TIØ4258 – Exercise 1
Group 45

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Part I

Brainstorming

1 Idea No. 1: "Gløshaugen StandGuide"

Students at the Norwegian University of Technology and Science, especially those belonging to the Gløshaugen campus, become accustomed to the somewhat sporadic appearance of "stands", from which freebies such as coffee can be obtained, on and about the campus. This is universally perceived as a positive phenomenon by students. In fact, the only downside to this arrangement seems to be that the knowledge of the presence of such stands are spread through word-of-mouth and/or the grapevine, meaning individuals have to run around campus looking for stands. The year is 2013 – the world is more modern than ever before, is such an archaic approach really acceptable? Introducing "Gløshaugen StandGuide", a system that lets you see if there's any stands on campus at any given time and what they're offering. No more will students have to run around like headless chickens uncertain as to whether they'll find any free coffee by the end of their run or not. It's efficient, it's attractive, it's easy. It's the future. "Gløshaugen StandGuide" – because you shouldn't have to work for free (stuff).

2 Idea No. 2: "Reiseplanlegger1"

Travel planning system for transportation within Norway.

If you want to travel within Norway your options are quite plentiful. There's trains, buses, metros, trams, airplanes and what not. Norway's problem isn't that it lacks public alternatives to private travel methods such as the personal car, it's that figuring out how to use these alternatives can be a soul-draining experience. The company running all public transportation in one city has its own system, which is wholly different from whatever system is in use in any other city. Knowing how to figure out what bus you need to take to get somewhere in Oslo doesn't really help you pick out the right bus in Trondheim, and vice versa. Travelling from somewhere in Oslo to somewhere in Trondheim requires that you interface with up to five[1] different providers of transportation just to plan your trip.

It shouldn't have to be that complicated. That's why we've come up with "Reiseplanlegger1", a system which aims to integrate every single method of publicly available transportation within Norway, allowing you to plan your trip through one single interface. Need to get from Skånevik to Molde using public transportation? If it's possible, we'll tell you how.

Part II

Possibility Analysis

In this part, we continue with Idea No. 2, "Reiseplanlegger1".

3 Product Description

3.1 Problems & Solutions

To recap, the system is intended to serve as everyone's go-to service when they need to travel from some place in Norway to another place in Norway, when the distance is too great to be considered within "walking distance".

[1] 1) public transit to get to the airport transit, 2) transit to Oslo airport, 3) airline, 4) airport transit from Trondheim airport, 5) public transit in Trondheim

Simply put, our system makes planning one's travels easier. Life is an optimization problem. Anything that simplifies parts of it or frees up our time is arguably a solution to the problem of "not having enough time". More specifically, our system aims to solve the following problems that exist with the current model:

1. Proficient use of public transportation in some areas seem to require intricate arcane knowledge only possessed by those native to the area.
2. Information about available methods of transportation in an area is not readily available unless one knows where to look.
3. Current systems are segmented according to provider with little or no support for planning a trip outside any single provider's reach.

The first issue is solved as the system provides easy-to-understand information in the same format wherever our users are. People who have moved to or visited some place in Norway they've not been before might be familiar with this. The second issue is solved by offering this information through the system, regardless of where the user might be located. The third issue, which you might be familiar with if you've ever flown out of Trondheim[2], is also solved by the collecting of all this information in one database, allowing the system to search through all of it when looking for a viable travel route.

The key thing here is that all this information – in-land flight schedules, bus routes, train departures, trams, ferry schedules throughout the country – is all gathered up into one place, lowering the entry level for those who want to use non-private transportation. The current system is like having multiple dictionaries, with the words spread randomly between them. Why would anyone want that?

The system itself, as presented to the user, is in its simplest form just two fields – into which the user enters his or hers place of departure and desired destination – and a button that is pushed after the information is entered. A suitable route is then computed by the system and presented to the user. The route is presented in the form of a map, as well as a series of concisely formulated steps the user would have to undertake in order to reach his or her destination. This could be an app, a website or a telephone-based service. The core concept is that the user provides the system with a place of departure and desired destination, and is given a route to get there which employs as much non-private transportation as possible.

3.2 Technological Challenges

There is a variety of challenges facing a product such as a travel planner. The most prominent of which is the development of proper APIs. As of yet there are many different services available in various areas that provides information on travel planning in that area. As these services are commonly available on the web, the travel planner will be able to extract information from these when appropriate. Unfortunately this is not standardized, and all of these services will have to be uncovered manually.

The amount of data that will be processed and gathered at any step to plan a trip will be within the scope of what current technology is able to. Therefore the technological challenges from a hardware perspective will be negligible. It is the software's decision making on where it should gather data for what that will be important. The software that handles this could have a feed-back stage so that the user can respond whether they believe the travel planner has presented a good route/method of travelling. If it is unacceptable the travel planner may learn from its mistakes and perform better next time. How the travel planner will handle these issues depends on what the expected demographic and userbase will be. If the userbase is small and exclusive, the travel planner may prioritize quality over efficiency or the urban over the suburban. This means that the travel planner will require a developmental stage that can take a significant amount of time and resources, but once it is up and running, the system will be relatively self-sufficient.

Scaling as a result of popularity might become an issue when regarding the servers. This is a problem that has been faced by many up-and-coming web based businesses. Some have handled this by preparing the community for a downtime, others have tried to perform the transition in the background.

[2]Where there's two different companies running a bus route to the airport, each listing their routes at different locations and of course neither are compatible with the regular bus system.

4 The Market

4.1 Market segmentation and quantifying potential market size

In general we can divide the market for our trip planner into three groups:

1. Those who are going to use the trip planner a lot; people who often travel to new places.
2. Those who will use the trip planner some times; these people do not travel very much or generally just travel between a small set of the same places.
3. The last group is the tourists coming from other countries.

These groups are further divisible into other groups as well. Some people are willing to pay more for their trip duration to be shorter. This is generally people with a lot of money and people traveling at their employers expense. Other people may want the trip to be as cheap as possible. This could be people with very limited funds, e.g. students. Most people will probably want a balance between cost and travel time.

For now we are looking into a nationwide trip planner, connecting other existing regional trip planners into one functional product. This will make it easier to plan trips within different regions and in between different regions.

The target group of customers will be those traveling domestic. This can be both norwegian citizens as well as foreign tourists. This will help them plan the trip both cost- and time wise. As most people traveling domestic will, at some point, whether it is a long trip or just a short trip, need to look up the time table(s) and plan their trip, this service will be needed by everybody. Our potential customer base is therefore everyone traveling by bus, train, tram, boat, plane and all other methods of transportation available in Norway. Essentially, this includes everyone. Even if one person is only traveling the same distance time after time after time, he/she will have to look up an updated schedule from time to time. Maybe there have been changes to the time table or another alternative has become available.

4.2 Who is the customer, and how is our service of use to them?

The customer, in our case, are people who travel, usually often and far. To be more precise, we can mention students as an important group of customers. Students often live far from their original home, and usually wish to visit their home town or family several times per year. We can, with relative certainty, say that students generally visit their family at least twice a year, in the break between the semesters. Often times, this number is larger. Three or four times is not unusual over the course of two semesters, or a school year, considering it is quite common to visit home during Easter, and usually some time during the fall semester.

Students generally have a quite restricted personal economy, which makes it important to find the cheapest way to travel. However, there are certain situations where travel time is more important than price. This is often the case for those who live far north, but study at a college or university in the southern half of Norway, but also in cases where the student studies in, say Trondheim, but lives south of Oslo or Bergen. In Northern Norway, the distance between towns are often large, and there might be fewer trains and buses. This makes travel times up to 12 hours quite common, and they can be even higher. In those cases, it might be worth it, even for a “poor” student, to pay the extra cost for a flight.

When it comes to the students who travel between cities in the southern half of Norway, the difference in travel times for various means of transportation is smaller, but it can still be very noticable. These differences can also vary between departures. The advantage students have when it comes to travel, is that they are often relatively free to choose when to depart, and usually have a bigger time frame where travel is possible. This makes our service very useful, but more on that later.

Another central group of customers are consultants and other advisors, travelling salesmen, and other people in similar situations, where their customers are spread out across the country, and their work requires them to physically seek them out. This group of people usually travel a lot, much more frequently than students, but the price is often less of an issue. In this case, travel time and a specific time of departure is commonly the most important. Additionally, it might be preferrable to have as few changes of transportation as possible.

Of the described customer groups, we place students who study a moderate distance from their home, as well as business travelers with a country wide customer base, in the category for people who will use the service frequently. This group of students are perhaps the ones that will find our service the most useful. Because their needs are shifting, it's practical to be able to sort based on various criteria, such as travel time and price. This lets the customer evaluate whether the difference in travel time is so major that paying extra for a flight (as opposed to train or bus) is worth it, or minor enough that they wish to save as much as possible by choosing the cheapest alternative. Alternatively, the customer can determine whether one of the service providers has particularly low priced tickets some time during the desired time frame for departure, and make an informed decision based on the information our service provides.

The business travelers will be able to simplify the process when they are traveling to a customer in a new location. Rather than seeking out the various transport service providers, they can specify the details of departure location and destination as well as desired departure time, and receive all relevant means of travel from various service providers or combinations of providers all the way to the final destination, with information about price, travel time and number of transport changes.

The category containing customers who will some times use our service, consists of the students who travel far, e.g. far north, or to Southern Norway from Mid- to Northern Norway. These customers will mainly find the price comparison feature between various flight providers most useful. If they need to change means of transport during the voyage, they can use our service to find the best departure. In this category, we also find the people who don't travel regularly. The service is useful when they are traveling to new places, in the same way the business travelers can utilize it when visiting customers in new locations. In this case, however, price again usually plays a bigger role. The third category, tourists, can also use the service in this same way.

4.3 Entry barriers

Trip planners aren't a new invention by any standard, and there exist a lot of alternatives like Ruter, AtB, Skyss and so on. The problem with the existing trip planners are that they are only made for specific regions. Because there already exists different trip planners we can learn from them and improve on their features. This will make it easier to come up with a better system that can deliver a better result. A trip planner will typically be implemented as a website complimented with a mobile app for mobile devices. Websites and mobile apps are relatively easy to make, which means that the entry barrier is low for development of the product and also easy to use for customers that want to try out the system.

As a new player in the market, it is important that people be made aware of the new product. A lot of resources will be needed for a nationwide campaign, which is required as our potential customers include everyone in the country. Another difficulty is attaining credibility; to gain the trust of the people. Most public transportation companies have their own trip planner. It is important that the customer can trust that the information provided by our trip planner is just as good, or better, as the information provided by existing trip planners. It is also essential that the route being calculated is optimal to the wishes of the customer.

4.4 Competitors and Substitutes

As far as competitors and substitutes goes, there are services available, such as Trafikanten and Bussoraklet. Many of the transportation service providers also offer their own travel planning service, Norwegian and NSB amongst others. The mentioned services, however, are all lacking in one way or another. The transportation providers' own services have the obvious flaw of only containing their own services, leaving you to check each other provider separately to find the best alternative. Services such as Bussoraklet only cover one means of travel (in this case, bus), and most of these services are limited in the area that they cover. Trafikanten, for instance, only covers travel in Oslo and Østfold.

Our biggest competition that we have been able to locate, is rutebok.no. However, we experience their algorithm to be inadequate, as we cannot find all desired means of travel for the various voyages we tested on their site. On the basis of the market survey we conducted, as well as our own desires, we don't find all the necessary or desired functionality in their service, such as sorting on any chosen criteria. Nor

do we find the design of this service to be sufficiently good. Based on these experiences, we believe our service would be a strong competitor.

5 Organization and Economics

5.1 The Business Model

There are primarily two ways of monetizing a product such as ours: Selling the product to our end users, or selling our end users to other companies. The former would typically involve a subscription fee, which would require users to authenticate themselves prior to using the service, and/or charging a one-time fee for our mobile apps. Selling our end users might mean showing advertisements in our trip planner, or taking a commission on the sale of tickets.

Each of these models have their pros and cons. Charging customers to use our service is the most straightforward way of making a profit, allowing us to focus on making the planner as good as possible, but has the disadvantage of presenting a barrier of entry for potential customers. It's especially problematic to charge for a service such as a trip planner because it is not common to do so; many people would likely look to a free alternative, even if it was not particularly good, making it difficult for us to achieve the critical mass of users necessary to consolidate a segregated market.

Showing advertisments is problematic because "nobody likes ads", but has the advantage of keeping the service free. It also keeps business negotiations simple provided we utilize large ad publishing programs such as those offered by Google and Apple (although a Norwegian publisher may be better in our case). Taking a commission on tickets sold by transportation service providers is problematic because it would compromise our integrity if companies were able to pay for a higher position in our search results, or our perceived integrity if people believed that this was possible. Taking a commission also requires deals to be made with various companies, increasing the administrative/burocratic overhead of our operation, an often-unpopular move with start-ups in technology.

Of these possibilities, displaying advertisements alongside our trip routes would probably be the path of least resistance to making a profit.

5.2 Outsourced and In-House Activities

A third-party trip planner is a portal to other companies' services; it is a product separate from the actual transportation services it facilitates access to. As such, our most important tasks are the gathering and presentation of relevant information from other parties, as well as the marketing required to make people aware of our product. These key goals necessitate

- The development of our planner (website, app, ...)
- The operation and maintenance of back-end services such as web servers
- Negotiation of access to third-party information (legal, business and technical agreements)
- Product marketing

While it is usually necessary for someone familiar with your situation to architect and maintain the structure of your web services, it is often the simplest and least expensive option for all but the largest companies to outsource the physical operation to a third party such as Amazon, Rackspace, Heroku etc. Therefore, the second point on the list above should probably be partly outsourced. Other than that, all of these tasks should be kept in-house as they represent the very foundation of our product's existence.

Tasks which may be left to others, at least in the start-up phase of our operation, include accounting and possibly legal services because there would likely be too little such work to justify a full-time employee.

5.3 The Potential for Profit

It is very difficult to predict any earnings should we choose to make advertisement our source of income as the Terms of Service of the large ad networks prevent affiliates from disclosing how much they make. However, given the fairly large number of free web services and apps for mobile devices that show ads, it would seem it's possible to make a profit given a large enough audience. The question then becomes one of whether there is interest for a product such as the one we propose. We performed an online survey, advertised to friends and acquaintances through Facebook; it received 84 responses with the vast majority (88%) being between 18 and 25 years of age, presumably students, and 63% being men. Some of the results are shown below. ('Ja' means yes, 'nei' means no.)

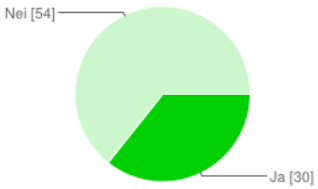

Figure 1: Do you currently use any trip planners?

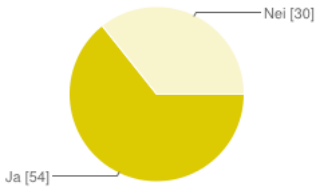

Figure 2: Do you trust trip planners?

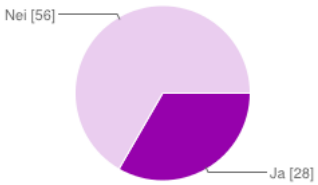

Figure 3: Would you pay to use a good trip planner?

Though we have a small and biased sample, we'll make some observations based on the data available. It seems that the assumption that people do not want to pay for a trip planner was largely correct, potentially making advertisement a good source of income. Furthermore, the majority of people trust trip planners to function adequately, but do not currently use any; this may indicate that what's lacking is a pleasant and unified user interface, although that is an admittedly large assumption.

Taking a larger survey prior to making any big decisions would be a good idea; in particular, it would seem pertinent to examine the large and financially significant body of travelling professionals. However, at the very least, what data we do have doesn't speak against the idea of a free-of-charge trip planner being a potentially sound product.

5.4 Initial Capital and Investment

Given the strategies and observations laid out thus far, what we have is a stand-alone software product with an uncertain potential for profit, and which would have to be more or less complete (in terms of software development) before it might enter the market. Therefore, it seems there are primarily two realistic strategies for its initial development.

One possible strategy is to spend very little or nothing on initial development of the product; this requires the developers to have another source of income, and to take the risk of having no returns on their invested effort. This may be a realistic strategy for students, or for a tightly knit group of developers who believe in the product and are willing to spend their free time on it.

Another strategy is to persuade a venture capitalist or an angel investor that the product will make money in the future, and to have them finance the development of the product. The disadvantage of this strategy is that the investor will likely want significant returns in the event that the product succeeds, given the high risk. Also, importantly, you would need to know or get to know an investor.