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Internal website development process

Author(s) Title	Alina Kelo Internal website development process
Number of Pages Date	66 pages 28 November 2017
Degree	Master's degree
Degree Programme	Masters of Business Informatics
Specialisation option	-
Instructor(s)	James Collins

This thesis presents a process that supports website development from an internal perspective for the target organization, Huhtamaki. Huhtamaki specializes in food and drink packaging and competes in the global packaging markets. The company itself is divided into four different business segments that all work individually towards their goals. The web environment concentrates on providing a stable and safe platform on which all four business segments can build their web environment on. The target group of the process was the internal website development project team of the target organization.

In this thesis, the challenge was that Huhtamaki was missing an internal development process that supported the business throughout the website projects. To understand the issue more in depth, both qualitative interviews and action research were applied. From these, both the current weaknesses and strengths were identified that needed to be tackled with the website development process.

For the conceptual framework, the best practices of website development process were studied to form an overall idea of what is recommended and what different processes there are. From those the once most suitable for an internal process were chosen and presented to provide insight into the steps required.

The process was developed using the best practices from the conceptual framework and the information gathered from within Huhtamaki. In addition it provides information for the IT and Communications on when they are to be part of the process. The process was validated internally and overall approved with the notion that this process must be reviewed often and improved when required.

The process is taken into use and improved through continuous improvement. In addition, the technical infrastructure designs to security are to be reviewed based on the findings and the process.

Keywords	website, development, process, internal, web development

Contents

1   Introduction

1.1   Overview

Websites are said to be the business card of the company in today's world. If taking this thought into account, first impressions are not made during the first handshakes but when the customer first enters the website. If the company has not recognized the importance of their website and shared this knowledge throughout the organization with working tools, it can lead to poor development and administration of the website. Then the output can be an unsatisfactory website which can already at that stage drive off the potential customers.

Nowadays the website and graphic design markets provide a large variety of experts that can help the company create a website for them but it is not merely enough that the experts know what they are doing and they have they're project process.   The businesses as the customer in these projects are required to give their input as well and it could be noted that long before the experts are brought in, the business must have already sat down and thought about the web site in detail.

In this thesis, I will concentrate on the creation of a new internal website development and administration process for Huhtamaki from a technical project manager's point of view. The process is not meant for the experts to use but only for the internal use which will be applicable to the experts' way of running a website project. I will look at the current processes as well as past projects and combine that knowledge with an on-going website creation project at Huhtamaki. Throughout the project I will be making improvement changes to the process and in the end based on my overall review of all the knowledge I have gathered, I will present an improved website development and administration process for Huhtamaki.

As the output I will present a new website development and administration process that will support my work as the technical project manager at Huhtamaki but also the business as well when a new website project begins. The renewed process is to provide more consistent and stable developing and administering of the company's websites.

1.2 Case company

The company in this thesis is Huhtamaki which specializes in food and drink packaging. It is a Finnish company that competes in global packaging markets with its headquarter based in Espoo, Finland. Even thought, the Finnish markets have had its fair share of gloomy days in the past years, Huhtamaki has been able to grow. As reported by Helsingin Sanomat (2015) Huhtamaki's revenue grew 23% during January-September in 2015 reaching 2 billion euros. They have also made substantial acquisitions in the past years taking a foot hold in multiple regions globally.

Huhtamaki's global influence is represented by 71 manufacturing units and 23 sales offices in 34 countries. All together Huhtamaki consists of 15,800 employees globally with Jukka Moisio as the CEO. The business at Huhtamaki is structured into four segments; Foodservice, North America, Molded Fiber and Flexible Packaging. Each segment concentrates on certain packaging types which are manufactured at specific units.

This division is also visible on how the company's website environment is structure. In addition to the corporate site, each segment has their main site as well as additional sub-sites. This short description of Huhtamaki websites is only an indication to how many sites the company actually has, but in addition the variety is large. This structure is opened up in the thesis in more detail in the coming chapters.

1.3 Business challenge

Websites are a crucial communication channel for businesses. A business cannot survive without a website nowadays for it is the main channel for the company to provide exact correct information for site visitors and potential customers. For a company to be able to create websites by which they reach their target groups, it not only requires the work of web developer experts but also the commitment from the business itself. By it is meant that not only do the experts need exact and clear processes to be able to create a successful website but also the business must have internal processes in place.

The challenge, which is faced at Huhtamaki, is that the company is missing a clear internal website development process for the business. In today's world it is merely not enough that the web developer experts understand website development and the pro-

cesses but it is also important for organizations to have an internal process in place which is developed from the business point of view and for internal use.

The lack of the internal process clearly has created an environment where the websites are experiencing difficulties due to poor planning; they are paying extra for fixing the issues found and the internal knowledge on what the website consists of is not there. It is clear that missing the internal process for website development is causing challenges within the company. With creating a new internal website development process the challenges can be reduced and in the future make the work more seamless and stable with also growing the knowledge internally on the website environment and the specific sites themselves.

1.4   Objective and scope

The objective of the thesis is to create an internal website development process. The process is to support the business with future website development projects. It must also provide the correct building blocks so that the website meets the requirements of Huhtamaki from the brand and technology perspective.

The objective can be broken down by identifying what areas the process should include. It must be taken into account, that the detailed objectives might change during the research but as a whole, the main objective mentioned in the previous paragraph is to stay the same. The objective in detail is to provide; a clear and attainable documentation, to take into account the technical as well as the business point of view and to construct the process so that it is transferable between different website projects.

The scope of the thesis is to only concentrate on the internal development process. By this is meant that the process will not include any elements that would require an external vendor to change their processes. The internal process is to only provide the correct tools for the Huhtamaki organization and will therefore not include deep technical details that are not relevant from the business units' perspective.

The content of the websites will also be excluded from the scope. The process will not hold detailed information on how content is to be created from the Huhtamaki perspective. The process will only include the content creation in a more practical way with the

note that the nature of the content is to also be taken into account by the business segments. To more detail, this topic will not be dealt with.

In the thesis, the subject was researched from the technical project manager point of view. The reason for this was that the researcher's role in the organization is tightly part of the website environment in everyday work but also that the researcher was the technical project manager during the website development project which is used as a base in this thesis. Also the administration of the websites and the portal environment falls under then technical project manager responsibilities and this provides the possibility to view the current status from an overall perspective. This it will surely create a backbone to the process that the technical project manager can use in the future projects.

The last point to add to the scope is that the current improvements are to concentrate on the current portal environment as well as the current structure of the business. It can most likely be that in the end it is possible to identify certain areas that will need further improvement but in this thesis I will only concentrate on how to improve the process in the current environment.

2 Method and material

2.1 Research approach

As the research approach it was most suitable to use action research. In addition to this, it was identified that qualitative research would be utilized at the beginning in action research to gain knowledge of the phenomenon. In the next two chapters these two research approaches are defined and the reasons for them being chosen are discussed.

2.1.1 Action research

> "Action research starts from where qualitative and quantitative research finished."
> (Kananen, 2013, p.40)

By merely looking at the previous quote, it can be stated that understanding the phenomenon isn't enough; in action research the target is to act upon that knowledge gained and to change the element in question. It is also important to understand the meaning of knowledge in action research. This is noted by Coghlan and Brannick

(2013) that the form of knowledge that action research aims to produce is practical knowing, the knowing that shapes the quality of your moment-to-moment action.

As an approach, action research also provides the researcher the opportunity to be part of the research and to take real action to see what changes come about and how it affects the research.

According to Coghlan &Brannick (2013) action research consists of four step process; constructing, planning action, taking action and evaluating action. It also compromises of an additional step in the beginning called context and purpose. During the pre-step, qualitative research will be used which is explained in the next chapter.
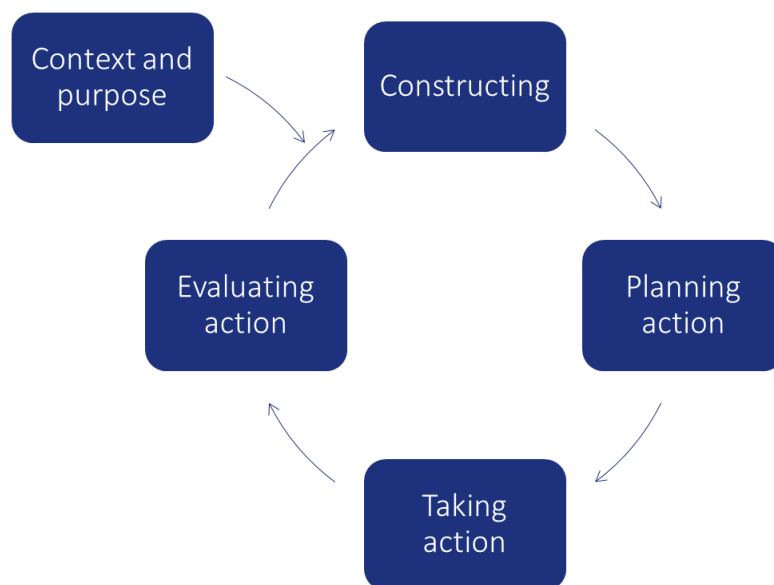

Figure 1. The action research cycle (Coghlan and Brannick, 2013, p.8)

The researcher must pass through each stage to be able to conduct the study in action research manner. In most cases action research only consists the four states present-ed in a cycle mode. It is presented by Coghal and Brannick that the cycle would also consist of a pre-stage; Context and purpose.

The idea behind the pre-stage is to define the context of the project. The details of why action research was chosen are to be discussed in the coming text but it is valuable to mention that the thesis is created based on an on-going project where action research is the correct approach to choose. Therefore the additional step is important in this context. Coghlan and Brannick mention that the stage provides clarity to the desired future state and creates the necessary networks and relationships to the owners of the project as well as the critical persons who will be working on the project.

Even though the cyclical stages might seem simple enough it might be important to note that through the process it can have overlaps and not in the end a walk in the park. To bring more clarity to the stages even more it is suggested by Taylor, Wilkie, and Baser, (2006) that the action research process could be conceptualize into the following steps:

- Identifying an area for investigation and a need for change (research)
- Carry out changes (action)
- Look at effects for changes (research)
- Replan/adjust changes (action)
- Repeat!
- Make a constant effort to link reflection and practice

(Taylor, Wilkie, and Baser, 2006, p.6)

Action research is also usually very topic specific. By this, it is meant that the results cannot easily be adapted to another environment. The findings and the changes tend to suit the environment where the research was done in due to the detailed specifics that were implemented and changed.

> …it is unlikely that research results could be generalised to other settings; rather, the action research project is concerned with effecting change locally, in istu.
> (Taylor, Wilkie, and Baser, 2006, p.6)

Action research was the most suitable approach for this thesis due since it included elements that suited the environment where the research would be conducted in. It was also the research approach from which I would, as the technical project manager, benefit the most. It would provide me valuable information now that I would then be able to transfer onto the next project that I know to be the same. There were multiple action research elements that suited this thesis; researcher is part of the project team, the researcher is able to collaborate and implement change and the cycle for in how the research is conducted. The collaboration and researcher being part of the project as well is noted by many.

Action research has been traditionally defined as an approach to research which is based on a collaborative problem solving relationship between the researcher and the client.
(Coghlan, Brannick, 2013)

A conductor of action research is often a member of the research object. Action research requires the researcher to have more knowledge and understanding of a phenomenon than the traditional research as the aim here is a change and its testing and implementation.
(Kananen, 2013, p.41)

…action research is more targeted at people and their possibilities to influence and getting them involved in the change.
(Kananen, 2013, p.41)

2.1.2   Qualitative research

It could be argued that this is just a part of action research. Qualitative plays an important part in this thesis's action research approach in the beginning since it is a suitable means to gather information of the current state and also the history. Qualitative research provides the information and feedback that cannot be found in the documentation nor surveys. In simple terms, qualitative research lets the researcher understand the phenomenon.

"Interviewing provides a way of generating empirical data about the social world by asking people to talk about their lives. In this respect, interviews are special forms of conversation. While these conversations may vary from highly structured, standardized, quantitatively oriented survey interviews, to semi-formal guided conversations and free-flowing guided informational exchanges, all interviews are interactional."
(Holstein, Gubrium, 1997, p.113)

"Qualitative research uses words and sentences whereas quantitative research is based on numbers. Qualitative research does not aim for generalizations like quantitative research. The purpose is to describe and understand a phenomenon and give it a reasonable interpretation"
(Kananen, 2013, p.31)

Qualitative research is conducted through interviews where the structure can vary as pointed out by Holstein and Gubrium.

> "...conversations may vary from highly structured, standardized, quantitatively oriented survey interviews, to semi-formal guided conversations and free-flowing informational exchanges..."
> (Holstein, Gubrium, 1997, p.113)

2.2 Research design

In the following chapter, the research design of this thesis will be described. It will contain the detailed outline how the research is conducted. The Figure 2 contains the six steps that the research design consists of as well as the data that is required and the outputs.
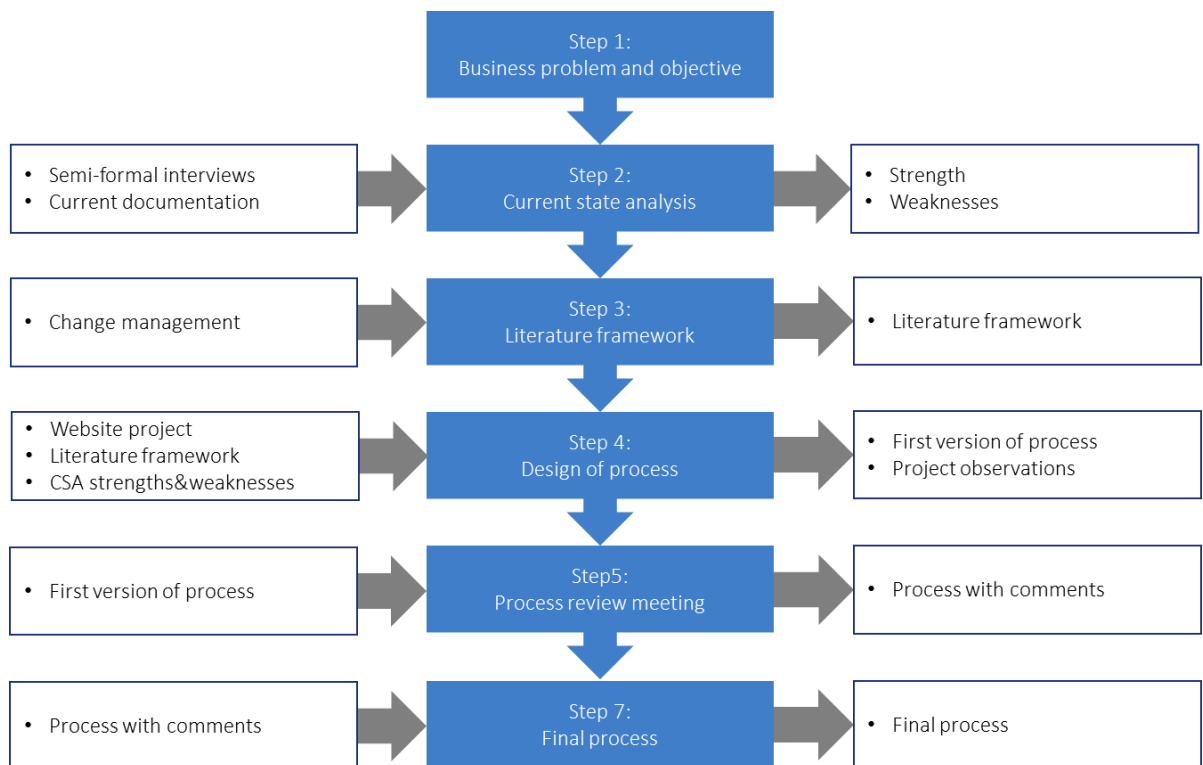

Figure 2. Research design

The first step was to identify the business problem and the objective. The problem was identified from the area of work where the researcher herself worked in the company. Based on the hunch and the short discussion held with the manager the problem was identified. Once the problem was decided on an objective was then formulated to set a clear target for the research.

After the first step in the research design, the current state analysis was made. The analysis was formed from two sources; semi-formal interviews and available documentation used previously inside the organization.

All together three interviews were planned to be held. These interviews included challenges which are described in the chapter 2.3 called Limitations. Due to the relationship between the researcher and the interviewees the interview approach was planned as semi-formal which provided the chance for the interviewees to speak their minds on the chosen subject but for the researcher to still have a structure. The interviewees were planned to be from different parts of the organization who had been or were often in touch with web development projects inside the organization. The chosen units were a business unit member who had just finished an website development project and members from IT and Communications.

Due to the semi-formal approach, the interview structure included a set of three questions that would provide a backbone for the interview as well as to ensure that the main critical issues are covered. These questions are listed in Table 1.

Question 1	How familiar are you with the current website development process at Huhtamaki?
Question 2	What elements do you think work currently in the process?
Question 3	What elements don't you think work in the process?

Table 1. Interview questions

The second data was the documentation available at the Huhtamaki organization regarding website development projects. In the beginning the researcher began with gathering all documentation that had a part to play in the website environment of Huhtamaki. The main interest laid within website development processes that were being used currently. From these two data sets the researcher was then able to form

an conclusion on the strengths and the weaknesses of the current state of the website development process.

The third step of the research design is the literature framework. In this step the researcher leverages relevant literature to achieve deeper understanding of certain topics. The topics were chosen based on the current state analysis. As mentioned the goal of the framework was to gain more understanding but also to possibly to new and innovative ways to support the business in website development process.

The literature framework was the third step of the research design where the researcher read on the identified literature areas to gather more theory based information. This information was then used in the fourth step to bring more depth and understanding to the process.

The fourth step consists of creating the first version of the internal website development process. The version was formed using the knowledge gathered from the current state analysis as well as the literature framework. The output of this step was the first version of the process which was created during a website development project.

The created process was than reviewed. The review was held as a meeting with the IT and Communication and the data used for the review was the first version of the process. Before the meeting the researcher shared the process with the units in question for them to be able to familiarize themselves with it. With this the researcher's aim was to receive more in depth comments in the meeting to come. During the meeting the researcher presented the process once more to the units and gathered the comments into a list.

In the last step the process was finalized. The data used for this were the comments received from the previous step. The output of the step was the final version of the process which was then used in the upcoming website development project in Huhtamaki. It must be noted that this process is closer to a living organism and must be reviewed often after the research to keep up with the changing website environment.

2.3   Thesis limitations

The research included a limitation that affected the amount of data that was planned to be gathered during the current state analysis. The research design chapter mentions that in the beginning it was planned that the research would include three interviews. This set of three could not be held due to difficulties in arranging the interviews. In the end only one interview was held with the manager from the IT business unit.

Though this issue was met, it must be noted that the limited amount of information that was received does not undermine the thesis in any way. The data received from one interview with the IT unit includes a large amount knowledge which has been gathered though out the years of expertise on the subject. Therefore the information does provide an overall look at the current state even without the other two interviews.

The other reason for the limitation not undermining the new process created through the research is that the process is only based on the best knowledge possible at that current moment. It is also mentioned in the research design chapter that even though the final process is created in the last step, it does not mean that the process will than stay unchanged. It is a process that will have to go through continuous improvement to support the organization and therefore feedback and comments from the missing units can then be taken easily into account.

3   Current status analysis

In the following chapter the current status is analysed. Based on the findings from the analysis the weaknesses and the strengths of the current process are listed at the end of the chapter. The data used were the semi-formal interviews as well as available documentation on the current process, portal platform set up and the observations made by the researcher themselves.

3.1   Platform environment

In the following chapter the background of the current platform and website environment is described to provide more understanding on what the current state is.

3.1.1   Background

Approximately three years ago Huhtamaki renewed their brand image which set off a need to also renew their website environment. Along with the brand change it was agreed that the website environment would be built on top of the newest 6.2 Enterprise edition of the Liferay platform and the old websites would be built from scratch on top of this new platform chosen.

Liferay is an open source platform and therefore enables a flexible development for websites. At Huhtamaki Liferay is only being used for website development even though it could offer services and tools for social collaboration. Liferay as a website development platform offers integration with other tools. Due to it being very flexible with this feature it is especially well fit to integrate with user directories such as Active Directory or with single sign-on systems like OpenSSA which can critical for enterprises such as Huhtamaki.

Liferay also provides the possibility to host multiple websites on one portal which is a relevant advantage in Huhtamaki's website environment case. This element makes it possible to have all wanted websites in one place where the user management pro-vides the ability to still manage the environment and the users.

3.1.2   Web environment

For understanding the thesis overall, it is critical to provide a introduction of the web environment and the development model.

The web environment consists of three different servers called production, staging and development as seen in Figure 3. These servers are referred to as environments which all have their own unique task in a website development. The production environment holds the final and live versions of the websites are based, staging is for testing and development is for coding.
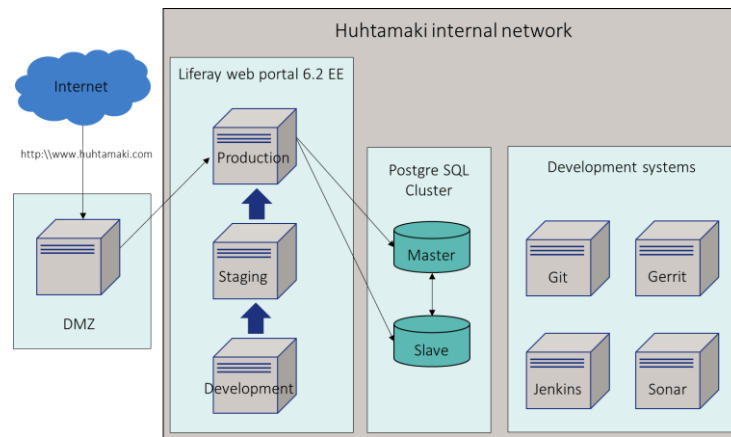
Figure 3. Huhtamaki web environment

A Continuous Integration (CI) model was chosen as the development model for the Huhtamaki web environment. The model provides a flexible environment for development where project do not have to wait. It also decreases the development process as a whole. The CI environment is handled by the developers and it provides the developers an environment where automated tests are run as well as the possibility for multiple developers to inspect the code.

The Continuous Integration has an extension call the Continuous Delivery which consists of the previously mentioned three environment; production, staging and development. In Figure 4 the Continuous Integration and the Continous Delivery are presented to provide an overview of the whole cycle.

Figure 4: Continuous Integration and Continuous Delivery environment

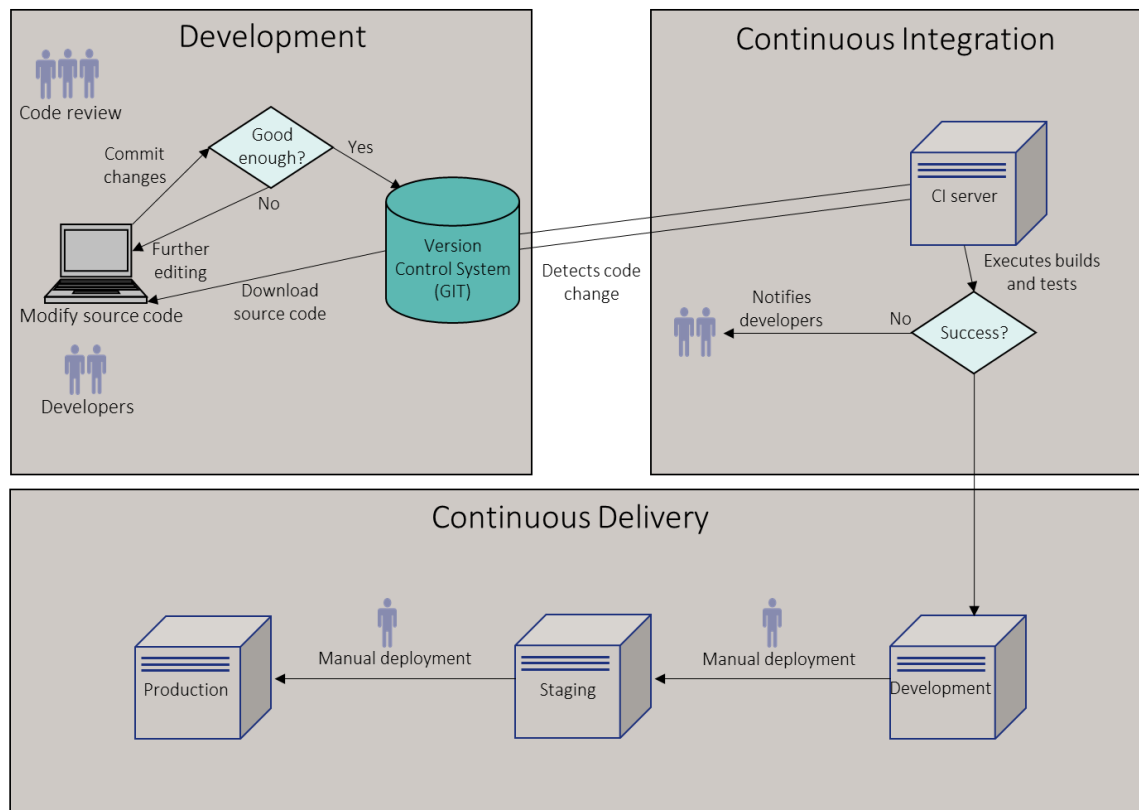This extension handles the websites' publishing process and it also offers version control as well where it is possible to revert to an older version if an issue is detected. The developers handle the publishing between the different environments with manual deployment. The editors of the sites have access to the staging and publishing environments.

As displayed in the Figure 4 there are phases that must be taken to ensure good quality code as well as keep track of versions before an editor can get their hands on the website. In high level the building of the site using this model begins in the Development phase where the source code is created by developers. These changes are reviewed and commit to the version control system. The source code is moved into the CI server where the Continuous Integration takes place. At this point the system is able to run automated tests on the code and detect any errors. If that is to occur the developers are notified immediately and the code can be fixed.

Once the CI environment has accepted the code it is updated to the Development server and reviewed by the developers. At this point the code is updated to the staging

environment which means that the editors are for the first time able to see their site as well as test functionalities. Once different parts start to be approved the code is updated to the production environment and made live on the Internet.

If any issues, developments, or errors are to occur in the production environment, the developers are to pick the latest version of the source code up from the CI server and move begin working on it in the development phase in the beginning. The fixed or updated code must once again go through the CI environment and from there be brought through the three different environments to reach the production server.

3.1.3   Website structure

In 2014 Huhtamaki's new Liferay platform was taken into use and the first site building began. When the thesis research started Huhtamaki's website structure had grown to three separate website which did not have any subsite.

When the new platform was set up, the target was to move all the organizational websites under this one platform to provide one common point. At this current point not all segments had started their project to build their website onto the platform so therefore it was clear that the amount of websites were to grow.

At the start of the research one segment was under-going a website development project which would grow the websites amount from three to over twenty sites which was to include sites as well as subsite. The image underneath presents the current live website, the sites under construction and the planned sites.
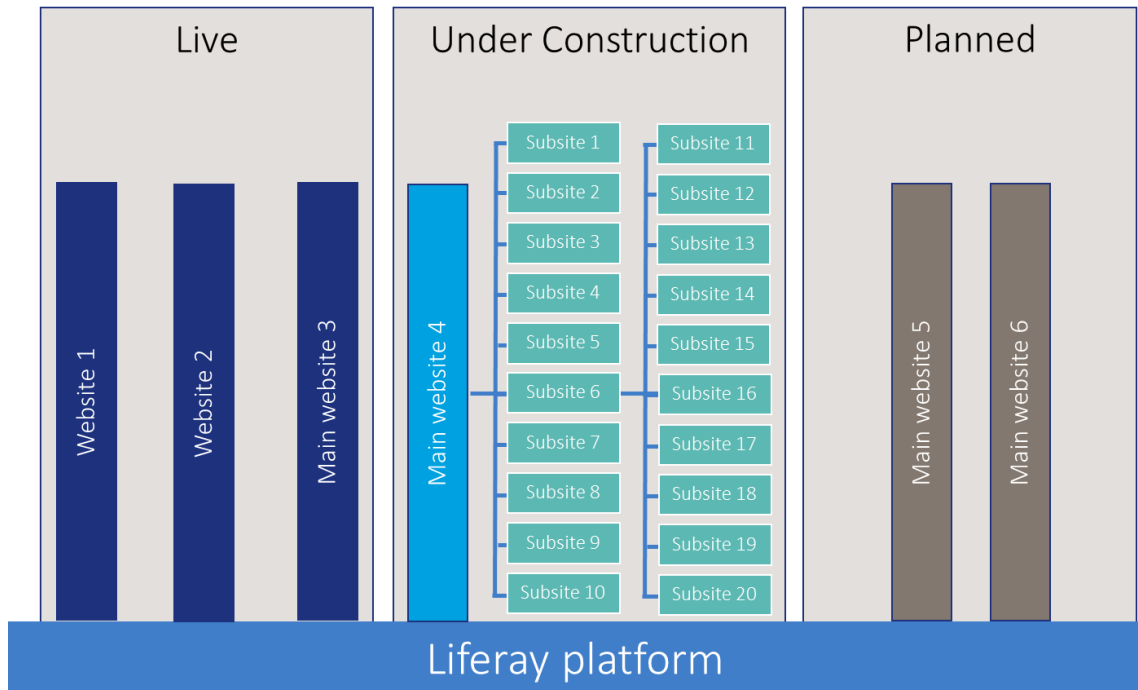
Figure 5: Website structure

The structure on how the websites were managed consisted of multiple people. Overall the platform was managed by a team in IT to provide a secure and smoothly working platform on which the business units were able to build their website on and Communications provided brand guidelines for new website development projects. Each website then was managed by one individual editor from the business unit in question.

3.2   Interviews

For the current state analysis one interview was held. Initial three interviews were planned to gather information not only from the IT unit but also receive an input from the Communications as well as from one business segment. Due to certain difficulties the only interview that took place was with the IT units Group IS service manager. The interview was held as semi-formal due to the nature of the situation.

At the beginning of the interview the researcher concentrated on the current process that was found in the Business segment website planner document which is reviewed in the previous chapter. The manager commented that the process is there is no longer applicable and has not been used in projects as the base structure. The document it-

self has not been reviewed in a long time which is identifiable already from the old information it contains.

During the interview a few main topics were discussed; roles and responsibilities, communication, the steps required at the beginning of the project and at the end. Most elements were transferable between a website development project and the maintenance of a live website.

The manager felt that the main challenge that was causing multiple issues was the lack of ownership. He commented this role and responsibility structure has not been and this created a situation that nothing happened. It was noted that of course website projects did have different roles but these roles would be heavily part of the everyday website maintenance as well.

One main challenge that was mentioned as well by the manager was the lack of communication. The current status on how any information regarding the website has been distributed to the business segments has mainly been inconsistent as well as sparse. There has been monthly meeting between the different editors of the segments as well as the IT and Communications but for reasons unknown these meetings ended. The rest of the communications has been based the Communications and IT have a few process and policies here and there but the segments have mostly been left alone without concrete support.

Another point made by the manger in the interview was that there is clearly a lack of knowledge in how website development project are ran. He points out that in his opinion websites should not start with the initial cost being set but with the detailed plan of why the project is needed, what we want to achieve and how can those be measured. Only then would the cost be relevant for discussion.
Also it was noted that overall the company would require more understanding in why websites are needed and what are the benefits that they bring to the company. So the development projects are more likely to be seen as a topic of anxiety than something that could be of great possibilities

To summarize the comments of the manager, he wants to emphasize that we should build the internal process of website development inside Huhtamaki. This would require finding new working ways of communicating and supporting the business but also growing the knowledge on what a website development project is and what it requires.

3.3   Documents

In the following chapter the documents related to the website development process inside Huhtamaki are inspected and reviewed to provide insight in how the process itself had been designed. The strengths and weaknesses of each document is assessed.

In the beginning it was identified that there were two main documents on the website development process; Business Segment website planner and the Huhtamaki website development. Each document is reviewed in detail below but it can already at this point be pointed that the first document, Business Segment website planner is the main document in website development and the Huhtamaki website development document is most likely an overview of the environment and the process and with more emphasize on the technical aspect of the environments as well. The third document to be used in the current state analysis is one segments website process. The target is to review the document and pin point any sections that are connected to website development.

3.3.1   Business segment webpage planner document

The first document, Business segment webpage planner, is compact documentation that includes many topics related of website development. The following areas that the documentation includes are: responsibilities, Business segment website build process, website design, content administration and website administration and these areas are inspected more closely in the following paragraphs. The document has been created in 2012 and based on the researcher's findings has not been updated since. This date also indicates to the researcher that it has been created before Huhtamaki moved into using the new Liferay platform.

The responsibility section included a very high-level overview of the site structure and the responsibilities between a website team member together with a sponsor and Communications and IT. It can be noted straight away that the structure is outdated with segments that are no longer part of Huhtamaki. The responsibilities do not take straight forward contact to website development project but are more of guidelines to all in the website environment. The table underneath are gathered the responsibilities:

Who	Responsibilities
website team member and sponsor	• Ensuring that the objectives off the website remain in line with the business requirements as specified in this document • Ensuring compliance with agreed-to web design specifications and website guidelines • Allocating resources, including content creation, personnel and budgets • Meeting website project milestone • Monitoring feedback and recommending site improvements
Group Communications and Group IS (IT)	• Technical platform Liferay and Content management System. Guidelines for technical website build and portal administrator support. Technical application development standards and guidelines. • Guidelines for design and content management. Guidelines for domain names and domain maintenance.

Table 1. Business segment webpage planner document: Responsibilities

One of the most interesting parts of the documentation for this research was the Business segment website build process. It is listed in eight steps without any reference to an introduction or other details that are crucial in website development. The process is:

1. Segment informs Group Communications (GC) about interest to create a website.
2. GC provides guidelines and recommendations for design, content creation, domain names; Group IS explains technical considerations.

3. Project plan submitted to GC for review. Plan should include description of need, time line, project team including external contacts, tasks and responsibilities, proposed navigation (sitemap, 1st and 2nd level only), proposed domain name.
4. Project plan should be approved by business segment Executive Vice President.
5. Once project plan has been approved, segment can start development work of the website.
6. Domain registration:
   - If this is a new domain, GS will either register the domain or request routing of Domain Name System (DNS) with a group Internet Service Provider (ISP)
7. Before the development is completed, segment should submit the prototype of the site for GC for review. Segment informs GC and Group IS about intended launch date.
8. After GC review is completed and possible amendments are complete, segment confirms the publish date for Group IS one business week before the actual launch
   - Once the domain has been registered, or both DNS routing and configuration of Virtual Host done, it will take 24-48 hours before the new domain name is replicated everywhere globally.

The document also includes web design section which explains what certain elements the Huhtamaki websites must include, what the brand colours are and what images are to be used on Huhtamaki sites. The documentation also includes a content administration section which provides a guideline for how content is to be created and managed. In this section a few roles are mentioned which are content administrator and overall website manager. These roles' responsibilities are left vague and therefore no real identification between a everyday website management and a website development project can be made.

3.3.2 Huhtamaki' website development document

The second document is not a documentation of the website environment but more in a presentation mode. There are though clear fundamental topics that are related to the website development process. The document has been created in 2015 and includes a website build process more from the business segment point of view as well as a building process from the technical point of view.

The interesting finding is that the development process which is described in the document is the same process which was listed in the earlier chapter in the other documentation. The process has only been compressed into a more straight forward process which delivers very little support to a business unit who is looking to create a

website. The other fact that makes this finding interesting is that it implies that the process has not been reviewed since 2012.

Another topic that is worth mentioning is that the technical development of the site is informed in the presentation. There is a clear notion that there has been the need for others to understand the publishing process and the Continuous integration model since it has been added alongside the development process. This process very much part of the development process of a website but is detached from the other process described earlier.

It seemed that the presentation which includes good basic technical information lacks in the roles and the responsibilities. The only indication of any roles is that those are business unit role vaguely and the vendor roles but their responsibilities are once again left out.

3.4   Researcher observations

The researcher was able to make observations of the current status due to the role of the researcher within the organization. In the table beneath, are the observations made by the researcher through a certain period of time before the development of the new process.

The main issue noticed by the researcher was that there actually was no process in place. The process that was documented which was also mentioned in the previous chapters was not enforced and therefore with time the process was not valid in most situations. Also due to the legacy of the way the segments worked allowed for a very independent way of working which had created an environment where nearly all did what they wanted within their own segments. Even though the headquarters did have somewhat of an idea of how the websites should be developed the lack of resources and time and the legacy, the segments were able to create site's with neatly any process that suit them.

The second challenge was clearly on the roles, responsibilities which also included understanding the guidelines and the policies in place. The lack of roles and responsibilities had created an environment where no one knew who to contact in case of challenges or who was responsible for the decisions or even budget. Also this lack consist-

ed of the fact that the development project did not include all the necessary units inside an organization. This had created situations where decisions were made which were expensive and time consuming to fix later on. This could also be due to the tight resources that the headquarters is able to provide and therefore Communications as well as the IT units cannot provide such support as the business would need in any website related topics.

The third element that the researcher in her role in the organization had noticed was that there was a clear uncertainty as well as lack of knowledge on what website development project should consist of and what were important steps to take. The process that had been documented did not explain a development process in any detail and left the business to figure the process themselves out.

Due to all the challenges that websites held regardless of whether it was a question of a website project or only general maintenance, the overall attitude towards websites seemed negative. The website project or maintenance was regarded as time consuming or just an additional work that had to be quickly without deeper understanding to be taken care of. It was also notable that the businesses were not familiar with their sites nor had they had any training. Also it was noticeable that most of them did or could not answer the question of what was the target of the site and how was the site planned.

Overall the researcher was able to identify numerous issues with the current set up which was causing multiple issues around the website environment

3.5 Strengths and weaknesses

In the following chapter the strengths and weaknesses are summarized based on the findings in the current state analysis. The findings are listed into the table beneath consisting of the main strength or weakness as well as a short description to it.

Strength	Description
Supportive units	Communications and IT are supporting the business units in the beginning of the process
Roles	High level roles were identified
Weakness	**Description**
Current documentation	It is out of date and does not support any units.

No website development process	An actual development process is missing. Only lightly touched upon in one document.
Roles and responsibilities	- Have not been clearly identified in any documentation. - Maintenance and website development difference are not identified either. - No ownership.
Lack of support	IT and Communications only supports the business units in the very beginning of a project
Lack of knowledge	The units within the organization did not understand fully what a website development project required, how it was to be run through and what crucial elements in website development projects are.
Lack of interest	Units did not understand fully why websites were needed and were also therefore incapable of identified what sites were crucial and what were not in their own business.
Resources	The organization lacks in resources and therefore there are no qualified people to take responsibility of the site
No planning	Business units seem to jump into the development phase without concrete planning. lack of planning has caused additional cost later on once site is live.
Supportive information missing	The documentations included very little supportive guidelines for maintenance or development
Communication missing	The communication between the supportive units and business units is missing.
Website issues	There are a number issues rising up from live websites that are due to the lack of poor planning.

Table 2: List of weaknesses and strengths from current state analysis

When looking at the Table 2 it might seem as if there are multiple issues but with closer inspection it can actually be identified that there is a certain element that seems to be creating all the weaknesses. Projects require a process and this brings the knowledge how a project is to be seen through and what elements are to be taken into account. Since there is no process for web site development that can be used as the backcone for all web site projects, it is not a surprise that frustration and a lack of interest is seen in the results.

4 Best practices of website development process

In the following chapters a variety of website development processes are inspected in detail which will form the literature review part of this thesis. The aim of the chapter is to identify the best practices for web site development process and to gather enough information from which a process for Huhtamaki company can be formed.

4.1 Why have web development processes?

All who have worked on website projects know that these types of projects are highly prone to meet challenges and even in the end fail. Without having a clear process in place that includes all the necessary elements, the project is mostly likely to fail in all aspects. Although this might seems a harsh judgement it clearly is noted by many authors such as Friedlein and NewDesignGroup.

> "It is important to create standards and processes to which you team can work. For a team to form quickly – and then to perform successfully in delivering quality, and delivering on time and within budget – it helps enormously if all work to a single structure and system. This structure will not stifle creativity but infuse confidence in the project and the team, promoting rather than inhibiting calculated risk taking, innovation, and creative excellence – within the controlling parameters you establish and monitor."
> (Friedlein, 2001, p.4)

> "The creation of every website follows a clear web design process. A client, who understands the basics of this process will appreciate what happens at each stage, will be clear about when the process can easily change direction and can communicate more knowledgeably with the web agency. Also, the more they know, the more the information provided by the web design team in their updates will make sense and prove more useful."
> (NewDesignGroup)

The harshness is brought upon by the web itself. The web as an environment is innovative platform itself that keeps changing in high speed without control. It as a platform is perfect for the world of web sites with all the possibilities from structured technical aspects to the wild creative designs but due to this setting it is also uncontrollable. This sets an immense pressure on web site projects not swing out of control and therefore it is crucial that the project sticks to a certain process.

"To get things done in a sensible fashion, you need to develop working practices that can contain and control change (to make sure projects don't spin out of control) but at the same time embrace change as one of the very life forces of the Web."
(Friedlein, 2001, p.4)

4.2   Process introduction

"A Web development process is a documented outline of the steps needed to be taken from start to finish in order to complete a typical Web design project. It divides and categorizes the work and then breaks these high-level sections into tasks and resources that can be used as a road map for each project."
(Reimer, 2011)

Most might think that a web site development process begins from the technical building and ends when the site is live. When reading through the literature it is clear that it is not that. In addition to the technical aspects, these projects require well thought out preparation and planning before anything can be done and also evaluation and maintenance once the site is live.

"…web project are often approached as "technology problems" and projects can get colored from the beginning by enthusiasms for particular web techniques rather than by human or business needs that emerge from engaging users in the development process."
(Lynch and Horton, 2016, p.6)

Another aspect that comes up often is that since the projects are handled from technical, the people are forgotten. As emphasized by Lynch and Horton, web development project are human centred project by commenting that people are the key to successful web projects at every stage of development. Though it is also important to remember that on top of the human input the process is needed there for the team to keep the project structured and not lose sight of the original goal.

As earlier mentioned the process is the glue that holds together the project. Most web processes follow quite the same backbone which can be roughly divided into three main areas; planning, development and maintenance. These three main levels can be then broken down into smaller sections. It can be noted in multiple references that before the web development process can begin it is crucial if not mandatory that certain

steps have been taken. It can even be argued that without these first key elements the actual development process itself consists of heavy risks.

4.2.1 Before the project starts

Before any web project can begin, the web team must be assembled. The actual development team regardless it being internal or external must consist of a certain set of core skills and the exact size and composition are based on various factors. The composition of the team will vary depending on the scope, budget, schedules, available resources, target market, the client to mention a few.

It can be noted that the team in question in literature is not from the clients' point of view but from the development team perspective. It can be argued that this information is not relevant in this thesis but this can be challenged. The more the client, so said the internal, has knowledge of what the web development team consists of, the more it ensures that the relationship works between the two parties. It has been mentioned that the relationship is an essential part of a successful web project and therefore it can be argued that the client must be aware of the web team and it should contain. This also emphasizes the need for the client to think about who form their side is required to take part in the project.

As previously mentioned a web development team must contain at least a certain set of skills to function probably. Horton and Lynch (2016) list the following set of core skills:

- Strategy and Planning
- Project management
- Information architecture and content development
- Visual and interaction design
- Web coding for themes and templates, the content management system and serve-side engineering
- Site production

The set of core skills is also listed by Friedlein (2001):
- Strategy
- Project management
- Architecture and design
- Content
- Programming

The two skill sets do not vary although with a first glimpse it might seem so. By inspecting both lists it can point out that all teams must comprise contain strategy, the project management, architecture, design, and technical implementation.

The skill set yet does not determine the number of team members. Also the skill sets per person may vary as stated by Friedlein:

> "Depending on the project, it may be that one person fills a role that covers more than one of these skill areas. Equally, each of these skill areas could have an entire team of its own, with extended and specialist skills contributed."
> (Friedlein, 2001, p.20)

When discussing the team, it was already mentioned earlier that the team in question is not the client itself but only concentrates what a web development team consists of. In most cases the client is rarely inspected in detail regarding its role and responsibilities and left to understand the whole process alone without real and clear idea of what is expected. However, Friedlein mentions the client and the importance of it. Although, it might seem strange that the client is set responsibilities even though they are the ones paying for the project, it provides more stability and clarity to the project itself.

Friedlein (2001) listed responsibilities that a client is to take care of. The list consists of the following:
- keeping to the terms and conditions set
- ensuring the availability of necessary internal resources
- delivery of content
- usability testing
- copy proofing including sign off

The list consists of vital responsibilities which, if not kept to, will result in a failed project. In the following chapter these responsibilities will be looked at more in detail but it can already be said that it is clear that also the client needs to gather a team of their own. It must consist of committed members who are able to the responsibilities when the project begins. From the clients side, the knowledge on how a project of this sort is to be run might not meet all standards but being able to gather a team with the will to learn and understand can be a key aspect when it comes to the success of the project.

Friedlein (2001) had constructed a team structure showing the roles that can constitute a large Web development team. When inspecting the structure it can be noted that there are certain teams that hold roles that can be provided or are even naturally identifiable on the client side. Friedlein has identified 9 main teams and the Project management, Content and Webmaster teams all hold roles that can be handled by the client or would be from Huhtamaki's perspective.

From the project management team, the project director role and the project manager role hold qualities that would also be valuable to have as a role on the client's site when the knowledge or resources are scares. It can be challenged that if the responsibilities like correctly resourced and planned, troubleshooting decisions, communicating, driving the project, and ensuring deadlines are only left to the web development team and not the client as such, it can be criticized that is it possible if the web development service is external. Another role which is interesting from the project management team is the QA tester. The responsibility of this role is to ensure that the site built meets the standards set in the project specifications. The QA tester can be large team or one person depending on the size of the project.

In addition to the project management team, the content team includes roles such as editor and researcher. Once again these roles can be filled in on the client side and will continue with the site's maintenance once the project is over. The editor's role is described in the following way:

> ' She will understand the target market very well, will set the tone of the content, ensure copywriting and content standards are maintained, develop new content areas, ensure content is kept up to date, and react to user feedback among similar duties.'
> (Friedlein, 2001, p.29)

The researcher role is to support the editor. They will not necessarily create concrete content but gather any material or search for new or additional information that helps the editor.

The most interesting roles from the list is the webmaster whose role covers a large variety of different tasks. This role specifically is mentioned to be a role that can either work on the client or agency side. The webmaster is described as the role that requires knowledge on sites' maintenance, administration, monitoring and updating. The webmaster is also the first contact when issues arise with the site.

As previously mentioned some of the roles can already be identified on the client's side and therefore it can be said that the client itself can gather the needed team together before the actual first step of the process begins.

4.3   Process overview

> "The result of poorly planned, hasty development efforts often is an "orphan site" starved of resources and attention."
> (Lynch & Horton, 2016, p.85)

> "The key to successful web development projects is the qualitative cooperation between customer and the web developers."
> (Burns, 2015)

All web site development projects should follow a strict process. The process provides some structure to a project that is very likely to face multiple challenges and therefore have a high rate in failing. The web development process is defined by Reimer (2011) as a documented outline of the steps needed to be taken from start to finish in order completing a typical web design project.

When reviewing the literature, it can be noted that the way the process is being presented can vary a lot but with closer inspection you can identify that there are clear key elements in all the process that take place. The common elements consist of planning, development, launch and maintenance. Each of these four are either called something

different or split into varies steps to provide more understanding of what the process includes.

Lynch and Horton (2016) present their development process as a seven step process:
1. Site definition and planning
2. Content inventory
3. Information architecture
4. Site design
5. Site construction
6. Site Marketing
7. Tracking, evaluation and maintenance

The process was also presented as in the Figure 6. The process described flows in a funnel type mode where the necessary tightening of focus ensures that the project gets done on time and on budget.
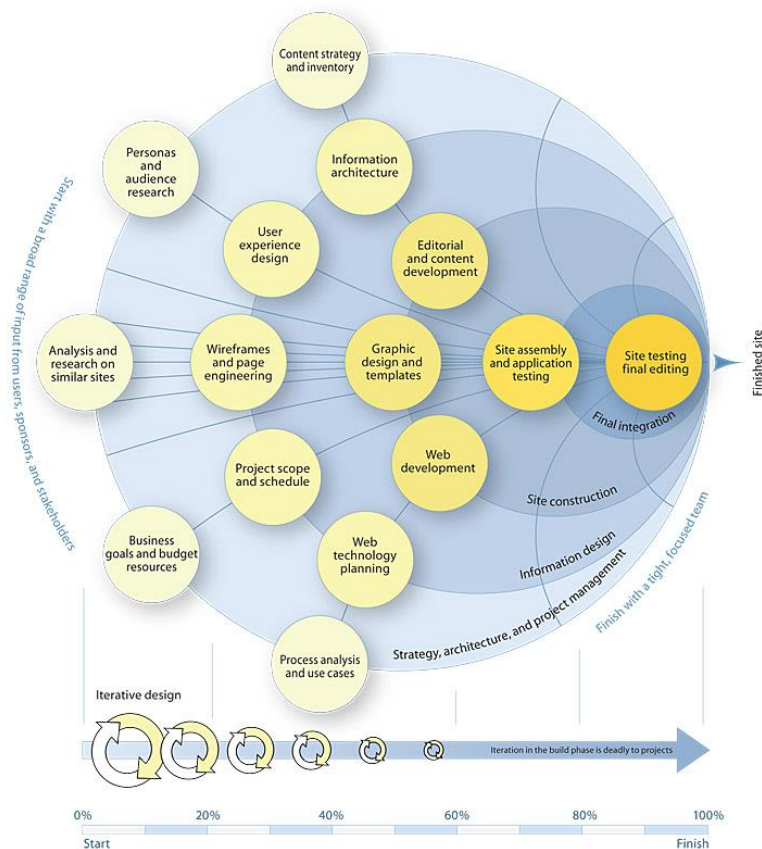

Figure 6 (Lynch & Horton, 2016, p.86)

The Figure 6 is not based on the seven basic steps presented earlier in the text but is another concept of web development projects. It can be noted that it does not open up very well at which point is the client's input is needed but it still enforces idea on how the ideas should be shed off or clarified when moving forward. If the project's focus is too vast and is not clarified there is chance the project fails.

Another way of looking at the process has been presented by Friedlein (2001). It has been split into four phases called preproduction, production, maintenance and evaluation. In the Figure 3 underneath it can be seen how these four phases have been split.

Phase 1			Phase 2			Phase 3	Phase 4
Preproduction			Production			Maintenance	Evaluation
Project clarification	Solution definition	Project specification	Content	Design and construction	Testing, launch and handover	Maintenance	Review and evaluation

Table 3 (Friedlein, 2001, p.43)

As already previously mentioned the processes provided a well-structured backbone for the developers but in the end, the client is left in the dark not understanding the process overall and not knowing exactly when their input was needed. All the communication on those matters is left to the partner to explain which in some cases can create also challenges.

One process presented by Simplesquare in Figure 7 has taken designed a way to present the process that the experts need to follow, at which point the client's input is needed and how large the input is. This is an excellent representation of how the client and expert are to work side-by-side with the same successful goal in mind. As seen in the Figure 8 the actual actions during the process vary depending if it is the developer or the client. This illustration provides easily the understanding for the client that what action the developer takes it usually has an action for the client as well.
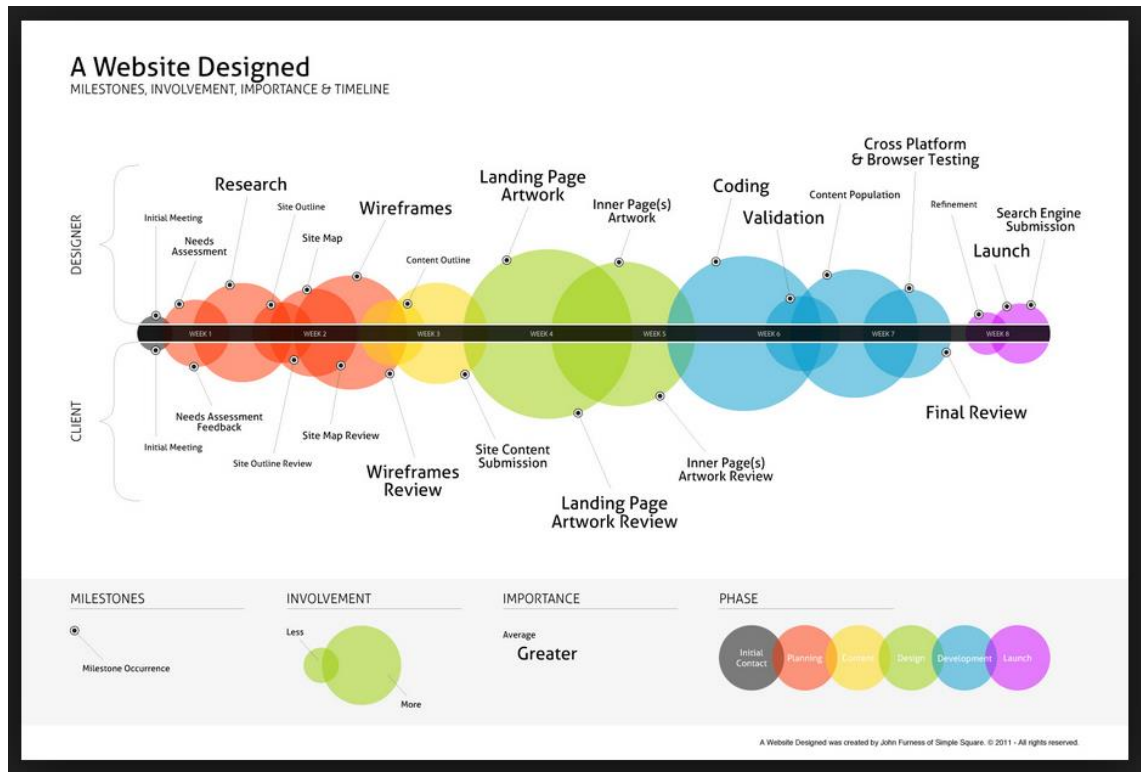
Figure 7: A website designed (Simplesquare)

It has been mentioned that all web projects are unique but they all follow the same log-ic for the process itself although the names can vary a bit. This can also been seen in the Figure 7 where Simplesquare has divided the process into six main phases which have been presented by different coloured circles. As it can be identified that there is a planning phase which in their case seems to include many phases whereas the devel-opment and launch are much simpler without undermining the actual work they with-hold.

To emphasize the need for the client to understand the process is well summaries by New Design Group as follows:

> "A client, who understands the basics of this process will appreciate what happens at
> each stage, will be clear about when the process can easily change direction and can communi-
> cate more knowledgeably with the web agency. Also, the more they know, the more the infor-
> mation provided by the web design team in their updates will make sense and prove more use-
> ful."
> (New Design Group)

The process in Figure 8 was designed by the New Design Group as a periodic table that consists of six main phases which are brief, planning, design, development, launch, and maintenance. Once again it can be said that these phases are very well if not exactly the same to the other examples that have been introduced in this chapter.
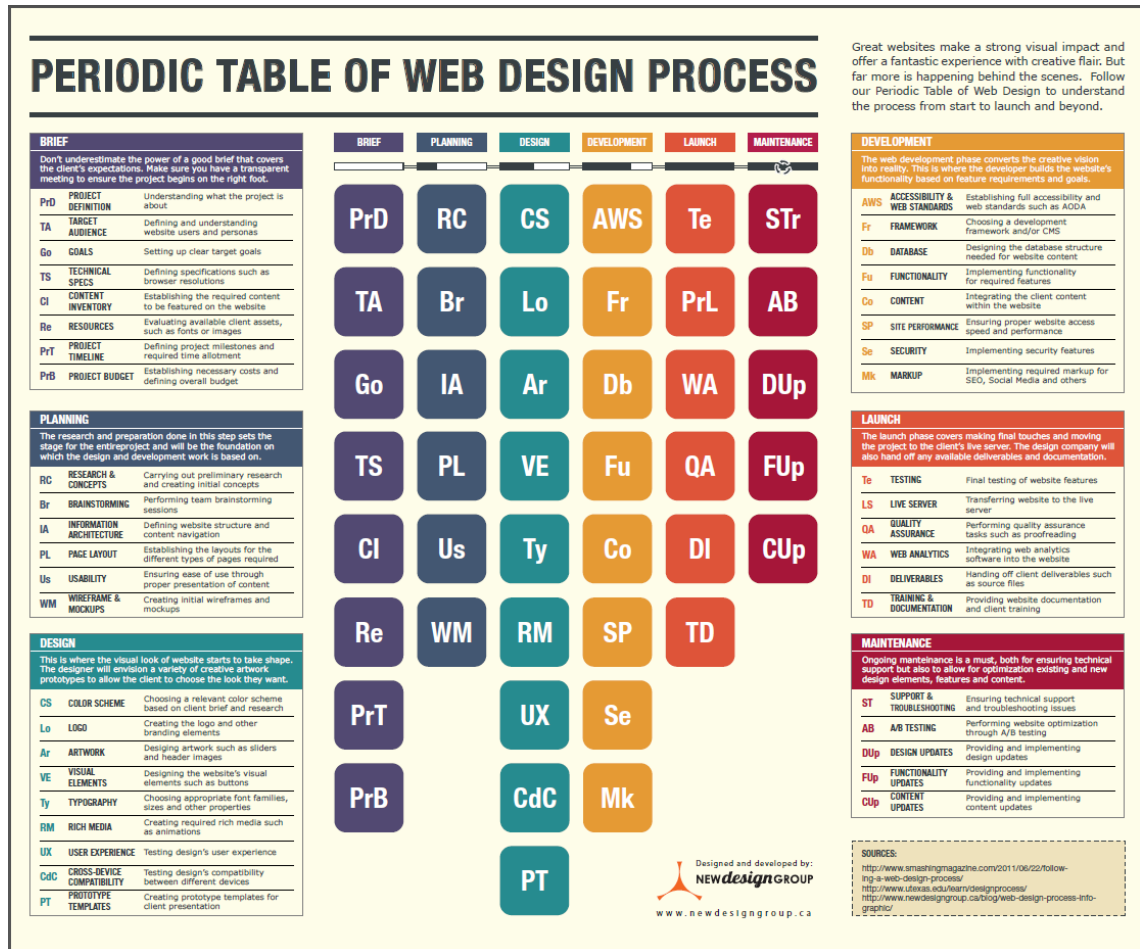
Figure 8: Periodic table of web design process (New design group)

To understand the process more in depth it is crucial to look at what each category holds. Previously four different processes were introduced. It can be noted that there is some variance between the processes but with closer inspection it can be noticed that all the processes can be divided into four main categories; planning, development, launch and maintenance. The table 4 underneath includes the four different processes introduced earlier and how their stages have been sorted into the four categories.

	Lynch & Horton	Friedlein	Simplesquare	Newdesigngroup
Planning	1. Site definition & planning	1. Project clarification 2. Solution definition 3. Project specifications	1. Initial contact 2. Planning	1. Brief 2. Planning
Development	2. Content inventory 3. Information architecture 4. Site design 5. Site construction	4. Content 5. Design & construction	3. Content 4. Design 5. Development	3. Design 4. Development
Launch	5.Site construction 6. Site marketing	6. Testing, launch and handover	6. Launch	5. Launch
Maintenance	7. Tracking, evaluation and maintenance	7. Maintenance 8. Review and evaluation		6. Maintenance

Table 4: Process stages divided into four main categories

In the following chapter each category is presented in detail to provide a broader understanding of what they include. This way it is easier to handle multiple processes and the stages each includes.

4.3.1   Planning

"A great deal of trouble can be averted through proper planning, allowing you in many cases to anticipate and diffuse problems before they arise."
(Friedlein, 2001, p.12)

Planning is the key to a successful web development project. During the planning phase the goals and objectives of the web site are defined and all the information gathered is analyzed with the budget and the resources can be justified. With detailed and thought-out planning the project is merely a game of Russian roulette where the chances to succeed is based on luck. Planning is the roadmap that increases the chances significantly of the website's outcome to be a success and decreases the

chances of elements such as new unexpected requirements or scope creep to come in and ensure failure. Especially for web projects, planning is the Holy Grail and all web developer experts often state that it is the most misunderstood section of the process and therefore the one the clients tend to skip.

Planning costs and clients tend have a difficult time understanding the value of the phase and rather jump to the development phase as quickly as possible backing up their hastiness by saying that they know what they want and there is no need to plan anymore. At this point it is the experts' choice to take the chance of continuing and accepting the risks or challenges the client.

Lynch and Horton (2016), Friedlein (2011), Reimer (2011) and Seigel (2011) discuss that the planning phase is the time of intense interaction between the client and the expert partner. In addition to the actual planning which is presented below, the company must also choose the partner they work with if the company itself does not have resources for it internally. In these cases it is suggested that partner is chosen quite quickly since the planning requires the input of the partner as well. The best results are gained from the partner and the client planning together from the very early on of the project. The client is able to bring the business aspect into the plan and the partner the web specific expertise.

> "For web development and engineering efforts to succeed, management has to be clear and straightforward about what it is requesting."
> (Sacks, 2012, p.24)

During the search for the partner the client is already able to begin the planning where the client is able to internally think about what they are going for with the crucial members.

> "…website engineering teams have been the "back office," having little interaction with executive and business development teams. Too often, those running the business and planning the next phases are unaware of technical and engineering objectives and problems and don't seem to realize that input from technical departments could help the organization function more efficiently as a whole, and save dollars and effort in achieving its objectives."
> (Sacks, 2012, p.15)

It is mentioned in several references that creating a project charter is the first thing that is to be done. A project charter is described as follows:

> 'A project charter document provides a conceptual framework and server as a basis for decision making thought out the project life cycle. It consists of a project definition and high-level strategies for achieving project goals.'
> (Lynch & Horton, 2016, p. 6)

The charter includes various sections which need to be thought of to guide the project team through and not let them wonder off the path. It is presented as part of the initial planning that must occur before anything else happens. The charter provides the goals and objectives and ensures that all project participants are on the same page and working towards the same goal.

According to Lynch and Horton (2016) the project charter is to include the following sections:

- Purpose: What purpose does the product serve?
- Goals: What outcome does it need to achieve?
- Target audience: Whom must the product appeal to and work for?
- Success indicators: How will you know you have achieved project goals?
- Strategies: What approaches will help to realize the goals?
- Tactics: What activities might help to realize the strategies?
  (Lynch & Horton, 2016, p. 7)

The project charter's creation can be started by the client itself in the beginning but it is suggested that the client shares it with the partner chosen for the project as soon as possible. This meaning that the project charter does not have to be finalized when the partner is chosen for the project but at that point the client and the partner can begin brainstorming and finalizing the project charter together. The co-operation already at this point ensures that both the client and the partner have the same knowledge and the goal in mind. It is only sensible to move forward with the project once the project charter is finalized but with the understanding that the project charter can change along the project life cycle.

In other literature, the project charter does not always come up as a clear action to do and therefore it can be argued that it is something that cannot be expected from the client. In some cases it is mentioned that it is merely enough that the client has thought

about the following topics; purpose, goals, target audience and content. From this information the actual plan is then developed from by the partner who brings the technical aspect to the plan itself as well.

This plan mentioned is not the project charter discussed earlier. The plan itself is more concrete with elements that help the project move forward in much more concrete way. As in other literature others planning is discussed on general level but Lynch and Horton (2016) refer to a implementation plan which they had divided into six sections which are project overview, success metrics, project scope, roles & responsibilities, project budget and timeline and project risk assessment. The form of the plan is to be to the point and short but to include all the necessary information to these sections from the client itself but also to include the specifications for implementation details.

The six sections are presented in the following way:
- Project overview: This section answers the "why" of the project. It should include the goals of the project and the general metrics for success. It is referred to as the 'elevator speech'. It should also include a strategic point of view that clarifies how the project fits into the organization's big vision.
- Success metrics: Identify what metrics to follow based on the project charter's success indicators.
- Project scope: This section answers to the "what". It should be a fairly flexible and general description with the 'must-have' feature, content and the purpose described. The scope should not include certain technology since this is to be determined after the partner has analysed the results. The scope is to be fixed as much as possible before the timeline and the budget are set.
- Roles & responsibilities: Although roles and responsibilities were earlier mentioned, this is the point at which the roles & responsibilities are set fully. At this point the names are set for the roles needed and the responsibilities are crystalized for all members making sure that all know what they are committed to. This is the point at which it can be emphasized that all the members involved have responsibilities and deadlines regardless is it a roles from the clients side or from the partners side.
- Project budget and timeline: Everything should be taken into account in the budget with also the knowledge that web project have a tendency to grow. Therefore it is better to be prepared for it or then to pay for the price afterwards

because even though the project is planned to precision and is managed perfectly, they still grow.

- Project risk assessment: All project plans should on some level deal with the risk of failure and have a back-up plan or a plan b. The risk assessment should also contain detailed plans for how to minimize or mitigate risks. Common risk mentioned by Horton and Lynch (2016) are schedule, budget and scope of work, quality assurance, accessibility, content development and application development.

Friedlein (2001) also notes that at the planning stage the project plan should include these elements so that the actual work can begin. She also mentions that at this point is important to discuss and document what are the project management solutions such as setting up regular meetings dependent on the method being used, understanding the sign-off structure and process with the client and also take into the working environment meaning the physical location, tools and materials, management and development environment. It is also important to discuss at this point the terms and conditions of work so that no misunderstanding on the work that is being paid for comes in the way of the project.

As seen in this chapter, the planning includes a lot of time and thought from the client and the partner regardless of it being in-house or not. There are elements that the client can take upon themselves to sort of in the beginning before choosing the partner to work with but also understanding that the planning does not stop there but is actually only the beginning. As a summary of this phase it clearly important from the clients' perspective to understand that planning needs time and to invest in it will surely decrease the chances of the risks taking place. Also the time invested in discussing and planning together with the partner is crucial so that all the elements from the business requirements down to the technical aspects are all taken into account.

4.3.2 Development

Development actually can be said to consist of three separate areas; content, design and technical development. Each area contributes to the next phase and therefore any of them cannot be left unnoticed once the plan for the site has been set.

The first element is content which can in web project mean a lot of many different things but keeping mind the scope of this thesis, by content in this context, it meant by the actual information that is to be on the web site. The content in this phase does not mean that the content is to be ready there and then but it begins with the analysis of what is needed with the guidance and support from the plan document, identifying what there is already and what more is needed and where it should be on the site.

Lynch and Horton (2016) suggest that the best way to start identifying what there is first is to do an inventory and audit of the content. The way they describe this is as follows:

> " …a detailed listing of basic information about all the content that exists in a site to be re-designed or, in some cases, a site to be newly created from existing content resources."
> (Lynch and Horton, 2016, p. 108)

A spreadsheet for this technique can be used which is a good tool to use to map out the content inventory. These content inventories are the most powerful at the beginning of the project but are not to be forgotten through-out the project. Each page on the spreadsheet includes a various list of information that is kept up to date by a set of team members who all have their own areas of responsibility. The information includes:

- Unique ID number for project purposes
- Page name
- Page template or type
- Section name
- URL
- Short description
- Date of last update
- Content owner

The spreadsheet itself can also include action-oriented columns that enforce some action upon the page. This information is also needed to be linked to the strategy and the goals set in the planning phase.

It can also be noted that content is a difficult subject which in most cases is something that everyone has an opinion on. Therefore how the content is categorised on the web site is to be taken into account and challenged. One tactic that the partner and the client can do in addition to the spreadsheet action is to play card sorting. With this tech-

nique it is possible to identify new ways of looking at things as well as find solution to how the content is to be categories on the site. This technique also provides an easy way for the client ad partner to find a way to present the information from the customers or site visitors' point-of-view without jeopardizing the goals of the project.

This inventory of content only provides the actual site map but mapping out what exact content on the site is a task of its own. This is one of the most frustrating parts of the projects where the delays can be substantial.

> " …what agencies complain about most is their clients supplying them content late, not at all, or in an entirely inappropriate format."
> (Friedlein, 2001, p. 144)

Although Friedlein speaks roughly about the client and the issues with the content she also mentions that it is only of question of how the partner manages the client and nothing more. She enforces that this is a subject that is to be discussed already during the planning phase so that there are no misunderstandings with the topic at this point. The client must be made aware of the responsibility of the content if that is how it has been set at the planning phase.

Siegel mentions that the client must also be made aware that there numerous amounts of different kinds of content and this is to be also understandable to the client when the client promises to provide information on what is needed. The list of the first set of content includes elements such as blogs, articles, banner advertising, discussion forum, e-commerce, contact form and so one. When reviewing this list it can actually be argued that to the client when speaking of content and actually referring to the listed elements, it can at some points get confusing. To the client, content can actually mean elements such as text, images and videos, to name a few.

The content step requires a lot from each, the client and the partner. When it has been decided that the client will produce the content, it is in most cases the most difficult step since it is in most cases the most under-estimated and time-consuming step. The partner itself is neither in an easy spot since it is their responsibility to remind the client diplomatically that beginning to create the content at this phase of the project is very important. Using as much as possible real content already in the prototypes decreases the chances of doing things over.

The design phase starts once the site map has been defined and the content is on its way. The design includes concrete wireframes and the visuals created by the UX team members. This phase is the time for the US experts who will create the wireframes first based on all the information gathered and once those are approved the look and feel follows. It is emphasized that it is important not to let anyone design the look& feel before the wireframes have been designed. The reason for this is that it is very common that at some point someone may find it irresistible to start planning the look and feel before the wireframes.

Lynch and Horton (2016) specifically mention that too early discussion on the look and feel of the site, and especially the home page, is a sure way to throw the project off rails. The reason why the client is to have wireframes is that it forces not only the partner but the client to focus on the site architecture and navigation before any look and feel elements come into play. This is also discussed by Seigel (2011):

> "The tendency of designers especially is to make things look appealing from the beginning of the process. But this should be avoided completely at the wireframing stage, because that would distract from the purpose of the wireframe, which is to decide where things should go, not what font size to use or what color the navigation should be."
> (Siegel, 2011)

The look & feel for the site is then created once the wireframes have been set. This is the moment where the integrate things are set for the page on how it actually looks which is once again handled by the UX team members. At this point it is important that all the illustrations, images or videos are to be ready and also all text content is writing, organizing, assembling and editing is taken care of at this stage. At this point also any programming, database design and entry and search engine design should be on its way.

One critical issue to take into account is how the client and the partner have decided the reviews for the wireframes and for the visual designs as well as the sign offs. Simply put the sign-off means that the client has seen the work you have done and approved it. It is an important step since it creates an environment where the partner knows that they can proceed with the project's next steps. The importance of this phase can be seen very well in Figure 7 where the design phase has the most emphasize due it being the first time that the client sees the web site.

Once the wireframe and visual designs have been approved by the client, the actual construction of the web pages begins. This task is done by the technical partner who's responsibility is to construct the pages based on the designs as well as take care of the all the programming and database links. The construction phase includes very little interaction between the client and the partner but once the site is ready, testing takes place. Although at this point it is mentioned by :

> "This entire time, your designer should continue to make your in-progress web site available to you for viewing, so that you can suggest any additional changes or corrections you would like to have done"
> (Bowlby)

The comment has a clear impact on how the site construction and reviewing is handled based on the organization's web environment which was presented in background chapter. The client must remember the responsibility of reviewing the site based on the working method, waterfall or sprint and both parties must understand how the environment works. Once the site has been constructed and the client has given a formal approval it is time to launch the site.

4.3.3 Launch

As previously mentioned the construction stage is not a very interactive stage between the client and the partner but the launch phase requires once again communication between these two parties. The launch phase includes testing the constructed web site, the actual launch and in some cases, mentioned by the literature, marketing as well.

Before the actual launch, which means that the site is live on the web for all visitors, there are steps that the partner as well as the client must and should take. Testing has already been done by the partner during the development phase from more technical point of view but this testing is done by real users for the web site's features. Friedlein (2001) points out the following:

> "The testing phase is to test for functional and operational problems, not as an opportunity to make changes to the content or functionality."
> (Friedlein, 2001, p.202)

This is emphasized by Horton and Lynch (2016) that testing should be run by users who were not part of the development team. The users are then able to provide criticism and improvement ideas for the development team and those can be either fixed or improved before the launch. Of course, at this point in development it can be argued that not all improvement ideas can be taken up due to the time constraints or budget but it can be seen as something that should be noted for future's sake.

Friedlein (2001) also mentions that testing phase should not in any case be dismissed nor should the time for it be compromised. It should have been budgeted and built in from the very beginning of the project with the technical specifications. Testing phase is something that takes time and in some cases can be misunderstood by the client and therefore emphasize on why it is important must be seen through at the beginning of the project. As an example, commercial website must at least have a minimum of two weeks of testing.

Testing includes a large variety of different types of testing which are some performed by the partner and some performed by the client. The testing can include the following depending on the specifications set at the beginning of the project:

- user acceptance / usability testing
- functionality testing
- operational testing
- scenario testing / load testing
- security / penetration attach testing
- copy proofing

Not all of these are done and therefore it is important to identify which testing is to be run and who does it. There is clearly some testing that the client can run themselves or be part of. User acceptance testing is used mostly in testing out is an application meets specified requirements and therefore is mostly used in prototype testing. The client a can be part of this but in most cases a specifically chosen target group is used. Functionality testing is the most common and can surely be done by the client themselves. The idea of this testing is to go through the entire site and everything functions as expected. The test results can then be provided to the partner and errors can be reviewed and fixed. It is also possible that the client and partner divide the tasks between each other.

Operational testing is increasing as well. This is to do with testing out what happens at the back-end once the visitor has left the site. This is especially common in e-commerce sites where the steps need to function as well after the visitor has clicked on buy. This step is something that the client can and should also take part in so that all project members are aware of the whole cycle and how it works and what are the errors that need to be taken care of. Load testing is a test which the partner must make which the client can only be informed of. The test involves stress testing the programming technologies used on the site and the hardware capacity of the system with a script rather than real-life users. Security testing can be done by both the partner and the client. It can also vary a lot on how vide of a security test there is to be done to the site. This is to be set by the client at the beginning of the project and ran at the specified moment. Copy proofing is the last of the testing and this could as some points are seen as an obvious task. Copy proofing is done by the client to make sure that all the information on the site is correct. In some web site project the partner is the one inputting the content for the client and in some cases, the client is the one. However the content is input, the client is the one who needs to copy proof the content. Most likely the basic larger text parts are copy proofed quite well but there are cases where smaller things are left un-noticed such as phone numbers and addresses.

In addition to testing, New Group Design mentions in Figure 8 that web site is to be transferred to the client's servers. This section is clearly also a step where the client must be part of the action to provide clear steps for the partner on how to move the web site since web environments within organizations can differ. Therefore it is mandatory that the client provides the needed information and access so that the partner can do their job.

One step that also New Group Design mentions was the quality assurance which clearly is an action for the client. The web site's content, in this case the texts, document and images etc, must be reviewed so that it is clear that the content is up to standards since the quality of the content reflects the company itself. Though it can be argued, that this step is just as naturally part of the testing steps described earlier in the chapter but it does emphasize that it is an important aspect of a web site project.

Once the testing is done and the ok has been given by the client for go live it is time to launch the web site. By this is meant that the correct URL directions are set to work and the site is live on the web. Friedlein (2001) mentions two ways to launch a site; soft and hard launch. A soft launch is to launch the web site without making a fuss about it and a hard launch is to launch with a big fanfare. Soft launch might be chosen since the site is still under certain type of construction where the development will continue after some data is gathered from the users.

There are also elements that are important to take before the launch. Friedlein listed elements that are important to set up and comments on it the following:

> "Some of these precautions need to be instigated quite a while before the launch date, so
> make sure you are aware of them at the outset of the project."
> (Friedlein, 2001, p.212)

The precautions include the following topics listed by Friedlein (2001):

Preparation	Description
Search engines	you can register your web sites to search engines
DNS entries	ensure the domain is pointing at the correct server you are hosting the website on
Meta-tags	make sure all key pages include relevant meta-tags in their code
Legal / compliance	have legal representative sign off the site
Marketing / PR	make sure marketing/PR initiatives are properly coordinated with launch
Training	train all relevant staff
Stats software	make sure any traffic analysis software is up and running
Warn ISP	inform them that you are launching a site and to keep an eye on the traffic amounts and provide more bandwidth if seen necessary
File sizes	scan the site to make sure all graphics

	files have been properly optimized
Page names, ALT tags, graphic dimensions	Make sure all fine tuning information is in place
Final test	Go through the site one more time
Final sign-off	Client provides a formal agreement for the site to go live
Early launch	Launch the site before the given time to run a final live check

Table 5: Preparations by Friedlein (2001)

Once the last check-ups have been done it is time to make the web site live. After this the partner is responsible for any handover elements such as documentations or archiving depending on what was agreed upon.

4.3.4 Maintenance

It seems that in most cases the last category is forgotten or at least forgotten by the client. It is not always visible in literature either but it is also a vital step to take. it was earlier mentioned that web sites are living organisms that do not become static once they are live.

This is discussed both by Horton and Lynch, and Friedlein that maintaining requires commitment and concrete doing. The maintenance of the web site very much depends on the nature of the organization. In some cases the client will then take over the sites maintenance but in some cases the work is pushed to an outside vendor. This is to be agreed and set with the partner and the client and is most likely clear already at the beginning of the project. Earlier the roles and the responsibilities were discussed, where the Webmaster role was introduced. This role by Friedlein (2010) is an important role at this point since it can truly take over the maintaining of the site.

The most common set up is that the client takes care of the content, the marketing, the performance of the site and the statistics and the partner takes care of the bugs, fixes and developments. In addition to actually concentrating on the web site, one area that

the client should invest time into is the statistics. This information provides a large variety of information on how the site performs and what it tells the organization of its users. With this data the organization is able to fine tune the site to even a better user experience than before.

It is also important for the client to remember that at this point it is important to discuss the service-level agreements so that there will not be confusion in the future as to who does what. These agreements create a clear working environment both for the partner and the client.

5   Proposal of the internal website development process for Huhtamaki

In the following chapter is the proposed internal website development process introduced and viewed in detail. The process is formed based on the findings combined from the organization itself as well as the literature framework.

5.1   Process introduction

The process created for Huhtamaki has been created based on what fits the organization and on the literature review findings. At the beginning of the process building it was noted that there must be a backbone for the process that . These are:

- process is to be applicable to any website development project
- process is to clarify internally what will happen and what is required
- process is built for internal use
- process is to work with external vendors since in-house development is not possible

On high level it was identified that the process is divided into four main stages. On the high level each stage will include the targets as well as the concrete process. The process for Huhtamaki is divided into four stages: planning, developing, go live and maintenance (Figure 9).
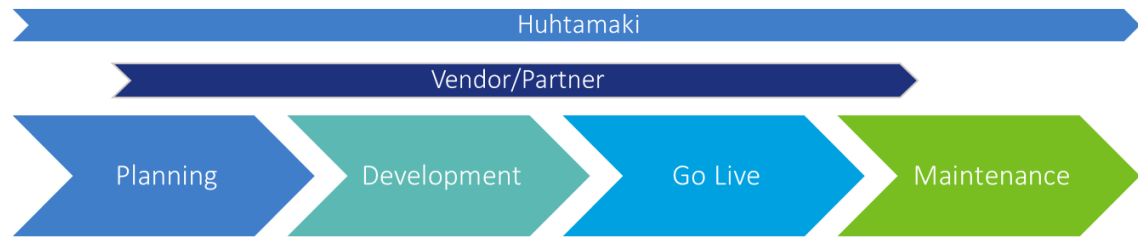
Figure 9: High level web development process for Huhtamaki

When inspecting the high level process, it requires Huhtamaki internally to be part of the project from the planning stage till the maintenance. The planning begins internally and the partner chosen will join in the project only half way through the planning phase. The development and go live stages are handled together but the maintenance stage once again is only partly shared by the partner. This is the stage of the hand over to Huhtamaki and the partner steps back. In the following chapters each stage is described in detail.

5.1.1 Planning

The planning phase is the crucial stage of the process. Although in the literature frame the planning phase begins only when the external vendor begins to work on it with the client, it can be noted that in Huhtamaki's case it is important that the planning is started already beforehand. Therefore the planning stage is structured into two phases: first the internal discussion and the second phase, when the external vendor is chosen and the planning done with them.

The first phase as earlier mentioned is divided into two stages: internal planning stage and planning stage with chosen external partner (Figure. 10). . In the literature framework planning began most often only when the external partner was chosen but it was identified that occasionally it was mentioned that the client, in this case Huhtamaki, could plan internally beforehand and then provide this information to the chosen external partner. This point was a crucial point for this process since it was noted early on that planning phase overall was lacking commitment from Huhtamaki's side.

Since the planning was divided into two stages this could most likely help the business as the owners of a project provide more time and emphasize for the planning phase. The reason for the change is the two parted set up. The initial internal planning pro-

vides the time for the internal planning which also includes no costs. It ensures that the plan that is presented to the vendors is also planned to the extent possible. This provides the business also the chance to receive better offers from the vendors. Also once the partner is chosen it offers the partner and the business to clarify and finalize the plan so that the development stage is to run smoothly. It also mitigates the most common risks known to web development project such as time and budget.

Each stage also has targets set. This is to clarify within Huhtamaki what each stage is striving for. It also ensures that moving forward with the project runs smoothly without leaving any knowledge gaps between the members of the project. If the targets that have been set are not met there is a clear chance that issues might arise already in the next stage.

Internal planning stage

| Understand the Huhtamaki web development process and web environment policies | Create plan and rough timeline | Identify team members | Choose external partner |

Planning stage with chosen external partner

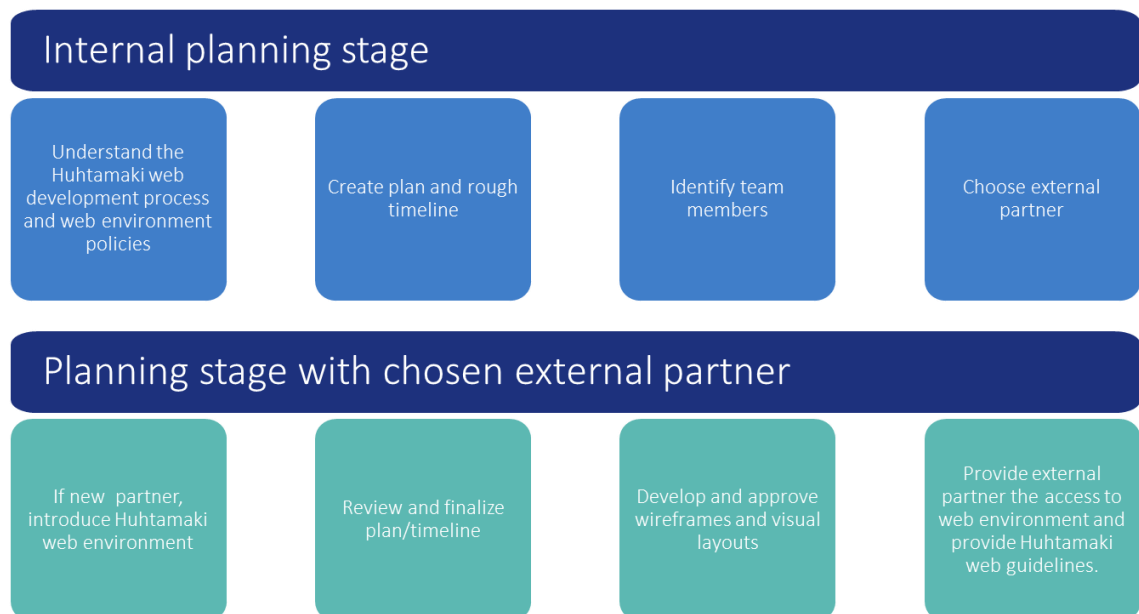| If new partner, introduce Huhtamaki web environment | Review and finalize plan/timeline | Develop and approve wireframes and visual layouts | Provide external partner the access to web environment and provide Huhtamaki web guidelines. |

Figure 10: Planning phase targets

In the first stage the main idea is to provide the necessary information to the business overall on web site development project, plan and decide certain elements and to choose the external partner the business wishes to work with on the project. These elements will help the business to understand the complexity of developing a web site and to decide already on the points that can be discussed. Also choosing an external partner is a requirement that is a compulsory step for Huhtamaki and if the previously mentioned targets have been well seen through, the chances are that the partnership will run smoothly with the chosen vendor.

Once the external partner has been chosen, the targets can also be set into four parts. If business has chosen to work with a partner that has not earlier work in the Huhtamaki web environment, it is mandatory that a technical workshop is held between the support vendor and the partner chosen to develop the site and the partner receives an introduction and an understanding of the environment they are working in. The second target is to still review the plan and the timeline to identify any details that would be missing. Also the schedule of the project is set.

The third target is to review and approve the wireframes and the visual layouts created by the partner. This target is crucial since without them the development cannot begin. It must be noted that in some cases the wireframes and the visual layouts are created by another vendor with more of a marketing background. If this is the case, it must be taken into account in the process. The target is best achieved if the marketing vendor and the technical vendor are provided the possibility to alongside during the creation of the wireframes and the visual layouts. The fourth target is that the external partner chosen for the project are given the correct access to the environment so that once the development work begins; there are no setbacks in the schedule because of that

The actual process is also split into two stages for the planning phase. Following the process it is possible to achieve the targets internally. The process for the internal planning stage is presented in Figure 11.
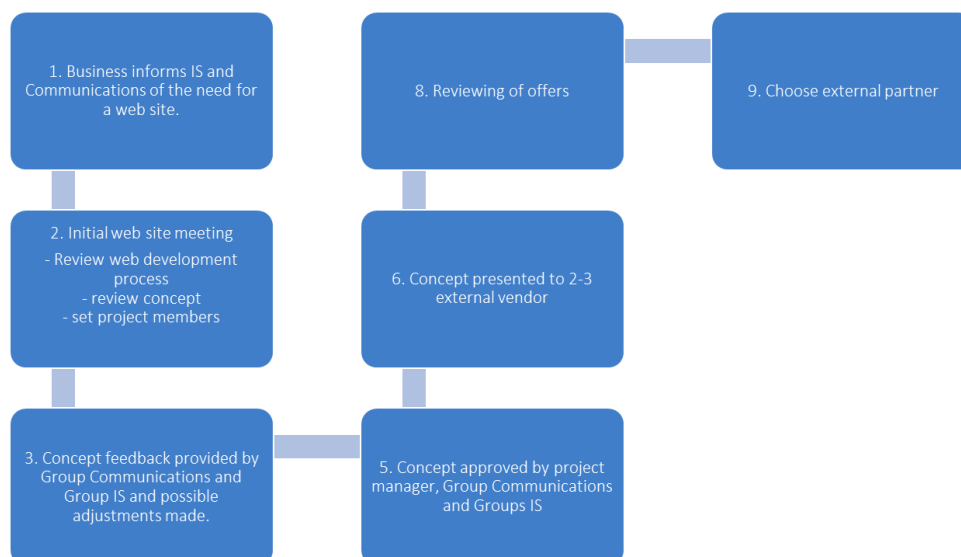

Figure 11: Internal planning process

Looking at the process it is important to note that it is crucial to inform the necessary supporting segments of the business which are the IT and Communications at Huhtamaki. This is the first step in the process and from thereon it is possible for the supportive segments to provide the necessary information in the coming meeting to the business. The idea behind the second to the fifth step is to ensure that all members of the project are identified and everyone is made aware of what is the goal of the project and the details within it. IT and Communications bring supportive information to the project. IT provides the technical possibilities and the restrictions as well as the requirements that we set for the external partner and Communication brings the Huhtamaki brand policy knowledge to the table.

At this point the project team is also to discuss what the end result is and by this is meant what they concretely receive at the end of project. As an customer do they only want the elements of the web site to be available and the site building to be one by Huhtamaki or due they wish to have the vendor build the site from start to finish where they input the correct texts and images as well.

This information is to be also available in the concept since it affects the cost and time estimation of the offer provided by the vendor. It also effects the planning and development stages in a way that at what point must Huhtamaki provide concrete content to the vendor. Both options have their pros and cons and must be discussed in detail. Therefore the subject is not opened up in this thesis but only mentioned as a side note as a topic that must be taken into account.

Once the concept has been approved by the necessary members of the project, the external vendor must be chosen. Since the Huhtamaki web environment is built so that it support multivendor model and therefore it is possible for the business to ask for an offer from at least two vendors. During the review of the offers it is necessary that it is reviewed by the business itself but also by the technical project manager to mitigate any risks. It is also mandatory that the offer chosen is approved and signed to provide a clear and concrete documentation of what the project is and who is responsible of what. After the signing the project can begin with the vendor chosen and it is possible to move to the second stage of the planning phase.

This second stage still concentrates on the planning but at this point the planning includes the vendor and with them the plan is reviewed and the designing and approving of the wireframes and visual layouts. This stage is most likely the long lasting during the project due to the importance of its effects on the whole outcome.
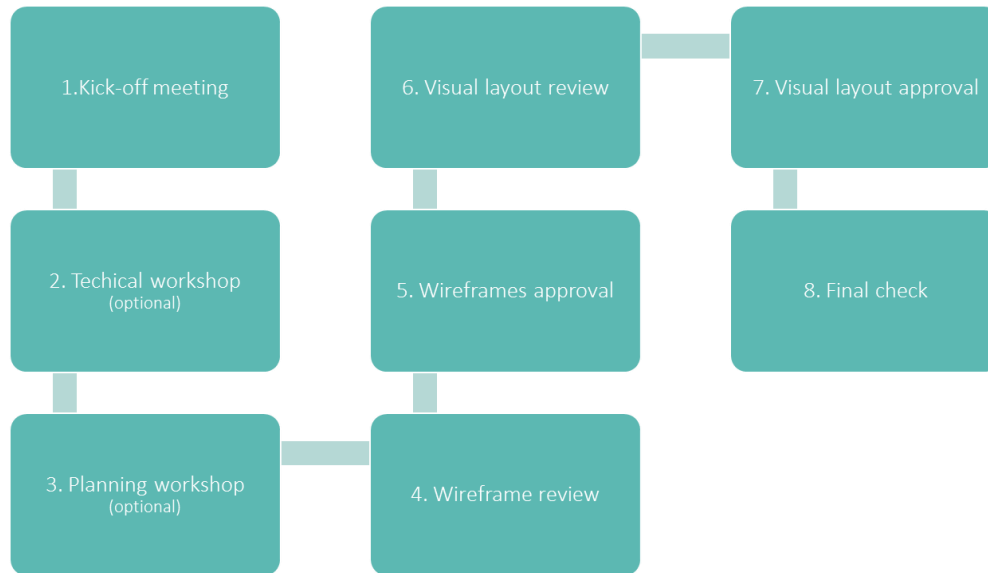

Figure 12: Planning stage with chosen external partner

Once the vendor is chosen a kick-off meeting is to be held. During the kick-off meeting it is important to have all the members from the Huhtamaki side to join that need to be part of the project regardless are they needed throughout the whole project or at certain times. This is to ensure that the vendor has the chance to go through the working methods and what they need for the project to move forward. Also at this point it is important to set certain timelines down so that the approvals and decisions can be made at the correct moment and therefore ensure that at least on the first level that the timeline of the project does not fail. Another aspect that must be discussed is the wireframes and visual layouts and how the feedback and changes are handled. This is also due to the fact that the most volatile time is once the business receives the wireframes and layouts for review. They must understand in what timeframe they are to provide the feedback and what sort of changes effect the timeline. This again is classified as mitigating the risks.

Depending on the discussion, there are two optional workshops that can be held. The first workshop is a technical meeting held between the vendor chosen for the project and the support partner who is responsible for the platform itself. This workshop is mandatory only in the case if the vendor is new and needs to be introduced to the Huhtamaki web environment and how the processes work and what the Huhtamaki guidelines are. At this point the support partner is responsible to ensure that they communicate the Huhtamaki guidelines for developing web sites.

The other workshop is optional. In some projects it has been noticed that for the vendor to begin their wireframe and layout work that they need more detailed information. This workshop provides the possibility for the business and the vendor to discuss in detail the needs and the requirements. This workshop method is a powerful tool if for example there is need for the vendor to understand the business processes that have effect on what sort of usability would work best for the target groups on the web site. The length of the workshop is determined based on the needs.

During the planning stage, it is also important that Huhtamaki as the customer provides the necessary content, meaning texts and images. If this is delayed, it can clearly have an effect on the outcome of the project as well as on the time line. The amount of content is based on what was earlier agreed in the offer.

Once the first steps have been taken the vendor begins the work on the wireframes and the visual layouts. The reason why these are broken down into two different steps is that it is important for business to understand that when beginning a brand new web site project, it is crucial first to concentrate on the wireframes and not look at how the 'web site will look' which in most cases has been the element which business is most eager to get their hands on. The process itself will require the noted members from Huhtamaki to provide their feedbacks on the set times on the wireframes and then in the end approve them. Those members would have already been identified clearly and documented during the kick-off meeting.

The same rules and process apply to the visual layout review and approval steps. Depending on the project, it could be that certain members might change at this point but it is still important to keep the same group as tight as possible. This will decrease the chances of the knowledge from dropping in middle of the project.

In the end it is important that the members from the business side commit to the decided timelines and the meetings. With that the main risks can be minimized and the target can still be reached within budget and timeline.

5.1.2   Development

The development phase, as it was discussed in the literature framework paragraph, is the time when the vendor is able to begin the concrete development work based on the wireframes and visual layouts approved at the end of the planning stage. The development stage for Huhtamaki consists of three parts: site development, testing and final approval.

Figure 13: Development stage

The site development section consists of sprints which are familiar within the scrum methodology. This way of working suits a web development project well since it enables to fix or make changes in the middle of the process rather than making changes at the end of the project which can be costly budget and time wise. Therefore the scrum is also taken into account with the Huhtamaki internal planning process. This binds the project members to provide feedback at the necessary points of the project and keeps each member up to date on what is the status is and what has been decided.

When referring Figure 13 it can be noted Huhtamaki needs to incorporate the needed steps that the scrum brings to the project but also additional internal meetings are needed. For the process it is also crucial to note that one step is to provide the feedback to the vendor. Without the feedback, the idea of the sprint meetings is pointless.
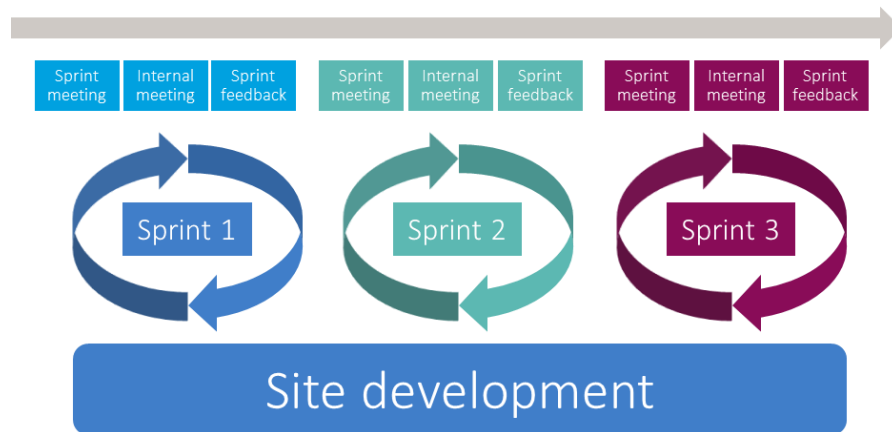
Figure 14: Site development

The amount of sprints is dependent on the project and therefore in Figure 14 the amount of three sprints is used as an example. As previously mentioned, each sprint will include three steps. The first one is the sprint meeting which is automatically part of the project since it will be introduced by the vendor. The target of the sprint meeting is to go through what the vendor has done up till then and what is to come in the next sprint. This is also a moment where feedback can be given by the project members. Once the sprint meeting has been held, it has been noted that an internal meeting has proven to provide the best feedback. If the feedback is not gathered at this point on each sprint it, the chances of the project being a failure is surely to take place.

Holding the internal meetings ensure that all team members are aware of the current status of the site and test it as well. During the internal meeting, it is possible to receive feedback that had not been thought of during the sprint meeting and provide a possibility for all members to still with time review the current status. It can also be pointed that since it is most likely that the project members are also committed to other work tasks and therefore were not able to join the actual sprint meeting; the internal meeting provides them another chance to review the status and provide feedback.

To ensure that all the feedback is provided to the vendor in the decided time frame an additional step is added to the process called sprint feedback. Although it can be argued that this step is in vain, it can be said that if this steps is not concretely acknowledged there is a sure risk that the members of project from Huhtamaki's side do not familiarize oneself well enough with the current sprint and surprises later on can happen. The reason for why trying to decrease the chance of these surprises happening is

that they can be time consuming to fix and costly at the same time and if these changes are to be tackled as soon as possible, it will mitigate the risks of facing surprises.

The second part of the development stage was the testing. It was mentioned in the literature framework that testing is done by the vendor chosen but it has been noted that it is also important for Huhtamaki to conduct their own testing. The testing done is not to be a copy of what the vendor is conducting.

Figure 15: Testing

Depending on the website and the scale of the project there are two areas possible to cover. The first one is mandatory from the process perspective and that is to run the last testing in the Huhtamaki environment with the project team. In short it would mean that the editor and the owner of the project would open the web site and use it with different browsers. They must also work with the site using the public network as well as the internal one. If the site includes clear actions that a visitor can take, must the project members test them to make that all steps in the customer journey as they should.

The other testing option is to run user test, which in large scale web site project or web site project that required very detailed customer paths is highly suggested. This can be conducted internally using Huhtamaki employees as the test users and the feedback gathered from them is then taken into account in the project. Of course at this point, making larger changes due to feedback needs to be discussed in detail before moving ahead with it. These changes clearly impact the go live and the project costs. The user testing is to be led by the project owner with the support from the editor and the feedback is to be delivered to the vendor at an appropriate time frame.

The last stage is the final approval. At this point, the web site is at the stage that it has been moved into production environment and should be ready for go live. How the final approval is to be handled depends on the scale of the project but it can either be held as a meeting or taken care of by email. The final approval is to be provided to the vendor by the project owner. Without the official final approval the project cannot go forward.

5.1.3 Go Live

Once the development stage is finished and the final approvals have been provided the site can go live. Even though the go live is the shortest phase it requires the active participation of the vendor, the project team from Huhtamaki's side and the Huhtamaki IT group. If the vendor chosen is not the platform support partner, the Go Live requires their participation as well.

Before the site actually goes live, what is required is for the vendor to check that all is clear in their part. The IT group task is to make sure the needed domain changes have been set up and the platform support partner must also set up parts of the domain changes as well as take preparatory steps with the go live. IT group is responsible for co-ordinating this stage.

Once the go live preparations have been done and the site goes live at the scheduled moment, the task is for the developer vendor, the IT group and the project team to check that the site is working as planned.

If issues are noted, the vendor must be notified of them immediately and making sure the IT group is also kept in the loop at all times. This is due to the fact that some issues during the go live cannot be fixed by the vendor but by the platform support partner and therefore if this is the case, the IT group can forward the issue to them.

5.1.4 Maintenance

Maintenance face is the last one of the phases. Once the site moves to this phase the vendor steps back and the person names to the editor position takes over. The responsibility of the site lies with the editor from there on which includes everyday tasks such

as changing or improving content as well as developing the websites by changing the site structure or adding elements created for the site. In addition to the everyday tasks, there are three different topics that might occur as seen in Figure 16.
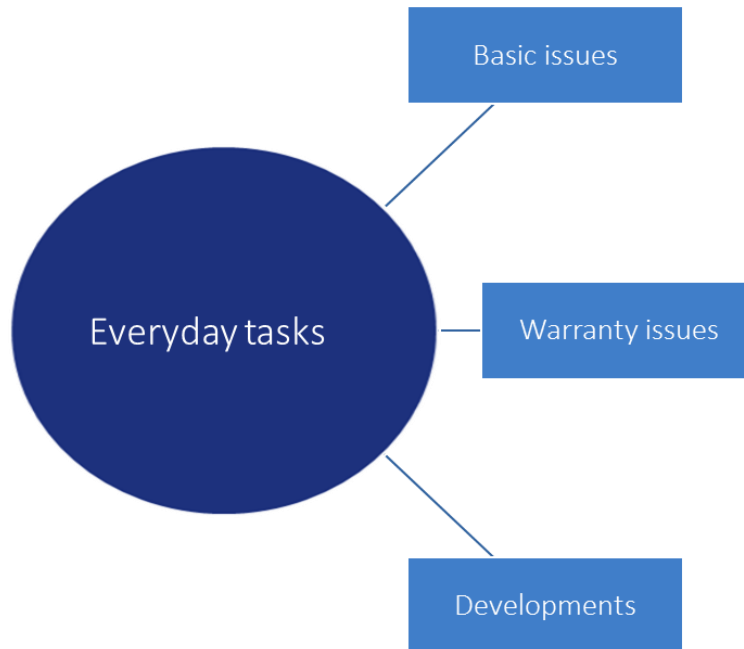

Figure 16: Maintenance tasks

The first additional topic that might pop up during the everyday tasks is noticing basic issues that do not fall under warranty. At this point the editor is to contact the IT administrator for support. If no solution is to be found that way, the editor is to contact the vendor and to agree on the fix. There are also issues that might fall under warranty in regards to the website development project done and those also are elements the editor must keep an eye out. If cases like this are noted the editor is to be in contact with the IT administration to discuss the nature of the issue. In these cases the issue is then discussed with the vendor as well as the project's warranty agreements are reviewed by Huhtamaki.

In addition to the everyday tasks and the issues noticed, the editor along the tasks might notice that more development is required. These sort of requirements are handled as minor projects that do not require such a large project process as described in this thesis. If a case such as this is recognized, the editor is to first document the requirements in detail. This is then reviewed together with the IT administrator and the Communications. If there is no such element available already in the web environment, the editor is to contact the vendor who built the website and provide the requirement

document to them for review and for them to be able to provide an estimation of cost and time. From there on the requirement is reviewed, developed, tested and updated to production for use. During this the editor who requested for the new development is to be in close contact with the vendor especially when going through the requirements and during the acceptance of the new element. Support can be provided by the IT administrator and Communications but the overall responsibility for the outcome is with the business segment who requested for the new development.

An additional task that could be argued that falls under that developments section is for the editor to concentrate on the search engine optimization. The reason for emphasizing this specific topic is that this is usually forgotten by the editors once the site goes live and if this is not taken care of, the site can get lost in the vast internet. Developing a web site is a job itself of course but without the search engine optimization, there is a risk that the website is then not found by the visitors. If this is to happen, it can be concluded that the project is a failure. Throughout the project but also when the site moves to maintenance phase, it must be remembered that who the customers of the site are. If this is remembered during the development of the project but also with search engine optimization which is a way to improve the user experience, the outcome of the project can be even a better success. With the optimization, the editor can do some of the work by themselves and in some cases, consultation can be provided by the vendor. This is to be estimated primarily by the business segment again due to the ownership of the website.

As a summary the maintenance phase is the last step in the process. The difference with this phase to the earlier phases is that it is an on-going phase that does not end unless the website is shut down. If the website requires a larger change in the future, this is once again handled as a larger development project which would use this process as the base again.

6 Discussion, development and summary

The last chapter is left to the discussion, self-development from two perpectives and the summary. The discussion was held with the IT manager and includes the findings recorded during that session. The self-development includes thesis writer's own thoughts as well as from the perspective of the IT administrator which was the role of

the thesis writer as well. The last section is a summary of the thesis that also includes insight into the next steps.

6.1   Discussion

Once the process was developed, it was necessary to be reviewed at Huhtamaki. The proposed process was also presented to the IT service manager at Huhtamaki who was at the beginning of the thesis work was interviewed. The intention of the discussion was to review the proposed process and gather feedback from the IT service manager. The feedback was gathered so that a meeting was held with the manager where the process was introduced. The process was summarised into a more visual presentable mode which provided a clearer picture of the process. The gathering of information was held using natural conversation which could be referred to as qualitative research.

The comments received mostly concentrated on the IT perspective which was expected due to the nature of service manager's work. As a summary the feedback overall was positive. The backbone was clear and the process was seen to fit all projects. However there were a few points that were brought up that required either more detailed reviewing or addition to the process. It was also discussed how the process should be communicated to the headquarters as well as to the business segments and how to implement it in each project. In the table below are summaries the four main points that were discussed

Topic	Summary of discussion	Action
• Security scan	The process lacked the requirement of a security scan. When a new web site is deployed into the Huhtamaki web environment it should be mandatory for the IT group to run a vulnerability scan on the new site. This mandatory step is missing from the process and therefore sets the Huhtamaki environment at risk. Scan should already be done at Development environment stage and the vendor responsible for fixing all high vulnerabilities found.	• Set up the vulnerability scan to scan the internal network. • Review process and includes vulnerability scan steps with responsibities.

• Web environment improvement	The deployment of a new web site into our environments seems like a slow and heavy process. Changes are known not to be quick but a review is needed now that the web environment is growing and the speed at which new web sites are to be deployed is growing. It was also noted that the current vendor management is most likely not up to the standards required. The amount of vendors is growing and the handled it the process must work smoothly also from the process view but from the technical point of view. If the web environment can be changed to work more efficiently, the internal process can also be simplified.	• Review the current technical set up of the platform as well as the deployment. • Contact support partner to discuss the current pains with setting up a new web site into the Huhtamaki web environment.
• Process communication	The information on this process needs to be communicated to the correct partners. The partners are the support partner, Communications and main editors of each business segment. The communication should begin with Communications and support partner since the comments received from them could affect the process. The process should also be added to the internal web community where it is accessible by all web editors. It was also mentioned that the IT groups globally should be more aware of this and therefore presented in various places.	• Review process with support partner and Communications. • Build the process into the web Community • To keep process up to date, create certain check points for it throughout the year. • Present the process in the monthly editor meeting. • Present the process to IT in monthly meeting and add process documentation to IT communities
• Process implementation	The process had somewhat been used in one project before without clear implementation and therefore no documentation of it exists. There is chance that if the process is not clearly taken into use, it will be forgotten.	• Present the process at the beginning of each project.

Table 6: Discussion topics

As a result comments were only been received from one Huhtamaki member and this was not yet sufficient to identify what areas need to be clarified or changed. It was discussed that the process was not yet to be changed or updated but rather have comments gathered from certain members and change to be implemented at certain times. The first main actions for the process improvement are to be gathered from Communications and the support partner. The process should also be tested with the coming project. This is clear step that needs to be taken so that the comments can be received from parties that both have clear responsibilities in the process.

The discussion concentrated quite heavily on the next steps or more on the fact that how we can make this even better from the process point of view especially from the technical point of view. The actions gathered in the Table 6 are only actions that are clear steps that can now be taken. It must not be forgotten that once the process is in use that it is reviewed and improved continuously. The reason for this is mainly that the web environment has a tendency to be prone to change and the changes can take place quickly but also that the Huhtamaki web environment is a multi-vendor environment with a variety of moving elements.

Technically the security of the new web site is the first task to tackle since it is currently not in practice at all and due to the multi-vendor environment it is clear that there is a risk that bad code is deployed. Once that is added to the process and reviewed by IT, the next steps can take place which are to develop the process with other partners as well as begin the communication and implementation of the process

Communication and ownership was also discussed. Even though the process was in place, was this sufficient if the ownership and the communication, the responsibilities of the process did not take place? Communicating all this strongly to the business segment was crucial. Since there is a clear lack in the knowledge of how websites are developed as well as a lack of resources, it will create more pressure for the IT administrator and in some cases Communications to provide support and communicate these. The change is to effect the business segments in a way that they must learn to take more ownership of web site projects as well as the maintenance of them in the future. These have been the biggest hurdles for the business segments and if these are not handled appropriately, there will be a clear need for review.

Another aspect that might need to be clarified even more or handled as separate part of this thesis is to document clearly the persons responsible within Huhtamaki. Within projects, the names change but when tasks relevant to the editor come up, there the name of the person responsible must be known.

As a conclusion it can be noted that the process is only the first draft and it will change. It is needed to be taken into use to see the full effects of it and what sections of it work and do not work. The process was mainly seen as a guidebook for the business side but the IT service manager challenged the process from the technical point of view as well. Also the process would not improve anything unless the ownership and communication was not in place. Could the process highlight technical aspects that required reviewing on the platform level? Could we identify areas that could be improved technically so that the process would run more smoothly?

As a side comment from the thesis point of view, it was presented in the research design that a final version of the process would be created after the comments. During the writing of the thesis, it was noticed that this would not be an applicable way to move forward with fine-tuning the process. The process as earlier mentioned will be under continuous improvement.

6.2   Self-development

Self-development in this chapter concentrates on the perspectives of the thesis writer and as the IT administrator. For both perspectives, writing this thesis held clear awakenings, learnings and the reinforcement of the ideas and opinions that had already been there.

From the thesis writer's perspective the first thought was that the literature used as reference could be challenged. The references read for the literature review section were most applicable but at a certain point the writer's skill to challenge developed. It was of course that some best practices could be used from other process management literatures but it was clear from the beginning that this was not what was wanted. The lack of literature, inspecting the process of creating a web development process for the web project owner, clearly built up the doubt on how to organize the process from the business perspective. The literature only began to handle the process when the web

developers stepped into the picture and noticing this from the thesis writer's perspective developed the skill to challenge.

This thought developed my possibility as the writer of the thesis to inspect the literatures more broadly and to think outside of the box. Note that in the beginning the literature seemed to hold all the answers to the questions but it was enlightening to notice that they did not answer all. There were clearly areas that I felt that I would have wanted to read more into but still trusting that not all answers are to come from the literature

Self-development from the IT administrator's perspective was at a larger scale. The reviewing and discussing of the current status opened the eyes. In the beginning as an IT administrator, I had thoughts on what sort of an process would work within Huhtamaki but this was not sufficient yet. Early on, it was noticed that developing an internal process that suited all business segment website projects was a larger challenge than expected. The environment itself is more prone to change and the level of knowledge that Huhtamaki in tales on developing websites was less than expected. Also what put pressure on the process was the need to create a process that suited all projects to come.

From IT administrator's perspective the developed process is surely to bring more of a backbone to the projects in the future but only the use of the process can actually show the parts that still require more improvement. There are a few sections that will surely create some sort of a change management cases. Planning and testing have been in a poor state before and those have created notable issues and changing the way we work through those steps will create some resistance and at least some discussion.

The creation of the process developed the IT administrator from the planning perspective the most. It was already an area identified to be important but how much is was emphasized in the literature references and how much damage the lack of it had had on earlier projects within the company lifted the importance to new heights. During the analysis and creation of process, the handling of the planning and the way of how to re-enforce the planning phase developed. it is clear that not all the answers and ways of working have been yet identified but it is already a step forward when the importance has been noted.

From the IT administrator's perspective more commitment to planning and testing is hoped for and therefore there might not still be enough emphasize on these matters. The IT administrator must be more head strong in pushing the planning and the technical security aspects into each project to keep the quality strong. Trusting yourself as an IT administrator has also developed since most of the ideas for the process were more verified rather than new elements unknown of.

6.3   Summary

It had been noticed at Huhtamaki that the past web site development project have been quite challenging and the projects had suffered budget and time wise. This caused clear friction within Huhtamaki as well as between the vendors since there were no clear understanding to what website development projects required, what the internal process was and the responsibilities.

To bring ease to the future, a process for Huhtamaki was needed which would provide insight to Huhtamaki project members to what a website development project is, what members from Huhtamaki are expected, what actions are to be taken care of by Huhtamaki. The key aspect to keep in mind is that the process is for internal use to support the Huhtamaki project members. It would support the vendors' processes throughout a project and also help the project member's follow the project.

The processes created consisted of four main stages; planning, development, go live and maintenance. These form the backbone for the process where all stages included detailed steps and at what point action is required from Huhtamaki project team members. Even though the thesis concentrated on a project process, what makes this process interesting is that it actually continues for as long as the web site is active.

Although the process is set in place with some adjustments required still, it is clear that due to the web environment being very volatile to change, it creates a clear pressure for the process as well. Once the process has been presented to the parties involved within Huhtamaki, it is important to review the process from time to time. When the changes are to take place and how those are communicated is also an important factor to keep in mind.

Overall the process will provide a starting point now since as it was noted at the beginning of the thesis, there really was no process in place or if there was it was too lightly formed nor had it been communicated to others within Huhtamaki. Taking the process into use will only show what exactly works for Huhtamaki and what not and the elements needing change must be changed.

The process and its fine tuning will in the end make the web site development project overall more of a success. It was already in the literature framework presented that website development project are very prone to scope creep, time management issues as well as cost management and those are the key factors also with the process created. It will hopefully bring more knowledge as well as trust into these project and not create as much as resistance from the very beginning as before within the company. The success key factors drive the process to be implemented and to be fine-tuned to suit Huhtamaki's need.

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