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UX Design Project of B2B Website for Enics

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Bachelor's Thesis
Degree Programme in
Business Information
Technology
2020

Haaga-Helia

Abstract

Date 11.5.2020

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Degree programme
Business Information Technology

Report/thesis title
UX Design Project of B2B Website for Enics

Number of pages and appendix pages
72 + 1

Nowadays it is vital to clearly communicate the company's offerings to potential customers, especially on the website. Many B2B websites block the paths of prospects by failing to answer customers' fundamental questions and concerns.

User Experience (UX) Design plays a considerable role in enhancing user satisfaction by creating services and products that ensure meaningful and relevant experiences to users. Moreover, to create a website that best corresponds to company's business needs, its design shall be intuitive, informative, and easily navigated.

This product-based thesis is a project for Enics, a global Electronics Manufacturing Services (EMS) provider. The primary goal of the project is to showcase and support the future changes in service offerings at Enics by improving the overall website UX, predominantly Information Architecture (IA) and Website Navigation.

The project follows the iterative UX Design Process, which helps to provide better visibility of progress for stakeholders, receive constant feedback, and make refinements constantly and fast. Discovery, User Research, Design and Validation stages helped to achieve the research goals of the thesis. Mostly quantitative methods were used, but qualitative method as stakeholders' interview was conducted, too.

During the Discovery stage, the reader can immerse oneself to the company's industry and present-day website. The profound research was implemented to gather business' requirements, to analyze the current website performance and give recommendations of improvements. In addition, the evaluation of usability, content, and User Interface (UI) elements of key pages of the website was accomplished through the extensive Completive UX analysis based on Heuristics principles and design guidelines.

User Research was carried out to investigate users' behaviours and patterns through quantitative method such as Heatmap analysis. Both Discovery stage and User Research provided a lot of valuable insights and ideas on how to improve website UX.

The scope of the Design Stage for this thesis is within the Information Architecture (IA), navigation and prototyping for Enics' services page for desktop. The High-Fidelity prototypes were confirmed by Enics, and the student will take part in further design and implementation.

Keywords
User Experience, Usability, B2B Website, Information Architecture, Website Navigation, User Research.

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Terms and Abbreviations

UX	User Experience
UI	User Interface
B2B	Business-to-Business
IA	Information Architecture
EMS	Electronics Manufacturing Services

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1 Introduction

A website is one of the first places people go to search for new products and services nowadays. Since its first appearance in 1991, website design and Web development have changed dramatically.

A website not only gives an opportunity for companies to communicate their offerings to potential customers, but it is also the most powerful communication and marketing tool for businesses. To create a website that best corresponds business needs of a company, its design should be intuitive, informative, and easily navigated. User experience (UX) design plays an essential role in achieving this.

According to Jakob Nielsen (2006) many business-to-business (B2B) websites are stuck in the 90s in their perspective to user experience and fall short of answering customers' questions and concerns. B2B sites goals are considerably much complex than of business-to-consumer (B2C) sites, because B2B purchases have longer decision-making process and often greatly higher prices than B2C. Consequently, B2B sites shall lay special emphasis on user experience and usability to help users to browse more specialized offers and accomplish more advanced tasks.

This thesis is a product-based study, which is also a temporary development project of existing website of Enics, an electronics manufacturing service provider. The company hired the author of the thesis with the aim of assisting them in preparation of the website design for the future changes in the engineering service offerings in Enics. When the new changes come, the website shall be able to showcase it and raise the interest about the new services.

Enics is the third largest European industrial leaders in providing electronics manufacturing services (EMS), according to Manufacturing Market Insider (MMI). The company is headquartered in Zurich, Switzerland and employs almost 4000 people in 8 manufacturing plants in Europe and Asia. Enics provides end-to-end services from engineering, manufacturing to after sales and supply chain management, which help industrial companies to optimize their value chain and improve competitiveness.

This product-based study aims to analyse and improve the B2B company website, using an iterative UX design process and the most corresponding UX methods. The outcome of this study seeks to provide recommendations, which can improve the overall website performance, user experience and usability of the company's website, and to provide design

prototypes, which will correspond and display the company's values and future services' changes.

1.1 Objectives and Research Goals

The main goal of this project lies in the significance of UX Design and Web Usability of B2B companies' corporate websites. Thesis results are development and improvements of overall UX design and Web Usability of Enics' website. This thesis explores the following research goals:

1. To discover the business and website requirements from Enics' stakeholders.
2. To find out and analyse the main UX and usability issues of the current Enics' website from users' behaviour.
3. To find the new design solutions, give recommendations of improvements and prototype.

The research goals are discovered and accomplished through theory, quantitative and qualitative research, and prototyping.

1.2 Thesis Delamination

No profound UX design research has been made in Enics' before. Accordingly, there is not much supportive material that can be used to expand the knowledge about the users of the website, their behaviours, and concerns.

Also, online surveys were implemented on the website and the student expected to receive the valuable feedback from users about overall UX. But unfortunately, none of 29 respondents did not provide verbal feedback, but only the scores. This did not give the clear picture due to the small amount of answers. So, mainly quantitative methods as mouse tracking and Web performance analysis were used to analyse the overall UX and usability of the website, which nonetheless provided a lot of insights and ideas.

1.3 Thesis Structure

The thesis is built with a zipper structure, where theoretical and empirical parts are presented together in every chapter. The structure of the thesis is presented in the following way:

Chapter 2 introduces the theory of User Experience Design, Web Usability, Brand Experience, and its importance for B2B companies and specially for Enics. Then, the responsive

design and its importance for Enics' website are delineated. The outcome of the second chapter is the UX design process for this project established by the author of the thesis. Also, the research methods, that will be used for the project, are briefly discussed in this chapter. The design process than forms next three chapters: Discovery, User Research and Design.

Chapter 3 is a Discovery stage, which consists of the determination of the project ecosystem, interviews with key internal Enics' stakeholders and business requirements for the website. Then the profound Enics' website performance analysis is executed, which is followed by the website performance recommendations. Also, the content analysis for one of Enics' Web page is carried out.

Chapter 4 presents the UX Competitive Analysis in terms of UX, UI and usability. The analysis is a part of Discovery stage in the UX process, but it is placed as a separate chapter for better readability.

Chapter 5 is a User research part, where the current website design is tested with quantitative user research methods.

Chapter 6 is a Design stage, which includes brainstorming of ideas, paper prototyping and digital prototyping based on Discovery and User research.

Chapter 7 is a Conclusion with the summary, project outcomes, next steps, and evaluation of the student's own learning.

2 UX Design

This chapter gives an introduction of UX design and the UX design process of this project for the commissioning company and readers. It includes the theoretical background of User Experience Design, Usability, Brand Experience and Responsive design and its importance on the Web and for B2B websites.

2.1 User Experience (UX)

According to International Organization for Standardization (2010*),* the official definition of User Experience (UX) is *"*user's perceptions and responses resulting from the use and/or anticipated use of a product, system or service." User's perceptions and responses are the user's emotions, feelings, preferences, beliefs, comfort, accomplishments, and behaviour that could happen before, during and after the use.

UX includes all aspects of the end user's interaction with the company, its services, and products. To achieve first-class user experience in a company's products and/or services there should be a seamless confluence of disciplines as marketing, engineering, graphical, industrial and interface design (Norman D. & Nielsen J. 2006).

In digital industries, user experience is used to measure user's digital interaction within a website, mobile application, software, or any other form of human-computer interaction (HCI). With help of UX, company delivers a product or service which meets the needs of the users or customers and gives the opportunity to easily achieve their desired outcome.

2.1.1 UX on the Web

Norman's and Nielsen's (2006) definition specifies that, despite of its medium, user experience (UX) encompasses all and any interactions between a customer and a company. This means that as a cognitive science practice, it can be applied to any industry, but it has been used mostly within digital field.

On the Web, user experience is more important than it is for tangible products. Once a user in on the website, there is no instruction for use or there is no support representative to guide users across the website. A website is considered as a "self-service" product. A user faces the website alone with his/her own experiences and feelings.

It is organizations' responsibility to provide a quality user experience on the web. UX helps to form the customer's impression of the company's offerings, to distinguish the company

from its competitors and to determine if the user comes back again and becomes a potential client (Garett 2002).

2.2 UX Design

If UX is the experience that a user has by interacting with a product or service, UX design is the process where that experience is shaped. As defined by Interaction Design Foundation, User Experience (UX) design is the process of strengthening user satisfaction by creating services and products that provide meaningful and relevant experiences to users. “This includes the design of the entire process of acquiring and integrating the product, including aspects of branding, design, usability, and function” (Justin Mifsud, Usability Geek).

UX design applies to everything that can be experienced as a website or mobile application, a bicycle, or a flight on an airplane. However, its use initially has been almost within digital industries (Lamprecht 2019).

The users’ behaviours may differ from each other depending on many factors. Consequently, there is not one fixed UX design solution or framework for every website. UX design includes many different disciplines, approaches, techniques, and tools.

It is crucial to distinguish the UX Design from UI Design (User Interface Design). The User Interface Design is the design process of user interfaces with a focus on looks or style to maximize the user experience and usability. While UX Design is about making interfaces useful, solving, and identifying users’ problems, UI Design is about creating aesthetically beautiful, interactive, and intuitive user interfaces (Emil Lamprecht, 2019).

Jakob Nielsen (2012) explains the three main goals of UX design:

1. Usefulness

In UX design, one of the main goals is high usefulness of the system, because we want people to use it. In case with a website, we want users to come back again and again, and keep using it. If it is something for sale as a product or service, we first want people to buy it, but then keep using it after they bought it, so they can recommend it. But usefulness demands the optimization of two quality attributes in the design. Usefulness equals utility plus usability.

2. Utility

Utility is the question of what the system does. Does it have the system features? Utility should make sure that the product/service/website meet the user needs. No matter how beautiful and attractive the user interface design is: if this interface is with wrong features and it does not do what user want, people will not use it. So, the utility must be at the high level and there is no UX without utility.

3. Usability

The same as utility, usability should also be of high priority. Usability is a quality attribute that evaluates how easy and convenient user interfaces and the system's features are to use (Nielsen 2012). Can users learn the interface? Can they understand it? Can they operate it efficiently? If the usability is weak, the utility will also be weak. If the user cannot understand and learn how to use the feature (usability), the user will not be able to use the feature at all. Usability is a huge part of UX and will be discussed as a separate part below.

So, to have high usefulness of a design, there should be both high-utility features and high usability. If one of those two criteria fails, the entire product or service will also fail.

2.2.1 Usability

It is also significant to distinguish the UX Design and Usability. Usability is a quality attribute that evaluates how easy is something to use. According to Organization of Standardization, usability is used to achieve specified goals with effectiveness, efficiency, and satisfaction within specified users in specified environments (ISO 9241-11).

Usability can be experienced in product design or software design, but it is also the essential part of the Web. The fact that users experience the usability of the website first and before they spent any money, makes usability even more important for Web than for any other design. In comparison with product design, customers pay first and experience products later.

People leave a website if it is difficult to use and to navigate, if a website's content is hard to read and it does not answer users' questions, if a homepage does not comprehensibly state what the company does and offers (Nielsen 2012).

Before redesigning Enics' website, the author of the thesis will test the old design to identify parts that work well and should be kept, and parts that could concern users. To evaluate and test the usability of the website, the student will analyze how usable the overall User Interface Design and usability of main pages based on Jakob Nielsen's Usability Heuristics and Usability Design Guidelines through Competitive analysis. Next step will be testing the behavior of the Web users with Mouse tracking techniques. This can support the usability design analysis and reveal new usability issues.

2.2.2 B2B Design and Usability

Designing for B2B (business-to-business) websites is different than designing for B2C (business-to-consumer) websites. The basic UX principles as Heuristics or Gestalt principles can be applied for both types of companies because both parties are still humans (Ritter & Winterbottom 2017). However, the B2B audience time-to-time has different needs than consumers.

In comparison with B2C, where there is only one decision maker, B2B is a group of individuals that make a final decision and it takes them much longer, than for consumers. The studies by Nielsen Norman Group revealed that this group of individuals are decision makers, also called as choosers, and key staff that use services or products – users. So, the content shall speak both to choosers and users on the website (Page Laubheimer, 2016).

Enics is a B2B company, which serves multiple industry segments. The website shall clearly support and encourage the decision-making process with the content that speaks to the audience and help users to find services and products that the best fit their needs and help to make informed decisions.

During the Discovery stage, the business requirements will be gathered to fulfil the needs of Enics' B2B audience. Also, the Competitive Analysis of Home page and Content page will include the B2B website design guidelines and will be applied during the Design stage of Enics' website.

2.3 Brand Experience and UX

Brand experience is a type of marketing, that helps to lead a person to a strong and loyal relationship with the brand by creating a sensory experience (Freeman). The brand experience and user experience (UX) are sometimes counted as two individual disciplines. The

authors of the UX for the Web (2017) state that there is a tight connection between the user and the brand in both digital and real-life interactions.

The website is one of the touch points that the user will experience with the brand, which will create an emotional connection and build loyalty. The relationship between the user and the brand is shown in how the website delivers information through the visual content, brand guidelines as logo, typography or imagery, and user interface animations. “Many websites exist primarily to create or strengthen the brand for a product or service”, - by Jered M. Spool in the article “Branding and Usability” (1996).

Recently, I have downloaded Nike Run Club mobile application to track my run activities, because I started to prepare for the 10 kilometers marathon. I decided to try the application by Nike mostly because of the world popularity of the brand and from the recommendations of my friends. I came outside in the morning, put my earphones, opened the app and was ready for the sunny and first run in this season. I selected the guided run “First Run” for 20 minutes, which gives the statistics including time, distance and calories burned, and the guide through the run by the coach in audio format.

Then I decided to make a small video of surroundings while I was running. I opened the camera on my phone and the voice from the app said, “Pausing workout”. After I finished the video, the music continued to play from the app, but there was no voice of a coach during the rest of my running. “Probably, it just finished and now I need to run by myself”, - I thought. I was so frustrated, when I saw that my running activity was not recorded since I opened the camera. Both the tracking and the voice did not resume automatically, but the music was playing, which was an indicator for me that my running is still recording.

The incident with the running application displays, that no matter how popular the brand is, how great is the logo and other brand identities, everything I remember about the app is the broken experience. It does not mean I will never buy the Nike’s sneakers again, but I most probably will not use Nike Run Club again.

2.3.1 Brand Experience at Enics

Combining all above, companies and organizations of any size must understand that brand experience and digital user experience should work in a complete harmony; a brand perspective and user perspective are inseparable.

The design solutions for B2B should consistently enhance the company branding by building trust and loyalty. Enics’ website is one of the touchpoints when a customer interacts

with the brand. The company has already established brand guidelines as logo, iconography, colors, and brand values. These set of guidelines ensure that the brand is represented in a consistent and professional way, that will form the overall positive brand experience and user experience for the customers. These guidelines will be accurately followed during the project's re-design.

Every touch point as Enics' products and services, the website or social media supports to the overall experience and connection of the brand. Since digital space is extremely competitive now, Enics needs to stand out among its competitors not only in services or products. Considering UX during this design project will help to build more valuable experiences between the customer and the brand.

2.4 Responsive Design

The cell phone market has changed dramatically when Apple introduced the first iPhone on 29th of June in 2007. People started to connect with the world not only by just calling and messaging, but by browsing the web as well. With the raise of diversity of devices, there was a need for optimization of the design which will fit into multiple screen sizes (Soegaard 2019).

There is a great amount of ways how users can access the information today from the giant desktop monitor to the smartwatch. The goal and work of designers lie in overcoming the gap between multiple devices. Screen sizes are changing all the time, so it is crucial that websites can adapt to any screen size.

The term "responsive design" was first coined by Web designer Ethan Marcotte in 2010. Responsive Web Design (RWD) is a Web development approach, which responds to the changes in browser width by regulating the placement of design elements to fit the available space. RWD is one of the solutions of designing for the many devices (Schade 2014).

Responsive design uses breakpoints, which are based on the width of the browser, to define how the layout of the website will look like (Schade 2014). The same HTML code is applied for all devices using CSS media queries to change the site's appearance. The number of breakpoints or media queries, that can be built on the website, can differ depending on the needs, but usually three or four key breakpoints are created for desktop, tablet and mobile.

Enics' website is built with RWD approach. To test if the website is responsive, we can open the website in the browser on the desktop and change the size of the browser window. The content and layout will move and change to arrange itself based on the browser window. On mobile phones or tablets, the website will arrange the space automatically.

There is the tendency of rapid growth of the mobile website traffic worldwide presented by Statista, online portal for statistics (2020). In the beginning of 2015, mobile devices generated 31.16 percent of global website traffic, while in the fourth quarter of 2019 this number exceeded 52 percent. In the future, mobile users may become prevalent than desktop users. Below I tracked the device usage of Enics' website during 2016 and 2020 (figure 1) to decide which devices to consider during design.

2.4.1 Device Usage of Enics' Website

Google Analytics data enables to discover the device usage tendencies of the website. There are three device categories: desktop, mobile and tablet. I have compared the usage data for every device during 2016 to 2020 at Enics' website by available data in Google Analytics tool. The following chart was created in Excel to demonstrate how the usage for desktop, mobile and tablet devices has been evolving across four years:

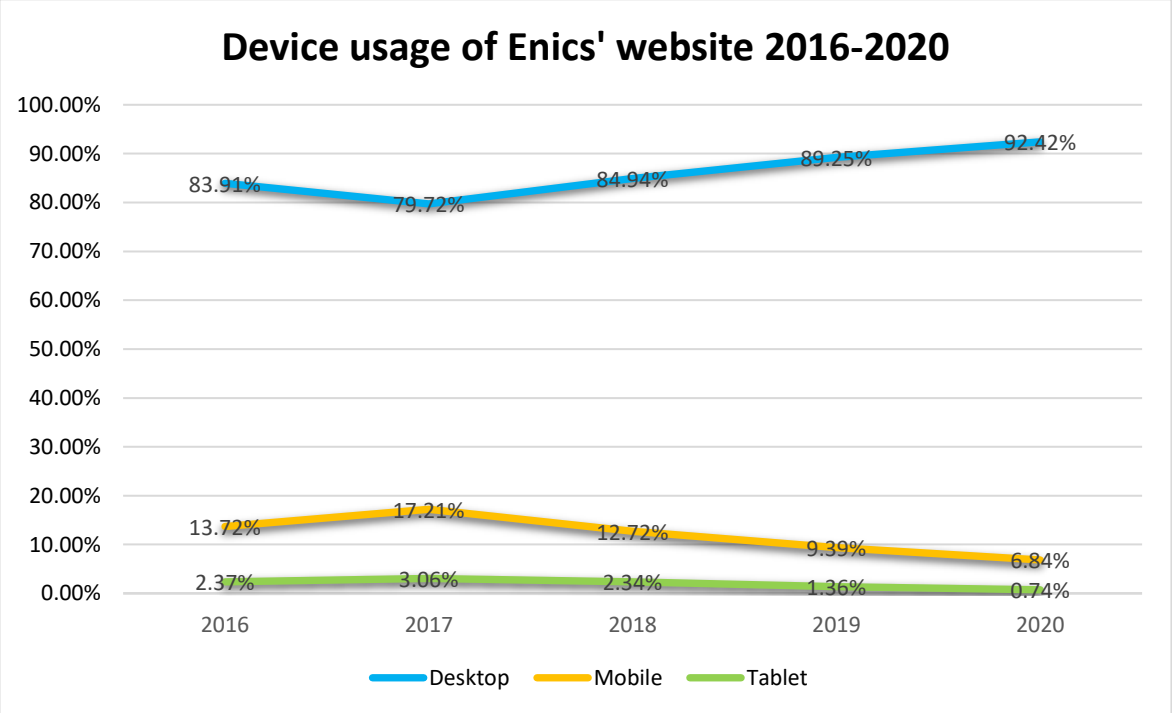

Figure 1. Device usage statistics of Enics' website, 2016-2020

From the table below (figure 1), we can observe the obvious preference of the desktop website users on Enics' website. The second place is occupied by mobile users, with a

huge difference with desktop users in about 50-80 percent during 2016-2020. The browsing with a tablet is the least popular among Enics' website users.

The highest usage of mobile devices (17.21 %), when browsing the website, is traced in 2017. But after 2017 the amount of desktop users of Enics' has increased by almost 12 percent by 2020. At the same time mobile usage has decreased from 2017 to 2020 by 10 percent, making the desktop website browsing at Enics' predominant (92 %).

There is an unresolved question why the number of mobile users of Enics' website tends to decline and why this number relatively small, and I believe there could be many reasons behind that. One of the research reports on B2B Web Usability by Huff Industrial Marketing, KoMarketing and BuyerZone in 2015 showed that, 59 % of respondents do not use smartphone, but other device, when looking for B2B products. "Mobile is still a developing media for B2B buyers", - one of the key takeaways in this report about B2B website usage. But it clearly states that mobile-friendly websites will become more essential in B2B world in the nearest future.

So, even though the desktop usage has been prevailing over mobile and tablet during 2016 between 2020 on Enics' website, designing responsively is a key asset nowadays and for the future. During the redesign process, I will take into consideration the design for desktop, mobile and tablet. Also, to design responsively, I will communicate to developers how the design should look like on various breakpoints.

2.5 UX Design Process

There is no sole winning formula and process in UX. Each project has its own unique requirements and challenges. The type, scope and timeline of project determines the techniques and outcomes used in UX design process. But the key principle of every UX design project is involving the users in the design process in some way.

Defining the overall approach of UX project is essential in understanding how and when you as a designer will be involved and how you should involve other stakeholders (Unger & Chandler 2009). Garett emphasizes five planes of UX, which are strategy, scope, structure, skeleton and surface (figure 2). All design processes comprise of stages as understanding of the problem which is solving, ideating, and designing the solutions, and deploying the ideas. The typical UX design process involve the stages as:

- Discovery/Strategy
- User Research

- Analysis
- Design
- Validation/User Testing
- Delivery

In the traditional waterfall approach, an entire corporate website will be built from start to finish without any user feedback, research, or testing. The waterfall methodology is very rigid and does not allow to make any improvements. It does not match with the core steps of iteration, testing, and improvement in UX (Ritter & Winterbottom 2017).

UX design process is iterative, which equals a continuous prototyping, testing, and adjusting until the prototypes coincide with requirements and we have reached the best possible solution. Following iterative process can help to show the evolution of the design and give better visibility of progress for stakeholders, receive constant feedback, and make refinements quickly and cost-effective.

To create the best value for our users, we need constantly refine our designs. By its nature iterative design involves a lot of user testing and user feedback, that can be used to improve the website's design and its usability, and to understand which elements of the website are working and which are not working well. Iterative design process allows to be flexible and to repeat the stages again and again until the desired result is achieved.

2.5.1 Elements of UX Design Process

Garett (2002) presented five planes of UX design process:

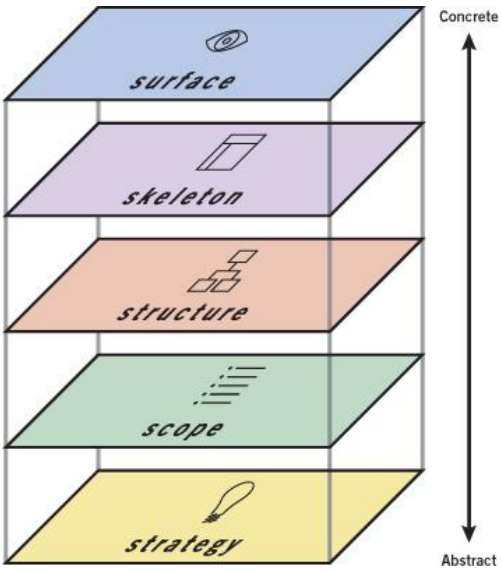

Figure 2. Five Elements of UX design

All five planes overlap with each other and iterate with the feedback from stakeholders and users. I have created the summary table about five planes and its characteristics (table 1), where column “Outcomes/Actions” shows what happens in each stage and “Stage” indicates on which stage of the process it can be engaged.

Table 1. Five UX planes and its characteristics

Plane	**Outcomes/Actions**	**Stage**
Strategy	scope of the project user needs & business goals	discovery/strategy stage research stage
Scope	defined website’s features and functions content requirements	analysis stage
Structure	abstract structure of the website interaction design & information architecture	analysis stage design stage
Skeleton	concrete structure of the website information, interface & navigation design	design stage
Surface	sum of all work and decisions sensory experience	validation stage delivery stage

Each of the planes and its characteristics are just an example of how UX design process can look like. I have created its unique and the most suitable UX approach for Enics’ project (figure 3).

2.5.2 Enics’ Design Process

The writer tried to browse “UX design process” in Google and she received about 884 million results (April 2020). As it has already been mentioned, every UX design project will be unique and will differ from one company to another, from project to project and from one UX designer to another. Based on the first meeting with Enics and with my own brainstorming and research, I have set the iterative UX design process for this project and introduced every stage below:

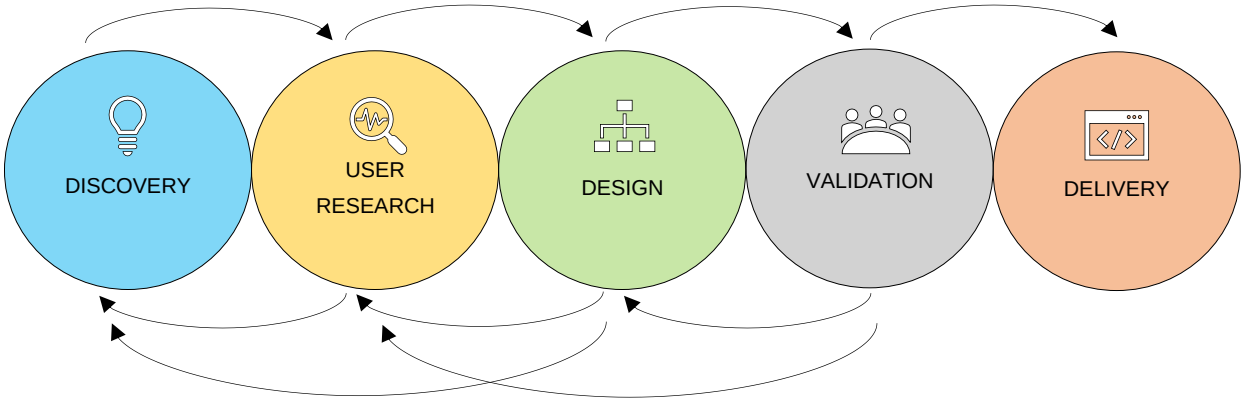

Figure 3. UX design process of Enics' development project

1. Discovery Stage

Discovery is a preparatory phase in UX design process which includes browsing and researching on the company and market, going through the company's website, talking to the stakeholders, and defining business requirements. This stage will help to immerse the author into the client's world and to gather insights and company's requirements. The Discovery Stage will be mainly utilized in the beginning of the project but can be accessed afterwards if necessary (figure 3).

2. User Research

This stage is the investigation phase of users, their behaviour, and user requirements to receive valuable data, insights and information that can be applied ito the re-design. This stage will also include the analysis of collected data from the research. User research will continue throughout Design and Validation stages (figure 3) if needed.

3. Design Stage

This is the process of creating the solutions, sketching the ideas, and prototyping. In the end of this stage, I should be comfortable sharing the new design solutions to the company. The whole design process iterative, meaning during Design stage the author can cycle back to previous stages (figure 3) to validate ideas or assumptions.

4. Validation Stage

This is the process of finalizing the design with the key stakeholders. If the design is not accepted by them and will require some of the adjustments, the student will return to the

previous stages until the design is confirmed. Once the whole design is validated and accepted, the student will move to the last stage – Delivery.

5. Delivery Stage

Once the company and student are confident that the proposed solutions will work for the company, its customers and website's users, the project will transit into Delivery. The role of author as a UX designer is working alongside with the developers to see if what have designed is technically possible.

2.6 Research Methods

The research in UX serves many goals throughout the design process and includes a diversity of methods of gathering and analyzing data to improve usability. The core of UX discipline is user, but in order to design effectively it is also vital to gather the data from the business stakeholders and its competitors, research on design technologies and standards (Ritter & Winterbottom 2017).

Selection of research methods depends on the type of project, needs and audience. UX research methods can be divided into two dimensions of how data is collected: Quantitative and Qualitative research. Both methods types will be used in this project.

2.6.1 Quantitative Research

Quantitative (quant) research is the type of the research that is measured in numeric form and usually answers the question "what" but not "why". Quant studies deliver an indirect, overall usability evaluation of the website through numbers and metrics as task times, task-completion rate, error, and satisfaction rates in form of graphs, tables, or calculated results (Ritter & Winterbottom 2017). The objective of quant research is in gaining a good understanding of what users are doing on the website and on which parts to focus efforts on improving the website.

Thinking about how to analyze Enics' website, the user group and segmentation were considered. As Enics' customers are employees and people from the tech-world, it is hard to reach them for conducting face-to-face meeting, as this category of people tend to be very busy and would not agree to meet in person. So, it was decided to mostly refer to the quantitative methods as Web performance analysis, Content analysis, Competitor Analysis and Heatmaps.

2.6.2 Qualitative Research

Qualitative (qual) research is the type of the research which focus is understanding attitudes or behaviours based on observations. In contradistinction to quant data, qual data answers the question “why” something is happening (Hay 2017).

Some of the qualitative UX methods will be used during this project to build an in-depth picture of the users and the company. Stakeholders interviews and Heuristic analysis of the website in Competitor Analysis are applied as qual research methods for Enics’ website.

Both qual and quant types of research are important in an iterative design process. According to Hay (2017) both research types should be used as complementary to each other to achieve the best results.

3 Discovery Stage

A Discovery Stage is an initial and preparatory phase of a design process that assumes researching the problem, framing the problems to be solved and collecting enough evidence and direction on what to do next (Rosala 2020). We do not test any solutions or hypotheses on this stage.

I was hired as a UX designer for this temporary project. As I am facing with Enics for the first time, I need to build understanding for myself about the market, company environment and its offerings to move further.

The Discovery Stage is often carried out differently according to the type of the project. Rosala (2020), UX Specialist in Nielsen Norman Group, highlights the situations when a Discovery is needed. One of the reasons to go through the Discovery Stage is if a company is targeting to the new-market opportunities, expanding, or shifting its offerings as in the case of Enics. The Discovery might require analyzing of the current website, performing competitive analysis, or gathering insights from stakeholders.

Firstly, the Discovery Stage for this project includes defining the project ecosystem. Before I did have the first meeting with the company, I have researched about the company beforehand and defined the project ecosystem to better understand my future work.

Secondly, the stakeholder's interviews with Marketing and Sales departments were conducted to define the scope of the project, gather website requirements and business needs.

Lastly, the Content Audit and Competitive Analysis have been held to understand what the usability issues are and what exists on the current website before planning a new design.

3.1 Enics' Project Ecosystem

Unger and Chandler said (2009), that every project has its own "ecosystem", that should be understood by the designer in the very beginning of every design process. It covers elements as company culture, the type of the website you are designing, and all people you are interacting during the project. All this knowledge could help to communicate the ideas and responsibilities in more effective manner.

Authors of the practical book “A Project Guide to UX Design” (2009) highlighted four type of the sites: Brand presence, Marketing campaign, Content source and Task-based application. Each of them has different characteristics and goals. Identifying the type of the website can help to:

- Set generals goals that need to be achieved within the website’s visual or interaction design
- Understand which business departments could or should be involved in the process
- Define the best methods of User Research
- Outline which technologies could be involved

Among four types of sites, the most suitable for Enics is “Brand presence” type of a website. It is described as “a constantly present online platform that facilitates the relationship between the company and anyone who is interested in its products or services”. Brand presence websites focus in introducing the company’s brand values and messages. As the writer of the thesis will work on brand presence website as Enics, she will design for many user groups as current and potential customers, investors, partners, the media, and job seekers.

The main design goals of a brand presence website are in following (Unger & Chandler 2009):

- Provide easy and fast access to the company information
- Clearly communicate the brand values of the company
- Present and explain what and how the company can do for its users/customers

3.2 Internal Stakeholders’ Interviews

Stakeholders interviews help to define the research objectives and hypotheses (Lang & Howell 2017). Stakeholders often keep unique insights, knowledge and data about the customers and inner processes in the company. Interviewing key stakeholders in the company can give the new levels of understanding of company and individuals’ business objectives, relevant project-related ideas, needs and frustrations, which can be later elaborated into the project requirements (Unger & Chandler 2009).

During the meeting with stakeholders, the author of the thesis focused on what needs improvements on the website. The student was in touch with employees from Marketing, HR, and Sales departments within Enics. Before every meeting with them, the writer has prepared the questions in advance. But in general, the meetings went very naturally, and stakeholders covered many topics including opportunities, problems, business goals and customer interactions. They helped the student to understand how the company works and shared their thoughts and ideas on how to improve the website.

During all the meetings I was making notes. After each interview, I have brought out all needs and ideas of stakeholders. In the end, I coalesced these ideas into requirements to turn them into useful and trackable components of the project.

3.2.1 Marketing and HR

During the first meeting with the company, the writer of the thesis met Ms. Elina Mielityinen, Brand and Communication Specialist at Enics, who also was a project supervisor, and Ms. Susanna Kohisevankoski, Chief People and Culture Officer, who gave an overview of the project and the company.

Earlier on the student spent few hours by going through Enics' website to understand what the company does. During the meeting, the writer of the thesis pointed out to Ms. Elina Mielityinen and Ms. Susanna Kohisevankoski that "Solutions" page, where all Enics' services are presented, loads and responses very slowly on the website, which makes it difficult to navigate around the page.

By the end of the meeting the student had the answers to the following questions:

Question 1: Why is this project important to the company?

Answer 1: Enics is going to be more service-oriented in the nearest future and will increase its engineering service offering. Also, some content on the website is not anymore relevant or does not display the business values. That is the reason, why the project of website's development is settled. When the new changes come, the website should be able to showcase it and raise the interest about the new services.

Question 2: What approach or methodology will the project follow?

Answer 2: Project will be based on UX design approach and techniques. Before making any changes, the designer will conduct website and user research, outline the main issues of usability, create solutions, and implement the changes with help of the design agency.

Question 3: What are the main dates and deadlines during the project?

Answer 3: The final work should be done approximately in the middle of May; no other dates have been set.

It was also discussed that in general the website has all necessary information and sections, but it needs some small improvements. The company acknowledge that there are some of the usability problems at Enics.com. For example, we all agreed that the page “Solutions” is very slow in performance and overloaded with content.

3.2.2 Sales Department

The stakeholder interviews with the Sales department of Enics’ were conducted with two key members of Enics’ Sales organization, manager of Enics Life, a portal for customers, and Ms. Elina Mielityinen. The main topics, which were covered and discussed, are the Enics’ sales process, the importance of the website for clients’ buying decision making, the current design decisions of the website at “Home” page, “Solutions” page and “Contact” page, and how those could be improved.

At first, the writer of the thesis asked the vision and opinions of stakeholders on the role of the website for Enics’ sales process. They commented that they feel there are a lot of leads coming from the Web page. Sales department implies that several times per week they get contacted from the website, either by email or phone call. Moreover, one of the stakeholders stated that one of the very fast and successful sales cycles happened, when the customer contacted them with the help of the website.

Then we have discussed the “Contact” page in more details. Sales team at times gets the feedback from prospective clients, that is quite troublesome to find whom to contact. “Contact” page has two sections: first being “Enics Worldwide” contacts and then “Sales Contacts”. These sections might be perceived as repetition.

Stakeholders also stated, there was a major organizational model change in the company. Earlier the main contacts were managers of the factories around the world, but now it is more customer-oriented and sales organization is the main contacts to the customers. Stakeholders stated there should be considered which contact details provide to the customers: whether it should be factory directors, which could be contacted through “Enics Worldwide” section or sales team through “Sales Contacts”.

Stakeholders shared several ideas on how to improve contact process on the website. Every product in “ODM Products” has its own PDF datasheet, which opens in the new page. If a customer opens one of these PDF files, to contact with the company, he/she needs to go back to the website and go to “Contact” page from the main navigation or footer. From what key member of sales organization said, it is vital to find the contact eas-

ily and quickly. So, we have discussed the opportunity to have the contact on the “Solutions” page near every product or/and to have the direct link to the contacts inside every datasheet document.

One of the stakeholders said, that titles and information about people presented in Sales contacts are outdated. The pictures of employees are not coherent in the way of clothing style, lighting, and composition. They all agreed that the pictures should be retaken in the nearest future. The great suggestion came from Vice President of Sales to indicate the communication language for every salesperson. As Enics is international and have 8 plants in Europe and Asia, this improvement could be very useful.

All the stakeholders agreed that “Solutions” page needs the most improvements and changes. For example, sub-section “Challenges” does not relate to “Solutions” and the text there is not up to date anymore. Ms. Elina Mielityinen mentioned that it would be a good idea to have the research workshop on that, but there are not resources to do something like that at the moment. There is a feedback from one stakeholder regarding the navigation of the pages: “It is sometimes hard to know where you are; sections are scrolling over each other and it is hard to go back”. So, the time should be dedicated on revising the website navigation.

The student shared the data about the website speed with stakeholders. Ms. Elina Mielityinen said, that it would be valuable if we can spot and find the elements as images or videos that take the most of the Web space and can be resized to decrease the loading time of pages.

The video starts to play on the home page automatically on desktop and tablet. From stakeholders’ perspective, this video can be used for hundreds other different companies. That means that it does not fully showcase and represent what Enics does. Only the last third of the video, which is around one minute from beginning, starts to show something relevant. So, the brainstorming shall be done on how to organize the home page.

Enics Life is a collaborative online portal for the customers and from the stakeholders’ opinions it is not fully presented and promoted on the website. Enics Life is one of the solutions that Enics has. Stakeholders said that there should be at least short description about Enics Life at “Solutions” page. After the meeting, I went through this point, and saw that Enics Life is included into “Lifecycle Services” and has its description at “Solutions” page. But as it is a big part of Enics’ services, so it shall be presented more comprehensively.

At last, we have talked about the company presentation, which is attached as PDF on the website. “I want to have teasers on the website, but I do not want to have 30 pages of the presentation”, - one of the stakeholders mentioned. It is caused by using this presentation during sales meetings with clients. If the client reads the presentation in advance, it eliminates the reason for the meeting.

3.2.3 Enics’ Offerings and Services’ Overview

There should be a clear picture of services that Enics provides to improve user experience on the website. During all the meetings with the stakeholders and my own research online, I found out about Enics’ industry and services.

Enics’ core services are end-to-end Electronics Manufacturing Services (EMS). Enics provides EMS services from engineering, full-scale manufacturing and after sales services to sourcing and supply chain management.

EMS is a term used for companies as contract manufacturers that manufacture, test, distribute and repair services for electronic components and assemblies for OEMs – original equipment manufacturers (Mayes 2015). OEM is the brand owner, the company whose logo is shown on the final product.

For example, Apple is the OEM and it designs its products. But Apple outsources the most of iPhone manufacturing production to contract EMS and ODM solutions providers. It is cheaper for OEMs as Apple to pay another EMS company to purchase and deploy expensive test and production equipment externally from Apple and to pay to EMS solutions provider to manage vendors and suppliers in the supply chain, than for Apple to do all of that internally (Venture Outsource).

Also, Enics specializes in original design manufacturing (ODM). Original design manufacturers as Enics are companies that create new product designs and specifications based on the idea provided by the client. Enics’ expertise in ODM is in power control and test devices within industries as industrial electronics, security, telecommunications and energy.

According to Enics’ key members I talked to, the future of the collaboration with customers goes through Enics Life, an online portal, which is not promoted as it should be currently on the website. That is why it shall be embedded more on the top line. Enics Life is a collaborative online portal for the customers, which provides Product Lifecycle Management services (PLM).

So, Enics has three main specializations: EMS, ODM and Enics Life portal. The Information Architecture and navigation of Enics' "Solutions" Web page will be revised and reconsidered based on this knowledge in next chapters.

3.3 Business Requirements

Business requirements determine the objectives and what problems stakeholders intend to solve with the website. Requirements only tell what the website shall have and address, but not how to design or develop the website's features, content, navigation and so on.

I have analysed all the thoughts and ideas of stakeholders by going through the website. The design of the website should clearly show and represent Enics, its values and business requirements. Here is the list of business requirements, based on interviews with internal stakeholders:

1. The website shall support the cultural change.
2. The website shall support Enics' values as openness, trust, quality, responsibility and people.
3. "Solutions" page shall clearly display Enics' offerings.
4. The home page shall clearly state what the company does.
5. Contacts shall be fast and easily accessible on the website.
6. User should be able to contact sales directly from "Products" page and "Products" datasheets.
7. The website's navigation shall be smooth and intuitive.
8. Users could be able to call to the salesperson who speaks their language.
9. Prospects should not see the company presentation before the meeting.

3.4 Website Analysis

A website analysis is the practice of analysing and testing a website's performance (Hotjar, 2020). A website is the face of the brand in the digital world. It is an opportunity for companies to communicate their offerings to potential customers and make the first impression online. Nowadays a website became the first place for potential customers to make their judgment about the company and its business.

One of the requirements of stakeholders is to provide fast loading website usage. Ms. Elina Mielityinen also wants to know the elements as images or videos, which might slow down the page performance. Also, browsing of the website has shown that some of the

pages are slow in performance and response time. To prove it, there should be the evidence in form of metrics. The website performance tools will help to collect this data, show performance gaps, and provide suggestions how to optimize the website.

I gathered the data about the Web page speed and performance of Enics' website with the online free tool Google's PageSpeed Insights (figures 5, 6, 7). The tool provides metrics based on real data from Chrome browser users. The majority of Enics' users have been choosing Chrome browser and this number has been increasing during 2016 and 2020 (figure 4). Chrome browser is the predominant choice for 83 percent of Enics' website users in 2020. Next, I used the online tool Pingdom to get the page size and HHTP requests (figure 9, 10).

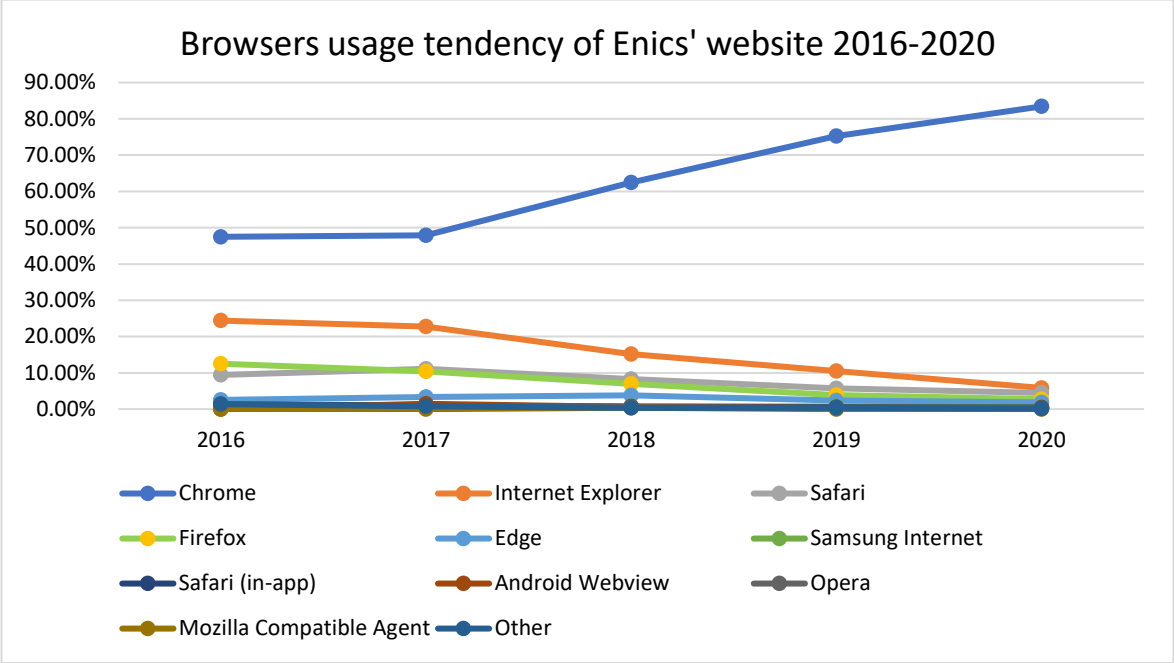

Figure 4. Enics' website browser usage 2016-2020

Enics' website is one of those many touchpoints that prospects, customers or other user groups have with the company. Enics' official website provides information about company, its services and products, contact information, news and career opportunities.

Enics' website is built in WordPress by the design external agency. As I have not been involved in the previous development, I should test the website to understand what is working and what is not working. Stakeholders' interviews and browsing of the website shown that some of the pages are slow in performance and response time. To prove it, we need to get the evidence in form of metrics. The website performance tools will help to collect this data, show performance gaps, and provide suggestions how to optimize the website.

3.4.1 Website Speed and Performance

Website performance analysis can help to determine if the website is slow, average in speed, or fast, and even provide a diagnosis and recommendations for better Web performance. Page speed is a measurement that determines how fast the content on the page loads. It had a huge impact on visitor's satisfaction and overall website UX (UX Planet 2019). Page load time is an essential part in User experience.

PageSpeed Insights (PSI) is Google's tool for analysing and optimizing Web page's speed on mobile and desktop devices. The tool is powered by Chrome User Experience Report, which provides real-world UX metrics, and by Lighthouse, an open-source tool for improving the quality of Web pages. The overall performance score in PageSpeed is calculated based on six different metrics, that are focused on what a user sees and experiences. PageSpeed applies a 0-100 scoring to each of these metrics and calculates the total score. The performance score is color-coded, where slow index (0-49) is red, average (50-89) is orange and fast (90-100) is green.

As Google says, load is not a single moment in time, but an experience that no one metric can completely capture. The multiple moments exist during the load experience, that can affect on user's perception of "slow" or "fast". It is better to focus on improving the overall performance score, rather than focusing on a specific metric.

First, I have run the test for "Home" page of Enics' website where performance score was 67 out of 100 for at desktop version, which counts as a moderate speed level (figure 5). I have also run the test of mobile version of Enics' home page with PageSpeed Insights. The performance score appeared to be only 14 out of 100, which is slow index (figure 6).

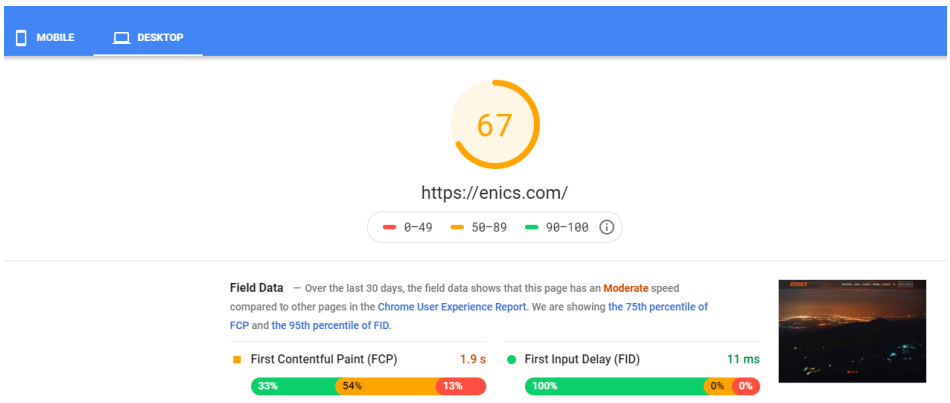

Figure 5. Enics' "Home" page performance score at desktop with PageSpeed

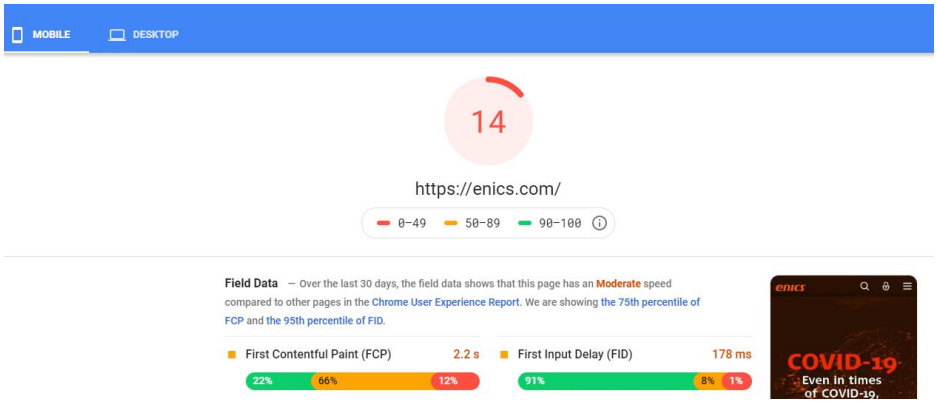

Figure 6. Enics' "Home" page performance score at mobile with PageSpeed

After, I have run the test for "Solutions" page for desktop also at PageSpeed Insights Tool. The speed score totaled only 14 out of 100 (figure 7):

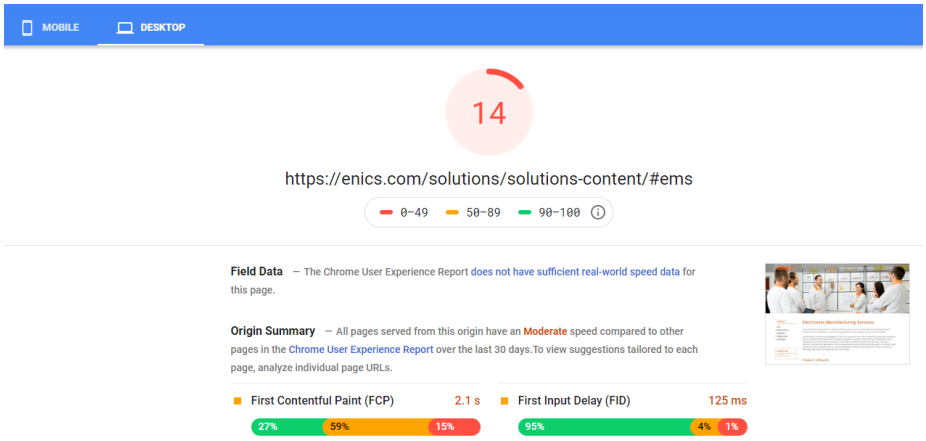

Figure 7. Enics' "Solutions" page performance score at desktop with PageSpeed

3.4.2 Web Page Size

Page size or page weight is one of website metrics among page speed, that can contribute the overall website performance. Page size refers to the amount of all elements needed to display a page. It can include the HTML and CSS files, the images and videos, the scripts and other files that are used to create a page.

According to data collected by the open online source HTTP Achieve, the average Web page size, among over 4 million of URLs worldwide, is 2080.2 KB (2.08 MB) for desktop and 1885.2 KB (1.88 MB) for mobile in 2020. Tammy Everts (2017), senior UX and Web performance researcher, notifies that every website is different, and we could not take the results from the sources as HTTP Achieve as the only benchmark for our website.

Everts also says (2017) that page size matters, but there could be long and heavy pages, which still work fast. So, the page size matters if the speed is low. Cremin (2015) also affirms that load time is directly impacted by the page weight. Users do care about speed time and it can directly influence the overall user experience.

HHTP requests should be considered during the website performance analysis. Every time somebody visits a website, the browser checks the Web server and requests the files that are on the page as HTML, CSS and JavaScript files, images, videos and so on. This request is called Hypertext Transfer Protocol (HHTP). The server then receives an HHTP request and sends the required files to browser for rendering the page for user (Morey 2020). So, that means more files page has, more HHTP requests browser needs to make and it could take more time to render a Web page.

One more aspect of page weight and HTTP requests is cost for users. Users may sometimes pay for more cellular data (Cremin 2015). So, reducing the total size of a page's network requests is good for users' experience and their wallets.

The page size of the desktop version of Enics' home page is 5.9 megabytes and the Web server have 68 HHTP requests (figure 8). The tool gives suggestion on making fewer HTTP requests for this page. In comparison with Home page, "Solutions" page total size on desktop is 12,5 MB with 165 HHTP requests according to PageSpeed Insights (figure 9). The average number of page requests is 76 for desktop in 2020 (State of the Web 2020).

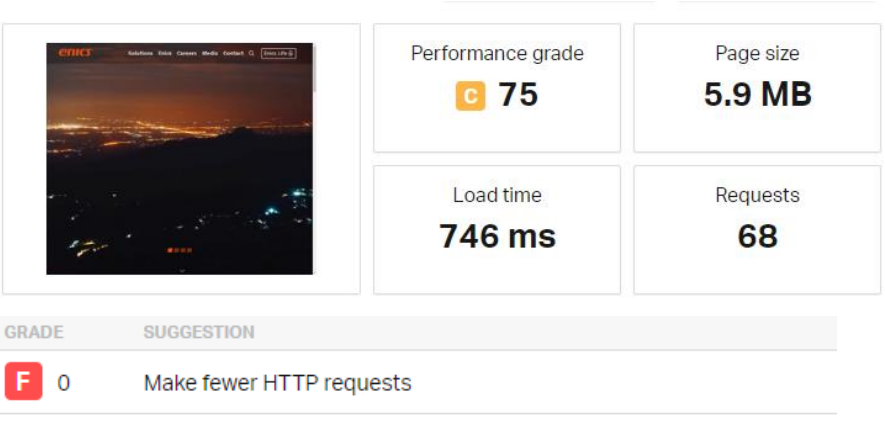

Figure 8. Enics' "Home" page analysis on desktop with Pingdom

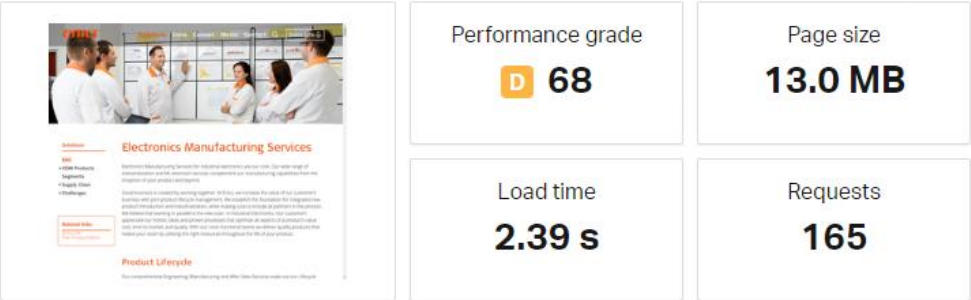

Figure 9. Enics' "Solutions" page analysis on desktop with Pingdom

3.4.3 Enics' Website Performance Recommendations

Based on how each of the metrics is scored, each PageSpeed report gives a series of recommendations and warnings. The Opportunities section collects metrics that could improve loading time. The Diagnostic section focuses more on Web development practices.

The speed and performance analysis of Home page showed that the score for desktop is average, but for mobile is very low. The speed score for "Solutions" page according to PageSpeed Insights was very low. Moreover, page sizes are much below average indexes. I composed the recommendations on how to improve Enics' performance and speed based on PageSpeed and Pingdom results:

1. Optimization of images

For instance, the section "Opportunities" for "Home" page for both mobile and desktop, and for the desktop "Solutions" page indicates that the page can load faster, if images are served in modern formats. The tool generates the list of images and even shows what the potential savings could be (figure 10). PageSpeed states that image formats as JPEG 2000, JPEG XR, and WebP often provide better compression and faster download than JPEG or PNG.

The next recommendation, which is mostly applicable for the mobile versions, is image encoding. It is the process of saving images in a more efficient and compressed format. According to PageSpeed Insights optimized images load faster and consume less cellular data.

It is crucial to optimize images for Web by reducing file size without impacting the visual quality. The fewer bytes the browser downloads, the faster the content is shown (UX

Planet, 2019). GTmetrix' Word Press Performance Guide (2017) lists the number of plugins and written recommendations for image optimization. For example, one of the plugins for image optimization that can be used for Enics' website is WP Smush, and for image optimization – WP Fastest Cache.

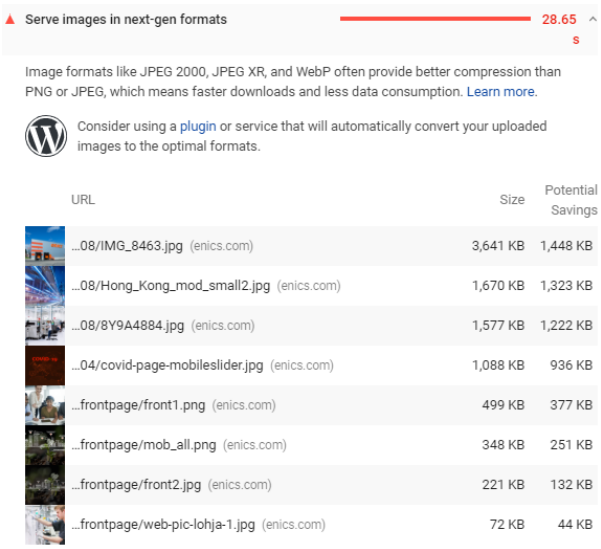

Figure 10. PageSpeed' recommendations on images

2. Avoid enormous network payloads.

In the previous chapter was already discussed how HHTP requests work and can impact on page speed and user experience. PageSpeed recommends reducing the number of requests for both "Home" and "Solutions" page by reducing the number of the content shown on a given page or breaking the long content into multiple pages or use a plugin to lazy-loading comments. The Lazy Load plugin delays loading of images until a user starts to scroll down.

All the suggestions above should be undertaken to deliver the optimal user experience regardless of type of network or device. Web pages with a longer waiting time tend to have lower average time on page and affect the overall UX.

3.5 Content Analysis

Bill Gates coined the phrase "Content is king" in 1996, when he predicted the role content will play on the web. Content analysis is an essential part of many UX design projects that include existing content (Jones 2009).

The main purpose of analysing Enics' website content because the project is aimed on re-design. It will help to gain deep understating what is on the website and why it is there. A Content Inventory (figure 12) and Content Audit will be applied to perform comprehensive content analysis of the website.

3.5.1 Content Inventory

A content inventory is the process of looking into the content of the website and compiling it into the list (Usability Gov). An inventory is a quantitative method, that assists in showing a picture of how much content is on the website and identify specific pages, links, content and so on (Baldwin 2010). An in-depth list of all content can help to get the better understanding of the overall structure of the website, reveal previously unknown elements and relationships between content types and spot duplications.

The process on a content inventory is very straightforward process of clicking through the website and recording what you find. Veen highlighted in his blog on the inventory topic in 2002, that "A content inventory is a decidedly human task". The fact that we go through pages by hand ensures that we do not miss anything. By investing the time into seeking through the website and disassembling the pages, we will gain unvalued knowledge for the website redesign.

"Solutions" page is the heaviest Web page of Enics' website in size and in the amount of content. As one of the main requirements is improving the usability of "Solutions" page, I performed the content inventory for this page only. I have developed an Excel spreadsheet (appendix 1) to structure all findings.

The content inventory was conducted for both desktop and mobile versions of the website. There are some differences in the navigation and elements. The content inventory for "Solutions" page helped to determine the scope of the page. In order not be lost during the Content Investory, I approached the process step-by-step, and I did not start the new part before I finished another.

During the Invenory, I have spot the section "Insights" highlighted with red color on Excel (appendix 1), which is not linked or indicated nowhere on the website. The next step is to analyze the data from the content inventory and conduct the Content Audit for that.

3.5.2 Content Audit

A Content Audit is a process of turning the raw data from content inventory into useful insights (Usability Gov). It requires going through each step and perform the assessment. I have done it partially during the content inventory already and left the comments in the spreadsheet. This project needs the audit to see what parts of the page should be removed or revised. The list below presents the main insights and concerns of “Solutions” page and other pages on the website, which were disclosed:

1. On the page “Solutions”, there is the section “Insights” between sections “Supply Chain” and “Challenges”. The section “Insights” is not indicated and linked anywhere on the website or in navigation. It is consisted of five sections on the website: Undisturbed business, Lean, Electronics Engineering, Conflict minerals and Service. Every of the sections has the related articles. On mobile, the section “Insights” also goes right after “Supply chain” section by scrolling. Its sub-pages can be found in the additional local navigation bar (figure 11):

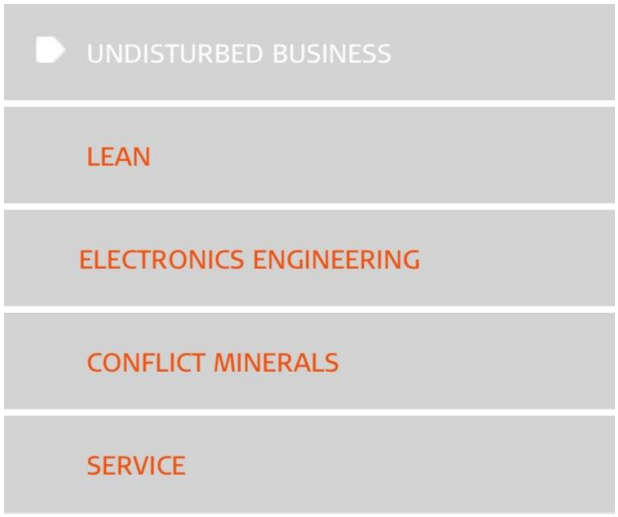

Figure 11. Enics’ local navigation on mobile

The question is in necessity of this section on this page. “Solutions” page is meant for introducing and presenting Enics’ products and services clearly and accessibly. Although, the articles in “Insights” provide information on the services and products, but this section is located separately and beyond its main content.

Also, it should be reviewed if these articled are still and will be relevant and carry the right message to the new services and products. If yes, then these articles should be presented on the same page with description of products and services, complementing each other, not distracting.

2. On the desktop, the main navigation bar is broken on every article of “Insights” (figure 12).

Figure 12. Enics’ main navigation bar on sub-pages of “Insights”

3. The main insight I got from the Content Inventory, the browsing of “Solutions” page’ content on desktop is troublesome due to very slow response time and a big number of HHTP requests browser needs to get from the server. The performance score and page size of “Solutions” page can also support this fact.

4. EMS section presents “Product Lifecycle” visual picture, but in the text below and in the main navigation bar it is presented as “Lifecycle Services”. This part is essential for company’s offerings, so there should not be any confusions like that.

5. The “Product Lifecycle” picture is interactive on desktop only, but the phrase “Hover your mouse over the picture and see for yourself” is also on mobile. On mobile version, the content extends under the picture. So, it can confuse users who reads this on mobile.

6. Also, all inscriptions on “Product Lifecycle” (figure 13) work when user hover the mouse on it and the text appears under. “Enics Life” is the only section, that also works as link when user clicks. It can confuse and disturb users, because “Enics Life” should be at least indicated differently, so users can distinguish it, among others.

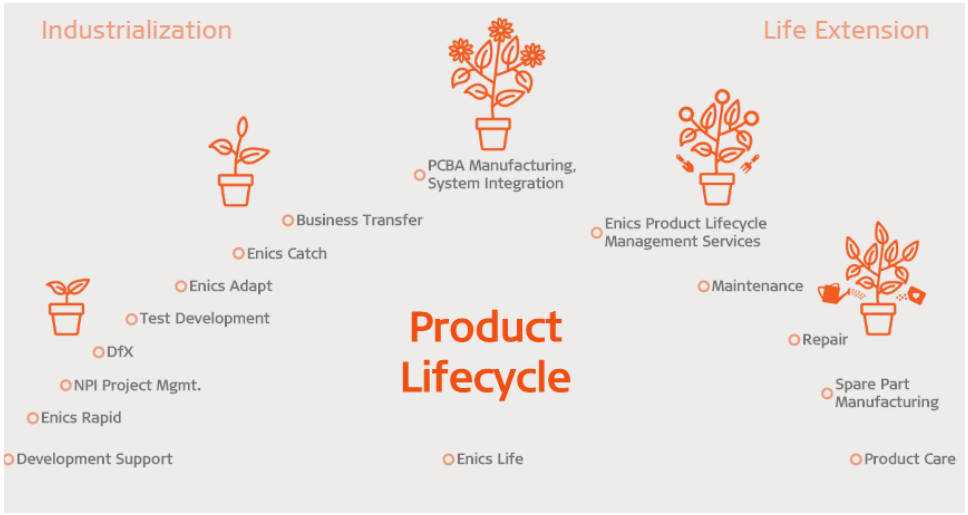

Figure 13. Enics' Product Lifecycle on desktop

7. With 15 sections, where each of them is a service, in the Product Lifecycle (figure 13), it makes it hard to read on the mobile, as there is just a long list with all services. Also, on desktop you need to go one by one by hovering the mouse to read all. There should be easier and faster way to scan all the services. All the services presented can be grouped in groups accordingly to the type of service.

8. The contact information in the footer of every PDF file about products should be re-viewed, as emails and addresses seem to be no longer existed or relevant.

9. After the search in browser "Enics Lifecycle services" and opening the link "Enics Product Lifecycle Management Services", the incomplete and incorrect page appears The same happens with the search "Test Products" and the link "Our Test Products - Enics".

10. The descriptions of each Enics member in the section "Management & Board" do not follow the same design style and not all members have information about them. This section should be revised in terms of the content, and consistency.

3.5.3 Content Recommendations

All the above issues were sent and presented to the company. The Content Analysis of the website and especially of "Solutions" page revealed a lot of insights and usability issues.

According to Usability Gov, providing the content, which is useful, well-structured, usable, and easily found is essential to improve website UX. For that, the content strategy shall be inseparable part of the re-design process for Enics website.

In addition to the author's research, the planning and creating the new content for the website should be implemented. Meanwhile, the student will discover how Enics' competitors perform the similar design solutions on their websites and conduct user research to reflect user's needs into the website.

4 Competitor UX Analysis

The Competitor UX Analysis is the part of Discovery Stage in the Enics' design process. It was presented as a separate chapter for better readability.

A Competitor Analysis in marketing is a strategy of defining the direct and indirect competitors and research their products, price, quality of service or product and so on. In UX a Competitive Analysis is applied to see the difference of the competitors in overall user experience and usability standards (Ritter & Winterbottom 2017). Analysis of the competitors is one of the common UX research methods and a UX competitive report is one of the essential UX deliverables in the industry (Komninos 2019).

The competitor research can demonstrate how companies are solving similar problems and to spot opportunities to offer something very useful (Measuring the User Experience, 2013). The first reason of doing the Competitor Analysis for the website is that nobody has not done it before. Besides, it can uncover new solutions of the usability problems that the website has (Douglas, Usability Geek).

A standard Competitor Analysis is within 2-4 competitors. Competitors are divided in two categories:

Direct competitors are companies that offer the same product or service and share the same customers or users.

Indirect competitors offer similar product or service but have different customers or users.

I determined Scanfil as the direct competitor and Zollner as the indirect competitor. Enics and Scanfil have very similar services, as well as the size and locations. Zollner is an indirect competitor because Zollner is also service provider in EMS, but it has some different services and in terms of size, Zollner exceeds Enics.

The next step to take is to define the assessment criteria for our analysis, which depends on the brand, goals and results needed. Komninos (2019), the senior researcher, and writer-editor at the Interaction Design Foundation, indicates that to be unbiased by personal preferences, the comparison criteria can be based for example on the usability heuristic principles. There are ten crucial usability rules for UI design by Norman and Nielsen

Group (1994). Some of these principles will be used along with B2B Web Usability guidelines.

The analysis is divided into three parts: “Navigation and Content”, and “Home Page Usability” and “Contact Page Usability”. Each of the part will have several assessment criteria. In the end, each comparison criteria will be scored accordingly. All the criteria were tested across three devices: desktop, mobile and tablet.

Also, in order the analysis is not unbiased and subjective, the writer’s result will be presented to the company for review. One or two employees, who have a good understanding of Enics’ brand, will be asked to give the assessment, too.

4.1 Navigation and Content

Information Architecture (IA) is a practice of organising, structuring, and labelling content of the websites, mobile applications, and web. The main purpose of IA is to help users to find information and complete the tasks in fast and easy way (Usability Gov).

Assisting users navigate should be in a top priority for a website. The content on the website should be useful and structured in a way that user can find what they are looking for very easily (Ritter & Winterbottom 2017). The most appealing feature or content can be worthless if users cannot find it.

All the websites need some form of navigation menus to structure the content. Navigation menus are lists with content categories in form of links that are grouped together and connect other sections of the website. For example, navigation bars and hamburger menus are one of the forms of navigation menus.

The main criteria of comparing navigation and structure (table 2) is based on guidelines for usable navigation menus created by Kathryn Whitenton, Nielsen Norman Group's Director of Digital Strategy (2015), on the list of top Information Architecture mistakes by Nielsen (2009) and on the usability heuristics by Nielsen (1994):

Table 2. Comparing criteria for Navigation and Content

#	Criteria	Description
1	Easily tapped menu links	Menu links should be big enough to be easily tapped and clicked, especially on smaller devices.
2	Contrast guidelines	Links text colors should be in contrast with the background colors in navigation menus.
3	Feedback on user's location	The question "Where am I?" is critical for users to navigate with success. Examples of providing the feedback are using 'breadcrumbs' or color-coded menu links or other visual indications.
4	Clear link labels	No industry jargon and abbreviations, only category labels that are relevant and familiar, and clearly describe the content. According to fourth usability heuristic, information should appear in a natural and logical order. "Old words are better", Jakob Nielsen said.
5	Preview lower-level content menus	For large websites, the menus should let users preview lower-level content. For example, the preview-level menus as drop-downs menus or mega-menus which can save time by skipping levels.
6	'Sticky' navigation menus	Use 'sticky' navigation menus for longer pages and/or the button which returns on top. To avoid tiresome scrolling when users reach the bottom of the screen, sticky menus on the top could save users' time and are especially welcome on smaller screens. But if a user wants to go on the top of a page, the easiest way is being redirected by the button.
7	Category landing pages	If a website has a series of categories, Jakob Nielsen recommends using the landing page for each of the categories to provide a section overview. Users might misunderstand a scope of website or miss the important details about services or products.

4.1.1 Enics' Navigation and Content

See below presented the analysis of navigation and content of Enics' website, based on the comparing criteria in the Table 2:

1. Menu links are quite visible and big, but all links in the preview lower-level menu (figure 14) look quite small on a desktop screen, which might be a challenge to read and tap. On mobile, all menu links are quite big and visible.

Figure 14. Enics' preview lower-level navigation on home page on desktop

2. White colored and orange menu links on the translucent grey background (figure 14) makes it hard to read and distinguish the links on some pages. With the white text on the translucent orange background and different pieces of videos on the home page and images on other pages on desktop (figure 14), it could be also sometimes hard to read and distinguish the links in preview-lower menu on desktop. There could be just the issue with the font size here. On mobile, orange links text is in a good contrast with white background (figure 15).

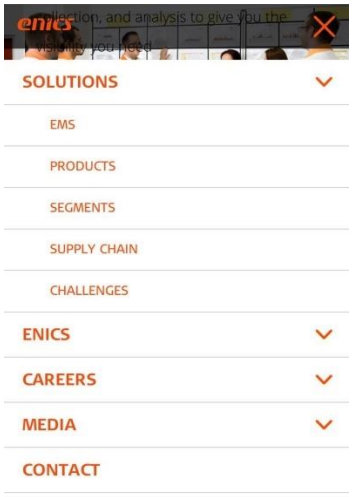

Figure 15. Enics' hamburger navigation on mobile

Figure 16. Enics' local navigation on desktop

3. On desktop and tablet color-coded orange menu links in the main navigation bar (figure 14) indicates where the user is; local navigation (figure 16) on other pages also indicates the pages with colors when scrolling. On mobile, the hamburger menu does not show the exact current location, but the category just opens and shows the list with sub-links (figure 15). This way user does not understand on which specific page he/she is. But local navigation at some pages greatly indicates user's location with colors and arrow (figure 11).

4. Link labels as "EMS" and "ODM Power Products" are industry internal abbreviations and might be no obvious for non-tech audience. Another thing to consider is naming of link labels. As "Solutions" is quite vague term and it may confuse the users why "Challenges" are in solutions.

Also, the section "Solutions" of Enics' main navigation has five links and quite a lot of sub links (figure 14). For example, the first link "EMS: has one sub link, "Segments" no sub links at all and "Challenges" has five links with confusing names. It looks very inconsistent, by that it can confuse users.

"Solutions" page and its Information Architecture needs the most attention and re-design. The links labelling will be taken as a separate discussion and brainstorming with the company further.

5. There is the preview lower-level navigation menu on desktop (figure 14) and on mobile (figure 15). It works quite well and smoothly. On tablet, the navigation menu remains the same as for desktop (figure 15) and it is customized for tapping behaviour.

6. Horizontal and vertical navigations menus always ‘sticky’ and helps user easier to navigate on desktop and tablet. On mobile hamburger menu is also always visible. On all devices, there is a button in the right bottom corner of page in the form of button, which returns on the top of a screen.

7. Out of five navigation categories on the website, three of them has its own landing page on desktop. The contact page might look confusing due to unorganized clear labelled contact groups, so the landing page could help to solve that if designed correctly.

The mobile version does not include the links to the landing category pages. This might be because the mobile screens are small, and it can be not tapped. So, this will not affect the total score.

4.1.2 Scanfil’ Navigation and Content

See below presented the analysis of navigation and content of Scanfil’ website, based on the comparing criteria in the Table 2:

1. Both horizontal nav bar (figure 17) and vertical nav bar (figure 20) are visible and the font size is quite big for all devices.

Figure 17. Scanfil’ main navigation on desktop

2. White text of links in main navigation (figure 17) on the translucent blue background and with colorful pictures on different pages reads well in overall on all devices.

3. Both the author and second evaluator agreed that he website’s “breadcrumb” navigation (figure 18) greatly shows the journey of the user, and it is clickable. Blue color-coded

categories (figure 17, 18) and bold and underline sub-links clearly indicate user's current location on both desktop and mobile.

4. There are very few labels' names which will not be familiar to the new user as e.g. "SMART" (which is a Scanfil' operation) or Group.

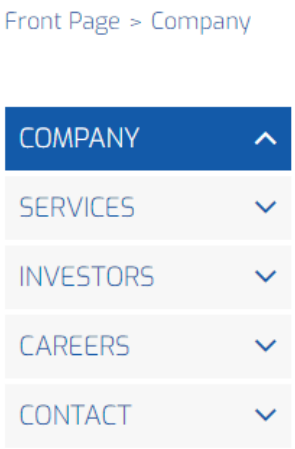

Figure 18. Scanfil' breadcrumb navigation & local navigation

5. Scanfil uses drop-downs menus with sub links in each drop-down with the indicator "plus" or arrow. It has too many of different sub links there. There are pages as Mission and Strengths of the company, that have just few sentences on page, could be connected into one page. It makes the lower-level menu too big and push users to scan and read through a lot of labels (figure 17). It could be especially hard to read on smaller devices.

6. Website does not have neither 'sticky' menu nor the button that returns up on all devices. Especially, on smaller screens it could be more complicated.

7. There are landing pages for all the categories on desktop and mobile, which are implemented very well.

4.1.3 Zollner' Navigation and Content

See below presented the analysis of navigation and content of Scanfil' website, based on the comparing criteria in the Table 2:

1. All menu links are big font size and easy to tap for both desktop (figure 19) and mobile.

2. Dark-grey link text colors are in a good contrast with the light-grey background colors.

3. On each page of desktop there is a small “breadcrumb” navigation. At the same time, it might be too small and not that obvious for users. On mobile the only navigation is a hamburger menu on the top of the screen.

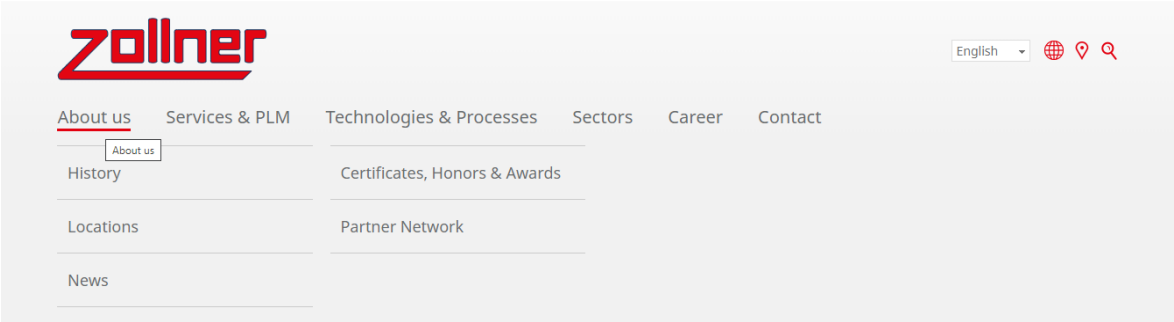

Figure 19. Zollner’ main navigation on desktop

4. Names of sub-links as “PLM”, “NPI” are industry internal abbreviations and will not be obvious for everybody. The sections “Services & PLM” and “Technologies & Processes” might confuse the users by its meaning and might be understood as repetition.

5. There is a simple drop-down menu with one preview-level, which works well on all devices.

6. There are no ‘sticky’ menus at the website, but there is the arrow button in right bottom corner, which sends back the user to the top of a page on mobile and desktop. But I have noticed this arrow after some time spent on the site, and mainly because I was trying to really find the way how to navigate. As this arrow is a very light-grey color, not everyone will notice it.

7. Each of categories except contact page has its own landing page for both desktop and mobile version of the website, which give good overview of categories.

4.2 “Home” Page Usability

A company’s home page is a main webpage and starting point of a website for most of the users. Nielsen states (2002) that “a home page is a company’s face to the world”. In most of the cases, home pages get the most visits than any other page on a website.

The criteria of comparing and evaluating home pages (table 3) is based on Research-Based Web Design & Usability Guidelines (2003) and Home page Usability guidelines by Jakob Nielsen (2002):

Table 3. Comparing criteria for Home page

#	Criteria	Description
1	Clear value proposition and purpose of a company	A clear and short tagline or paragraph that summarizes what company does and emphasize how company's service or product solve problems, what benefits customers can expect and why should they buy over competitors. The tagline should be easily accessible, so users do not need to read a lot of text or to go to other pages to determine the site's purpose.
2	High-contrast text and background colors	Use high-contrast text and background colors or images so it is as legible as possible. Background images can make it hard to read foreground text. So, background images should be simple and do not make difficult for users to read text.
3	Use of graphics, animation, and videos	Use graphics, animation, and videos thoughtfully and meaningfully to show real content, not just for decoration. It is important to have useful and clear reasons for using multimedia to avoid unnecessarily distracting users.
4	Use of visual clues	The most critical page elements should be shown without scrolling. If there is critical content below that, visual clues should be added so users know it is there.

4.2.1 Enics' "Home" Page Usability

See below presented the analysis of Enics' "Home" page, based on the comparing criteria from the Table 3:

1. Considering, most people spend very little time browsing the web, the video on home page does not carry clear purpose and value proposition of Enics from the beginning. Only after more than one minute the video shows value proposition: "It's about helping our customers build sustainable business" and what the company does "We are Electronics Manufacturing Services".

Only after scrolling down, there is a statement what company does - “We are an Electronics Manufacturing company driving sustainable business of our clients” and the paragraph with services information (figure 20).

Figure 20. The part of Enics’ home page

2. Black text with the background photo (figure 20) makes it hard to read through and distinguish words on desktop and tablets. Also, some text on the video overlaps with CTA button and makes it hard to read. For mobile it works well.

3. The video does not show useful information for users, at least in the beginning. But not all users will have time to watch until that moment when it does show, at least by the reason that there is not any indication of the length of the video. If the only reason for this video is drawing attention, that it should not be used in the front of home page. Segments are presented very well in the form of graphics in the end of the page.

4. On the desktop and tablet, there is visual clue in the form of the arrow, but it is very small, and the light-grey colour so can be not visible for every user. On mobile there is not any visual clue for further content below.

4.2.2 Scanfil’ “Home” Page Usability

See below presented the analysis of Scanfil’ “Home” page, based on the comparing criteria from the Table 3:

1. “Global contract manufacturer and systems supplier” is written in the end of the page after three full page scrolling. It should be visible and written once a user opens a page, but not somewhere down in the end.

2. There is a good level of contrast of text and background for all the devices.

3. From multimedia there is only the carousel with four sections in the beginning on the page. They all follow the same style and in overall the home page does not distract the eye with many elements.

4. At all devices it is quite clear that there is content below, due to the section “News”, which is shown in the first screen of content.

4.2.3 Zollner’ “Home” Page Usability

See below presented the analysis of Zollner’ “Home” page, based on the comparing criteria from the Table 3:

1. On desktop and tablet, there is a sliding animation with the text “Electronic components, modules, devices, complex systems”. But it takes more than ten seconds to read it through. There is for sure a place for improvement.

2. There is a good level of contrast of text and background for all the devices.

3. As mentioned in the second paragraph, there is an animation with sliding text on the home page on desktop and tablet. It shows an important content about the company services. Jakob Nielsen does not recommend animating the critical elements of home page as logo and tag line. It is often difficult to read, and users will absorb animation’s content less effective than with standard format. The graphics with sectors are represented well clear and well.

4. There is a visual indicator in the form of red arrow with tiny straight line on desktop and laptop, which is quite visible. On mobile, there is half of text shown, so it makes it clear that there is continuation below.

4.3 “Contact” Page Usability

There were quite a lot of requirements related to the Enics’ contact page during the discussions with sales stakeholders. It is a crucial page and almost website needs it. Contact page should have specific details to make it useful to the users. B2B Web Usability research (2015) by KoMarketing showed that the most lacking information on vendor website is solid contact information.

One of Nielsen's (1994) ten usability heuristics is to maintain consistency and follow standards. This heuristic is vital to make sure that UI is predictable and learnable. User should not have to guess if different actions, words, symbols, or situations mean the same.

The comparison criteria (table 3) is based on research by Nielsen Norman Group (2019), where participants were asked to attempt activities related to Contact us information on 40 different corporate websites:

Table 4. Comparing criteria for “Contact” page

#	Criteria	Description
1	Linking and labelling of contact page	Link to contact page should be noticeable and included into main navigation bar and in the footer of the page. The usability testing and eye tracking research by NN Group showed that users try to find link to contact page in the top right corner of the page or down in the footer. Also, labelling of this page should be recognizable as “Contact us” or “Contact”.
2	Clearly organized contact information	Larger companies tend to have many different contact phone numbers. So, contact phone numbers should be organized into clearly labeled groups to help users find the correct contact. If the contacts are unorganized, they will be senseless for users and they will unsure whom to contact. Anna Kaley writes (2019) about the NN Group research that showed organization of contact numbers based on company’s internal structure and hierarchy is usually not grasped by new visitors. So, if there is a complex company structure, there could a main contact number on the contact page to reduce any to reduce any uncertainly in how to contact a company. Then contact listings should be labeled and grouped so that users are aware where to contact.
3	Best practices of displaying contact information	Apart from providing appropriate contacts, there are best practices of displaying contact information within each group: – Show contact information for local branches and offices abroad if applicable with physical address, email address and international phone number. – If a company serves international auditorium, then offer opportunity to contact in other language. – Make it clear how long it will take to receive an email response or/and availability to take calls

4.3.1 Enics’ “Contact” Page Usability

See below presented the analysis of Enics’ “Contact page”, based on the comparing criteria from Table 4:

1. Link “Contact” to the contact page is situated in the main navigation bar in the top right corner. And link “Contacts” is in the footer.

2. The titles of offices on contact page, which are also highlighted in the same way, are static headings and lead to the blank page, which breaks an internal consistency based on usability heuristic rule. In addition, on the Locations page, it is not clear if “Locations” are plants or offices, because we can name both as locations. The titles of offices on contact page lead to the blank page.

The Brand Communication specialist, who assessed this, also said that it is not very clear whom to contact and that Sales contacts should be presented as priority contacts. Overall, all contact groups are scattered on the page and are not organized. It can make users question whom to contact.

3. Enics shows contact information for local plants and offices with physical addresses, and for some email addresses and international phone numbers. There are no indications of the business language of contact on the page.

4.3.2 Scanfil’ “Contact” Page Usability

See below presented the analysis of Scanfil’ “Contact” page, based on the comparing criteria from the Table 4:

1. Link “Contact” to the contact page is situated in the main navigation bar in the top right corner.

2. The overall structure of contact page makes it easy to navigate and distinguish different groups of contacts. On all devices it is easy to access contact information.

3. Scanfil shows complete contact information for local factories and offices with physical addresses, email addresses, international phone numbers and local websites if applicable. There are not any indications of the serving language of contact on the page. There are no indications of the business language of contact on the page. There is no information on response times and availability as well.

4.3.3 Zollner' "Contact" Page Usability

See below presented the analysis of Zollner' "Contact" page, based on the comparing criteria from the Table 4:

1. Link "Contact" to the contact page is situated in the main navigation bar in the top right corner and down in the footer.

2. Company does not give direct contacts, but it provides contact form with several options of departments. Contact form should not be a replacement to phone numbers or emails. At times users are sceptical of contact forms and are unsure when their inquiry will be answered.

Also, the map with links on contact page strongly breaks the heuristic rule of internal consistency and standards because it is not clear that there are hyperlinks there. This might be a problem as it violated the established meaning of the visual treatment.

3. Zollner shows thorough contact information for local factories and offices with physical addresses, email addresses, international phone numbers and maps. There are no indications of the business language of contact on the page.

4.4 Assessment and Results

The assessment criteria must meet the comparison criteria and content of this competitive analysis. Authors of "UX for the Web" proposed the assessment matrix, which I found the best suited for that. As we want to consider not only the number of completed elements in each comparison, but also its quality and the way it was executed.

It was defined by Ritter and Winterbottom (2017) "Quality over quantity goes a long way with user experience." In this analysis, we will score well-executed elements higher than having more elements but poor executed. It is better to have less features and greatly implements them, rather having many elements that are working bad and impact the whole user experience. The following assessment matrix is used for evaluating the usability of the websites:

Score 1: If a company has none of the elements present
Score 2-4: If a company has all the required elements present, but they are very poorly executed. Or if a company has 30% of elements present, but they are well executed.

Score 5-7: If a company has all the required elements present OR 30-70 % of the required elements present, but they could have been executed better.
Score 8-9: If a company has all the required elements present OR 70-90% of the required elements of the required elements present and they are executed between well and excellent.
Score 10: If a company has all the required elements present and they have been executed excellent.

The following matrix (table 5) is the result of a student's assessment:

Table 5. Author's assessment results of Competitive Analysis

Criteria	**Enics**	**Scanfil**	**Zollner**
Easily tapped menu links	8	9	9
Contrast guidelines	6	9	9
Feedback on user's location	8	9	8
Clear link labels	3	8	7
Preview lower-level menus	8	6	9
'Sticky' navigation menus	9	1	4
Category landing pages	7	9	9
Navigation and content. Total:	**7**	**7,3**	**7,8**
Clear tagline	4	3	7
High-contrast text and colors	4	9	9
Graphics, animation, and videos	4	9	4
Use of visual clues	6	9	8
"Home page" Usability. Total:	**4,5**	**7,5**	**7**
Linking and labelling	10	10	10
Clearly organized contacts	4	9	2
Best practices of displaying contact information	4	6	7
"Contact" Page Usability. Total:	**6**	**8,3**	**6,3**
Total score:	**5,8**	**7,7**	**7**

As already have been mentioned, in order not to be subjective, Enics' employee assessed the criteria too. The assessment was done in the face-to-face with the student and the employee. So, the author placed the verbal feedback and assessment of the employee in the previous chapters, too. The Table 6 is the assessment matrix of Enics' employee:

Table 6. Enics' employee assessment results of Competitive Analysis

Criteria	**Enics**	**Scanfil**	**Zollner**
Easily tapped menu links	7	7	9
Contrast guidelines	9	9	8
Feedback on user's location	6	10	9
Clear link labels	3	8	4
Preview lower-level menus	10	10	10
'Sticky' navigation menus	9	9	9
Category landing pages	7	9	9
Navigation and content. Total:	**7,3**	**8,8**	**8,3**
Clear tagline	6	5	3
High-contrast text and colors	7	9	9
Graphics, animation, and videos	6	8	8
Use of visual clues	7	8	8
"Home" page Usability. Total:	**6,5**	**7,5**	**7**
Linking and labelling	10	10	10
Clearly organized contacts	6	8	5
Best practices of displaying contact information	6	8	5
"Contact" Page Usability. Total:	**7,3**	**8,7**	**6,6**
Total score:	**7**	**8,3**	**7,3**

The thoughts and assessment of two assessors coincided in many points. The Competitive Analysis also revealed a lot of opportunities to improve the navigation across the website, and usability of Home and Contact pages of Enics' website. It also shows the importance to design responsively, to follow usability heuristics principles of UI design and other design common guidelines. The results received in the competitive design will be used in the Design stage in the Chapter 6.

5 User Research

User research is a study of user's behaviour, needs, experience and motivations through various qualitative and quantitative methods. User research helps to put people at the centre of the design process and services or products (Mortensen 2019). The vice president Loranger at Nielsen Norman Group outlines the main philosophy of user-centred design approach: "UX without user is not UX" (2017).

The phrase "you are not the user" is in the core of the user experience. All UX practitioners first think of their users and create designs that will correspond to those who will be using it (Budiu 2017). User research helps to extract bias by learning about the users from their perspectives, experiences, and knowledge.

The field of UX has an extensive range of different user research methods. The type of user research should be picked depending on the type of the website, the timeline and environment (Usability Gov). The user research methods for Enics were chosen in accordance with the business requirements gathered in Discovery Stage.

Hotjar is an online behaviour analytics and user feedback tool that combines both quantitative and qualitative methods. It is chosen for this project to understand and observe and analyse the behaviour of Enics' website through method such as Heatmaps. The reason Hotjar is selected for this project as it is "all in one" tool, the installation procedure is simple, and it has 14 days free trial version for all the functions.

5.1 Heatmap Analysis

Heatmap analysis is a research method which involves analysing heat maps generated from recordings tools as mouse tracker or eye tracker. A heat map is a graphical visualization of user's mouse or eye movement when using a website, where values are represented by colors. Heatmaps are used in analytics mostly to display user behaviour on specific Web pages.

The origin of heatmaps took place in 19th century, where a small gray or black manual matrix was used to visualise statistics of population in Paris. In the early 1990's software engineer Cormac Kinney trademarked the term 'heat map' and created a tool to depict real-time financial market information (Hotjar Team, 2020).

A website heat map shows a color-coded imposition of user mouse movement, scrolling, taps and clicks. Website heatmaps help to reveal the most popular and unpopular elements of a webpage. The popularity of page elements is indicated using a color scale from red – the most popular parts, to blue – the least-used parts.

5.1.1 Mouse Tracking

Mouse tracking or it is also called as click tracking method will be used for Enics' website. The purpose of this method is to track and record mouse movement of users. In contrast to eye tracking method, where the equipment for mapping is expensive, mouse tracking is less expensive (Matt Isherwood, 2019).

Hotjar mouse-tracking heatmaps operate by making a copy of the page's HTML code, categorize each element by tag, parent elements and classes or IDs. While users view the page, Hotjar collects users' interactions and behaviour into the heatmap reports (Hotjar Team, 2020). Then data is arranged into three different heat map types: click map, move map, and scroll map. Hotjar records data from desktop, tablet, and mobile devices. After the Hotjar plugin was installed in WordPress and tracking code inside Hotjar, the heatmaps for "Home" page, "Solutions" page and "Contact" page were created.

5.1.2 Types of Heatmaps

A click map is a type of website heat map which displays where users click their mouse on desktop devices and tap their screen on mobile devices. The click heat map is color-coded to show which elements such as buttons, images or links have been clicked and tapped the most.

A scroll map is a type of website heat map which visually and numerically shows how far users scroll down a page. Hot colors in scroll maps show the most viewed parts of the page, rather than the most clicked as in click heat maps. But scroll maps are not only about colors, it counts the percentage of how many users decided to scroll down a page.

5.2 Heatmap Analysis of Enics' "Home" Page

This paragraph presents the results from scrolling heatmaps of Enics' Home page and discusses the parts of the page that shall be improved. During 17th of March until 6th of April, Home page collected 10,000-page views, from which 9,357 desktop views, 603 from mobile and 40 from tablet.

The Figure 21 below is the result of scrolling heat map on Enics' home page, which numerically shows how far users scrolled down a page. The scrolling behaviour showed that only 7,6 % (711 users) of desktop users scrolled below the fold meaning below the video, which equals to 30% of content of Enics' Home page (figure 21). Also, only 3,8 % (355 users) saw the bottom of the page. The scrolling behaviour is different on mobile and tablets on Home page, where more than 30% and 35% users accordingly scrolled the home page until the end. It could be partly explained by the natural scrolling behaviours of mobile and desktop devices.

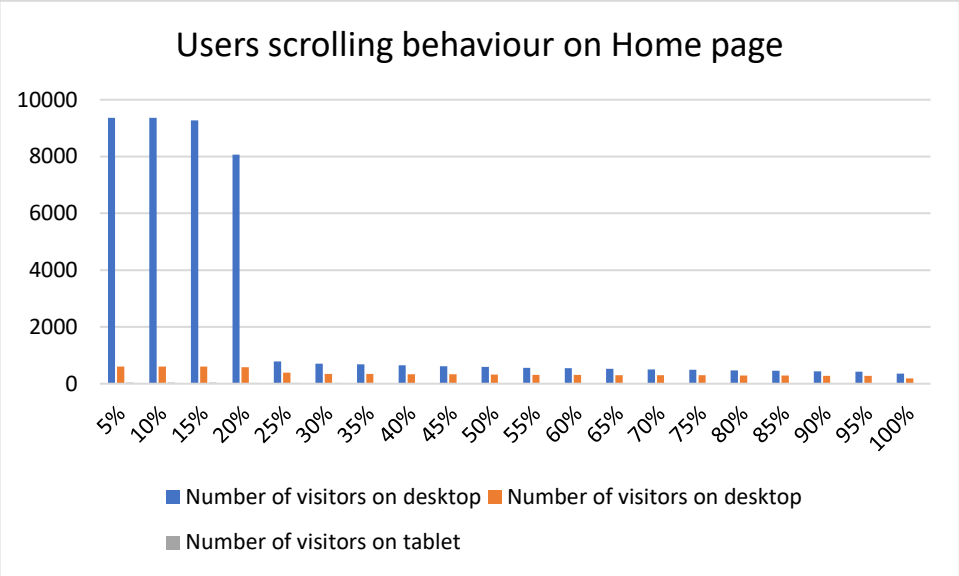

Figure 21. Users scrolling behavior from three devices on "Home" page

As has been already considered in the Competitor Analysis of Home pages before, visual clues should be added on the page to point that there is a content below. On Enics' home page there is a small grey arrow, which could be inconspicuous to the users. This may be a consequence of the fact that almost 93 % of users, who reached Enics' home page by desktop devices, did not scroll down at all. Considering that majority of users (more than 90%) reach home page and the website from the desktop devices, the Home page shall be revised in terms of user experience and usability during Design stage.

5.3 Heatmap Analysis of Enics' "Contact" Page

This paragraph presents the results from click heatmaps of Enics' "Contact" page and discusses the parts of the page that shall be improved. During 18th of March until 29th of April, "Home" page collected 2,430 pageviews, from which 1,750 desktop views, 561 from mobile and 119 from tablet. The clicking heat map recorded 2,065 clicks in total for desktop devices.

The Figure 22 below is the screenshot from the clicking heatmap of the area with “Enics Worldwide” contacts on desktop. I have also added manually the number of clicks, which the tool recorder. The first box in the figure shows the number of clicks recorded of locations’ title and the second box – the number of clicks on the area of contact details.

It is important to understand that every user can click multiple times at one point and the results below does not give us answers on why users decided to click or not to click somewhere. Yet the results received from scrolling heatmap (figure 22) provide us with some relevant insights.

Figure 22. Number of clicks of locations’ titles and its contact details on “Contact” page

From the Competitive Analysis, we found out that locations’ titles on “Contact” page (figure 22) are designed as links, but only 8 out of 12 lead to “Locations” page, the rest of ti-

tles are blank pages. The clicking heatmap results showed that the title of location “Vantaa, Finland”, which is not actionable, received the most clicks – 49 clicks (2.38 %) from the total number of all recorded clicks on “Contact” page. Users who first click on titles, which are actionable, and then click on those which are not, will be distracted. It again proves the importance of one of usability heuristics by Nielsen (1994) of maintaining consistency and making UI elements predictable and learnable.

Another observation from the clicking heatmap, is that users do click on contact details of offices and plants under titles (figure 22). For example, 128 clicks out of 2,065 were recorded in Enics Headquarters contact details. It shows that users expect to either open a map application with the address or to call by phone number directly from the page. To accomplish this, users should click on titles and get this opportunity on “Locations” page only. But anyway, four out of twelve locations’ titles do not lead to separate pages.

The results, received during click heatmaps on Contact page, show that the contact information shall be revised in terms of user experience and usability during Design stage.

5.4 Heatmap Analysis of Enics’ “Solutions” Page

This paragraph presents the results from click heatmaps of Enics’ “Contact” page and discusses the parts of the page that shall be improved. For one month, Solutions page recorded only 278 pageviews, from which 196 desktop views, 74 from mobile and 8 from tablet. There are not many insights from this page in heatmaps, because the page exceeds the maximum height of Hotjar limitation. There is nevertheless one insight from tap click heatmap on mobile.

The “Product Lifecycle” photo (figure 13) has recorder 16 taps, which is 13.56 % of all taps, on “Solutions” page. As it was revealed in content inventory, “Product Lifecycle” picture is interactive on desktop only, but there is a phrase below it “Hover your mouse over the picture and see for yourself” on all devices. Considering that, this part shall be revised during Design stage to not mislead users.

6 Design

The next stage in the UX design process for Enics' website (figure 3) is Design stage. After the Discovery and User research stages, the requirements have been collected and prioritized, and the website parts, that shall be revised and improved are identified.

According to Babich (2017), an effective design stage is iterative, meaning that it can return to itself to validate assumptions and ideas, and it is collaborative, when all project members are involved. During this stage, the brainstorming meetings with the company were held, where the new solutions and ideas were presented.

Design stage usually includes methods as building IA, sketching, creating wireframes and prototyping. The major and solid change on Enics' website shall be done in Information Architecture (AI) and navigation across the pages, especially on "Solutions" page. The first step in Design stage will be identifying the scope of re-design, then creating new Information Architecture, website navigation, and paper and digital prototypes.

6.1 The Scope of Design

Before designing, it is important to define the scope of the work. The research showed that "Solutions" page is the least user-friendly page and needs the most of changes in IA and its navigation. Especially, it is vital for the company to demonstrate its new engineering offerings, which are located on "Solutions" page.

Therefore, it was agreed between Enics' project supervisor and the student, that the student will create solutions of the revised Information Architecture and navigation for "Solutions" Web page for desktop version and mobile version. However, due to the limited time, the prototypes for mobile version will be done after the thesis submission.

6.2 Information Architecture (IA)

According to Cardello (2014), the re-design shall be started with re-defining the IA before designing the website navigation. It is important first to define the scope of the content and number of pages, before creating the user interface elements. The IA also should not be fully ready before starting to prototype and creating wireframes, it could be modified later.

The first component of a website's information architecture is the definition of the site content and functionality; the second component is underlying structure, organization and nomenclature that determines the content and functionality of the website. The IA is represented in hierarchical diagrams, which identify the navigation structure of a website and are called site maps (Cardello 2014).

The IA is not visible in the User Interface by itself, but undoubtedly impacts the overall User Experience of the website. Because as goes from the definition by Don Norman, "UX encompasses all aspects of the end-user' interaction". Even though users do not see the structure of the website, they can feel and experience how the content is connected and divided across the website.

The concept of Information Architecture was already presented during the competitive UX analysis as well as some components of IA as labelling and navigation of Enics' website were assessed in the Chapter 4. Content inventory and Content Audit activities were undertaken in the Chapter 3, which involved the defining of the current site's IA and identifying the parts of IA that shall be revised and/or removed. Next there will be more in-depth analysis of the current "Solutions" page (table 23) to create the new IA.

6.2.1 Weak Points of Current Site's IA

As the scope of Design stage is within "Solutions" page of Enics website, the weak points of IA for this page will be presented further. In addition to the Content inventory (Appendix 1) and Content Audit in the Chapter 3, where the student did the evaluation of the content usefulness and overall effectiveness by herself, during the Design stage the brainstorming meetings regarding IA were facilitated with Enics' key member of Sales organization, who specializes in Enics' Lifecycle services, with Senior manager of Sourcing Processes and Ms. Elina Mielityinen, Brand & Communication Specialist at Enics.

The "Solutions" page is now divided into five categories: EMS, Products, Segments, Supply Chain and Challenges (figure 23). Also, the section "Insights" was found during the content inventory, but it is not labeled anywhere in the navigation on the website. Each of the category will be described and analyzed further.

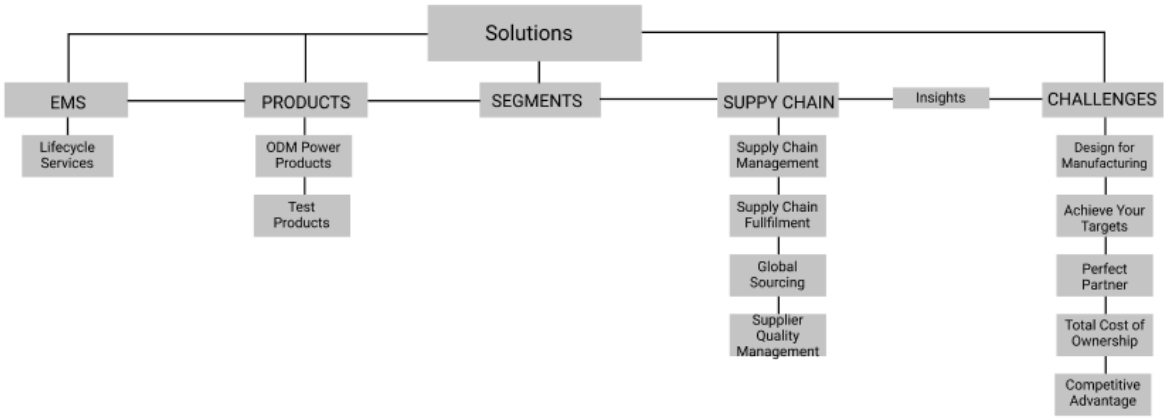

Figure 23. Current Information Architecture (IA) of “Solutions” page

1. EMS – Electronics Manufacturing Services

As already described in the Discovery Stage, EMS is the core in Enics, and the company provides end-to-end Lifecycle EMS services. Currently, there is only one sub-link under EMS – Lifecycle Services, which does not give a clear picture of all EMS services that Enics provides. Product Lifecycle is presented then in the illustration (figure 13).

As was already discussed in the content audit, that on mobile all the services are presented in one long list, which makes the scrolling very long. On the desktop, user shall hover the mouse on top of the title of the services and the description appears below. From the usability point of view, this current solution of browsing the services is not efficient, as a user needs to scan a lot of terms and titles again and again to find what he/she is looking for.

In the Competitive Analysis (table 2), one of the comparing criteria was “Clearly links labels”, which indicated that links names shall be familiar and clear without industry abbreviations and jargon. EMS is the industry abbreviation, which will not be familiar for most of not-technical people.

2. Products

Now under Products there are ODM Power Products and Test Products. As already highlighted in the Chapter 2, EMS is separate from ODM, and Enics has both expertise. So, it makes sense to represent this two expertise separately on the website. But the name “Products” does not fully represent ODM itself.

3. Segments

The role of showcasing the segments on the website is huge, as Enics provides solutions for many industries. In the current IA, Segments is presented under Solution (table 23). In fact, industry segments are not the direct solutions, but it is more about company' resources and company' identity.

So, "Segments" will be removed from "Solutions" and moved under the section "Enics", where the information about the company is represented.

4. Supply Chain

There are quite a lot of content under "Supply Chain" now (able 23). According to Senior manager of Sourcing Processes, some of the content does not reflect anymore how supply chain is organized in the company now and what they want to message out through the website.

Also, if one looks on the current navigation bar (figure 14), it seems that "Supply Chain" is sold purely separately from other services in Enics. But the reality that EMS industry is one big Supply Chain operation. However, Supply Chain services are clearly defined and charged for each customer, so it is plausible to embed "Supply Chain" under "EMS" on the website.

5. Insights

The section "Insights" is between sections "Supply Chain" and "Challenges" on the website (figure 23), and it is not indicated nowhere in the website navigation. According to Ms. Elina Mielityinen, Brand & Communication Specialist, this section was added on the website long time ago and the idea behind that is a blog with articles. Some of the information is outdated there as well.

We have discussed with Ms. Elina Mielityinen that, the good side of these articles that they provide some in-depth knowledge about the services for users and customers. But this section should not be just left somewhere on the page without indication, as it is now. It could be moved to the separate page under "Media", for example, as a "Blog". For now, it will be removed from the whole IA scope and will be taken into consideration by the company.

6. Challenges

According to Jakob Nielsen (2009), too many websites still make up their own terminology for labels and navigation. The category name “Challenges” can cause confusion because people can not possibly know which information it contains. Especially, when “Challenges” is situated under “Solutions”. For now, this section will be removed from the IA. This point was brought to the company and it will be taken into consideration.

6.2.2 Updated Information Architecture

Taking into consideration all the points above, the IA of “Solutions” category is revised and updated, and the new IA is presented as a diagram below in the Figure 24. It yet could be not the final version and some little changes could be made during the implementation if requested by the company.

In comparison with the current IA of the “Solutions” page (figure 23), there are only three categories under “Solutions” in the updated IA: “EMS”, “ODM” and “Digital Services” (figure 24). The weak points of the current IA and its name labels were presented in the previous chapter and by analyzing it, the changes were made with help of Enics’ employees. Below, every category of the updated “Solutions” page is discussed:

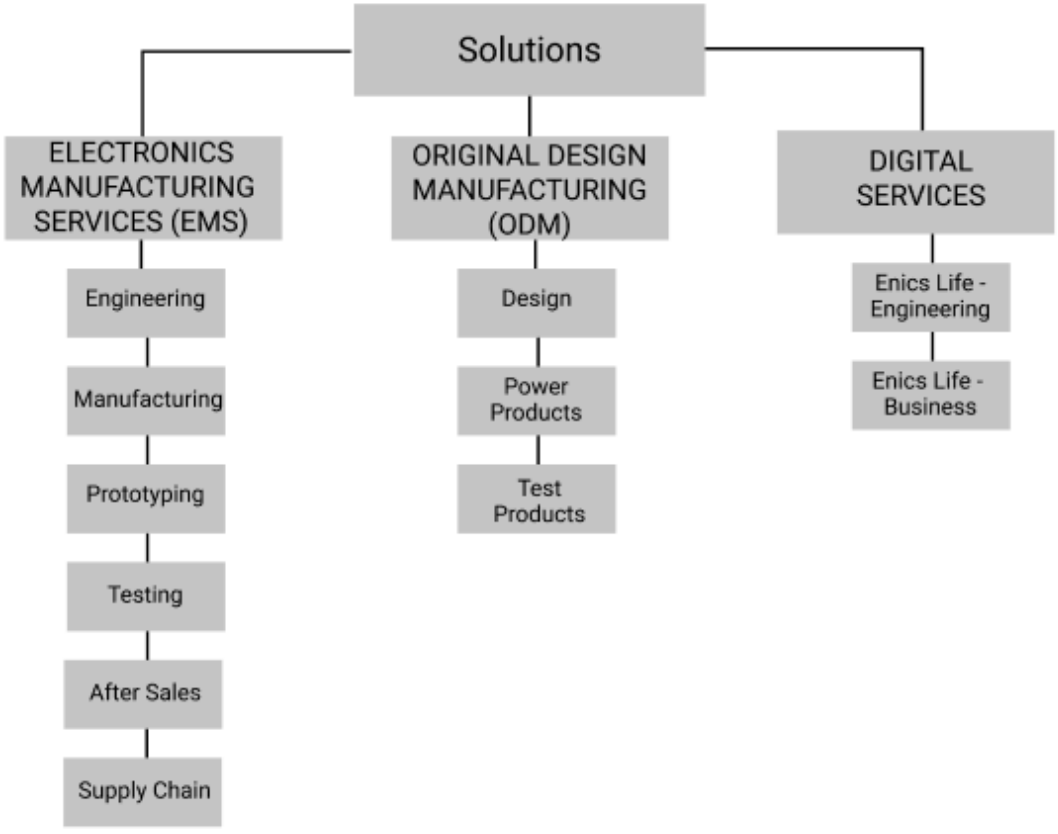

Figure 24. New Information Architecture (IA) of “Solutions” page

1. Electronics Manufacturing Services (EMS)

It is now fully written, so every user of the website will understand the meaning. The student' solution is also to split all EMS services into categories: Engineering, Manufacturing, Prototyping, Testing, After Sales and Supply Chain (the names or the order could be changed later). The student presented this idea to Enics' key member of Sales organization, who specializes in Enics' Lifecycle services and he said that for sure there should be a structure of the view of the services on the website.

Also, "Supply Chain" is now removed as a separate category under "Solutions: and is embedded under EMS. It looks simpler now and it gives the users the understanding that Supply Chain in offered within EMS. Also, during the discussion with the company, the author of the thesis understood that Supply Chain is mainly offered within Manufacturing and After Sales services, so this shall be indicated in the content of "Supply Chain" Web page as well.

2. Original Design Manufacturing (ODM)

"Products" will be substituted to the label Original Design Manufacturing (ODM). And under ODM there will be three categories: Power Products (before – ODM Power Products), Test Products and Design as a first line, as it is a major part of ODM.

3. Digital Services

Enics Life, collaboration portal, is an important part of Enics' services and the requirement of the company is promoting and showing it more on the website. Enics Life is only presented in the Product Lifecycle now (figure 13) and for the new users or customers "Enics Life" does not mean anything. So, there shall be the better way found to label and present this portal on the website.

During the brainstorming sessions, key member of Sales organization, called Enics Life as a digital service It is clear from the definition that a digital service is the electronic delivery of the information including data and content across multiple devices and platforms (Stephan 2015). And Enics Life is a digital service in the form of the online platform, which gives an access to all relevant information about customers' products and online reports.

"Digital Services" will be presented on the top line now and under there will be "Enics Life – Engineering" & "Enics Life - Business" – two different types of the platform.

6.3 Website Navigation

It is important to distinguish the website IA and website navigation. If an Information Architecture is about the structure and nomenclature, navigation is a collection of the user interface (UI) elements that allow users to receive the information they are looking for on the site (Cardello 2014). Navigation elements include global navigation, local navigation, breadcrumbs, filters, footers, and others.

The scope of the design for Enics includes the improvement of navigation on “Solutions” page. The next chapters will include the description of the new solutions in main navigation and local navigation across of the website mainly for the desktop version.

6.3.1 Main Navigation

There is a main navigation, or also called as global navigation or main nav, which provides an access to the wide scope of the site and usually it appears on every page (James Garett, 2002). Users can switch between top-level categories easily no matter of their location with the main navigation. Also, users that come to the website not through the homepage can easily and fast get an idea what is available on the website (Jen Cardello & Kathryn Whitenton, 2014).

As already have been defined earlier in the project, Enics’ website navigation bar appears consistently on every page of the website on all devices. Then all categories in the main navigation except “Contact” have a preview-lower menu for all devices (figure 14, 15). “Solutions” lower categories will be changed accordingly to the new IA, which is presented in Table 24. For desktop, all the categories in Table 24 will be included in the preview-lower menu. For mobile, only top categories as EMS, ODM and Digital Services will be added in the hamburger menu. The lower categories will be embedded into local navigation on mobile.

It was revealed in the Competitive Analysis that the font size of preview-lower menu links is a bit too small on desktop devices. So, that could be increased by few points during the implementation among all the categories.

6.3.2 Local Navigation

Local navigation, also called sub-navigation or page-level navigation, is used to access lower levels below main navigation. Local navigation sometimes works along with the main navigation and is an extension of the main nav (Kalbach 2007).

The current local navigation of Enics' website is the 'scrolling' over each other navigation, where every category of the website as "Solutions" or "Contact" have all the sub-pages on one long page. Web performance analysis showed that "Solutions" has very low performance score due to its page weight. This not only makes the response time very slow, but it could cost for some users more to download the current "Solutions" page, rather than download the separate Web pages.

To enhance user experience and usability, it was decided with the company to change this scrolling behavior and to create separate Web pages for all the categories. The local navigation on desktop will remain visually the same, but to reach the category and sub-categories, users now needs to click on the link label in the lower-preview menu or in the local navigation. This will be presented in prototypes in next chapter.

6.4 Prototyping

The next stage of design is creating visual representations of how Web page will look like and work. A prototype is a draft and early sample or model build to test a concept or ideas. A prototype could be anything from paper sketching to digital prototype, that allows to click through the content on the website. The paper prototype is also called as low-fidelity (Lo-Fi) and digital as high-fidelity (Hi-Fi) (Usability Gov).

Prototypes are not the final version of the product, but they created to visualize how the final version will look like. The authors of "UX for the Web" (2017) highlighted the benefits of prototyping:

- Stakeholders can physically interact with the prototypes and to visualize the look of the final product. Accordingly, they can give the instant feedback and designer can fast refine if needed.
- It takes less resources to create prototypes rather than the final product.
- Designers can investigate and test a lot of different design options.

6.4.1 Paper Prototyping

Paper prototyping (Lo-Fi) is a technique based on creating hand drawings of different screens representing user interfaces with paper and pen only. This method is simple and inexpensive, which allows to refine different design ideas fast. Low-fidelity prototypes are helpful in an early visualization of design ideas, which usually causes the innovation and enhancement (Usability Gov).

After there is an updated Information Architecture (figure 24) and website navigation of "Solutions" page, I created the one-page paper prototype for "Solutions" page (figure 25):

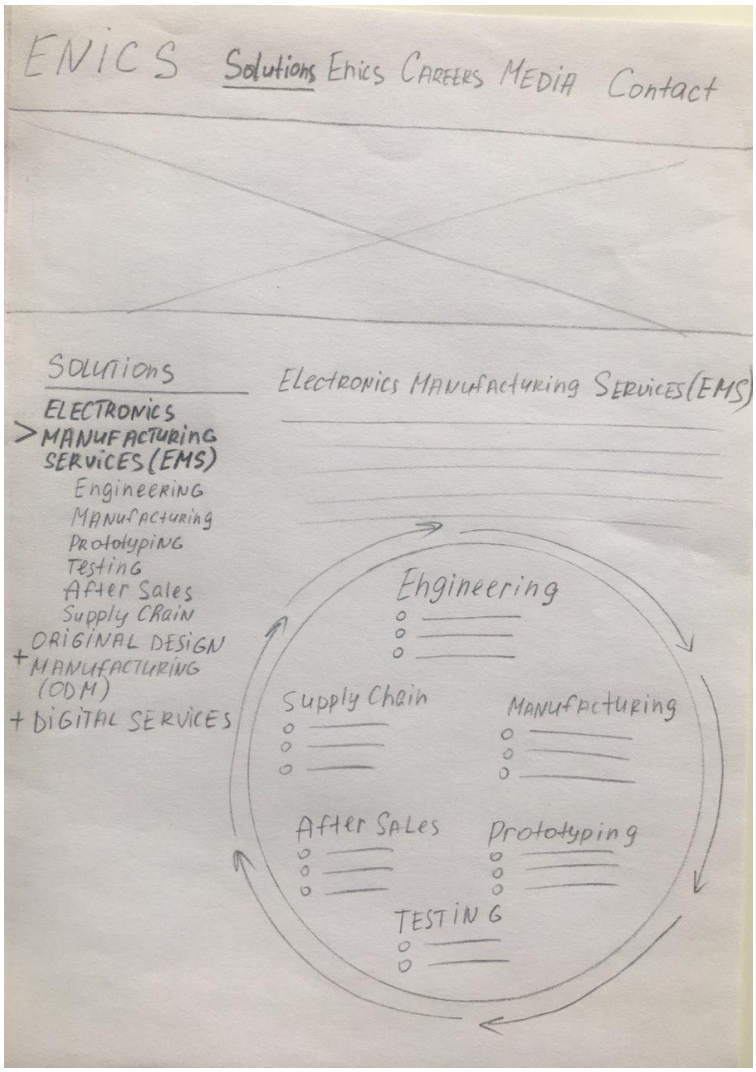

Figure 25. Paper prototype of “EMS” page on desktop

On the paper prototype above (figure 25), the updated IA is now presented in the local navigation at the same position. Instead of the long list with all services, services now are divided into categories: Engineering, Manufacturing, Testing etc. The services are now also presented in the circle illustration. All the titles of services are links and lead to the separate pages.

This way users have a clear categorization of all the EMS services. The idea is also that the circle appears on every service’ page. I have presented this idea to the key member of Sales organization, and he said that he likes how all the services are presented in circle this way and the arrows show the lifecycle of all services.

There are now three opportunities of how to navigate to services’ categories (Engineering, Manufacturing etc.):

1. From the main navigation bar by hovering mouse on “Solutions”, under the “Electronics Manufacturing Services (EMS)” (figure 24).
2. From the local navigation under “Electronics Manufacturing Services (EMS)” (figure 25).
3. From the circle model by clicking on titles inside the circle (figure 25).

6.4.2 High-Fidelity Prototyping

High-fidelity prototypes are computer-based and sometimes include user interactions which provides more realistic experience. Hi-Fi prototypes cover the user interface (UI) and overall UX in terms of navigation, interactions, and behavior. The main purpose of this type of prototypes is to use them during testing to validate it with users (Murphy 2018).

The links to visual prototypes can be also sent to stakeholders for evaluating and feedback. The high-fidelity prototypes are then shared with developers to check the design and see if the implementation is feasible.

There is a large amount of digital prototyping tools that are easy to use nowadays. For this project, the collaborative prototyping tool Figma is chosen.

Figure 26 is a prototype of “Solutions” main navigation from the home page. With the updated IA of “Solutions” page (figure 24), the main navigation preview menu looks more compact and it is easier to scan than it was before (figure 14). The background colour of preview menu will not be changed – translucent orange, but as discussed before, the font size could be changed during implementation.

Figure 26. Prototype of “Solutions” updated main nav

The updated main navigation for “Solutions” (figure 26) was approved by the supervisor and other Enics’ employees. But it will be still discussed within the company before the implementation.

The next high-fidelity prototype (figure 27) is the interactive version of the paper prototype of EMS page (figure 25). With the new local navigation, every category there has its separate page. Before, user could just scroll down to reach, for example, “Engineering” section. With the updated navigation, user needs to navigate either from local navigation or from the circle by clicking on the title of the service.

As one of the stakeholders’ requirements was an improvement of contacting, the CTA button is added below all services (figure 27), which will lead to Sales contacts, for example. Or it could be decided within the company, if they want to put the specific person’ email address.

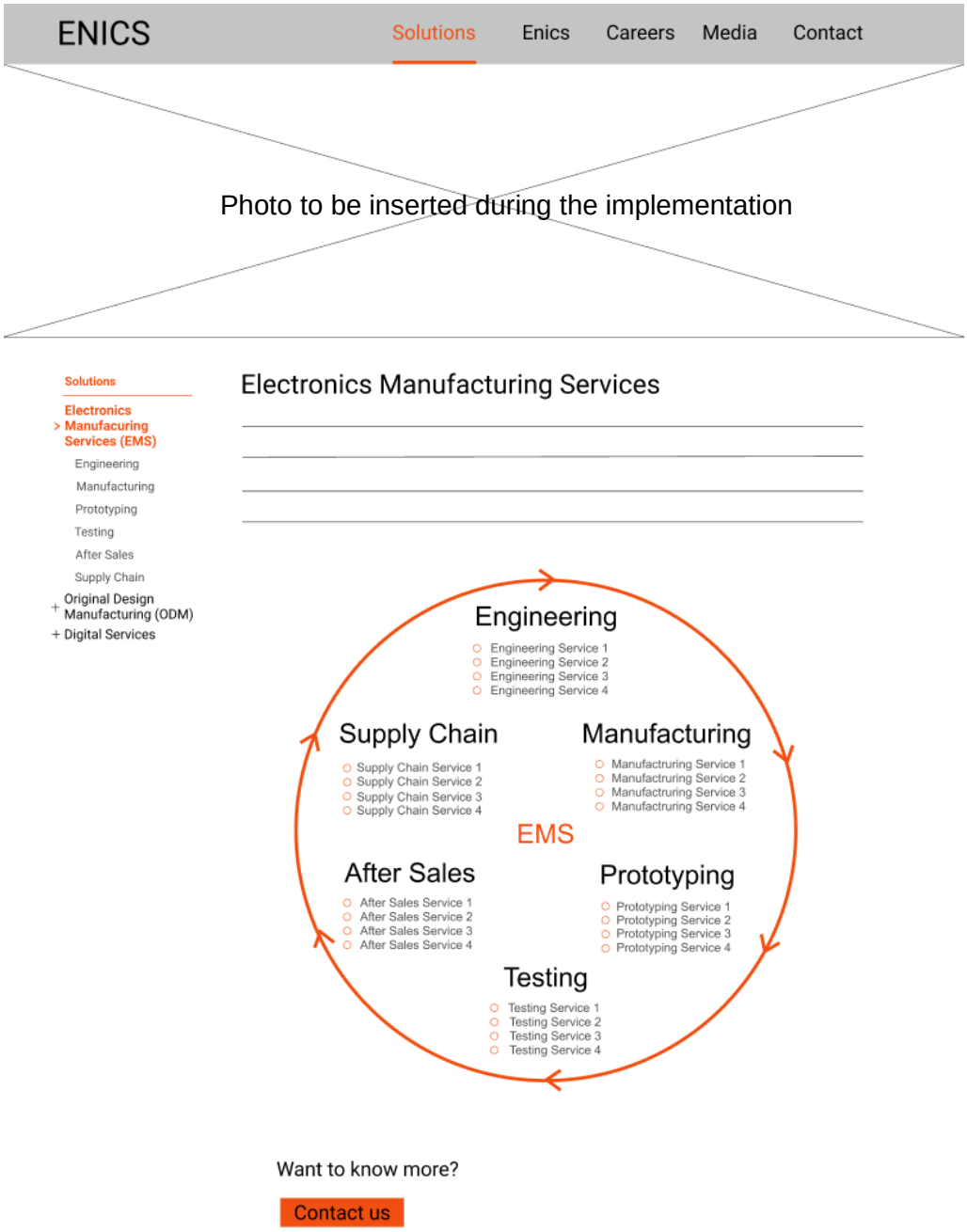

Figure 27. Prototype of “EMS” page

To check the EMS' service categories (Engineering, Manufacturing etc.) from EMS page (figure 27), user can either access them through main or local navigation, or by clicking on the titles inside the circle. The next prototype (figure 28) is the page with Engineering services within EMS category:

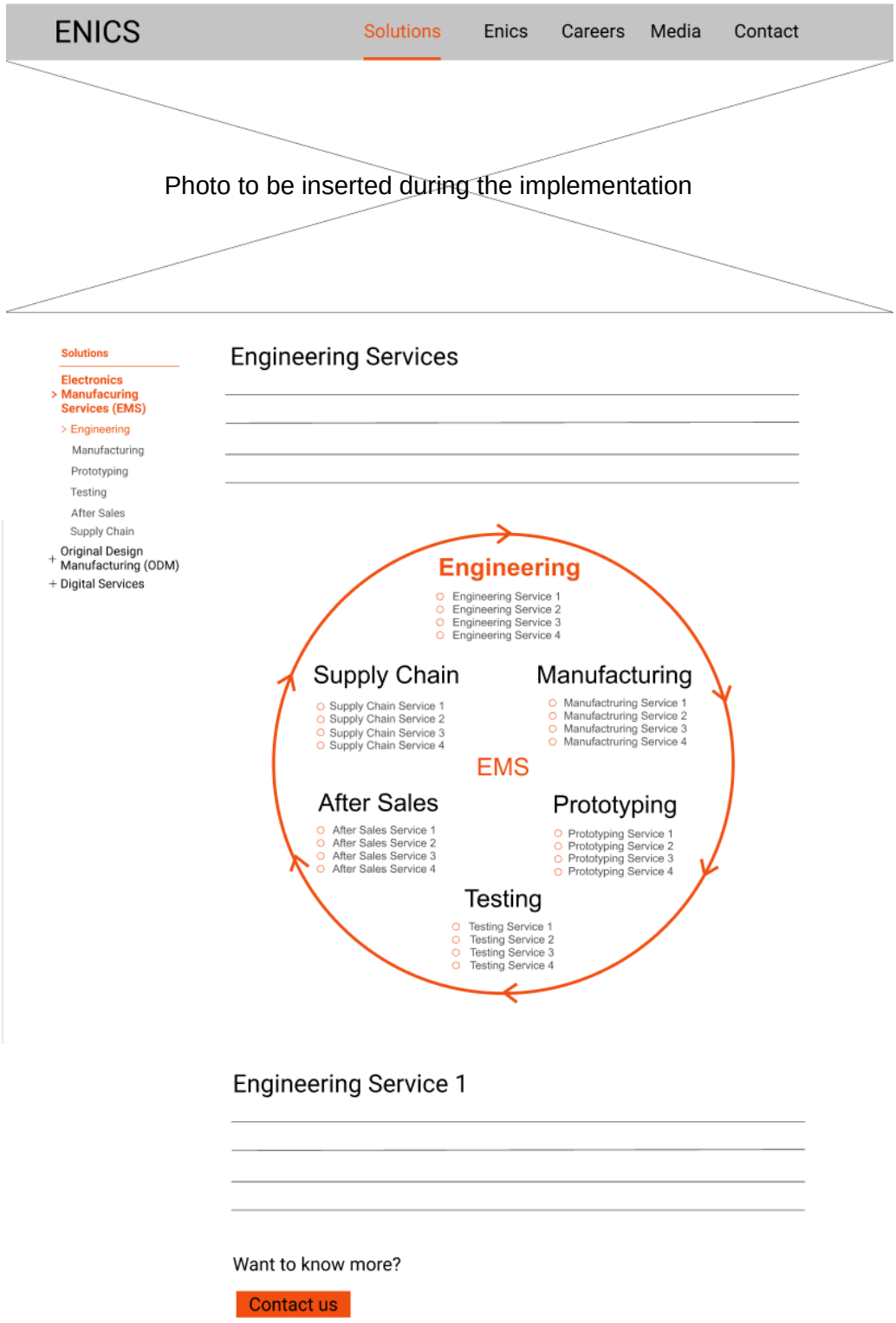

Figure 28. Prototype of "EMS" service category page

The category “Engineering” is now highlighted with orange in the local navigation and inside the circle (figure 28) to show users’ current location. The picture in the beginning of the page shall represent associated with engineering services, so user can feel that that they are on the right spot.

Below the circle, all of Enics’ engineering EMS services are presented and described. Below all of them, there is the same CTA button to the contact page (figure 28).

When I was designing the EMS circle with services and all digital prototypes, I considered Enics’ brand and its established guidelines. The primary goal of the “Solutions” page is to strengthen Enics’ brand. So, during further prototyping and implementation, all the brand guidelines will be also followed thoughtfully.

6.5 Implementation

The student received the feedback from the company, that Enics will take all the student’ advice and design solutions and will implement them further on the website. When all the prototypes and IA are ready and approved, the student will participate in the common meeting with the design company. The author of the thesis will be announcing and communicating these changes to the developers and discussing how all of that can and will be implemented.

7 Conclusion

This thesis tried to demonstrate the importance of UX for B2B companies during the website design or re-design processes. The project achieved all the research goals, which were set in the beginning. Considering the limited time for the project and the resources, the chosen iterative UX design approach has proved to be very flexible in the matter of receiving the constant feedback of stakeholders and making refinements in prototypes.

A lot of valuable insights about the current website design, and a lot of ideas on how to attain Enics' business requirements and needs were revealed in this thesis. The revised Information Architecture, navigation and layout of "Solutions" page strive to support Enics' future changes. Beside the created High-Fidelity prototypes, the Web Performance recommendations and other pages recommendations regarding UX, usability and UI were presented to the company.

The student had fulfilled the Design Stage in the close cooperation with Enics' stakeholders from different departments, which brought a lot of ideas through brainstorming and raised many important questions about the website layout, content, IA and navigation. In addition to this, the prototypes should be tested by potential users before the implementation to validate the design solutions.

Ms. Elina Mielityinen, Brand and Communication Specialist at Enics, who also acted as a project supervisor, provided the feedback that the student's outcome of the research was very detailed and practical. It was also confirmed that the student's recommendations and design solutions will be implemented at Enics' website. The next step is creating the prototypes of "Solutions" page for the mobile version. After that, the student will act as the facilitator in the meeting with the design company to communicate all the changes and new design solutions to developers for the further implementation.

The author of the thesis gained the valuable knowledge and experience in the real-life project for the company. All the work, research and thesis writing were taken very responsibly by the writer. All the feedback from the company and the thesis advisor were taken into consideration. It is certain that the acquired skills will become essential in the author's UX career.

References

Babich N. 2017. UX Process: What It Is, What It Looks Like and Why It's Important. URL: https://theblog.adobe.com/ux-process-what-it-is-what-it-looks-like-and-why-its-important/. Accessed: 6 April 2020.

Baldwin S. 2010. Doing a content audit or inventory. URL: https://web.archive.org/web/20100327194524/http://nform.ca/blog/2010/01/doing-a-content-audit-or-inven. Accessed: 8 April 2020.

Budiu R. 2017. You Are Not the User: The False-Consensus Effect. URL: https://www.nngroup.com/articles/false-consensus/. Accessed: 11 March 2020.

Cardello J. 2014. The Difference Between Information Architecture (IA) and Navigation. URL: https://www.nngroup.com/articles/ia-vs-navigation/. Accessed: 27 March 2020.

Cremin R. 2015. Understanding web page weight. URL: https://mobiforge.com/research-analysis/understanding-web-page-weight. Accessed: 17 April 2020.

Douglas S. Usability Geek. How To Do A UX Competitor Analysis: A Step By Step Guide. URL: https://usabilitygeek.com/how-to-do-ux-competitor-analysis/. Accessed: 9 February 2020.

Everts T. 2017. The average web page is 3MB. How much should we care? URL: https://speedcurve.com/blog/web-performance-page-bloat/. Accessed: 16 April 2020.

Freeman. Why Brand Experience Is the Future of Marketing — Part One. URL: https://www.freeman.com/insights/why-brand-experience-is-the-future-of-marketing-part-one. Accessed: 8 March 2020.

Garett J. J. 2002. The Elements of User Experience: User-centered Design for the Web GTmetrix. 2017. WordPress Optimization Guide. URL: https://gtmetrix.com/wordpress-optimization-guide.html. Accessed: 15 April 2020.

Hay L. 2017. Researching UX: Analytics.

Hotjar Team. 2019. Your introduction to Hotjar: what it is, what it can do for you, and how it works. URL: https://www.hotjar.com/blog/what-is-hotjar/. Accessed: 17 March 2020.

Hotjar Team. 2020. The complete guide to website heat maps. URL: https://www.hotjar.com/heatmaps/. Accessed: 17 March 2020.

Huff Industrial Marketing, KoMarketing, & BuyerZone. 2015. 2015 B2B Web Usability Report. URL: https://komarketing.com/files/b2b-web-usability-report-2015.pdf. Accessed: 2 April 2020.

International Organization for Standardization. 2010. Ergonomics of human-system interaction. URL: https://www.iso.org/obp/ui/#iso:std:iso:9241:-210:ed1:v1:en. Accessed 13 February 2020.

Isherwood M. 2019. Heatmaps. URL: https://uxdesigntemplates.com/evidence/method/mouse-heatmaps#learn. Accessed: 4 February 2020.

Jones C. 2009. Content Analysis: A Practical Approach. URL: https://www.uxmatters.com/mt/archives/2009/08/content-analysis-a-practical-approach.php. Accessed: 8 April 2020.

Kalbach J. 2007. Designing Web Navigation.

Kaley A. 2019. 'Contact Us' Page Guidelines. URL: https://www.nngroup.com/articles/contact-us-pages/. Accessed: 27 March 2020.

Komninos A. 2019. Why You Should Analyze Your Competition to Design Better Solutions and How to Do It. URL: https://www.interaction-design.org/literature/article/why-you-should-analyze-your-competition-to-design-better-solutions-and-how-to-do-it. Accessed: 24 March 2020.

Lamprecht E. 2019. The Difference Between UX And UI Design - A Layman's Guide. URL: https://careerfoundry.com/en/blog/ux-design/the-difference-between-ux-and-ui-design-a-laymans-guide/. Accessed: 1 April 2020.

Lang J., Howell E. 2017. Researching UX: User Research 1st Edition.

Laubheimer P. 2016. B2B vs. B2C Websites: Key UX Differences. URL: https://www.nngroup.com/articles/b2b-vs-b2c/. Accessed: 27 March 2020.

Loranger H. 2017. Homepage Links Remain a Necessity. URL: https://www.nngroup.com/articles/homepage-links/. Accessed: 18 April 2020.

Marcotte E. 2010. Responsive Web Design. URL: https://alistapart.com/article/responsive-web-design/. Accessed: 12 April 2020.

Mayes J. 2015. What is meant by the terms OEM, EMS, CEM, ODM and why should you know? URL: https://www.jjsmanufacturing.com/blog/what-is-meant-by-the-terms-oem-ems-cem-odm-and-why-should-you-know. Accessed: 7 May 2020.

Mifsud J. Usability Geek. URL: https://usabilitygeek.com/the-difference-between-usability-and-user-experience/. Accessed: 3 April 2020.

Morey R. 2020. How to Reduce HTTP Requests to Speed Up Your WordPress Site. URL: https://wp-rocket.me/blog/reduce-http-requests-speed-wordpress-site/. Accessed: 17 April 2020.

Mortensen D. 2019. User Research: What It Is and Why You Should Do It. URL: https://www.interaction-design.org/literature/article/user-research-what-it-is-and-why-you-should-do-it. Accessed: 6 March 2020.

Murphy C. 2018. A Comprehensive Guide To Wireframing And Prototyping, URL: https://www.smashingmagazine.com/2018/03/guide-wireframing-prototyping/. Accessed: 30 April 2020.

Nielsen J. 1994. 10 Usability Heuristics for User Interface Design. URL: https://www.nngroup.com/articles/ten-usability-heuristics/. Accessed: 5 March 2020.

Nielsen J. 2002. 113 Design Guidelines for Homepage Usability. URL: https://www.nngroup.com/articles/113-design-guidelines-homepage-usability/. Accessed: 27 March 2020.

Nielsen J. 2009. Top 10 Information Architecture (IA) Mistakes. URL: https://www.nngroup.com/articles/top-10-ia-mistakes/. Accessed: 27 March 2020.

Nielsen J. 2012. Usability 101: Introduction to Usability. URL: https://www.nngroup.com/articles/usability-101-introduction-to-usability/. Accessed: 13 February 2020

Norman D. & Nielsen J. 2006. The Definition of User Experience (UX). URL: https://www.nngroup.com/articles/definition-user-experience/. Accessed: 13 February 2020.

Ritter M. & Winterbottom C. 2017. UX for the Web: Build websites for user experience and usability.

Rosala M. 2020. The Discovery Phase in UX Projects. URL: https://www.nngroup.com/articles/discovery-phase/. Accessed: 6 April 2020.

Schade A. 2014. Responsive Web Design (RWD) and User Experience. URL: https://www.nngroup.com/articles/responsive-web-design-definition/. Accessed: 9 April 2020.

Soegaard M. 2019. Adaptive vs. Responsive Design. URL: https://www.interaction-design.org/literature/article/adaptive-vs-responsive-design. Accessed: 9 April 2020.

Spool J. 1996. Branding and Usability. URL: https://articles.uie.com/branding_usability/. Accessed: 7 March 2020.

State of the Web. 2020. URL: https://httparchive.org/reports/state-of-the-web. Accessed: 16 April 2020.

Statista. 2020. Percentage of mobile device website traffic worldwide from 1st quarter 2015 to 4th quarter 2019. URL: https://www.statista.com/statistics/277125/share-of-website-traffic-coming-from-mobile-devices/. Accessed: 13 April 2020.

Stephan F. 2015. What Is Digital Service Delivery? URL: https://www.kaizenko.com/what-is-digital-service-delivery/. Accessed: 10 May 2020.

Tullis T., Albert W. 2013. Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics, 2nd Edition.

Unger R., Chandler C. 2009. A Project Guide to UX Design: For user experience designers in the field or in the making.

Usability Gov. 2003. Research-Based Web Design & Usability Guidelines. URL: https://www.usability.gov/sites/default/files/documents/guidelines_book.pdf. Accessed: 1 April 2020.

Usability Gov. Content Inventory. URL: https://www.usability.gov/how-to-and-tools/methods/content-inventory.html. Accessed: 8 April 2020.

Usability Gov. Prototyping. https://www.usability.gov/how-to-and-tools/methods/prototyping.html. Accessed: 11 April 2020.

Usability Gov. User Research Basics. URL: https://www.usability.gov/what-and-why/user-research.html. Accessed: 13 February 2020.

UX Planet. 2019. How page speed affects Web User Experience. URL: https://uxplanet.org/how-page-speed-affects-web-user-experience-83b6d6b1d7d7. Accessed: 9 April 2020.

Veen J. 2002. Doing a Content Inventory (Or, A Mind-Numbingly Detailed Odyssey Through Your Web Site). URL: https://web.archive.org/web/20100328015705/http://www.adaptivepath.com/ideas/essays/archives/000040.php. Accessed: 8 April 2020.

Venture Outsource. What is difference between OEM, CM, CEM, ECM, EMS, ODM, JDM, design house contract electronic terms? URL: https://www.ventureoutsource.com/contract-manufacturing/what-difference-between-oem-cm-cem-ecm-ems-odm-jdm-design-house-contract-electronic-terms/. Accessed: 7 May 2020.

Whitenton K. 2015. Menu Design: Checklist of 15 UX Guidelines to Help Users. URL: https://www.nngroup.com/articles/menu-design/. Accessed: 25 March 2020.

Appendices

Appendix 1. Content inventory of “Solutions” page

Page [1]	Sub-page [2]	Detail topic [3]	Documents: PDFs, videos [4]	Links & buttons [5]	Comments [6]
EMS	Lifecycle Services			In the end of the section - "Contact us!" button to Sales Contacts page	No indication, that "Enics Life" is a link
ODM Products	ODM Power Products	Original Design Manufacturing			
		Power Distribution Units	PDU Power Breaker 48-16 Datasheet & PDU Power Breaker 48-16 Datasheet		
		Phone Powering Unit	EPPU Datasheet		
		Power Supplies	i-PPSuM Datasheet & 4PSuM Datasheet		
		Surge Protection	Nactus Surge Protector Datasheet		
		Digital Power Control	Caiman Datasheet		
	Test Products	Functional Testers	Enics Adapt FT3000 Datasheet		
		Safety Testers	Enics Adapt ST2000 Datasheet		
		Burn-In Testing	Enics Adapt RF 19" Datasheet, Enics Adapt DualChamber		
		End Of Line testing	Chameleon 64™ Datasheet + video & Chameleon 111™ Datasheet + video & Chameleon 157™ Datasheet + video & Chameleon 257™ Datasheet +		
		Test Instruments	i-PPSuM Datasheet & 4PSuM Datasheet & EAA 4-2-1 Datasheet		
		Our Partners	Enics Raahe & Noffz Technologies Partnership	External link to www.noffz.com	
Segments				In the end of the section - "Contact us!" button to Sales Contacts page	
Supply Chain	Supply Chain Management				
	Supply Chain Fullfilment				
	Global Sourcing				
	Supplier Quality Management				
Insights	Undisturbed business	Supply Chain reliability			Section with articles. "Insights" is not shown as a link on the website. Why artciles are in here? Every article (except about Enics Life) has marketing@enics.com email address, is it still relevant?
		Successful system integration ramp-up with a			
		Reduce your risks in China with the right partner – Trade Compliance			
		Maximizing profits during and after Business transfers			
		How to mitigate the risk of counterfeits in your supply chain?			
		Why is there an opportunity in the market for		External links to www.erai.com & www.idofea.org	
	Lean	Want to be LEAN?			
	Electronics Engineering	Trouble in Paradise?			
		How to avoid investments in updating product structures?			
		Manufacturing friendly products save costs			
		Intelligent selection of components during design			
	Conflict minerals	Conflict minerals – Does it concern my company?		External link	
	Service	Enics Life		Broken link	
		Longterm Obligations			
		Industrial Electronics Repair			
		How to avoid investments in updating product structures?		Error 404 link	
		Electronic Maintenance	2 PDFs "White papers" (only with downloading): Obsolescence:		
Challenges	Design for Manufacturing			In the end of each section - "Contact us!" button to Sales Contacts page	
	Achieve Your Targets				
	Perfect Partner				
	Total Cost of Ownership				
	Competitive Advantage				

[1] Main categories of “Solutions” page.
[2] Links of sub-pages of main categories.
[3] Links of sub-pages included in navigation on “Solutions” page.
[4] Datasheets and videos on pages.
[5] The external or internal links, and buttons.
[6] Comments on important issues.