Service Design and Web Development for Implementing a Social Discovery Platform

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Abstract

This thesis revolves around the implementation and design of a social discovery web service called *Go&Grow* whose beta version was launched in September 2012. The aim of this study was to conduct a theoretical analysis of *service design*, putting it in comparison to other design disciplines, and finding key points in designing this web service. Another purpose was to start the implementation of the service using the web framework *Django* and further evaluate different web techniques used to build such a system. Methods applied in this study were taken from literature describing the service design process. Based on these findings, the identification of persons that should be involved in the design process was found. Also, prototypes of the design proposals were created to test user interaction and experience. The system has been implemented by using web techniques including *Python* and the *Django* framework, *HTML, CSS, AJAX* and *JavaScript*. Both *back-end* as well as *front-end* development has been performed, though this thesis mainly focuses on the *front-end* aspects of implementation. The results of the study were a new design proposal of the web site as well as a launched beta version of the *Go&Grow* service.
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Chapter 1

Introduction

Social media has grown to be one of the most used resources on the Internet. With over 900 million active users on Facebook alone [8], followed by more than 100 million active accounts on Twitter [17], nearly half of the 2.2 billion of worldwide Internet users [22] actively use social networking sites. With the large use of social networking by Internet users, the ability to attract persons to new services or social platforms are difficult. Therefore the design of the service is of the utmost importance, to make it distinguishable from similar media.

This thesis revolves around a social discovery platform named Go&Grow. The main business idea and niche of Go&Grow was established before this project. The graphical aspects of the website has drastically changed during the course of this thesis, and these revisions as well as the technical implementations of the system are the main focus of this paper. The purpose of this thesis is to make a theoretical analysis of the site by doing an in-depth study of the service design aspects of the platform, as well as practical implementation of the website using different web techniques.

The method of the theoretical analysis has been to make clear distinctions and definitions of what service design is, how it correlates to other design disciplines and what parts of the Go&Grow system that was to be focused on in the service design work. Furthermore, the practical assignment has been to create a prototype from the given graphical elements that would be used to analyse interaction flows and element placements, as well as continuing with the full scale implementation of the service. As the practical work has been focused mainly on front-end development techniques, this thesis also involves descriptions of the web programming languages and frameworks that are used for creating content on the site, excluding database programming.

The results of the thesis is a study on service design aspects when implementing a new social media website, as well as specific conclusions about parts of the Go&Grow system. Practical results involve descriptions of the programming and script languages used, as well as a description of the practical implementations that has been done.

1.1 Go&Grow

Go&Grow is a newly started IT company based in Umeå, Sweden, and is centered around a social media site by the same name whose beta version was launched in September 2012. The social discovery aspect of the web page leads to the site being largely filled with user-generated content, where persons with registered accounts are able to provide material for other users to view. The focus of the social interaction through the service, in comparison
to similar media, is to entice users to engage in real world activities, as opposed to socializing entirely through the virtual domain of the web site.

1.1.1 The Service

*Go&Grow* as a service is a hub for people or organizations to reach out to other persons with similar interests so that they may perform activities, share tips or discuss certain topics of interests or hobbies. This is done either by the user searching after a specific topic and finding already existing posts about the subject or if the user decides to create a new post where he or she is looking for other individuals to interact with in relation to a specific interest.

The service distinguishes itself from other similar social media sites in the sense that the users are not intended to just interact through the media, but rather use it as a tool to perform activities in the real world.

1.2 Goals

The purported theoretical work for this thesis was to analyse *Go&Grow*’s system from a Service design point of view, to be able to draw conclusions on how to best acknowledge some critical areas in the service. By doing this the hope was to be able to more distinctively solve some interaction problems that may occur, as well as form the service to better suit the needs of the target groups.

The practical goals were initially to implement a prototype of the website based on graphical content provided beforehand but later went on to become the implementation of the site that has been launched. This was to fulfill some of the technical aspects of the thesis work in terms of using web development programming languages and scripts to create a functional web service. The prototype would later be used to evaluate interaction issues before the main implementation of the entire web site so that these issues could be addressed as early as possible. It also provided the sense of structure in a web browser as opposed to only having graphical sketches of the site. Furthermore, this helped in identifying some technical constraints that were not noticed in the original graphics, which lead to some compromises being made in the process.

1.3 Paper Outline

Here are the different chapters that total the entire thesis work, with each chapter being briefly described.

**Chapter 2 - Problem Description**

This section is a detailed description of what was to be performed during the course of the thesis work. Both theoretical and practical parts of the assignment, that were decided beforehand as well as revisions, are taken into account.

**Chapter 3 - Service Design and Web Development for Implementing a Social Discovery Platform**

The core of the theoretical part of the thesis work. It describes Service design as a design discipline, how it relates to this particular work and is put in comparison to other design
areas. It also describes the technical solutions in implementing Go&Grow as well as the interaction techniques used to create the existing system.

**Chapter 4 - Methods**

A description of how the study has been performed, involving planning, execution of tasks and analysis of the results that has emerged during each period of the thesis work.

**Chapter 5 - Results**

Description of where the system stands today, as presented in figures, language use, future implementation that is to be done and a deeper analysis of the theoretical study results.

**Chapter 6 - Conclusions**

This section handles the final conclusions drawn from the thesis work and addresses the restrictions and limitations present during the work as well as the future incorporations of the results presented in the thesis.

**Chapter 7 - Acknowledgements**

My way of thanking and showing gratitude to all those that have helped me during the course of my thesis work.
Chapter 2

Problem Description

This chapter handles the initial assignment that was presented before the writing of this report, and will detail every aspect of the predetermined work that was to be performed. During the work a series of revisions had to be made and these are documented under the subsection revisions.

2.1 Problem Statement

Go&Grow is a company started by Lena Edman in Umeå, Sweden, as a result of her degree work when studying Interaction Design at the Umeå Institute of Design. The core idea of Go&Grow is to give people the opportunity to discover new activities or to meet like-minded people to do certain activities with. This is reflected in the company motto of "Doing real things, with real people, in the real world".

Since there were several revisions of the designs, both graphically and structurally, the problem statement only refers to the prototype phase and the launched version of the service is shown in section 5, Results.

2.1.1 Original design of the service

From the beginning the platform was a web based site where users could create content in form of trees, branches or leaves that were graphically represented in a tree structure. This created a hierarchical structure where the tree was the main category, the branch a sub-category and a leaf was a user created post, placed either on the tree or the branch. These posts, or leaves, were divided into three different types named a Do, an Event and a Tip which further describes what the user intends to present with the post.

- a Do
  An activity that is to be performed, but does not need to be particularly specific in the details. This could include activities that are done weekly, or when time permits.

- an Event
  Activities that are more specified in information, for example if a group of people want to arrange a get together in a specific time and place.

- a Tip
  A category which allows users to create posts with tips and tricks regarding a subject.
These tips could either be someone providing information about a certain topic, or someone asking for help in some situation.

Together these trees would form a forest with different categories placed next to each other. A sketch of the graphical representation of this structure can be seen in figure 2.1.

Figure 2.1: Design proposal of topic hierarchy where the Gardening tree is chosen

This forest was intended to be the focal point of the service in the sense of letting users explore different topics as well as defining the graphical identity of Go&Grow as a company. The graphics in figure 2.1 are an example of when a user has clicked on a category, which is not the initial state of the forest. Below in figure 2.2 is an early sketch on the first page of the site, where a category has not yet been chosen.

Figure 2.2: Early design of the Go&Grow front page
2.1. Problem Statement

The initial layout of the front page also included a video section where Go&Grow could post videos, a feed with the newest posts on the site, a Latest News section regarding the site and a Lets Talk section where users could discuss the site. This can be seen in figure 2.3, note the different types of posts. The discussion possibility was to be implemented on the front page as well as on all the sites that are generated by users. This means that they can communicate with other users regarding topics without necessarily being interested in performing an actual real world activity, this was graphically presented in the sketches as seen in figure 2.4.

Figure 2.3: Subsequent section of the front page from the sketch in figure 2.2

Figure 2.4: Final part of the initial front page sketch with the Lets Talk section
Mainly, the problem statement was that Go&Grow was in need of someone to bridge the connection between design and implementation. Initial back-end development, as well as some of the front-end development, were to be created by consulting company CodeMill AB, and the resulting system architecture were to be handed over to Go&Grow. The above figures were the building blocks in the beginning of the assignment.

One of the practical assignments during the thesis work was to implement these sketches in to working prototypes to assess certain interaction flows and placements of elements.

2.2 Goals

Intended goals was to be able to get a deeper understanding of the techniques used when implementing a large scale web site. Most importantly focusing on the aspects of creating user-generated dynamic content.

The goal with the theoretical part was to do an in-depth study of service design, by dissecting other design disciplines and putting these in comparison to each other.

2.3 Purposes

The purpose for this thesis in regards to Go&Grow was to get an overview of how the service could be designed to further enhance the overall experience of the service, for all the stakeholders in the project. It was also a way to involve more people in the project so that it could be further developed in the future, without the need of external consulting companies handling the maintenance of the service.
Chapter 3

Service Design and Web Development for Implementing a Social Discovery Platform

3.1 Service design

_Service design_ is a design discipline which does not only focus on the design of a particular object or system but take in consideration all the potential stakeholders and participants that may be of interest of the service. This means that several different communication methods outside of the system must be addressed, e.g. investors, what public relations channels that should be used etc. To fulfill this the service designer will have to identify the actors involved in using the system, the stakeholders and define the possible uses of the system. _Service design_ is therefore also inherently a inter-disciplinary design division [16] as it does not solely rely on solving one specific issue, as the case is when regarding the physical traits of an object in regards to industrial design for example.

Since there is still no universal definition of _service design_, this thesis uses multiple views on the core of what _service design_ is. One of these is a definition of service design as proposed by The Service Design Network [16], that is largely based on the work of Birgit Mager and the Board of International Research in Design [31]. It states that:

- Service design aims to create services that are useful, useable, desirable, efficient and effective.
- Service design is a human-centered approach that focuses on customer experience and the quality of service encounter as the key value for success.
- Service design is a holistic approach that considers in an integrated way strategic, system, process and touchpoint design decisions.
- Service design is a systemic and iterative process that integrates user-oriented, team-based interdisciplinary approaches and methods in learning cycles.

In Marc Stickdorn’s book “This is Service Design Thinking” [30] he provides five _principles of service design_ instead of trying to define it. Stickdorn also argues that the lack of
a specific definition is a strength for the future development of the design area. He states that service design should follow these five principles:

- User centered
- Co-Creative
- Sequencing
- Evidencing
- Holistic

These principles seek to help in creating a service that is foremost experienced by the customer. At the same time as all the stakeholders are involved in the design process and the service is visualised in sequencing possible actions. If there are intangible services these should be placed in a real world domain with tangible objects and taking the entire environment of the service into consideration [30].

He also continues to structure the essential parts that need to be addressed in the design process. The human factors are the customer that uses the service, the main provider of the service, the stakeholders that have some sort of interest in the service performance (could be financial or marketing interests etc) and the service designer. As stated above, the co-creation principle of service design entails that all these groups should be involved in the process of creating the service.

The environmental factors are the touchpoints which acts as a bridge between the service provider and the customer, the service evidence are tangible artifacts that are involved in using the service and the service period. The service period is used to identify in what period the service is at a given time. These are divided into pre-service, service and post-service.

3.1.1 Service Design in Comparison to Other Design Disciplines

This section handles how service design stands in comparison to some of the other important design divisions. The disciplines that have been chosen are information design, interaction design and industrial design. To highlight the differences between these divisions, examples are shown by photographs taken at the train station Östra Stationen in Umeå, Sweden.

Information Design

Information design is the design discipline that focuses on preparing or structuring data in a way so that users efficiently and effectively can understand the information. It involves the detailed planning of presenting data in a way that is easily understood, seeking to provide information in a specific context to achieve a specific objective.

A typical situation when this is important is when people need to find a certain location or find information about dates or times. A commonly used example when illustrating these kinds of situations are public places where a lot of people need to be informed about some event that is of relevance to them personally.
Figure 3.1 is an example of this kind of design, where a board with icons and tangible objects are used to describe areas of the train station. Furthermore, the use of braille writing widens the amount of persons being able to retrieve the information presented, and the tactile elements gives the viewer a further perception of depth and location within the station. These kinds of icons does not necessarily need to be standardized, nor have a standard, and a common solution to this is to have a detailed description of each of the symbols used. In this case, the map in figure 3.1 is placed on the same desk as the icon descriptions shown below in figure 3.2.
Necessary information in this kind of situation, i.e. a train station, does not only involve locations within the station, but also facts about arrivals and departures, which tracks the trains are leaving from, etc. As this data is not always static, for example trains being delayed or the adding of new train routes, there has to be information about occurrences that may appear. In the previously used example, the solution to this has been to add a screen next to the information desk where passengers can be informed about specifics regarding their train. These separate parts of presenting information to users constitutes a system of parts with the sole intent of giving the user relevant information. This is illustrated below in figure 3.3.

Figure 3.3: Information desk complemented by digital screen with arrival and departure times

There are several definitions for the term, and it is closely connected to the terms information architecture and information planning. Robert E. Horn states that there are three main objectives of information design [27]. These objectives are:

- To develop documents that are comprehensive, rapidly and accurately retrievable, and easy to translate into effective action.
- To design interactions with equipment that are easy, natural, and as pleasant as possible. This involves solving many problems of the human-computer interface.
- To enable people to find their way in three-dimensional space with comfort and ease - especially urban space, but also, given recent developments, virtual space.

A difference between information design in comparison to both interaction and industrial design is that it is in a further extent considered when designing artifacts situated both in the virtual world as well as the real world. This is a result of information presentation being conformed to a standard long before the implementation of virtual worlds, e.g. web sites. The Web Style Guide [34] states that basic web page design can apply the conventions stated for printed media in The Chicago Manual of Style [33] which was first published 1906 for standardizing publications.
3.1. Service design

Interaction Design

The discipline of interaction design is unique in the sense that it only deals with virtual aspects of design. Its main focus is the relationship between an interface and the end-user and seeks to fulfill maximum usability depending on the desired outcome. The term was coined by Bill Moggridge who had previously used the term soft face, short for software interface, to describe the area. He proposes two definitions of interaction design, one that he calls a narrow definition that states that interaction design is "The design of subjective and qualitative aspects of everything that is both digital and interactive" and the other which he calls a broad definition that states "The design of everything that is both digital and interactive." [32].


- Design involves changing situations by shaping and deploying artifacts
- Design is about exploring possible futures
- Design entails framing the “problem” in parallel with creating possible “solutions”
- Design involves thinking through sketching and other tangible representations
- Design addresses instrumental, technical, aesthetical and ethical aspects throughout

A concise interpretation of these characteristics is that interaction design is the result of creating components for a particular purpose, addressing the possibilities and constraints of the intended goal of the design and evaluating the technical or practical requirements to implement a system that is the most suitable to meet this goal.

One problem with defining the specifics of interaction design is that the domain in which the implementation occurs can widely differ, as it can be digital interfaces that should be suitable for a broad audience (and thereby needing the information presentation, i.e. information design, to be well thought out) as well as it can be interfaces that are designed for one very narrow, particular task. An instance where interaction design is used, and largely dependent on the information design, is digital interfaces in a public setting, see 3.4. For example the interaction with a PC desktop would need to be designed for a broad audience as it is used by a large group of different types of people, where a dashboard in a space shuttle would have far more complex interactions but the intended audience are persons trained in using similar systems.

![Figure 3.4: Graphical interface for collecting or buying train tickets](image-url)
Industrial Design

Of the four design disciplines discussed in this thesis, industrial design is the one that is entirely situated in the real world and regards physical objects and their form. Compared to interaction design that focuses on interfaces and interaction, and information design that applies to presentation, the main focus of industrial design is the aesthetics and functionality regarding an object or a product and is therefore also sometimes labeled as product design [30]. Industrial design is the base for creating physical artifacts that need to be designed to function in a satisfactory way. An example from a public setting is seen in 3.5 where a person should be able to purchase a train ticket with his or her credit card on a train station.

Industrial design is of the least importance in the case of implementing the Go&Grow service, but is a discipline that is widely taught and plays a role in service design in general.

Figure 3.5: The physical objects designated for buying or collecting tickets

Relation to Service Design

As previously noted, service design is inter-disciplinary since it is not a design area regarding one specific task or situation, but rather envelopes those design divisions that need to be considered depending on the context. When implementing a web service where the digital interface and the presentation of data to a user is the most important aspect to achieve the best usability, then interaction design and information design is more important than industrial design. On the other hand, if an actor would want to, for instance, create an interactive billboard spanning an entire wall of a building, then other design disciplines would be needed to consider, e.g. architecture, instructional design and so forth.

If we expand on our previous example using a train station to highlight aspects of service design, then there are multiple variables to take into consideration. The primary stakeholders in this example are the train company, the railway and the municipality in which the train station is located. In this case, the train company and municipality is both a stakeholder
as well as a service provider. The customers are the persons travelling. There are also secondary stakeholders such as people waiting for the passengers to arrive, businesses located in the vicinity of the train station etc. But by going by our previously stated definition [16], the key value for success is the customer experience and quality of service encounter. To fulfill these requirements, and therefore lead to a service that is desirable, the station as a system is designed to give the customers the possibility to purchase tickets through a machine and (hopefully) present them with the information that they are seeking.

If the main goal of train travel is to give persons the chance to find their way around the station, purchase tickets and be informed of train times, then the service provided by the station meets these requirements.

The ticket stand in figure 3.6 can be found by viewing the centrally located map desk (information design example), it can be understood and manipulated physically by pressing buttons and inserting a credit card (industrial design example) and the user can be able to interact with a screen to find a train that is suitable to travel with (interaction design example).

![Figure 3.6: The ticket stand in its entirety](image)

3.1.2 Service Design in the Go&Grow Service

As Go&Grow is a company based around a web service, with its success an essential part of the business strategy, these service design parameters have all been taken in consideration. To adequately launch a service that is desirable for users is key to attracting persons which
in turn leads to more content on the site.

Customers
The customers for the *Go&Grow* service are the people who are using the web site. Either by creating content in form of activity posts, by being involved in discussions or social interactions through comments or private messages, or by just using the site and thereby providing the site with traffic while still being subject to the information the site presents.

Stakeholders
Since it is a service launched with a business interest, the company has shareholders who have a financial interest in the site’s success. Also the company itself is a stakeholder as it has invested time and money into the projects fullfilment. In a future implementation there are also advertisers and separate, paid for, premium accounts that will have to be taken into consideration when adding features to the site, as these companys or organizations will be seen in the same context as the material posted on the site.

Service provider and service designer
In this case the service provider and the service designer are the same, *Go&Grow*, seeing that the company has developed the concept for the service, as well as the actual implementation.

Touchpoints
The only means of communication between customer and service at this time is the actual use of the web site. Future work includes creating events were the company will be present, as well as launching mobile phone applications which will widen the amount of touchpoints, i.e. the contact between customer and service provider.

Service evidence
The tangible artifact in this system is, once again, the actual graphical interface of the web site. This follows by the service being situated entirely in the virtual domain of the web page.

Since one of the foundations of *Go&Grow’s* strategy is to have the web site ”live its own life”, it is innately user-centered as nearly all the content is created by the customers, not the service provider. By inviting the stakeholders to take part in the design process and analysing the entire environment of the service (what activities will users perform in the real world, in what context should the site and brand be seen, etc) a wide spectrum of how the service will be percieved was noted. Also guidelines for how we wanted the service to be percieved were defined. Since it is also a launched interface that is tangible in the virtual world, the sequencing and evidencing principles of service design are addressed.

Service period
The period of use of the service can be defined as before a user registers on the site (pre-service), while the user is actively using the site by posting content or contributing to the sites own ecosystem (service) and after the customer has used the service, hopefully by taking part in a real life activity (post-service).
3.2 Implementation techniques

This section handles the different programming and script languages that has been used in the prototyping, as well as the main implementation, of the system. In this chapter the original prototype is used to explain the concepts, and the final, resulting, system can be seen under Results.

3.2.1 HTML

HTML is a so called markup language that is designed to position content in a web page. A markup language is a system for making certain syntax distinguishable from text content. It is used to create hierarchical structures of content in which text, images, video and other elements can be placed in specific way depending on the syntax. HTML stands for HyperText Markup Language and is one of the most widely used languages for web development, as it is the basis for creating web pages [10].

It consists of a predetermined set of elements, called tags, defined by being written inside angle brackets, and is then matched with a closing tag. These tags then define what kind of manipulation should be performed on the content in between them. For example, a commonly used tag is \textless p \textgreater, which stands for paragraph. The closing tag for this element is denoted by adding a / in front of the element name. In this case the paragraph would be started with \textless p \textgreater and closed with \textless /p \textgreater, this allows the implementer to specify what actions should be performed on the content between these tags.

There are some elements that are used to structure the HTML document itself. These are:

\textless html \textgreater...\textless /html \textgreater
This is the root element of the document and defines it as a HTML file.

\textless head \textgreater...\textless /head \textgreater
The placing of information that is not to be presented on the web page, but can be found and processed by web browsers or search engines.

\textless body \textgreater...\textless /body \textgreater
All the text, graphics or any displayable content that is to be viewed by users in a browser is placed inside the body tag.

Another widely used markup language is XHTML, Extensible HyperText Markup Language, which combines both the markup of HTML as well as that of XML, Extensible Markup Language. HTML differs from XML mainly in the fact that the elements are already defined in HTML, as opposed to XML where tags can be defined by the implementer. HTML5 seeks to unify these languages to one general markup language for the entire web [10].

In the Prototype

HTML has been used to structure the graphic elements of the web site into a format presentable in web browsers. Since both the graphics and the structure of the page was well documented beforehand, the wireframing work in the prototyping phase was nearly non-existant. Instead the work with HTML was exclusively implementation and placing of objects in the prototype.

As stated in the problem description, there were two prototypes that were to be implemented, this also meant structuring the content separately for each of these prototypes. The
first implemented prototype was based on the sketches in figure 2.2, where the Go&Grow forest spans the entire width of the site. This prototype can be seen below in figure 3.7, and the prototype with the forest centered on the page can be seen in figure 3.8.

Figure 3.7: Start page of prototype with the forest spanning the entire site, as displayed in Firefox 12.0

Figure 3.8: Start page of prototype with the forest centered, as displayed in Firefox 12.0
3.2. Implementation techniques

Since the only difference in these prototypes is the placement, and concurrent centering, of the forest the rest of the page content is structured in the same way in both implementations. In figure 3.9 the newest posts are displayed, as well as the video section.

![Figure 3.9: Content of the front page below the Go&Grow forest, as displayed in Firefox 12.0](image)

To further help with debugging the HTML implementation, the Web Developer extension [20] to the Mozilla Firefox web browser has been used. Figure 3.10 is an example of how this tool have been used, and further illustrates how HTML structures content.

![Figure 3.10: Content from figure 3.6 outlined using the Web Developer extension to Mozilla Firefox](image)
3.2.2 CSS

CSS, an abbreviation of Cascading Style Sheets, is a language made for styling content in a markup language document. This is to be able to have a division between content structure and content presentation, as this allows the content to be explicitly styled in the CSS file and structure the content explicitly in the markup language document, a HTML file for example. If a HTML file is to use a Cascading Style Sheet, it is the HTML document that defines what file should be associated with it.

CSS works by manipulating how the content of elements are presented depending on what commands are ascribed to it. Each block of CSS code is defined by a selector which in turn consists of different properties that are assigned values that determine how they should be handled [2].

To expand on the earlier example of the paragraph tag in HTML, CSS could be used to manipulate all the content within the <p> tags, even if there are multiple instances of the tags. One could use this, for instance, to apply an overall margin on all the text that is placed within the paragraph tags, an example on how this could be written in CSS syntax follows below:

```css
p {
  margin: 10px;
  font-size: 12pt;
  max-width: 100px;
}
```

In this example p is the CSS selector, margin, font-size and max-width are the properties and 10px, 12pt and 100px are the values that are ascribed to the properties. This would result in a ten pixel margin around the paragraph, all the text content being 12 points in size and the paragraph width not being able to exceed 100 pixels.

In the Prototype

As previously stated, the intended use of CSS is to present the content that is already structured by the markup language. Similar to the illustration of HTML structuring in figure 3.10, figures 3.11 and 3.12 illustrate how content is presented without the use of CSS.
3.2. Implementation techniques

Figure 3.11: The content presentation from figure 3.8 with the style sheet disabled

Figure 3.12: The content presentation from figure 3.9 with the style sheet disabled

3.2.3 Javascript

Javascript is, as noted in its name, a script language for web applications. It is based on using Java syntax, with an object-oriented approach and typical Java traits such as braces.
defining different code blocks and working with several predefined operations that can be performed on objects [25]. Similarly to CSS it is placed in separate files from the structural content, and seeks to be as unobtrusive as possible in the code. There has also emerged several JavaScript libraries that extend the functionality of the script language. One such, well known, library is jQuery [6] which is used extensively in the Go&Grow system for handling user actions.

**AJAX**

*AJAX* is a technique for combining server side functionality with the functionality of *JavaScript*, which is processed client-side (e.g. in the users browser). It stands for *Asynchronous JavaScript And XML* and gives the implementer the possibility to allow users to do direct calls to the server by using *JavaScript* actions.

### 3.2.4 Python and the Django Framework

*Django* is an open-source web framework for developing web applications adhering to the *model-view-controller* design pattern [12]. It is a so called *high level* framework since it uses the *Python* programming language as the syntax when implementing applications. Meaning that the *Python* language is not closely related to the physical computer components running the code.

The framework was primarily developed to be used in an online news application and is at the moment used by The Washington Times web page which also has an open source project regarding their *Django* applications [19]. Since its inception it has grown to be used during the production of an array of different types of web sites, including Instagram [21] and Mozilla [18].

*Model-View-Controller*

The MVC architectural pattern is a way to keep the functional units in a system separate, and thereby keeping the logic that these units use separate, to more easily factor the components of a system. The model handles the operations related to the application domain, the view handles the different states of the application and works as the middleman between the other two layers and finally the controller is the users interaction with the model [26].

In the *Django framework* the model handles the basic database setup of an object as well as operations that are closely related to retrieving specific object data from said database. For instance, the model handling the user profiles in the Go&Grow system is made up of fields that define what a user is in the system. This includes fields as *Name*, *City*, *Followed Activities* etc.

The views handle the logic that processes data from specific models and render these to a *HTML* template. For example if a user visits another persons profile page, the view gathers the needed data from the model (the visited users information), applies this data to computations (for instance if the visited user is in the visiting users contact book) and renders this information to the controller, in this case a *HTML* web page displaying a profile page to the user.
Python

Python is an open source high level programming language. Its intended purpose is to be used as an object oriented scripting language and seeks to have a syntax that is as easy to read as possible [15]. The syntax differs from other high level languages, for instance Java, in that it does not use braces, i.e. \{ and \} to encapsulate syntax, but instead relies on indentation to distinguish code snippets.

Web Frameworks

Frameworks are used to ease the development of web applications by combining multiple parts that are used to deploy an application in to one development environment. These often supply the user with easily-accessible functionalities such as database retrieving, administrative interfaces and file management. Examples of some of Django’s core functionalities that are used in the Go&Grow system is the administrator interface, the models (as described below) access to certain databases and the predefined user and user authentication model. One important aspect is also that the framework allows for Python syntax to be input directly in to a HTML template. This is important because it gives the developer the possibility of accessing variables and data that have been processed by the view. An example of how Django allows the system to check if the user is registered and logged in to the system, and thereby presenting specific data could be written:

\{ % if user.is_authenticated %
\<p\>
You are logged in to the system!
\</p\>
{ % else %
\<p\>
You are not logged in yet.
\</p\>
{ % endif %

This code snippet would present the user with a different paragraph of text in the HTML presented in a browser depending on whether he or she was authenticated by the Django framework.

3.2.5 Server Solutions


3.3 Go&Grow as a Social Discovery Platform

The intention of the service is to stand out in a market where the social interaction on Internet based web services often rely on the content and actions being located on the specific site (see Introduction). Go&Grow seeks to engage people in physical activities situated in a non-digital context, or drive people to take the step to finally make certain dreams come to fruition e.g. learning a new language by discussing and meeting people who want to do
Social discovery is a loosely based term that has recently emerged to contrast that of a social network. It has no official definition, but has been said to be the acquiring of information about other people or activities as well as retrieving any information based on input from other persons [3]. As it has no official definition, Go&Grow tends to use the term to describe the discovery of activities as well as interests that one might not be able to perform on their own, or discovering new interests by communicating with like-minded individuals.

3.3.1 Social discovery in comparison to social networking

Social networking sites are based on having an individual focus, where the user connects with people they know or seek to further communicate with through the medium. It has a many-to-many relationship where each user has his or her own specific network of acquaintances. These sites prompt users to identify people in the system who they may know based on some set of data [24], and this widely differs from Go&Grow’s view that the social interaction between users should be based on their joint interest for a particular interest.

3.3.2 Physical activity focus

The main difference between Go&Grow and other social media is that it seeks to engage users in real-life activities. These activities do not need to be based on a particular interest as is the case in forums regarding a specific topic, but could be something that the user was not aware of that he or she would like to participate in. The distinction should also be made that even though the focus is physical activities, these would encompass interests that are not physical in practice but is centered around meeting in a real world environment, e.g. a book club.

Trust in the service

During the course of the implementation of the system, user tests has raised some concerns where people were not certain that they would want to interact with other users outside of the virtual system since they would not know what type of person they were communicating with. This was a side effect of focusing too much on not making the service in to a social network, where the individual is the most important aspect, as well as putting to much emphasize on the graphical identity instead of the interaction with the system. To try and circumvent this issue, the design was made as simple as possible to create an atmosphere that would be soothing in the context of meeting new people. This was made by giving each user a profile page where other users could see their personal information and posting the name and uploaded profile picture of users that either commented or posted activities.
Chapter 4

Accomplishment

4.1 Method for the service design work

To be able to achieve the desired goal of launching a site that would give the users easy access to posting and sharing activities, the principles and definition stated in chapter 3 were used to define the different aspects of the service. By doing so, each crucial element for making the service successful was determined. These were the customer experience, the stakeholders say in how the implementation should be performed, as well as how the service was to be perceived outward in forms of marketing and branding.

The user experience was an iterative process of testing each of the designs for the site, listening to their input and modifying the design accordingly to the results. One of these results were the scrapping of the original design using a forest metaphor to describe a forum structure and instead focusing on presenting the created content to bridge the gap between actual physical activity and the graphical interface. Also the profile was added to give the users an extra insight into what sort of persons they were communicating with as well as adding personal interests to define yourself in the system.

The external stakeholders were consulted on every design change that was made so that their interests were also looked after in the launching of the site. To have a deployed web service that focuses entirely on the customer but neglects the thoughts and wishes of the stakeholders would not fulfill the principles of a desired service design. There are also future implementations that are to be done to further enhance the interests of the stakeholders.

4.1.1 User tests

The tests that were performed on the users were both conceptual discussions regarding the concept of the service as well as testing the implemented prototypes. Firstly interviews were performed, discussing users thoughts and perceptions around a forest structure and noted their ideas of having to navigate in a “forest” to find activities to perform in real life. The next step was to test the actual design by having test users try the prototype of the service and give us their input on the interaction and user experience of the system.

After these more lo-fi testing sessions, a beta version of the original design was launched, though not on the company domain. This larger test was performed by inviting persons from the target groups to the site and asked them to give their feedback on how they experienced
the service. This version was fully functional in the way that persons could register accounts, create trees, branches and leaves as well as post comments of these activities. As stated previously, the result of these larger tests indicated that the metaphor used was a hindrance in our goal to make the service fully understandable and therefore desirable for customers. This lead to changing the design to the current, as seen under the Results, section 5, and reiterating these interview and test processes.

4.2 Method for technical implementation

The technical implementation of the system was more straight forward and was based on using the environments and frameworks at hand to create the actual virtual system. After discussions and tests of different graphical versions of the site, the design that was intended to be implemented was delivered in the form of larger sketches of specific pages (e.g. sketches of the start page as a whole) and then given each graphical component as an image. The actual working system was created by writing models, views and HTML templates in the Django Framework. Since Django also is an open source project, there are lots of already written applications that can be integrated into the application being written. Some of these third-party applications that were used was pytagcloud [7] for generating the filtering tag cloud, django-notification [4] to handle notification messages and django-postman [5] for sending internal messages to users.

The application was later published on an Amazon EC2 Server Instance connected to the domain http://www.goandgrow.com as well as implementing a Postfix mail server to be able to send mail from the company domain. The current use of the Postfix mail sending is to notify users in their personal mail accounts that an action has occurred in an activity they created or follows. This function is optional for the user.
Chapter 5

Results

5.1 The System

This section handles the presentation of the final design of the launched site as well as describing more in-depth about how the system is comprised of several different technical implementations.

5.1.1 Changes from the initial design

During the implementation process several user studies were performed to test the usability of the service. These tests included both interviews with users regarding the graphical aspects of the design, the concept of using a forest structure as a metaphor for a forum hierarchy as well as letting users test the implemented prototype.

After performing these tests a decision was made to drastically change the approach of the system and focus solely on easily presenting the data created by the users. This was to draw attention to the main goal of the service, i.e. to clearly present the user with the opportunity to create or find activities that should be performed in real life.

The revisions resulted in the hierarchy of the categorization being changed into having the previous trees, i.e. the categories, being transferred to a *word cloud* (see figure 5.3 and figure 5.4) with the sole purpose of sorting the posted activities accordingly. Based on the user tests previously mentioned, the idea of having subcategories, i.e. the branches, were scrapped completely. This was because the target groups did not appreciate, or understand, the forest structure, noting that it was a distraction from the purpose of the service. Finally, representing the posts as leaves was changed to let the activities be stand-alone components were the user is able to append several tags to the activity, and thereby connect the post to the categories in the *word cloud*. A profile page was also added to the service to give the users a better insight into the people interested in the same activity.

The revised design is the one that is currently used in the launched site. Structurally the design was also changed to be comprised of four parts. These parts were:

- **Start page**
  The first page that is shown when visiting the address *http://www.goandgrow.com* showing the company logo, the latest posts, a brief description of how to use the
service, and information regarding contact information and social media usage of the company. Also presented is links to the explore page and profile page, as seen in 5.1 and 5.2.

![Figure 5.1: Start page of launched site, as displayed in Firefox 12.0](image1)

![Figure 5.2: A scrolled down view of start page displayed in 5.1](image2)

- **Explore page**
  The main part of the site where users can find activities posted in the system. Users also have the possibility to sort these posts by *all activities, activities near me* (this
is only shown if the user has an account at Go&Grow and by clicking on any of the activities in the word cloud. This can be seen in 5.3, 5.4 and 5.5.

Figure 5.3: Explore page, as displayed in Firefox 12.0

Figure 5.4: Scrolled down view of the explore page shown in 5.3 showing the word cloud on the left.
Figure 5.5: A view of the explore page with a category in the word cloud clicked, resulting in the activity grid displaying only posts tagged with the category "Natur".

- **Activity page**
  The page for presenting information about the activity post. The top section consists of a banner showing the publication date and navigation to newer or older posts, a headline were the user has the possibility to follow or share the activity, and a section displaying the basic information of the activity.

  In the center of the page is a description that is input by the user who created the activity with a complementary descriptive image. Under the text is information about the poster and buttons to either vouch for the post owner or send him or her a personal message through the internal messaging system.

  Below this is a comment section called "Snackis" were individuals who are registered users can comment on the activity and maintain discussions regarding the topic. This can be seen below in figures 5.6 and 5.7.

Figure 5.6: Example of a activity posted, as displayed in Firefox 12.0
5.1. The System

Figure 5.7: Scrolled down view of the activity post shown in 5.6 showing the word cloud on the left.

- **Profile page**
  The profile page is comprised of a grid view with the users created and followed activities, a personal word cloud with the users input interests, a flag with personal information about the user. Also the possibility of sending personal messages and adding profiles to the users own contact lists is possible. If a user where to view their own profile page a personal inbox and notifications on that user’s followed or created activities can be viewed. The profile page is displayed in figures 5.8, 5.9 and 5.10.

Figure 5.8: Example of viewing your personal profile page. This can be noted by the letter icon as well as the top left flag handling notifications. The prechosen menu item is the activities that are created by the user.
Figure 5.9: Showing the followed activities of the user whose profile is visited.

Figure 5.10: Showing the notifications you have received either through followed or created activities.

5.1.2 Parts of the system

The web application is made up of several different types of parts to make it as functional as possible. These are the server, the models, the templates, the views as well as the CSS, JavaScript and AJAX code. The server implementation has not been done in this thesis work and will therefore not have a in-depth description.
5.1. The System

The models

The defined models for how an object (i.e. an activity or a profile) is represented in the system. The models are written entirely in Python and are connected to a database for storing input values. Each part of the system that needs to store data is setup by a defined model. The parts of the Go&Grow system defined by models are:

- **User**
  Predetermined data model supplied by the Django Framework defining username and password.

- **User profile**
  A model extending the above mentioned model adding data such as City, Interests, Created activities etc.

- **Activity**
  A data model to describe what makes up an activity. It involves defining the activities name, date of said activity, where it will take place, how many times it will be performed and a thumbnail image to describe it.

- **Notification**
  From the django-notification [4] application that states what should comprise a notice that will be sent to the user depending on what action has occurred.

- **Postman**
  From the django-postman [5] application that defines what data is needed to send a personal message internally in the system.

- **Tags**
  The interest definition of an activity or a person that consists of data about the name of the tag and what user or activity the tag is connected to.

The views

A view functions as a middle man in the system by handling the passing of data from the model to displaying it in a template. The views are written in Python where they perform logical operations on the data retrieved. For instance if a user visits a profile page the view gathers data about the user from the database, process it depending on context and then renders it to the profile page template. Each part of the system that has dynamic content has a particular view connected to it, meaning that the explore page, the profile page, the activity grid as well as all the modal features (pop-up windows for handling the internal messaging, for instance) on the site has views that process the data that is to be displayed.

The templates

Every HTML document that is used on the page is a template. It consists of the main page layout.html which define the basic structure of the web site with the top logo and flag links always displayed. Every template inherits from layout and is positioned within it. All the main navigational features of the site has their own template, such as the start page, the explore page, the profile page and the activity pages. This allows the system to use one single HTML file to present different data depending on what parameters are sent. Meaning that there is only one activity.html page, but depending on what data is passed through the
view, different data will be presented in the activity. Also subparts of the system has their own template, the grid system for instance is a template loaded with data that is included in a template that is higher up in the hierarchy, e.g. there is a `module_grid.html` included in both the `explore` page as well as the `profile` page, to display activities.

**AJAX, CSS and JavaScript**

The CSS is written with an object-oriented approach which sets classes to specific objects in the HTML and then extends these classes on subsequent elements within the enveloping HTML tag.

The AJAX and JavaScript handle the graphical feedback when users interact with the system. For instance if a user clicks on an interest in the word cloud, the JavaScript handles the changing of the color on the object and AJAX call to server-side operations to perform a filtration on the data being presented in the grid.

### 5.1.3 Go&Grow presently

At the date of this publication Go&Grow is launched as a beta version and is still undergoing testing of particular aspects of the system [9]. It is found at the web address http://www.goandgrow.com and has a total number of 207 registered users as of January 17th 2013.

### 5.1.4 Future work

As the deployed web site is still a beta version, there are a still a lot to be done to create a service that is as desirable as possible, seeing that it is an iterative process to gradually improve the quality provided. The future parts that are still not implemented that are to be completed before the full version is deployed are:

- **Group accounts**
  For local associations and groups to add activities but with a wider assortment of possibilities for their account and with a more distinguished graphical profile than a normal, private, user.

- **Image uploads for activities**
  Image galleries for activities so that users can upload and share their experiences, hopefully leading to the previously stated goal to entice users to become active through the service.

- **Social site connections**
  Even though Go&Grow does not define itself as a social network in the same sense as many others, there are still opportunities to spread the word about the service by implementing functionality that allows users to tip each other about posts or events on Go&Grow.

- **Event calendar**
  Implementation of a calendar view on the `explore` page, allowing users to toggle between a grid based design with the newest activities at the top and a calendar view with activities divided into specific dates.
Chapter 6

Conclusions

This chapter covers the final thoughts, restrictions and future goals of the work done in the thesis.

6.1 Restrictions

One main restriction in the course of this work has been that economical considerations halted the back-end development to a certain degree and therefore the practical work of this thesis was cut short. Seeing how the project was performed in a newly started company, it was known that some unforeseen circumstances would possibly arise and that the paper eventually would have to take another turn. Considering it was not meant to be a back-end implementation in the thesis work, the structure of the paper were shifted to focus primarily on the service- and interaction design theory behind implementing the platform.

In order to further address the practical requirements the prototype has been more fully implemented than initially intended, and the sections regarding the technical information of the implementation is also more detailed.

6.2 Limitations

Below are some of the limitations of the work that has been performed.

6.2.1 Prototype

The prototype that was implemented was created solely with front-end techniques, and was therefore not able to be used as a testing prototype of the entire platform. This was a direct result of, what has previously been stated, the back-end not being implemented in time for testing during the first part of this thesis work.

6.2.2 Analysing Similar Systems

One of the issues during the project was to draw conclusions on how other similar systems have solved problems, or come up with solutions to problems. This because one of the main aspects of Go&Grow’s business plan is to stand out and be unique in both the social interaction focus as well as the navigation system and overall graphical identity. Social
media services entirely centered around the virtual domain do not have the same need to fulfill the trust aspects in the person to person interaction as Go&Grow has. On the other side, media revolving around real life interactions have a tendency to focus mainly on those interactions. Often this leads to not providing users with a virtual domain that lets them remain anonymous or simply indulge in content already provided.

This makes the analysing of similar systems a grouping of two sets of social media with different directions, and trying to get valuable data from where they intersect.

### 6.3 Future Work

The work that is to be done is implementing more features into the service, for instance the group accounts and uploading pictures to events. These are to be done to increase the desired effect of actually experiencing an activity in real life and then being able to present it to those that were involved in performing it. As the launched site is still a beta version at the date of this publication, there are also small fixes that need addressing. The main focus of the present site is to get user feedback and being able to tweak certain implemented functionalities to the customers desires.
Chapter 7

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