch the video resumes and contact people they are interested in. Thus, we will create a *mashup* between LinkedIn and YouTube.[8] Our unique value proposition is 'personal professional video resume'.

2.3 Inspiration

2.3.1 Instagram

Instagram, the popular image sharing mobile service that started, grew from zero to a billion dollars in just two years. Started in March 2010, the startup was acquired by Facebook for a billion dollars in 2012. The founders didn't know exactly what to expect, but 25,000 users showed up on the first day. For late 2010 when there were fewer iPhones on the market, that was a big number.[9]

Instagram hit one million users in three months. Then that became two million, which then became 10 million users. Unlike many apps at the top of the charts, Instagram didn't have to spend a dime to get where it was. It was organic growth.

But Instagram was not the only company that had such service out there. So why did Instagram succeeded where others failed?

Kavin Systrom, CEO and one of the founders, says that "in the mobile context, you need to explain what you do in 30 seconds or less because people move on to the next shiny object. There are so many apps and people are vying for your attention on the go. It's the one context in which

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[4] http://www.academicroom.com/sites/default/files/article/19/David+H.+Autor,+Wiring+the+Labor+Market.pdf

[5] http://www.alexa.com/topsites

[6] http://www.zdnet.com/blog/btl/cisco-smartphone-traffic-will-grow-50-fold-by-2016/69429

[7] http://mashable.com/2013/02/21/vine-resume

[8] http://en.wikipedia.org/wiki/Mashup_(web_application_hybrid)

[9] http://techcrunch.com/2012/04/09/instagram-story-facebook-acquisition

you've got lots and lots of other stuff going on. You're not sitting in front of a computer; you're at a bus stop or in a meeting."[10]

An ex-founder of a photosharing startup argues in a Quora response that, photosharing apps succeed because they flatter the ego of their users. Ego is achieved by frequently posting quality pictures and then seeing them get exposure (or better, feedback).[11]

While there are theories for why Instragram succeeded, one is for sure - as founder Systrom say, that *simplifying the product--paring it down into an app that enables users to share beautiful photographs quickly--was the smartest business decision his team made*--and a strategy other developers should take to heart – a clear value proposition and a simple and easy to explain and use product is the formula we will follow.

2.3.2 Snapchat

Another recent success story of an app that delivers a clear and simple value proposition for sharing auto-destroying images is Snapchat. Launched in September 2011 with zero media coverage, now it sees more than 50 million uses or 'snaps' per day.[12] Again, a simple idea with simple execution, the app now looks to raise nearly 10 million dollars in funding, which is a clear mark of early success.

2.3.3 Vine

Twitter acquired the startup Vine in October 2012, before it has even launched their product. The Vine app is about recording and sharing short videos. There are already plenty of video-sharing apps out there, like Viddy and SocialCam, but Vine works differently in that it lets you shoot multiple short cuts to make one single, 6-second video.[13] For now, it is a success story, as Vine usage is increasing, compared to other similar services like SocialCam and Viddy.

Ingrid Lunden writes for TechCrunch: "One possible message here is that you may have a better chance of succeeding if you're entering a market that is not yet owned by any one company, regardless of whether you are launching off the back of a wildly popular social media platform or not. Vine was entering a space where its closest competitor was being used by only 1.3% of iPhone owners and falling. Snapchat, by comparison, was being used by 10% and rising when (Facebook's) Poke decided to Poke it. In general, video on mobile is still a wide-open space, with video apps used only by about 4% of highly active users on Twitter, according to RJMetrics." [14]

2.4 'Start with what you have in the fridge'

There are no current competitors for such mobile service that connects job seekers and employers using video as resume medium. So the question we ask is: How do we do it? How can we execute a mobile solution that would become successful? Even further, how can we execute a mobile solution that would become successful and help solve a real-world problem that affects millions of people around the globe?

We use the book *The Start-up of You* by LinkedIn co-founder Reid Hoffman as an excellent example of our argument why it is good to just start with an (even stupid) idea and execute it, instead of not starting at all.

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[10] http://www.fastcompany.com/1730967/instagram-founder-kevin-systroms-30-second-rule-app-success
[11] http://www.quora.com/Why-did-Instagram-reach-10-million-users-while-Path-only-reached-1-million
[12] http://techcrunch.com/2012/12/26/inside-snapchat-the-little-photo-sharing-app-that-launched-a-sexting-scare
[13] http://techcrunch.com/2013/01/24/twitters-video-sharing-app-vine-goes-live-in-the-app-store
[14] http://techcrunch.com/2013/03/14/early-vine-use-sees-video-app-rising-on-ios-while-cinemagram-viddy-socialcam-all-decline

Hoffman argues, that "there are three dynamic, changing puzzle pieces comprise your position in the market and, when paired with a plan, determine the course you should head in"[15]:

- *Assets* - what you have going for you now
    - Your *soft assets* (e.g. knowledge, skills, connections)
    - You *hard assets* (cash in the bank)
- *Aspirations and values* – where you might like to go in the future
- *Market realities* – what people will actually pay for you

Given that, we start "*cooking the venture*" with all the assets we "*have in the fridge*". In this venture case and for the purpose of this master thesis – *knowledge, skills and time*. We would like to further develop our knowledge and experience with business models design and mobile platforms and applications – those are our *aspirations and values*. By looking at the LinkedIn model and analyzing the mobile apps environment, we will draw conclusions for the *market realities* and adapt our business model and our service and product according to the findings.

[15] http://www.slideshare.net/reidhoffman/startup-of-you-visual-summary

CHAPTER 3

Business Model Design

3.1 Approach

There are different ways to start a business venture. Some entrepreneurs plan, predict and execute only when the perfect time comes. Others try to create and control the future. We want to create a product, or a service, which at the time of writing this work does not exists. Thus, we cannot compare to similar solutions and businesses. We try to find out how we can build a business plan for such a venture while minimizing the risk and without waiting for the 'perfect moment' to do so. We live in a dynamic world, where competitors can come tomorrow with something similar and often better. That is why we allow this venture to fail, which we will use to take the best elements and continue with them to change the venture to be competitive or start a new one.

That is why we argue that we should follow the *effectual entrepreneurship* logic and approach this work with the mindset, techniques and tools, appropriate for such blue-ocean[16] scenario.

3.2 Effectual Entrepreneurship Theory

According to Saras Sarasvathy, a cognitive scientist who has done an extensive research experiment with 27 expert entrepreneurs[17], expert entrepreneurs have learned the hard way that the most interesting ventures are built in a space in which the future is not only unknown, but unknowable. Still yet, entrepreneurs do shape this unpredictable future. They use techniques which minimize the use of prediction and allows them to shape the future. These five principles, listed below, make up effectual logic.[18]

- *Bird-in-hand* (start with your means) - When expert entrepreneurs set out to build a new venture, they start with their means: who I am, what I know, and whom I know. Then, the entrepreneurs imagine possibilities that originate from their means.
- *Affordable Loss* (focus on the downside risk) - Expert entrepreneurs limit risk by understanding what they can afford to lose at each step, instead of seeking large all-ornothing opportunities. They choose goals and actions where there is upside even if the downside ends up happening.
- *Patchwork Quilt* (form partnerships) - Expert entrepreneurs build partnerships with self-selecting stakeholders. By obtaining pre-commitments from these key partners early on in the venture, experts reduce uncertainty and co-create the new market with its interested participants.

[16] http://en.wikipedia.org/wiki/Blue_Ocean_Strategy
[17] http://www.effectuation.org/research
[18] http://www.effectuation.org/sites/default/files/documents/effectuation-3-pager.pdf

- *Lemonade* (leverage contingencies) - Expert entrepreneurs invite the surprise factor. Instead of making "what-if" scenarios to deal with worst-case scenarios, experts interpret "bad" news and surprises as potential clues to create new markets.
- *Pilot-in-the-plane* (control v. predict) - By focusing on activities within their control, expert entrepreneurs know their actions will result in the desired outcomes. An effectual worldview is rooted in the belief that the future is neither found nor predicted, but rather made.

Sarasvathy writes in her work "What makes entrepreneurs entrepreneurial?" [19], that the word "effectual" is the inverse of "causal". Causal rationality begins with a pre-determined goal and a given set of means, and seeks to identify the optimal – fastest, cheapest, most efficient, etc. – alternative to achieve the given goal. Effectual reasoning, however, does not begin with a specific goal. Instead, it begins with a given set of means and allows goals to emerge contingently over time from the varied imagination and diverse aspirations of the founders and the people they interact with. She compares causal thinkers with great generals seeking to conquer fertile lands and effectual thinkers with explorers setting out on voyages into uncharted waters, like Columbus. She argues that it is important to point out though that the same person can use both causal and effectual reasoning at different times depending on what the circumstances call for. In fact, the best entrepreneurs are capable of both and do use both modes well. But they prefer effectual reasoning over causal reasoning in the early stages of a new venture, and arguably, most entrepreneurs do not transition well into latter stages requiring more causal reasoning.

Effectual logic, she writes, happens in mind of an individual, where it provides a way of thinking about making decisions when non-predictive control is required. The effectual cycle (Figure 1) represents the thinking process in a form used in creating products, markets, and ventures. It's not a algorithm, but rather a set of heuristics that uniquely and universally apply to the challenges that entrepreneurs are bound to face.

The individual begins with an inventory of his means, from which he imagines goals. The goals he chooses to pursue are within his affordable loss. Next, interactions drive the process of enlisting others to join in co-creating the new venture. Committed stakeholders will influence the entrepreneur by morphing and appending the original idea into one that a whole network of stakeholders are committed to. The cycle continues as the effectual entrepreneur grows closer and closer to a defined, sellable product, complete with committed customers and stakeholders comprising the new market.

[19] http://www.effectuation.org/sites/default/files/documents/what-makes-entrepreneurs-entrepreneurial-sarasvathy.pdf

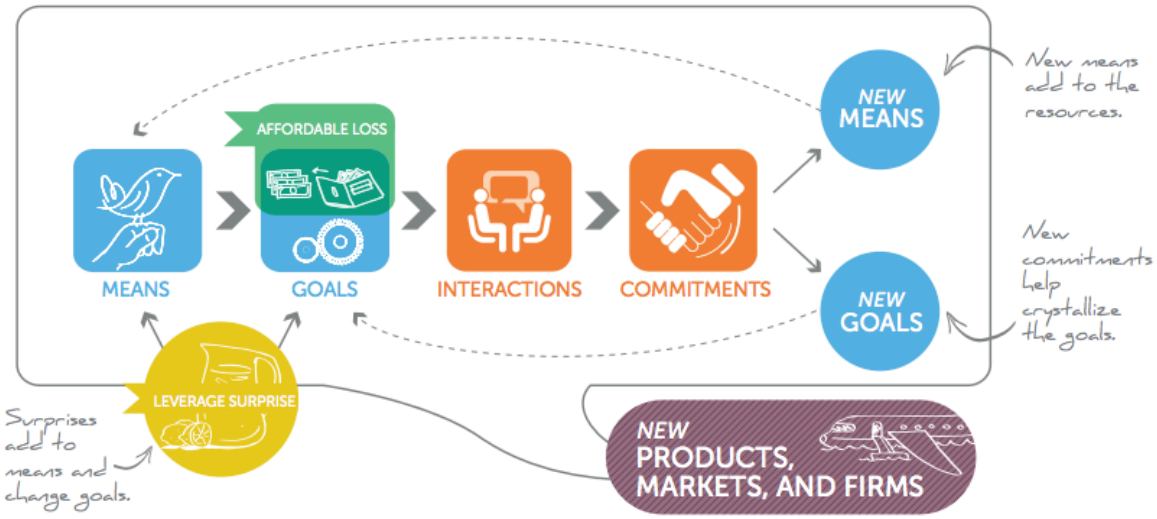

Figure 1. The effectual cycle[20]

We adopt the effectuation theory approach and aim at executing the idea with the available resources and knowledge that we possess, to achieve our goal with minimum affordable loss, in our case – time.

3.3 Business Model Generation

For the purpose of this master thesis we adopt the business plan development approach taught in DTU's entrepreneurship courses. The *Business Model Generation* book by Alexander Osterwalder, which we studied in our curriculum, provides a good illustration how to develop a business model and how to approach creating a venture. A business model describes the *rationale* of how an organization *creates, delivers and captures value*.

We will follow and analyze the Understand, Design and Implement phases of the business model design process described in the book.

The Mobilize phase is a preparatory phase, which involves team-assembly and establishing a shared and commonly understood communication inside the team. It also includes defining the motivation behind the project and the project objectives, which we have defined and described in Chapter 2.

The Manage phase is about adapting and modifying the business model according to market reaction. It involves processes of monitoring, evaluating and transforming the business model. This phase is out of the scope of this master thesis.

According to Osterwalder, the phases tend to progress in parallel, especially the Understand and Design phases, and rarely just one after the other. The process usually requires refactoring of work, done in previous phases, as a result of new findings and conclusions from later phases.

3.4 Understand Phase

The Understand phase is about research and analysis of the elements required for the business model design process. The team acquires relevant knowledge about:

[20] http://www.effectuation.org/sites/default/files/documents/effectuation-3-pager.pdf

- Customers
- Technology
- Environment

The team collects information through interviews of potential customers and experts, and identifies needs and problems.

In this phase we employ several techniques to acquire relevant to the project knowledge and conclusions:

- Customer Insights
- Visual Thinking
- Scenarios

Based on the findings we proceed to evaluate the potential business models, which we define using:

- Business Model Canvas
- Business Model Patterns

We study the business model environment and evaluate the business model accordingly.

3.4.1 Customer Insights

Osterwalder argues that a good starting point for the business model generation process is to develop a deep understanding of the customer and her needs, including but not limited to: daily routines, environment, concerns, aspirations.

A common challenge is that the customer segment may not be clear from the beginning. Another challenge is to find out which customer segment to care for and which customer segment to ignore. We utilize the Customer Empathy Map tool (developed by visual thinking company XPLANE) to analyze and gain better understanding of the customer.

We start by giving our customer a name and demographic characteristics like income, martial status, etc. Then we build a profile of the customer by asking and answering the 6 questions depicted on the Empathy Map tool:

- What does she see?
- What does she hear?
- What does she really think and feel?
- What does she say and do?
- What is the customer's pain?
- What does the customer gain?

By definition in our project we include 2 different CS – job seekers and job providers, so it makes sense to have 2 customers, whose problems and needs we should understand in details. However, due to the broadness of each CS, we define 2 customers per each segment.

Our users are: *Monica, Rasmus, Pia, and Peter*. The description of our customers can be found in the Appendix.

3.4.2 Environment Scanning

To analyze the business model environment, we look at the external environment as a form of "design space", as described in the book. This "design space" takes into account design drivers and design constraints. We map 4 main areas of our environment:

- Market Forces
- Industry Forces
- Key Trends
- Macroeconomic Forces

We analyze each of those areas by asking key questions and trying to provide the best possible answer based on the relevant knowledge acquired. Then we modify the business model according to the findings.

The environment scanning questions and answers are in the Appendix.

3.4.3 Initial Business Model Canvas

We generate a business model canvas based on the business model building blocks elements descriptions in the Business Model Generation book (p.16-44). The canvas is depicted on Figure 2.

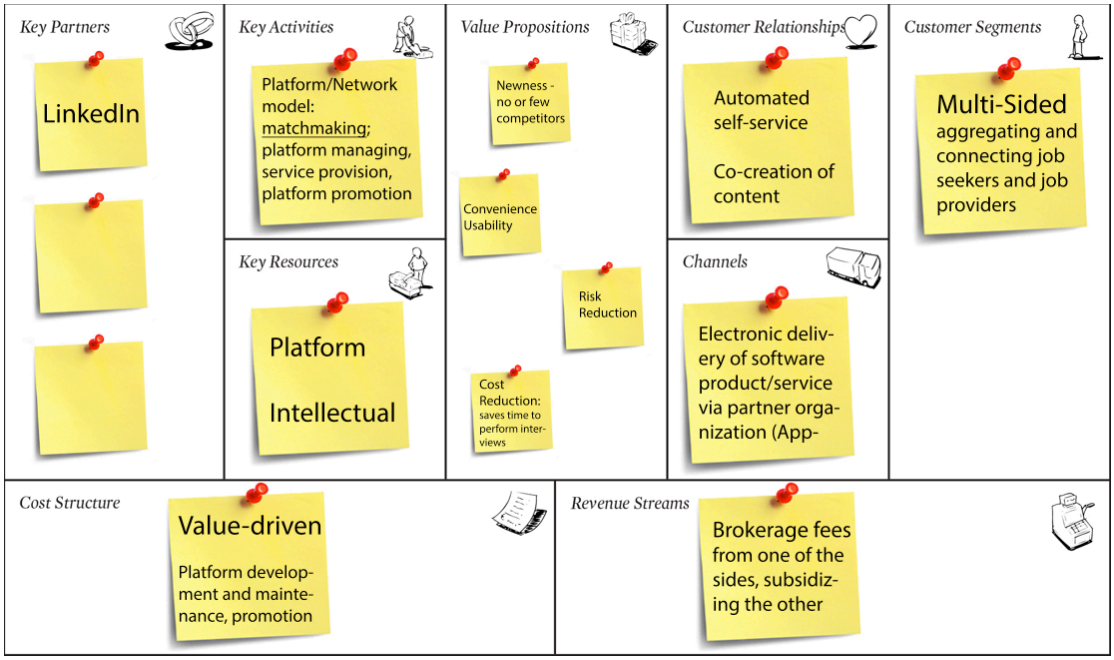

Figure 2. Initial business model canvas, based on business model definitions

3.4.4 Ideation

The ideation process is about generating a large number of business model ideas and choosing to continue working on the best ones. Ideation has two main phases:

- Idea generation – where quantity matters
- Synthesis – where ideas are discussed, combined and filtered to a small number of potentially viable ones

Ideas can be generated from different starting points, like:

- Epicenters of business models
- "What if" questions

The ideation process in this master thesis has been done when establishing the master thesis topic itself. The process was collaboration between the student and the supervisor. Multiple ideas were proposed from the student and were then questioned by the supervisor. The idea for the thesis was generated by asking "What if" questions and modifying an existing proposal by

combining it with new ideas. This way, the most viable idea was chosen and the master thesis topic was established.

We will now look at the idea from another point of view and discuss which epicenter is the starting point for the business model in question.

3.4.4.1 Epicenters of Business Model Innovation

According to Osterwalder, we can distinguish between four epicenters of business model innovation:

- Resource-driven
- Offer-driven
- Customer-driven
- Finance-driven
- Multiple-epicenter driver

The *customer-driven epicenter* is the most appropriate choice in our case because it is based on customer needs, facilitated access, and increased convenience. The canvas is depicted on Figure 3.

By delivering 'professional video profiles creation and consumption on mobile devices' to customers from two different customer segment we emphasize on:

Satisfying customer needs for better connection between job providers and job seekers by providing them with easy access to the other customer segment everywhere and all the time, which leads to increased convenience for both customer segments.

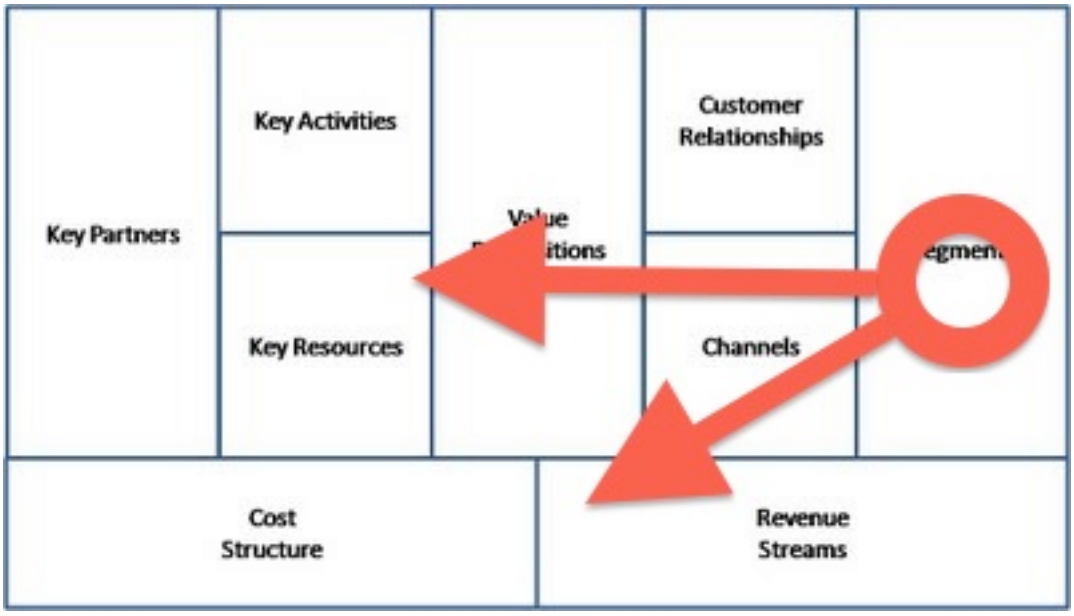

Figure 3. Customer-driven epicenter of business model innovation

3.4.4.2 The Idea

PitchMe is a mobile platform where job seekers can easily upload and list a personal promotional video, pitching not only their professional abilities and expertise, but also their character, charisma and creativity. Employers can browse and watch job seekers' videos, and can also be automatically notified for new relevant submissions via keywords, location or category matching. The pitch video acts as a preliminary job interview, where the employer can assess if the person is worth to be contacted and further interviewed and ultimately hired.

3.4.5 Visual Thinking

Visual thinking is a method of using pictures, sketches, diagrams and Post-it notes to construct and discuss meaning. Such visualization techniques help depict and explain the business model and facilitate co-creation.

We are using Post-it notes in combination with the Business Model Canvas to depict our business model in a reader-friendly way.

3.5 Design Phase

3.5.1 Business Model Patterns

In the Patterns section of the book, the authors have identified several business model patterns – based on business models with similar characteristics, arrangements of Building Blocks or behaviors. More than one of those patterns can be found in a single business model:

- Unbundling business Models – focuses on the separating a corporation business into several smaller entities
- The Long Tail – focuses on selling "less of more" or a large number of niche products which sell in small quantities
- Multi-Sided Platform – connects two or more different but interdependent groups of customers
- FREE as a Business Model – focuses on financing non-paying customers by another part of the business model, for example paying customers from different customer segment
- Open Business Model – focuses on company collaboration with outside partners to create and capture value

We focus on two of the business model patterns, as they are applicable to the business model we develop for the PitchMe service – Multi-Sided Platform and FREE as a Business Model:

- Based on the fundamental idea of PitchMe to bring together two distinct customer groups, we consider the Multi-Sided Platform as the basic business model pattern, which the business model will build upon
- By providing a completely free service to one or more Customer Segments, the service is modeled around the Free as a Business Model pattern also

3.5.1.1 Multi-Sided Platform

A business model based on the Multi-Sided Platform pattern makes money serving as an intermediary between the two (or more) customer segments, it is helping to connect. In order to work, the platform has to generate users and serve equally well all customer groups. The generated value for each customer group depends on the number of users in the platform's other customer groups.

A common way to approach modeling such business model is to subsidize a customer segment with free or very cheap offer, in order to gain significant user base, so the model can work. It can be hard to decide which customer segment to subsidize and how to price the product or service properly in order to attract customers. The pattern is the typical "chicken-and-egg" problem. We show the multi-sided platform value proposition and revenue stream on Figure 4. On Figure 5 we show additional visual representation of the model and how it works.

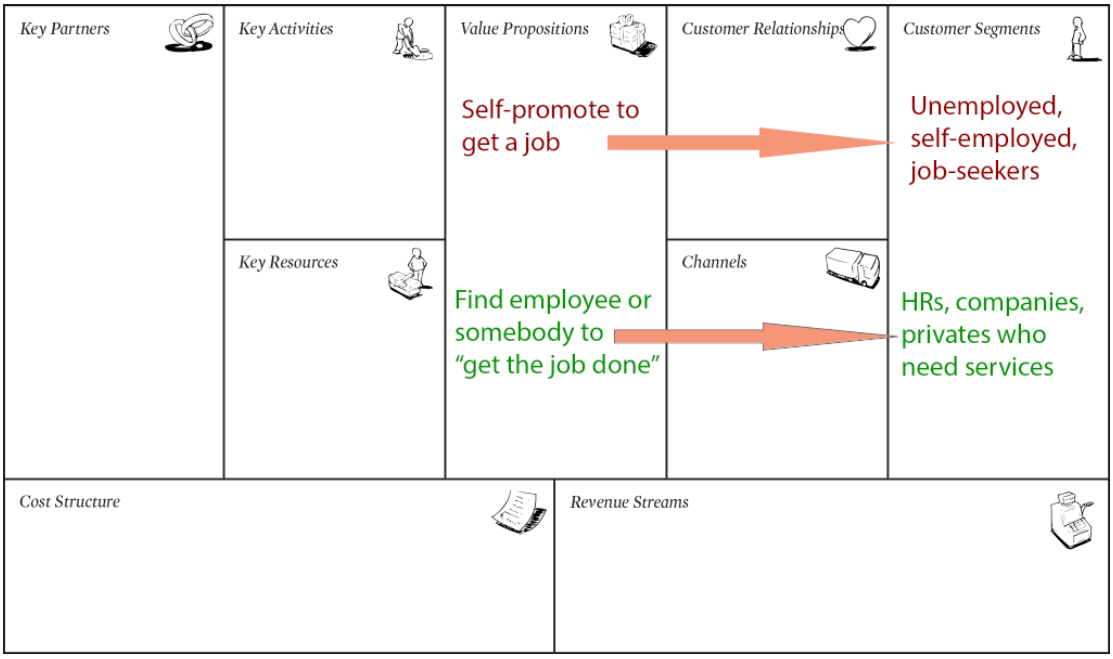

Figure 4. Value Proposition and Revenue Stream for both Customer Segments

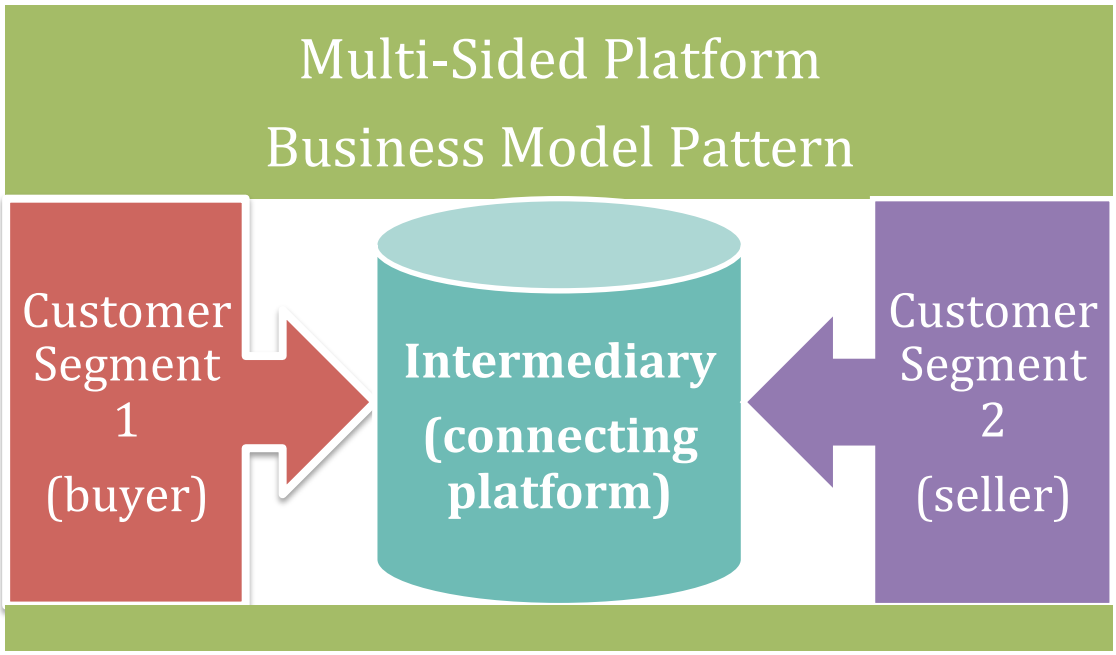

Figure 5. Multi-sided platform business model

We have identified two customer segments, in short – job seekers and employers. We plot those segments in the Canvas, as well as their value proposition.

The job seekers' value lies within the exposure they get and the possibility of contacted by an employer or contractor, and ultimately - *get a job*.

The employers' value is all about the ease of browsing potential job candidates and watch their self-pitch videos on a mobile platform of choice and initiate contact with chosen ones, and ultimately – *find somebody to get the job done*.

3.5.1.2 FREE as a Business Model

We argue that the best way to attract the most customers in both customer segments will be a FREE model for both. According to Distimo, "U.S. consumers download 15 free apps for every paid app purchased in the iPhone app store" [21]. This way no customers will pay for usage of the service and the generated customer base theoretically will be the highest. However, the business model needs a way to monetize its users, so a completely FREE model would not work in the long run.At the end, in order for the business model to work and make money, *somebody has to pay*.

We can identify a number of possible FREE model implementations:

1) If the service is free for job seekers and paid for employers – this model would attract the most job seekers but the employers customer base will suffer:
    a. Advantages:
        i. Much more job seekers – open registration and profile creation, everybody can create profile and upload video content
        ii. Legit employers – verified employers, high trust among job seekers
    b. Disadvantages:
        i. Unverified job seekers – the service can expect big amount of inappropriate or illegal accounts and content, fake account, etc.
        ii. Lower number of employers using the service – due to the payment fee, the small private contractors or privates looking to hire a temporary worker, would reconsider using the service
    c. A Business Model Canvas example is depicted on Figure 6:

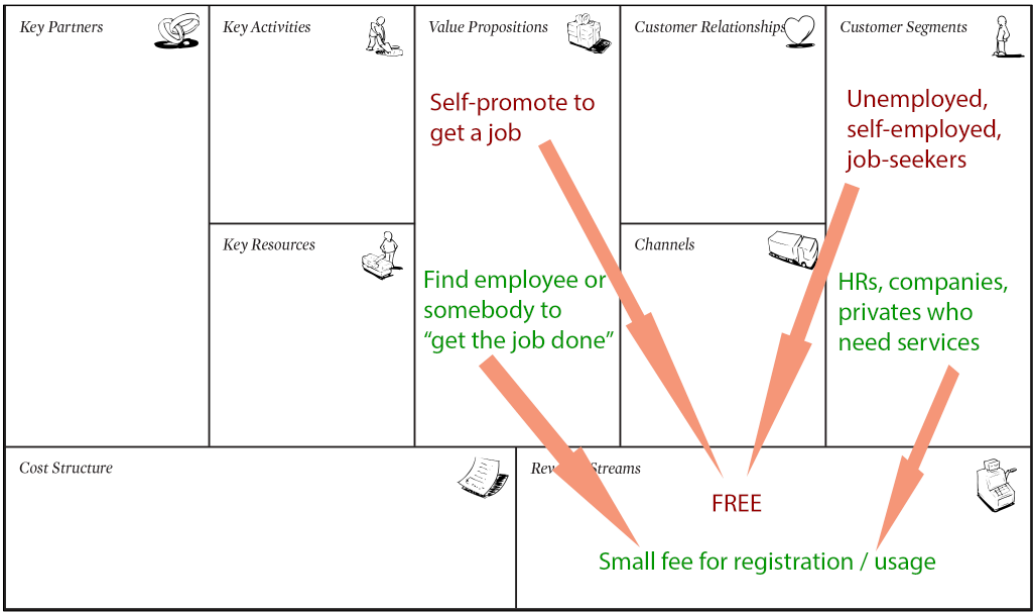

Figure 6. Business model where job seekers segment is subsidized

2) If the service is paid for job seekers and free for employers – this model would attract the most employers but the job seekers customer base will suffer:
    a. Advantages
        i. Legit job seekers – much less inappropriate or illegal accounts and content, higher trust among employers

[21] http://www.insidemobileapps.com/2012/09/18/distimo-u-s-consumers-download-15-free-apps-for-every-paid-app-purchased-in-the-iphone-app-store

ii. Much more employers – the service will benefit from the larger number of employers using it, which would ultimately drive more job seekers to pay to use it

b. Disadvantages:
   i. Much less job seekers – driven away by payment fees
   ii. Publicity of job seekers' profiles – due to open platform to employers, everybody can use it to browse profiles and videos

c. A Business Model Canvas example is depicted on Figure 7:

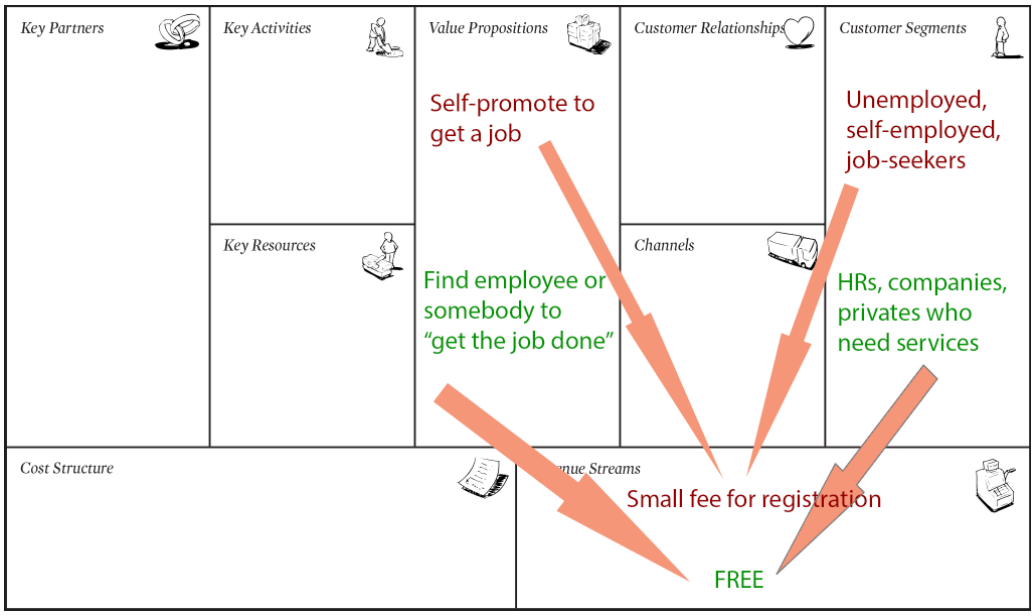

Figure 7. Business model canvas where employers segment is subsidized

3) If the service is paid for both customer segments – this model should benefit the most from the verifiable user profiles and accounts. All the accounts would be legit and the users of the service will know that they can trust its premium content.
4) If the service is free for both customer segments – this model would involve some other kind of revenue stream, for example subsidizing all sides in the platform by ad sponsorship. Such model would lead to the largest user base but many profiles will be untrustworthy and many problems will arise from that.

3.5.1.3 Freemium Business Model

The increasingly popular Freemium Business Model is based on the idea that the product or the service is provided free of charge, but a fee has to be paid for advanced features, functionalities or virtual commodities. This business model can impose limitations on various aspects of the free service, like:

- Features
- Capacity
- Time
- Support

Once the user reaches the imposed limit, she is usually persuaded to upgrade to the full version.

According to Flurry, one of the leaders in app tracking and analytics: "In 2012, Flurry estimates revenue earned from apps will approach $10 billion, with games taking over 80% of the

pie. The free-to-play business model (aka freemium), where consumers download and play the "core loop" of a game for free, but then pay for virtual goods and currency through micro-transactions, is the most prolific business model in the new era of digital distribution."[22]

3.5.2 Monetizing the mobile application

An article from the website e-string.org argues that there are 9 ways to monetize an iOS app.[23]

A graphic from DevelopersEconomics.com website shows the average revenue per app-month for June 2012 (Figure 8).[24]

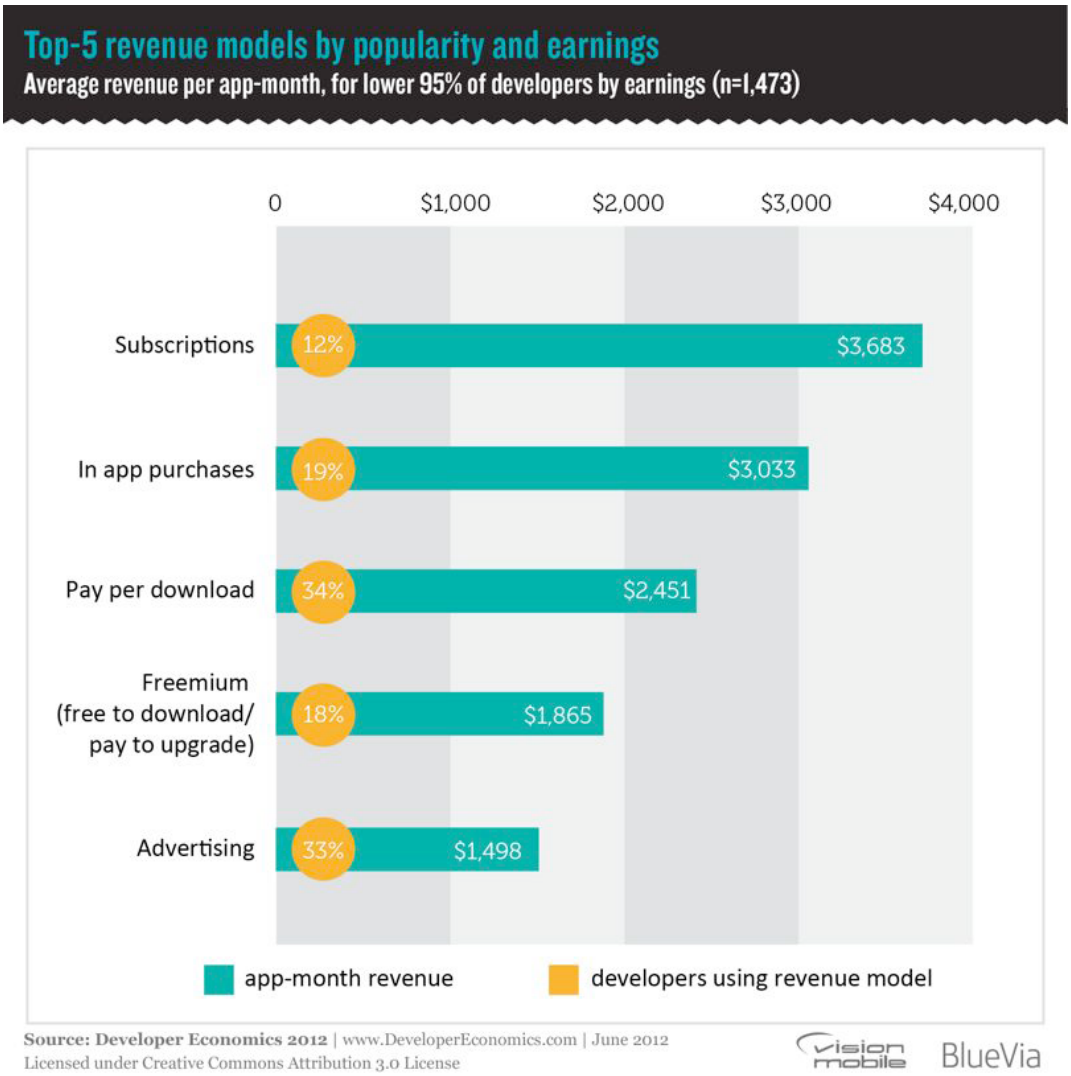

Figure 8. Top revenue models by popularity and earnings by Developer Economics 2012

We can summarize the main different strategies to monetize an iOS app like:

1) Pay per download – the user pays one-time download fee in the App Store
2) In-app purchases – one or many purchases of premium features or in-app virtual commodities

[22] http://blog.flurry.com/bid/92377/The-Gamification-of-Mobile-Games
[23] http://www.e-string.com/articles/9-ways-monetize-your-ios-app
[24] http://qph.is.quoracdn.net/main-qimg-38c037ef7c6904dd670eaeb32fec0914

3) Subscription – in-app purchases, allowing use of premium features for a limited period of time
4) Freemium – free to download a limited version, pay to upgrade to full version
5) Advertising – in-app ads
6) Sponsorship – by signing agreements with private or public institutions, which would benefit from the service the app provide, they will provide funding for running the business

Another monetization strategy is to develop a product or a service with a specific exit strategy and predefined buyer. Such approach is risky, but if executed properly could lead to big return on investment.

An app business model can combine more than one monetization strategies. For example, a niche app can be paid to download and also provide more premium features in form of in-app purchases. Different approach is to combine advertising by default in a free app, which can be disabled by an in-app purchase (again, different options are possible: disable the ads forever or for a limited period of time).

Currently, in Apple's ecosystem, there are three ways to collect revenue:

- Collecting one-time fee when the app is purchased from the App Store [25]
- Collecting one-time or recurring fee from within the app in form of in-app purchases [26]
  - One-time in-app purchase - upgrade (to unlimited access service)
  - Recurring in-app purchase – time-based fee (monthly/yearly subscription)
- Ad-based [27]

Apple's fee is 30% of all sales regardless if the sale is for app purchase or in-app purchase or even in-app ads.

According to a recent article by AndroidAuthority.com on the latest Apple App Store and Google Play trends[28]: "The trend seems to be that most apps are moving towards in-app purchasing, such as games that are free to play but let you buy upgrades. 69% of all apps generated their revenue from these types of transactions in 2012. Interestingly though, 35% of the revenue from the top 10 publishers was made by up front, one off fees, so in-app purchases don't necessarily appear to be the most profitable way of generating revenue."

We can draw conclusion that the in-app purchases are the preferred monetizing method for more than 2/3 of all apps. The upfront one off fees collected by top 10 app publishers may make more than a third of their revenue, however those publishers charge those upfront fees on apps that deliver significant content value.

According to an article by PadGadget[29], reviewing a report from Dutch company Distimo, which tracks applications in all major stores, named "The 4-Year Anniversary of the App Store", between June 2010 and June 2012 there is a noticeable shift from paid apps to free apps with in-app purchase options. This shift is depicted on Figure 9.

[25] https://developer.apple.com/programs/ios/distribute.html
[26] https://developer.apple.com/in-app-purchase
[27] https://developer.apple.com/iad
[28] http://www.androidauthority.com/apple-app-store-vs-google-play-distimo-141851
[29] http://www.padgadget.com/2012/07/27/new-distimo-report-the-4-year-anniversary-of-the-app-store

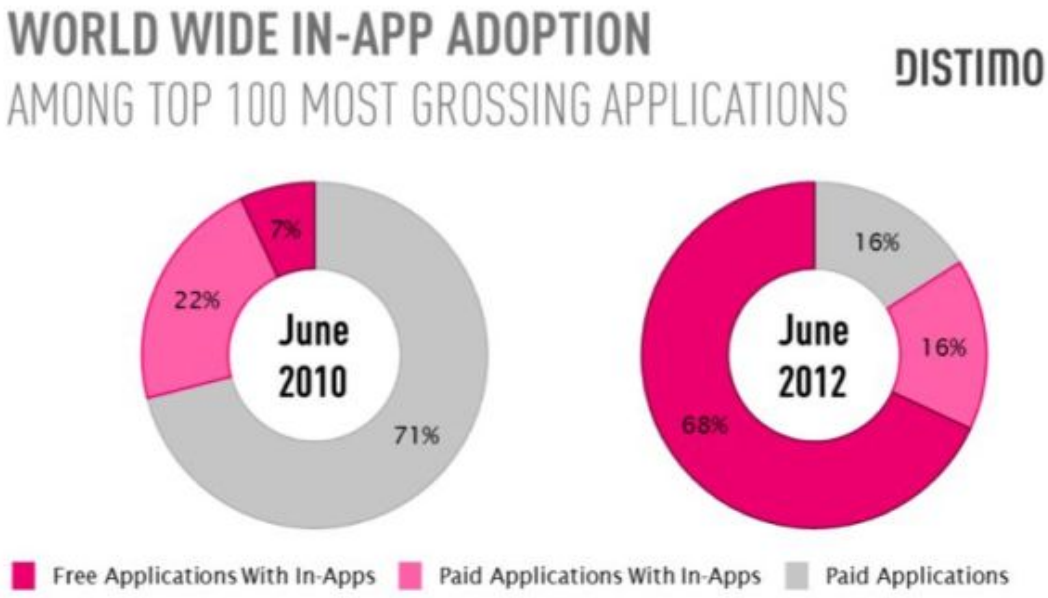

Figure 9. Paid apps, free apps and apps having in-app purchases distribution development

According to a more recent statistics from the same company, in October 2012 the revenue from free applications with in-app purchase options made 81% of all app revenue (Google Play store data). This statistic is depicted on Figure 10.

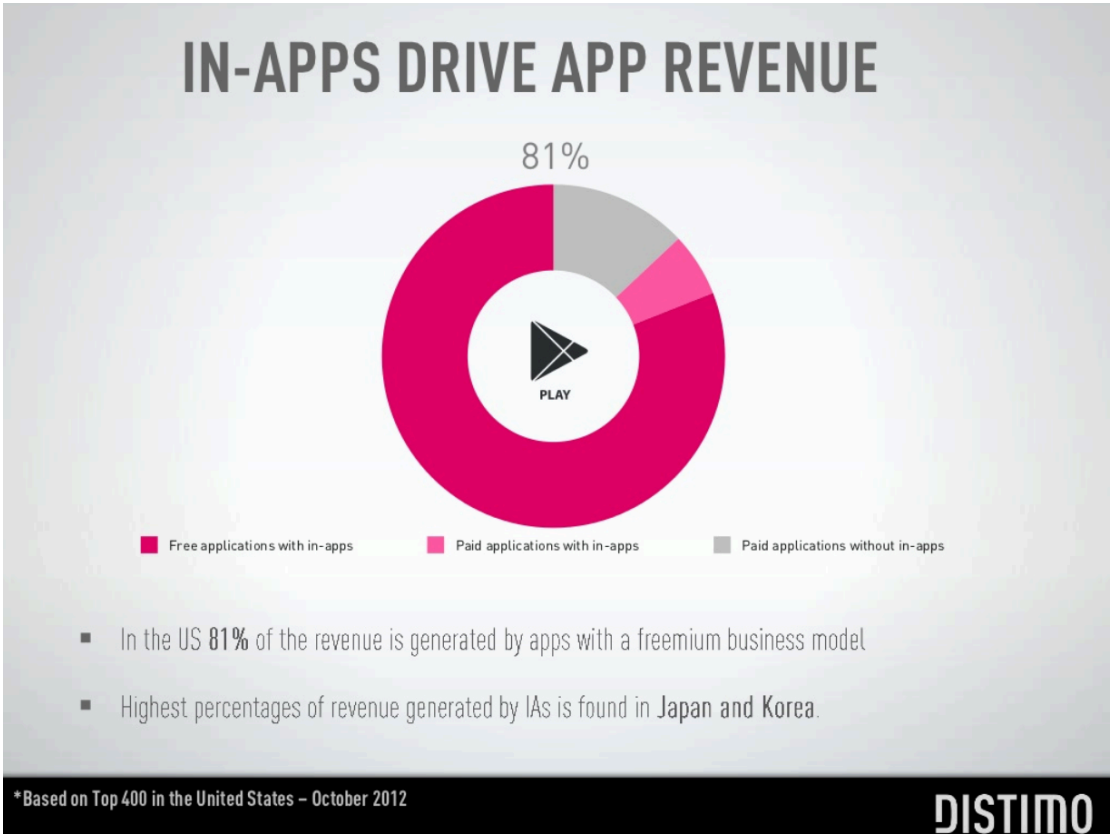

Figure 10. Summary of the revenue drivers of Android apps

Galen Gruman argues in an article for InfoWorld[30] that a model with free to download app with paid in-app purchases in terms of virtual goods or subscriptions, provide the highest utility, engagement and value, at the same time. Factors in the graph:

- Utility - how useful a person finds the app
- Engagement - how often a person uses the app
- Value - how much the person likes what the app provides

The graph is depicted on Figure 11.

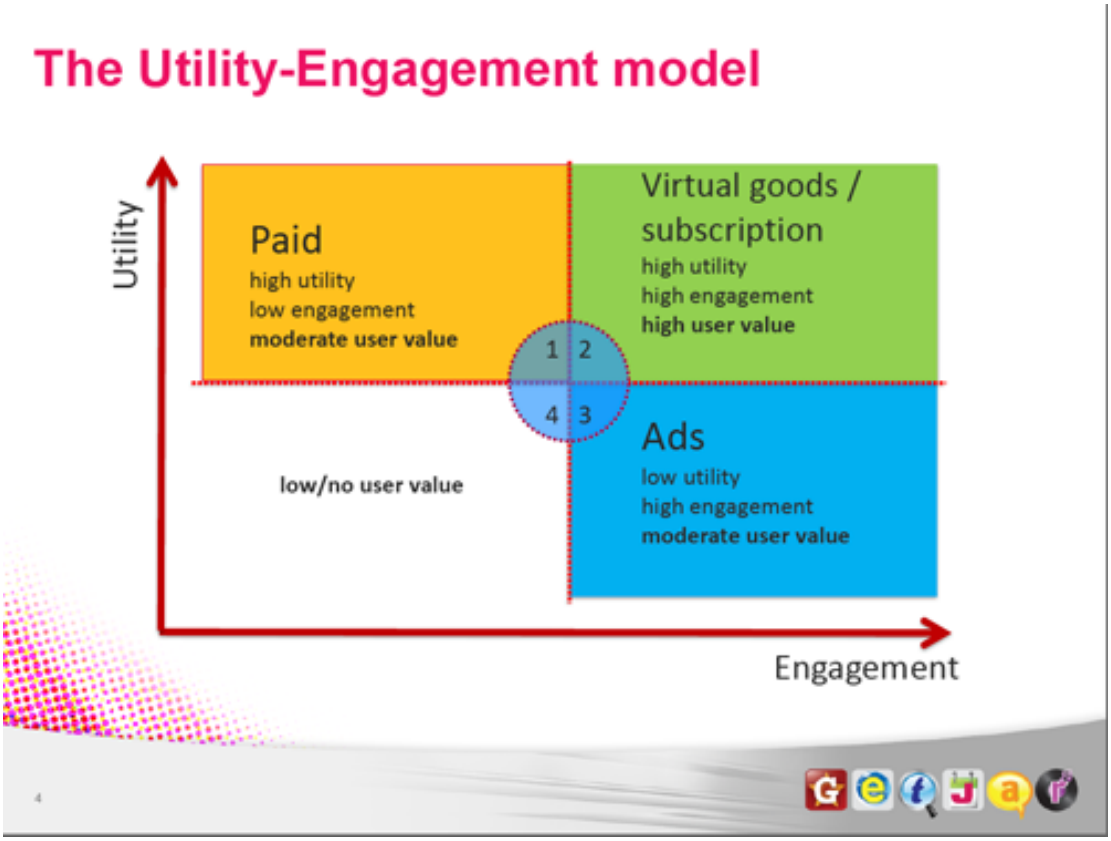

Figure 11. The utility-engagement model of Galen Gruman

Given the analyzed models for monetization, we analyze feasible options for paid premium features. Such premium features could include:

1) For job seekers:
   a. Verified profile – after a small in-app purchase for the premium feature, the job seeker profile gets verified (by a service's employee or by matching the payment details and the profile details) and gets a "verified" status. Such status would tell employers, browsing the profile, that the job seeker is an authentic and also a serious one, and that she has actually invested money in getting her profile to stand out from the crowd
   b. Promoted profile – after a small in-app purchase for the premium feature, the job seeker profile gets a "promoted" status. The profile would appear higher in search lists and be more visible by enhancing attractiveness or positioning of the profile layout. This feature would work similar to the paid results in a Google search
   c. Extended profile – after a small in-app purchase for the premium feature, the job seeker profile gets an "extended" status, allowing the user to upload more than

[30] http://www.infoworld.com/d/mobile-technology/the-secrets-making-money-mobile-apps-192920?page=0,1

one promotional videos. Such premium feature would be useful for, for example, individuals or small companies that provide multiple services (one-time fee 1$ per 1 sec additional video time?)

2) For employers:
    a. Premium ("Head Hunter") profile – such premium feature upgrade would enhance the job seeker user interface, adding extra functionality, like profile organizer, providing easy way to save and organize favorite profiles, contact multiple users simultaneously, organize and invite to interviews, and other features, helpful for somebody who searches for many employees
    b. Premium Notifications – such feature would enable the employer to create multiple saved search filters and get immediately notified when new matching profiles are created, so they can establish contact

By diversifying the premium features, the service will provide multiple small enhancement for very little fee, but when combined the premium features would accumulate a revenue, which would make the user valuable.

It is possible and meaningful to introduce a step model – the profile can only be "promoted" or "extended" if it is "verified" first. This way there will be no illicit profiles popping up in the search results and no profiles with illicit content inside. This way if a user would like to see her profile promoted, she will also has to get it verified first, leading to higher revenue per user.

A "verified profile" upgrade would be for a lifetime, as it is done only once and afterwards it is assumed that the user is legit. The same rule makes sense for the "extended profile" – it is unlikely that the user would like to reduce the content size (i.e. number of uploaded videos).

However, the "promoted profile" premium feature might as well be subscription-based. This would lead to further monetizing the user and practically open monetization potential.

If a user is providing a babysitter service, she would likely buy a "promoted profile" for a month to try it. When the premium placing of the profile leads to more work for the job seeker, she might as well continue to pay for premium placement each month or buy a yearly package with some discount.

LinkedIn uses similar premium feature for "Saved Searches". Non-paying users can create up to 3 saved searches. Once the user upgrades her account, she can save more than 3 searches and receive notification emails on new results.[31]

A recent Forbes article analyzes the paid account options and how are they worth to job seekers.[32] The article summarizes some of the reasons to pay for an account as a job seeker, according to LinkedIn senior communication manager Krista Canfield:

- You can put a badge on your profile announcing that you're looking for a job
- You will rise to the top of the pile when you apply for jobs through LinkedIn, and in searches by hiring managers
- You can see people who viewed your profile
- You can send LinkedIn "InMail" to members you want to contact

In such premium features approach, the service will benefit from both selling in-app premium features with a one-time fee and from selling subscription packages, and further benefiting from user retention. We show the premium features and their type in Table 1 and Table 2.

[31] http://www.linkedin.com/mnyfe/subscriptionv2
[32] http://www.forbes.com/sites/susanadams/2012/10/16/for-job-seekers-is-linkedin-worth-paying-for

	Pay to download One-time fee	In-App One-time fee	In-App Recurring fee
PitchMe app	X		
Verified profile		√	
Extended profile		√	
Promoted profile			√

Table 1. Revenue model, job seekers segment

	Pay to download One-time fee	In-App One-time fee	In-App Recurring fee
PitchMe app	X		
Premium profile		√	
Premium notify			√

Table 2. Revenue model, employers segment

Such schema would diversify the premium features for both customer segments and avoid full subsidization of one of them. For job seekers the service will be fully featured with a limitation of the number of uploaded videos. This limitation would not impose any limitation on the way the user uses the app nor the discoverability of his profile.

3.5.3 Business Model Prototyping

To refining our business model we need to think through a number of business model possibilities before developing a case for a specific model. This way we try to consider many possible business models, which might be appropriate for our case.

3.5.3.1 Sketching

We start prototyping by sketching the rough idea on the canvas. We include the value proposition, the customer group and the revenue stream. As the idea is to serve two customer groups, we include both in one canvas. This canvas depicts the main idea behind the project – connecting job seekers and employers. The canvas is shown on Figure 12.

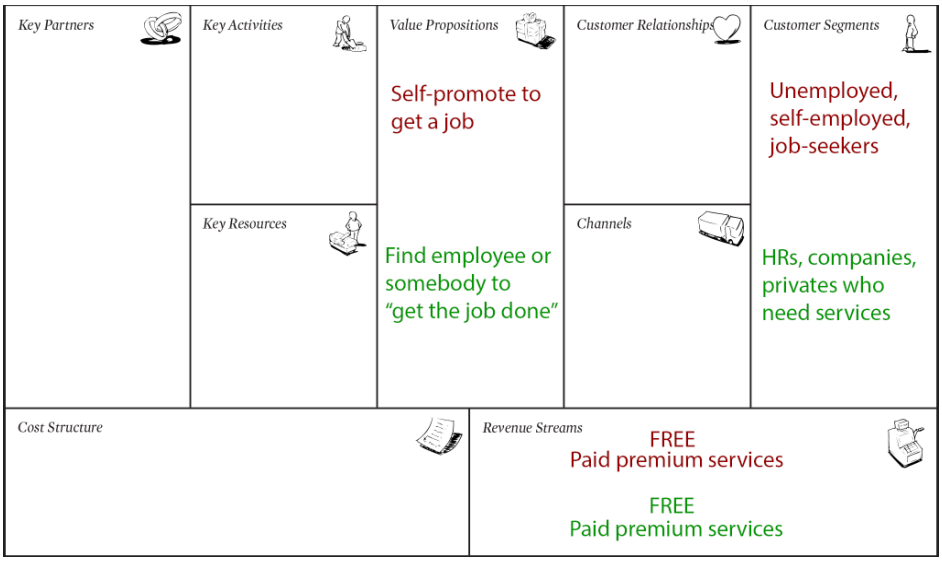

Figure 12. Business model sketch

3.5.3.2 Prototyping Business Models

We continue to prototype and iterate by advancing to use a more detailed version of the canvas – developing full canvases, including all the building blocks. We think through the business logic, estimate market potential and discuss the relationship between the business blocks. We perform a simple SWOT analysis on each model to help us estimate its feasibility and potential. Then we choose a business model based on market potential. We then perform a detailed SWOT analysis on each building block of the chosen business model canvas.

3.5.3.2.1 FREEmium business model

We develop a business model based on the FREEmium business model pattern, which is show on Figure 13. In such business model, the service usage is free for all. This model would lead to higher user base from both customer segments customers will not be scared away by compulsory usage fee. There are features, which are paid. The users that would like to extend their service and use the Premium Features will have to pay one-time fee or subscription-based fee. One-time fees can be applied to features like the ability to upload more than one pitch videos or to get a verified status for their profiles to increase trust level in employers. Recurring fees can apply for promoted profiles, which are displayed on top of the other profiles in a list or search results. Such business model would largely benefit from the increasing popularity and acceptance of the *in-app purchases* model, where user of a mobile app can very easily buy extra services or content inside the application.

Figure 13. FREEmium business model canvas

We analyze the business model using the SWOT analysis technique as shown on Figure 14. SWOT analysis (alternatively SWOT Matrix) is a structured planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project or in a business venture. A SWOT analysis can be carried out for a product, place, industry or person. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favorable and unfavorable to achieving that objective.[33]

[33] http://en.wikipedia.org/wiki/SWOT_analysis

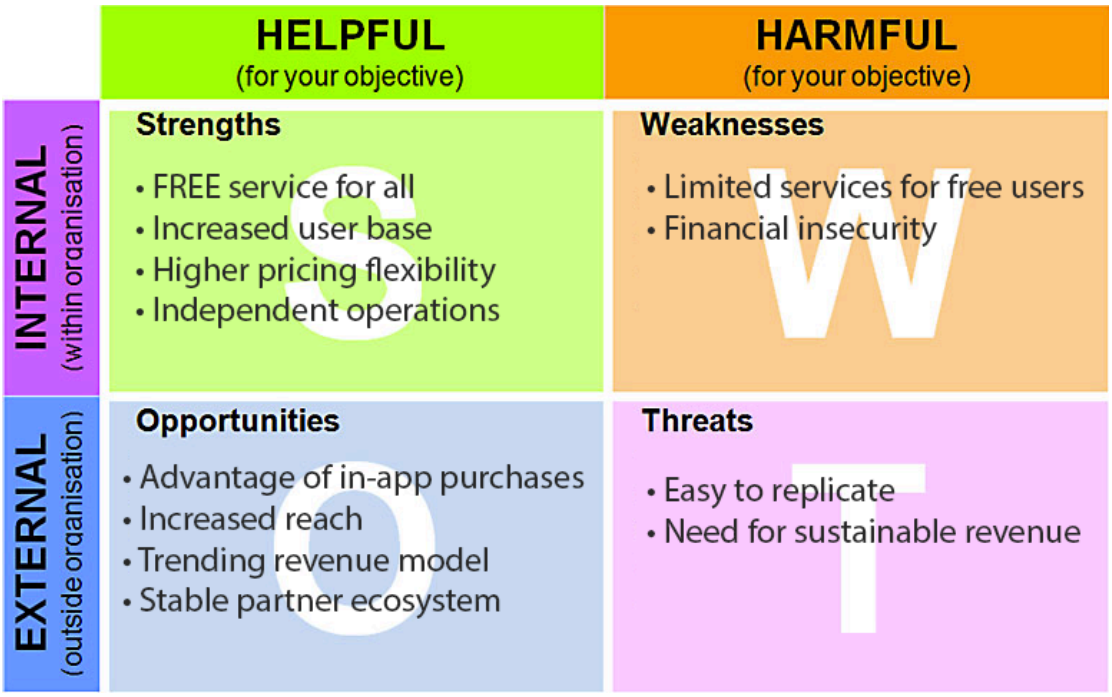

Figure 14. SWOT analysis of the FREEmium business model

3.5.4 Comparison of the Business Models

We compare the analyzed business model canvases in order to select one that should be the model we build the service on. We cannot quantify the different business models, their feasibility or their canvas' building blocks. There are no parameters, which we can use to quantitatively assess those. Therefore, we evaluate each business model block using the SWOT assessment questions sets on pages 216-223 in the book. We then highlight the most distinctive strengths and weaknesses for each business model and perform *big picture assessment*. This approach helps us decide which business model to further develop. The comparison is shown in Table 3. The other analyzed business model can be found in the Appendix.

Model	Strengths	Weaknesses
Ad-based	• Proven revenue model • Business ownership • Short time to market • Local and global marketing	• Commission fees • Ads scare users • Floating click-rate • Illicit users • No diversification of revenue
FREEmium	• Diverse revenue options • Proven revenue model • Business ownership • Short time to market • Local and global marketing	• Commission fees • Low premium users rate
State-financed	• State support • One customer • Stable revenue • Clear development goal	• Heavy dependency on state • Longer time to market • Slower adoption • No business ownership • No diversification of revenue
State-subsidized	• State support • Promotion - state institutions • Business ownership	• Dependency on state subsidy • Possible regulation by state • Public-private risks • Focus on local market
Acquisition	• One customer • Clear development goal • Acquisition revenue	• Deal uncertainty • No diversification of revenue • No business ownership

Table 3. Comparison of the possible business models by their strengths and weaknesses

After we analyze and compare the developed business models, we proceed to pick the one that we are going to build the PitchMe service on. The model of choice is the FREEmium business model.

3.5.5 Why FREEmium Business Model?

The FREEmium business model will have short time to market, highly diverse revenue options with both fixed price and variable price, and one-time fees as well as recurring subscription fees. It would benefit from the high popularity and the easiness of the in-app purchases payment model. The business ownership will stay in the company and the revenue will grow with the user base. Threats to this business model are the commission fees of 30% paid to Apple and the low rate of purchased premium services. However, if the service is attractive enough to generate a large user base, the premium features model will work well. Example of that is LinkedIn, being one of the most profitable companies on the Internet today.[34]

We develop a full-featured canvas for the FREEmium business model using Post-it notes on a printed big-format canvas. It is depicted on Figure 15.

[34] http://www.businessinsider.com/linkedins-profit-is-going-to-explode-2012-11

Figure 15. FREEmium business model canvas with Post-It notes

We analyze the gathered information and research in order to identify the canvas building blocks.

3.5.5.1 Customer Segments

We start by identifying the main Customer Segments – the job seeker and the employer, as the epicenter of the business model idea is Customer-Driven. The business model idea is based on customer needs and increased convenience – *make it easy for job seekers to promote themselves to employers using video on mobile platform*. The other business model canvas building blocks are affected by the Customer-Driven approach and the target is how to serve the customer needs the best and how to make the business model viable.

3.5.5.2 Value Proposition

As the business model is based on the idea to connect two Customer Segments it is a Multi-Sided Model or just Platform. The value proposition to both Customer Segments is Matchmaking – make it easy for the users to connect to the other Customer Segment.

For the single Customer Segments the Value Proposition can be defined as:

- For job seekers – automated self promotion and ultimately finding a job
- For employers – find employees or somebody to get a job done

The Value Proposition is focused on delivering a *convenient* service with high *usability*, which *reduces risk* and *saves time*, benefiting from *newness* and hype over mobile apps.

3.5.5.3 Channels

PitchMe is a mobile application running on smartphones and tablet devices. The application is providing access to the service. The application is distributed through Apple's closed eco-system and it's App Store. It provides fully automated payment system and electronic delivery through one-time download of the application software bundle to the user's device.

The delivery channel is categorized as an *indirect channel of a partner organization*.

3.5.5.4 Customer Relationships

To deliver outstanding performance, convenience and usability, the service aims at automating all processes that could be automated. Processes like registration, content creation, platform usage, communicating with other users, are all fully automated.

The software platform aims at delivering fully *automated self-service* that allows easy *content creation* and search.

3.5.5.5 Revenue Streams

The business idea is about a mobile platform, which serves multiple Customer Segments. The Multi-Sided platform makes sense if there are enough users from both sides and usually solves this chicken-and-egg problem by subsidizing one of the Customer Segments in order to attract enough customers. In the PitchMe case, we are actually subsidizing both segments by providing them to free access to the platform. Of course, there has to be a Revenue Stream, which will come from selling different Premium Services to both segments. The paid services are based on *subscription fee* – both *one-time* and *recurring*. The pricing is based on *fixed, product and customer dependent pricing*. It could be also *volume dependent* – promoted profile for job seekers could come in 1-month and 3-months packages, and get a reduced price if premium service usage is purchased for a longer period of time.

3.5.5.6 Key Resources

In order for the service to function, it requires a number of Key Resources to be present or acquirable. The most important Key Resource in software development is the *human capital* – the developers who develop, support and upgrade the software. The software development can and should be seen as a creative process as much as it is seen as a technical one. Using this human capital the business develops *intellectual* resources, like proprietary knowledge and customer databases. The most valuable resource of a multi-sided platform business would be the platform itself – in this case that would be the customer base and its generated content. It is arguable if financial resources are to be included, as all businesses need money to function and invest.

Of course, in order to develop and promote the service, the business model should take into account the required *financial* resources.

3.5.5.7 Key Activities

Like Key Resources, Key Activities are required to create and offer a Value Proposition in order to earn revenues. The main Key Activity is *software development*. We could argue if *promotion* is also a Key Activity.

We can categorize the identified Key Activities as *Platform/Network* development activities.

3.5.5.8 Key Partnerships

As the idea behind the business is to leverage the existing LinkedIn service, the main partner would be LinkedIn. This partnership is based on *acquiring resources*, in terms of the profile information fetched from the LinkedIn database. It is considered that the service could benefit from partnering with state-owned employment institutions. Such partnership would increase the popularity and the user base of the PitchMe service.

3.5.5.9 Cost Structure

The Cost Structure describes all costs connected with creating and delivering value and capturing revenue. The model for this project is *cost-driven* which characterize with low-price Value Propositions, *maximum automation* and extensive outsourcing. Maximizing automation is the main driver behind low costs required to operate the business model. A fully automated virtual service as PitchMe requires big investment to create the software and setup the infrastructure, and automate the platform service, and then costs are focused on upgrading and supporting the software and acquiring and supporting customers. The Cost Structure has *variable cost* model, because the bigger the user base, the lower the maintenance cost is per user. Thus, *Economies of Scale* apply to this model.

3.5.6 Transforming information and ideas into business model prototypes

Now that we have identified the business model we will work with, in the next Chapter 4 we will look into the process of transforming the business model into a prototype design.

CHAPTER 4

Prototype Design

4.1 From Business Model to Prototype Design

Once we have identified the business model patterns, we initiate the process of translating the business model into a product prototype specification and design.

We aim at translating the needs and expectations of the customer groups into a user interface and application behavior, which will satisfy those needs and provide a usable and useful end product.

We examine the FREEmium business model and analyze how the product design needs to address its specifics. For example, if the business model subsidize the job seekers but the employers have to pay to use it, will mean that the user interface and application flow have to address this and impose some usage limitations for users who have not yet subscribed for the full service. Other form of limitation is limiting usage by time or quantity – for example, if an employer browses more than 5 profiles per day and she wants to browse more, she needs to pay to get full access.

We start with low-level prototyping of the first iteration of the product design, specifically – the UI of the mobile app. We draw the interface on paper, using printed iPhone blank screens as templates. When we have the low-level prototype, we do a high-level prototyping using free prototyping software called Prototyper[35]. With this software, we build the app screens and the flow between the screens. The screens contents are dummy, but the screen structure and interactions are live. The high-level prototype is exported from Prototyper and opened in a web browser where we can interact with the prototype and perform usability testing.

4.2 Features assessment

The very prominent Danish usability expert Jacob Nielsen writes in his Mobile Usability study: "When you have a smaller screen, you must *limit the number of features* to those that matter the most for the mobile use case."[36]

Thus we undergo the process of establishing an app features list with main focus on having only important features and leaving unnecessary features out of the scope.

We initiate the design and prototyping activities by defining the main functionality required – the *app features*.

We look at LinkedIn and YouTube's services and how user-perspective processes function. Both services present to new users an account creation process, followed by a content creation process. The content creation process in YouTube is in form of video (record and) upload, featuring options like adding custom sound track to the video, or adding subtitles. With LinkedIn, the user is invited to create a personal text resume, where she describes her education, work experience and other professionally focused attributes, and attaches a picture of herself. Once the user completes the content creation process, she can update or remove parts of it, share it or

[35] http://www.justinmind.com/prototyper
[36] http://www.nngroup.com/articles/mobile-usability-update

browse similar profiles to see how others are doing it. Very similar user signing and content creation process will be implemented in this work. For this purpose, we iterate over a list of possible features and select the ones that are most relevant for the project.

The very basic app functionality can be summarized as

- Record and upload pitch video
- Search and watch pitch videos

We consider how those two main tasks could be executed and what steps the user must take in order to do so. Because we have two customer segments, we need to think first about how a job seeker would perform those tasks, which activities he will need to perform to do so and which app features will help her perform those activities. We repeat the same process with the other customer segment – the employers. We combine the identified features in a short preliminary list, which will serve as a base for further clearing of the app functionality and features:

- Create profile
- Record and upload video
- Search for profiles
- Browse profiles
- View profile
- Watch pitch video
- Message user

Full-featured app functionality list is compiled after splitting the main features into sub-features and looking at the possibilities for introducing automation, communication and different options for executing actions:

- Create profile by login with LinkedIn
- Record and upload video
    - Post update on LinkedIn
- Update profile description and contact information
    - Post update on LinkedIn
- Browse profiles
    - By category
        - By upload date
        - By view count
- Search for profiles
    - By category
    - By text
    - By distance
- View profile
- Watch profile video
- Message user
- Add user to favorites list
- Receive notifications on new messages
- Receive notifications on new profiles that match a search criteria (Saved Search)
- Activate premium feature (in-app store)
- Premium employer: Organize favorite users
- Premium employer: Organize multiple saved searches
- Premium employer: Mass-message users

Analyzing this list of features we identify that for one of the customer segments – the job seekers, the app functionalities and features are the same for premium and non-premium users. However, employers who pay for premium features will be provided extra functionality – user

interface for organizing favorite users, user interface for organizing saved searches, user interface for mass-mailing job seekers.

When iterating the features list, we come up with a problem – how a user will be able to see a list of other users that she has added to her favorites list. For this purpose we introduce a new option in the 'browse profiles' features set – *browse favorites*. We identify another missing feature – a *messaging section*, where the user can list, view and delete messages from other users. We address those problems and change the functionality list accordingly.

4.3 From features to user interface

We proceed to analyze each feature and how it can be translated to user interface. Each app feature can have a different user interface implementation. We will look at best practices from successful apps on the market to identify feasible interface solutions for our case. But first we need to think over what presentation and interaction requirements each feature have. Also we need to think about the application flow and how the user will interact and work with the application.

4.3.1 Application flow

The application flow is the path a user follows across the user interface in order to achieve a task.

A typical application flow for a new job seeker is depicted on Figure 16.

Figure 16. Basic application flow for a new job seeker user

However, a job seeker might also want to see how others are doing it and explore best practices, so we try to compile a complete workflow diagram of how a job seeker user will interact with the application (Figure 17).

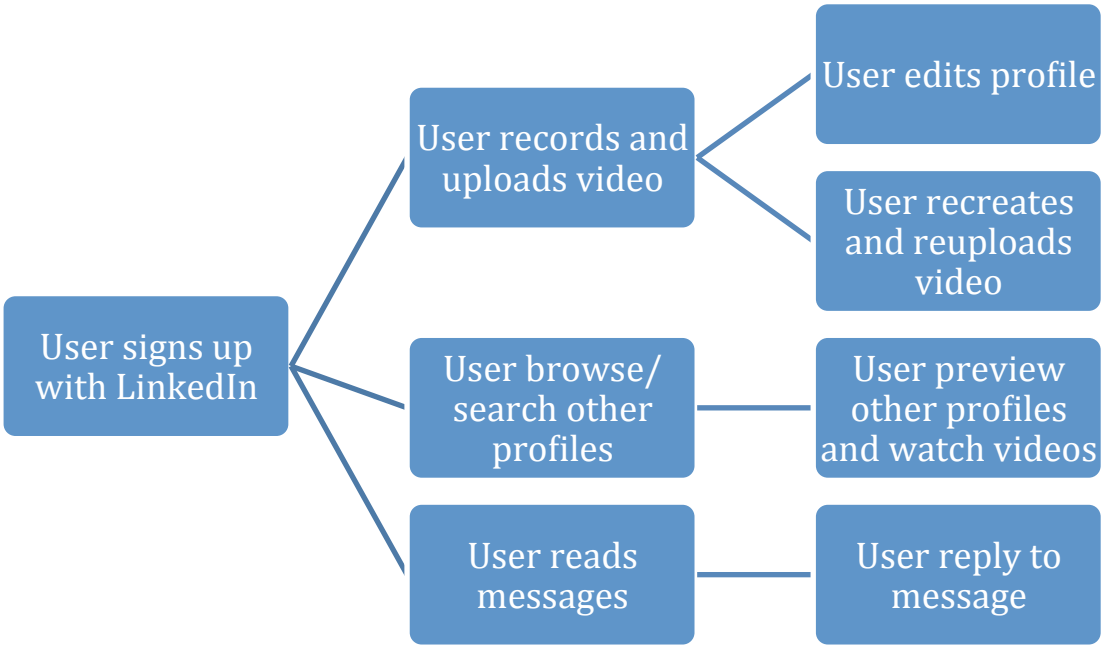

Figure 17. Full application flow for a job seeker user

We can see that a job seeker user has just a few interactions with the application. This is because the business model focuses on job seekers to create the content, which will be viewed by the employers. An employer user will have more interaction with the application achieving her goal of finding employees – browsing for profiles, searching for profiles, marking profiles as favorites, contacting profiles, organizing favorite profiles, mass-messaging favorite profiles, organizing saved searches. A typical workflow for employer user is shown on Figure 18.

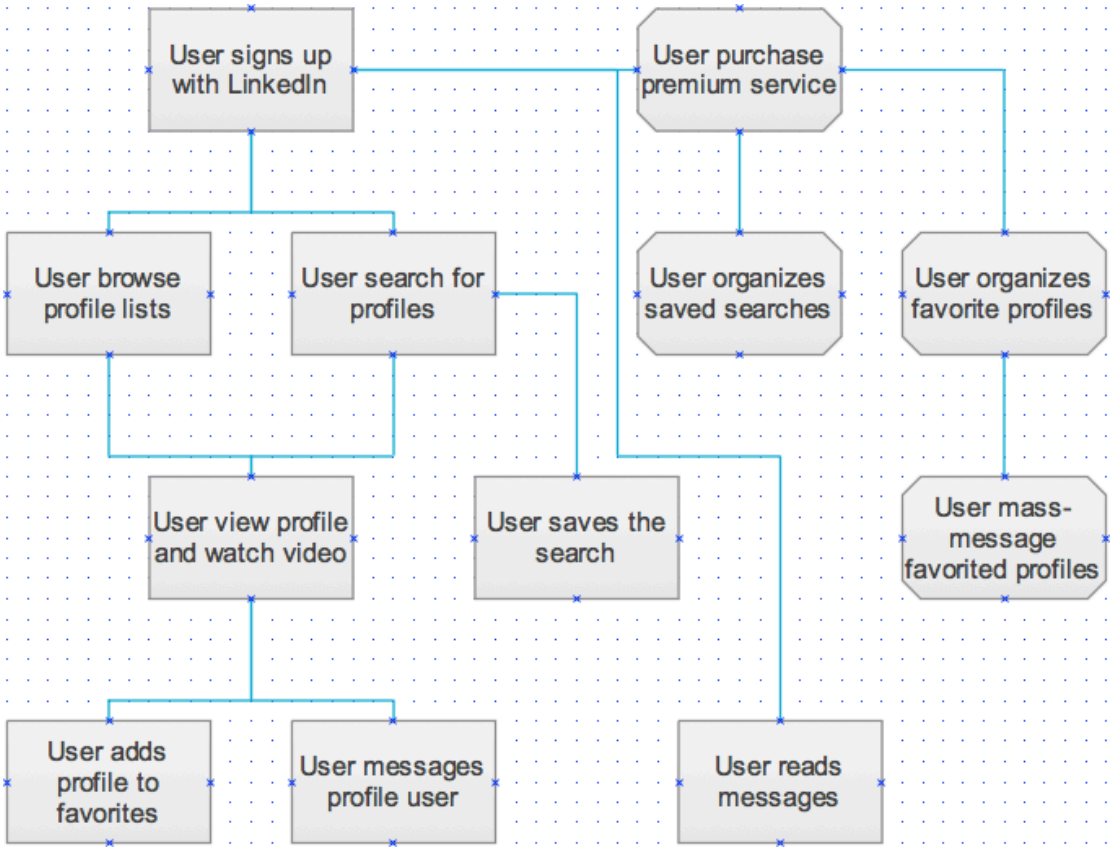

Figure 18. Application workflow for employer user

4.3.2 User interface sections

We define the most important user interface sections or groups of interface elements. Those sections hold one or more application features, which the user uses to achieve a task. Main interface sections and the associated tasks are:

- Login screen – starting point, user logins with LinkedIn (on first app launch)
- Create profile content – record and upload video, share on LinkedIn
- Edit profile – edit profile details and share on LinkedIn
- List of profiles – by browsing or searching
- View single profile – view profile details, watch video, message user, add to favorites
- Searches organizer – edit or remove saved searches
- Favorites organizer – edit or remove favorite profiles, mass-message profiles

4.3.3 User interface patterns

To convert the features and requirements to user interface we look at well-established practices, or mobile design patterns, applied in successful apps. Good sources for mobile design patterns are websites that gather and organize apps screenshots that have applied concrete patterns. Such websites are: inspired-ui.com, mobile-patterns.com, pttrns.com.

We also reference the Apple Human Interface Guide[37] and the book Designing Mobile Interfaces by O'Reilly[38].

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[37] http://developer.apple.com/library/ios/#documentation/UserExperience/Conceptual/MobileHIG/Introduction/Introduction.html

[38] http://shop.oreilly.com/product/0636920013716.do

There we can find most of the common design patterns in categories like: Logins, News, Lists, Articles, Search, etc.

We look at the app main sections and identify user interface elements that will translate features into functionality and the possible mobile design patterns that could be applied.

4.3.3.1 Startup screen / Sign Up screen

This screen is the first screen of the application. This screen gives the user a first impression of the app and it is important that the user experience is done right. Jakob Nielsen describes in an article from his Alertbox series, that the WSJ app has been getting bad customer reviews due to the design of its startup screen. "As the saying goes, you get only one chance to make a first impression. That's why startup screens are crucial. This is particularly true for mobile users, who often have fairly low motivation to mess with apps they've downloaded for free. But even in "regular" software, the installation, setup, and initial screens can make or break an application."[39]

We will implement a very simple and useful startup screen. Once the app is launched for the first time, this screen is presented to the user and she have to tap on a "Login with LinkedIn" button to proceed using the app. Most applications offer multiple signup options like signup with Facebook, signup with Twitter, or just signup using email and password. For the purpose of this project we will implement only the LinkedIn solution, as the service is tightly linked with LinkedIn and its content and services. More and more applications provide only social network signups, like the apps Sunrise Calendar[40] (Figure 19) and SocialCam (Figure 20).

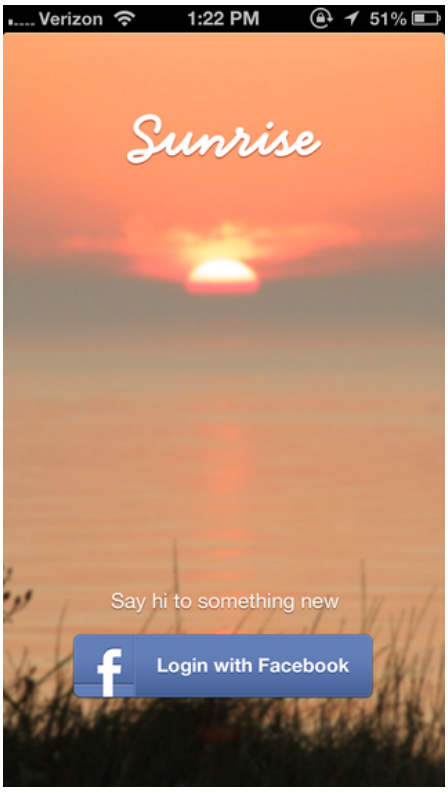

Figure 19. Sunrise app

Figure 20. SocialCam app

[39] http://www.nngroup.com/articles/why-wsj-mobile-app-gets-bad-reviews
[40] http://www.mobile-patterns.com/sunrise

When the user taps the login button, she will be presented with a LinkedIn login screen, where she needs to input her LinkedIn username and password to authorize the PitchMe app to use her LinkedIn data. This is done only once so this signup screen will not be presented to the user the next time she logs in.

4.3.3.2 Dashboard screen / Activity feed

When the user has logged in with LinkedIn he is presented the dashboard screen. This screen displays a summary of all recent user activity like: number of received messages with a link to the messages section, number of new search results for saved searches with links to the search results, number of profile/video views since last app session. With the help of the dashboard screen, the user will get an overview of the recent events and react on them.

The dashboard will use a *table list pattern* to show the activity and links to the corresponding app sections or screens, like it is done in Day One[41] (Figure 21) and Ness[42] (Figure 22) apps.

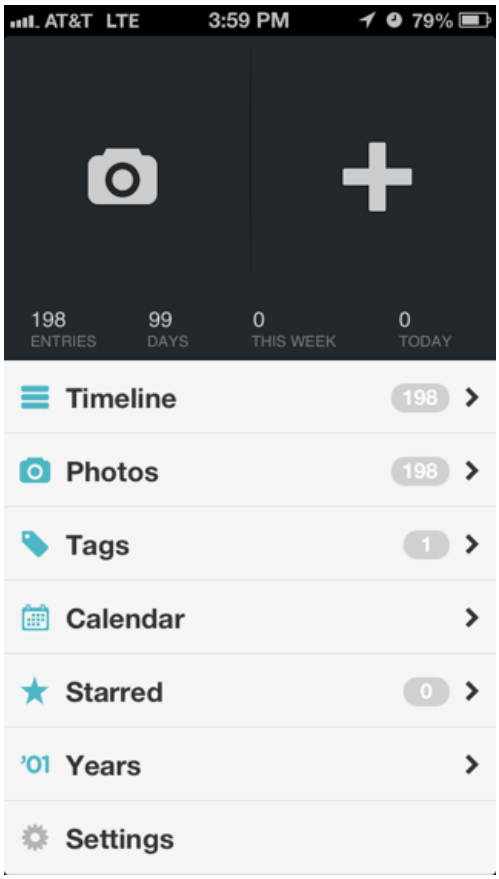

Figure 21. Day One app

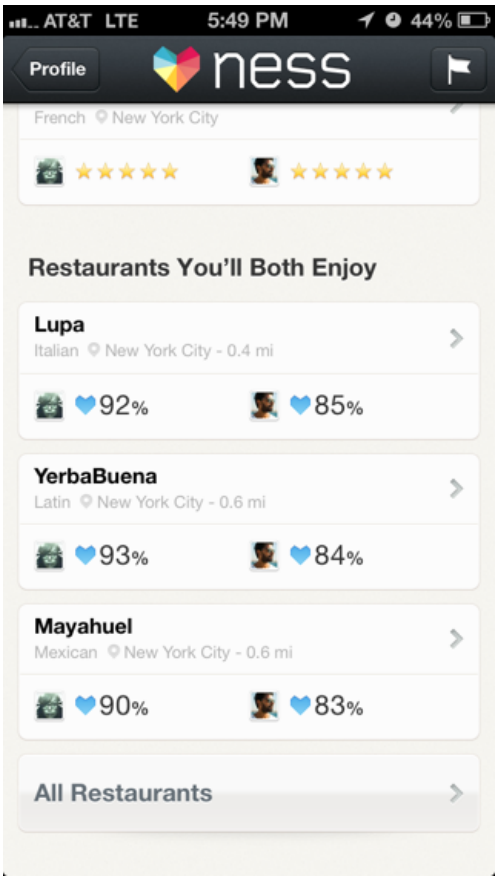

Figure 22. Ness app

4.3.3.3 Search screen

A vital part of the application functionality and user interface is the search interface. It provides users with the ability to search for profiles using keywords, categories and/or distance

[41] http://www.mobile-patterns.com/Day-One
[42] http://www.mobile-patterns.com/ness

from current position. The keywords and category search parameters are very common and used in almost all search solutions.

The distance parameter is possible to implement thanks to the smartphone GPS capabilities. The distance will provide a few options to choose from: All, 5km, 25km and 100km. The 'All' option is be used if the user does not want to specify a distance to the job seeker. The job seeker will be able to choose and set her location when she edits her profile. This location will be based on the Danish postal code system[43] – 1000 to 9999. The backend of the service will calculate the shortest distance between a postal code and current location using the Google Distance Matrix API.

The keywords parameter gives the user the ability to type in keywords in form of free text and the backend system will match those keywords with the matching profiles' info.

The category parameter can be chosen by choosing either a main category like "Engineering" or a more specific sub-category like "Construction Engineering". The user will be presented a list of top-level categories, each of them consisting of a list of sub-categories.

There is a possibility to save the search as *saved search,* which can be viewed later with updated results. A possible implementation of this feature is to have an on/off button on the search results list screen that will be off by default but when switched, it will save the search.

Inspirational search designs patterns in application are the app about.me[44] (Figure 23) and Convertr[45] (Figure 24).

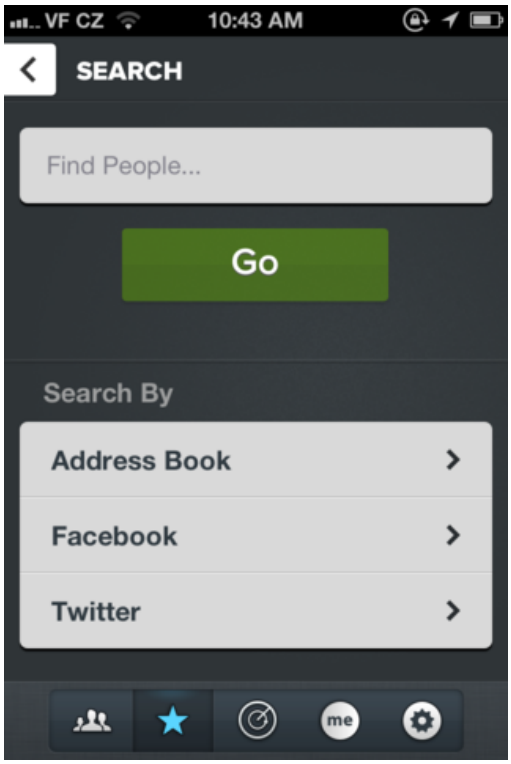

Figure 23. about.me app

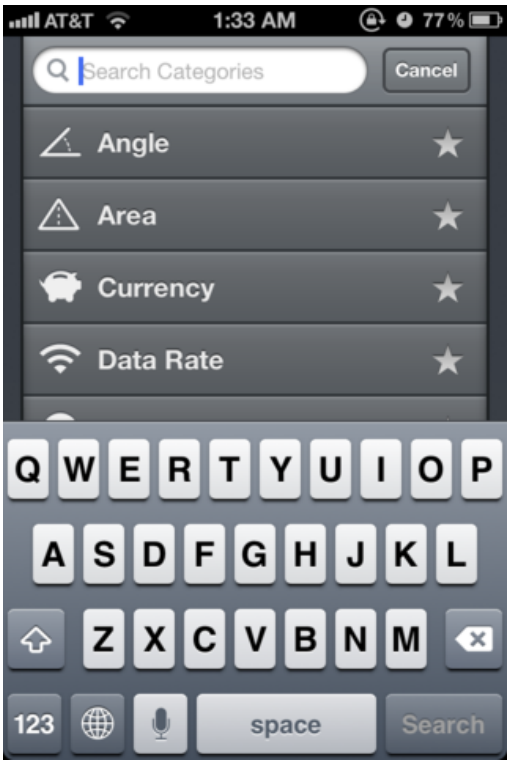

Figure 24. Convertr app

[43] http://en.wikipedia.org/wiki/List_of_postal_codes_in_Denmark
[44] http://pttrns.com/p/172
[45] http://pttrns.com/p/160

4.3.3.4 Browse screen

The browse screen gives the user the ability to select a category and browse a listing of all the profiles in that category. This functionality has proven to be useful and websites like Amazon and eBay are supporting it. The functionality is allowing an additional mechanism for finding the right profile. When looking at all the profiles in certain category, the browsing user can easily spot the ones that stand out from the crowd. The user will be able to sort the list of profiles by either *upload date* or *view count*. This will give the browsing user the flexibility to see first either the newest profiles or the most viewed ones. The most viewed sorting option also serves as stimulus to the other customer segments – the jobs seekers – to create more interesting and eye-catching profiles and pitch videos. An interesting sort option we can introduce is to sort the results by *favorite count*. This means that the more the profile has been marked as *favorite*, the higher in the browse list it will appear.

There are several paging options that the list can implement – standard paging with page numbers, *load more* button, infinite scroll. The *infinite vertical scroll* pattern (O'Reilly, p. 72) of listing paging is the most modern and user friendly one and is widely used by highly successful services like Twitter, Facebook, Instagram and many others.

Applications that can give us hints of how we can implement such design are Jamie's Recipes[46] (Figure 25), showing implemented categories list, and Feedly[47] (Figure 26), with *vertical list* pattern.

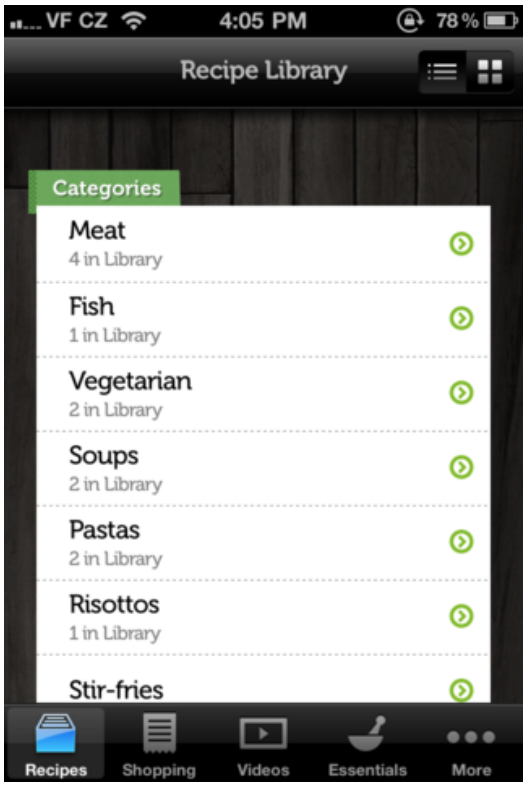

Figure 25. Jamie's Recipes app

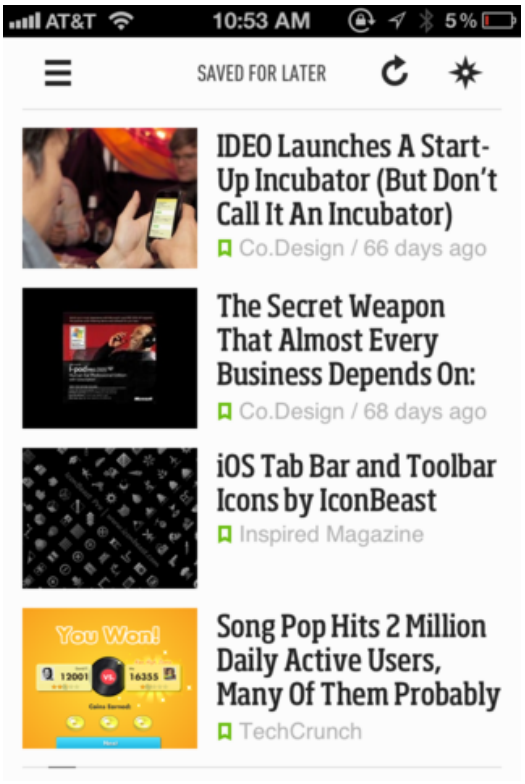

Figure 26. Feedly app

[46] http://pttrns.com/p/19
[47] http://pttrns.com/p/30

4.3.3.5 Profile screen

The profile screen displays all information regarding the user. If the user is a job seeker and has uploaded a video, the profile will be public and searchable. Otherwise, if the user is an employer, it would only be accessible from the same user's device.

The user profile will contain 2 main sections – the pitch video and the profile data, which will be fetched from LinkedIn. The viewing user has to be able to *favorite* the viewed profile and *message* the profile's user. A useful addition, that will help prevent spam and scam profiles, will be to introduce a *report* button, which will be used when the profile is offensive, irrelevant or otherwise inacceptable.

The viewing user will be able to start the pitch video with a single tap on top of the video's thumbnail image. She will scroll down to look at the profile info and eventually favorite it or initiate contact with a direct message.

If the profile is *verified*, *extended* or *promoted*, a badge will be displayed, so the viewing user can see that (as in the Zaarly example).

Examples of profile screen solutions that we will follow are ShoutFlow[48] (Figure 27) and Zaarly[49] (Figure 28).

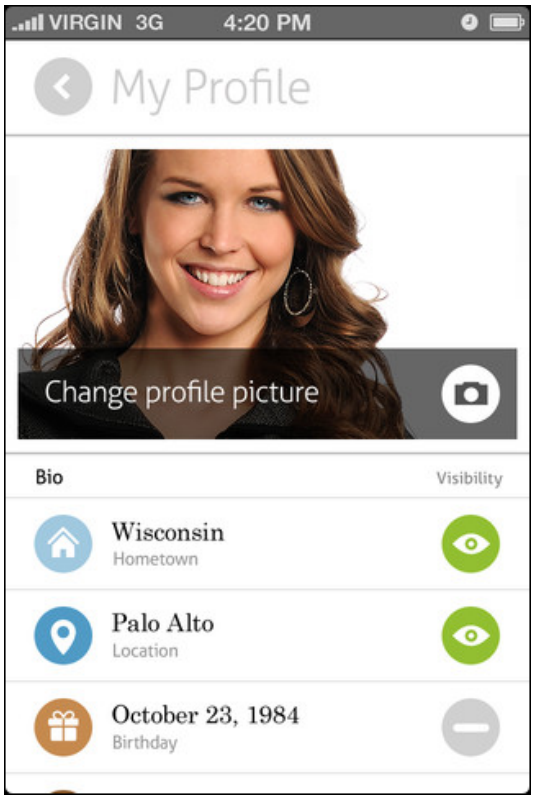

Figure 27. ShoutFlow app

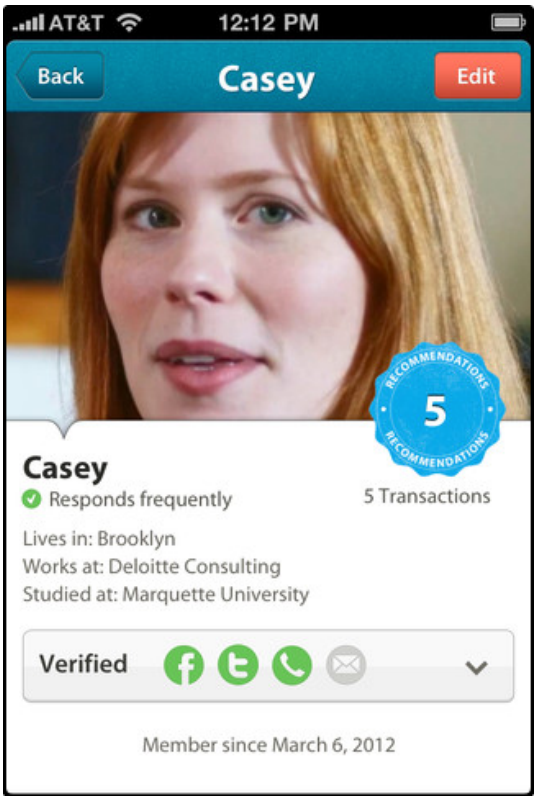

Figure 28. Zaarly app

The profile-editing screen will be similar to the profile view screen. It will have prefilled input fields instead of text and a record button instead of play button on top of the pitch video. When the user taps on an input field she will be able to edit the text for that field. When the user taps on the record button, the camera on the device will be activated and a video recording screen will be presented. Once the user has recorded the video she will tap on an upload button and

[48] http://inspired-ui.com/tagged/shoutflow
[49] http://inspired-ui.com/tagged/zaarly

upload the video. All the data for a user profile, including profile info and pitch video will be uploaded to a storage server.

Good examples of a capture screen pattern are the applications Everyday[50] (Figure 29) and Camera Plus[51] (Figure 30).

Figure 29. Everyday app

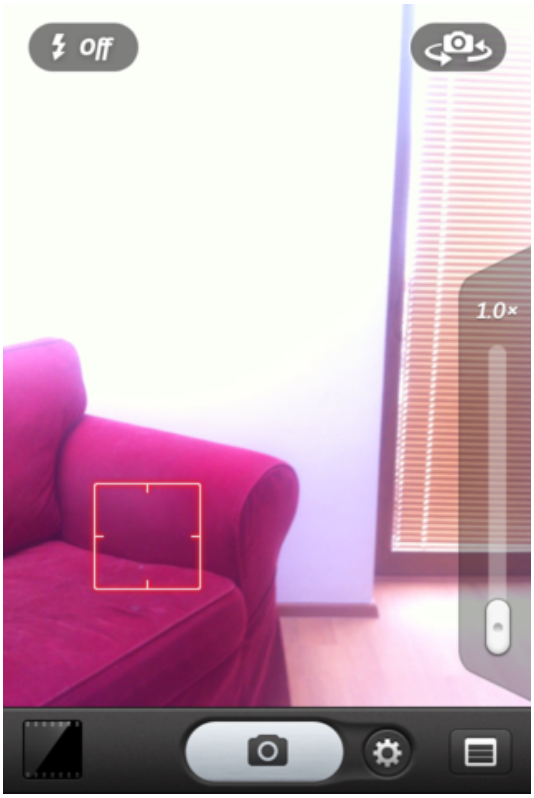

Figure 30. Camera Plus app

4.3.3.6 Messaging section

The messaging section of the application acts as an in-app inbox, where the user can list and view received messages. The user can also delete messages in her inbox. The messages will be displayed in a searchable and scrollable list with *infinite vertical scroll* (O'Reilly, p. 72). Each list element will contain the message send name and the message topic. When the user taps on a message in the list, a new screen will appear which will contain the whole message content as well as reply button, which the user can use to write back to the sender. There will be a input field for search text, where the user can input keywords and the messages list will be automatically filtered to match those keywords. The search functionality utilizes the *Search Within* user interface design pattern (O'Reilly, p. 264).

Examples of such user interface solutions are the applications Mailbox[52] (Figure 31) and the iOS default Messages[53] app (Figure 32).

[50] http://pttrns.com/p/98
[51] http://pttrns.com/p/77
[52] http://pttrns.com/p/242
[53] http://www.simonblog.com/wordpress/wp-content/uploads/2011/08/copic-message.jpg

Figure 31. Mailbox app

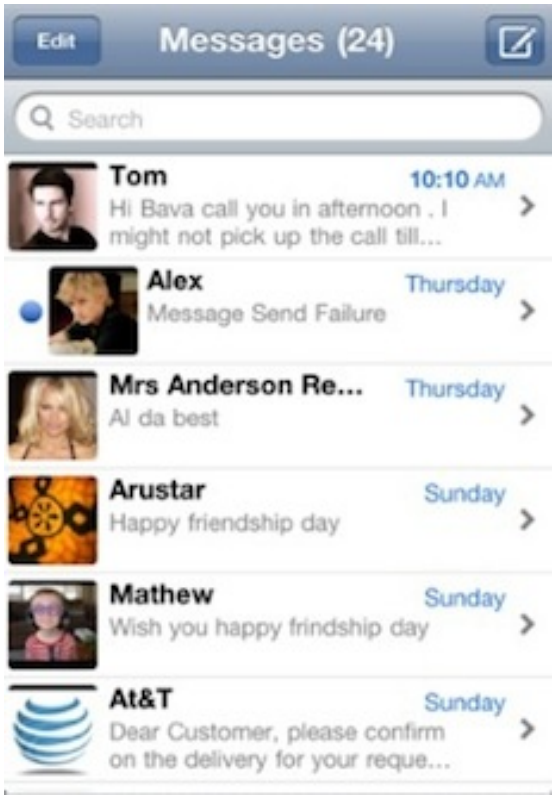

Figure 32. iOS Messages app

4.3.3.7 Premium features

The premium features in the application can be purchased as in-app purchases[54]. This method allows the premium features purchasing to be seamlessly integrated into the application, in form of a dedicated in-app store, where the user can buy one or more in one place, or scattered through the app, positioned where the premium feature apply. An example of an in-app store is a list with premium features, with buy button next to each premium feature or content is depicted on Figure 33.

[54] https://developer.apple.com/in-app-purchase

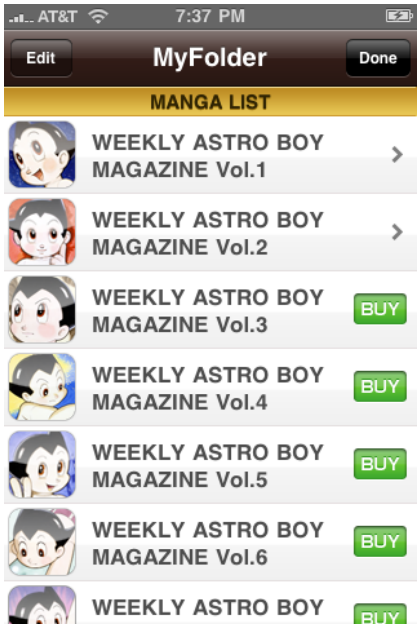

Figure 33. In-app purchases list of premium features

Different approach to in-app purchases is to integrate buy buttons on the screens where the premium features will apply. For example, a premium feature, which displays a user profile higher in its category listing, would be placed in the profile view screen or the category listing where the profile is located, as shown on Figure 34.

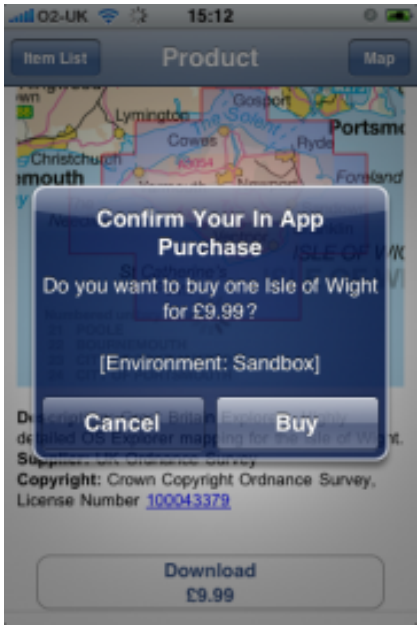

Figure 34. In-app purchase embedded in app screen

Correct placement of purchase buttons, scattered across different screens of the application would require extensive research and testing, thus we are taking the decision to implement a one-stop in-app shop for all premium features.

The 'premium store' screen will contain a vertical list displaying the different premium features with descriptions of what they add to the app functionality and experience, and a buy button in each list entry.

When the user taps on a buy button, she will be presented an *alert dialog* following the *confirmation* design pattern (O'Reilly, p. 146) where the user can choose to either accept the purchase or cancel it. Once she accepts the purchase, the app will notify the Apple app store and the PitchMe server, so the feature can be activated and the user's account billed.

4.3.3.8 Navigation

The navigation is arguably one of the most important design challenges in a complex mobile app. Due to the fact that a mobile device has small screen, the navigation must be designed to address this issue and to provide the user the ability to switch between the main app screens with ease. A typical solution for navigation, used in many applications, is the tab bar navigation. The tab bar is typically displayed in the bottom of the screen and contains two or more tabs – buttons that switch between screens on tap (Figure 35).

Figure 35. Tab bar navigation

A tab bar appears at the bottom edge of the screen and should be accessible from every location in the app. A tab bar displays icons and text in tabs, all of which are equal in width and display a black background by default. When users select a tab, the tab displays a lighter background (which is known as the selection indicator image) and its icon receives a blue glow. (Human Interface Guide, p. 125)

A more recent and innovative navigation solution is the *sidebar* menu or the *slide-in* menu pattern. Facebook, Google's Gmail, Tumblr and many others have adopted this interface pattern. The side navigation replaces the much criticized dashboard pattern (Figure 36). The major criticism towards use of dashboards has been that it slows users down on their way to the app's content.

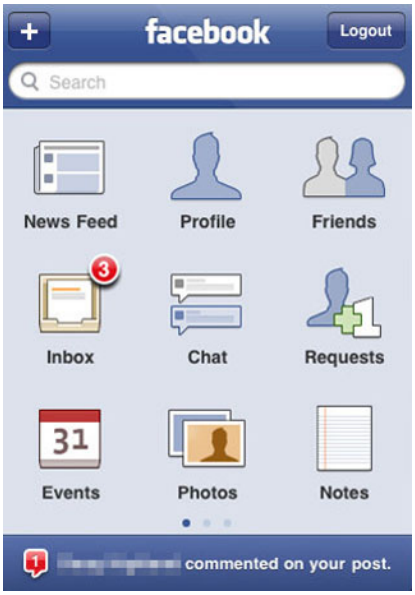

Figure 36. Dashboard navigation menu

The idea is to provide users quick shortcuts to the most important part of the application without having to leave the screen they are on.

Users can directly access any major part of the app without having to move back up in the activity stack first. Therefore the app can launch directly to one of the primary screens instead of to the dashboard providing users content directly.[55]

Recently, Spotify has also adopted this navigation solution, which proves to be the most modern and up to date.[56]

We will also use a sidebar, which will hold shortcuts to the main app sections and also hold direct links to saved searches for easier access – we call those custom user actions.

Inspiring designs come from Google Gmail (Figure 37) and Facebook's latest mobile app version (Figure 38).

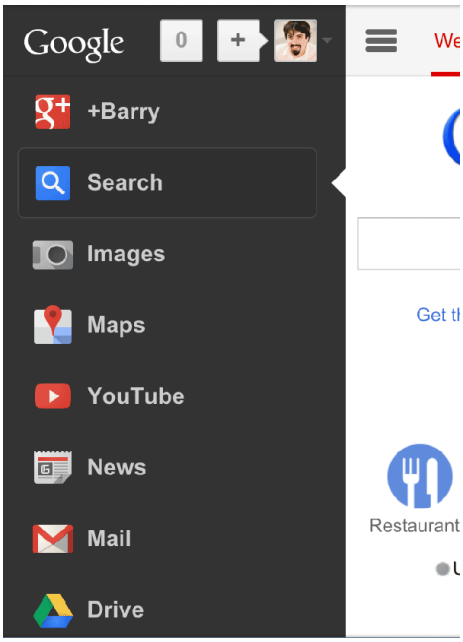

Figure 37. Google Gmail app

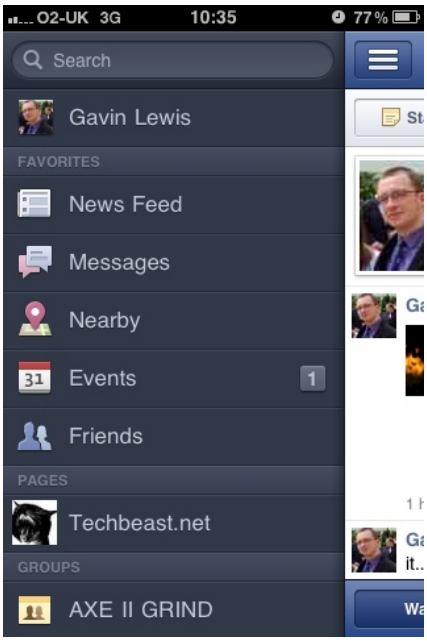

Figure 38. Facebook app

James Tang argues in favor of the sidebar navigation: "the default UITabBar is definitely good for situation that the tab bar is needed to be always there. But if you think you needed more screen estate, maybe you'd now really consider using the "Sidebar" for navigation."[57]

4.3.4 User Interface Prototyping

According to Apple's Human Interface Guide, "Before you invest significant engineering resources into the implementation of your design, it's a really good idea to create prototypes for user testing… In the very early stages of your design you can use paper prototypes or wireframes to lay out the main views and controls, and to map the flow among screens."

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[55] http://www.androiduipatterns.com/2012/06/emerging-ui-pattern-side-navigation.html
[56] http://thenextweb.com/apps/2013/02/27/spotify-updates-its-ios-app-with-more-fluid-swipeable-interface-with-new-sidebar-and-now-playing-bar
[57] http://mystcolor.github.com/ux/2012/01/02/the-real-benefits-on-using-facebook-or-path-liked-sidebar-navigation-in-iOS-apps

We initiate the prototyping by wire-framing the user interface on printed iPhone device blank screens. We use color pencils to draw interface elements on the blank screens and comment on what the functionality and workflow is.

We perform usability testing with 4 users by showing them the wireframe prototype and asking them to point the next action they need to perform in order to achieve a specific task. This method is usability inspection is called *Cognitive Walkthrough* and is summarized as "Cognitive walkthrough uses a more explicitly detailed procedure to simulate a user's problem-solving process at each step through the dialogue, checking if the simulated user's goals and memory content can be assumed to lead to the next correct action."[58]

The tester is presented with the app startup screen. Then she is assigned a task that she needs to perform. She can choose from the user interface elements on the screen she is viewing and select which one she would like to tap. When the tester chooses a user interface element, she is presented with the next corresponding screen. Then she repeats the process until she has achieved the task or gives up from doing so.

Jacob Nielsen argues, that "workflow design is a big issue in application usability. In many cases, a tighter workflow best expedites the paths users take to their goals. But in many other cases, it's better to add a few steps to ensure that each step is focused and self-explanatory. What matters to usability is not the number of clicks, but the amount of user frustration and time spent. For an app, there's no delay in moving from one screen to the next, so it's often better to resolve the trade-off in favor of additional screens."

We adopt his approach and *measure the frustration level of the test users and the time spent to achieve the assigned tasks*.

He argues in his article on the number of test users: "the vast majority of your user research should be qualitative — that is, aimed at collecting *insights to drive your design*". He concludes: "For really low-overhead projects, it's often optimal to test as little as 2 users per study. For some other projects, 8 users — or sometimes even more — might be better. For most projects, however, you should stay with the tried-and-true: 5 users per usability test."[59]

To recruit the testers we adopt the Hallway Testing approach[60], which is essentially recruiting the first people who walk in the hallway. We recruit 3 people - 2 women and 1 man, who we will call Participant V, Participant K and Participant P.

4.3.4.1 Usability Testing

We create 3 goals that the test users should achieve and measure their frustration level on each step on the workflow and the overall time spent.

1. Create profile as a babysitter, upload a 30-sec pitch video and promote your profile for a year
2. Find a plumber using keyword 'professional' within 5km of your location and send him a message
3. Upgrade your account to premium 'Head Hunter', find and add 5 web developers to your favorites list and message all of them at once

The tasks given to the testers will reveal design flaws and workflow bottlenecks, which we will address and resolve in the next UI iteration, which will be demonstrated on the presentation session of this work. The results are listed in Table 4.

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[58] http://www.nngroup.com/articles/summary-of-usability-inspection-methods
[59] http://www.nngroup.com/articles/how-many-test-users
[60] http://en.wikipedia.org/wiki/Usability_testing

Test case	Test subject	Frustration level	Time spent
1	V	1/5	3:32
1	K	3/5	3:51
1	P	2/5	3:10
2	V	2/5	1:19
2	K	3/5	2:43
2	P	1/5	1:26
3	V	2/5	3:12
3	K	2/5	2:50
3	P	1/5	1:30

Table 4. Usability test results using low-level prototypes

The user interface test process reveals the following findings, received as feedback from the test subjects. The findings are described in Table 5.

Test case	Problem	Solution
2, 3	Users are frustrated by the time spent to scroll down the long category listing which contains expanded category list, showing all categories and subcategories on one screen	Implement categories listing screen where the top-level categories are collapsed and single category can be expanded to show its subcategories
1, 2, 3	Users find it confusing to have many links in the sidebar panel, like Edit Profile or Favorite Profiles	Users would prefer to have access to those sections from the relevant screens like View Profile or Browse Profiles
2, 3	Users does not fully understand the meaning of the Saved Search functionality	More explanatory content should be included
1, 2, 3	Users are confused on the startup screen if they do not have a LinkedIn account	Implement "Do not have a LinkedIn account?" button which leads to explanation how the user can create one
1	Users are asking for the possibility to preview their profile before saving	Introduce a 'preview profile' feature

Table 5. Usability test findings

4.3.4.2 Heuristic Usability Testing

We adopt the heuristic usability testing approach to tackle the lack of time and testers in our second UI iteration. Jakob Nielsen's heuristics are probably the most-used usability heuristics for user interface design. Nielsen developed the heuristics based on work together with Rolf Molich in 1990. The final set of heuristics that are still used today were released by Nielsen[61] in 1994.

However, those heuristics were made before the smartphone era and are somehow outdated. The San Francisco based UX designer and blogger Suzanne Ginsburg proposes a slightly updated set of Nielsen's heuristics, adapted for the iPhone device.[62]

[61] http://en.wikipedia.org/wiki/Heuristic_evaluation
[62] http://www.iphoneuxreviews.com/?p=114

We adopt the updates from the Ginsburg's heuristics list and analyze the proposed UI and draw conclusions from the findings. The conclusions are translated to recommendations for the next UI design prototype iteration, which we will not cover in this work.

4.3.4.2.1 Visibility of app status

The app should always keep users informed about what is going on, through appropriate feedback within reasonable time.

Recommendations: app loading indicator; upload video progress bar; listing items fetching loading indicator; list refresh loading indicator

4.3.4.2.2 Match between system and the real world

The system should speak the user's language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

Recommendations: location detection for searching and browsing customization; dialog boxes communicate simple and understandable; adopting the LinkedIn profile concept

4.3.4.2.3 User control and freedom

Users often choose app functions by mistake and will need a clearly marked "emergency exit".

Recommendations: adopt standard emergency exit user interface design solutions like buttons, controls and navigation

4.3.4.2.4 Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

Recommendations: follow Apple's Human Interface Guidelines; adopt proven mobile user interface design patterns; refer to design and usability solutions implemented in successful widely-used apps

4.3.4.2.5 Error prevention

Even better than good error messages is a careful design, which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

Recommendations: implement confirmation for important profile updates or premium features purchasing; alert if user-generated content is inconsistent or empty

4.3.4.2.6 Recognition rather than recall

Minimize the user's memory load by making objects, actions, and options visible. Instructions for use of the app should be visible or easily retrievable whenever appropriate.

Recommendations: implement saved searches; implement favorite profiles; implement recent viewed profiles screen

4.3.4.2.7 Flexibility and efficiency of use

Reduce the number of steps required by anticipating user needs and enabling customization.

Recommendations: prepopulating user input whenever appropriate

4.3.4.2.8 Aesthetic and minimalist design

Screens should not contain information, which is irrelevant or rarely needed.

Recommendations: hide unused controls; do not overdesign app screens; keep the design minimalistic; draw inspiration from the Danish minimalistic design approach; use only high quality graphics and images

4.3.4.2.9 Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language, precisely indicate the problem and solution.

Recommendations: self-explanatory error and warning messages

4.3.4.2.10 Help and documentation

Help should be focused on the user's task, list concrete steps to be carried out, and not be too long.

Recommendations: adopt modern design solutions for help in mobile app like the 'coach marks' and 'walkthroughs' design patterns [63] [64]; implement notifications which follow user actions or interactions.[65]

4.3.5 LinkedIn Integration

We analyze the possible LinkedIn integration by looking at how our service can interact with LinkedIn through their API.

4.3.5.1 Signing in with LinkedIn

When a user signs in with LinkedIn, the LinkedIn platform allows the application to request permissions to access parts of the LinkedIn profile information of the user. The accessible data when signing in with LinkedIn[66], depending on the permission, is shown in Table 6.

Permission	Accessible profile information
Your Profile Overview	Name, photo, headline, and current positions
Your Full Profile	Full profile including experience, education, skills, and recommendations
Your Email Address	The primary email address you use for your LinkedIn account
Your Connections	Your 1st and 2nd degree connections
Your Contact Info	Address, phone number, and bound accounts
Network Updates	Retrieve and post updates to LinkedIn as you
Group Discussions	Retrieve and post group discussions as you
Invitations and Messages	Send messages and invitations to connect as you

Table 6. LinkedIn API functionality

The authentication flow for each customer segment is described in Figure 38 and Figure 39.

Once the user has authenticated herself using LinkedIn and has given permissions to the application to access this profile information, the data can be fetched from LinkedIn and stored on the PitchMe server. The user needs to authenticate and give permissions only once, the next time she uses the app, it will automatically login her with LinkedIn authentication.

[63] http://pttrns.com/categories/21-coach-marks
[64] http://pttrns.com/categories/16-walkthroughs
[65] http://pttrns.com/categories/4-notifications
[66] https://developer.linkedin.com/documents/authentication

4.3.5.2 Leveraging the LinkedIn platform

By leveraging the LinkedIn platform and integrating it within our mobile app, we introduce several benefits for the customer segments:

1) Job seekers
    a. By signing in with LinkedIn, the job seeker will be provided an easy way to create an account in the PitchMe system
    b. The PitchMe profile will be automatically updated with the LinkedIn profile information, which will be automatically fetched from the LinkedIn API
    c. Will automatically post new Network Update in LinkedIn on PitchMe video upload or update with a link to the web version of the video (which will be developed as a future improvement). The posting will promote the pitch video among the user's LinkedIn connections
2) Employers
    a. By signing in with LinkedIn, the job seeker will be provided an easy way to create an account in the PitchMe system
    b. Leveraging the Linked people search – by using a API call and utilizing the LinkedIn search platform, the employers will be presented with similar search functionality as LinkedIn, inside the PitchMe app, where they can follow results which would lead to PitchMe profiles and eventually watch their pitch videos

The LinkedIn connection flow is shown on Figure 39 and Figure 40 for both customer segments.

Figure 39. Job seeker user authentication and LinkedIn connection flow

Figure 40. Employer user authentication and LinkedIn connection flow

Once the job seeker has authenticated and uploaded a pitch video, a network update will appear in the LinkedIn stream of his connections (Figure 41).

Figure 41. Network update post as it will appear in LinkedIn stream

This update will lead to a web version of the user profile and be visible and shareable by the user's connections. If the update is followed from an iPhone device, which has the PitchMe application, installed, the web profile page will redirect the viewing user to open the app on her device and view the profile inside the app. This flow is depicted on Figure 42.

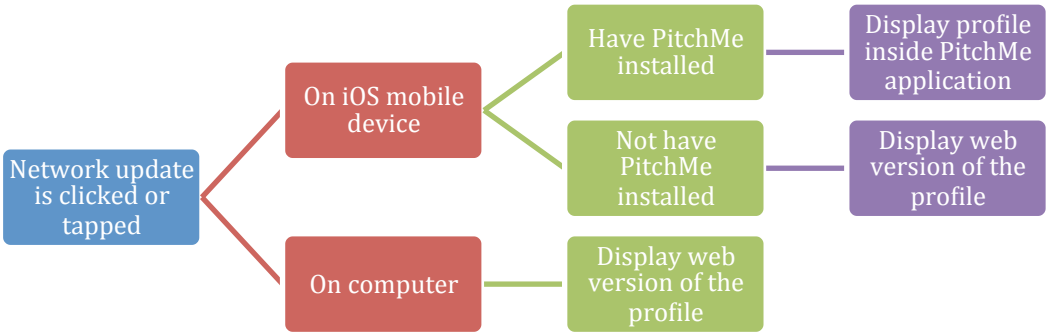

Figure 42. Flow of following a network update in the LinkedIn stream

CHAPTER 5

System Design

In this chapter we analyze and describe the technical solution, which we will use to implement the PitchMe service. We will write about the used technologies and how they will interact. We will briefly describe the database structures and code algorithms. We will focus on the video capturing and streaming solution, as this is the unique value proposition in the business model.

The system design specifications serve as requirements specification for further development of the service.

5.1 Requirements Specification

We compile a list of the requirements, which the app needs to fulfill. For each requirement we develop the back-end functionality and user interface.

Storage

- Storage of user profile information
- Storage of video files

API

- New account creation
- Authentication for login
- Fetch all users information
- Fetch users information per category
- Fetch single user full information
- Store video file per user
- Stream video file per user
- Edit/delete user information
- Delete video per user

Back-end

- Re-encoding of uploaded video files

5.2 Back End System Design

The platform back-end will be developed in PHP 5.3[67] and use the latest stable version of MySQL database[68] to store account data and user content. The PHP server-side scripts will first be developed in form of an API (Application Programming Interface) and will run on Apache 2.2[69] web server. The video content will be stored on file server as video files in the file system.

[67] http://www.php.net
[68] http://www.mysql.com
[69] http://httpd.apache.org

The web server will communicate to Apple's Push Messaging Service[70] in order to deliver push messages to iPhone devices running the PitchMe app. The system design diagram is shown on Figure 43.

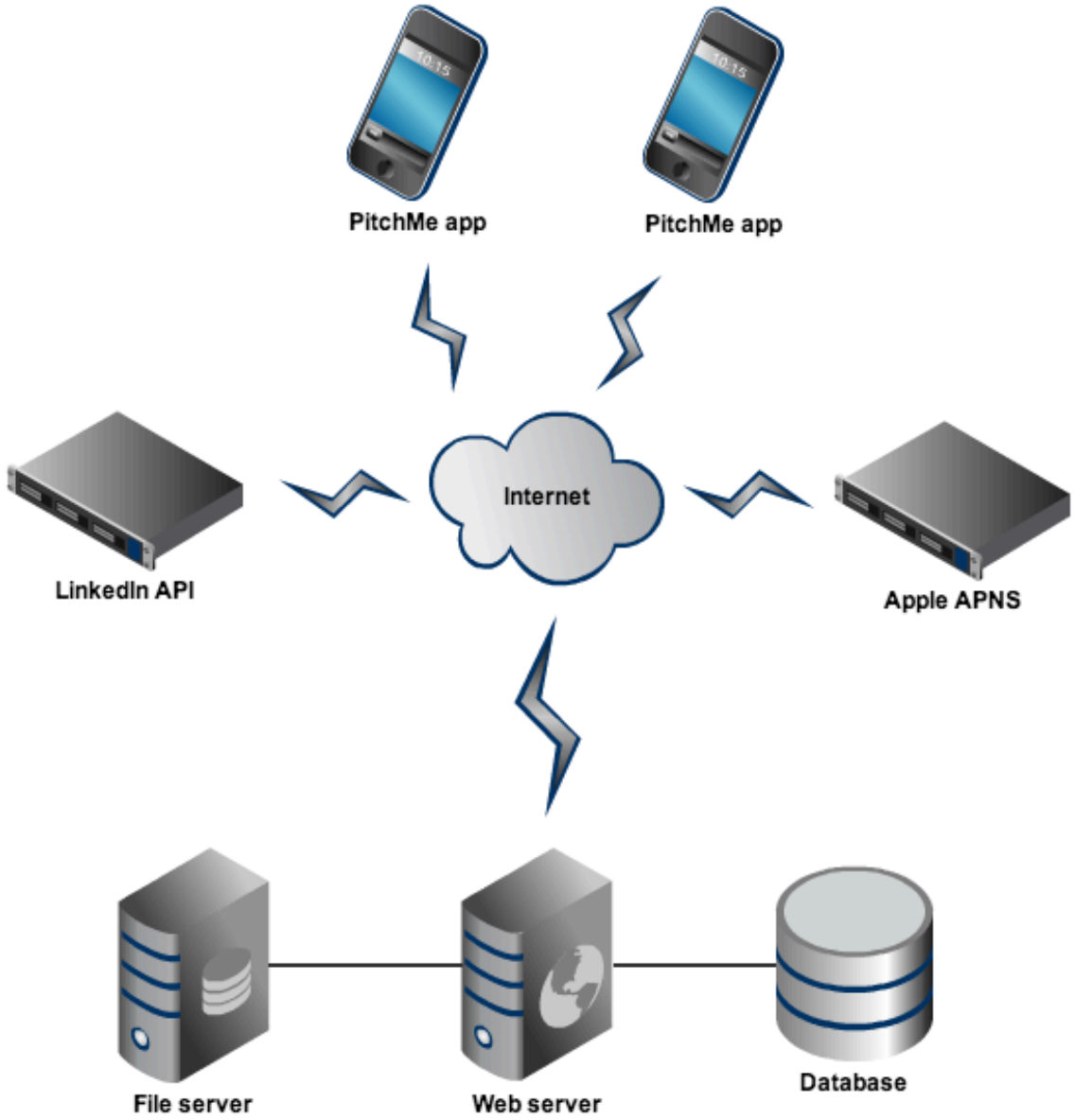

Figure 43. System design diagram

5.2.1 Application Programming Interface (API) Functionality

The API serves as a gateway between the client and the content stored in the database on filesystem on the web server. The API is basically a script holding several functions that serve specific tasks like fetching of single user profile or saving user profile data.

When used in the context of web development, an API is typically defined as a set of Hypertext Transfer Protocol (HTTP) request messages, along with a definition of the structure of response messages, which is usually in an Extensible Markup Language (XML) or JavaScript

70

http://developer.apple.com/library/mac/#documentation/NetworkingInternet/Conceptual/RemoteNotificationsPG/ApplePushService/ApplePushService.html

Object Notation (JSON) format. While "Web API" is virtually a synonym for web service, the recent trend (so-called Web 2.0) has been moving away from Simple Object Access Protocol (SOAP) based services towards more direct Representational State Transfer (REST) style communications. Web APIs allow the combination of multiple services into new applications known as mashups.[71]

For the purpose of this project we will implement a RESTful[72] web API, which uses JSON-encoded messages to communicate with the client (mobile application).

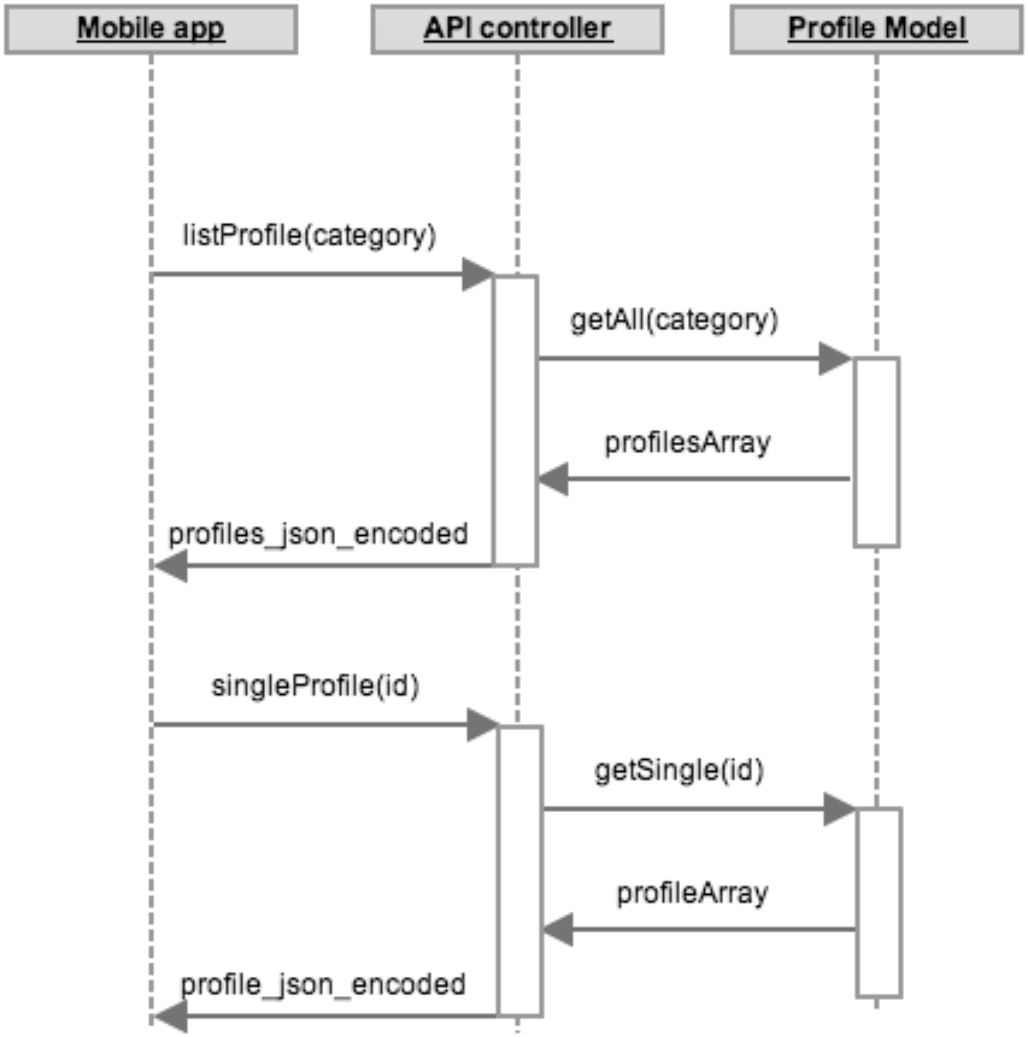

Figure 44. Example workflow of the API

An example flowchart of the communication of the mobile app with the API and the data model behind it show how the mobile app communicates with the API (Figure 44).

First, the mobile app sends a JSON-encoded POST request to the API controller containing the requested action name and parameters. The parameter is this scenario is a category ID. The API receives the request and calls the getAll() method in the ProfileModel with the category ID as parameter. The data model connects with the database using a Database Abstraction Layer protocol, executes a query in the database and returns an array of all the profiles that has matched the parameter criteria. The API controller receives the array and transforms it to a JSON-encoded response, which is finally sent to the mobile app. The mobile app then decodes the response,

[71] http://en.wikipedia.org/wiki/Application_programming_interface
[72] http://en.wikipedia.org/wiki/Representational_State_Transfer

iterate it and assign single profiles to list cells, which are displayed on the user screen. Similarly, any other requests connect to the API to either send or receive data.

5.2.2 Database Structure

The database will be designed to hold data about users and their interactions. It will hold users login and account data, data about the users profile information and the messages sent between users. Data in the database can be inserted, updated or read through the API functionality. The database is a relational MySQL database using InnoDB[73] storage engine. The initial structure of the database is depicted on Figure 45.

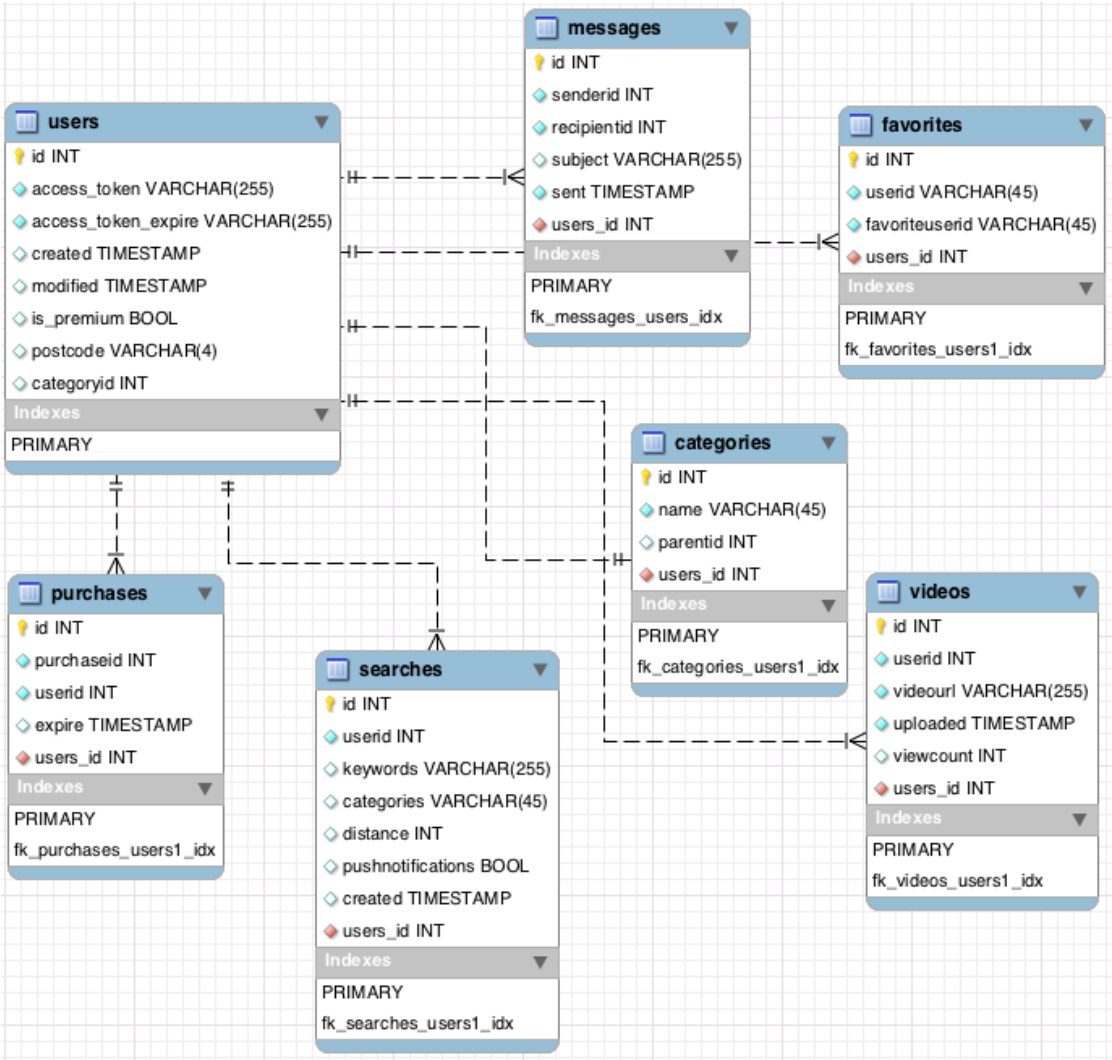

Figure 45. Database structure

The database will have 7 main tables:

Users – contains all data about the user like his LinkedIn access token, date of creation and last modification, user postcode, the category where the user has placed his pitch video, flag if the user is a premium user

Categories – all categories and their subcategories

Videos – the uploaded videos with their file names and paths

Messages – the messages sent between users

[73] http://dev.mysql.com/doc/refman/5.5/en/innodb-storage-engine.html

Favorites – the favorites, which the users have received

Searches – the saved searches with all the searches info

Purchases – the successful premium features assigned to each user

5.2.3 Apple Push Notification Service (APNS)

We use the Apple Push Notification Service (APNS) to deliver push messages to the users devices. That is the default way of delivering such notification messages. The workflow of the service is shown on Figure 46 as it is described by Ray Wenderlich on his website for iOS tutorials.[74]

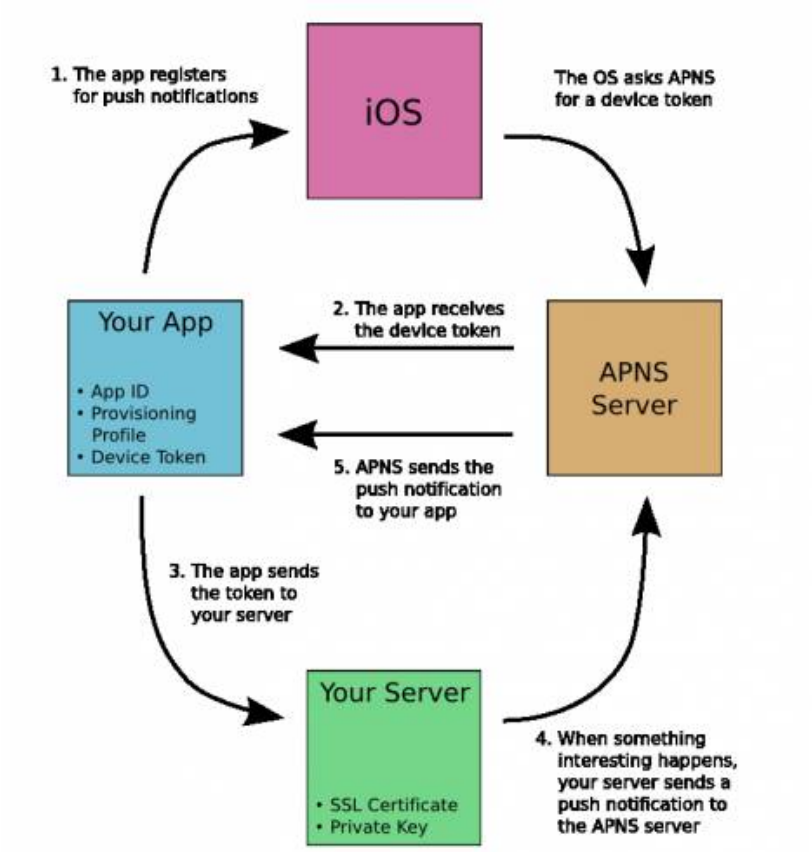

Figure 46. Apple Push Notification Service workflow

1. PitchMe app enables push notifications. The user has to confirm that he wishes to receive these notifications.
2. The app receives a "device token". You can think of the device token as the address that push notifications will be sent to.
3. The app sends the device token to your server.
4. When something of interest to your app happens, the server sends a push notification to the Apple Push Notification Service, or APNS for short.
5. APNS sends the push notification to the user's device.

When the user's device receives the push notification, it shows an alert, plays a sound and/or updates the app's icon. The user can launch the app from the alert. The app is given the contents of the push notification and can handle it as it sees fit. In our case, the push notification content will consist of identifiers for a saved search, which have updated results.

[74] http://www.raywenderlich.com/3443/apple-push-notification-services-tutorial-part-12

5.3 Video Storing and Streaming (HTTP Live Streaming)

The video streaming will be handled using Apple's HTTP Live Streaming (HLS) solution. HTTP live streaming lets you send live or pre-recorded audio and video to iPad, iPhone, iPod touch, and Mac, using an ordinary web server. Designed for mobility, HTTP live streaming can dynamically adjust movie playback quality to match the available speed of wired or wireless networks. HTTP live streaming is great for delivering streaming media to your iOS-based application or HTML5-based website.[75]

Conceptually, HTTP Live Streaming consists of three parts: the server component, the distribution component, and the client software.

The server component is responsible for taking input streams of media and encoding them digitally, encapsulating them in a format suitable for delivery, and preparing the encapsulated media for distribution.

The distribution component consists of standard web servers. They are responsible for accepting client requests and delivering prepared media and associated resources to the client. For large-scale distribution, edge networks or other content delivery networks can also be used.

The client software is responsible for determining the appropriate media to request, downloading those resources, and then reassembling them so that the media can be presented to the user in a continuous stream. Client software is included on iOS 3.0 and later.

The workflow of the service is shown on Figure 47.

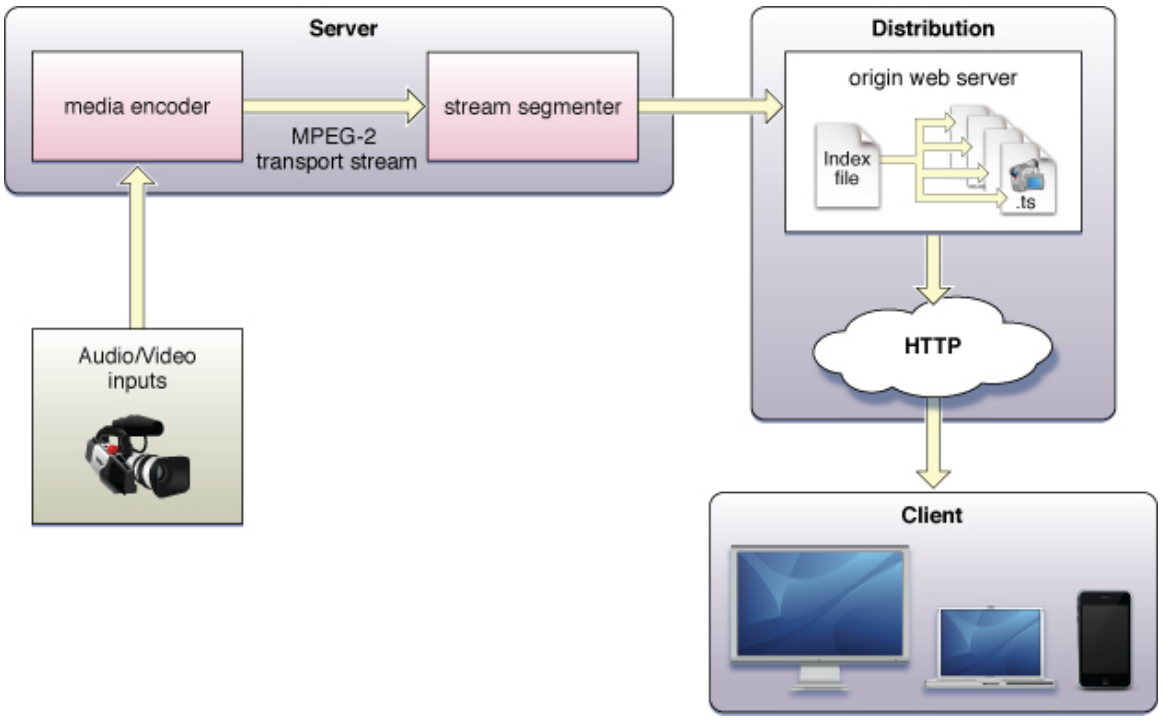

Figure 47. HTTP Live Streaming workflow

In a typical configuration, a hardware encoder takes audio-video input, encodes it as H.264 video and AAC audio, and outputs it in an MPEG-2 Transport Stream, which is then broken into a series of short media files by a software stream segmenter. These files are placed on a web server.

[75] https://developer.apple.com/resources/http-streaming

The segmenter also creates and maintains an index file containing a list of the media files. The URL of the index file is published on the web server. Client software reads the index, then requests the listed media files in order and displays them without any pauses or gaps between segments.[76]

The default iOS implementation for streaming videos on iOS device is fast and simple. It utilizes the MPMoviePlayerController class from the MediaPlayer.framework iOS library.[77] The result of this implementation is shown on Figure 48.

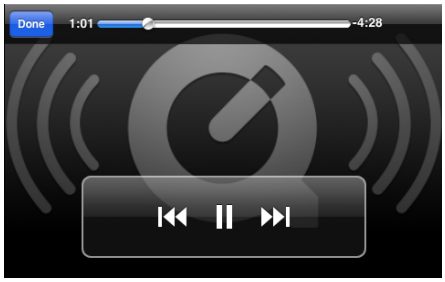

Figure 48. The default iOS media player, implemented using the MPMoviePlayerController class

A simple implementation without appearance customization could fit in a few lines:

```
#import <MediaPlayer/MediaPlayer.h>
@interface ViewController ()
@property (strong, nonatomic) MPMoviePlayerController *streamPlayer;
@end

@implementation ViewController
@synthesize streamPlayer = _streamPlayer;

- (void)viewDidLoad
{
   [super viewDidLoad];
   NSURL *streamURL = [NSURL URLWithString:@"http://pitch.me/videos/somefile.m3u8"];
   _streamPlayer = [[MPMoviePlayerController alloc] initWithContentURL:streamURL];
   [self.streamPlayer.view setFrame: self.view.bounds];
   self.streamPlayer.controlStyle = MPMovieControlStyleEmbedded;
   [self.view addSubview: self.streamPlayer.view];
   [self.streamPlayer play];
}
@end
```

iPhone and iPad apps that send large amounts of audio or video data over cellular networks are *required* to use HTTP Live Streaming.[78]

iOS apps submitted for distribution in the App Store must conform to the following requirements:

---

76 https://developer.apple.com/library/ios/#documentation/networkinginternet/conceptual/streamingmediaguide/HTTPStreamingArchitecture/HTTPStreamingArchitecture.html

77 http://developer.apple.com/library/ios/#documentation/mediaplayer/reference/MPMoviePlayerController_Class/Reference/Reference.html

78 https://developer.apple.com/library/ios/#documentation/networkinginternet/conceptual/streamingmediaguide/Introduction/Introduction.html

- If your app delivers video over cellular networks, and the video exceeds either 10 minutes duration or 5 MB of data in a five minute period, you are required to use HTTP Live Streaming. (Progressive download may be used for smaller clips)
- If your app uses HTTP Live Streaming over cellular networks, you are required to provide at least one stream at 64 Kbps or lower bandwidth (the low-bandwidth stream may be audio-only or audio with a still image)
- These requirements apply to iOS apps submitted for distribution in the App Store for use on Apple products. Non-compliant apps may be rejected or removed, at the discretion of Apple

5.4 Mobile Application Development

We are using the Xcode application to write the code of the mobile app. Xcode is Apple's powerful integrated development environment for creating great apps for Mac, iPhone, and iPad. Xcode includes the Instruments analysis tool, iOS Simulator, and the latest Mac OS X and iOS SDKs.

The Xcode interface seamlessly integrates code editing, UI design with Interface Builder, testing, and debugging, all within a single window. The embedded Apple LLVM compiler underlines coding mistakes as you type, and is even smart enough to fix the problems for you automatically.[79]

We create a new project in Xcode and start building the app interface in the Interface Builder tool.

The app screens represent the views from the Model-View-Controller paradigm (Figure 49), which are controlled by View Controllers, which work with Data Models.[80]

Figure 49. An iOS app model-view-controller design

The View Controllers will do most of the work in our app. They will capture user interactions, initiate actions based on user input and coordinate the data flow between views.

We will use the frameworks built-in iOS as well as external libraries found on the Internet, which will provide us with pre-made functionalities and logic, which we will embed in our app.

The Cocoa Touch frameworks that drive iOS apps share many proven patterns found on the Mac, but were built with a special focus on touch-based interfaces and optimization. UIKit

[79] https://developer.apple.com/xcode
[80] https://developer.apple.com/technologies/ios

provides the basic tools you need to implement graphical, event-driven applications in iOS. UIKit builds on the same Foundation framework infrastructure found on the Mac OS X, including file handling, networking, string building, and more.[81]

An example of an external library we will use is the NVSlideMenuViewController library, written by Nicolas Verinaud.[82] It will provide us with ready-to-use functionality for the sidebar menu, that we have chosen to implement in the app.

5.4.1 LinkedIn Authorization

We create a new API key in the LinkedIn developer control panel as shown on Figure 50.

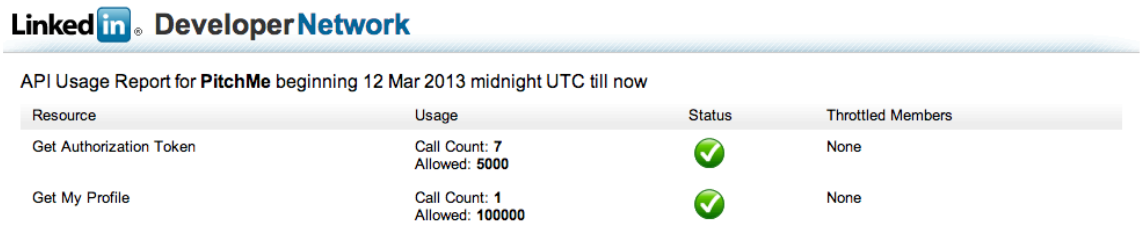

Figure 50. LinkedIn API app authorization screen

We use an authentication script made by Lee Whitney and set our API key and secret key as parameters.[83]

Once the user has authorized our application with LinkedIn, their API will send back a special string of characters, which will act as a key assigned to that specific user. This way, each PitchMe user will be linked to his LinkedIn account only.

5.4.2 Further Development

The mobile application development will follow the above described requirements and specifications. The end result will be a binary file, which will ultimately be submitted to Apple's App Store. The app prototype will be presented on the thesis defense.

[81] https://developer.apple.com/technologies/ios/cocoa-touch.html
[82] https://github.com/nverinaud/NVSlideMenuController
[83] http://www.whitneyland.com/2011/03/iphone-oauth.html

CHAPTER 6

Conclusion

In this master thesis we proposed a way to solve a real-world problem with a virtual service. The final result of this work is the business model and specification for developing a mobile service solution aiming at helping solve the unemployment problem and the product in form of a mobile app prototype.

We started with defining the problem and its parameters. We identified different solutions to tackle the problem using smartphone devices as platform. We discussed multiple business models, which could be used as a base for developing a solution. We followed the process for translating a business model to actual functional requirements. The functional requirements were then translated to technical requirements and specification. We looked at the user interface and the possibilities of implementing it in a way, that will best serve the user, by testing its usability using design prototypes. We described how the service will function as a whole and what are its components. We gave examples of how the components should be developed.

We have looked into different business models. We have selected one business model to work with, however other models might be suitable for a real business operation, depending on many factors like capital, location or human resources.

In this work the user interface of the mobile app is not completely defined but we have only given guidelines for how to design the interface to meet the latest trends and user expectations. Today it is very common for companies to redesign parts or most of their user interfaces as soon as the next trend comes. To stay ahead of the competitors, a company developing mobile apps must be very flexible and ready to change its product appearance quick and painless. That is why we have selected interface patterns and solutions that we consider most up-to-date as of now. We propose execution of this solution and refactoring according to user feedback and next innovative trends.

We consider this work a success and we strongly believe that the idea and the solution can be developed further into a start-up company, providing the service in Denmark and abroad.

6.1 Future work

We have laid the foundation for developing the PitchMe business model and technical implementation by defining the requirements and the most feasible solution. This work can be extended by deeper analysis of the business model and creating a business plan with concrete numbers and figures.

The user interface could benefit from more usability testing, which could be achieved best in real-world environment.

The work can also benefit from further refining the specification for the technical implementation of the back-end part of the solution.

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Appendix

i. Customer Insights

Monica

Monica is a student in her early-20s. She studies full-time master degree and lives in a room in a shared apartment. She needs to get some part-time job soon because her saved money are running out.
We start imagining and answering questions about her:

What does she see?
- Studies take too much time
- It's hard to find a part-time job
- Where to start looking for a job?
- How to apply for a job?

What does she hear?
- You need to study hard
- You need to succeed in life
- You need to pay the rent
- Let's party

What does she think and feel?
- I want to finish my studies
- I want to travel but I can't afford it
- I have to secure a part-time job
- I don't have time to apply for many jobs
- I am sure to impress employer if I can get to interview
- I would like to work as a babysitter

What does she say and do?
- I am trying to study hard
- I am trying to find a job

Pain
- Failure in studies
- Failure to find a job
- Failure to win a job

Gain
- Part-time job that pays well
- Flexible working hours
- More time for studies

Rasmus

Rasmus is a 32 years old IT professional, working with Microsoft technologies. He has been working in a company for 7 years and he would like to change his work place and work as a consultant. He has a well-developed LinkedIn profile.

What does she see?

- Same people every day
- Same problems every day
- Opportunity to grow as a professional outside of my company

What does she hear?

- You are very good at your job
- You can talk good to customers
- You have very positive attitude to problems
- IT specialists are needed

What does she think and feel?

- I have reached the limit of this position
- I need to change workplace
- I need more challenging work
- I would like to work as a freelance IT consultant
- I need flexible working hours

What does she say and do?

- I am watching the IT trends
- I am an innovator

Pain

- How to reach potential clients
- I am not good with marketing myself
- LinkedIn is good a platform but it lacks the personal touch
- Would like to

Gain

- Easy way to market my skills and expertise
- Easy way to reach potential customers
- Use charm to capture potential customer attention
- Be able to rapidly respond to inquiries

Pia

Pia is a 39 years old single mother of 2 children. She works as a manager in a big company and is usually very busy. She would like to hire a babysitter so she can have a social life and some time for herself.

What does she see?

- Parents can not always take care of the kids
- Kids cannot be left unattended

What does she hear?

- Having a babysitter will help you a lot
- You can find babysitter by looking at the paper

- Be careful choosing babysitter

What does she think and feel?

- I need more time
- I need more social life
- I need somebody to watch my kids
- I don't have time to interview many babysitters

What does she say and do?

- Ask friends for recommendation for babysitter
- Ask colleagues for recommendation for babysitter
- Browse newspapers for advertisements

Pain

- Find the perfect babysitter without spending too much time

Gain

- Have time for myself and socialize more

Peter

Peter is a 42 years-old HR in an international company, operating in Copenhagen, Denmark. The company operates with energy sources and looks to hire energy engineers in Denmark and Norway.

What does he see?

- There is a lack of energy engineers
- Due to HR budget cuts now many CVs are scrapped by filtering software
- The company has huge growth potential but needs more people

What does he hear?

- You have to hunt down the right engineers
- Management needs more workforce quickly
- Conducting too many interviews is too costly
- We do not have enough workforce to handle all candidates

What does he think and feel?

- We need to be able to quickly screen all potential candidates
- It would be great to have a database of potential candidates

What does he say and do?

- I am always trying not to miss good job candidates
- I need more time to hold interviews

Pain

- Find and interview the best job candidates without wasting too much resources

Gain

- Hire the best engineers to help the growth of the company

ii. Business Model Definition

Business model canvas

The book *Business Model Generation* book proposes describing a business model using on a 9-building-blocks canvas, which shows the logic of how a company intends to make money. The 9 building blocks are:

- Customer Segments (CS) – An organization serves one or more customer segments
- Value Proposition (VP) – It seeks to solve customer problems and satisfy customer needs with value propositions
- Channels (CH) – Value propositions are delivered to customers through communication, distribution, and sales channels
- Customer Relationship (CR) – Customer relationships are established and maintained with each Customer Segment
- Revenue Stream (RS) – Revenue streams result from value propositions successfully offered to customers
- Key Resources (KR) – Key resources are the assets required to offer and deliver the previously described elements
- Key Activities (KA) - Key resources are the activities required to offer and deliver the previously described elements
- Key Partnerships (KP) – Some activities are outsourced and some resources are acquired outside the enterprise
- Cost Structure (CoS) – The business model elements result in the cost structure

3.1 Customer Segments (CS)

Defines the different groups of people or organizations an enterprise aims to reach and serve
CS is one of the most important parts of the business model. Without customers there is no business. Different types of CS that we take into account when creating the business model are:

- Mass market
- Niche market
- Segmented
- Diversified
- Multi-sided platforms/market

3.2 Value Proposition (VP)

Defines the bundle or collection of products and/or services that create value for a CS
The VP is the reason why a company acquires customers – it solves a customer problem or satisfies a customer need. A VP can be a completely new and innovative offer or an upgraded and improved existing one. Different types of values can be defined as follows:

- Newness
- Performance
- Customization
- “Getting the job done”
- Design
- Brand/Status
- Price
- Cost reduction
- Risk reduction
- Accessibility
- Usability/Convenience

Some of those values are qualitative and some are quantitative. A VP can be a combination of multiple offered values in a bundle.

3.3 Channels (CH)

Defines how a company reaches and communicates with CH to deliver its VP
CH can be direct or indirect. They can also be categorized as own or partner-based. Another categorization is physical or online distribution.

3.4 Customer Relationships (CR)

Defines the types of relationships a company establish with a CS
Several types of CR could be defined:

- Personal assistance
- Dedicated personal assistance
- Self-service
- Automated services
- Communities
- Co-creation

3.5 Revenue Streams (RS)

Represents the cash a company generates from each CS
The actual earnings are the result of the subtraction of all costs from the revenues. A business model can involve two types of RS:

- One-time payments
- Recurring payment

RS can be categorized as follows:

- Asset sale
- Usage fee
- Subscription fee
- Lending/renting/leasing
- Licensing
- Brokerage fees
- Advertising

Each revenue stream can have different pricing mechanisms. There are two main types of pricing:

- Fixed pricing
- Dynamic pricing

3.6 Key Resources (KR)

Describes the most important assets required for the business model to work
KR can be categorized as:

- Physical
- Intellectual
- Human
- Financial

3.7 Key Activities (KA)

Defines the most important things a company must do to make the business model work
KA could be:

- Production
- Problem solving
- Platform/network

3.8 Key Partnerships (KP)

Describes the network of partners needed to make the business model work
KP could be distinguished as:

- Strategic alliances
- Cooperation
- Joint ventures
- Buyer-supplier relationships

The KP can also be categorized based on the motivation to have such:

- Optimization and economy of scale
- Reduction of risk
- Acquisition of resources and activities

3.9 Cost Structure (CoS)

Describes all costs associated with operating the business model
We can distinguish between two main classes of CoS:

- Cost-driven
- Value-driven

CoS can have the following characteristics:

- Fixed costs
- Variable costs
- Economies of scale
- Economies of scope

iii. Environment Scan

Environment

To analyze the business model environment, we look at the external environment as a form of "design space", as described in the book. This "design space" takes into account design drivers and design constraints. We map 4 main areas of our environment:

- Market Forces
- Industry Forces
- Key Trends
- Macroeconomic Forces

We analyze each of those areas by asking key questions and trying to provide the best possible answer based on the relevant knowledge acquired. Then we modify the business model according to the findings.

1.1 Market Forces

1.1.1 Market issues

Identifies key issues driving and transforming your market from Customer and Offer perspectives

What are the crucial issues affecting the customer landscape?

- Rising unemployment in the developed world
- Budget cuts in governments and corporations

Which shifts are underway?

- Shift to electronic job search process

Where is the market heading?

- Market is growing in crisis times
- Innovative job search processes are becoming more important

1.1.2 Market segments

Identifies the major market segments, describes their attractiveness, and seek to spot new segments

What are the most important Customer Segments?

- Job seekers
- Job providers (employers)

Where is the biggest growth potential?

- Developed world – OECD countries
- Emerging markets – strong potential in BRIC countries

Which segments are declining?

- Markets with high growth and low unemployment rate

http://www.imf.org/external/pubs/ft/fandd/basics/unemploy.htm

Which peripheral segments deserve attention?

- Corporate HR

1.1.3 Needs and demands

Outlines market needs and analyzes how well they are served

What do customers need?
- Easy way to present their skills to employers
- Easy way to find and screen the right employees

Where are the biggest unsatisfied customer needs?
- Markets with monopolies over job search processes

What do customers really want to get done?
- Get a job
- Find and hire the right employee

Where is demand increasing?
- OECD, BRIC and other countries with high IT penetration ratio

Declining?
- NA

1.1.4 Switching costs

Describes elements related to customers switching business to competitors

What binds customers to a company and its offer?
- Customer content being stored in-house

What switching costs prevent customers from defecting to competitors?
- None, except time required to do so

Is it easy for customers to findand purchase similar offers?
- Yes

How important is brand?
- Very high importance

1.1.5 Revenue attractiveness

Identifies elements related to revenue attractiveness and pricing power

What are customers really willing to pay for?
- Free services or premium services, if they recognize the need for

Where can the largest margins be achieved?
- Premium services

Can customers easily find and purchase cheaper products and services?
- Yes, customers prefer free services

1.2 Industry Forces

1.2.1 Competitors (incumbents)

Identifies incumbent competitors and their relative strengths

Who are our competitors?

- One startup direct competitor
- One indirect competitor (also desired partner)

Who are the dominant players in our particular sector?

- LinkedIn
- SparkHire

What are their competitive advantages or disadvantages?

- SparkHire – being the first to introduce the service
- LinkedIn – having huge customer base and strong brand

Which Customer Segments are they focusing on?

- SparkHire
    - Job seekers
    - Employers / HRs
- LinkedIn
    - Job seekers
    - Employers / HRs

What is their Cost Structure?

- LinkedIn
    - Cost of revenue (exclusive of depreciation and amortization)
    - Sales and marketing
    - Product development
    - General and administrative
    - Depreciation and amortization

http://stefann.com/wp-content/uploads/LinkedIn-Business-Model.pdf

How much influence do they exert on our Customer Segments, Revenue Streams, and margins?

- Direct competition for customers, however customer may choose to use both services
- RS can suffer if they attract more customers

1.2.2 New entrants (insurgents)

Identifies new, insurgent players and determines whether they compete with a business model different from yours

Who are the new entrants in your market?

- SparkHire – a startup company[84]

Howare they different?

- Focusing on questionnaire and video interviews

What competitive advantages or disadvantages do they have?

- Being the first to introduce video profiles
- Already featured in respected media

Which barriers must they overcome?

- Disruption from new players
- Introducing the innovative model to the market

[84] http://www.sparkhire.com

What are their Value Propositions?

- Video profiles for job seekers
- Video interviews

Which Customer Segments are they focused on?

- Job seekers
- Companies

What is their Cost Structure?

To what extent do they influence your Customer Segments, Revenue Streams, and margins?

1.2.3 Substitute products and services

Describes potential substitutes for your offers—including those from other markets and industries

Which products or services could replace ours?

- Similar offers from startup companies

How much do they cost compared to ours?

- They could maintain the FREE model for longer period of time if they have enough capital backup

How easy it is for customers to switch to these substitutes?

- Generally very easy

What business model traditions do these substitute products stem from?

1.2.4 Supply and other value chain actors

Describes the key value chain incumbents in your market and spots new, emerging players

Who are the key players in your industry value chain?

To what extent does your business model dependon other players?

Are peripheral players emerging?

Which are most profitable?

1.2.5 Stakeholders

Specifies which actors may influence your organization and business model

Which stakeholders might influence your business model?

- Venture capitalists
- Established job market platforms
- Government employment agencies

How influential are shareholders?

Workers?

The government?

Lobbyists?

1.3 Key Trends

1.3.1 Technology trends

Identifies technology trends that could threaten your business model—or enable it to evolve or improve

What are the major technology trends both inside and outside your market?

- Mobile communication, content creation and consumption is becoming the default
- Web usage still have momentum but is starting to decline[85]

Which technologies represent important opportunities or disruptive threats?

- Smartphones and tables – as main service platform
- 4G mobile networks – enables much more convenient consumption and real-time video communication
- Smart TVs – could be an opportunity to extend the service reach

Which emerging technologies are peripheral customers adopting?

1.3.2 Regulatory trends

Describes regulations and regulatory trends than influence your business model

Which regulatory trends influence your market?

- None, the service runs using Internet technologies and on a free market
- State-chosen monopoly could damage cooperation with government employment agencies

What rules may affect your business model?

- None in the foreseeable future – the Internet is considered a free and unregulated space

Which regulations and taxes affect customer demand?

1.3.3 Social and cultural trends

Identifies major societal trends that may influence your business model

Describe key societal trends. Which shifts in cultural or societal values affect your business model?

- Strong and fast adoption and acceptance of mobile technologies
- The mobile device becoming the universal assistant

Which trends might influence buyer behavior?

- Racial or other visual appearance intolerabilities

[85] http://www.businessinsider.com/chart-of-the-day-web-mobile-tv-consumption-2012-12

1.3.4 Socioeconomic trends

Outlines major socioeconomic trends relevant to your business model

What are the key demographic trends?

- Growing demographical reach of mobile technology adoption
- No location, age, gender, race or any other limit of using the service
- Increasing adoption in the most populated developing countries lead to increasing potential user base

How wouldyou characterize income and wealth distribution in your market?

- Low to medium income job seekers

How high are disposable incomes?

Describe spending patterns in your market (e.g. housing, health- care, entertainment, etc.). What portion of the population lives in urban areas as opposed to rural settings?

1.4 Macro-economic forces

1.4.1 Global market conditions

Outlines current overall conditions from a macroeconomic perspective

Is the economy in a boom or bust phase?

- The economy is in a bust phase, in recession, but the service benefits from the fact
- Uncertainty as to when the economic recovery will occur

Describe general market sentiment. What is the GDP growth rate?

- Negative or very low GDP growth in OECD
- Slower growth rates in BRIC

How high is the unemployment rate?

- High: 7.7% in USA (11.2012) and 11.7% in EU (11.2012); 7.9% for OECD (09.2012)[86] [87] [88]

1.4.2 Capital markets

Describes current capital market conditions as they relate to your capital needs

What is the state of the capital markets?

How easy isit to obtain funding in your particular market? Is seed capital, venture capital, public funding, market capital, or credit readily available?

- Numerous startup initiatives
- State-funded investment fund Vækstfonden[89]
- Private venture capitalists
- Well-established laws and regulations
- Promising startup scene[90] [91]

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[86] http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Unemployment_statistics
[87] http://www.tradingeconomics.com/united-states/unemployment-rate
[88] http://stats.oecd.org/Index.aspx?DatasetCode=STLABOUR
[89] http://www.vf.dk

How costly is it to procure funds?

1.4.3 Commodities and other resources

Highlights current prices and price trends for resources required for your business model

How easy is it to obtain the resources needed to execute your business model (e.g. attract prime talent)?

- Strong human capacity ranking (Copenhagen) [92] [93] [94]

How costly are they?

- Relatively high costs for skilled IT engineers

Where are prices headed?

- Costs are rising due to higher demand

1.4.4 Economic infrastructure

Describes the economic infrastructure of the market in which your business operates

How good is the (public) infrastructure in your market?

- Leading IT infrastructure
- Excellent test market (Denmark)[95]

How would you characterize transportation, trade, school quality, and access to suppliers and customers?

- Very high quality
- High-income customers

How high are individual and corporate taxes?

- Very high individual taxes
- Close to EU average corporate taxes[96]

How good are public services for organizations?

- Excellent public services
- E-government services[97]
- E-tax services
- E-business services[98]

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[90] http://thenextweb.com/eu/2011/09/25/something-is-rocking-in-the-state-of-denmark-why-copenhagen-is-a-startup-city-to-watch

[91] http://www.dvca.dk/index.php/uk/about-dvca

[92] http://www.copcap.com/content/us/quick_links/news/latest_news/2012/news_4th_quarter_2012/copenhagen_is_the_smartest_city_in_europe

[93] http://www.investindk.com/Clusters/ICT/Software-development

[94] http://www.managementthinking.eiu.com/sites/default/files/downloads/GTI%20FINAL%20REPORT%205.4.11.pdf (p. 4)

[95] http://www.investindk.com/Clusters/ICT/The-worlds-best-test-market

[96] http://www.businessweek.com/globalbiz/content/jun2010/gb20100629_855797.htm

[97] http://www.digst.dk/Servicemenu/English/Policy-and-Strategy/eGOV-strategy

[98] http://www.eurofound.europa.eu/pubdocs/2012/64/en/1/EF1264EN.pdf (p. 135)

How would you rate the quality of life?

- Very high[99]

1.4.4.1 Unemployment

1.4.4.1.1 EU

The current socio-economic environment is the western world has changed since the financial and economic crisis hit back in 2008. Unemployment is on the rise and people find it harder to find a job. Even if not experienced that hard in some countries or regions, this phenomenon is widespread.
"In 2010 and 2011, the average unemployment rate in the EU-27 was 9.7 %, the highest annual rates recorded since the start of the series in 2000."[100]

1.4.4.1.2 US

"Total nonfarm payroll employment increased by 171,000 in October, and the unemployment rate was essentially unchanged at 7.9 percent, the U.S. Bureau of Labor Statistics reported today. Employment rose in professional and business services, health care, and retail trade."[101] [102]

1.4.5 Technology Trends

Sales of smartphones and tablets are on the rise.

"77 percent of job seekers have already begun to use smartphone applications to give them a leg up in the increasingly cut throat race for employment."
"As technology continues to out due itself on a day-to-day basis, it will only be a matter of time before finding a new job is as easy as posting a filtered picture to Instagram."[103]

Mobile commerce is set to explode.[104]

"Worldwide, there were 419 million phones sold to end users, is down 2.3% compared to a year ago, Gartner says. Just over one-third (36.7%) of all devices sold were smartphones, which continued to grow well even as the wider market (which includes feature phones) declined. Sales of smartphones were up by 42.7% to 154 million units, with Apple and Samsung together accounting for 83% of all smartphone sales."[105]

"According to Forrester Research, tablets are rapidly becoming the primary device of choice for millions of people around the world. Sales of tablet computers in 2016 are predicted to hit 375 million, and 760 million tablets could be in use worldwide. Compared to the 56 million tablets purchased worldwide in 2011, that's a compound annual-growth rate of 46 percent."[106]

"There are now 234 million U.S. residents using mobile devices, with smartphone usage up 4% to 110 million — giving the country a smartphone penetration of 47%."

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[99] http://www.guardian.co.uk/world/2012/apr/07/copenhagen-really-wonderful-reasons

[100] http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Unemployment_statistics
[101] http://www.bls.gov/news.release/pdf/empsit.pdf
[102] http://mashable.com/2012/12/12/prepare-for-job-hunting
[103] http://www.jobsnhire.com/articles/2606/20120730/jobs-hunting-mobile-apps-iphone-android-careers-entry-level-unemployment.htm
[104] http://www.businessinsider.com/bii-report-why-mobile-commerce-is-set-to-explode-2012-11
[105] http://techcrunch.com/2012/08/14/gartner-global-mobile-sales-down-2-smartphones-surge-43-apple-stalls-as-fans-hold-out-for-new-iphone
[106] http://venturebeat.com/2012/04/24/forrester-tablet-sales-predictions

"Here Google's Android has continued to remain in the lead, with 51.6% of the market, and it's even grown — although by only 0.6 percentage points. Apple remains in second position with 32.4% share, but even without a new device on the market, it's actually grown its share the most of any other platform — meaning that for one reason or another consumers continue to grow their engagement on the iOS platform. The remaining three smartphone platforms — RIM, Microsoft and Symbian — all saw declining usage."[107]

[107] http://techcrunch.com/2012/08/01/comscore-us-smartphone-penetration-47-in-q2-android-remains-most-popular-but-apples-growing-faster

iv. Business Models

Ad-based Revenue Model

We develop a possible business model focused on revenues from advertisements. Such Revenue Stream would have implications on the other building blocks. In the Key Partner block we include *Advertisers* as such will provide ads that will be displayed on the service's virtual estate space and will pay for this. The service will be FREE to use for all customer segments. However, they will see advertisements, displayed when they use the service. The advertisements can be in different form and shape but due to the video focus of the service, video ads would make sense. Another possibility is to display text-based ads inside the video content, like YouTube does.

	HELPFUL (for your objective)	HARMFUL (for your objective)
INTERNAL (within organisation)	**Strengths** • FREE service for all • Proven revenue model • Increased user base	**Weaknesses** • Decreased reputation • Financial insecurity • Decreased content quality
EXTERNAL (outside organisation)	**Opportunities** • Different advertisement part-nerships opportunities • Huge potential for mobile ads • Increased reach	**Threats** • Easy to replicate • Mobile ads immaturity • Need for sustainable revenue

Acquisition business model

We also develop a business model based on the idea and opportunity to create a service to be sold to a competitor or larger company in the same business area. Such business model focuses of developing a matchmaking platform for job seekers and employers, where the main goal is to make it as lucrative to the target buyer as possible. The service is built around the idea of possible acquisition and implements all features which the buyer would find useful and worth paying for. In this business model, we don't hire infrastructure or use Apple's App Store to deliver the product. Instead the platform is developed to be demonstrated to the buyer and to be integrated into the buyer's existing applications and infrastructure systems. The service is tailored to the

buyer specific requirements and premium support is provided in order to help the buyer to integrate the service.

	HELPFUL (for your objective)	HARMFUL (for your objective)
INTERNAL (within organisation)	**Strengths** • Clear development target • Clear exit strategy • No user acquisition operations	**Weaknesses** • Narrow focus • High risk of deal rejection • Financial risk
EXTERNAL (outside organisation)	**Opportunities** • Very large established user base • Very clear target market • Major contract • No marketing expenses	**Threats** • Can be outrunned by competitor • High dependancy on vital major contract

State-sponsored business model

Another business model we develop is based has a Resource-Driven epicenter and is based on the idea of State sponsored service. Denmark is currently throwing massive amounts of funds towards reducing unemployment rate and creating jobs. However, the results are not always satisfactory

(refer to article about lack of efficiency of job centers). This lead us to the idea that the main partner of the PitchMe service can be the Danish state and more specifically, the institutions that are responsible for the unemployment problem. In such business model the state will a major stakeholder and the service will be tailored around the state needs to fight unemployment. Job centers can introduce the service as an alternative for job seekers to look for jobs and for employers to filter and hire employees. The revenue streams will be influenced as well, as the business model will count on state-subsidies for its revenue streams. We will deliver the service and provide support to the customer segments.

State-financed business model

Another opportunity for similar business model is to have the whole operation financed and eventually owned or co-owned by the state in form of a public-private company. The state will pay for the development of the service and its operations. The customer will be the state, which will provide the service to its own customer segments – job seekers and employers. Such business model is similar to the LinkedIn acquisition model and aims at developing a service, which is fully or partially sold to the state.

v. SWOT Analysis

We employ the widely used SWOT analysis to evaluate the business model's:

- Strengths
- Weaknesses
- Opportunities
- Threats

We use the proposed on p.217-223 in the *Business Model Generation* book non-exhaustive sets of question to help us assess each of the building blocks in the business model canvas.

3.1 Assessing strengths and weaknesses

3.1.1 Value Proposition assessment

3.1.1.1 Value Proposition (VP)

Are our VPs well aligned with the customer needs?

Do our VPs have strong network effects?
From a Business Insider article[108], we draw conclusions, that what creates a favorable network effect in the platform is the user base. The more users from both CSs the platform has, the stronger the network effect will be.

Are there strong synergies between our products and services?
Yes. The product is the service itself.

Are our customers satisfied?

3.1.2 Cost/Revenue assessment

3.1.2.1 Revenue Stream (RS)

Do we benefit from strong margins?
Apple takes 30% of all app sales, including in-app purchases. NPD Group reports that 40% of freemium users make in-app purchases.[109] KRs become less expensive as the user base grows, the total cost per user falls. The larger the user base, the higher the margins.

Are our revenues predictable?
Possibly. Based on mobile devices penetration, unemployment rate, user base growth, freemium-to-premium conversion and other statistical data and predictions based on such.

Do we have recurring RSs and frequent repeat purchases?
Yes. The premium customers purchase expiring premium features. Thus we incur recurring costs for regular users of premium features.

Are our RSs diversified?
Yes. The business model aims at charging all CSs for premium features, even though it subsidizes one of the groups.

Are our RSs sustainable?
Yes. The more the user base grows, the more revenue will be collected.

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[108] http://articles.businessinsider.com/2012-03-05/research/31123118_1_ios-android-platform
[109] https://www.npd.com/wps/portal/npd/us/news/press-releases/pr_120423a

Do we collect revenues before we incur expenses?
Revenues are collected at any time. Expenses are mostly period-based – infrastructure rental, salaries.

Do we charge for what customers are really willing to pay for? Do our price mechanisms capture full willingness to pay?
Yes. The service is free. There is a charge for premium features, which are optional for all CSs.

3.1.2.2 Cost Structure (CoS)

Are our costs predictable?
Yes. Fixed infrastructure costs that decrease with the increase of user base, fixed human resources costs, marketing costs.

Is our CoS correctly matched to our business model?

Are our operations cost-efficient?
Yes. Launching the service will require only a small seed-capital.

Do we benefit from economies of scale?
Yes. The more users the platform has, the cheaper will be to support a single user – lower infrastructure cost, lower human resources cost.

3.1.3 Infrastructure assessment

3.1.3.1 Key Resources (KR)

Are our KRs difficult for competitors to replicate?
No. Like with every other software product - competitors can replicate the software and launch similar services. Mobile apps are patentable but due to shorter shelf-live it does not make much sense.[110]

Are resources needs predictable?
Yes. Resources needs are predictable. As the service user base scales, the resources requirements also scale.

Do we deploy KRs in the right amount at the right time?

3.1.3.2 Key Activities (KA)

Do we efficiently execute KAs?

Are our KAs difficult to copy?
Yes. Like with every other software product - competitors can replicate the software and launch similar services.

Is our execution quality high?

Do we have an ideal balance between in-house and outsourced execution?
Such balance can be achieved by outsourcing infrastructure needs (servers and other hardware infrastructure), development costs (outsourced software development) and support or sales activities (outsourced support and sales).

[110] http://www.richardspatentlaw.com/faq/have-an-idea/can-i-patent-an-iphone-app

3.1.3.3 Key Partnerships (KP)

Are we focused and work with partners when necessary?
The business model relies on strong relationship between the service and external professional profile services – LinkedIn.

Do we enjoy good working relationships with KPs?

3.1.4 Customer interface assessment

3.1.4.1 Customer Segments (CS)

Are customer churn rates low?
In the first 12-24 months of your business, it is frequently too early to figure this out. At this stage it is more important to get broad customer adoption, and that often means simple pricing that leaves something on the table for your customers.[111]

Is customer base well segmented?
Yes. There are 2 clearly defined CSs, which the platform aims at connecting.

Are we continuously acquiring new customers?

3.1.4.2 Distribution Channels (CH)

Are our channels very efficient?
Yes. Installing is as easy as installing any other mobile app from app store.

Are our channels very effective?
Yes. The service will run on only 2 platforms which both have dedicated app stores, available for all user worldwide (or in the target markets).

Is our channels' reach strong among customers?
Yes. Right after launch, the service's app will instantly be available to more than 1.1 billion global smartphone subscribers.[112]

Can customers easily see our channels?
Yes. App stores are deeply integrated in both platforms (iOS and Android) and considered the default way of installing apps.

Are channels strongly integrated?
Yes. App stores are deeply integrated in both platforms (iOS and Android) and considered the default way of installing apps.

Do channels provide economies of scope?
Economies of scope are not applicable for such distribution practice.

Are channels well matched to CSs?

3.1.4.3 Customer Relationships (CR)

Do we have strong CRs?
The service employs automated self-service and content co-creation. CR is present in terms of support.

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[111] http://www.forentrepreneurs.com/why-churn-is-critical-in-saas
[112] http://www.slideshare.net/kleinerperkins/2012-kpcb-internet-trends-yearend-update (s. 7)

Does relationship quality correctly matches CSs?
Paying premium customers will receive higher level of support in terms of shorter response time, phone support, etc.

Do relationships bind customers through high switching costs?
No. Customers could easily switch to other similar services without high costs.

Is our brand strong?

3.2 Assessing threats

3.2.1 Value Proposition threats

3.2.1.1 Value Proposition (VP)

Are substitute products and services available?
Yes. One company (SparkHire Inc.) has already launched similar service.

Are our competitors threatening to offer better price or value?

3.2.2 Revenue/Cost threats

3.2.2.1 Revenue Streams (RS)

Do competitors threaten our margins? By technology?
If LinkedIn decides to integrate video into their service it could seriously damage our margins.

Do we depend excessively on one or more RSs?
The service depends on RSs from both CSs, in particular the employers CS.

Which RSs are likely to disappear in the future?
None. But there is a possibility to introduce more RSs when the service user base grows.

3.2.2.2 Cost Structure (CoS)

Which costs threaten to become unpredictable?
Infrastructure costs if the service becomes extremely popular. Scaling the infrastructure at a very fast pace could be very expensive. This can be avoided by using cloud solutions, like Amazon's Cloud Services AWS, which provide scalable cloud computing, storage and database services.[113] [114]

Which costs threaten to grow more quickly than the revenues they support?
Salaries cost due to lack of qualified IT engineers.

[113] http://www.rightscale.com/info_center/white-papers/RightScale_White_Paper_Building_Scalable_Applications.pdf
[114] http://aws.amazon.com/solutions/case-studies

3.2.3 Infrastructure threats

3.2.3.1 Key Resources (KR)

Could we face a disruption in the supply of certain resources?
No. This can easily be avoided by using cloud services for computing, storage and database. Human resources could be a vulnerable element.

Is the quality of our resources threatened in any way?
No. Quality of infrastructure resources can only become higher as the technology evolves. Quality of human resources could become harder to capture because of increasing demand and competition for highly skilled IT engineers.

3.2.3.2 Key Activities (KA)

What Key Activities might be disrupted?
Service provisioning – due to technical issue.

Is the quality of our activities threatened in any way?
The platform development activity, which is basically software development, could be threatened by ineffective or badly designed software.
Platform promotion could be threatened by lack of resources for promotional activities.

3.2.3.3 Key Partnerships (KP)

Are we in danger of losing any partners?
Yes. By aiming at having LinkedIn as a main partner, we risk that the giant company develops its own solution, similar to ours, leaving us out of the equation.

Might our partners collaborate with competitors?
Yes. By aiming at having LinkedIn as a main partner, we risk that the giant company develops its own solution, similar to ours, leaving us out of the equation.

Are we too dependent on certain partners?
No. Even without high-level cooperation with LinkedIn, we can still use its API for connecting to our service.

3.2.4 Customer Interface threats

3.2.4.1 Customer Segments (CS)

Could our market be saturated soon?
Could be. It is a niche market and specific kind of electronic service. Can be copied by competitors if very successful.

Are competitors threatening our market share?

How likely are customers to defect?
Job seekers will defect if they accomplish their goal of finding a job. The other CS comprised of employers, HRs and private persons looking to hire somebody for temporary job are much less likely to defect.
Especially premium customers could defect if they experience any frustration caused by lack of service quality, availability, etc.[115] [116]

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[115] http://hbr.org/1995/11/why-satisfied-customers-defect/ar/1

How quickly will competition in our market intensify?

3.2.4.2 Distribution Channels (CH)

Do competitors threaten our Channels?
No. Channels are available to everybody who uses the mobile platform.

Are our Channels in danger of becoming irrelevant to customers?
Not in the foreseeable future. Niche app stores might appear and become default, but will still be usable.[117]

3.2.4.3 Customer Relationships (CR)

Are any of our Customer Relationships in danger of deteriorating?
The co-creation of content from one of the 2 CSs is very important for acquiring customers from the other CS.

3.3 Assessing opportunities

3.3.1 Value proposition opportunities

3.3.1.1 Value Proposition (VP)

Could we generate recurring revenues by converting products into services?
Yes. The product is the service itself. The revenues are entirely based on purchases of premium services, which can be optionally recurring.

Could we better integrate our products or services?

Which additional customer needs could we satisfy?

What complements to or extensions of our Value Proposition are possible?
Extended services such as guidance and personalized help for job seekers.
Pre-screening of job seekers as extended service for employers.

What other jobs could we do on behalf of customers?

3.3.2 Revenue/Cost opportunities

3.3.2.1 Revenue Streams (RS)

Can we replace one-time transaction revenues with recurring revenues?
Yes. Customers could opt-in for recurring charging for premium services.

What other elements would customers be willing to pay for?

Do we have cross-selling opportunities either internally or with partners?
Yes, to both CSs.

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[116] http://www.businessnewsdaily.com/3524-businesses-can-prevent-customer-defection.html
[117] http://www.quirksmode.org/blog/archives/2011/01/the_future_of_a.html

What other Revenue Streams could we add or create?

Can we increase prices?
No. Prices could only go down as the user base grows and competition increases.

3.3.2.2 Cost Structure (CoS)

Where can we reduce costs?
Platform development and maintenance outsourcing. Support outsourcing. Infrastructure outsourcing.

3.3.3 Infrastructure opportunities

3.3.3.1 Key Resources (KR)

Could we use less costly resources to achieve the same result?
Yes. Outsourced development, maintenance, support, infrastructure.

Which Key Resources could be better sourced from partners?
Cloud services. Professional profiles.

Which Key Resources are under-exploited?

Do we have unused intellectual property of value to others?

3.3.3.2 Key Activities (KA)

Could we standardize some Key Activities?
Yes. Software/platform development and maintenance. Support activities.

How could we improve efficiency in general?

Would IT support boost efficiency?
The product is entirely IT-based.

3.3.3.3 Key Partnerships (KP)

Are there outsourcing opportunities?
Yes. Outsourced development, maintenance, support, infrastructure.

Could greater collaboration with partners help us focus on our core business?
Yes. Distribution by Apple's App Store and Google's Play store. Cloud services from Amazon. Professional profiles from LinkedIn.

Are there cross-selling opportunities with partners?
Could be possible to cross-sell partner's additional services to both CSs.

Could partner Channels help us better reach customers?
Yes. Distribution channels are provided by Apple's App Store and Google's Play store.

Could partners complement our Value Proposition?

3.3.4 Customer interface opportunities

3.3.4.1 Customer Segments (CS)

How can we benefit from a growing market?
Mobile apps usage is growing fast. Social network sharing. Networking effect. Word of mouth recommendations.

Could we serve new Customer Segments?

Could we better serve our customers through finer segmentation?
Yes. Finer segmentation of CSs is possible, for example segmenting the employers CS to: public institutions, corporate HRs and small private employers.

3.3.4.2 Distribution Channels (CH)

How could we improve channel efficiency or effectiveness?

Could we integrate our Channels better?

Could we find new complementary partner Channels?
Yes. By developing the platform for new mobile platforms like Windows Phone and using its App Market to distribute the app.

Could we increase margins by directly serving customers?
We are directly serving the customers through the platform app.

Could we better align Channels with Customer Segments?
Yes. By using the emerging corporate app stores to distribute the platform app in corporate or public institution.

3.3.4.3 Customer Relationships (CR)

Is there potential to improve customer follow-up?
Alternative channels for CR could be utilized to improve customer follow-up like: email or phone contact, seeking customer input. Such follow-up can occur after premium feature expiration.[118]

How could we tighten our relationships with customers?

Could we improve personalization? How could we increase switching costs?
Personalization can be improved by even further automating the self-service platform by implementing personalization algorithms.

Have we identified and "fired" unprofitable customers? If not, why not?

Do we need to automate some relationships?

[118] http://www.smetoolkit.org/smetoolkit/en/content/en/903/How-to-Follow-Up-with-Customers