MapC

Business Plan for Knowledgebased Entrepeneurship 2009,

Group 1

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1. The executive summary

We wish to start a new company called MapC. MapC's product is a software solution that will offer delivery companies a cheaper and more functional system to track their couriers and in addition offer them qualified routing suggestions. Our first target group will be bike messengers in particular, but the system is usable for other types of couriers as well.
It is important for a delivery company that it is able to deliver their goods as fast and reliable as possible. Also they want to utilize the time of each employee to the highest possible degree, meaning that they want to avoid them having to wait for new orders and minimise the travelling time to a client pick-up. Therefore there is a strong motivation for the companies to get a tracking system, and following there are several such solutions already on the market. Most however are expensive, sometimes the performance is less than satisfactory and the hardware are not always very practical. We believe our product to be very superior on these points compared to most other solutions in the current market. At present most delivery companies use highly customized terminals while our system will utilize ordinary mobile phones. The advantage of the phone being that it originates from an already highly developed industry, therefore they have high reliability. Furthermore the mobile phones will have a considerable lower unit cost, the unit will be easy to install and/or replace. Also looking at bike messengers as our first customers, the mobile phones are much lighter than the current products on the market.

Our software will be installed on ordinary GPS enabled mobile phones and furthermore use Google Maps at the offices of the customer, to present the location of the couriers along with the routing suggestions.

The founding team comprises of five members, all Computer Science students, but with almost five different approaches to the subject and very diverse experiences within our field.
It is our goal to make the best functioning courier mapping and tracking system available for delivery companies. And within 5 years be the market leader within our particular niche of making a product that is in particular suitable for bike messengers.

We predict that we within 5 years, will have an annual turnover above 8 mio. DKK with 10 employees. There should be a couple of potential exit-opportunities in form of buyout, either by some of the larger competitors on the market, currently developing a slightly different product (perhaps more with a focus on truck delivery) or possibly some of our customers. The value of the company in 5 years, will in a rough estimate amount to 37 mio DKK.

We do not seek any outside starting capital, as we intend to develop our product in our spare time and already might have our first customer lined up. The little start of expense we do have, we plan to invest ourself.

2. The conclusion

We intend to use the Business Plan not to attract outside founding, but rather as a tool for ourselves. We will use it as an internal guide to guide us through the business process, and in everyday administration. Later we wish a CEO with experience in running a smaller business in the upstart and furthermore someone with extended experience in sales and/or marketing.

We start up as a Partnership Company consiting of five founding members (namely the five of us handing in this plan), but once we have sold to our first customer we will establish a Private Limited Company (ApS).

We conclude that it is possible to develop and sell the product with the resources we have available, we have no other start up resources than 17,500 DKK that we invest ourselves and furthermore our own capabilities within finances, sales, marketing and development.

In order to renew our company, to expand and to keep a continually high profit, we want to keep developing our product, possibly into other systems with the same or similar core technology and maybe to accommodate similar needs in other customer groups.

We conclude that there is in fact a market for our product. The initial market is estimated to be all over Europe and comprise of approximately 500 potential customers that would each buy one solution and a median of 50 units per customer. We aim to start up 3 new customers in Denmark per quarter in 2011 and 5 in Europe. In 2012 we suspect that Denmark is exhausted and we shift our entire focus to Europe with 7 new costumers per quarter in 2012 and raising to 9 per quarter in 2013 and 11 per quarter in 1014 totalling 143 costumers by the end of 2014. This adds up to an estimate of 6-8 mio DKK annually, starting from 2011.

We want to sell our product, contacting the potential customers directly and furthermore have a well developed website with information about the product.

We think that with the predicted revenue, the business do have lots of potential. We need to move fast though. We are in a fast moving and trend oriented market and therefore it is important to be on the forefront of things. So the earlier we start developing our product the better we stand. In our business plan we have a release date of our first product in the 3rd quarter of 2010, but that is based on the assumption that we start developing in January 2010. This time was chosen to ease the overview of the time plan for our company. If we start developing immediately we will launch the fully developed product with our first customer in the 1st quarter of 2010.

Concluding from the budget, the goals, the risks and the overall plan for our business, we would say that it is a good idea to start up MapC, and that we can do so without fear of bankruptcy or loosing anything else than the time invested along with 17,500 DKK. We can start up MapC and expect it to be a good and profitable business.

3. The background

The technology

When GPS hardware became available in phones less than 10 years ago, many people began to talk about a huge potential market for location based services[1]. Some estimates were made as to when GPS would be a normal feature in a phone, and they where quickly left behind in the dust when reality rushed by them, as it turned out their estimates was extremely conservative, and not on par with the speed of the real [2]world. As the cost of GPS chips goes below $3 and their power requirements go very low, it will not be long before every phone always has a turned on GPS chip inside [3]them.

The GPS devices themselves are not very interesting without a map. And there is one map that rules them all, and has changed the game in map services and location based information: Google Maps. Some people estimate that we have only seen the top of the iceberg when it comes to what you can use Google Maps for, especially when combined with location based services[4].

The idea

When we met as a group at the university at the entrepeneurship course, we came up with a range of different business ideas. With the obvious huge market potential and exciting new opertunities, and a chance to "ride the tiger" with Google Maps and GPS everywhere, we thought: let's be a part of it.

One thing is to read about market potential, and to have the notion that there are a lot of money to be made with businesses based on these technologies, another thing is to come up with actual products. We had a set of initial ideas, but not any specific customers. One of the ideas was surveillance and routing for bike messengers, and so we contacted Budstikken and arranged a meeting with them. We quickly realised that not only was this a good idea for bike messengers, this could actually ease implementation, ease daily use and decrease cost by a large factor for all kinds of delivery companies wanting GPS surveillance and the benefits that follows from it.

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1. http://www.pcworld.com/article/55986/will_big_brother_track_you_by_cell_phone.html
2. http://news.softpedia.com/news/GPS-Enabled-Phones-to-See-Leveraged-Traction-in-the-Future-102626.shtml
3. http://www.earthtimes.org/articles/show/air-semiconductor-samples-1ma-always-on-gps-receiver,740533.shtml
http://www.zdnetasia.com/news/communications/0,39044192,62039218,00.htm
4. http://www.abiresearch.com/press/
1189-Location+Based+Platforms+and+Infrastructure+Licensing+Revenues+Will+reach+%242.2+billion+by+20
http://searchengineland.com/google-maps-features-market-share-rising-14932

The people

In our group we all have a background as Computer Science students, and as such we all have the skills for developing the software solution that lies at the core of our product. We also all have a common interest in entrepreneurship - we met each other at the optional entrepreneurship course 2009 at Copenhagen University. Our CV's can be found in the appendix[15.2].

4. The table of contents

5. The goals of the business

Overall the immediate goal of our business is to deliver a better functioning, eaiser to use, easier to implement and cheaper alternative of GPS survalaince to our customers. Better, easier and cheaper when compared to other current solutions. The long term goal of our business is to expand into the huge future market of location based services.
The order, of the listed goals, reflects the priority.

Personal goals

By starting our own business, one of the more important goals for all five of us is to work with something we really enjoy. As mentioned we met at an entrepreneurship course, hence we are all curious about business startup and in that way of life.

Since we are all rather young and we're all currently under education, we very much agree that we'd rather avoid committing ourself to a big economical dependency. Hence we will aim to start up the business by utilizing the resources we have at hand already, namely our immediate skills in computer science and perhaps also our flexible work hours. If we should invest in something it will be in completing the group of people with some supplementary expertise, maybe we would search for a business student or someone with more profound sales experience either to employ later or as a sixth partner.

Each of us has listed what our goals would be for entering this particular business. What seemed to overlap was our wish to work within our field of interest and the fact that we could see that there would be room for us all to explore the different possibilities in being part of our own independent business.

Also we have agreed that it is important for us to uphold these two basic values towards our customers:
- We value a sound product. It should be a well functioning product that strives to live up to our customers needs, and hence create value for our customers.
- We value giving our customers a good service.

Business goals

- We aim to have 63 customers in the first 3 years, resulting in an income on system start up of approximately 12 mio DKK. After 5 years this should be around 163, result approximately 25 mio DKK. We estimate that each of these customers, will have a median of 50 mobile phone licenses, giving us a yearly income, on licenses alone on 6.3 mio DKK and after 5 years 16.3 mio DKK.

- We aim towards having the best functioning courier mapping and tracking system for delivery companies. First objective is to make a product that is in particular suitable for bike messengers.
- We aim at being the market leader within our niche in 5 years. By leader we mean having the highest amount of customers in our market, and to be present as a potential solution whenever a possible new customer needs a tracking system.
- We aim to improve our product of upgrade it with new functionality to our existing customers, for an additional fee. This will help us ensure a competitive advantage in a fast moving market.
- After we are established we will expand to other types of business, that has a similar need for tracking.

6. Selection of corporate form

In Denmark there exists four major types of corporate forms – Personally Owned Company, Partnership Company, private limited company (ApS) and limited company (A/S). We have chosen to only focus at the Partnership Company and the private limited company (ApS), since they best apply to our situation. The Partnership Company is the best suited for us in the beginning since we do not want to be dependent on investors from the beginning, and since we do not have many expenses in the beginning, we are as partners able to invest the start-up money ourselves. We will be a group of 5-6 people working together on our project, and we will of course set up share holder agreements between us to protect our common interests. After our first sale in the 3 Quarter of 2010, we will use some of the money to establish our company as a private limited company (ApS). This is done because after that time we will work our way into the market with more expenses to follow. and we want to protect ourselves from a possible personal bankruptcy. A bankruptcy could occur as a result of a lawsuit, should the product not work as intended or as a decrease in income.

7. The organization

In the startup phase we aim to fill the most immediate functions of the organization ourself, we have divided us roughly into the functions that each of us have the most experience with and that we have shown interest in working within [see our personal cv's in the appendix 15.2]. Looking at our competence graph bellow however we realize that we wish to strenghten our team in particular the sales post that is of cause a very important part of our business.
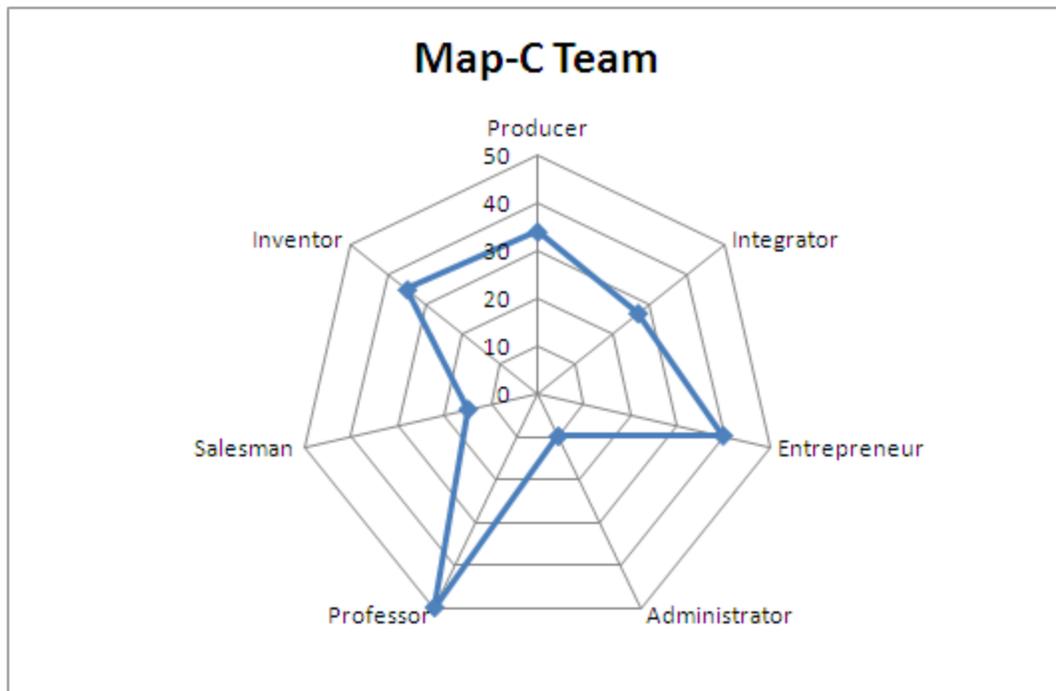
Finances and bookkeeping: Caroline, has experience working at an accountant, as well as she has taken courses within business economics. experience working at an accountant, as well as she has taken courses within business economics.

Sales, marketing and reasearch: Kemal and Anders. Anders has experience as a salesman for TDC and an ever lasting hunger for knowledge on what is going to be the next big thing in the technology driven markets. Kemal has studied courses at the university relevant for business administration, management and organization as well as micro/macro economics.

Development: All five of us, with emphasize on Brian, Katrine and Anders. Brian has extensive experience in systemdevelopment and integration to already existing systems. Katrine has in experience in developing user friendly interfaces, as well as system development and project planning. Anders has experience with distributed systems and the Google Maps api.

In 5 years we imagine a business structure that looks more like the model in appendix 15.1

8 Business management

MapC will be founded by 5 Computer Science students, one from The Kadir Has University, Istanbul, Turkey and 4 from The University of Copenhagen. The Board of the company will consist of the 5 of us, who are also the partners. Possibly a business student from CBS could join us.

Finances

We intend to use our budget as a starting point, and then when we begin to see results in our sales department, we will of course be making adjustments to the budget so as to reflect the situation. We intend to use the aid of an accountant-friend to check our finances and accounts, and to ensure the health of the company. When we reach the point in time when we start making a lot of money and transfer our company to an ApS, we might need to use some money to hire an accountant company, but so far we will use the aid of friends.

Project and production

We will be using our own competence as computer science students with relevant work experience to ensure that our product lives up to the demand of the costumers, as well as the feedback from our first costumer. We might also ask friends and family to try our product in the test fase, to make sure it is also easy to use for people not used to IT.

Cooperation

From the start it will only be the five board members working together on the project, and therefore the cooperation will be through meetings and joined programming. When we begin to hire people to run our company, we will ensure that we have monthly (possibly more often) meetings with the director, and the developers in the company, so as to make sure that they are working to our advantage. It might also be that we will actually hire ourselves as some of the key personnel in the business, and we will probably never be able to completely stop working for the company, but do some work as consultants.

The Initiator group

The Initiator group consists of five people well educated in computer programming, testing etc., and we find that the experience in that area is enough. One of the members have worked at different accounting companies helping with accounts etc., and knows some about the financiel aspect, and the rest will be provided by an accountant friend. A few of us have a background in business, and can possibly provide some good insights in the art of marketing, and what is required to help a company expand etc. We also have some lawyer friends and we feel that we will be able to handle the work in the business at the beginning. When sales start picking up, we are however aware that we need some more competence, and have decided that we need both a CEO (with experience in running a small business), and a sales person, who can ensure that we keep finding new costumers.

8. Facilities

Since our product is software and therefore is relatively easy to manufacture, since all needed is a computer and possibly a server, we do not have any physical facilities to aquire. We have agreed to use our own computers and server, and only invest in 4 mobile phones for testing the software. The phones will be paid by an initial investment from us.
If we do need facilities for meeting potential customers, we will take advantage of DIKU for meetings etc.

9. Product description

Technology

Product description

The product is a complete positioning and tracking system, most probably used with delivery companies. It will give the capability too
- Track employees position at any given time
- Calculate optimal routing schemes, also on the fly as new orders come in.
- Be used as documentation for delivery or attempts at delivery
- Run out simple and relevant statistics about the delivery patterns.
- Supervise the system from one or more planing centrals where you can also visually on a map see the positioning of the tracked units.

The technology is based on Google Maps and normal mobile phones, either with or without GPS functionality.

The system consists of a number of mobile phones with a small program installed. These calculate their own position either using built in GPS (available in many even cheaper mobile phones) or by triangulation to mobile phone antennas (this will reduce accuracy somewhat, but depending on the use scenario, it can be a viable solution). Then it sends the data via whatever data protocol the phone is using, over the internet to our system installed at the customers company.

Our system will then be able to extract these positions in real-time and plot them using Google Maps for visual reference.
Further we are able to make the calculation and logging of data needed to obtain optimised routing, safe positioning history, make statistics and even, if the customer has special needs, satisfy those.

The system can be integrated completely with current systems at the customer or it can be installed as a stand alone system.

Value creation

The value this creates for the customer is quite clear. Mostly a delivery company has to be able to deliver their goods as fast and reliable as possible. Also they want to utilize the time of each employee to the highest possible degree, meaning that they want to avoid them having to wait for new orders and minimise the travelling time to a client pick-up. In order to do this they have to make routes that the employees run and again in order to efficiently make these routes, they have to know where the employees are currently.
This is especially important when new orders come in during the day, and the central is not sure how far along their employees are.
It is easy to imaging that the central send a overbooked employee to a new pick-up close to his pre set route, while he is still a long way or maybe already passed that position. All the while a less busy employee happens to be closer to the pick-up having little planed. It is also easy to see that a "navigator" with an overview of the exact location of every courier out in the field, can make a much better decision about which courier should take the newly arrived job, than the couriers themselves can, because they are not aware of the other courier's current location.
Further travelling to some address to find that there is no answer is wasted time, unless it can be documented to the client that the address was visited at that time and the delivery company should still get paid.
All of these points are strong motivation for delivery companies to get a tracking system and therefore there are several such solution already on the market. Most however is expensive and sometimes performing very poorly and they are not always practical to use for the couriers. We believe our product to be superior compared to most other solutions because the foundation is already highly developed industries (Google Maps, and ever smarter mobile phones).

Competitive advantages

GPS technology is well known by everybody and many use the advantages of this global positioning system on a daily basis. As a result of this companies with the need to track their employees, like delivery companies, often invest in having a good and stable full GPS system for their cars or bikes.
However such systems are quite expensive for several reasons, some listed here:
1. They do not generally conform to a standard of communication. Many use the mobile phone net (gms/gprs) to broadcast the data they gather, but most systems have developed their own protocol on this communication platform.
2. They require the installation of often expensive hardware. It tends to be expensive because the manufacturer wants to make their own hardware platform and thereby forcing the customer to buy hardware only from them as it is the only hardware compatible.
3. Seeing as many manufacturers only use their own hardware, there are often issues with repairs and ordering time. The manufacturer has to be able to handle this infrastructure on top of their normal business.
4. When you produce your own hardware it becomes cheaper and more fault tolerant depending on how many units you produce. Cheaper is self evident with many units and more fault tolerant because of the larger base of experience and proportional more

money that can go into development because of the large customer base. This is a thing we see quite clearly in mobile phone development. As most current manufacturers make their own hardware, they work in smaller productions and this often compromises fault safety, again leading to more expensive and slow repairs.

5. The production of the software system itself is most often also made from scratch.
6. In order to keep unit price down manufacturers often choose to go with one or very few unit models, with focus on the bigger market (being cars), and sometimes even built into the car. Therefore the adaptation to bike riders or temporary drivers are often somewhat impractical.

Our tracking system keeps a low cost price by utilizing the good work made by others.

1. By using the positioning protocol of Google Maps we get a good working protocol that is still being improved and implemented on more devices in the future, simply handed to us.
2. The hardware platform is mobile phones either with or without GPS functionality. Thereby the unit price can be kept comparably low and companies can even offer phones for free for their employees - a cheap personal benefit.
3. The infrastructure of buying and repairing mobile phones is well known and efficient since it is dealing with high consumer demands already.
4. Mobile phones are becoming more and more fault tolerant as consumers are highly dependent on them and wont accept faulty equipment. There are even main stream series especially development for high durability.
5. The central software system will to a high degree be based on the Google Maps api, thereby forming a strong platform for further development, rather than developing it all.
6. Adaptation is something highly taken care of in the mobile phone industry already. And it is hard to imagine a practical work situation where carrying a mobile phone would be a major hazel. Also temporary drivers can easily be handled by lending out these small devices.

In conclusion our product is better than most common full GPS systems ==mainly because of price== but also because of fault tolerance, hardware infrastructure and high adaptation. The later three points again becoming a cash gain for the customer as less time is used on faulty equipment, reordering or repairing and finding practical solutions where hardware adaptation is lacking.

We have seen from our interview with Budstikken (See appendix 15.4) that many of the problems mentioned above has been problems that they indeed have and further they suffered under the problems in a very high degree.

Furthermore the aspect of the phone also being able to work as a phone is a bonus on top of the others. This advantage could be used in several ways. Providing free mobile phones for your employees, using it as basis for communication or using employees own phones. What the choice would be, would depend greatly on the policy of the company in question, but it is a potentially strong extra advantage.

Law

Since our product is software it is difficult, and practically impossible to gain a patent on it, since every little component has already been used by other people. We are also in our product using some of Google's technology, and therefore there is no reason to even try to get the product patented.

We could register the name MapC as a trademark, since this would give us some security, that someone would not try and make almost the same product with the same name, and thereby possibly undermine our business. This is why we have decided to register our name as a trademark, since it is fairly cheap, and do provide some protection or at least a chance for retribution if someone decides to use the same name, within the same classifications.

In order to use Google Maps for realtime tracking within a company, the company has to purchase a license for that. The product from Google is called Google Enterprise and the cost is set from 10,000 $ a year scaling with users. A typical customer would at maximum have a expense of 15,000 $ a year on this license. This licensing is a agreement between the customer and Google, but we will of course help our customer in facilitating this.

We do not foresee any accidents occurring as a result of our product, since it is merely some software installed on a computer, and therefore we do not need to take out any insurance to cover the non-existing risk.

In a worst case scenario we might risk that our product doesn't work satisfactory, or our customer might not agree with us whether or not the product lives up to our business agreements, and hence they will sue us. But before we get to this point our company have transferred to an Aps and a prosecution might not be worth much for the customer.

Product development

Development strategy

We start out developing a core product, that has the before mentioned set of base functionalities. We realize that this first set of core functionality will likely never reach beyond a best-guess of customer needs. Hence we plan to develop the product further. We plan to initiate development via two different approaches, from customer customization and from collected development ideas (whether they arise from customer brainstorms, employee experiences or developer ideas).

Development from customizations: We guess that our customers often would ask us to make some different sort of customization for their exact solutions. Other than the fact that we wish to make additional income on these customizations, we also hope that they occasionally will offer an opportunity to optimize our core product. We estimate that this will over time, develop the system towards the needs of a broader group of customers and make it more sell-able to customers with similar demands - maybe even customers in entirely different business areas. Of course we will add these improvements to the product in agreement with the customers that has inspired the ideas. Depending on the sort of development/idea, they might request some sort of

compensation, in that case it must be handled from case to case. However, since we will overall only add those improvements to the core product that is significantly improving it, it can only strengthen the overall value in the product and our company . In particular we imagine that the best-courier-guesser and the statistical module will benefit from this strategy.

Development from collected ideas: We wish to collect good ideas. Whenever we hear an idea from a customer or we get an idea ourself, wether it is an idea on the current product or an idea on how we could use our technology in other ways. Everybody involved in the business is encouraged to write it down on a shared idea document, initially we have created a Google-group with a shared idea document in it. Every half year the employees meet up for a 2-3 day idea-evaluation-session. This will then be the start of the next half year development plan, which the development team will make following the session.

The first year

First phase will be getting the core product developed and get it released to the first customer. In the first half year, after release, we intend to only add functionality to the product using the customization strategy and meanwhile build up the first idea sheet. Other than that we will in the beginning only edit the system to correct errors or optimize existing functionality. Since we already have identified a potential first customer, we imagine that we from the beginning might add some extra functionality they wish for us to make for them. After this first stabilization phase we will have our first idea-evaluation-session and in the nature of the idea-strategy, it might lead to the next version of our product or it might lead to a new type of product with a new customer group in mind.

Potential

We imagine that the development strategies will lead us down a couple of different paths:
- It might strengthen the core product itself and give us a potentially better and better version of the system
- We might benefit from splitting out the core to a line of similar products, either more or less advanced or possibly more or less shaped to a certain subgroup of our customers.
- It might lead us to an entirely new type of product based on the same technology.

Since the technology of our system is to some extend trend based, we find it hard to predict what the market for real time mapping might look like in even a year. We feel that the flexibility in continuous idea development and improving will strengthen us more than to plan an exact line of products we wish to build. Therefore our development plan will not be specified besides the overall strategy beyond this first year plan.

We have a few ideas at present that we might wish to pursue to get a feel of the markets. Some examples from our pool of ideas:
- There might be a possible market for tracking on maps within other types of deliveries.

- We could use the system as a cheap and modern alternative to check in/check out of hotels. Or we could make a version to check in/out of work for companies with employees on-the-move.
- Another option is to remove the tracking part of the system to, and sell it to smaller-medium sized companies as a cheap alternative to mapping and routing suggestions to their sub departments, either mobile phone maps or as a web page solution.

We believe this development strategy will lead us to our business goals, and give us a good standing with a competitive edge in the market.

Compared to goals

We have listed both personal and business goals for the future MapC. The development strategy meets both our personal wish to work with interesting new ideas within our field and it is also a rather inexpensive startup strategy. Compared to our business goals, that is partly to have the best product within our niche it is very important that we keep adjusting our solution according to customer needs and the outlined development strategy should accommodate this.

Production

Production Goals

From a production perspective the only development needed is software. There is hardware in the system in form of the mobile phones, the pc's and potential projectors and other A/V equipment. But these will all be "of the rack" products and other than time used to become familiar with the products we will not use development time on hardware. In our time schedules, for implementing the solution at customers, we will take into account that time migth be needed to work with new hardware.

There are 4 major programing areas that need to be completed and each will in the following be handled seperately and summed up in the end of this section.
- Phone client software
- Tracking organiser software for the PC's
- Server services for tracking and to coordinate the pc's
- Integration to existing customer systems

Phone Client Software

This is the program installed on the individual mobile phone in order to track them real time. The program will have to abide to the following requirements.
- It has to continously send it's coordinates to the central server
- It has to run in the background of the phone
- A feature must exist to make sure that the application is actually up and running.
- It must be able to run on many mobile phone platforms.

Developmentwise this is a rather resource demanding part of the system. However this is being very much easier with new development as most new telephones with GPS facility are also running a general purpose operating system. If we cover development of the application to just Symbion, Blackberrie and windows mobile OS, we cover about 80% of the current generel purpose OS cell phone market, and we have not so far found a single GPS cell phone not running a general purpose OS.

Further if we make a implementation using the Java runtime environment for cell phones all of the OS mentioned above plus serveral others will be able to run the application directly also. Thus allowing us to cover a huge market of phones by implementing on the Java platform.

There are even under the java platform however sometimes differences between phones. These are most often due to the different display capacities of cell phones. For our application this is not a problem as we do not rely of the graphical interface on the cell phone itself.
The only other major difference from phone to phone we expect is how they utilize the GPS chip, and even that is for most phones covered in the java classlibrary.

Basicly, we have to check for new phone models that the program we have written also works, and if not do some changes. But we expect these to be small for the reasons mentioned above.

Tracking organiser software

This is the software installed on a number of pc's at the customer. These will allow the visual tracking of the mobile phones, suggest routing and generally be the user interface to the system. The core requirements are.
- Easy userinterface
- Being able to visually track all delivery employees
- Being able to visually show the workload status on each one
- Being able to get suggested routing advice
- Being able to accept the suggested or override it manually
- Once routing is made the employee will automatically receive the new information over his mobile phone
- It has to be a safe distributed system so that several people can work on new routes at it concurrently

This program has to be developed from scratch by us and since it is the interface to the end user, it will probably also be the part of the system that needs the most maintenance. We can get the visual maps part greatly simplified as Google Maps can be applied there almost directly, but GUI designs, protocols and algorithms we have to do ourself.

Server services

The entire system is in essence a distributed one and using a central internet server to coordinate the system parts makes for a easy and time tested infrastructure in this kind of systems.

We need server services to do the following

- Coordinate the organiser software to allow concurrent planing of routes.
- Safe all position and routing history
- Calculate valueable statistics
- Use Google Maps to plot the positions in realtime

Many of these services could be done locally on the pc software but with each of them there are reasons to rather make them server based.

- The coordination is simply easier to implement on a client server system than a peer to peer distributed system
- It makes sense to safe history in a central position rather than on each seperate client
- By hosting statitics centraly these can be accesed by other sources than just the application software, e.g. a reporting website.

Integration to existing customer systems

While this is not actually a single assignment that we do once and roll out to all customers, it will be a permanent task fitted to every customer that wants it, and it will also be a integral part of the product we are offering.

Therefore we need to calculate resources to get this job done also, even though the requirements of such integrations will vary heavily from customer to customer.

Sum up of production goals

We need to make

- A solution of phone client is simple and very not development heavy, though it needs to support several OS'
- A strong user interface and distributed application for installations on pc's
- A server solution to coordinate the distributed system
- A development team strong enough to handle projects of integration with existing system. Even though these projects will vary in size and complexity.
- We need to further evolve, maintain and develop on all aspects as time progresses.

Resources

Our Primary resources is ourself and our capabilities. Luckily these suit what we need during production quite well.

We are 5 Computer Science student with at least one of us having skills and experience in all of the following areas:

- Statistics and modeling
- User interface design and implementation
- Graphical Design
- Distributed systems through central server
- General commercial application development
- Deployment and maintenance of applications

All points in this list are critical main aspects in the development of the system described.

Timetable

The timetable of the development is in the appendix 15.3

Overall the expect the development of the system to take about 24 weeks. Further we would will use out first customer as a Beta tester, and expect additional development in the first phases of use. Counting 1-2 months.

Budget

The initial development of the system is calculated as being done by all 5 of us while still working and studying. Hence we will work unpaid for that period and the development costs will be low.
The initial work can also be done on our private pc's and applications, thus not leading to higher costs. If no other facilities can be found, work will be performed individually or at DIKU or privately in our homes.
We need a selection of mobile phones to do basic tests on. These has a cost of around 2,500 DKK and we need about 4 to cover main operating systems which means 10,000 DKK.
We need a webserver for hosting the server services, but own a computer that can be set up as server environment.
When the product is complete and selling, we need to have about 1-2 developers at a price at around 35,000 DKK a month each.
Further we may need more developers hired on a project basis working on system integration.

Packaging

As our product will be software on the mobile phones and pc's there will be none or very little packaging involved. Software will often either be installed by us or downloaded from our server. When looking at the mobile phones themselves, they already come with suitable packaging from the mobile phone manufactor.

Supervision of quality standards

There are 5 parts that need to be of a certain quality.
1. The mobile phones
2. Our software
3. Google's map services
4. The pc's
5. Possible A/V equipment

As of all hardware product that we don't produce ourself, we will refer to the quality of the manufacturer. mobile phones, pc's and A/V equipment all alike are normally products for direct sale to picky end users, and have good experience in convincing people that they are functional.

Our own software is the only one of these parts we can influence directly ourself. Customer references will be importent as well as our own ability to find and correct faults should those arise. We are also, as said above, keeping development resources to maintain the product.

As for Google's map services, our belive is that customers will be familiar with Google and the wide area of high quality internet services that they offer. Especially many companies allready use Google Maps as a vital aspect in homepages.

All cases where quality is not up to standards, wether in hardware, software or in Google's services, we expect will be picked up by our support and acted upon by management if the situation requires action.

Assembly of machinery

We need no special machinery to get started on production. Only a few development computers and a few mobile phones to sanity check our development. In fact for mobile phones we can even use publicly available virtual simulator running on our development computers until testphase.

Logistics

Hardware availability
Our sub-supplier would be cell phone companies, computer selling companies and A/V equipment companies. And we are not going to be dependent on any particular sub-supplier as the system will work on most common platforms. Our biggest dependency could occur if a customer wants to use a particular cell phone producer.

As we don't rely heavily on any sub-supplier in particular, we are also stronger set against potentially high delivery times. Because of the popularity of espcially brand new cell phones models, shortage of supply can be a problem, if customers expect that we can deliver these new models. A example of this is the iPhone that was close to impossible to get due it very high demand after the release.

Also the same situation can occur with older phone models, as phones go out of production in a relative short timespan. However discontinued models are almost always made obsolute by new models with similar and often better functionality for about the same unit price.

Production workflow

After the initial development of the system and work carried out while in test at the first customer the development workflow will be following this general plan, performed by the developers and supporters. It will be prioritized from the top down.

1. Client cases that is serverly compromising the functionality of the system is to be resolved with highest priority. These cases either start at our supporters when the custormer contacts us, or is already found during installation of the system.
2. Frequent support cases that can be resolved through moderate development effort should be resolved next. This is a job made in cooperation between support and development
3. Adding and improving features of the existing system on the basis described in product development.
4. Lastly resolving client cases that do not serverly impact the functionality of the system.

This is the productivity workflow after the system is up and running and being sold on a normal basis. On top of this there is the job of developing integration to existing systems at the customer. In periods where we have big integration projects like that, we will only priorities case 1. of the above.

10. Market description

Most of the market description is composed by qualified guesses, online research and estimates. We have one actual customer, Budstikken, that we can use for real world examples.

The geographical markets

We will start the company in Copenhagen, Denmark. But there is much room for expansion: We anticipate that nearly every city in the world, of the same size or larger than Copenhagen will have companies like Budstikken, that will benefit from our product. In Copenhagen we currently have two such companies.
According to wikipedia[5] delivering companies offering bike messengers as part of their service are prevalent in Northern Europe, North America, Japan, New Zeeland and Australia.
But we don't have to limit ourselves to couriers offering the service of bike messengers. All companies with couriers could benefit from our product. As couriers exists everywhere our geographical market is everywhere, where a mobile phone can reach the network of a phone carrier.

According to a population survey[6], there are nearly 500 cities in the world with a population similar to or larger than Copenhagen. We cannot expect to be in all of them, but considering that there are many more cities in the world slightly smaller than Copenhagen, with carrier companies like Budstikken, I think it is fair to say that 500 customers world wide is a conservative and not unrealistic estimate. But again there's no need to limit our selves to delivery companies like Budstikken. All kinds of couriers could be our customers: couriers delivering parcels and letters, moving companies, taxi companies, land transport companies (here we are thinking of big trucks delivering large amounts of goods) and probably many more. It is very difficult to obtain a precise number of potential customers, but in Europe alone our potential

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5. http://en.wikipedia.org/wiki/Bike_messenger#cite_note-3
6. http://www.citypopulation.de/world/Agglomerations.html

customer base ads up to be a lot bigger than the amount of customers we expect our company to have after 5 years. This means that there should be room for both us, competitors and cooperators.

Trading obstacles

Bike messenger companies has been shrinking the last couple of years, largely because of the internet[7]. We believe though, that the market will find its balance, and that bike messenger companies will have their own niche in all big cities for many years ahead, but again we do not need to limit ourselves to bike messenger companies.
There are competitors in the market, and so we have to deliver a better and cheaper product to overcome them, be bought by one of them or team up with one of them.
In some countries there might be privacy laws that hinders the kind of surveillance a costumer wants.

The customers

The customers are small to large delivery companies. Both companies that already have GPS-survailance of their couriers and companies that do not have it yet. Specifically we can target much smaller companies than our competitors' because our solution is a lot cheaper and more cost effective in use, than the competitors solution.
The decision maker in such companies will often be the CEO or CTO if they have one.
We guess that delivery companies can see that it is smart to track their couriers real time, and therefore wants this ability. CTO's in delivery companies probably do not know a lot about technology, and so they will probably look more on the price tag of the product, and if we can include specific features that they might want or if these features are included in the basic features of the product.

Why would they buy

The biggest trigger is definate the price compared to current solutions. What might be just as big a trigger is the ease of implementation and repair: get a mobile phone with GPS, install the software (could be as easy as reciving an sms and say yes when the phone ask if it should install). It works. If the mobile phone breaks: grab a new one from your storage or nearest phone shop, and your up and running again. No need to wait for the repair. And of course they buy because they can see a big enough advantage in tracking their couriers in real time.

Risks

We guess that the price advantage and ease of implementation are so huge advantages that companies with a size like Budstikken are willing to take the risk of a failure.
If we initially sell the product, but later have to close the company, the customers can continue to use the system implemented. But if errors occur, the system breaks down or other accidents, they

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7. http://www.wired.com/culture/lifestyle/news/2008/07/bikemessengers

will probably have to implement a new system. But then again: the cheap and easy implementation does not make this a big loss for a customer like Budstikken.

The competitors

Budstikken have never heard of or thought of using cell-phones for cheap GPS-tracking of their couriers. Since they are one of the largest Danish bike messenger companies and they are owned by Post Danmark, we estimate that there aren't any competitors in Denmark with the same idea as ours - at least not anyone with a business and a product to sell yet. But there are of course competitors using other and more expensive hardware than our solution to obtain the same service as us. We, however, know nearly nothing of them. One of them have sold their product to budstikken.
Location based services are the next big thing, according to a lot of experts and foreseers in the market. So there's no doubt that we will not be the only company out there doing this. But as far as we know, nobody has combined GPS-enabled mobile phones with couriers yet.
As the hardware for this technology gets cheaper and cheaper and people begin to realise the endless possibilities you get from combining location, routing and statistic data with maps, theres no doubt that companies in this field will begin to feel threatened. At least we think they should. On the other hand the big players in this market area might be on the lookout for small companies with ideas similar to ours, so they can buy these companies and be on the forefront of the technology. There's probably rich oppertunities for partnerships to be made.

Trends

Our product is very much based on a new trend of location based services for everyone, made possible by the ever cheaper hardware available for mobile phones and easy online access from everywhere. Some companies[endomondo] are beginning to combine the use of GPS enabled mobile phones together with maps and other services for tracking people or things people/ companies own. But we don't know of any players on the market that earns money on this yet, but everyone seems to agree, that this is one of the "next big things"ne of the "next big things" - where money will be made. On the other hand there are allready many companies out there making money on similar services, but many of them with expensive and soon to be-outdated hardware.
Our product can be further developed and a lot of extra services can be apllied in the future. We are also very competitive when it comes to following the technological development, because we don't need to rely on a specific set of hardware. So when a new mobile phone comes out with longer battery life and better GPS-chips we can start using these almost imediately.

11. The marketing plan

Firstly because of potential existing costumers such as Budstikken, our business solution for delivery companies will focus on the market in Denmark as starting point. Due to the fact that we are living in Denmark, we have opportunity to easily touch customers and care about their needs.

In regards to maintenance, it will be necessary to give better service to our customers immediately at their jobs. Even if we do not have enough experience about business relationships, we can effortlessly handle relationships in danish culture.

All size of delivery companies which concern their position of couriers to manage and operate them effectively are our potential customer groups. One of basic characteristics of delivery companies that we will sell our product to, is having the need to reduce their expenditure of tracking couriers. Nature of market is also another factor to willingness of reducing expenditure. If there is a competitive market among delivery companies, there will be opportunity to take advantage when reducing the price of their service for their costumers. Same thing happens in less competitive market, if they reduce their expenditure, they can get more profit in their business.

At the beginning we will deploy direct selling strategy in our business model. We will find our potential customers and explain benefits of our service and product them in terms of price advantage, usability, robustness and etc. After selling our product to few customers and acquiring good reputation from them, we can advertise our product easily to new customers.

In Business-to-Business supply chain to reduce our marketing expenditures, we will use tools of direct selling such as personal presentation and explanation of product. Also well-developed web site to access necessary information related to our service and product will be available to take attraction of potential customer. So explaining the benefits of our product rather than existing old systems clearly to business customers is more significant in early stages.

In sense of loyalty business model, reputation acquisition is crucial from primary customers to reach new customers, we are going to target specific subset of market which is firstly bike messengers of delivery companies, So for big software companies this market segment is too small in order to serve them profitably. In that case our company plan to meet the expectation of customers such as quality of product and service reliably.
There is a market niche. Because of improvement of technology, every single mobile phone started to have GPS facilitiy. It changes the market environment. We have opportunity to produce low price solution for delivery companies. Nevertheless, the final product quality is not dependant on the low price of supply, it is more associated with the specific needs of bike messengers.

The software cost is 50,000 DKK with installation to computer costing 3,000 DKK per computer. Installation on mobile phone cost 2,000 DKK. Phone and e-mail service will be included in the price for 2 years, where as on-site support costs 500 DKK per hour.
We will sell a package which is comprised of software and three computer installations, installation of 50 mobile phone and phone and e-mail service for 2 years. Package price is totally 190,000 DKK.
Costs of computer hardware, cell phones, data tranfer subscriptions and Google Enterprise licensing is paid by the customer untop of our software price. Typically adding up to around 180,000 DKK in initial hardware investment and a anual fee of around 100,000 DKK for data traffic and Google Enterprise.

12. Finances

In initial investments we have merely set aside 10,000 DKK for the purchase of four telephones usable for our project for testing and experimenting and 7,500 DKK for registering our product name MapC as a trademark in Europe. We don't calculate with more money since our company is going to start as a spare time-project using our own server and computers for developing. We will work from home, and since our project does no cost money pr. item (software for computers), we do not use any materials to produce and therefore our costs pr. item is zero.

We calculate that we will make our first sale in the 3rd Quarter of 2010, and the price is specified as 190,000 DKK for the software itself, installation on 3 computers (additional computers 5,000 DKK per computer), and 50 mobile phones (additional phones 2,000 DKK per phone). In the price is also included 2 year service and support via telephone and email (1,000 DKK per month). We also offer on-site support at the price of 500 DKK/hour, which will yield additional income, not included in the budget.

From the 4th Quarter in 2010 we suspect that the support will be more than we can handle ourselves, and therefore we hire a supporter to help us. We expand our supporter-group through the years until we reach 5 supporters in 2014. We will offer the supporters a salary of 25,000 DKK a month. We will also need to hire 2 developers over time to keep the product up to date, and eventually expand the product portfolio, and they will get a salary of 35,000 DKK a month. From the 2nd Quarter 2011 we suspect that we might need to start doing something more for sales of our product (and maybe new items too), and therefore we hire a full time salesperson with a salary of 30,000 DKK per month. In the 3rd Quarter 2011 we hire a CEO to take of day-to-day business, since our company has now grown large, and he will need a salary of 40,000 DKK per month.

In the 2nd Quarter 2011 in addition to hiring the salesperson, we have also set aside funds for marketing, and when we hire the CEO we will also be leasing office space for our employees. Until now people have been working from home, and we have taken advantage of DIKU for meetings etc.

As for our income we have calculated that we start out by selling to our first costumer, and then just try the system out before selling it further. As can be seen in our market part in the budget we calculate on a year of selling the system in Denmark, and then we foresee that the market will be covered in Denmark, and will therefore only sell the product in the rest of Europe. We will already in the beginning also involve the European market, since we believe that we need to move fast with this product. When we start selling our product in both Denmark and Europe we realize that we might have to set aside money for travels, and we also calculate that we might need to lease a car, so our supporters can move around in Denmark to do on-site support. We have set aside 12,000 DKK for leasing of a car in the entire budget period, and the rest is set aside for travels abroad, diets etc.

As can be seen in our budget, we have a solid profit from our product, and since we are careful with our costs, it seems that our company have a healthy economy, and we do not see any chance of losing more than the initial 17,500 DKK planted in the company and the amount of time spent on the project.

Cash in Hand, end Quarter
Black: with financing. Grey: without financing
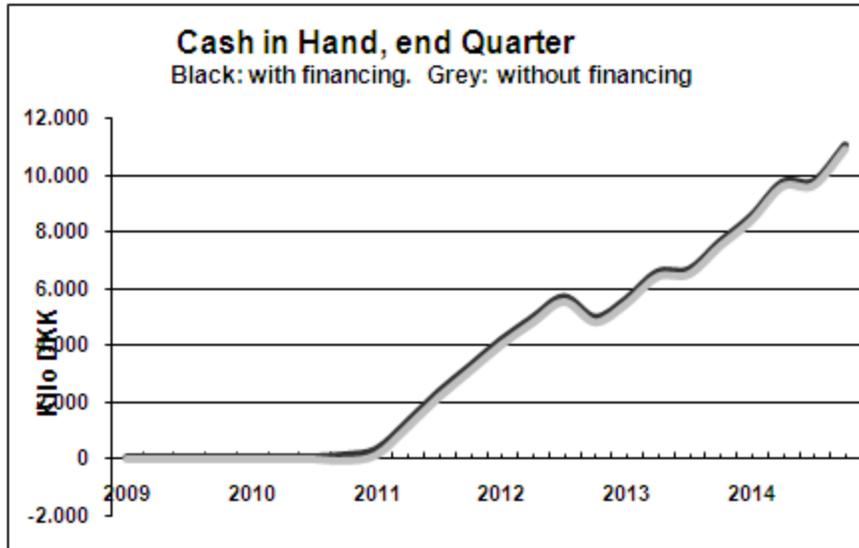
13. The financing plan

As have already been stated we have a very little start-up investment, since we do not have to buy equipment, and the product does not have to be produced by other suppliers. We need some mobile phones for testing and experimenting on, and this investment will be covered by ourselves as owners and investors. We are in the lucky position that we do not need to find external investors willing to invest money in our company, which make it more manageable to start with. This make the company more robust and with a larger possibility of actually surviving the start-up phase without going bankrupt before sales have even begun. When the need to make investments for hiring of personnel, renting office space and purcase of equipment arise, we will already have made a lot of money on sale of our product, and therefore our profit/loss yearly will still be very positive.

We can see in the summary sheet that our company's value in 2011 is at it's maximum, but when we quit the Danish market, it drops a little bit. After that however the value increases from year to year, and ends at a value of 37 mio DKK (se graph below).
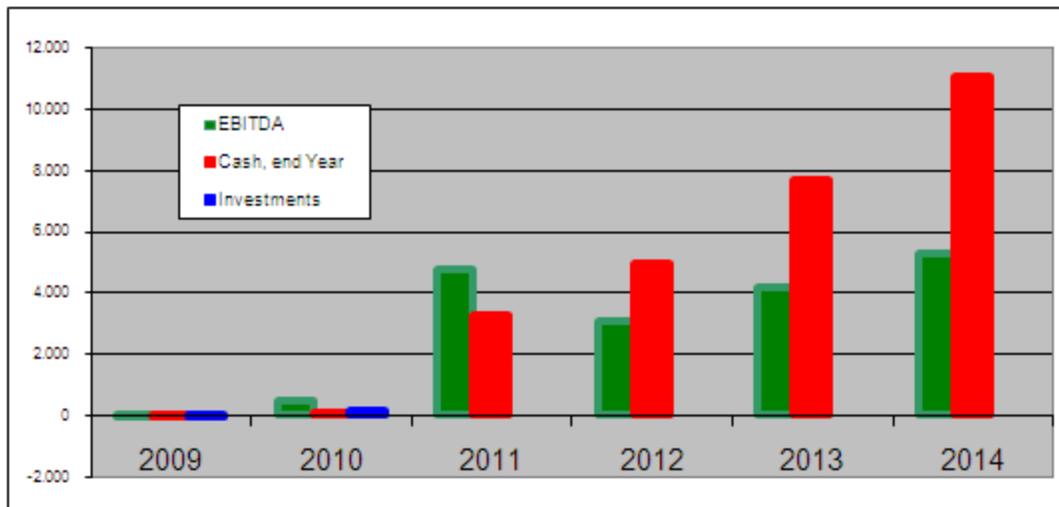
14. The sensitivity analysis

The budgets sensitivity can be summarized down to sales. Our entire business is built up on the fact that there is a lot of companies out here missing our product. We have searched the market and have found some companies who would really like to buy our product, but that there are more is an assumption we made.

We have made a worst-case budget, where it is possible to see that if sales goes down (indicated in market sheet), we can fire some people to keep costs down. It will be possible, since if sales do not pick up, or even decline, we will not need as many supporters, developers, and the sales person and the CEO will have to go, since they are not really performing optimally. What we see in the budget is that if we keep costs down, we will still be able to make money, but as can be seen in the summary sheet, our company will loose value, and we as investors and owners will not be able to withdraw any money for ourselves.

15. Appendices

15.1 Organization diagram five years from now

```
                    ┌─────────────────────────┐
                    │ Board                   │
                    │ (one or more of us might│
                    │ be represented)         │
                    └────────────┬────────────┘
                                 │
                    ┌────────────┴────────────┐
                    │ Director                │
                    │ (might be one of us)    │
                    └────────────┬────────────┘
                                 │
┌──────────────────────┐         │
│ Administration        │────────┤
│ (secretary function + │        │
│ bookeeping)           │        │
└──────────────────────┘        │
                                 │
         ┌───────────────────────┼───────────────────────┐
┌─────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│ Sales & Marketing│   │ Support             │   │ Development         │
│ 1 or 2 salesmen  │   │ (3-5, one of wich   │   │ (1-2 developers, might│
│                  │   │ might be a manager  │   │ consist of 1-2 of us)│
│                  │   │ function)           │   │                     │
└─────────────────┘   └─────────────────────┘   └─────────────────────┘
```
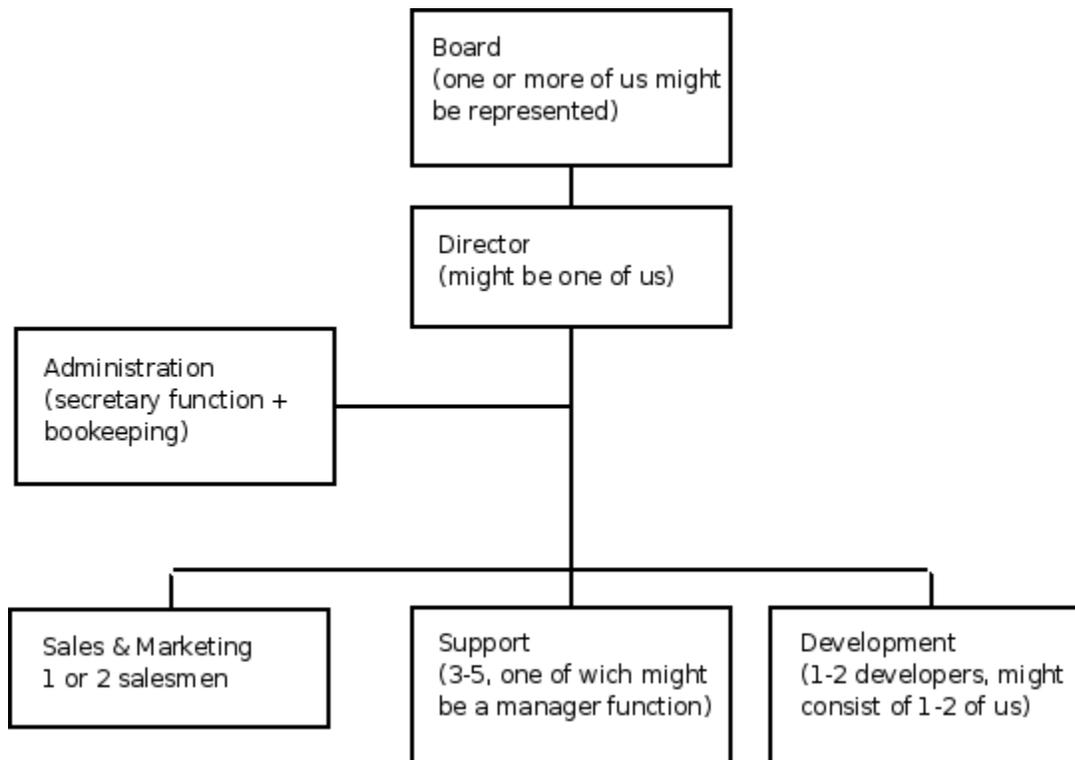
15.2 Resumes

Anders Iversen

Frankrigsgade 50, 302
2300 Copenhagen S
(+45) 31 20 91 20

Keywords

C++, python, distributed systems, Google Maps api, javascript, xml, php, MySql, Drupal (CMS), web development, digitization.

Employment History

2008 - 2009 webdeveloper
Borgerligtcentrum.dk and 3vv.dk
Webmaster and developer of the entire sites.

2002 - 2009
DBB (or NOTA from july 1sr 2009)
Digitizing the entire analog audio collection for the Danish national library for blind people (dbb.dk), and structuring the text of the library's books in xml documents.

2005-2007
Institute of Geology, University of Copenhagen
IT-supporter - everything from network structure, building PC's to repairing the printer.

1999-2000 + 2003-2004
TDC
Tele marketing salesman for TDC, selling subscribtions and equipment to the private- and SOHO customer segments.

Education

Currently a student on B.A. Computer Science
University of Copenhagen, Copenhagen Denmark

Brian Kristensen

Egilsgade 31b 1tv
2300 Copenhagen
(+45) 32 54 84 44

Keywords

C/C++/C#, Visual Basic, ML, Java, Javascript, Lua, .Net framework, sql, databases, distributed systems, networking, hardware platforms, windows programing, window embedded, application development, web application development, project development and management, system architecture

Employment History

2008 - 2009 Developer
InfoBoard A/S Copenhagen
Primarily vb.net, supervising systems, programing ad hoc, planing new system architecture and several projects

2006 - 2007 Student
DIKU Copenhagen
Changed field of study from Physics to Computer Science

2003 - 2005 Developer
InfoBoard A/S Copenhagen
Primarily vb.net, web programing in asp.net, programing ad hoc, implementing client software and several projects

2002 - 2003 IT staff
ManagersHotline Copenhagen
It Support, IT infrastructure setup, some web development

Education

Currently a student on B.A. Computer Science
University of Copenhagen, Copenhagen Denmark

Katrine Christiansen

Egilsgade 31b 1tv
2300 Copenhagen
(+45) 32 54 84 44

Keywords

C, C++, Java, Visual Basic, .Net, web design and development, project leader.

Employment History

2008 - 2009 webdeveloper
InfoBoard A/S Copenhagen
Development and design on a new version of their system administration.

2006 - 2008 webmaster
FolkeFerie.dk, Copenhagen
Implementation and maintainance of FolkeFerie.dks public website and worked with development team on their new online booking. The last year I was responsible for the web department.

2000 - 2007 webdesign
GastroCorner.dk and InfoBoard A/S, Copenhagen
Designed and created websites using HTML and/or CMS systems. Had a lot of customer relations, planning and executing the designs. Amongst other projects I made the design of our own portal GastroCorner.dk.

Education

Currently a student on B.A. Computer Science
University of Copenhagen, Copenhagen Denmark

Kemal Ozkavaf

Terrasserne 16,
2700 Copenhagen
(+45) 26 41 21 01

Keywords

Operations Research, Statistics, Algorithms, C, C++, Java

Employment History

2007 - 2009 Scientific Research Specialist
 Modelingand Simulation Research Center
Middle East Technical University, Ankara, Turkey

· develop distributed interactive simulation with run-time infrastructure (RTI)
· support implementation of High Level Architecture (HLA) compliance certification
· support implementation of IEE/EIA 12207.0 standard.
· maintain and administrate web site and web portal about modeling and simulation.
· researched "critical infrastructure protection using modeling and simulation" for Framework Program 7.

2003 - 2004 Teaching Assistant
Kadir Has University, Istanbul, Turkey

· worked in computer center of Kadir Has University
· assisted lecturers about computer based problems
· supported maintenance of computers in SUN computer lab

Education

Erasmus Exchange Student, Computer Science (February 2009 – July 2009)
University of Copenhagen, Copenhagen, Denmark

Master of Science, Modeling and Simulation (Expected June 2010)
Middle East Technical University, Ankara, Turkey

Bachelor of Science, Statistics and Computer Science, graduated 2006
Kadir Has University, Istanbul, Turkey

Caroline Miller

Kuhlausgade 4
2100 Copenhagen Ø
(+45) 31 20 91 20

Keywords

Bookkeeping, accounts, finance, marketing, business aspect.

Employment History

June 1998 - Today
Revisionsfirmaet Stig Jagd
Writing and correcting accounts.

January 1998 - June 1998
Revisionsfirmaet Mogens Henriksen ApS
Secretary with responsibility for correcting and writing accounts.

August 1998 - December 1998
HGS-course, Lyngby Uddannelsescenter
Upgrading my highschool diploma to include business like management, marketing, IT and business economics.

Education

Currently a student on B.A. Computer Science
University of Copenhagen, Copenhagen Denmark

15.3 Development timetable

If we look at the workload of core requirements of the system, meaning analysis, protocol development, implementation, documentation and testing. The system is roughly comparable to a medium to large size course assignment as we know them from DIKU.

To that should be added. user interface design, graphical design and deployment plan. Maintainance and further development strategy should also be developed aswell as plans for how customer system integration is handled.

This roughly adds up to a workload comparable to two large DIKU projects, which means approxiately 24 weeks of development is needed if we do it untop of regular work and courses.

A proposed timetable could be.

Week 1 – 2
Specify program features and rough implementation plans. Identify problems needed to be analysed deeper.

Week 3 – 4
Start work on User Interface Design using rough storyboards
Start work on problems needed to be analysed further. Under that also dive into protocol needed.

Week 5-6
Refine User Interface Design
Finish problem analysis, finish protocols.
Make refined implementation plan and design

Week 7-8
Start work on user interface graphics
Start implementing programs, with priority on simple functionality

Week 9 – 10
Review what needs to be changed, and make the changes

Week 11-12
Continue work on UI, and implementation.
Start work on deployment strategy

Week 13-14
Start testing first version, find bugs and improvement and start from top

Week 15-16

Find and resolve basic differences in platforms between phone models

Week 17-18
Redo what you found out in the first tests

Week 19-20
Start testing updated version
Write documentation
Do tweaks

Week 21-22
Check application on the cell phones and emulator available and do necessary changes to make them work.

Week 23-24
Test Deployment and User interface extensively

The idea is that this development table will give us a version so good that we can implement it at our first customer. There the product will mature into a stronger system over 1-2 months due to further development based on the feedback we get.

Even after the first customer is up and running, work will have to continue with maintaince and bug fixes for a few months before the further development starts to focus on maintenance and feature improvement.

After the first deployment there will still be a need for 1-2 full time developers to maintain and upgrade the system.

15.4 Summary of meeting with BudStikken

We have added this appendix, because we got so very inspired by our meeting with BudStikken and they have in large inspired much of the functionality of our product.

March 2nd, 2pm to 3:30pm, attending from BudStikken was Lars(Manager of logistics and quality) and Johnny Duholm(Operations Manager), attending from MapC was Anders, Kemal and Katrine.

Budstikken is one of the largest delivery companies in Denmark. They have delivery by both trucks and bike messengers. They are owned by Post Danmark, and can deliver a package all over Denmark.

We had initiated contact with them via email, in order to introduce our idea and to get a feeling whether they would be interested in it, and they immediately offered to do a meeting with us.

At the meeting we did a short introduction on ourself (also in short on the course) and the idea. As they said they where constantly looking for new ideas and opertunities to improve their current systems, and had no problem that the idea might never become reality. In brief we said that we wanted to make a piece of software to install on their bike messengers mobile phones, the phones would then send thier position in real time to a map that could be viewed on a central map. Further we argued that it would also be possible to add other functionality and integration to the system.

They explained a bit about them selfs, their current system and the problems thay had with the system, further they said what might be the advantages for them in our idea. BudStikken has approximately 25 bike messengers and in addition around 35 trucks, they have a need to track the messengers in order to plan and optimize their routes and hence the end profit. Currently their trucks have a GPS system installed, the system have been ported for their bike messengers, but the mapping of bikes had a uptime of approximately 2%. For both the truck and bikes terminals the average repair time was 6-8 weeks, the trucks in particular had to go in for repairs as the GPS units was permanently installed in the engine compartment (their repairs was performed in Germany). In particular the bike terminals where easily broken, and they only had a spare set of 5 terminals. For the bike messengers the size of the terminals was also a problem (in fact they had 3 different units that was connected). Further more they had a lot of temporary delivery guys that only did jobs for them a couple of days at the time. Right now they could not track these since it was not possible to give them one of the valuable and hard to install units for just three days. This was also a major problem for them, for once because they used the GPS monitoring to confirm that the delivery guy had actually visited the correct address and tried to deliver (therefore it was also really important that the positioning was pretty accurate, GPS positioning was satisfactory), also they often had a feeling that when the temporary delivery guys informed them on where on the route they where they might over or underestimate their

progress, hence make for a poorer end result for their customers.

What they immediately liked about our solution was that it was based on mobile phones, it would be easy to install and replace, also it would be light weight for the bike messengers and it would be considerable cheaper than the their current special and error prone terminals. It would be possible to give their temporary couriers tracking units as well. And they would potentially save a lot of money with fewer repairs to their systems. Basically we would likely be able to offer a functionality comparable to their current service, however at a much cheaper price and with considerable less inconvenience.

When we left the meeting they seemed very interested both in the potential of our idea and in helping us further.

15.5 Budget

Budgets are in the excel files "Budget MapC.xls" and "Worst Case Budget MapC.xls".