

Supporting Service Design for Web: *Redesigning Aalto Blogs*

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Abstract

The increased capability of web technology has enabled more services to be provided through web platforms. The growth of such services naturally accelerates further evolution of the technology, resulting in increased learning curve.

Many web development frameworks were introduced to overcome such difficulties, and together with web technology, these workarounds have also evolved rapidly. Modern web frameworks, and also platforms, provide rich eco-system that provide alternative solutions to web development. Some powerful content management systems (CMS) even enable a web service to be developed without any programming.

This thesis aims to find further opportunities from these modern frameworks, by redesigning a university's web self-publishing service through a CMS.

In order to reorient and reposition the service to address wider range of users, the key components of the CMS to be focused on were identified through contextual study and in-depth interviews.

The redesigned service was suggested by designing and developing a CMS theme through agile development process.

Keywords: web service, service design, content management system, web framework

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1. Introduction

The rapid growth of web these days has unveiled limitless opportunities for web services. With web capable of serving more features than ever, new types of web services are introduced frequently, and many of them are soaked into everyday life, commonly in a form of a communication platform. Naturally at the same time, the complexity of underlying technologies is rising fast.

Many attempts are being made in order to overcome increasing difficulties in developing a web service. Many new frameworks have been introduced to reduce the process workload as well as to implement and test new ideas quickly. As more frameworks and similar platforms have been recognised and became a common practice in web development, those solutions serve as good starting points for designing web services.

Well-structured platforms provide good external components such as themes and plugins, which can significantly reduce development works, and sometimes even enable development to be done without writing code at all. Such tools, if learnt and applied properly, can provide further opportunities for non-developers, to engage with rapidly evolving web technology.

In this thesis, I try to take advantages of one of the more recognised content management systems by looking into the redesign of a web services in Aalto University.

1.1 Background

Web technologies have been experiencing a rapid change ever since emergence of web 2.0 (O'Reilly, 2005). This has also been accelerated by the introduction of mobile devices. In less than a decade since launch of modern smart devices – such as iPhone and Android phones – the number of users accessing the web through mobile browsers has already outnumbered that of desktop browsers in the U.S. (Lella, 2015), and the forms of interaction of users with the services have become more diverse. To comply with this harsh flow, the role of web design has expanded greatly – the main focus has been shifted from emphasis on visual design to interaction design and user experience design. Many newly introduced terms such as *responsive web design* (Marcotte, 2010) and *mobile-first approach* (Wroblewski, 2009) imply how today, mobile devices are dominating web browsing experience in big parts of the world (Lella, 2015; Perez, 2014). Now it is inevitable to consider various user experiences according to devices.

1.1.1 Web as a Service

The role of web has expanded along with the technology's development. Increased capability of web enabled more services to be run solely on online platform, introducing a number of influential web-based services such as Facebook, Twitter and Instagram. Notably, the majority of these web services focus on user generated content. Aforementioned services all provide easy platforms for sharing users' contents, and they have become a major tool for communication, often referred as *social networking services*.

On the other hand, although social networks have become the mainstream of delivering information, the demand on informative websites remains high. The role between social networks and websites have divided distinctively; websites tend to have more complex structure with more in-depth information, whereas social networks take role in spreading links to those websites. The information on websites are displayed in various ways, often introducing a new user experience.

Despite the high demand, development process of such websites has become much more challenging. Along with aforementioned responsive web design and mobile-first approach, a new discipline of front-end design and development has emerged, which shows the high need of expertise in overall web development. Within recent few years, development process has become much more structured as a number of frameworks for various languages have been introduced, such as Laravel (Otwell, 2011), Django (Django Software Foundation, 2005), Ruby on Rails (Hansson, 2005) and AngularJS (Google, 2010), to name a few. In lower-end side, new platforms such as Wix (Wix.com, 2006) and SquareSpace (SquareSpace, n.d.) has become popular to offer easy website building solutions, along with improvements on traditional blogging platforms such as Tumblr (Tumblr, 2007) and Blogger (Google, 1999). As well, there are mid-range solutions, commonly referred as content management system (CMS), to serve both high-end developers and low-end users, represented by WordPress (WordPress, 2003), Drupal (Buytaert, 2000) and Joomla (The Joomla Project Team, 2005).

Among these frameworks, recent statistics show that WordPress has become one of the most influential platform today, with over 25% of total market share for all websites (Web Technology Surveys, 2016). The platform, backed by rich theme and plugin eco-system, provides an easy starting point for creating a website for lower-end users, and its flexibility enables developers to easily implement advanced features as well. In addition, its multisite feature has enabled users to operate their own blog hosting services such as Edublogs.org (Edublogs, n.d.).

1.1.2 Web Publishing in Aalto University

Aalto University has a very large-scale web eco-system that attempts to centralise overall information architecture in one place. Under this umbrella platform, several

services such as Into (Aalto University, 2011), MyCourses (Aalto University, 2015), WebOodi (Aalto University, n.d.), etc. provide more focused information and services that are directly related to school's operations. While this centralised platform provides larger scope of information regarding school and studies, lower-level information is provided through individual channels, of which this paper will focus on. These individual channels vary from department websites to students' blog, and notably there is no restriction in choice of platforms or methods of development.

Recent cases in Aalto University show underlying challenges in launching websites, primarily due to lack of knowledge and scarce web developers within the community. To relieve such difficulties, currently Aalto University offers several web self-publishing services to students and staffs, such as Aalto Users, Aalto Sites and Aalto Blogs.

Among these services, Aalto Blogs is designed to provide a self-publishing blogging service, which is built on WordPress platform. Unlike the other two services mentioned above, this service does not require any knowledge on web-related technology and physical interaction with service providers. There are also other related services as stated in Aalto Inside (Aalto University, n.d.), most of them require certain amount of knowledge on web programming.

In spite of its potential, the Aalto Blogs service is currently not actively maintained. The service provides only outdated themes with limited customisation options, which prevents Aalto community from using it. In addition, the current service provider, Aalto Learning Services, are struggling to provide occasional user support due to lack of resources assigned to the service.

1.2 Project Objectives

As summarised in previous section, it is clear that current Aalto Blogs service has limits in providing a user-friendly service. Although it is the only self-publishing web service (that do not require any programming knowledge) provided by Aalto, it does not fulfil major needs of the community well. Hence, the focus of my project was set to make major improvements to Aalto Blogs service to address wider range of users within the Aalto community. Based on this, the project objectives were set as follows:

- ***What redesign and repositions should be made for Aalto blogs in order to fulfil Aalto community's web self-publishing needs?***
- ***What key components of customisable content management system (CMS) need to be designed and developed to support the above?***

- *Can service design approach provide insights for the design of these components?*

1.3 Project Structure Overview

The project consists of four major parts – contextual study, in-depth interviews, theme design and development and service deployment.

In contextual study, I will try to contextualise the space my project takes in, by exploring through recent evolution of web design and development. Also, I will go deeper into WordPress platform and explore its role in a service development.

Next part is in-depth interviews, in which I have reached service providers of Aalto University's web-related services and users of Aalto Blogs and WordPress. In this step, major insights were gained to set design directions for the project.

Following two parts are the service development and deployment. These parts will show how insights gained from interviews are visualised into ideas and eventually implemented through service providers.

2. Contextual Study

2.1 Increasing Complexity of Web Design

It is evident that web design is one of the fastest transforming fields today, driven by the emergence of various devices and new technologies (Ensor, 2015). Until recently, web design has been focused on graphical elements with simple HTML- and CSS-based structures. Attempts for more dynamic and interactive web experiences were made using Adobe Flash. The concept has faced significant challenge as web trend has shifted from the early days of Netscape- and Internet Explorer-driven environment to a multi-browser environment. Also, this movement was accelerated by the introduction of mobile devices, which led browsers to eventually abandon Adobe Flash and adopt JavaScript as the standard for HTML5 (Winokur, 2011). Modern websites are obliged to follow web standards in order to deliver the same user experience between browsers, and such an experience must be extended to mobile devices as well (Gardner, 2011).

In addition to this development, the amount and type of digital information has grown immeasurably. The increased capability of web technology in delivering content and services has accelerated the rapid growth of digital databases. Also, the ignition of social media has opened the gate for users to easily generate online content. Compounded on this, is the increased speed of mobile data connection, which has enabled images and videos to be transferred quickly, encouraging users to seek for much more dynamic experiences (Frattasi, Fathi, & Fitzek, 2006).

This recent evolution has naturally increased the intricacy of web design itself. A good web designer these days is expected to have good knowledge in multiple related fields, such as user experience design and interaction design. As well, information architecture has become extremely important to deliver content efficiently (Morville & Rosenfeld, 2007), in the context of aesthetic user appeal. However, one of the major challenges in the discipline comes from fast growing web technology (Gausmann, 2014).

Many web prototyping tools have been introduced to relieve the learning curve of fast growing technology, for example, Adobe's Muse and Facebook's Origami. Yet, these WYSIWYG- (What You See Is What You Get) generated prototypes are seldom implemented directly into development process due to the limits of WYSIWYG-generated codes. Considering the increased complexity of web development process, web designers these days are often asked to write human-readable code to reduce repetitive work for developers. This trend of prototyping live is blurring the distinction between web design and web development; such tendencies can be observed from a number of online debates (e.g. LaViska, 2009), in which people often discuss on difference between a web designer and a web developer. Furthermore, the growing popularity of related job positions such as front-

end web developers, reflect a rising awareness emphasising the importance of end-user experience on web.

2.2 Web as a Service Touch-Point

More and more service experiences are shifted to the digital platform these days, driven by the rapid development of mobile technology. Mainly because portable devices are connected to internet they tend to remove barriers of space and time, which has given significant advantages for digital touch-points over physical touch-points. Customers are no longer bound to service provider's availability, and transferring related information has become much more convenient. At the same time, these features have increased complexity of services, as the amount of information and interaction have outnumbered that of physical touch-points.

Hence, it is now imperative that web design, on a holistic scale, be taken one's approach to service design; web platform is the point where most of the interactions between stakeholders occur. As Grönroos et al. (2012) and Kimbell (2011) state, the service design process can be understood as exploration for means to engage the involved actors effectively in order to derive co-creation of value. Thus, one of the key factors for a successful service is pleasant experiences in service touch-points, typically from customers' point of view, as Clatworthy (2011) outlines.

Digital Touch-point Dilemma

Despite its significance in a service, digital touch-points are often challenged to be prototyped properly due to its complexity, especially if a service contains multiple types of touch-points. While some papers discuss the importance of service prototyping and experience prototyping (Blomkvist & Holmlid, 2010; Bitner, et al., 2007; Buchenau & Suri, 2000), their focus is more on physical-based methods, such as paper prototyping, and in some cases, semi-interactive approach using static images with devices to *show* a user interface. Considering the amount of potential information and various types of digital media, their approach clearly lacks in simulating overall digital experiences.

The key element of digital platforms is information and communication, just as its mother term 'Information and Communication Technology' implies. It has advantages in delivering a large quantity of information in various formats, and at the same time, it can provide a communication channel regardless of space and time. Naturally, the major role of digital touch-points in a service is to provide information and communication channel to customers, and user experience at this stage is highly determined by how efficiently and effectively they can be performed. Also, interactions with service providers may occur by transferring data, which may eventually influence other touch-points and service workflow.

The underlying challenge of experimenting with the digital touch-point experience comes from the same aspect – the amount of information and its diverse types. Not only is it difficult to be dealt with in limited time, but also it is hard to simulate digital interactions with physical prototypes. Although some studies such as Sefelin et al's (2003) discuss on two types of prototyping, they are rather more focused on product usability. In service design context, more studies on information delivery and interaction with other related touch-points are needed.

To make matters worse, developing a digital prototype requires relevant knowledge, which often requires some learning curve. It has become even more challenging as diverse devices and online platforms have been introduced. Such complexity and lack of knowledge prevent designers from carefully blueprinting service experience.

The Case of Gov.uk by Government Digital Service

The concept of web as a digital touch point and web-based service design is fairly new, and this approach is blurring the distinction between web service and web platform. Also, in many cases, existing physical touch-points are entirely merged online, and operated solely on digital touch-points. This section explores an exemplary case of this new trend via a recent initiative of the UK government.

The UK government has launched Government Digital Service (GDS) in 2011 in order to transform their services into fully digital services, namely 'Digital by Default' strategy. Starting from the gov.uk website, the aim was to establish a proper framework that could be applied to all other government sectors. The case is a typical example of digital platform itself as a service, but at the same time, an exclusive sample of a thoroughly designed digital service.

In Sitra's summary (2013), the starting point of the project is notably stated as "fixing publishing of information", which would not only upgrade the user experience, but also ease maintenance by the government staffs. Under this objective, the contents of the website were sorted according to top hundred user needs, derived from empirical analysis of former websites (Sitra, 2013).

This approach represents how digital platforms should be designed with awareness on information structure among user needs. Although a digital touch-point may be designed to perform a single task or simple interaction, it is rare that it will serve as a standalone solution. Hence, achieving desired goals from bulk information would directly influence the service experience.

Another noteworthy point here is the consideration on service provider's resources. The article mentions how scattered the old web service was, and how the complexity has increased since, due to variety of systems and stakeholders (Sitra, 2013). This aspect is very important when designing a digital touch-point, as it might require unexpected resources to execute a service.

The case also highlights the importance of prototyping process with constant interaction with users (Sitra, 2013). Although it may not be appropriate to directly compare a web service of such scale with a simple touch-point, their agile development process supports the possibility of rapid prototyping in a short period of time. Sitra's article (2013) mentions that GDS was able to achieve "incremental development goals in weeks rather than months." As this implies, if proper tool and minimum knowledge are provided for designers, simple digital touch-points may be possible to be built as a proper prototype within a short period.

2.3 WordPress

2.3.1 Service Development

WordPress is an open source content management system (CMS) introduced in 2003 (WordPress, n.d.). Originally started as a blogging platform, it has grown into a highly scalable platform over time. Its open source approach encouraged the community to develop highly reliable plugins and themes, spearheading the platform's success today. According to recent statistics, 25% of all websites are now operated with WordPress (Web Technology Surveys, 2016), with over 44,000 plugins (WordPress, n.d.) and 1,500 WordPress-hosted themes (WordPress, n.d.).

WordPress aims to enable users with little knowledge on web technologies to build websites through those community-driven solutions. At the same time, the platform tries to provide a decent framework suitable for various ranges of web projects for skilled developers. This capability of satisfying both users without relevant knowledge and experienced developers comes from its straightforward plugin and theme structure, which is distinctive from other frameworks. Although such software design is relatively more limited in scalability and not optimised for extremely large scaled websites, in most cases it significantly reduces development and maintenance effort, yet serving sufficient functionalities.

To further address various types of users, WordPress offers its platform through two mainstreams: WordPress.com and WordPress.org, each aiming to serve lower-end users and higher-end developers, respectively. WordPress.com is a hosted version of WordPress platform, where users can simply register and run their own websites. Its main focus is to relieve the barrier of hosting a website to lower-end users, and most of the customisations are done through ready-made themes. WordPress.org is more focused on flexibility and scalability, and it is meant to be installed on self-hosted web servers to serve individual web platform, hence requiring minimum knowledge on Linux web servers.

It is also worth noting that as of WordPress 3.0, multisite functionality was added to enable single WordPress installation to host multiple websites (WordPress, n.d.). This has a great merit in organising a large quantity of information in extra-large

organisations, such as in cases of Georgia State University (n.d.) and BBC America (n.d.). More importantly, this feature extends a WordPress site's capability to allow any users to create their own blog, which can be used to provide a dedicated blogging service. WordPress.com itself is an example of WordPress multisite installation, and other popular service such as Edublogs (n.d.). As these major services showcase, the boundary between platform and its service is becoming more unclear, and this trend clearly shows increasing significance of web platforms in online services.

2.3.2 Theme and Usability

The WordPress theme is a set of files that provide major functionalities and customisation options for running a website. Although its role is often underestimated due to the term, its functions are not limited to visual design. It enables WordPress to be modified almost without any limits, while maintaining the core engine files untouched. Hence, unlike traditional visual theme design, WordPress theme development is considered a complex job requiring thorough understanding on technical background and web user experience.

Similarly, theme design in practice is approached in two ways: minor visual design and general-purpose template. The former is a common practice in individual-level implementation such as corporate websites. On the other hand, the latter approach addresses much wider groups of users, often with more focus on multi-functionality. Recently introduced themes tend to provide wider range of options to users, in attempt to absorb visual design completely, often by integrating third-party plugins into the theme. Such trends are well represented by many popular themes (e.g. Theme Fusion, 2012).

However, increasing complexity of themes often result in a steeper learning curve and worsened usability. For example, as can be seen in Figure 1, recent themes often add multiple layers of feature options in an inconsistent manner. Such a problem is referred to as feature creep, and has been widely studied in design disciplines (Page, 2009; Thompson, Hamilton, & Rust, 2005). In an attempt to avoid confusion, WordPress has introduced Customizer API, which provides centralised theme control options (WordPress, n.d.). Yet, many themes nevertheless adapt proprietary features which cannot be achieved through the API, and options are usually listed without careful considerations on user experience.

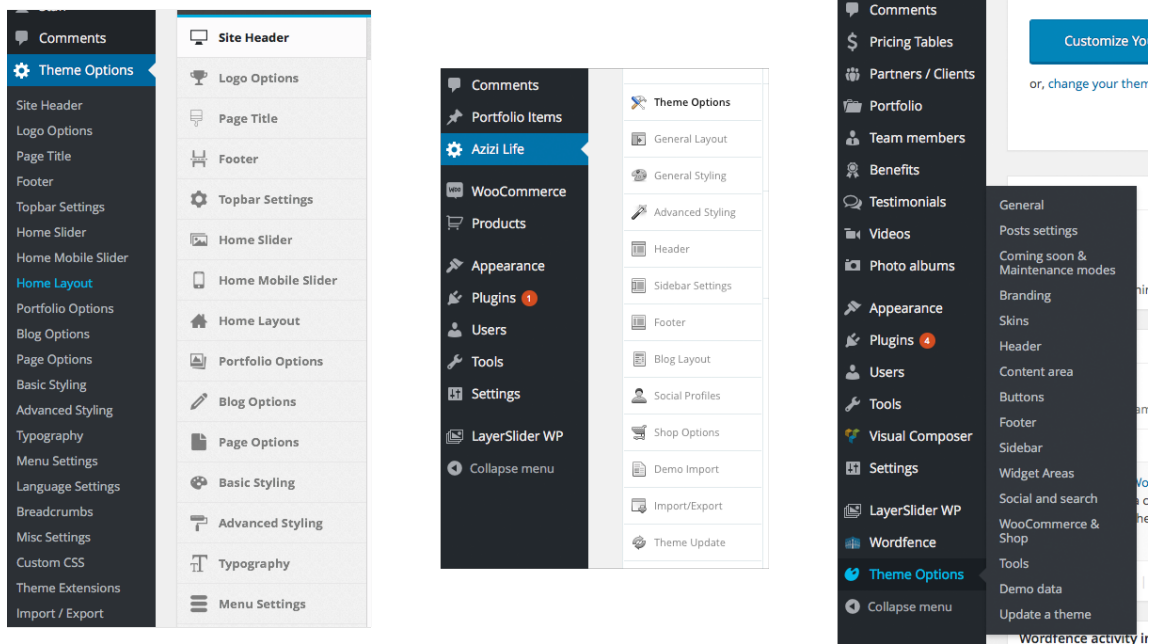


Figure 1 Examples of inconsistent menu structure in different themes, all under “Theme Options” menu

The importance of user experience of a theme is not limited to a single website. As mentioned in previous section, WordPress’ ability to serve individual blogs to multiple users is closely associated to theme itself as well. In a multisite network, WordPress themes are managed centrally in network administration screen, which means a single theme may be used throughout the whole network. This feature is very important in both maintenance and design perspective, as allowing users to add their own themes may deliver unwanted security issues, not to mention risks of uncontrolled design within an organisation. On the other hand, if a centrally managed theme does not serve good user experience to users, this will naturally affect all users within a network. Hence in multisite environment, theme user experience is directly linked to the whole service experience.

Moreover, a theme also serves as a technical touch-point in multisite environment. WordPress features a number of multisite-specific functions (WordPress, n.d.) which enables micro-control over network blogs; for instance, a specific post can be inserted upon creation of a new blog to provide better guidance to user. Notably all these functions are implemented in a theme function file, enabling multisite to be controlled according to chosen themes. This means that thoughtful selections of such features in a theme has an influential role in overall experience of the whole service.

3. In-depth Interviews

The main study on the current service was performed in two phases of interviews. The first phase was to interview some of the main actors from service provider side (in this case Aalto University), in order to identify their existing related services and understand how, and by whom, they are operated. The second phase included an end user research done via a semi-structured interviews approach (web users of Aalto University) to gain insight relevant for the new design.

3.1 Service Provider Interviews

At the beginning of the project, the roles and service providers of Aalto Blogs and Aalto Sites were not clear. Also, other related services for web self-publishing needed to be identified. As a starting point, Aalto Web Studio was reached first by convenience. From this interview, Aalto Learning Services was identified as the main operator of the Aalto Blogs service and Aalto Communications was also mentioned as a key stakeholder for controlling all Aalto websites' brand identity. Further interviews with these two stakeholders were held, and they were constantly reached throughout the project for necessary support. In addition, Aalto IT was recognised as responsible for providing technical support, however, their participation in Aalto Blogs service was limited to hosting server and thus I did not engage with them much. I conducted all interviews in this phase in free format, as the main objective was to gather information rather than insight.

For this stage, total number of five people were interviewed between December 2015 to April 2016, from Aalto Web Studio, Aalto Learning Services and Aalto Communications. One participant each from Aalto Web Studio and Aalto Learning Services and three staffs from Aalto Communications were reached.

3.1.1 Aalto Web Studio and Aalto Sites

Aalto Web Studio (Aalto University, n.d.) is responsible for providing one-by-one consulting service for users who are in need of websites within Aalto University. As part of their service, they provide Aalto community with web building environments and test servers as well as related advices regarding practical web development procedures. Although they are operating a website called Aalto Sites (Aalto Media Factory, n.d.), currently this website does not offer any web-based service.

Web Studio has also shared their experiences in consulting and building websites for their customers inside the university. They possess exhaustive understanding of their customers' needs, as they have been interacting directly with various Aalto users through face-to-face consulting. According to Web Studio, most clients do not require much customisation for their websites, as most features they request are already available in WordPress. When the clients were provided with an access to a

WordPress account, they were able to build and manage the website by themselves. Chemarts website (Aalto University, 2016) and Photography Programme website (Aalto University, 2015) are good examples of websites built and managed by Web studio's customers. Web Studio's role has been often limited to providing them a server and suggesting some plugins, and at most, developing a simple plugin to integrate some Aalto-specific services into client's website.

3.1.2 Current Aalto Blogs Service

Aalto Blogs service was built in 2011 by Aalto Strategic Support of Research and Education and is currently run by Aalto Learning Services. It offers any users with an Aalto account the possibility to create a WordPress website for free. Although the service is active, only minimum maintenance, such as security updates and site statistics has been done occasionally and the the overall system is outdated. Aalto Learning Services indicated that there was no proper hand over process between other stakeholders when the service was relocated, so currently there is no designated body which is responsible for the service. At present, most of the user-related supports are done by Aalto Learning Services and technical maintenances are operated by Aalto IT.

Aalto Blogs service is built on the WordPress platform using the Multisite feature. It currently offers four themes – a dedicated Aalto Blogs theme and three customised WordPress official themes (Figure 2). Also, it possesses three centrally managed plugins, of which two are for preventing spam comments, and one is for adding social sharing buttons (*Table 1*).

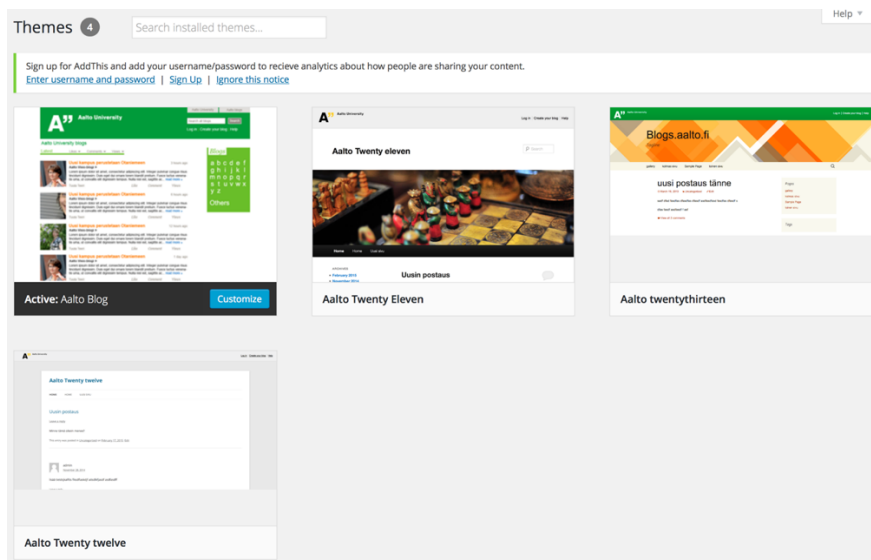


Figure 2 Four themes provided by Aalto Blogs

Name	Function
AddThis	Adds social share button to the site
Conditional CAPTCHA	Insert CAPTCHA to prevent spam
Akismet	Default anti-spam plugin for WordPress

Table 1 List of plugins provided by Aalto Blogs

Although the service provides some customisation options through a few provided themes, these themes have shortcomings in terms of usability and visual design. The Aalto Blogs' own theme has minimal options for design customisation, that include a selection of sidebar widgets (Figure 3), resulting in a very limited user experience. Furthermore, the theme itself is outdated and does not feature modern web design elements, such as a responsive web design (Figure 4).

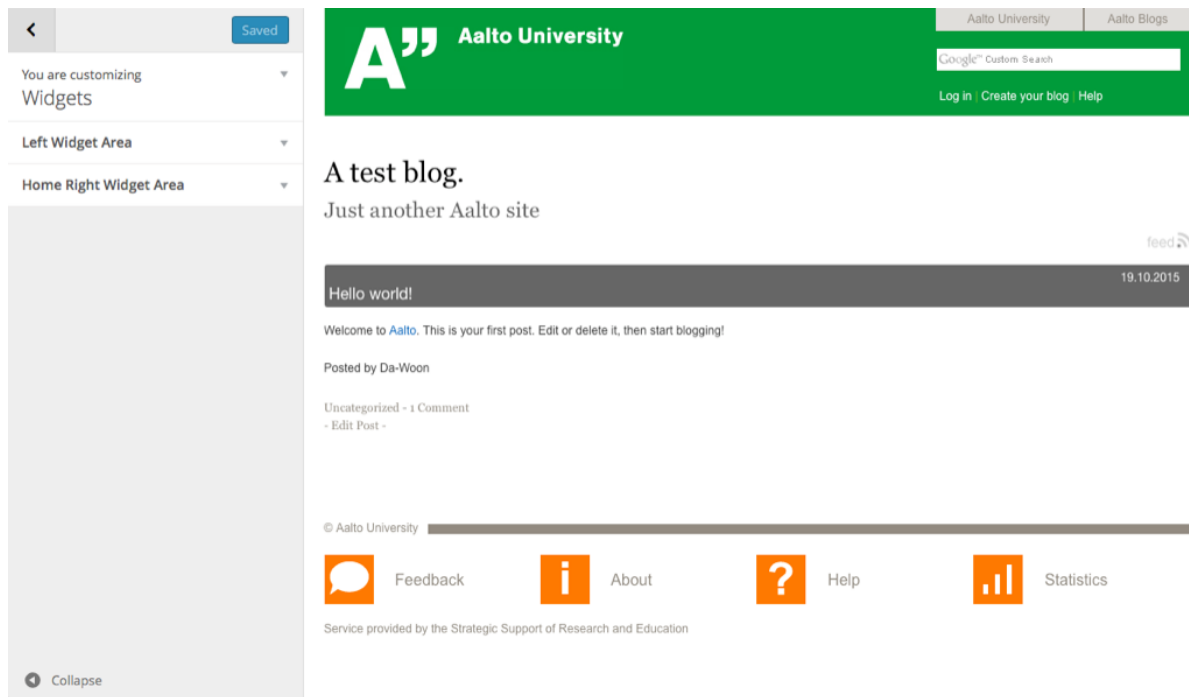


Figure 3 The only customisation option (sidebar widgets) provided by current Aalto Blogs' default theme

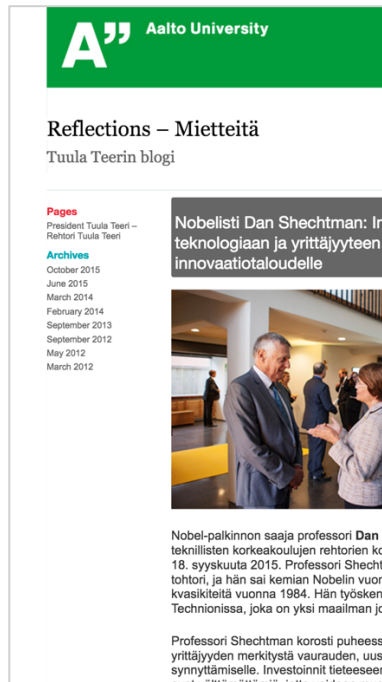


Figure 4 Aalto Blogs theme viewed on a mobile browser

On the other hand, the other three modified WordPress official themes were originally designed for general use, thus, they are not optimised for any specific user group, or practice that would be typical for universities. Furthermore, these themes do not represent Aalto’s brand identity successfully as the theme modification was made only by adding header and/or footer logo (Figure 5).

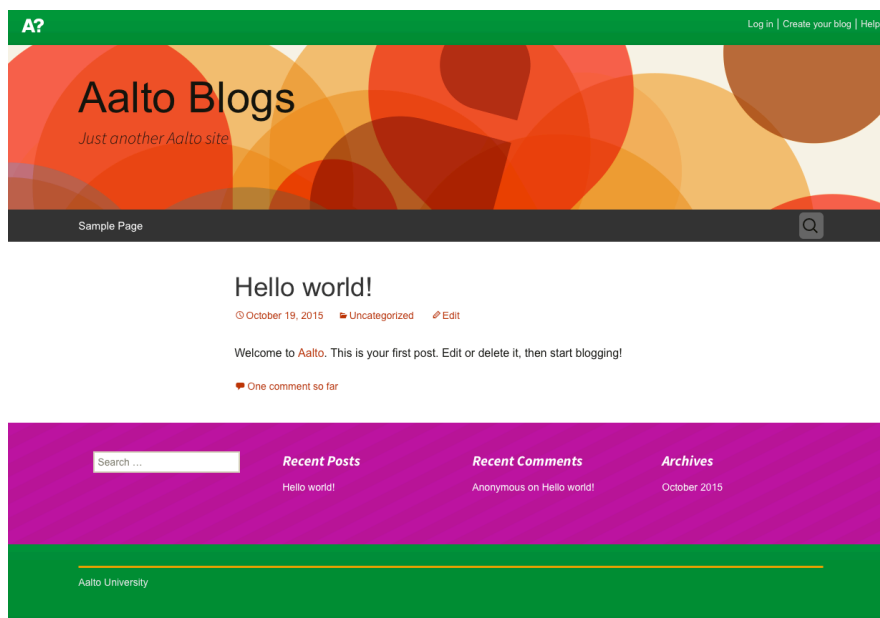


Figure 5 An example of customised WordPress theme with Aalto identity inserted

It is clear that Aalto Blogs provides outdated services, which is compounded by the fact that there are scarce resources and no designated body charged with updating the service.

Aalto Communications and Aalto Websites

One of the difficulties Aalto users experience when trying to make an Aalto website is to follow the university's brand guidelines. This difficulty was mentioned by all interview participants – both service providers and users. During the interview, Aalto Web Studio hinted that Aalto Communications has started to revise the guideline for websites to suit modern web design, which led to further interviews with Aalto Communications.

According to Aalto Communications, there is no fixed guideline for the website branding other than placing Aalto logo. Also, overall usage of the logo has become more flexible in case of the web environment – for example, using logo without text element is widely used in Aalto websites, despite it is prohibited according to the original guideline (Aalto University, 2015).

In addition to discussion on the identity, Aalto Communications mentioned that they are willing to promote Aalto Blogs service once the new design is ready, which will be discussed further in chapter 5.

3.2 User Interviews

Based on understandings on Aalto Blogs from the first phase of research, user research was planned to gather further insights. The research was done in a qualitative approach using a semi-structured interview. The primary aim of the user interviews was to explore user's experiences in making and running websites, and to understand how they felt about those situations.

3.2.1 Interview Preparation

Interview questions were carefully prepared through multiple iterations. There were several challenging factors that needed to be considered thoroughly during constructing questions.

First, interview participants may have a different level of understanding about the web. The initial plan for the interview was to select users from diverse backgrounds; naturally, their knowledge towards web technology would vary noticeably. Such differences may influence their attitude during the interview considering inevitable technical aspects in web experiences.

Second, it is difficult to estimate in which layer of web environment the user experience occurs. Typical web platforms have several layers of interaction points –

in the case of WordPress: visual customisation, information sorting, content publishing, communication with visitors, and so on. The interview questions should address these experience layers as much as possible.

Third, the complexity of the web experience itself hinders participants from expressing it. Similar to previously mentioned complexity, the dynamic characteristics of web is often difficult to be expressed in words. Thus, appropriate tools may be needed to help respondents share their experience in more effective way.

Considering these factors, first draft of questionnaire was prepared and evaluated through a pilot interview with User A (Table 2). Although the test run did not reveal any remarkable problems on interview structure, it later became clear that the questions were not effectively addressing users with less knowledge on web. This resulted in asking leading questions to participants, which may have distorted user's answers (Flanagan, 1954). After realising this, the questions were revised to avoid such mistakes, and participants were encouraged to use web browser to remind their experiences during the interview.

3.2.2 User Selection

A total number of eight participants were selected for the interview. As mentioned above, the users were selected from various backgrounds to gather broader insights within limited interviews. Two users have been selected by convenience from my former project clients, as their knowledge and experience level on web were very high. Four users were selected by their activity level on Aalto Blogs service. The activity level was measured by analysing latest statistics provided by Aalto IT, and also by observing the most recent posts of the service that are listed on main page. The remaining two users were in need of building WordPress websites, and they reached me first, volunteering to be interviewed. Table 2 summarises the participants of the interviews.

User	Website Type	WordPress Experience	Web Activity	Uses Aalto Blogs
User A	Department website, course website, personal research blog	Very high	Very high	No
User B	Department website, course website, research group website, personal research blog	High	Very high	No
User C	Personal research blog	Medium	Medium	Yes (formerly)
User D	Design portfolio	Very low	Very low	No
User E	Design portfolio	Medium	Medium	No
User F	Department website	Low	High	Yes
User G	Coursework blog	Medium	Very low	Yes
User H	Personal research blog	Low	Medium	Yes

Table 2 Summary of interview participants

3.2.3 Analysis Methods

All interview data were transcribed in detail immediately after each interview was held. Transcribed raw data was coded to generate secondary data to be used in further analysis.

For the coding process, raw data were imported to Atlas.ti software and coded carefully. The process was performed for several times in order to derive final code. Saldaña states this process as “preliminary jottings” and recommends it to be done as data is being collected and formatted (Saldaña, 2013). The preliminary coding started from in-vivo coding, together with reviewing on-site notes. The codes were revised mainly using initial coding method to seek for better phrases, and this process continued until satisfactory final codes were derived.

Further analysis on the codes were done by categorising them. Final codes were copied to sticky notes and categorised by hand in order to help visualise the process. This step was also done multiple times to deliver the least biased output. The final result was reviewed thoroughly to derive meaningful insights.

3.2.4 Key Insights

Key insights were sought from further reviewing of analysed data. Interpreting user data was done in multiple perspectives derived from previous research, such as web usability, service touch-points, and academic identity.

Better Aalto Blogs service, or other similar service is highly needed

Every participant had an immediate reaction when asked about their website building experience, all of whom expressed overwhelmed feelings. Many mentioned that the steep learning curve of web technology, including that of WordPress, is the main barrier for initiation. However, most users also agreed that WordPress is a good starting point for beginners. User G, for example, stated: “I like WordPress because I don’t have to program at all, [...] but this menu [site customiser] is quite hard to find in [sic] the first time.”

The fact that there is no proper web publishing service in Aalto University was the core problem behind such impression towards the website building. Remarkably, most participants did not think Aalto Blogs as a proper option for building websites. Due to its limited options and design, they sought for other solutions such as Aalto Web Studio or WordPress.com service. User C, who has moved from Aalto Blogs to WordPress.com, articulated the situation clearly:

“I first started using this service [Aalto Blogs] because it was very easy to start with, but then quite quickly I noticed a few things that I didn't like, [...] the first thing was that you cannot choose any theme here. [...] I couldn't change font or anything, and it [default theme] has quite small font.”

User A and User B also responded they would be benefited significantly if Aalto Blogs could be used for building course and department websites. Another important point mentioned by these two users was difficulties in finding developers for more complex websites, which User B described as “hell of a job”. Both users had to rely on their friends in looking for developers as there is no dedicated web development service in Aalto.

Users with richer experience with websites identified designing information architecture as the most difficult and time-consuming process, especially for informative websites such as department websites and course websites. Such difficulty was also experienced in several former projects done by myself and User B – for example, Collaborative and Industrial Design programme website (Aalto University, 2015), in which majority of time was spent in sorting the information.

According to User A, this process is not limited to building, but continued in uploading posts. He tried to take advantage of hyperlinks in order to “reduce the text

as much as possible,” and by this way, information was organised in a way that it does not overwhelm visitors. He added that “[he] spent tons of time” on a multi-author website to fix others’ posts, because they often neglect the importance of such effort.

Need of channels to get support

There were cases participants sought for support from Aalto Blogs service. User C and User F mentioned their desire to track visitors to their websites through statistics software such as Google Analytics. However, due to scarce resources in Aalto Learning Services, individual support was not provided to them, and instead, service-wide statistics were updated and informed (Aalto Learning Services, 2011).

These users also mentioned about the landing page of Aalto Blogs service. Currently the main page lists latest posts among all blogs, necessity of which were questioned. User A pointed out that almost no people would visit Aalto Blogs main page to search for a post; rather, they would use a search engine.

Users with little experience with WordPress mentioned difficulties in finding tutorials or support on WordPress in general. More specifically, they struggled in finding the right tutorial for their needs, as most online tutorials tend to discuss on wider topics rather than a specific issue. Also, according to User D, many tutorials consider WordPress as a blogging platform instead of a content management system and thus often neglect to explain some important customisation features. User E identified difficulties in finding theme-specific information, which he attempted search from the theme developer’s support channel.

This implied that beginners were not aware of existence of Web Studio, where they provide free consulting on general WordPress issues (provided that they are within Aalto usage). There was only one user among non-expert group who had actually visited them to learn about the platform, while others sought for help from online search. Contrarily, User A and User B have launched several websites through Web Studio’s web server, although development was done separately.

Backend and Frontend Does Not Match in Aalto Blogs theme

Users without much experience with WordPress expressed difficulties with its dashboard screen. Especially for Aalto Blogs service, the text editor was a core usability issue, as user’s input and final result differs significantly (Figure 6 & Figure 7). However, User A and User B preferred to have better writing functionalities over matching visual output. Both users mentioned Markdown (Gruber, 2004) as their alternative to the default editor, for similar reasons. They said Markdown helps reduce their maintenance work because it is much easier to distinguish text elements – heading, table, link, etc. – especially when a post is written by other users. Also,

lack of table feature in default editor was another reason for adapting Markdown for User A.

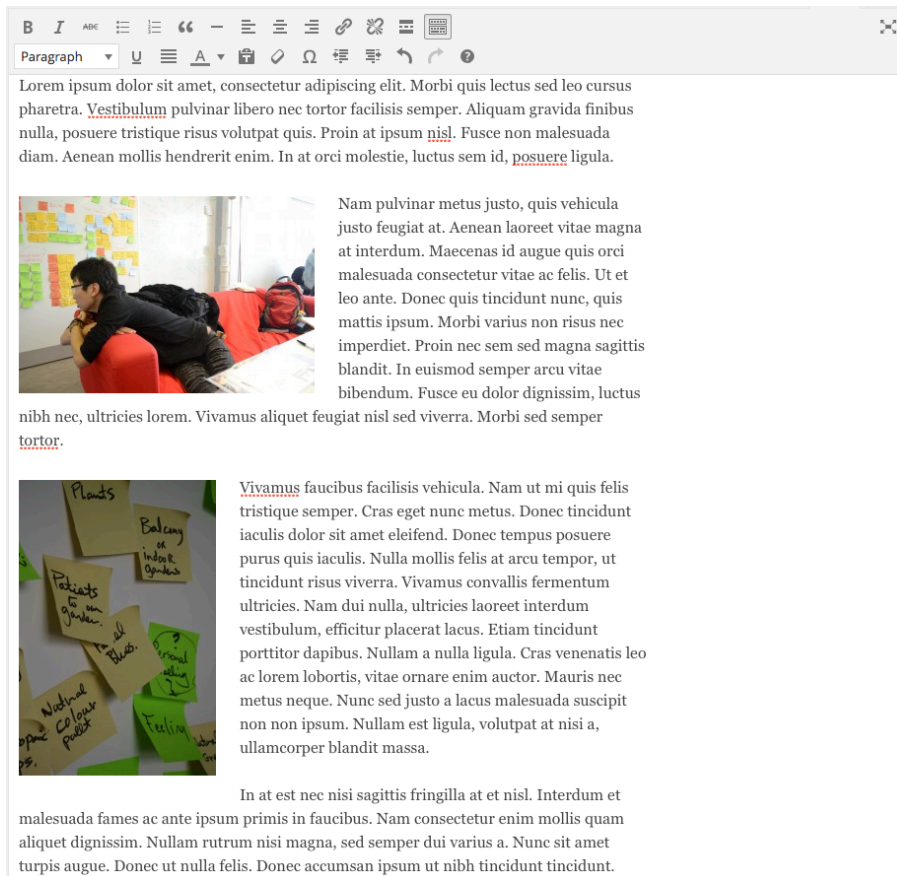


Figure 6 Post in the editor screen

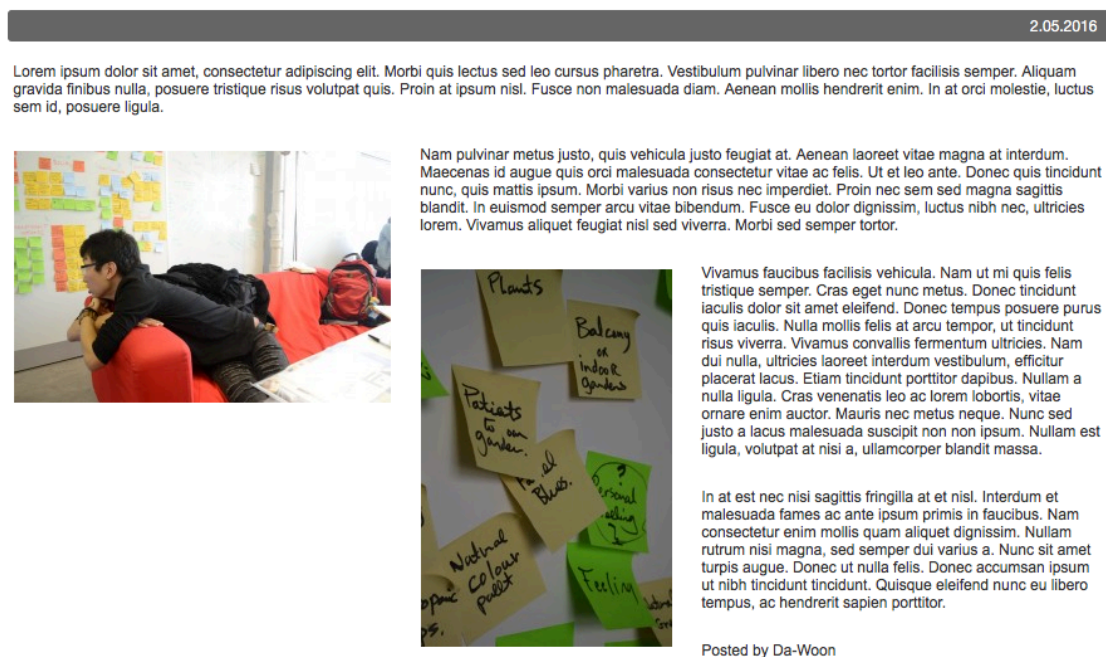


Figure 7 Post (Figure 6) output

The non-matching behaviour of the editor appeared to be a major issue as it was very problematic when dealing with images. All participants emphasised the value of visual media such as images and videos, but many of them struggled in aligning those elements with texts. For this reason, User A and User B favoured to use external services – Flickr and Google Plus – for displaying their image galleries. User C, on the other hand, was unable to find ways to embed external video in Aalto Blogs, even though he knew it was possible in WordPress.

It is also worth noting that most users tended to copy and paste their post from an external word editor, and in rare cases, directly from other websites. In most cases, this process was done without a noticeable problem, however, the latter case often yielded unwanted HTML elements, which users had to fix manually by looking into code.

Usability issues in theme customisation was also observed in other themes. This experience varied among users, as each WordPress theme had different options. User E, for example, has described the process as “learning a new software,” as the theme he purchased offered too many functionalities. Also, regardless of theme-specific problems, participants had difficulties in making site’s menu structure and using sidebar widgets. User F’s website represents such complexity (Figure 8). The user was unable to remove the duplicate menu, because she could not locate the option in dashboard.

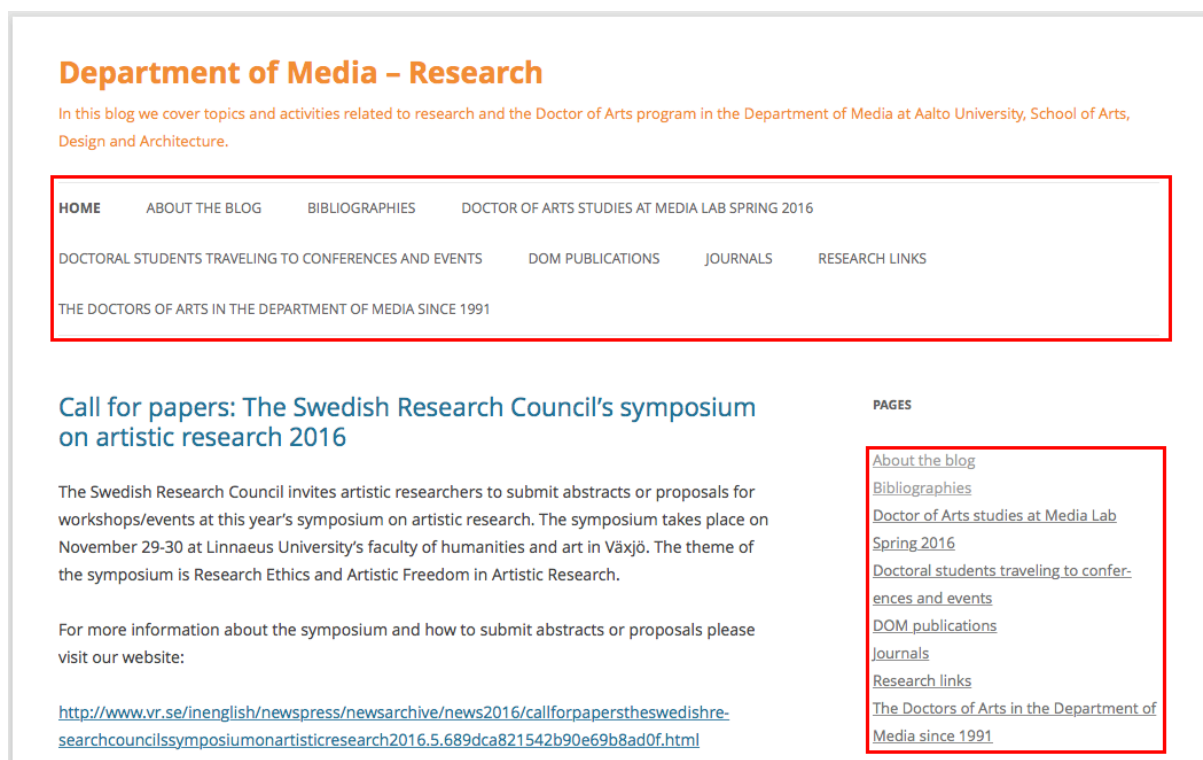


Figure 8 Duplicate menu (in red boxes) displayed in a user's website

How will the audiences feel?

The impression of website was mentioned by all participants during the interview. They believed this would directly affect audience's experience and thus put much effort in improving it. For instance, User F, in aforementioned example, also mentioned "user [audience] experience" as the reason for willing to change the menu structure.

One important finding was the fact that users running websites related to Aalto University valued the university brand. Just as User B commented, they thought "giving the Facebook link is not cool" for providing information, though they nevertheless shared website's link through social networks to promote contents. According to User A, the purpose of operating school-related website is "to gain credibility," which implies the use of official logo and aalto.fi domain as crucial factors to such cases. Also, User H, a doctoral student in Aalto University, summarised her reason for using Aalto Blogs as follows:

"It was definitely the audience, because I wanted people to know this is the research that I'm doing here, that I'm an employee and a researcher here in Aalto and this is connected to my work here. So that kind of university brand was important."

However, User H also expressed concerns in overuse of the brand, especially in Aalto Blogs service. She emphasised user blogs should "look like an individual blog" in order to avoid confusion between individual posts and school's official articles. User A supported this opinion, suggesting that "the site needs to look like *my* [emphasis added] website, only with simple customisation."

4. Theme Design and Development

4.1 Project Re-brief and Directions

The interview has provided answers to first two of the three questions mentioned in Chapter 1:

- ***What redesign and repositions should be made for Aalto Blogs in order to fulfil Aalto community's web self-publishing needs?***
- ***What key components of customisable content management system (CMS) need to be designed and developed to support the above?***

Aalto Blogs needs to be redesigned in a way that it can provide more options for building websites by improving its features and design. This can be achieved by designing a new WordPress theme, with possible support of external plugins. Based on these findings, the focus of the project was fixed to designing a new theme for the service, and followed by that a set of theme design directions were defined as follows:

- Theme should serve as an easy starting point for beginners
- Provide a more straightforward editor, and enhance overall visual design to optimise reading experience
- Help users organise their information more easily
- Theme should resemble an up-to-date design, and the user experience should be consistent in devices with different screen sizes
- Follow Aalto University's brand guideline

These directions were regularly reviewed to stay in focus and prioritise features; it was especially helpful in agile development, where ideas had to be generated and evaluated simultaneously with development process.

4.2 Personas

Personas are virtual people who represent possible target users and their behaviours based on insights gained from actual observations (Cooper, Reimann, & Cronin, 2007). According to Cooper et al (2007), properly selected personas will greatly enhance prioritising design features according to their needs, and thus they must be chosen very carefully “based on real-world observation.”

Six personas were modelled by thoroughly reviewing interviews and user backgrounds. Users' and service providers' past experiences were referenced to

build possible scenarios and interactions between them. After completion, personas were prioritised into primary, secondary and negative persona (Cooper, Reimann, & Cronin, 2007).

Persona A: Robin Vaskola

Robin is a bachelor's student in Bioinformation Technology programme. He recently found a poster advertising on the new Brain Science course, the topic of which he was very interested in. He wrote down course's website address from the poster to visit it later. He could get more detailed information about the course from the website, including planned course projects and similar courses done from other universities. The course content seemed very motivating for Robin, and he finally decided to take the course.

On the first day of Brain Science course, students were told to form into a group and were given a research assignment regarding human brain system. The lecturer, Xavier Garcia (Persona E), showed detailed examples from blog posts written by students from other university. The new groups were told to create their own blogs as well, by using Aalto Blogs, and to post their assignment process there. Following the instructions, Robin has formed his group with one of his classmates and an exchange student, and later that day, they gathered together to make their research blog.

Persona B: Susanna Lundberg

Susanna is a doctoral candidate in Department of Media, researching mainly on media pedagogy. She is an active blogger and has been running her personal WordPress blog, where she shares her education activities.

These days, she was realising that her personal blog has limits in sharing professional contents related her research, as the blog was intended for more general audiences. She wanted to launch a new blog with more in-depth topic on media pedagogy, and if possible, under Aalto domain, as her contents will be related to her doctoral study. Susanna visited Aalto Web Studio in the same department to ask for possibilities, and from there she got information on Aalto Blogs service. Although it was impossible to get an Aalto subdomain (e.g. *example.aalto.fi*) for an individual's website, Aalto Blogs service seemed to offer 'blogs.aalto.fi' domain by default. Also the fact that the service is operated on WordPress was a great merit as she was already familiar with it, so she finally chooses to start her new blog with Aalto Blogs.

Persona C: Janette Beketsky

Janette finished her master's in Graphic Design programme and is currently working as a part-time assistant in Antimatter and Nuclear Engineering research group for

their new website. The research group recently published an influential research on antimatter and has become recognised by the public, and they are in need of making a new website. While the group wants a professional website, they do not have immediate budget for it, so they are looking for a cheap solution.

Janette heard from her former classmate Susanna (Persona B) about Aalto Blogs, so she started to make the website with it. However, she realised one feature cannot be implemented through this service. The research group occasionally organises events and conferences, which they currently announce through an online event organising service called Eventbrite. It was essential to include this service into the new website, which should be done by a WordPress plugin, but Aalto Blogs does not support installing custom plugins. Janette was worried as she designed the website based on Aalto Blogs' theme and did not want to change it.

Susanna advised Janette to reach Aalto Web Studio. Fortunately, they were able to copy Janette's work to their own server, which provided custom installation of plugins as well. Also Janette and the research group was happy to know that their service is free for Aalto users.

Persona D: Yeonji Lee

Yeonji studies in master's programme in Product and Spatial Design and is about to finish her first study year. One day, she found a summer job offer from a Finnish interior design company, which was urgently looking for a designer capable of working with a Korean client on an interactive space project. Yeonji was very interested as interactive space is her main study field in her master's.

In order to prepare for application, she started to collect relevant works from her portfolio, and she thought it is much more effective to show interactive contents through video clips. She already had all clips uploaded to her Vimeo account, so she decided to make a simple website to showcase them. She remembered one of her friends made his web portfolio very quickly using Aalto Blogs service, so she also plans to give it a try.

Persona E: Xavier Garcia

Xavier is a new lecturer at Bioinformation Technology programme. He has been assigned as the lecturer for the new Brain Science course, as he had a successful teaching career for the topic during his postdoctoral fellowship in other university.

In prior to launching the new course, he wanted to promote his new course through a website, in which he plans to share contents from previous university lectures. His colleagues suggested him to reach Aalto Communications to get help for launching an Aalto course website. Aalto Communications told Xavier that they are only responsible for assigning domains to websites and do not provide any web building

service. Instead, they recommended two options: Aalto Web Studio if he needs a highly customised website, and Aalto Blogs service for a simple and quick website. Since he had quite clear idea on his contents which do not require any complex structure, he decided to try Aalto Blogs.

Persona F: Paul McGregor

Paul is a doctoral candidate in Department of Marketing. He has rich experience in web development from his former job, and he is currently researching on e-commerce marketing for his doctoral study.

He recently received a school-funded job from the department to create their website. The department has introduced a new PhD programme starting from next year, and major structural change in overall studies will be made. The new website needs to provide all new information regarding the change along with general information on the department.

Paul and the department agreed to assign budget for the project over six months, and he is able to hire external resources. In order to find a web designer, he did a quick research from Aalto University website and found out about Aalto Web Studio in Department of Media. After requesting help from them, he was able to find a graphic design student who can help with the project. In addition, he learnt that Aalto Web Studio also provides a test server and a production server, so he plans to reach them again when development work starts.

Persona	Persona Type	Website Summary
Persona A	Primary	Simple blog for course learning diary
Persona B	Primary	Personal research blog with informative contents
Persona C	Secondary	Research group blog with external service integration
Persona D	Primary	Image and video-based portfolio website
Persona E	Primary	Course website with informative contents
Persona F	Negative	Highly complex website with large quantity of information

Table 3 Summary of personas

As summarised in table above, Persona C and Persona F are sorted as secondary and negative persona respectively. In Persona C’s case, most of the website can be built with the new Aalto Blogs service, however, the integration of external service through a plugin requires consulting another service, in this case Aalto Web Studio. Persona F’s case is beyond the scope of new service as it is backed with enough

resources and knowledge; the persona can either hire an external developer or simply develop the website by himself.

4.3 Agile Development

Unlike other design projects, it was impossible to set a clear boundary between the ideation process and the development phase. The main reason for this is the complexity of software development, in which features are developed with numerous trials and evaluations. This characteristic of software makes prioritisation of ideas crucial, and it also forces ideation to be done synchronously and continuously. Therefore, the development process was done in an agile approach (Martin, 2003; Ferreira, Sharp, & Robinson, 2012), which involved prototyping, user evaluation and further ideation.

4.3.1 Visual Design and Wireframe

The major difference between a static web page and a dynamic platform is whether or not users can change the visual design of them. For Aalto Blogs' case, it is essential to provide as much freedom as possible for users, and for such websites, visual design should consider non-static factors of the layout. If a designer is familiar with HTML and CSS, it is often easier and more accurate to prototype directly on the web browsers based on a minimum-defined wireframe.

A similar approach was taken by quickly trying out several possible layouts with varying elements (Figure 9). Once the base layout was decided, all dynamic elements have been removed from the design, leaving only the placeholders to indicate user-configured elements (Figure 10). All further design trials were done during prototyping phase.

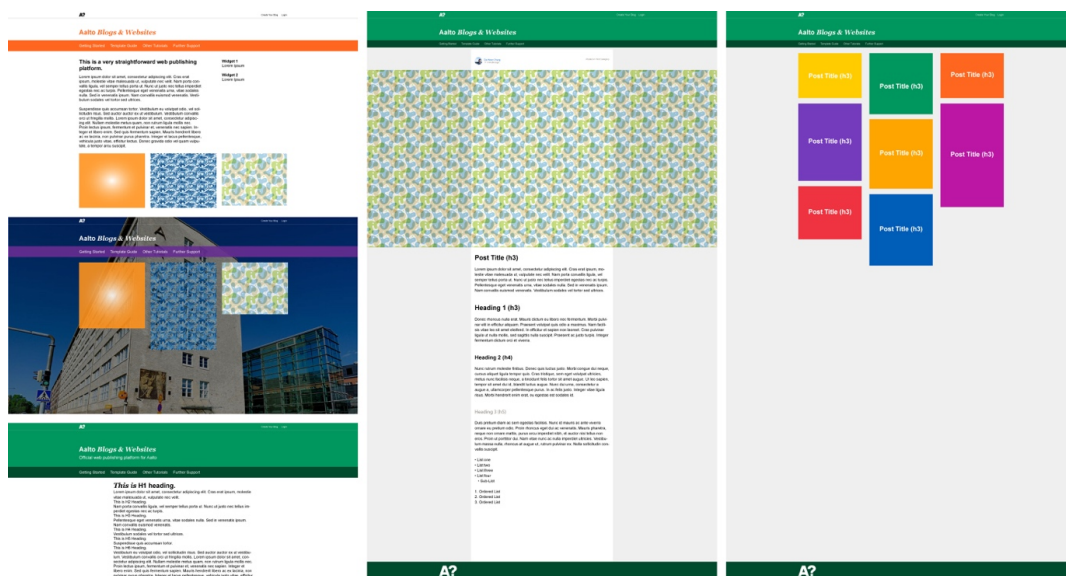


Figure 9 Design tryouts

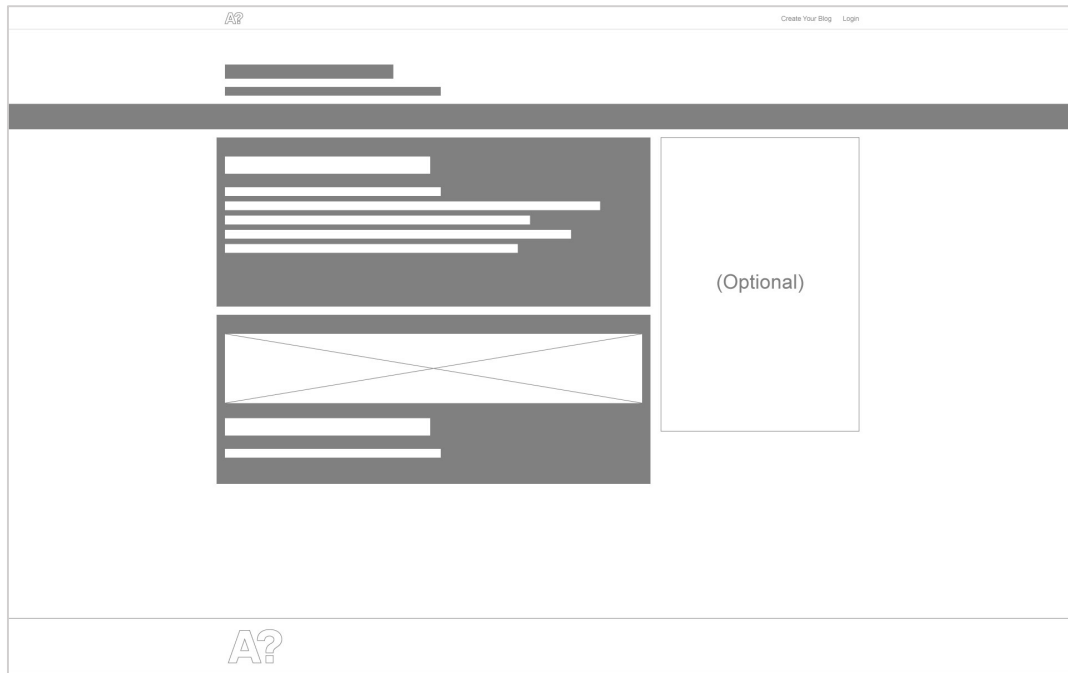


Figure 10 Layout design wireframe

4.3.2 Prototyping

The prototyping stage differed slightly from usual browser-prototyping method mentioned above. It was executed while prototyping the actual theme along with other features. This approach helped to determine which web functions should be used for each customisable user elements – e.g. use of dropdown list or radio button – which would eventually affect usability of the theme.

Although not listed in theme design direction defined in previous stage, the development process was done with careful consideration on future maintenance, by following several coding practices.

First, the theme's file structure strictly follows WordPress' guideline (WordPress, n.d.). WordPress themes are composed of template files written in PHP, which are processed according to template hierarchy defined by internally. Following the guideline not only helps other developers understand the code easier but also avoids unexpected results, typically caused by violating the hierarchy. Despite the advantage, many third-party themes do not follow this structure, usually in order to adapt proprietary features easily. Such practice makes further support and customisations extremely difficult and thus were avoided in this project.

Second, all PHP functions are highly documented, also by following WordPress' practice (WordPress, n.d.), which is further managed by phpDocumentor (phpDocumentor, n.d.). Although there is no clear guideline for documenting a theme, this is a de facto standard in development process. Properly documented PHP functions can be easily modified or reused by other developers in the future,

which can ultimately benefit overall maintenance as well as minimise the handover process.

Third, all user customisation features were placed into one file and limited to the Customizer API. As discussed in Chapter 2, scattered theme options are one of the critical factors preventing consistent user experience. By following the recommended API, both usability and maintenance efficiency could be improved noticeably, which was also confirmed during the user evaluation.

Overall, the prototyping process was focused on two core parts: editor optimisation and theme customiser development. User interview has revealed that these two factors are the main touch-points in the service, and their usability directly influences service experience. While the latter is a common process in WordPress theme development, editor optimisation is seldom performed. As WordPress adapts customised TinyMCE (ephox, n.d.) as its default editor, additional knowledge on editor itself is required to perform further customisation. Such complexity is also reflected in the fact that there is a dedicated development channel in WordPress maker community (WordPress, n.d.). There exist several plugins that modify the default editor (e.g. Ozz, 2016), however, their approaches are mostly focused in increasing functionalities rather than optimising usability.

4.3.3 User Evaluation

User evaluations were also performed in two major parts, following the two prototyping focuses. Two participants from the user interview were also involved in this stage: User A was consulted as an expert in overall process, and User D was invited to participate in usability assessment as a beginner. Also, four students from the Design for Government course in Aalto University were observed during their biweekly assignment, as they were asked to write a post on the course's website (implemented using WordPress). In addition, a link to test server was provided to my contacts in Aalto Learning Services and in Aalto Communications and to two students (selected by convenience) to run a closed beta test.

For the evaluation, users were asked to create their own website using the beta test platform. After setting up basic structure of the website, they were asked to write a post with images. Six participants – User A, User D and students from Design for Government course – were observed directly as they performed tasks, and remaining participants were asked to provide feedback after testing the service. As the result, several bug fixes were made and additional insights listed below were found and implemented.

Example menus and widgets help understand the customisation process

Improving the usability of menus and widgets were initially impossible, as these features are integrated in WordPress' core files. Instead, an existing tutorial video

was shown to test participant to provide better starting point. However, users were usually not patient enough to go finish the entire video and preferred to try it themselves until they understood how it worked.

User D also struggled to understand the structure of menu customisation screen from the tutorial video, and eventually sought advice. Notably, after showing her an example menu structure from other website, she immediately understood how it worked and was able to customise it by herself. She also commented that “it would have been easier if there was an example menu assigned by default.”

Directly copy-paste images from external editor

One participant expected images to be automatically inserted during copy-paste process from other word editor, however, she eventually had to upload them manually as it was not supported. Shortly afterwards, it was discovered that the feature was not enabled by default, even though it existed within the default WordPress installation.

More distinct quotes are preferred

User A identified the importance of quotes in academic writing and the need of it in an online environment. Frequent use of quotes was also observed in User C and User H’s blog postings, supporting this need. He also suggested the option to be implemented in a straightforward way to avoid worsening usability.

4.4 Final Theme Design

For the last phase of development, Aalto Communications was reached for final evaluation of the theme’s visual identity. After applying minor adjustments suggested by Aalto Communications, the agile development phase was forcefully stopped to focus on implementation. This means that no more design features were added and only critical technical issues were to be reviewed from then on. In this section, final design features are organised according to design directions to show how insights are implemented. As a note, the directions are rephrased into keywords in this section.

4.4.1 An Easy Starting Point for Creating Website

This direction was achieved by two main approaches: by providing placeholder menus according to menu location, and by properly categorising customiser menus in the dashboard.

By default, WordPress generates a sample post, page and comment, and also assigns sample sidebar widgets. As found in user evaluation stage, it is evident that

such example content helps beginners understand basic structure and reduce the learning curve. To further ease use, the theme is designed to automatically generate two menus – primary menu and social link menu – and assign them to suggested locations (Figure 11).

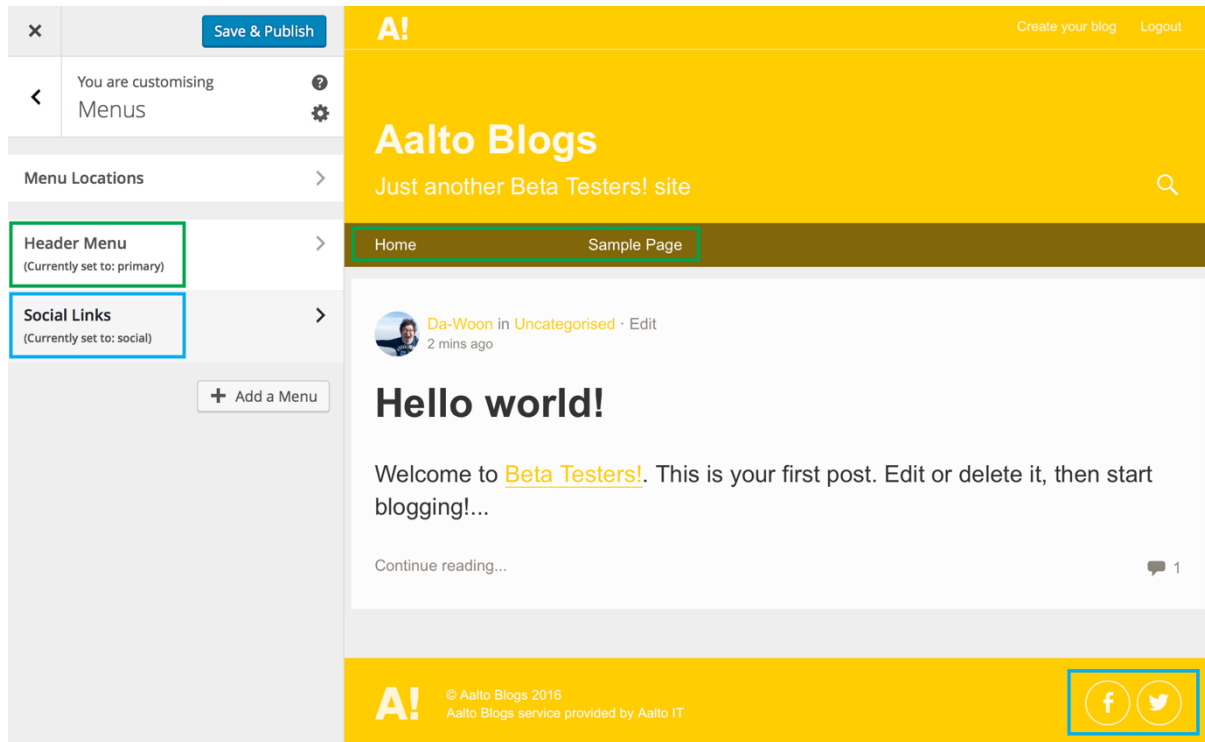


Figure 11 Automatically inserted menu as indicated by corresponding colour

Also, customiser menus are categorised by element types and sorted in recommended order (Figure 12) in order to enhance usability. The names for the menu categories were carefully chosen to provide straightforward labels.

Site Name and Tagline	>
Aalto Preset and Logo	>
Site Layout	>
Layout Colours	>
Text Colours	>
Header Image	>
Background Image	>
Menus	>
Widgets	>
Static Front Page	>

Figure 12 Suggested customiser menu

4.4.2 Writing and Reading Experience

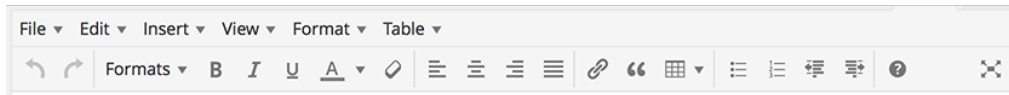
One of the main focuses in enhancing the writing experience was to match the editing screen and the final result. WordPress and TinyMCE has options to include a dedicated CSS stylesheet to help the matching process, thus, the editor is designed to be identical to final output.

Formatting options of the editor are reorganised to improve usability. The process was done by benchmarking Microsoft Word and Google Docs; simply by aligning the options in a similar way to the widely-used word editors can increase the consistency of the user experience (Figure 13).

Original WordPress Editor Menu



Re-sorted WordPress Editor Menu



Google Docs Menu Structure

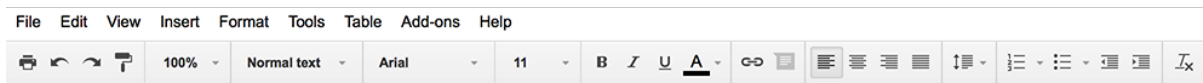


Figure 13 Comparison between original editor, newly designed editor and Google Docs menu

Additional features that are frequently used – tables and quotes – were added and improved. The missing table option was added through an external TinyMCE plugin – not to be confused with WordPress plugin – which is available from official TinyMCE plugin repository (TinyMCE, n.d.). Feature improvement on making quotes was made by CSS only in an attempt to avoid increasing complexity. By default, WordPress only supports one style for quotes – blockquote. Considering the fact that a blockquote is usually written in a multiple-line paragraph and thus does not need to be aligned in a distinct way, each alignments are assigned to give extra options for short quotes (Figure 14).

Quotes

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Proin sollicitudin urna vitae neque sollicitudin tincidunt. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Fusce imperdiet vitae elit nec faucibus. In hac habitasse platea dictumst. Curabitur eget sodales lacus, nec pretium ex. Phasellus finibus euismod erat, nec lobortis urna facilisis et. Aliquam erat volutpat. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Quisque elementum, nisi non efficitur sagittis, nunc leo interdum nibh, ut condimentum dui turpis id libero. Nunc ac urna a sem facilisis vestibulum. Donec molestie efficitur metus, a porta arcu porta ut. Praesent ornare ex et felis egestas laoreet. Integer mollis ligula mauris, hendrerit aliquet urna aliquet consequat.

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“This is a right-aligned quote.”

Figure 14 Examples of different types of quotes

One core problem identified from the user research were the difficulties in controlling images within a post. This has been solved by forcing image sizes programmatically. By default, image sizes have to be manually set from WordPress settings, which often causes unexpected results depending on themes. To prevent such confusion and also to reduce unnecessary work, the theme is programmed to forcefully reset image sizes upon activation.

Reading experience for visitors is enhanced by carefully adjusting font styles. All necessary elements – headings, paragraph, quotes, lists, table, etc. – are manually programmed in CSS to enhance readability. Typographic styles are mostly

referenced from Bringhurst’s book (Bringhurst, 2012) and Aalto University brand guideline (Aalto University, 2013). In addition, a choice for post layouts is added – narrow layout for informative websites (Figure 15), and wide layout for focused reading experience (Figure 16). As shown in the figures below, users are able to choose their preferred layout depending on their desired website types.

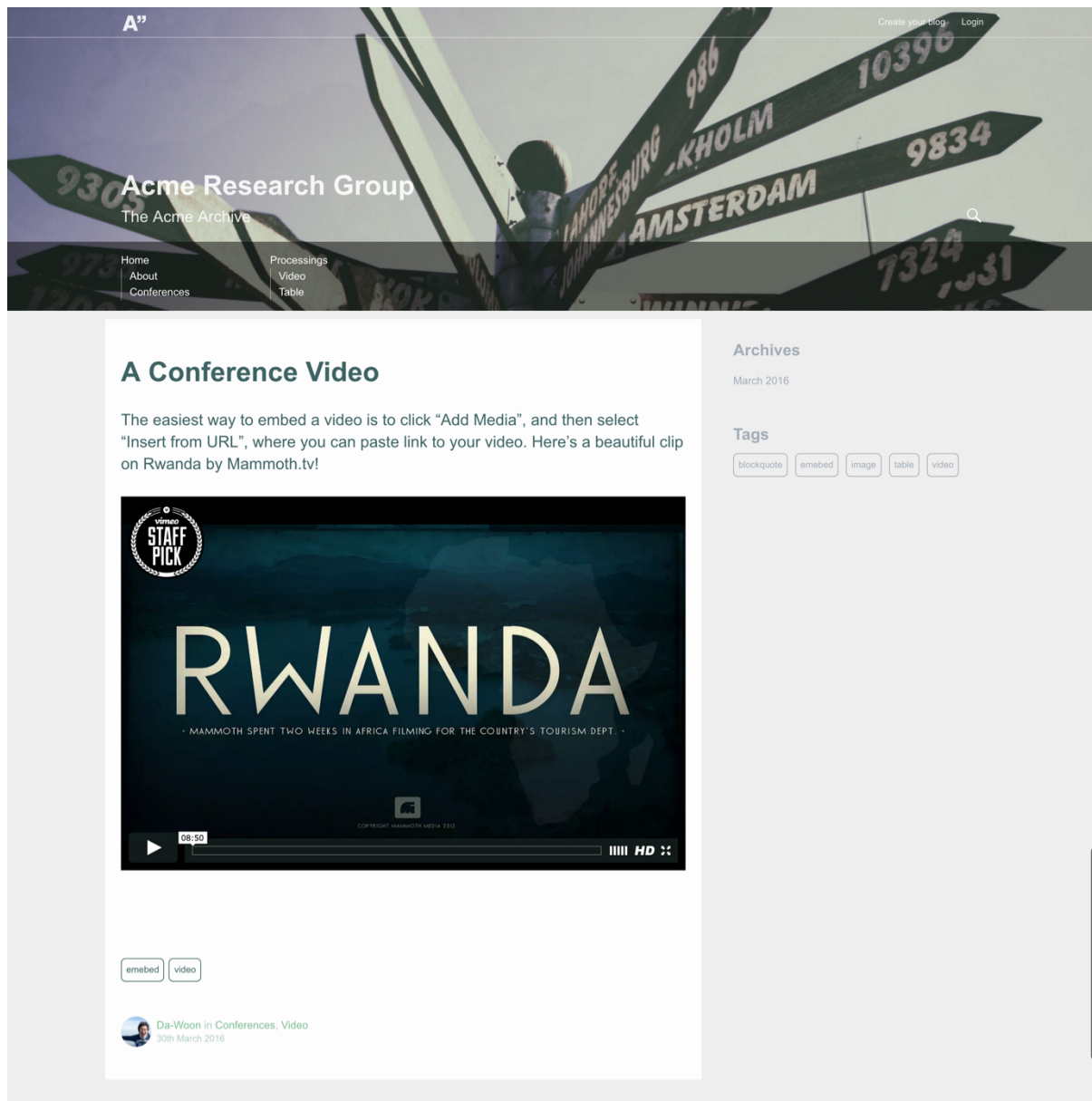


Figure 15 Narrow layout, with sidebar



A Conference Video

The easiest way to embed a video is to click "Add Media", and then select "Insert from URL", where you can paste link to your video. Here's a beautiful clip on Rwanda by Mammoth.tv!



embed video

Da-Woon in Conferences, Video
30th March 2016

Figure 16 Wide layout for enhanced reading experience

4.4.3 Organising Information

Obviously it is impossible to control user-generated content and the way these contents are categorised. As a partial solution to help organising information for users, the theme provides an option to include nested menu. The theme has only one menu area in the header to avoid further confusion, especially considering the intricacy of menu composition process. The menu was designed to adjust its layout automatically according to assigned structure, as shown in Figure 17.

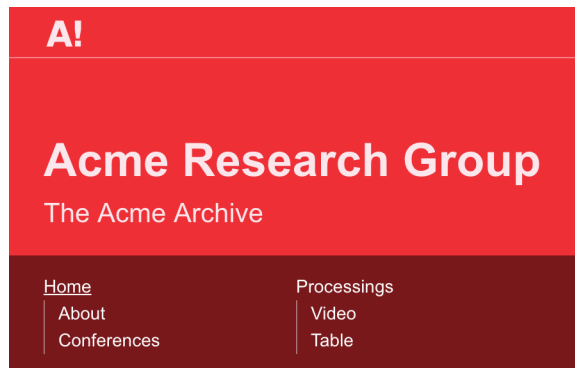
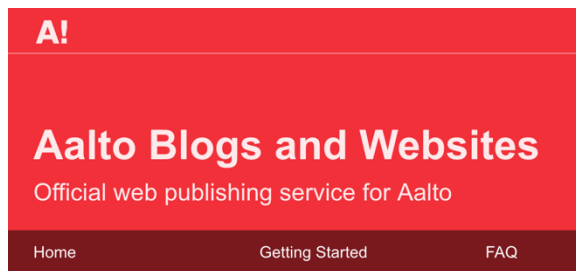


Figure 17 Two types of menu structure: single line menu (left) and nested menu (right)

Also, an option to display site hierarchy – commonly known as breadcrumbs – was added to enhance navigation experience in informative websites.

4.4.4 Up-to-date Design

As discussed in section 2.1, modern web layouts must consider various screen sizes, which is a very sophisticated task on its own. To relieve the complexity, Bootstrap-SASS library (Bootstrap, n.d.) was adapted for theme development. Bootstrap is already widely used in major websites, namely, Spotify and Twitter, and thus has advantages in future maintenance, as many developers are already familiar with it. As a result, the theme is fully responsive and optimised throughout all sizes of screen (Figure 18).

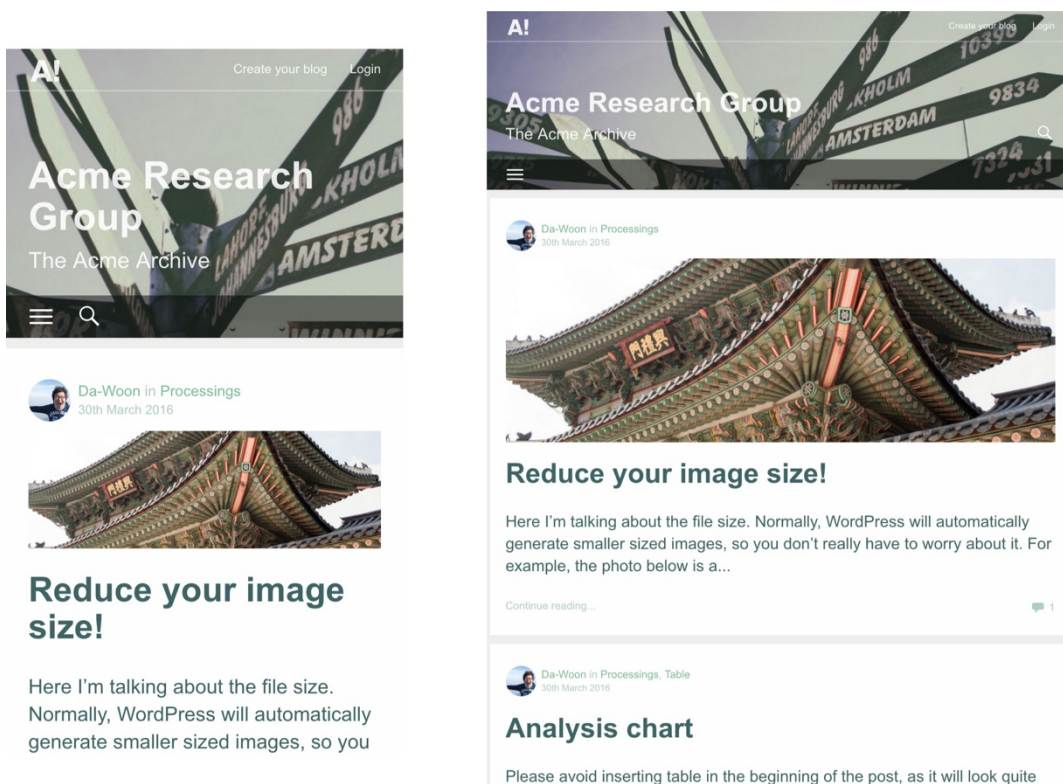


Figure 18 Layout rendered in mobile devices: smartphone (left) and tablet (right)

Furthermore, the theme has been designed with careful consideration on image as a core design element. Importantly, use of images is unavoidable for users from design school, thus, options for these users are needed to support all types of users of Aalto University. For this reason, the final theme design has choices for two layouts – one for text-based layout (Figure 19) and the other for portfolio-like layout (Figure 20) – with an optional sidebar for text-based layout (Figure 22). There are also options to add background images to header and body area (Figure 21 and Figure 22).

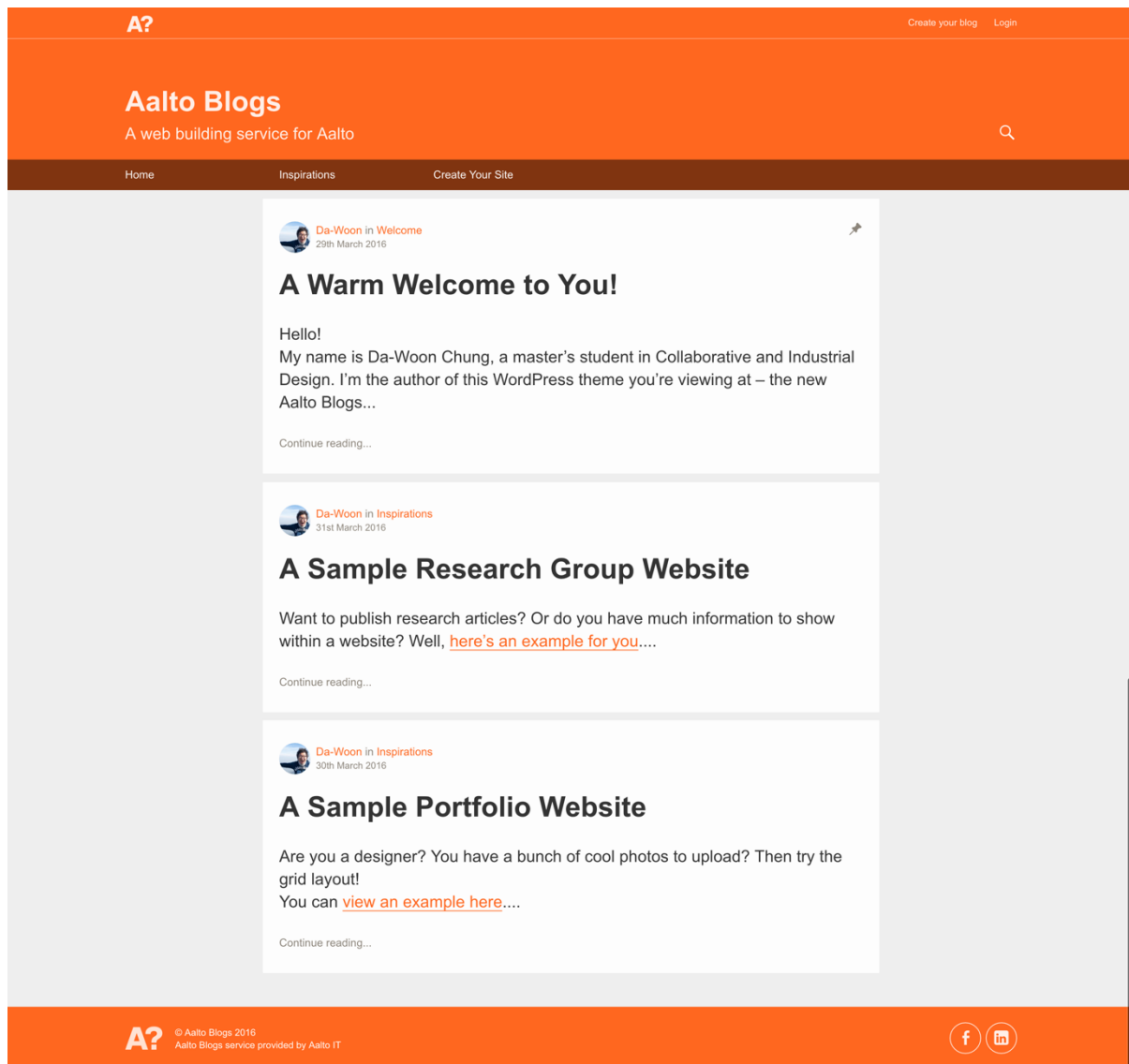


Figure 19 Text-based layout, without sidebar

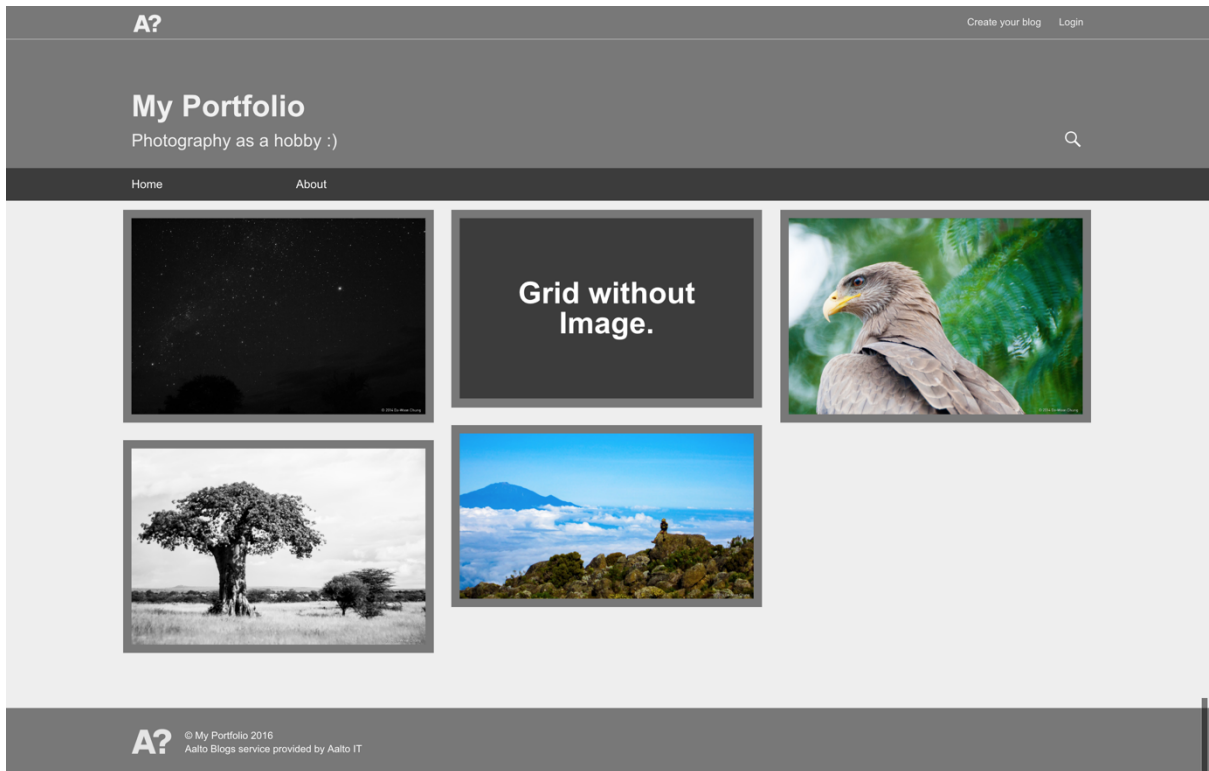


Figure 20 An image-based grid layout

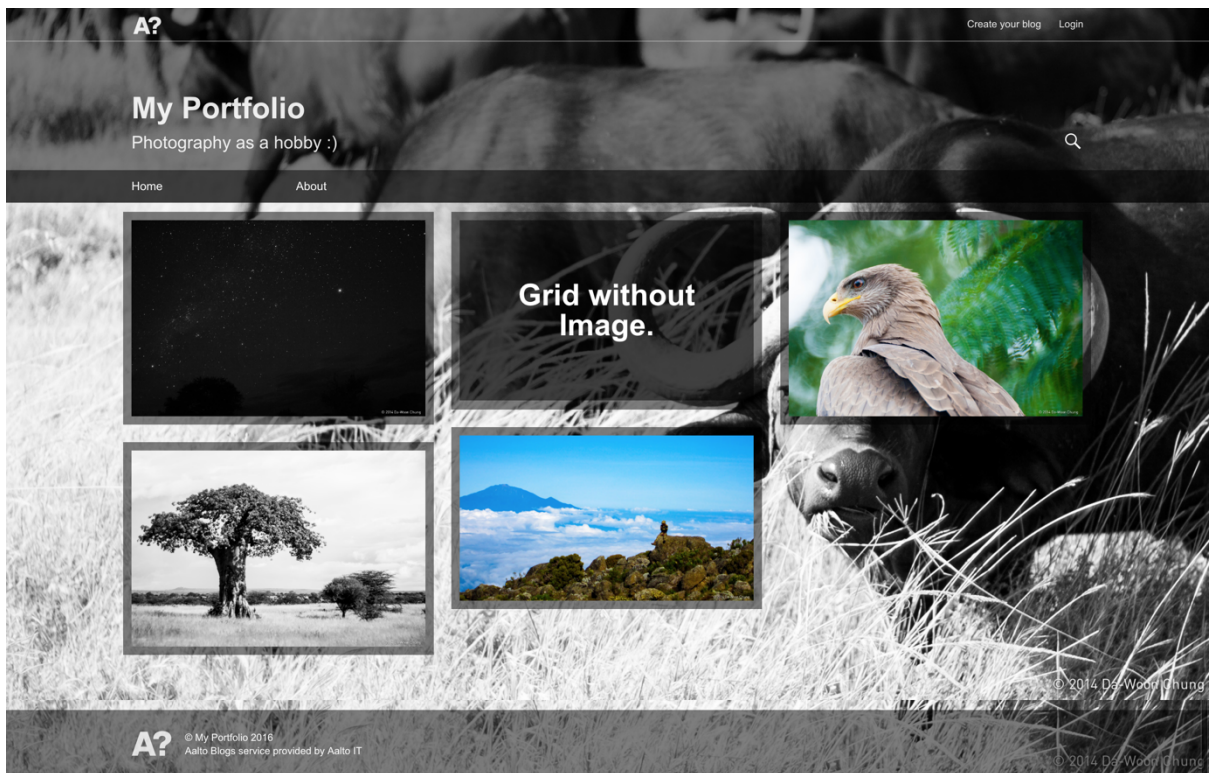


Figure 21 Layout with background image

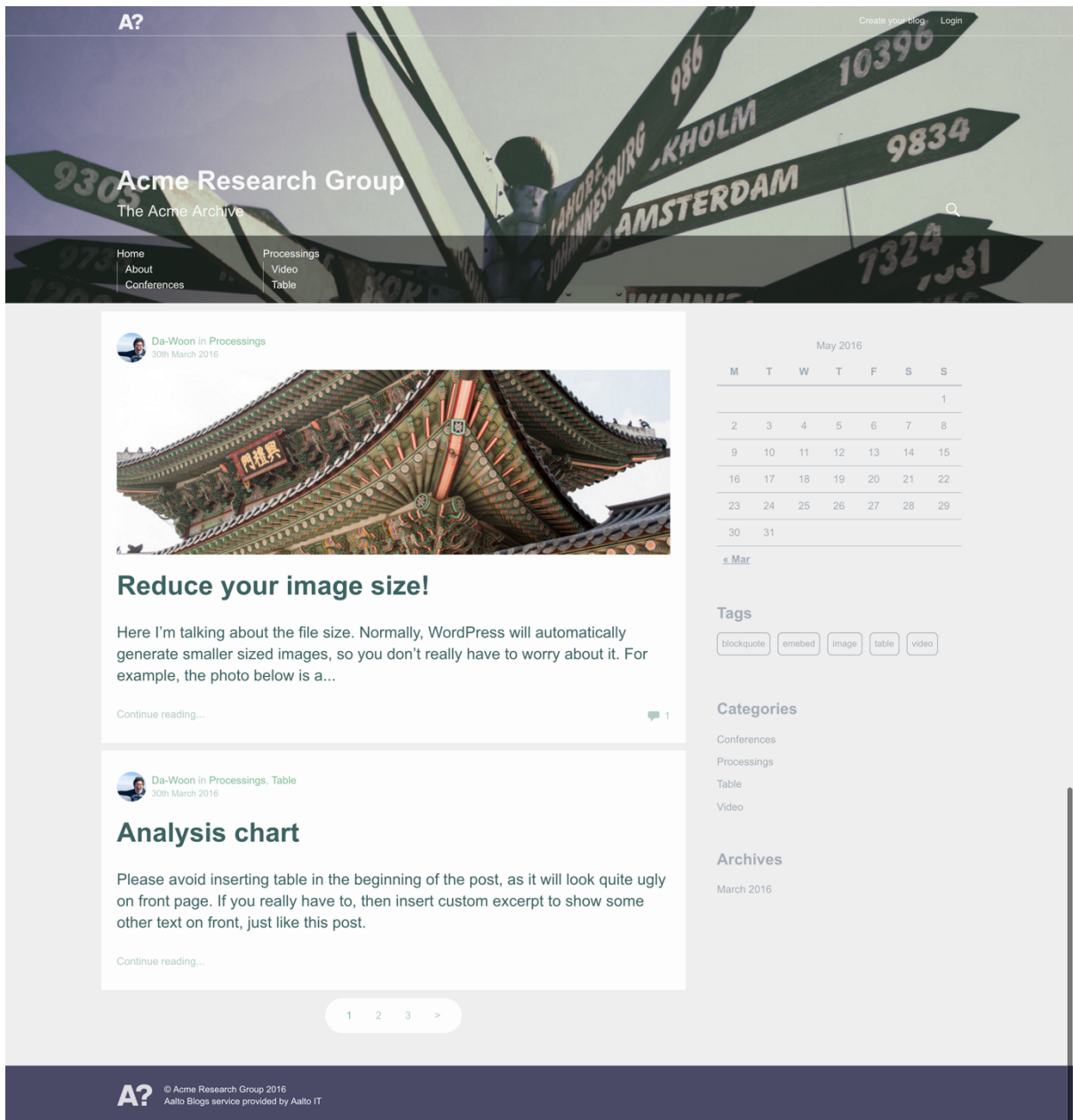


Figure 22 Text-based layout, with sidebar and custom header image

4.4.5 Aalto Brand

Due to the characteristics of Aalto Blogs service, Aalto-related elements are inserted in a way that it does not disturb the possibility of developing a user-generated identity. Following Aalto’s guideline, options were provided to choose a black or white logo, depending on background. Also, the logo was generated through SVG script rather than image files, to keep high resolution for all devices. To add more dynamic aspects, a random logo, from the three suggested types featured in the Aalto brand, is generated on each visit to the website.

While overall Aalto brand elements used are limited to the minimum, Aalto colour pre-sets have been added to help schools choose their brand colour easily (Figure 23).

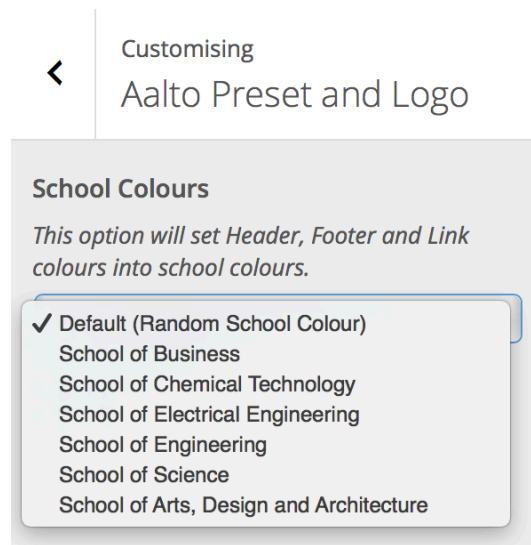


Figure 23 Colour presets for each Schools of Aalto University

Table 4 summarises design directions and selected features.

Easy Starting Point	<ul style="list-style-type: none"> • Better categorisation for customiser menu • Provide example menu
Writing and Reading Experience	<ul style="list-style-type: none"> • Matching front-end and back-end • Better editor layout • Better formatting options • Modern reading layout
Organising Information	<ul style="list-style-type: none"> • Options for menu structure • Breadcrumb option
Modern Web Design	<ul style="list-style-type: none"> • Responsive layout • Options for image-based layout • Better features for various media
Aalto Brand	<ul style="list-style-type: none"> • Visible yet not disturbing • Colour pre-sets for Aalto Schools

Table 4 Summary of selected features and corresponding design directions

4.5. Plugin Suggestion

While most features have been directly included into the theme, features that require extra user input have been set aside to be included through a plugin. Inclusion of plugins can reduce time for development, however, it has the risks of scattering user

experience and potentially causing increased maintenance work. Considering these factors, only one plugin, JetPack (WordPress, n.d.), has been suggested for use by Aalto Learning Services.

JetPack plugin is developed and maintained by authors of WordPress, which means its security updates and feature compatibilities are guaranteed. Two main features that were mentioned by users can be achieved through this plugin – social sharing button and statistics. However, the downside this is that extra user registration at WordPress.com is required to enable the features, resulting in potential confusion for repetitive registration process. Despite the inconvenience, this plugin is nevertheless preferred to other third-party plugins for its stability.

5. Service Deployment

The majority part of the new service deployment is installation of the new theme, which involves thorough testing on actual server environment provided by Aalto IT. The tests are mostly related to technical issues such as security and compatibility, and thus it will not be covered in this chapter.

Further steps for the deployment include collecting necessary information to be displayed on the service main page and proper role division between service provider side. Both these steps were planned in collaboration with Aalto Learning Services and Aalto Communications, as they are directly related to future maintenance.

Which information should be provided on the landing page?

The current landing page of Aalto Blogs service lists latest posts from all blogs. As mentioned in the interview, the list did not appear to be necessary to most users. However, Aalto Learning Services mentioned former cases in which users requested a feature to search for a specific blog, and thus suggested a search field to be displayed in the main page using a multisite search plugin (Insub, n.d.).

Also, both Aalto Learning Services and Aalto Communications wanted the service to be self-operating without much maintenance and support, considering their scarce resources. To achieve this, two pages were suggested – theme documentation and an FAQ page. Theme documentation will serve as a tutorial for the service, with detailed explanations on customising options and examples. The FAQ page will be composed based on previously asked questions addressed to Aalto Learning Services and questions raised during user interviews, such as embedding external video. Additionally, information on other possible options for building website will be prepared by Aalto Communications.

Future roles of Aalto Learning Services and Aalto Communications

The core problem of the current service identified in the earlier stage was lack of designated role among service providers, which resulted in a poorly managed service. Both Aalto Learning Services and Aalto Communications were aware of the problem and showed willingness to cooperate each other. During the discussion, two main roles have been suggested: promoting the service and direct user support.

One of the remaining challenges is that not many people in Aalto University are aware of the service. During the interview, Aalto Communications mentioned that they have not been promoting Aalto Blogs service due to its outdated design. With the newly designed service, they offered to announce its renewal through an official channel (e.g. Aalto News Letter). Importantly, Aalto Communications have mentioned the blog operated by the president of Aalto University (Teeri, 2012). Aalto

Communications proposed to apply the new theme to her blog in the first place to showcase the new design.

The need of direct user support is minimised by providing FAQ and documentations, as mentioned in previous section. Further support behind the scope of provided information will be managed through Aalto Learning Services. Other minor technical maintenances such as the occasional updating of WordPress platform and plugins will be also performed by them.

Although not directly involved in Aalto Blogs service, Aalto Web Studio is also a potential stakeholder. As illustrated in Persona C's case, the new theme can be used by them to provide seamless transfers between the two services. Provision of the new theme was agreed with them during the interview.

How can users maintain their websites after leaving Aalto?

A major issue raised by users regarding the Aalto Blogs service was that its access restriction policy diminishes motivation to invest efforts. The service currently requires an Aalto University account in order to access the dashboard. However, once the student or staff leaves the university, this account is disabled, making the admin panel unreachable. This is problematic, for example master students whose study period is usually only for two years and could lose valuable content and effort. Also in doing this, the university inevitably encourages users to create Aalto contents outside their platforms and thus cannot benefit from contextualising important results inside its own brand. Currently there is no possible way to address this as it is Aalto University's policy.

A partial solution to this, offered here, is to provide for the public another theme (with same features). Detailed guidelines on transferring the blog to other WordPress websites will be also offered through the new Aalto Blogs service. The public version of the theme will have all Aalto identity references removed as such new site will no longer be targeted for Aalto community.

Currently (as of April 2016), the service is under test by Aalto Learning Services, and planned materials are being prepared by Aalto Communications and myself. The new version of the service is planned to be launched by end of May 2016.

(The test service can be reached <http://blogs.ittest.aalto.fi> within Aalto VPN. Also, beta service can be reached from <http://aalto.chungdawoon.com>)

6. Conclusion

This project tried to provide a vision for designing a web self-publishing service using a content management system (CMS) platform. In the case of Aalto Blogs service, this approach was applied to re-orient the service to address wider range of users, which could be achieved by designing a central theme for WordPress platform.

By using a service design approach this project studies the needs and requirements of different stakeholders of the service and current and possible technological implementation. The main insight gained was to propose a redesign based on themes, with possible support with plugins. By providing a theme- and plugin-based structure, as identified from the contextual study, the new proposal reduces learning curve for the users, allowing them to personalise and utilise their website much more easily, and at the same time the web development efforts are reduced significantly. These enables a designer/developer and/or a designer to focus more on the web service touch-point. These key components have also enabled quick assessment of design features during agile development process. For the same reason mentioned above, applying ideas and fixes could be done much easier as the process only required uploading the theme files. Many ideas were applied and fixed while performing the user evaluation simultaneously. This advantage applies the same in actual production of the service, as mentioned in Chapter 5, which can be done by simply installing the theme when tests are complete. Furthermore, as witnessed during the user interviews, many suggestions were made directly by participants, often by showing an example plugin. For example, the use of Markdown plugin mentioned by User A and User B had led to deeper discussion on text editor behaviour and underlying maintenance issues. Although this suggestion was not directly implemented in the final design, this insight led further consideration on maintenance perspectives within writing experience.

The project has revealed that many interactions between service providers and users could be replaced or augmented – and sometimes even removed – by the web platform. For example, there were repetitive interactions between Aalto Learning Services and Aalto blog users when they needed to know their website's statistics. In such interactions neither were satisfied due to the limited possibilities of the current service to provide that information. This has been solved by proposing to implement this feature through an external plugin. This proposal will eventually reduce the support work that Aalto Learning Services personnel must provide. Although whether or not this practice will enhance service experience for Aalto Blogs users needs to still be validated. This implies that proper distribution of interaction points, or service touch-points, needs to be carefully considered, similar to what Clatworthy suggests for service design practices (Clatworthy, 2011).

6.1. Limits of the Project

In contradiction with some of the major advantages of CMS platforms mentioned above, the learning curve nevertheless remains steep. In practice, web-based services are seldom designed and developed by one person due to their scale and complexity. Although web designers, as discussed in Chapter 2, are expected to acquire certain amount of knowledge on web development, the focus should be on communication with developers and other team members, rather than the technology itself. This thesis did not cover such collaboration between the disciplines as the project was performed solely by myself. There are, however, existing case studies relevant to this such as Ferreira et al's (2012), in which they explore how agile development and user experience design are integrated in practices. On the other hand, there is also the situation that for many projects resource constrains, but also when the project itself is not too complex, a team of one will be enough. In such case the experinces outlined here might be useful.

The project itself has limits regarding the future operation of the re-designed service. As uncovered from the interviews with service providers, the fact that there is no *official* body assigned to be responsible for this service leaves open a major question of service sustainability. Despite the efforts to rearrange roles between related bodies (Aalto Learning Services and Aalto Communications), what was achieved do not imply any official agreement; rather the service will continue to be voluntarily maintained by them. The most obvious solution to this is to make the service more known and recognised by the Aalto community, which will enforce the service providers to operate in more reliable terms. This will again, require certain efforts from the service providers in promoting Aalto Blogs; the challenges nevertheless remain until the sustainable point is reached.

6.2. Further Suggestions

Contrary to other online services that are designed to address wider range of users, this project is focused on a specific set of users from Aalto University that need a self-publishing web service. This particular context has resulted in some unique insights towards particular features of these type of services. The insights included specific ideas on WordPress plugins for academic usage – for example, a better citation plugin for researchers. In addition, as Aalto Web Studio already mentioned during the contextual study, most people in need of this self-publishing support for the web wanted minor, yet specific features. These could be resolved by adopting or developing simple plugins. These plugin-activated features were not prioritised during this project as increased number of plugins potentially raise maintenance issues which were out of the scope. However, if the needs of features can be evaluated through further research, it will provide a good guideline for service providers to prioritise future enhancements to the service.

Furthermore, more case studies on similar context using other CMS platform, such as a learning management system (LMS) is suggested. While this project focuses on

non-academic service within a school, there exist examples of fully academic web services such as MIT's open courseware (MIT, 2001) and Aalto University's MyCourses (Aalto University, 2015). Although the context of academic website is similar, these are much more complex services that directly provide interactions between academic organisations and students. More in-depth studies on such services will provide further understandings on service design approach for the web.

Finally, after this project I have realised that the first user interview and analysis, done in Chapter 3, should have been continued even after directions were set. Further insights may have been derived by reviewing interview data as development progressed, which is also the core approach of agile development. In future projects, I wish to plan this continuous process more carefully in order to derive more valuable output.

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