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Interaction design in an advertising agency

Analysis and improvement

Master of Science Thesis in Interaction design and Technologies

JONATAN MATO LÓPEZ

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SUMMARY

The advertising industry has evolved considerably during the history, going from simple drawings on a rock to the use of digital channels we have nowadays. With this evolution, its professionals have been forced to adapt to new methodologies, strategies and ways of working, in order to take full advantage of the evolving technologies and systems. However, the adaptation is not always as easy, fast and smooth as one would want it to be, since a great amount of new concepts and ideas must be understood before one can fully apply a new approach to an activity that has been performed for some time.

Nowadays, with digital channels such as websites or apps, a gigantic change has occurred: from consuming advertisement to use it. Therefore, a new approach to its design is necessary in order to increase the success of the results, the approach Interaction design offers. Interaction design provides a set of methodologies and ideas focused on the design of the use, the experience, with a closer relationship and attention to the future users. However, despite the big synergy this field has with the new paradigm digital interactive content design offers, many have failed to start this relationship, due to either a lack of knowledge of the field itself, or about how to apply it successfully.

With this master thesis I intend to provide a clear and detailed set of methods, which make up an improved design process for digital interactive content within the advertising industry. In order to do this, I studied how these companies work and which are their specific needs.

The results from this thesis are useful for any advertising company, but especially for those having troubles adapting to the new paradigm digital channels introduce to their activities. However, and secondarily, other professionals such as smaller companies or freelance designers can find use to the resulting design process, since their way of working would benefit from the knowledge the leading advertising agencies have gathered through their experiences during the years.

Keywords: interaction design, advertising, design process, design methods

TABLE OF CONTENTS

1. INTRODUCTION	7
1.1 Background.....	7
1.2 Purpose.....	8
1.3 About Forsman & Bodenfors.....	10
1.3.1 Interaction design and Forsman & Bodenfors.....	11
1.3.2 Forsman & Bodenfors projects	11
1.4 Research question and aim	13
 2. METHODOLOGY	 14
2.1 Project planning.....	14
2.2 Observation and experimentation.....	15
2.3 Literature and market research	17
2.3 Design phase	18
 3. PROCESS	 19
3.1 Design processes	19
3.1.1 Effect management.....	19
3.1.2 Web engineering.....	21
3.1.3 Interface design process.....	22
3.1.4 Ecological Interface Design.....	24
3.1.5 User-based design process	24
3.1.6 UX centered design process	26
3.2 Design methods	27
3.2.1 Ideation	27
3.2.2 Web quality.....	28
3.2.3 Client-designer communication based on Social Software	29
3.2.4 WIDP: Web Interaction Design Patterns	30
3.3 Design models	30
3.3.1 Four-space model	30
3.3.2 Multi-modal design	31
 4. PRACTICAL CASE AT F&B	 33
4.1 The Process.....	33
4.2 Feasibility study	35
4.2.1 Brand analysis	35

4.2.2 Statistics	36
4.2.3 Market definition	37
4.2.4 Market statistics' analysis	37
4.2.5 Competitors' analysis	38
4.2.6 Current website's aim	42
4.2.7 Current website's analysis.....	43
4.2.8 Current website statistics' analysis.....	43
4.3 Strategy	49
4.3.1 Goals.....	49
4.3.2 Aim.....	49
4.3.3 Purpose	50
4.4 Target groups	52
4.4.1 Students	52
4.4.2 Teachers	53
4.4.3 Parents.....	54
4.4.4 People with accessibility needs.....	54
4.4.5 Principal.....	55
4.4.6 Opinion-makers	55
4.4.7 Decision-makers	56
4.4.8 Elder	56
4.4.9 Adults without children	57
4.5 Measurement points	57
4.6 Solution	58
 5. REFLECTIONS ON PROCESSES	 60
5.1 Effect management	60
5.2 Web engineering.....	60
5.3 Interface design process	61
5.4 Ecological Interface Design	62
5.5 User-based design process.....	62
5.6 UX centered design process	63
5.7 Ideation	63
5.8 Web quality.....	64
5.9 Client-designer communication based on Social Software.....	64
5.10 WIDP: Web Interaction Design Patterns	65
5.11 Four-space model.....	66
5.12 Multi-modal design	66

6. SUGGESTED IXD PROCESS WITHIN AN ADVERTISING AGENCY	67
6.1 General	67
6.2 Information gathering	69
6.3 Strategy definition	70
6.4 Solution development	71
6.5 Final steps: Implementation and launch	72
7. DISCUSSION	74
7.1 Methodology discussion	74
7.2 Result discussion	74
7.3 Generalizability	75
7.4 Future work	75
8. CONCLUSIONS	77
9. REFERENCE LIST	79
APPENDIX I: Statistics for www.universeum.se	82
APPENDIX II: Solution from www.universeum.se	89

1. INTRODUCTION

Advertising is a key part of most commercial relationships happening all over the planet, and it has become a requirement for any new product released. With the techniques it provides agencies try to encourage consumers to perform an action such as using or buying a product or keep with a particular activity or routine. Therefore, the advertising industry has been obliged to adapt to society's changes, both technology-related and personality-related, in order to be able to produce the desired effect on consumers.

The most recent of these changes is the digitalization of life, adding digital devices to most of the facets of a user's life, which has become an extremely important element within society. Advertising agencies are aware of this situation and have started to use these channels for their projects, by means of websites, apps and/or digital campaigns among others. However, these changes require a different approach and methodologies, which are not part of the industry's traditional way of working. This situation generates, in some cases, problems with unsuccessful digital projects due to an inability to adapt.

These problems could greatly benefit from the contribution of Interaction design, a fact already acknowledged by many agents within the field. However, the relationship between the two worlds is quite new and many agencies have failed to start it successfully. This thesis will address this situation offering a way of applying the knowledge coming from Interaction design into the advertising industry's way of working.

1.1 Background

The most common channel for advertising throughout history has been mouth-to-ear. In most civilizations sellers used their voices to attract customers and town criers were hired for any kind of announcements. Nowadays, although it has evolved, it is still in use in channels such as television and radio, and the core idea remains the same.

On the other hand, advertising techniques using visual channels weren't so popular until the 18th century, since most of the population was illiterate. The first remains of a written campaign date from 4000 b.C. with the rock painting techniques used in India (Gregory, C A, 2002), which used this kind of surfaces as canvas for advertising their

products. Babylonian clay tablets with similar content have also been found dating from 3000 b.C., and numerous examples of written commercial and political advertisement belonging to the Roman empire and Ancient Greece have also been collected. Still, these systems weren't really popular and in the Middle Ages, with the increase of population and illiteracy, they almost disappeared (Rulli, M., 1999).

By the end of the 17th century the number of people able to read had increased considerably and business signs began to spread within cities around the world. Street advertising stood as the only available channel until the evolution of printing techniques, which introduced a great number of new possibilities. The most important of those possibilities was the increasing number of newspaper printed. Newspapers began to add commercial messages to their pages and started charging for it, becoming their biggest source of income (Rulli, M., 1999).

The next important change came with radio and, more importantly, with television, since they introduced new medias with different characteristics. This obliged the industry to adapt and develop new strategies using moving images and other resources. In addition, it allowed agencies to reach more people thanks to the broadcasting character of these systems.

Finally, the end of the 20th century and the beginning 21th of the century marked the start of the era of Internet and other digital channels, which completely changed the way advertising worked. This evolution demanded completely new approaches, forcing a new change in mentality and way of working. These systems introduced an interactivity never seen before and, therefore, made the communication bidirectional, adding a huge challenge to the design of advertising campaigns for these channels (Norman, D., 1999).

1.2 Purpose

The history of advertising makes it clear that advertising agencies have been forced to adapt to the new requirements of the market, adding most recently the design of digital products to their areas of work. This new field introduces an interactivity never seen before and, hence, they generate a bidirectional communication. Such a challenge

demands an approach different to the one currently used, the one taken by interaction designers.

This new perspective contributes to the product success by analyzing the goals and needs of companies and users, since a product has no value if it is not used or doesn't perform the task expected by the company selling it. It also focuses on the experience the product will create and how users communicate with it. In brief, it takes a position closer to the users or consumers, trying to understand them in order to learn how to generate the desired effect.

However, an important problem arises from this relationship. Although during the latest years the introduction of interaction design into the traditional industry has improved, it is still far from optimal. In some cases the difficulties come from a lack of understanding about why interaction design is needed, but in some other cases they come from the lack of knowledge related to way of applying this new discipline into their projects (Norman, D., 1999).

This master thesis wants to go in depth into the relationship between the design of digital media content within the advertising industry and the interaction design field, assessing how beneficial it can be for both parts and which is an optimal way to carry it out successfully.

Therefore, I will analyze the design process used by an advertising agency and its success from an interaction design point of view. This task will assess the success of its results and methodology, as well as point out in which of the steps it could benefit from the interaction design approach. Hence resulting into the possibility of creating a set of improvements to the way these agencies currently work.

Consequently, the advertising industry could greatly benefit from the result of this master thesis, since it is either a confirmation of their successful design methodology, or a set of proposed improvements which would increase their success rate. In addition, those advertising agencies not applying interaction design to their projects will have a clear, detailed and easy-to-apply way of starting this beneficial relationship.

However, not only big advertising agencies can take advantage from the results of this master thesis, since smaller companies and freelance designers can find in it a way of applying a process, based on the expertise of the market big agents, and methods of proven success into their way of working, adding value to their results.

In order to understand the industry and to produce the desired results, I participated on a real project together with Forsman & Bodenfors, a leading Swedish advertising agency. This approach gave me all the insights about the design process used and helped me to conduct a richer analysis with a better perspective about its benefits and flaws.

1.3 About Forsman & Bodenfors

Forsman & Bodenfors is one of the biggest advertising agencies in Sweden, and a big player in the industry at a global scale. According to Big Won, who releases important annual rankings regarding advertising campaigns and agencies, Forsman & Bodenfors was in 2012 listed as the 10th advertising agency in the world across all media, and the 2nd as a digital agency. Moreover, in 2013 the Art Directors Club named F&B “Interaction Agency of the year”.

The company was founded in 1986 by Staffan Forsman, Sven-Olof Bodenfors, Mikko Timonen and Jonas Enghagein in Gothenburg (Sweden), where they still have their main office. After two years the agency got their first big client when Göteborg Posten signed with them, which is a very important relationship still today. It was only the beginning and many others followed after that point, until, in 1990, Forsman & Bodenfors got their first Golden Egg (Guldägg), the most important prize for advertising agencies in Sweden.

Nowadays, F&B has won many other prizes, such as Cannes, and has expanded and consolidated their position in the market, with clients as important as Ikea, Volvo or Systembolaget. Moreover, this expansion has also been geographical and, since 2001, Forsman & Bodenfors has a secondary office in Stockholm, which is rapidly growing.

1.3.1 Interaction design at Forsman & Bodenfors

As a big agency with a long experience in the field, F&B is aware of the needs a digital project demands. Because of that reason, they have had an interaction designer assigned to every project of this type for many years, resulting into a design process inspired by the way of working of interaction companies, but with some tweaks in order to adapt it to the advertising industry.

This approach has resulted in a great balance between creativity and design based on users driving forces, which has been really successful so far. Because of that reason, they were the ones chosen to conduct this research.

1.3.2 Forsman & Bodenfors projects

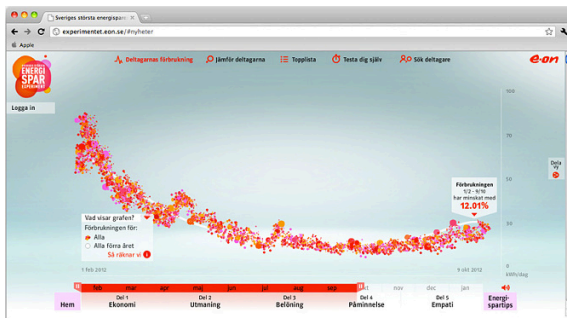
The following campaigns are some of the latest digital projects carried out by the company, and represent a small part of their long portfolio. Although most of their work is not based on digital channels, their list of releases of this kind is quite extensive. All their work can be found on their website: www.fb.se.



VÄSTTRAFIK/TRAM SIGHTSEEING APP

In this project, F&B designed an app for the local transportation company who wanted to encourage the use of public transportation among tourists as a touristic way of exploring the city.

Link: <http://www.fb.se/work/vasttrafik/the-tram-sightseeing-app>

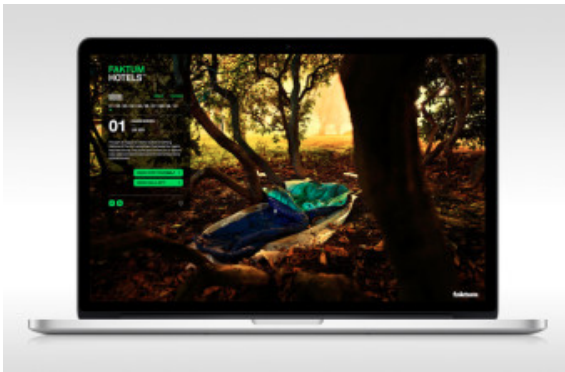


E.ON

In order to try to encourage people to save energy F&B created for the energy company E.ON an experiment based on an app and a website that allowed users to see their consumption in a visual and clear

way.

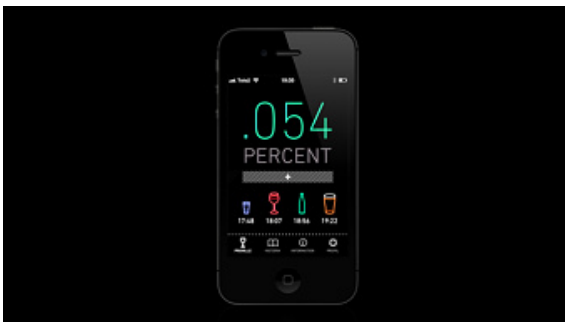
Link: <http://www.fb.se/work/eon/swedens-largest-energy-experiment>



FAKTUM/FAKTUM HOTELS

Faktum is a magazine working with homeless people and, F&B, in order to collect money for this collective, created a website where anyone can book any of the most common places for homeless people to sleep in. All the money collected this way goes to programs helping these people to improve their situation.

Link: <http://www.fb.se/work/faktum/faktum-hotels>



SYSTEMBOLAGET/PROMILLEKOLL

With this project F&B needed to find a way to encourage users to reduce their alcohol consumption. In order to do that, they created a phone app that helps users control their alcohol level and determine where the limit is.

Link:

<http://www.fb.se/work/systembolaget/promillekoll>

Although all these examples are campaign sites and apps created for a specific event or period, F&B also creates corporate websites such as the Sjörräddningssällskapet, Göteborg Opera, Västrafrak and the Nationalencyklopedin websites.

1.4 Research question and aim

Taking into account the purpose of this thesis, reaching a specific research question that structures the entire process is not a difficult task. Therefore, the main question I aimed to answer with this project is the following:

How can interaction design and its methods be successfully applied to the design process for digital products within an advertising agency?

Consequently, this master thesis aims to provide a set of instructions, methods and advices in order to successfully apply the interaction design approach to the design of digital products within the advertising agency activity. This result should take into account the singularities of this industry as well as which are the specific help opportunities this kind of methodologies provide.

2. METHODOLOGY

This master thesis explores the possibilities of the relationship between interaction design and the advertising industry and which is the best possible way of carrying it out. Therefore, the result is a set of specifications and instructions for a proposed design process within an advertising agency.

In order to generate this detailed result, information needs to be gathered to understand which is the current situation and which are the methodologies used. Studying the benefits and flaws of the processes followed by advertising agencies, as well as those methodologies available from an interaction design point of view, is vital if one intends to find a good combination of both worlds.

The information related to interaction design and its methodologies is widely available on a great number of publications, and it can be gathered by means of a thorough study. However, it is not the same situation with design processes advertising agencies use, since they are usually documented only on internal documents that are rarely shared. For that reason, one needs to have an inner look into the industry in order to understand how it works.

2.1 Project planning

For this project I decided to follow a Research/Design/Validation framework, which helps planning the work by providing a well-structured process (Allen, J. and Chudley, J., 2013).

This framework is divided into 3 phases:

- **Research phase:** In this phase the designer should get the background necessary to understand the task. In the case of this project it consisted in gathering the information from the advertising industries insights and information about how interaction design could potentially help an agency of this kind.
- **Design phase:** When the actual design happens. Applied to this master thesis it consisted in the definition of the proposed design process that gave answer to the research question.

- **Validations phase:** Finally, the designer needs to test the results obtained in order to guarantee their validity. In this master thesis the validation of the resulting design process is left as future work due to a combination of time constraints and the difficulty of contacting an advertising agency willing to apply an experimental process into one of their projects.

Due to the dual characteristic of this master thesis, which combines practical information about an industry and theoretical information about interaction design, the research phase was divided into two steps.

The first of the steps was a practical case within an advertising company, which was intended to provide the industry's insights. This step was based on an observation and experimentation process through the participation as interaction designer in a real advertising project consisting on the redesign of one of the agency's clients website.

The second of the steps was a literature research based on the information resulting from the observation and experimentation process performed within the chosen advertising agency. This research was intended to provide a set of methodologies that could be successfully applied to the industry, taking into account the insights previously revealed.

From a time planning point of view, the practical case was intended to last for 3 months, based on the estimations done by the advertising agency according to their expertise on this type of projects. The remaining 2 months were planned to be dedicated to the literature research and the design phase.

2.2 Observation and experimentation step

First-hand information is generally regarded to have a great value, since the chances that it has not been modified along the way by opinions is greatly reduced. Moreover, private information about companies and their methodologies is not normally made public, and it is only available through internal documents and the expertise of their workers.

Because of those reasons, an important step of this master thesis was to observe in first person and experiment the methodologies used by an advertising agency. In order to do that I participated in a real advertising digital project, being involved as interaction designer in all the parts previous to the implementation of the solution.

This process can reveal many insights from the way of working of these companies, data that could be missed if one is to take an external point of view. In addition, in this way, one can experience the benefits and drawback or problems that appear along the way, having a better understanding of what a design process should be ready to handle and what it is currently lacking of.

For this matter the company chosen was Forsman & Bodenfors, a leading advertising agency with seat in Gothenburg. F&B has a long career on their back, and a long history of successful results. This is supported by the great amount of prizes they have received during the years, as well as their condition of “Interaction agency of the year”, given by the famous standing made by the Art Directors Club.

Furthermore, F&B has been successfully applying interaction design in their digital projects, fact that makes it really interesting to study the way they have created this relationship.

During this step of the process the company chose a digital project for a client who was keen to accept a master student in the project team, in which I worked as lead interaction designer with the careful supervision of a senior interaction designer from F&B.

Finally, my work within the project finished after the design was complete, not being involved in the implementation and launch parts of the process. This limitation is caused by the long duration the whole process can reach, overextending the total duration of the master thesis project. In addition, the most important information from an interaction design point of view is contained in the firsts steps of the process, although the evaluation during the launch would be a great addition.

2.3 Literature research step

Although the observation and experimentation results are complete and detailed, and hence give an overall idea of the design process, they are not enough. In order to decide which methodologies are best for the studied environment, one needs to have a list of different options coming from a wide range of sources which should be afterwards compared and evaluated.

Through the reading of papers and other publications from academic or professional sources, one can collect a set of methodologies proposed and described with detail. Exploring these sources offers a variety of approaches that cannot be obtained from a single industry such as the advertising one. This variety opens up the design process to new possibilities outside their common area of work. In addition, these documents usually include a set of scenarios where one can see benefits and drawbacks from each of them.

The collected methodologies described how to apply interaction design to a design process with practical tools. These tools, combined with the insights of the advertising industry produce a better way of mixing the two worlds. In order to do that, I needed to analyze the strengths and weaknesses of those methodologies and the requirements of the industry in order to make the best choices possible.

Although it is highly recommended to involve an information professional in order to perform a successful literature research (Foote, M.A., 2009), it is rarely possible within the context of a master thesis, where the resources are so limited. However, there was a set of recommendations that were carefully followed in order to increase as much as possible the quality of the search result.

Firstly, it is extremely important to have a clear objective with a well-defined question for the search, in order to produce results potentially useful for our work. Unclear queries produce a high amount of undesired results that make the filtering more difficult than necessary. It is also vital to choose the right sources for the literature research, since it changes the type of results to be produced (Foote, M.A., 2009).

Moreover, in order to filter the results in a proper way, the same authors recommend to read the totality of those documents that may match the desired outcome and summarize them in a structured way. This makes it easier to make a comparison between them.

The selection of which methodologies to analyze and which parameters to use for the research process were based on the insights coming from the observation and experimentation step. Knowing the requirements and problems an advertising project poses is crucial in order to find those methodologies with characteristics that could potentially improve the processes advertising industry is currently applying.

2.4 Design phase

Once all the information is gathered and all the possible alternatives listed, they need to be analyzed and processed so the information available about each of them is enough and understandable. In addition, they need to be evaluated in terms of pros and cons, especially in relation to the characteristics of the advertising industry.

In order to do that I compared the different methodologies in the most objective way possible, assessing the success of its results and how they adapt to the different situations that can come up during an advertising project. This evaluation process determined which part of each one of the methodologies studied were best suited for being part of the improved design process for digital interactive content within the advertising industry.

Furthermore, it was important to bear in mind the constraints and requirements that specific industry gathered during the "Observation and experimentation" step, since they would determine the validity of each of the methodologies in the desired environment.

3. PROCESS

One of the steps of the process was to carry out a thorough literature study from which I selected a set of processes, methods and models with some characteristics that could potentially be beneficial for the projects an advertising agency works with. All the literature researched is related to interaction design in some way, with approaches mainly related to participatory design. In this chapter I describe the different methodologies collected from a practical and design point of view.

The observation and experimentation step of the master thesis revealed that the advertising agency had some problems managing their great creativity. Because of that reason I looked into methodologies that could help channeling this creativity towards the direction pointed by the feasibility study. In order to do that the results from the study needed to be strengthened and the transition from the first step and the solution one needed a better structure.

Moreover, it was also clear that there was an important lack of evaluation tools and user involvement, since the solutions proposed were never tested. Therefore, I also looked into methodologies that provided ways of introducing evaluation steps into the process.

3.1 Design processes

3.1.1 Effect management

Effect management is a design process for IT products created by the Swedish usability company inUse AB, and it is applied by many other design studios due to its successful results. The process focuses on the quality of the solution, having as a base the idea that this result is not successful if it is not used and if it doesn't play the role the company intended for it (Ottersten, I. and Balic, M., 2007).

The philosophy behind this design process wants to be the cooler of designers' crazy creativity. It is quite common for designers to choose their own favorite designs without asking themselves if they give a solution to the questions the site's owners present. Effect management solves this by clearly separating the analysis phase from the solution phase and giving a logic-based reasoning for any decision made.

The analysis phase focuses on understanding the purpose of the site and how it can be accomplished. In addition, it explores the product's target groups and their intentions toward the use of it.

The first step of the analysis is exploring what the company issuing the product expects from it. Knowing which is the goal of the project is key if one is to determine whether the result is a successful solution or not. These are usually referred as business goals and define the products purpose.

Afterwards, the target groups for the product are identified and prioritized according to how much influence they have into the accomplishment of the business goals. In addition, the driving forces of the different groups are identified, defining their needs and goals when using the product.

According to this information features and functionalities are ideated, focusing on those that work towards fulfilling the purpose and discarding those that don't. This process is carried out without thinking about a specific solution, avoiding interference from specific ideas, which could make the designer ignore the facts resulting from the analysis phase.

This first phase of the Effect management process uses an important graphic tool called Effect mapping. This tool is a representation of the different steps of the analysis and the effect/cause relationships between them. It represents in a very clear way the core values of this design process, since those functionalities without an explicit relationship with other elements are removed.



Figure 1. Example of an effect map. Source: Own creation

The solution phase takes the results from the previous step and generates solutions that follow the guidelines described by the effect map. During this part of the process the focus is on those functionalities that have been found to be useful for the accomplishment of the purpose. The result is an evolution of the results of the analysis phase into a detailed solution that works based on the goals its users and owners have.

This process is usually carried out within a workshop format with the participation of all the stakeholders. This way, designers can acquire the insights from all the groups involved and define the purpose and functionalities in a more conscious and reasoned way.

3.1.2 Web engineering

L. Urdén believed that the design processes used in interface design for web applications at the time she wrote her paper, lacked of engineering approach. She argued that those methodologies focused on the visual design and the implementation, and needed to include the context of use and their users in the decision-making process (Urdén, L., 2002).

With that intention in mind she developed a design process she called Web engineering, which could be seen as a setup wizard, asking every single detail before taking the next step. By doing this, it assures that everything users will require is provided by the final design.

Web engineering takes into account the importance of well-defined requirements that represent users needs and goals. Because of this reason it is divided in two big steps:

- **Requirements elicitations**

Urden identifies two types of requirements, those that are functional and describe functionalities and tools the system needs to include, and those that are user related and represent users performance and satisfaction factors when using the system. In order to define these requirements, she proposes the use of ACTA (Applied Cognitive Task Analysis), which, through interviews and surveys, is able to get the cognitive demand and skills required by users in order to perform certain task. With all this information the design team can define those characteristics the new interface should include.

- **Interface design**

Web engineering uses an Object-oriented user interface approach (OOUI), which focus on designing the objects users interact with. These objects are representations of the information and afford certain actions depending on the data they represent. Furthermore, it recommends the use of models as description and analysis tools, and describes 3 different models:

- **User's conceptual model:** Based on users' goals and needs, it describes the way the user understands the interaction with the system. In this case, and since users' interact with the interface through objects, they make the conceptual model, along with their afforded interactions.
- **Designer's model:** It describes how the objects should be seen and interacted with according to the designer's intention. If the interface has been correctly designed, the user's conceptual model will match the designer's model.
- **Programmer's model:** Is related to how the system works beneath the visual interface and, therefore, it only concerns the developers of that layer.

3.1.3 Interface design process

Eric A., after analyzing the early design processes used when working with digital user interfaces, identified some of the problems they had, and proposed a set of

improvements or recommendations in order for designers to be able to have better chance of success (Fisch, E., 1993).

The design process he described took a builder approach: it is really important to assure you have strong foundations before start defining the rest of the building. Therefore, the interface design process, as he named it, focus on dedicating time to define the interface requirements before starting to design it.

In his work, Eric divided the design process in two steps:

- **Preparation strategies:** This stage occurs before starting the actual design, and focuses on getting to know the system the interface will be used with. In addition, it includes the ideation and concept development step, for which he recommends having a multidisciplinary team, as well as the use of pre-defined standards and guidelines.
- **Concurrent strategies:** Once the design of the interface is being carried out, the interface design process recommends a high user input by means of usability tests and participatory design techniques. Moreover, he recommends the constant use of Rapid Prototyping Tools (RPT), which allow designers to show their ideas easily and very early in the design process.

In addition, he discusses the value of design guidelines based on studies made by Tetzlaff & Schwartz and Thovtrup & Nielson, identifying designers' problems when following instructions that are not clear or well structured enough. Moreover, he describes a common situation when, if the guidelines are not good enough, designers tend to prioritize their own opinions and logics to those described by the documents. Therefore, their use is recommended, but with caution when assessing their validity.

Although his work is 20 years old and many of his recommendations have been adopted by almost the whole design community, it is important to keep in mind the knowledge we have already acquired and written about, in order to not fall in the same mistakes again.

3.1.4 Ecological interface design

EID was first ideated by Ramussen and Vicente (Vicente, K. and Rasmussen, J., 1992), and tried to handle the new challenges complex information systems were introducing into the users' experience. In order to do that, they proposed a switch of focus from the product itself to the environment, creating an interface that takes care of users' adaptation to new situations and events.

The EID process could be seen as the work of an event planner, who must be ready for any eventuality. In that sense, the ecological approach analyses the environment of use and tries to design the interface in such a way it is ready for any situation that could arise, relieving pressure from the user.

In order to do that the EID relies on two important methodologies: the abstraction hierarchy and the skills, rules, knowledge taxonomy.

The abstraction hierarchy provides a framework that facilitates the analysis and characterization of an interface environment of use, taking into account the information needed as well as the tasks they need to handle.

On the other hand the skills, rules, and knowledge taxonomy deals with the relationship between users and the environment of use. In order to do that it provides three levels of interaction named skill-based behaviors (direct and automated interaction), rule-based behaviors (relate familiar cues with the task) and knowledge-based behaviors (analytical problem solving).

By combining the environment description and the information about how users' interact with it, designers can ideate an interface that adapts to the different types of interaction so it mitigates the impact of the pressure the environment of use can generate on the user.

3.1.5 User-based design process

The user-based design process take the attention from the designers' viewpoint and put the users' viewpoint in focus, making them participate in all the stages of the process. With this participation designers aim to determine which criteria users use

when evaluating a website, getting feedback and comments in order to evaluate the different versions of the design and, once the result is implemented, get suggestions, additions and possible improvements (Abelse, E., Domas, M. and Hahn, K., 1998).

This approach acts as a pollster, trying to get as many opinions as possible and as complete as they can be. This way, the input this information can have on shaping the resulting design is of great importance and strengthens the quality and chances of success of the solution.

The process is divided in a set of 4 stages. However, and previous to the first of them, the author defines a step named “Users’ task-related information seeking/use behavior”. This preliminary task aims to learn which kinds of information the users are interested in, how they look for it and which problems they find when doing so. In short, it looks for users’ needs, which will be taken into account throughout the whole process.

The mentioned 4 stages are the following:

- 1 Information-gathering stage:** During this first stage designers look for those criteria users use when evaluating a website, by means of questionnaires, interviews, focus groups and other methodologies from the participatory design field.
- 2 Development stage:** The next step is understanding those criteria, rank them, and translating them into functionalities and design elements. During this process user feedback is used in order to have their input related to design decisions.
- 3 Evaluation stage:** Before the website becomes operational and is released it needs to be tested and evaluated by the users. This creates an iterative process where a redesign occurs using users’ feedback.
- 4 Implementation stage:** Finally the website is implemented and subjected to continuous testing providing users with tools to provide feedback when using it.

Following this process requires a great ability in managing user groups and participatory design techniques, since the use of these elements is constant and vital for the success of the whole approach.

3.1.6 UX-centered interface design

Paul Sisler and Catherine Titta realized at some point in their careers as technical communicators that, if a product was to be successful, it needed to accommodate the needs of people, not the other way around. However, they identified a series of difficulties for industry to adapt to this new approach (Sisler, P. and Titta, C., 2001).

As if it was an assembly line, the UX-centered process makes clear difference of each of the steps, defining the outcome of them and how is the next one supposed to use this information. This helps greatly to handle multidisciplinary design teams with different specialties and ways of working.

In order to solve the situation presented by the design industry they decided to define a design process based around the user experience. They divide it in five different steps:

- 1 Identify the requirements and the constraints:** Firstly, the business goals should be analyzed as well as the technical constraints. In addition, the team should define a timeline.
- 2 In-depth user analysis:** In this step the team gathers demographic information as well as more specific data such as user goals or environments of use. Moreover, user profiles should be created with all this information and included in a profile specifications document.
- 3 Interaction and navigation design:** By analyzing the profiles and prioritize them, designers should define the workflow for the application. With this done, a behavioral specifications document should be written.
- 4 User interface design:** In this step the user interface is designed and, with it, a low fidelity prototype is created. The team user tests this prototype and revises the design with users feedback in an iterative process. Finally, the design is defined in an interface specifications document.
- 5 Application development and testing:** Finally, the application is developed and reviewed by those in charge of the interface design. After that, it is user tested and revised with users' feedback in a new iterative process.

The reason for them to require a document after each step is their recommendation of having a multidisciplinary team that bases each step on the outcome of the previous

one. Since not everyone is expert in all the steps, they need a detailed specification of the information in order to completely grasp it. This requirement eases the transition from step to step, making it a more fluid process.

The multidisciplinary team they define should be composed by the following roles:

- **User profiler:** Usually experts in ethnography, sociology or anthropology, they are in charge of the user analysis and the creation of the user profiles.
- **Interaction designer:** As experts UX they are the ones designing the workflow of the application.
- **Information designer:** They are in charge of the writing and creation of the supporting content used to help users.
- **Usability specialist:** Experts in the interaction between the user and the application, they manage user testing and prototype creation.
- **Interface developer:** They design and develop the interface, adding both technical and creative skills.
- **Project manager:** Coordinates the whole team and manages budgets and deadlines.

It is important to note that the authors don't limit the team to a one person-one role bases. Instead a member of the team can represent more than one role, since many of them have common points.

3.2 Design methods

3.2.1 Ideation

Brainstorming is the most common method when it comes to the ideation step, and Tom Kelly wrote about what is, in his opinion based on his experience, the perfect brainstorming. He argues that, even if it is the most common ideation method and many claim to carry it out, a lot of them fail in their attempt to master it due to simple mistakes that greatly affect the outcome (Kelly, T., 2000).

An easy way of picturing the ideation process is seeing it as the work of an archeologist: you dig and take anything that could have any value, even if they may be mere rocks. In

the same way, the ideation must take into account all the ideas proposed, crazy as they may seem, since you never know where the valuable one will come from.

In order to perform the perfect brainstorm he provides the seven rules to be followed if one is to have the best session possible:

- 1 Well-defined problem statement on focus.
- 2 Have playful rules that keep participants from turning the session into a normal meeting.
- 3 Number the ideas.
- 4 Encourage changes on the approach or the discussion of other ideas when energy fades out.
- 5 Use space, since spatial memory is extremely powerful.
- 6 Dedicate a short time in the beginning of the session to a brains warm-up.
- 7 Use visual channels in addition to words.

He also provides a list of those elements that could ruin a brainstorming session:

- 1 Giving priority to the boss.
- 2 Use a turn-based session.
- 3 Inviting just experts.
- 4 Abuse of off-site sessions, creativity should be related to the work environment.
- 5 Write everything down.

According to his opinion, if these clear and simple statements are followed, the chances of having a successful brainstorming session increase greatly.

3.2.2 Web quality evaluation

The assessment of an interface's quality is extremely important both during the design step and the final evaluation and iteration part of the process. Dahai Liu et al discuss the need to analyze both the quality of the product and the quality of the process in order to perform a good assessment (Liu, D., Tarawneh, I. and Bishu, R., 2000).

This method is the quality controller of the whole process and determines the validity of the result in relation to a set of standards and guidelines. It may not be necessarily binding, but it can be used as a descriptive tool.

In order to carry out the process of determining the quality level of a website they propose a set of criteria. They are divided into two categories:

- Information quality:
Content, display, authorization, layout and support.
- Process quality:
Web definition, market analysis, cognitive design, system design, system production, system testing and feedback.

According to their research, these characteristics cover all the qualities necessary to decide the quality level of the information displayed and the process followed to design that information.

3.2.3 Client-designer communication based on Social Software

Communication between the client and the agency designing their website or other products is extremely important, since it helps to establish a common ground from where the designers can better understand the business and market they are targeting with the project (Dekker, A., 2010).

Although this communication is better done within face-to-face meetings, this is not always a possibility due to constraints such as time (from both sides) and/or geographical reasons. Therefore, an alternative to them are the tools called Social software, which provide an online communication channel with additional features that enrich these conversations.

These applications usually have a general-purpose scope and provide tools that give the ability to share information, create a debate about certain project-related topic or give one's opinion regarding certain feature or design decision.

3.2.4 WIDP: Web Interaction Design Patterns

Patterns are predefined answers to a classical problem and, in the case of interaction design, they describe a common way to interact with certain objects. Through the use of these elements the designer can improve the quality of the result while, at the same time, making the development and maintenance tasks easier. Moreover, the designs resulting from the user of design patterns are more reusable and flexible, due to their module-like nature and the depth of their elements' descriptions. (Di Lucca, G.A. et al., 2005).

However, in order for the patterns to be a useful tool, WIDP must be defined in a correct and structured way. A correct pattern definition should have the following information (van Welie, M. and van der Veer, G.C., 2003):

- **Problem:** A correct definition of the problem addressed by the pattern.
- **Context:** A clear description of the situation or environment where the pattern is intended to be used.
- **Solution:** The actual description of the answer provided by the pattern. Should be clear enough to make it easy to adapt to any situation.
- **Example:** By providing screenshots and written examples it is easier to understand how to use and apply a pattern.

3.3 Design models

3.3.1 Four-space model

The four-space model provides a way of analyzing an idea or design from a point of view based on different spaces or levels of interaction. These spaces contain the interactions between the different actors. (Eriksson, E., 2013)

This model can be used as a tool for data collection in order to gather information covering all the spaces proposed. Also, it can be used as a design or discussion tool, since it helps analyze an idea or design and detect which interactions are poorer or less taken into account. Therefore, using the four-space model can be described as a warehouse worker job, sorting all the elements they get into the right part of space within the warehouse.

These four spaces are the following:

- **Interactional:** Represents the human-machine interactions and includes features related to sensor reading and different kind of inputs, among others.

- **Social:** Represents the human-human interactions and uses users as the reference point. It touches topics such as attention, activity, intention, understanding, place and, most important, communication.
- **Physical:** Includes all those elements that are visible, such as physical constraints, appearance and physical interaction. In this space is where the system meets the users and their context.
- **Digital:** Represents the system's infrastructure and computer models. It defines the output and feedback the system is to present to users.

The four space model is meant to be a practical tool to ensure that all the perspectives represented by the different spaces are covered. In addition, it helps assuring there is no overweighting on any of those levels. Therefore, it is useful for evaluation, but also for decision-making, since designers can predict the effect of their decisions on the space distribution.

3.3.2 Multi-modal design

In the past, when designing any kind of product the semiotics focused were related to just one mode (sound for music, text for books, etc.). However, with the arrival of digitalization, products have learned to use multiple channels and modes, becoming multi-modal. According to the authors, if the products to be designed are multi-modal, so must be the semiotics used during the design process (Kress, G. and Van Leeuwen, T., 2001).

The multi-modal design approach tries to embrace the multi-modality and give meaning to the design in different ways independently of the mode used, hence acting as a philosopher, trying to answer all the questions the world can pose.

According to this model, in a multi-modal era, a design is given meaning many times, not just one. Each of these times is named as "stratas" by the authors. In addition, they defend that meaning is produced in the same extent by those producing the design and by those interpreting it, since a designer can only hope to deliver the desired meaning to users, and users can only do their best in assigning the right meaning with the information provided.

The defined "stratas" are the following:

- **Discourse:** At this point of the design, the product is given an answer to what to say, which information is supposed to deliver to the users.

- Design: When the design starts the team defines a way to deliver the information, hence answering to how to say it.
- Production: Once the information and the way to present it is defined, it is time to decide how to implement it in a practical way.
- Distribution: Finally, once it is implemented, it may be defined how the product will reach the final users.

All four “stratas” contribute to the overall meaning given to the product, since the perceived image will greatly depend on what it is saying, how it is saying it, how it is done and how it reaches you.

The Multi-modal design model helps analyzing a design, being it from a preliminary point of view or a later one as an evaluation tool, since it describes in a structured way the meaning given by the product. The team can then compare the results of the analysis to the expected outcome and draw conclusions from it.

4. PRACTICAL CASE AT F&B

The digital project chosen for the observation and experimentation part of the research process was the redesign of Universeum's website. Universeum is a science center located in Gothenburg (Sweden) and is the biggest of its kind in Scandinavia.

The professional relationship between Universeum and Forsman & Bodenfors dates back to 2001, when the science center was opened, since F&B has been an important partner since that moment, taking care of Universeum's external communication.

Because of this reason, Forsman & Bodenfors has been asked to redesign Universeum's website, since the current structure and design has been up for nearly ten years. This age makes the site old fashioned and, in addition, have some structural issues.

The aim of the project is not only solve the problems the current website has, but also design how it presents Universeum's brand image, and how it can help the science center in performing their missions.

4.1 The process

Forsman & Bodenfors has a defined process used when working on a project that will have as a result a digital product. These steps and tasks are based on the design process called "Effect management", created by the inUse company. However, F&B added a few changes in order to adapt it to the advertisement business and their way of working. This tailor-made version comes from their years of expertise in the sector and is usually referred as "Interface Design Process".

As an advertising company, Forsman & Bodenfors has a special focus on the brand experience and takes the totality of the company communication as a whole, not just one of the channels used. Because of this approach, the Effect Management design process cannot be applied without adding some changes, since it was created with a special focus on the design of digital communication channels. Therefore, some methods need to be added in order to acquire this extra information required by an advertising agency.

The interface design process, as the effect management one, makes a clear division between the research previous to the ideation and the solution design itself, in order to take those options that actually help achieving a more successful result. Therefore, the division within the process are similar to the one proposed by the effect managing.

However, since an advertising company works with not only with the digital product itself but also with the image the company sends to the world, their process needs to gather more detailed information about it. This difference makes it necessary to expand the analysis phase in order to include information about the company but also a step dedicated to define an main project strategy that conveys the right message.

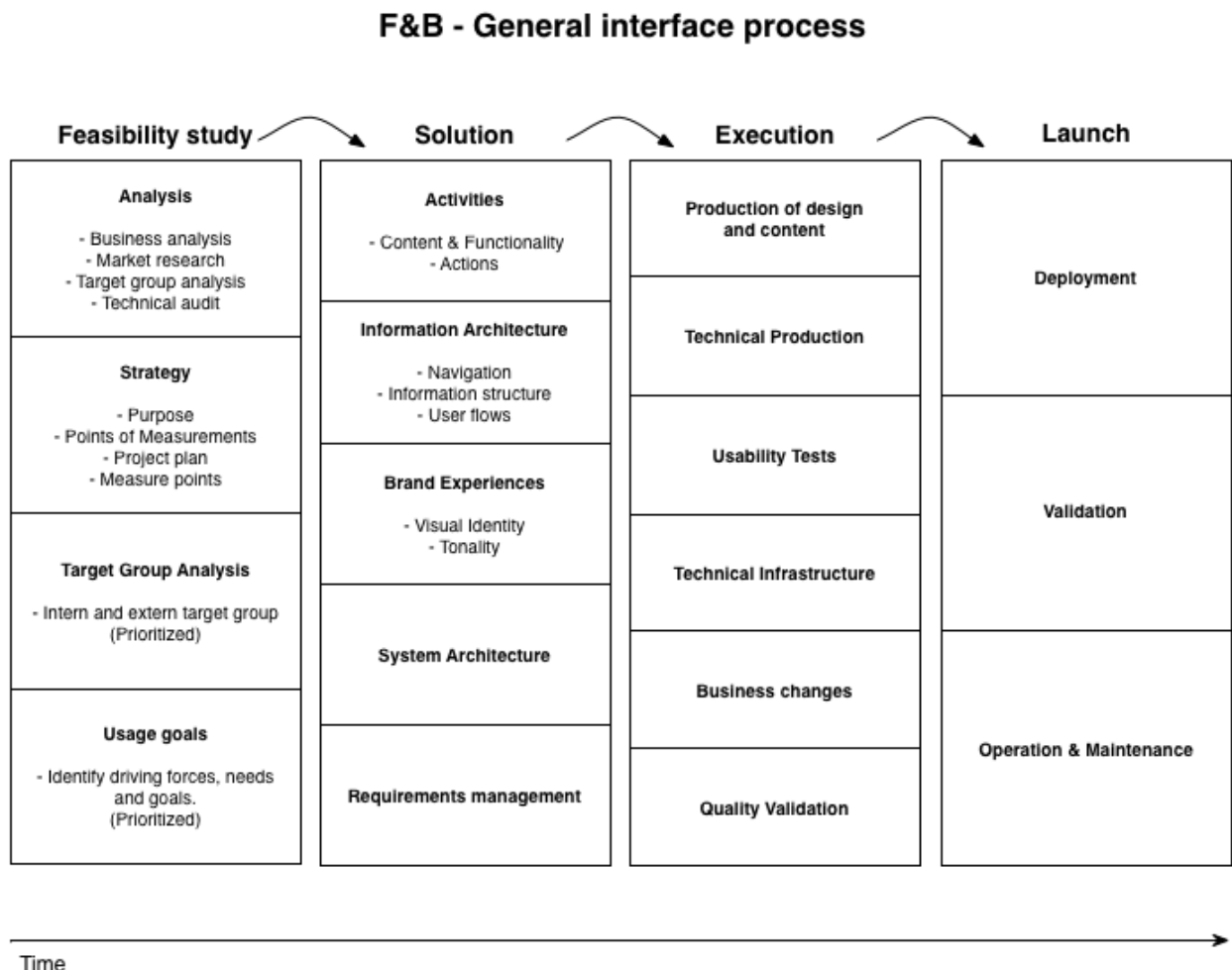


Figure 2. Table with the Interface Design Process used by F&B. Source: F&B

The process starts with the writing of the feasibility study. This document will contain everything related to the project that is not the design of the actual result, including information about the target groups, the strategy to follow and information about the brand.

Therefore, a lot of information needs to be gathered both from the client and from the users. This task is carried out by a planner and an interaction designer, who collect the

information needed for the development of the strategy. Once the information about the client's business goals and the different target groups is gathered, the rest of the team joins them in order to define the strategy.

The strategy defines which will be the goal or purpose of the resulting design, and must answer to the client's intentions. When the main purpose is defined, the target groups are prioritized depending on how important they are in relation to the purpose. All this decisions are registered in an effect map, tool provided by the effect management design process.

Finally, the interaction designer and the planner find the different target groups' driving forces, those goals and needs that relate to the project purpose, and define some measurement points in order to check the project's success after the launch.

With all this information gathered, the team comes up with different functionalities that answer the users driving forces, prioritizing the most important target groups. All these functionalities are then translated into a concept, which is translated into wireframes by the interaction designer.

The process that follows is an iterative conversation between the visual designer and the interaction designer, until a final result is reached. Once the approval from the whole team and the client is granted, the design is sent to an external company, which is in charge of the implementation.

4.2 Feasibility study

4.2.1 Brand analysis

Universeum is one of the biggest science centers in Europe, and definitely the biggest in Scandinavia, with 535.000 visitors during the year 2011. They dedicate their 8000m² to natural science, technology and mathematics through exhibitions and activities designed by a great number of experts and always with the visitor in focus.

With all this content Universeum wants to be seen as a classroom, a rather unorthodox one, where children and teenagers can learn through exciting experiences and activities that encourage curiosity. The aim is to not only spread knowledge and teach students

but to inspire and motivate them, increasing maybe their interest towards a future scientific career.

In order to perform this task, the science center has many contracts with different schools and communities which results in regular school visits to their premises. But the people responsible for Universeum don't want it to be just a teacher for students, but also offer a professional education for teachers, inspiring them to instill the pleasure for learning into their students.

This couldn't be achieved without Universeum's works on quality and renewal, which assures the knowledge taught in the center is trustworthy and evolving. These factors are key if the duty as a teaching area is to be guaranteed.

Moreover, and due to their position as a science agent and nature defender, Universeum manages many conservation projects for different endangered species within Sweden and Europe, but also in other parts of the world.

4.2.2 Statistics

Universeum provides with its annual report (Universeum AB, 2012), among other information about the center, the economic results from the latest years. However, the most important think to take into account when analyzing this is the fact that profits are not among their highest priority goals. The company focuses on teaching and inspiring rather than growing, acting more as a social foundation than as a private company. Therefore, profits are reinvested into reaching more visitors and offering better material.

Overall, Universeum's economy has had an improving trend, increasing the number of visitors and income. However, expenses has increased at the same time and, therefore, profits haven't improved in the same significant way during the last four years.

2011	2010	2009	2008	2007	FIVE-YEAR SUMMARY
101 339	95 691	89 828	85 944	87 206	Gross sales, SEK 000
2 061	1 983	4 187	4 089	4 039	Profit for the year, SEK 000
170 247	161 974	166 431	165 204	169 867	Balance sheet total, SEK 000
70	75	73	67	63	Total number of employees
535 000	520 000	524 000	504 000	530 000	Number of visitors
43,5	44,6	42,5	40,8	37,3	Equity/assets ratio %
3,5	3,1	4,4	4,3	4,8	Return on total assets %
2,5	2,0	4,7	3,9	6,9	Return on equity %

Figure 3. Universeum's summary of results. Source: Universeum

4.2.3 Market definition

In order to determine which is Universeum's market sector one must look into not only their brand description, but also the associations they are part of and in which group the visitors place them into.

Universeum is member of a great number of organizations, which range from a national to a worldwide level. This list can be summarized in a set of categories, which define the different markets Universeum works in. These sectors are "Zoos and aquariums" and "Science centers".

Both sectors are part of the brand description, since they relate Universeum to natural science and technology, giving an image of education and knowledge. Moreover, both markets can be related to what is Universeum ultimate objective, being a place for inspiration and motivation.

However, Universeum is also indexed into amusement parks' databases such as the one made by the International Association of Amusement Parks and Attractions (IAAPA). This, although not being part of the company's target market, is obviously something to take into account when analyzing the perceived image of Universeum.

4.2.4 Market's statistics analysis

According to the data provided by the Association of science-technology centers (ASTC), organization with 600 members around the world, science centers had in 2011 a total of 95 million visitors. This number not only shows an increase from the previous

year (89.6 million), but also, when broken down into types of visit, it shows a tendency to an increase in on-site visits (Association of science-technology centers, 2010 and 2011).

Moreover, the statistics show an increase in 2011 over the school group attendance to 22.9 million visits from the 16.9 millions in 2010. This data sets school visits as a 21.75% of the total visits, making them a huge part of their activity.

Although statistics results from 2012 are still not available, by analyzing the results of 2010 and 2011 it is easy to see a positive trend. In addition, if these statistics results are compared to the official ones coming from Universeum (Universeum AB, 2012), this tendency is confirmed for this specific case.

4.2.5 Competitors analysis

The number of centers with similar characteristics to Universeum is high, and therefore the competition within their market sector can be strong. Lists of the main science centers can be found on the main organizations for this type of companies: FSSC for Sweden (Föreningen Svenska Science Center, 2012) and ECSITE for the whole Europe (The European Network of Science Centres and Museums, 2012).

For this project those competitors with a great importance in the European area were selected for a thorough analysis, as well as those within the same national market, Sweden. (Figure 4).

Science centers in Sweden	Science centers in Europe
Teknikens hus (Luleå)	Cité des Sciences et de l'Industrie (France)
Technichus (Härnösand)	Futuroscope (France)
Framtidsmuseet (Borlänge)	Technoscope (Belgium)
Tekniska museet - Teknorama (Stockholm)	Experimentarium (Denmark)
Norrköping Visualization center (Norrköping)	Heureka (Finland)
Balthazar Sinnenas Verkstad (Skövde)	Technorama (Switzerland)
Dalénium (Stenstorp)	NEMO (Netherlands)
Innovatum Science Center (Trollhättan)	Universum (Germany)
Molekylverkstan (Stenungsund)	Hidrodoo (Netherlands)
NAVET (Borås)	Science museum of London (UK)
Frederiksdal's Open Air Museum (Helsingborg)	Scientastic (Belgium)
	Palais de la Découverte (France)
	Deutsches Technikmuseum (Germany)
	Museo Leonardo da Vinci (Italy)
	Eden Project Cornwall (UK)
	Cosmo Caixa (Barcelona)
	Ciutat de les ciències i les arts (Valencia)

Figure 4. List of competitors analysed. Source: Own creation.

The analysis focused mainly into the external image of these centers, and how they present themselves to the public. The results are quite wide and were divided into two main topics according to the research question they answer: Whom do they target? And which is their presented role?

Competitors' main target groups

The first part of the process had the focus on who were the competitors' websites made for, by looking into the information presented and the visual design. During the analysis three main types of target groups were identified for their external. The type of group chosen completely defines the role presented to the possible visitors, since each of the groups have different goals and needs.

3 different target groups on focus

PUBLIC	SCHOOLS	EVERYONE
Mostly amusement	Focus on learning and experiments	Practical info
Visually attractive	Usually focus on the company's philosophy	Sometimes divided into sections for each group
Usually focus on the place	Sometimes with online activities	Usually plain and unclear specific information
Special attention to families		
		

Figure 5. Competitors target groups. Source: Own creation.

The types identified are:

- **General public:** Most of the competitors focus their attention on the general public, since it includes every single type of visitor. However, by approaching them as a whole, the strategy taken is not the best for every single one of them. Usually the communication targeting this big group focuses on being attractive from a visual point of view, but also from a concept point of view, since they tend to send a message of amusement and focus on the greatness of the place itself. In order to cover most of the groups they usually treat the general public as being totally compound by families, since they are their most common clients.
- **Schools:** On the other hand, this kind of centers has as an important goal to teach and inspire children. For that reason some of them prioritize schools as a target for their external communication, completely changing their strategy and message. They tend to avoid focusing on the center itself but on the company, talking about its philosophy and how they help children to learn and experiment. In addition, in some cases they share activities, which can be done online or at

home, sending an educational image. In addition, they usually include a detailed plan about their educative offer and the outcome of it.

- **Everyone:** Finally, some of the competitors don't choose a particular target, resulting in a neutral or split communication. Those choosing a neutral option tend to focus on sharing practical information in a plain way. On the other hand, those having a split communication usually have different sections for each target group, having rather unclear structure and lack specific information.

Competitors' main roles

As stated before, the strategy or role presented to the visitors will greatly depend on which one of the previous groups is targeted. During the analysis of the different competitors three types of roles were identified.

3 different perceived images	
EXPERTS	- Focus on a specific topic and say everything about it. - Spread news about the topic of expertise. - Usually for websites focusing the general public.
EDUCATORS	- Focus on activities and workshops - Present themselves as source of knowledge - Detailed information about learning plans
ENTERTAINERS	- Focus on experiences - Learning presented as a secondary consequence - Oriented to the whole family

Figure 6. Competitors presented roles. Source: Own creation.

These are:

- **Expert:** Since science centers possess a great amount of knowledge about science and technology, they can be considered as experts on the topic. Therefore, some of them choose to show the public that they are a trustworthy source of scientific knowledge. Usually this type of centers focus on a specific topic of expertise and share any type of information related to it. Normally, they tend to focus the general public.

- **Educator:** However, some competitors decide to focus on their task as educators. These centers tend to show how they help children to learn and experiment by showing their activities and workshops. In addition, they share detailed information about their educational plans so teachers know what to expect from their visit. Therefore, educators tend to target schools and teachers.
- **Entertainer:** Finally, those focusing on the amusement part of their centers are usually presented as entertainers. They tend to prioritize information about the experiences one can live with them and target families with children. On this type of communication, learning is a consequence and not a main aim. Therefore, information about their educative task is hardly found on their main pages.

These groups summarize the main characteristics of the market and give an overview of how Universeum can fit into it while keeping its core values.

4.2.6 Current website's aim

According to Universeum sources (Universeum AB, 2012), the main purpose their website is expected to fulfill in addition to the obvious sharing of general and practical information about the science center, is to explain which is the reason for being of the center. That is, give a better understanding of their work and role.

Moreover, the site must represent the company's core values of quality and renewal, as well as make their educative aims and goals clear for the visitors. Also, it must show the science center as an inspiring and motivating place, not an amusement park.

All these requirements should make visible the value of the product the visitors are paying for when entering the center. This, in addition to control the perceived value of the visit and its prices, has a rather high chance of encouraging website users to visit Universeum.

Although all these characteristics are applicable to any kind of user, they are mainly focused on the general public. In order to encourage schools and teachers to see Universeum as a classroom and use it as teaching material the website must show the possibilities the center can offer from an educational point of view.

In addition, and in order to set and share the company's public image, the non-visible, and rather social, work as a nature defender must be an important part of the content.

4.2.7 Current website's analysis

The current website suffers of different problems which keeps it from performing the job it is supposed to.

Firstly, the URL system used lacks of a structure or pattern, which makes direct navigation quite difficult. W3C, one of the main rulers of the Internet, recommends simple and clear URL addresses (W3C, 2012), which make an easy indexation possible, as well as improve the work of the different search engines. If the date of this recommendation (2003) is taken into account, it is obvious that the current website presents a problem solved long time ago and, therefore, it is outdated in that sense.

The situation is not better if we look into the information architecture used, since it tends to be unclear and redundant, creating this way a frustrating user experience. Firstly, part of the information is presented in different ways within different sections. In some cases even different sections with the same name. This makes it difficult to find the desired information but also can give misleading information.

Therefore, and taking into account the desired role the website should have, it fails to deliver the expected message, since the information about the educational task of Universeum is deep down the site map. The same happens with the information about the center conservational tasks, which is a distinctive characteristic of Universeum.

This is aggravated by the unavailability of an in-site search tool, which would help finding the information that isn't visible enough. However, a deep exploration shows the existence of a search option, although it is not available for the visitors. According to Universeum's staff responsible for the website, this deactivation was caused by what they considered a poor behavior, since the results of the search included already deleted pages and many unexpected empty results were produced.

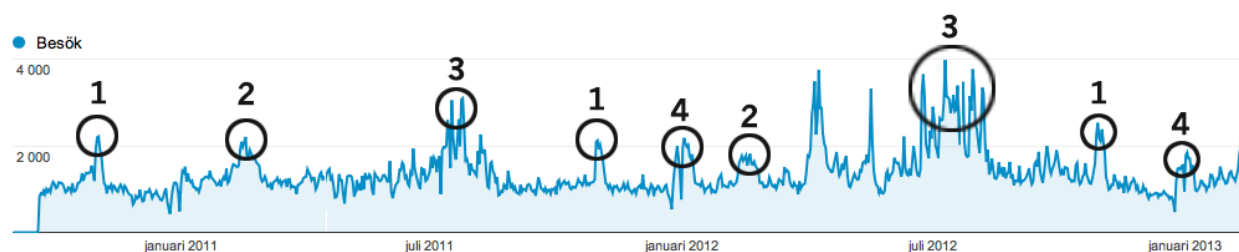
4.2.8 Current website's statistics' analysis

The analysis of the website traffic during the last 3 years through the use of the Google Analytics tool reveals many observations. This data makes it easier to determine whether the website is fulfilling the role of spreading the image of Universeum as a teaching and inspiring place or not. In addition, it reveals causes for the appearance of positive behaviors, which can be used for the design of the new website.

Since the statistics of the site haven't been monitored from the beginning of its activity, the analysis has focused on the period going from September the 19th 2010 to February the 19th 2013.

As a summary, during this time the website has had 1,208,182 visits with an average duration of 2.59 min and 5.02 pages seen per visit. But it is by observing the evolution of the amount of visits during this long period when one can look for patterns or variations and find the reason behind them. This helps to identify how visitors are currently using the website, as well as find ways of boosting the performance of the site. Knowing what current visitors want to see on the website is basic when determining the content available and its priorities in the new version.

One of the clearest patterns found on the Universeum website's statistics happens during holiday's times. During each of the Swedish school vacation periods, a radical increment of the amount of visits occurs, lasting for the whole duration of it. Figure 7 shows the relationship between most of the traffic peaks experienced during these 3 years and the holidays they correspond to.



1. Alla helgons dag
2. Sportslov
3. Summer holidays
4. Christmas holidays

Figure 7. Comparison between visitors graph and vacation periods in Sweden. Source: Google Analytics.

On one hand, these increments could just be consequence of the increasing of families' amount of free time, which allows those families who cannot visit Universeum during working periods to have enough time to do so. This doesn't say much about the reasons families have when choosing Universeum as a place where they can spend their free time, but it can be really important when designing new advertisement campaigns or new exhibitions.

On the other hand, this relationship made between Universeum and free time could be making evident a great separation between school and the science center done by families with young children. This could be implying that families are relating Universeum to a place for amusement, rather than to an inspiring and educative option.

Therefore, this fact can be read from many points of view, but choosing the right one can only be done by means of a thorough study of the family user group in order to discover their reasons and goals when investing their free time into Universeum.

In addition, a different type of radical increment of the amount of visits could occur. This is when a new exhibition is opened to the public, such as the dinosaurs' exhibition in 2012 or the Underworld in 2013. The graph in Figure 8 shows an important peak during the first week of these new spaces, making it quite easy to relate to them.

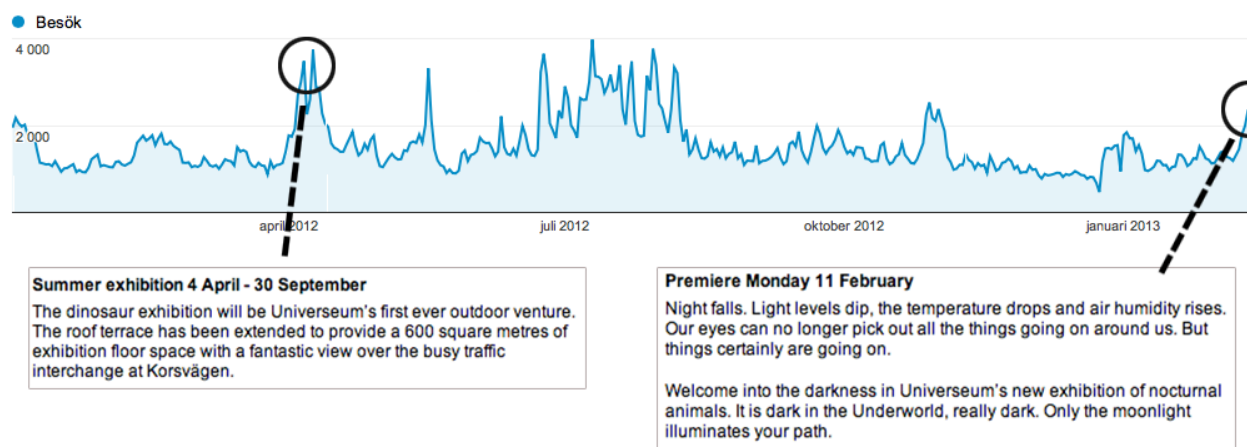


Figure 8. Comparison between visitors graph and Universeum news. Source: Google Analytics.

Taking the previous two conclusions, it could be argued that the peak experienced during April 2012 can be related to Easter vacations instead of the opening of the Dinosaurs' exhibitions. However, if the same periods but from different years are

compared like in Figure 9, one soon observes that the difference experienced during April 2012 is way above the average increment experienced during any other April period, hence confirming the effect of the new openings.

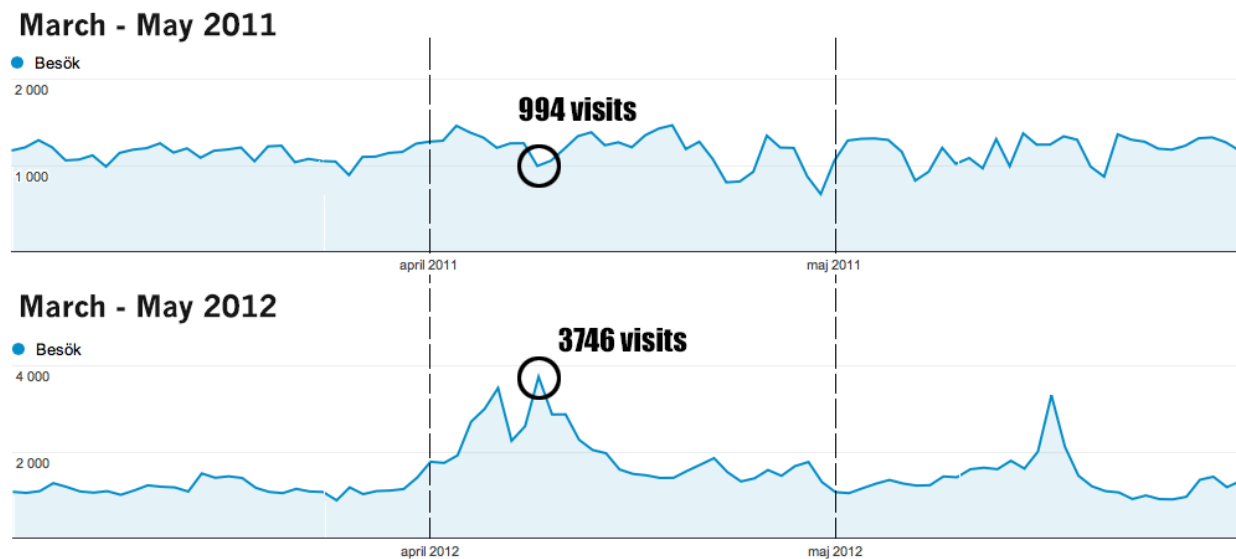


Figure 9. Comparison between visitors graph from April 2011 and 2012 Source: Google Analytics.

This fact could be read as proof that variability affects positively the interest of visitors for the center. Also it may be proving that the website needs to show this dynamism making clear that something is always happening at Universeum and, hence, there is always a reason to go back and check the site for the latest news.

Figure 1 (Appendix I) shows the traffic during this long period corresponding to the sites for each of the open exhibitions at Universeum. Many interesting conclusions can be drawn from this data.

Firstly, it confirms the relationship between visits and vacation periods, since all of them experience a traffic peak during holiday times. Moreover, it confirms the relationship between openings and traffic, since a visits peak occurs when a new exhibition is opened.

Furthermore, although obvious, one can see the connection between the size and importance of the exhibition and the amount of visits its site has.

Moreover, the duration of the visits is an important factor when determining what types of visitors are the most common. Figure 2 (Appendix I) shows how this duration is

distributed among the amount of pages seen. However, and although 0-10 seconds seems to be the most common duration with 38.51%, this group shouldn't be taken into account, since most of the time it represents those visitors who have entered the wrong website.

The biggest amount of visits is represented by the 61-180 seconds (1-3 min) groups with 19.16% of the visits, which should be taken as the standard visit duration. This range is usually seen as a successful one, since it proves that the website has been able to make visitors to stay after the 10 seconds mark. However, having a high number of pages seen associated to such a short time, shows a rather shallow approach to the visit. This may imply a focus on general information, being specific information greatly ignored.

It is quite easy, therefore, to conclude that a superficial visit would focus on practical details and big titles rather than into specific information about the company and its work. This is supported by the analysis of the pages visited within the website, since 19.66% of the total of pages viewed correspond to the homepage and 17.85% to the "Visit us" section, which contains all the practical information about Universeum.

As Figure 3 (Appendix I) shows, the rest of pages with more detailed information about the exhibitions and Universeum itself represent, the totality of them, less than the 70% of the views, making some of them almost unseen. This could be caused by a lack of interest or just because they are hard to find.

In addition, this tendency is even stronger for those users accessing the website from a mobile phone as Figure 4 (Appendix I) shows, since the number of views corresponding to detailed information drops considerably. Moreover, the fact that the regular visits have similar characteristics to the ones coming from such a sporadic devices could indicate us the superficiality of the visits, and how specific information is currently almost ignored.

However, and besides all the data presented so far, the website succeeds at spreading the position of Universeum as a source for scientific information in some extent, since many visitors reach it by means of organic searches using search words related to natural and scientific topics.

Although Figure 6 (Appendix I) presents a list of search words of any kind, it is interesting to look into Figure 5 (Appendix I), since it is a list of those terms not related to the name Universeum, known as non-branded searches. The list could be seen as a list of topics users relate the science center to.

Moreover, another important source of traffic are the referrals from other website. Figure 7 (Appendix I) shows the most common sources of referred visits. As it can be extracted from the list, most of the websites linking to Universeum's website are Gotenburg-related, being it from a touristic point of view or companies with headquarters in the city such as GP or Stena Line. However, other interesting options have an important presence, being them sources related to children and travel topics.

Furthermore, it is interesting to look into the screen resolution distribution among the website visitors, and analyze if the current website is designed correctly for the most common resolution sizes. Taking into account that the current website has a content width of 1024px, and compared to the top screen resolutions shown in Figure 8 (Appendix I), it seems that there is currently a lot of space unused in most of the cases. Excluding those resolutions corresponding to phones or tablets (320x480, 768x1024, 720x1280 and 480x800), the smallest width with a relevant presence is 1024px, used by 4,86% of the visits. Therefore, the current website is adapted, at least, for the smallest resolution.

However, as shown on the Annex 1, a 61.58% of the visits use a screen resolution equal or bigger than 1028. Therefore, the most used options will present big empty spaces on the sides ranging from 252px to 896px. These areas strongly affect the website overall appearance in a negative way. For that reason, the most recommended option would be a responsive design solution (Marcotte, E., 2011) that, without forgetting about the small resolutions, provides a better experience for the bigger sizes.

In addition, Figure 8 (Appendix I) shows that an important percentage of visits have as a source a mobile phone. Hence, a good mobile version for the website is probably necessary.

Finally, and since the traffic is almost completely originated from Sweden and Nordic countries, it is easy to think that the website is not spreading Universeum's image around Europe properly. Without this message being sent, it is impossible to become a tourism nor a science referent at a continental level.

4.3 Strategy

4.3.1 Goals

From Universeum's strategy plan and other documents, one can extract the following set of business goals:

- Increase general public visits.
- Increase school visits.
- Increase returning visits to the center.
- Increase knowledge about Universeum's task
- Increase knowledge about why Universeum exists
- Be seen as a classroom
- Be a European referent for education, knowledge and inspiration within nature science, technology and mathematics
- Increase the number of teachers taking Universeum's education

Although this list doesn't follow any particular order of prioritization, one is needed in order to define the website's purpose.

4.3.2 Aim

As a communication tool a website can perform a task of giving information and delivering a message to the visitors. By means of these two functions Universeum's site can work towards achieving some of the company goals, some in a direct way, and some on an indirect way.

DIRECT:

Business goals defined as direct from a website point of view, are those that can be influenced by means of the website's task. By delivering the right information in the right way and sending the right message, the website can impact the visitor to acquire the desired knowledge or impression.

- Increase knowledge about Universeum's task
- Increase knowledge about why Universeum exists
- Be seen as a classroom

INDIRECT:

However, indirect goals cannot be guaranteed, but their chances of being accomplished can be increased. From a website point of view, indirect goals are usually achieved as a consequence of one of the direct ones, and tend to be related to triggering actions or attitudes. These actions or attitudes cannot be initiated by the website, since they are a visitors' personal decision, but it can provide arguments in order to tilt the decision-making process towards the desired option.

- Increase general public visits
- Increase school visits
- Increase returning visits
- Increase the number of teachers taking their education
- Be a European referent for education, knowledge and inspiration within nature science, technology and mathematics

4.3.3 Purpose

Universeum was founded by, among other parts, the two biggest universities in the region with the intention of spreading knowledge and generating interest about science and technology, rather than to generate profits. Because of this reason, Universeum's goals are closer to a social foundation than to a private company, since they don't focus on expanding their business but in improving the results of their mission.

Therefore, Universeum's philosophy and mission, as extracted from their documents and commercial material, is to teach, inspire and hopefully encourage visitors to choose a future education on science, technology or mathematics. This task is always performed with children as a main focus and target.

In addition, according to the current website's statistics analysis done during the previous feasibility study, there is a risk of visitors having an image of the center closer to an amusement park rather to a place to learn and be inspired.

Because of these reasons, the purpose chosen as the main priority for the website is to give visitors a clear idea about Universeum by increasing the knowledge about Universeum's mission of teaching, inspiring and motivating within the science and technology field.

Accomplishing this particular goal would increase not only the knowledge about Universeum's philosophy, but also about what to expect from a visit to the physical center. This could, in consequence, help with other indirect business goals such as increase the number of visits of a certain type. However, this cannot be guaranteed.

This should be achieved by means of a website's capabilities, which means choosing carefully the information shared, and the way it is shared, in order to generate the right knowledge and send the right image.

The market study revealed that most of the science centers that focused on teaching and inspiring, avoided information about feelings and experiences and gave information about their activities and workshops. In addition, they shared detailed information about the outcome of a visit to the center from an educational point of view, which strengthened their image as educators.

Moreover, an analysis of the terms used for organic searches resulting into a visit to the site, revealed that a great tool that helps relating Universeum to its main goal is sharing basic information about scientific facts. These kinds of searches generate more visits to pages about Universeum's work than to pages with practical information.

In brief, Universeum's website must include the right information in the right way so it represents the company's mission of teaching, inspiring and motivating children in relation to the science and technology field, so visitors have a clear idea of what Universeum is and what to expect from a visit to the center.

4.4 Target groups

Universeum's goal is to teach and inspire children within the field of natural science and technology, hopefully motivating them to choose a career within these topics. On the other hand, the website's purpose is to communicate this mission and increase knowledge. This could be done in two main ways: by explaining the mission or by doing the mission.

If the conclusions of the current website are taken into account, one can see that specific information is usually unseen, and that science related topics are a good source of traffic through organic searches. Therefore, one could conclude that it is more successful to talk about science and teach about it than talk about how the company is. In short, it is better to show that you can do something by doing it than by saying that you can do it.

4.4.1. Students

Students are the main target group for Universeum, since they are the ones consuming their content while being taught and inspired. Therefore, they are also the main target of the website, since it needs to show Universeum's mission by affecting children in the same way the science center does.

Students can be divided into 3 groups with different goals and needs:

Lower stage (6-8): Although children within this range like to experiment and enjoy their visits to Universeum, they focus more on the fun part and do not have enough learning capabilities to use the science center to its full potential. In addition, their percentage of Internet usage is considerably low.

Driving forces:

- Want to have fun.
- Want to discover new things.
- Want to experiment

Medium stage (9-12): It is the ideal age range, since they are curious and like to experiment while having the learning capabilities to take full advantage of the center. In addition, during this time children start using the Internet on their own.

Driving forces:

- Want to discover new things.
- Want to have fun.
- Want to understand.
- Want to experiment.

High stage (13-15): Once they enter the teenager phase, children lose interest in learning and experimenting, and prioritize other facets of life. However, they have a big concern about their future career, since at this age they usually choose their field of studies.

Driving forces:

- Want to have fun.
- Want to be with friends.
- Want to be popular.
- Want to be independent.

4.4.2. Teachers

Teachers are responsible for a great number of students, and are in charge of their trips outside school. They are the ones proposing and organizing school visits to Universeum, and hence an important target group for the website.

Teachers are usually caught between the desires of being good professionals and choose the best for their students, and the paperwork and extra work something out of the ordinary could imply.

Since teachers are responsible for the academic education of the students, they are a high priority target group for the website and needs to increase their interest in Universeum as a classroom. This interest can be translated into school visits or professional education.

Driving forces:

- Want students to learn.
- Want to have the least extra work.
- Want to get away from routine.
- Want to be a good professional.
- Want students to have a good impression of him/her.

4.4.3. Parents

Parents are adults with children, hence, they are the responsible for their families and the ones making decisions. Although parents are not the main target for the science center, they are the ones deciding if their children are visiting the Universeum. Therefore, they are a high priority target group for the website.

According to the current website's analytics analysis, a great amount of the visits to the center are done during vacation periods, with no participations of teachers. This gives a high importance to visits initiated by parents.

Parents usually want the best for their children in every sense, but also they are afraid to waste the opportunity to spend time and share experiences with their children before they enter the teenager ages.

Driving forces:

- Want the best for their children.
- Want to share experiences with their children.
- Want to spend the least money.
- Want to have the least extra work.
- Want to share experiences with other families.

4.4.4. People with accessibility needs

People with certain accessibility needs have requirements related to information understanding with topics such as language or visualization, but also to physical accessibility, such as the type of input peripherals they are able to use. These users can be part of any other group, but their needs should be assessed separately in order to guarantee that the main target groups are covered.

Driving forces:

- Want to be able to do what everyone else can.

4.4.5. Principal

Although teachers are the ones in charge for school visits, school principals need to be convinced, since they are the ones approving or refusing teachers' proposals. Because school visits are very important for Universeum, the role of principals is vital, although they don't take the important first decision.

Principals, and other administrative personnel in schools, manage the school resources, so their job is to find the best balance between saving resources and give the best to the students.

Driving forces:

- Want students to learn.
- Want to spend the least money.
- Want to have all the information.
- Want the least extra work.

4.4.6. Opinion-makers

Critics, journalists and bloggers are those able to share their opinions about different topics by using their respective channels. Other people usually use opinion-makers opinions when deciding if a visit to Universeum is to be done, therefore, it indirectly affects the main purpose of the site.

These professionals' jobs depend on their ability to attract audience and, therefore, they strive to generate the most complete and interesting content possible.

Driving forces:

- Want to write interesting articles.
- Want to be successful.
- Want to have the most information.
- Want to have insights.

4.4.7. Decision-makers

This group includes politicians, Universeum's partners and Universeum founders. This people is in charge of making decisions that affect directly the science center, such as those related to funds or permissions.

The decisions they make are the high level ones, and usually affected by direct information sent by Universeum's personnel rather than the website, hence they are not an important target for it.

They are usually people working in public organizations, so they are really concerned about their public image. In addition, in some cases they are in charge of managing important budgets.

Driving forces:

- Want the center to be successful.
- Want the center to be profitable.
- Want to have good public image.
- Want to invest the least money.

4.4.8. Elder

Elder people can be responsible for their grandchildren, but usually they visit science centers on their own using the great amount of free time they tend to have once they have retired, since they feel free from their work duties and want to recover all those missed experiences. Moreover, family is a very important part of their lives, since they tend to be dependent on them.

Since they aren't part of Universeum's mission, their visits are a good consequence rather than a goal. However, they have the chance to influence other more important target groups such as their families.

Driving forces:

- Want to be entertained.
- Want to feel respected.
- Want the best for their families.
- Want to spend time with other elder.
- Want to be heard.

4.4.9. Adults without children

Adults, when not responsible for their children, visit Universeum on their own or with friends. Thus, they are the least important of the target groups, since they are not part of Universeum's mission nor have a high chance of influencing other high priority targets.

Adults without kids tend to enjoy the lack of parenting responsibilities spending time with friends in similar situations.

Driving forces:

- Want to be entertained.
- Want to spend time with other adults without children.
- Want to spend the least money.
- Want to be impressed.

4.5 Measurement points

Analytics

- Number of returning visitors to the website.
- Number of non-practical information pages viewed.
- Duration of the visit.
- Number of teachers asking for professional education.
- Number of school visits.
- Number of visits coming from non-branded organic searches.

People

- Knowledge about Universeum as a place to learn about science and technology.
(Asking to visitors)

- Vision of Universeum as a reference for science and technology information. (Survey)
- Vision of Universeum as a beneficial activity to share with children. (Survey)

4.6 Solution

The first phases of the process resulted in an effect map, a tool described by the “Effect managing” design process, which presents all the elements extracted from the feasibility study and the strategy (purpose, target groups, driving forces, etc...). On this map we added functionalities that answered to the needs of the prioritized target groups.

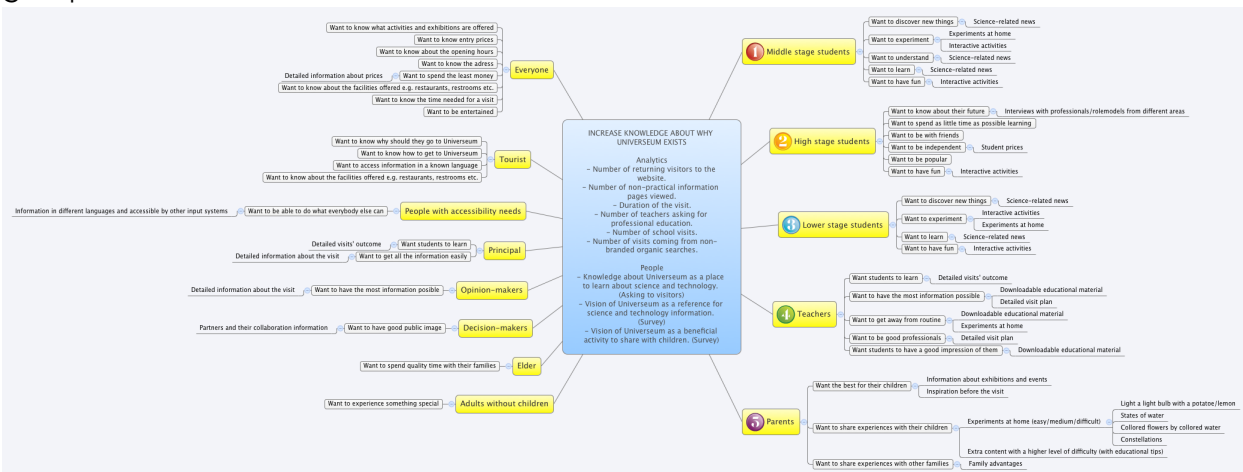


Figure 10. Effect map resulted from the Universeum project (expanded version in Appendix II). Source: F&B

All this functionalities were combined to produce a general solution that still answered to all those needs. After many ideation sessions, we defined a concept: Make Universeum a referent for information about natural science and technology by creating a news website where they would publish posts about this kind of news (earthquakes, space, etc...) using a type language intended to make children understand more about these topics.

This idea was then transformed into some first versions' wireframes, which were the bases to discuss upon.

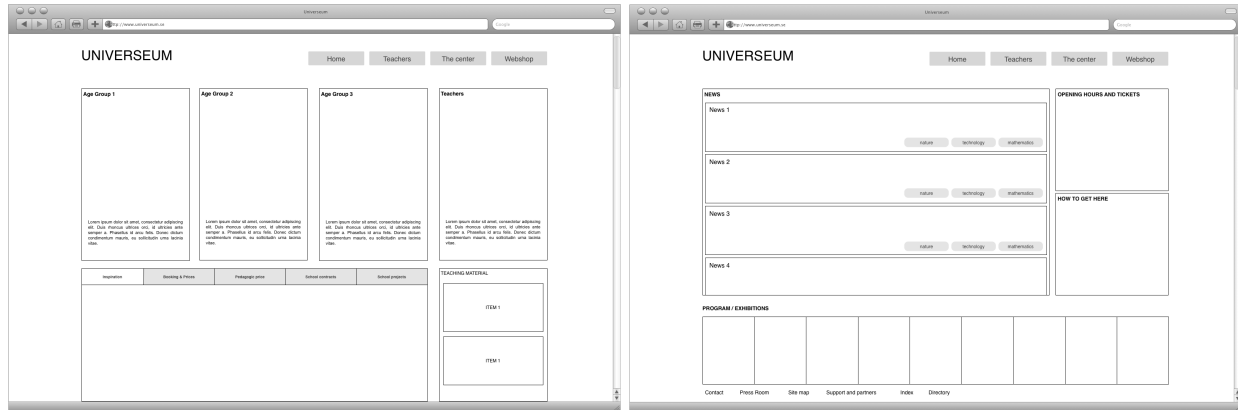


Figure 11. First wireframes for the Universeum project (expanded version in Appendix II). Source: F&B

However, when the idea was presented to the client, they felt they weren't ready to have that level of commitment, not being able to produce a decent quantity of content. For that reason, the idea was rejected and we started working on a different version, which could work towards the same purpose without the need for Universeum to be heavily involved. The design of that version is still in process.

5. REFLECTION ON PROCESSES

With all the information about the different design processes, methods and models gathered, I looked into their strengths and weaknesses and, most important, evaluate how could they help in an advertising project. In order to carry out this task I used the insights acquired during the practical work done at Forsman & Bodenfors, which proved to be a vital part of the process and a key element in the discussion process.

5.1 Effect management

+	-
Well structured	Not very detailed
Good control over the results' quality	Risk of affecting creativity
Huge importance of user data	Poor user participation

Effect management is a great design process with a strong focus on controlling the quality level of the result. It provides a very structured and clear set of steps in order to achieve this goal, by means of correctly used user data. However, a strong structure coupled with the way it determines the validity of each idea can be harmful to creativity. In addition, it seems a bit inconsistent to require a high quantity of user data, but not encourage their participation in different stages such as evaluation or ideation.

Therefore, its control over the quality of the result through the use of information gathering and the effect map is something that fits perfectly into the way advertising agencies work. However, this particular industry doesn't focus only in quality but also in originality, meaning that creativity is key and should be protected.

5.2 Web engineering

+	-
Techniques for requirement elicitation	Poor on the interface design part
Takes into account cognitive requirements	Focuses on tasks not experiences
Gives importance to the context of use	OOUI is very engineer oriented

The strength in web engineering is its detail in a tool level, since it gives designers a specific way of carrying out each of the steps, such as requirement elicitation and interface design. In addition, the seek for detail makes web engineering take into account aspects that are not usually taken into account, such as cognitive requirements and load. However, this is more useful from a requirement elicitation point of view than from an interface design one, since they propose an engineering oriented methodology focused more in tasks than in the overall user experience.

Since the advertising industry focuses mainly in the user experience due to its influence on users' actions, the interface design part of the web engineering process is not suitable for this kind of projects. However, the requirement elicitation tools could be of great use to the industry, since the knowledge on how to get from users the required information is not usually part of its expertise.

5.3 Interface design process

+	-
Great level of user involvement	Excessive reliance on guidelines
Continuous iteration	Risk of affecting creativity
Detailed process structure	No recommendation on how to handle those multidisciplinary teams

Guidelines, as explained by the interface design process, are a good asset for any process, since they give consistency to the projects and help making decisions. However, they have the tendency to have no room for new ideas or thinking out of the box, greatly affecting creativity. Moreover, the process recognizes the power of a multidisciplinary team due to its ability to handle the different steps and situations with great success. However, and although having a detailed structure for the whole process, it doesn't give any instructions or tips on how to handle this kind of teams, which isn't usually an easy task. Furthermore, an important strength of this design process is the continuous iteration that is suffered by the design, since it contributes to the quality of the result.

Therefore, and in a similar way as the effect management process, the restriction applied over creativity makes this part of the process not suitable for the advertising industry. However, its division of steps between pre-design and design makes a good

synergy with the division made also by the effect management process. Moreover, the idea of having a continuous iteration thanks to numerous evaluation points strengthens the quality of the result, key aspect in the advertising industry.

5.4 Ecological Interface Design

+	-
Excellent environment analysis tools	Lack of focus on UX
Great adaptability to changes in the environment	Lack of structure
Great interactions categorization	Ignores users' driving forces

The environment a product is used in is of great importance in many cases, and EID is one of the few processes that take it into account for its design decisions. For that purpose it provides practical and detailed tools with easy application in many projects. However, by focusing the environment it ignores other aspects of design such as the user experience and users driving forces. In addition, it doesn't propose any kind of fixed structure, which makes it difficult to follow.

From an advertising point of view, the lack of focus on the user experience makes the EID lose a lot of possibilities, as well as the lack of presence of users' driving forces. However, the tools it provides for environment and interaction analysis are something with great practical potential.

5.5 User-based design process

+	-
Great level of user involvement	Unclear about the creative steps
Important presence of evaluation	Unclear about how to manage the user involvement
Well structured process	Lack of evaluation tools

User participation and a great level of evaluation are the key strengths this design process provides, along with a very structured set of steps that can be followed very easily. However, what to do within each one of these steps is not as clear as the general

information, since it is not clear about how to involve users in the different steps or how to carry out the evaluation process.

The user-based design process doesn't provide any tool useful for an advertising project, but it has a very well structured set of steps which fits into an agency of this kind, as well as an approach based on users and evaluation, fact that contributes to achieve the sought quality.

5.6 UX centered interface design

+	-
Well structured	Not very open to adaptations
Clear about the steps division	Unclear about the process within the steps
Good management of multidisciplinary teams	

The UX centered interface design process provides a extremely well structured set of steps and tasks, being sometimes too strict to allow adaptations. However, one of the strengths of this process is the ability to manage multidisciplinary teams, which is not an easy task, by defining different roles within the team. It also describes how should the outcome of every step be and how it should be used by the rest of the members of the team.

Since within an advertising project work people with different backgrounds and specialties, the UX centered interface design process can contribute with its tools to manage this multidisciplinary team in a good and efficient way.

5.7 Ideation

+	-
Clear guideline	Not very open to adaptations
Easy to use in many situations	Lack of argumentation

The importance of the ideation part of the design is obvious and a set of guidelines to improve them is a good asset for a process. However, this guidelines need to be

discuss the typical problems and offer solutions, not offer just the solutions. In this case, the author doesn't give any argument to his statements and doesn't point out the problems they are taking care of. However, if one is to follow the guideline to the letter, it is very easy to apply.

Creativity and ideation are key in an advertising project, as it is in any kind of design work, and these guidelines can greatly help the industry in this sense. However, since every project and agency is different, the different statements cannot be applied in the strict way the author intended and need to be summarized in a set of recommendations or attitudes toward brainstorming.

5.8 Web quality

+	-
Detailed guideline Easy to apply	Doesn't take into account user goals Lack of evaluation tools

Many processes mention the need for evaluation during the design process, but not many describe how to evaluate a design. In this case, the authors provide a set of criteria to determine the quality level of the result, which are really useful to apply. However, they don't take into account the users' goals and needs, and neither describe a way to get all the information needed.

The advertising industry would give a lot of use to this guideline but, however, it would need to add more criteria in relation to users' driving forces in order to be suitable for an advertising project.

5.9 Client-designer communication based on Social Software

+	-
Saves resources invested in face-to-face meetings All the information is registered	Information and intentions can be easily lost along the way Tends to be general purpose oriented

Social Software is a good alternative when face-to-face meetings are not a possibility. However, they are not an equivalent option, since a lot of the information and intentions are lost along the way. In addition, most of the software currently used has a general purpose and, although some have been designed, no web design specialized version has been yet adopted.

The advertising industry has many singularities, which should be addressed by any tool to be used within their projects. Communication between the agency and their clients is extremely close, since their job is not to just design a product, but to design the image of the brand and their relationship with their customers. Because of this reason, face-to-face meetings are needed and cannot be substituted by a tool not designed specifically to answer the advertising industry's requirements.

5.10 WIDP: Web Interaction Design Patterns

+	-
Easy development tasks Flexible and easy to reuse designs	Risk of affecting creativity Lack of focus on target groups

Patterns are a good tool for standard website design, since they provide an easy answer to those problems that arise through any design project. However, since those answers are generic, they tend to ignore the market and users the website is targeting, information which could potentially change the resulting design.

Moreover, projects carried out within the advertising industry intent to customize a design to the business and their target users needs. The use of standard solutions for common problems would affect this uniqueness and the creativity behind it, damaging one of the industry's greatest strengths.

5.9 Four-space model

+	-
Good evaluation tool	More a philosophy than a process
Good aid tool for ideation	Difficult to put into practice

Although designed as a practical tool, the four-space model turns out to be more a philosophy than a tool itself and it may be difficult to apply in many cases due to its high level of abstraction. However, when successfully applied, it can be a great tool for evaluation and iteration, since it makes sure the final result is a balanced design from an interaction point of view.

When applicable, the four-space model can help the advertising industry to have a stronger focus on the interaction with their products. However, it is probably easier to apply as an evaluation tool than as an ideation tool, since it would change the focus of the project from driving forces, user experience and quality to plain interaction.

5.10 Multi-modal design

+	-
Good to evaluate a process	Difficult to apply in a practical way
Clear definition of the steps' outcome	Many ideas disconnected from each other

In a similar case as the four-space model one, the multi-modal design approach is sometimes too abstract and difficult to apply, touching many different topics with not too much in common. However, it can help to evaluate the design process, since it proposes a set of questions each of the steps in a design process should be able to answer. Using the wording used by the authors, they define what kind of meaning every stage should give to the design.

From an advertising point of view, and probably any kind of design project, the multi-modal design approach could be translated in some sort of checklist. This checklist would determine if the followed process correctly covers all the levels of meaning the design is supposed to have.

6. SUGGESTED IXD PROCESS WITHIN AN ADVERTISING AGENCY

With all the methodologies and processes analyzed, one can combine the right aspects of each of them in order to generate an improved version of their design process. This process must take into account the insights coming from the advertising industry, since that conditions many of the decisions taken.

Therefore, I looked into the advantages and disadvantages of the methodologies studied and, combined with the gathered characteristics of an advertising agency, I defined an improved design process for projects within an advertising agency.

This process needs to define all the process previous to the implementation of the result, not including it, since that step of the project follows a different set of rules and isn't usually done in-house. In addition, the launch of the service is usually defined by each advertising company and has no relation with the design process itself, since it is a more logistic-related topic. However, some recommendations will be given for those processes.

6.1 General

The design process defined as a result of this master thesis intends to take all this into consideration and is divided in 3 main steps: Information gathering step, Strategy definition step and Solution development step. The need for each of them will be explained in the following sections.

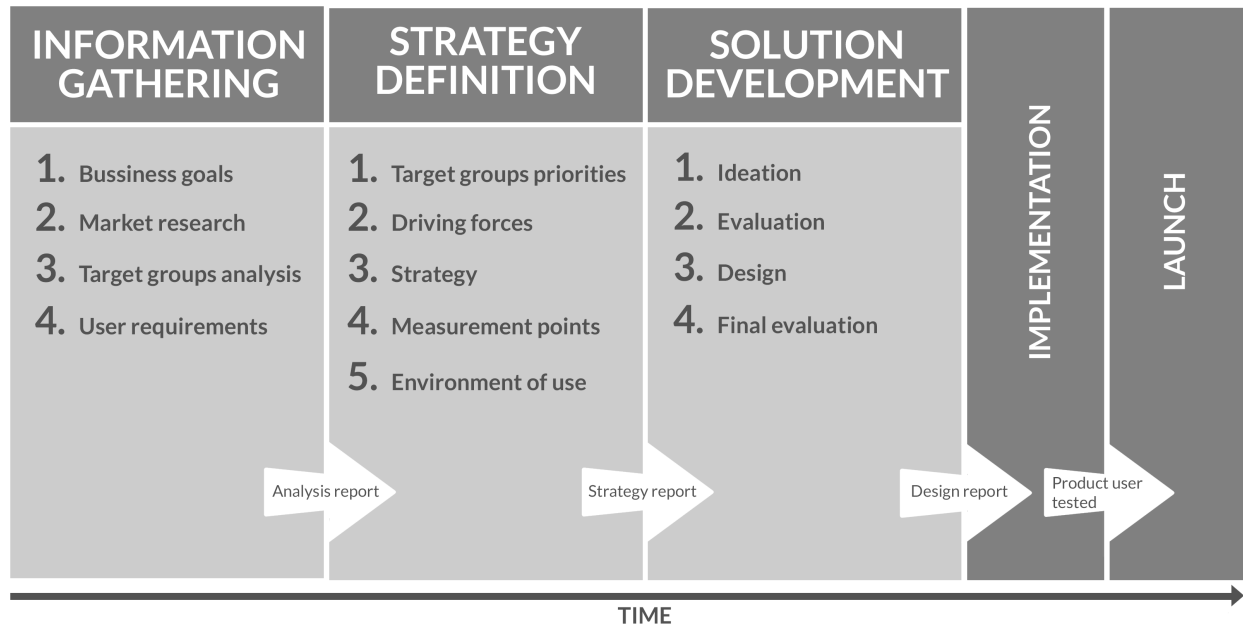


Figure 12. Improved version of the design process for an advertising agency.

The advantages of a multidisciplinary team are countless, since each of the members provides expertise on a different field and their own point of view. This variety strengthens the decisions made and increases the quality of the result.

In an advertising agency multidisciplinary teams are not only recommended but necessary, since the level of quality and detail they need to achieve requires of expertise on each of its parts. For that reason a basic design team is composed by a visual designer, an interaction designer, an art director, a copywriter and, finally, a project manager who manages the team.

This last task is the greatest problem the use of a multidisciplinary team generates, they are especially difficult to manage. In order to solve that, not only needs a role like the project manager, but also the team needs some kind of communication tools, which help to share their work and ideas. The solution proposed for this improved design process is the use of standardized documents, which are created at the end of every stage of the process. This will help the whole team understand and have the same level of knowledge about the project, since the team member responsible for that step will have shared with them the totality of the outcome from the work done during that stage.

Since this process consists in three different steps, three documents must be generated: the analysis report at the end of the information gathering, the strategy report at the end of the strategy definition and the design report at the end of the

solution development. These reports are used by the following steps as foundations for the decision-making.

6.2 Information gathering

As mentioned before, advertising tries to make consumers take an action or continuing with one they are already performing. Therefore, the results from any of the projects coming from the advertising industry will be valuable not only because of their quality, but mostly because of their effectiveness at encouraging the behavior they are designed for.

Hence, since effectiveness is such a key element, the design process used in these projects must guarantee as much as possible the effectiveness of its results by means of its step definition and the philosophy behind it. In order to achieve this, the resulting design must take into account two important types of information: what does the company issuing the project want to achieve with it, and what do users want, how they react and behave, etc.

As it is clear, dedicating time to gather this information is needed and, therefore, the final design process must include an "Information gathering" step. This first step will define the foundations for the decisions taken during the rest of the design process, since it will have the key to effectiveness.

This preliminary or preparatory step is defined by most of the design processes studied, proving its well-accepted importance.

The information gathering step includes 4 tasks which must be completed before continuing with the process. These tasks are:

- **1. Business goals**

By means of interviews and study of the internal documentation of the company issuing the project, the design team needs to get to know their work and their philosophy, and also understand their intentions and goals with the project.

- **2. Market research**

Once the team knows everything about the company, they need to learn more about their market and competitors. Understanding how it works and how are other similar companies working is vital if one strives for effectiveness..

- **3. Target groups:**

Knowing what kinds of users have some degree of implication on achieving the business goals is vital for the strategy definition. Therefore, they must be identified and described with as much information as possible.

- **4. User requirements:**

Finally, the user requirements and goals in relation to the company's activity, goals and the kind of result to be designed (app, site...) need to be gathered. In order to achieve that, I recommend the use of ACTA, since it provides an easy to follow and effective set of tools to gather different types of requirements from the users.

As a result from this stage the team creates an analysis report document, which will contain all the information gathered in a clear and structured way, in order for those in charge of the strategy definition find it easy to go back to any of this data when making any of the decisions needed for that process.

6.3 Strategy definition

Once all the information about the company and its consumers has been gathered, it needs to be analyzed and translated into a way of achieving a good and effective result, and a design related to it.

One of the effect management process strengths is the way it manages to put opinions and aesthetics-based decisions out of the table and focus on the quality and effectiveness of the design. In order to do this it makes a clear separation between the definition of the strategy to follow from the actual design of the result, and makes every decision taken go back to that strategy in order to find its validity.

Therefore, a "Strategy definition" step is recommended if one is to guarantee the quality and effectiveness of the resulting design.

The strategy to be defined needs of 5 important elements:

- **1. Purpose and aim**

The core of the strategy the design needs to follow is its purpose, which is the goal it is trying to achieve. This factor conditions most of the decision to come, since every element designed must work towards the defined purpose.

- **2. Target group prioritization**

It is important to have all the information about all the users involved in the project, but there are some types of users with a greater participation than others. In this task the team gives priorities to each of the target groups depending on how they contribute to the achievement of the project's purpose or aim.

- **3. Driving forces definition**

Those target groups with higher priority need to be known at a deeper level than the rest, defining their goals and needs. These driving forces are always prioritized according to their relation with the project's purpose.

- **4. Measurement points**

In order to measure the effectiveness and success of an advertising project a common practice is to define some elements that would be measured before and after the launch in order to check the difference between the starting situation and the resulting, and the effect of the project. These measurement points can be user related or based on statistics.

- **5. Environment of use**

During the design process, it is important to have defined the intended environment or environments of use, since they change the way users interact with products.

The strategy is described with a strategy report document, which will include all the details in clear way. Moreover, this document will include an effect map, a tool proposed by the effect management methodology, which is a visual representation of the strategy where each element is connected according to how they answer each other.

6.4 Solution development

With the strategy defined the actual solution design starts. As mentioned before, all the decisions taken within this step must find their justification in the strategy definition. In order to make this easier the effect management process proposes the use of an "Effect map".

In addition, as the "User-based design process" recommends, an evaluation stage within this solution development process is highly beneficial, since it strengthens the quality and effectiveness of the solution by introducing future users as final judges.

Moreover, and even though users will evaluate the effectiveness of the resulting design, formal tools or guidelines are needed if one is to evaluate the quality of it without introducing our own biases.

The solution development requires of 4 different tasks:

- **1. Ideation**

Taking into account the most important driving forces from the most important target groups, the team needs to come up with different functionalities. Every idea must give answer to these goals and needs, and are added to the effect map started in the "Strategy definition" step.

- **2. Evaluation**

All the ideas resulting from the ideation task need to be evaluated and check if they are really part of the defined strategy. In order to do this, participatory design techniques need to be used, such as interviews or focus groups. This process filters which ideas are good material to be used as foundations for the design.

- **3. Design**

With all the functionalities ideated and filtered it is time to define the actual design of the digital product. The design must combine the functionalities in a good way, and also contribute with its characteristics to the purpose described by the strategy.

- **4. Final evaluation**

As with the ideation, the design needs to be also user-tested. This task determines if the final result fulfills the strategy intentions and, hence, it is ready for implementation.

The solution development step includes evaluation tasks, what makes it an iterative process, going back and forth applying the results of the evaluation. Once the final design is defined, it is described with detail in a design report, which will be used by those in charge of the implementation as their reference material.

6.5 Final steps: Implementation and launch

Although the implementation and launch is not part of the design itself, there are some considerations that should be taken into account in order to achieve the best result possible.

Usually, external companies take care of the implementation of advertising projects. Therefore, the communication between the agency and this company is vital in order to ensure the quality of the result. This fact makes the detail of the design report crucial and the implication of a team member in the process is recommended.

In addition, and continuing with the introduction of evaluation into the design process, I believe it is necessary to perform a user test when the solution is fully implemented and before the launch has started. At this point it is still feasible to iterate the design with minor changes and the solution is ready enough to be tested by the targeted users.

Finally, it is common that each agency has its own procedure for the launch due to the characteristics of their market. However, it is important to bear in mind that, as the multi-modal design model describe, the way the result reaches the user adds an extra meaning to it. Therefore, deciding which channel to use and how it is presented according to the strategy is vital.

7. DISCUSSION

7.1 Methodology discussion

The process followed during this master thesis, despite its strengths and flaws, has resulted in some important conclusions that answer some of the questions this project started from.

Since the beginning of this project the importance of having both a practical step and a more theoretical step, since both the knowledge and the experience felt to be crucial when designing a process intended to be applied in real projects.

This division was successfully applied, however, it may be discussed that the relationship between each of the steps, and the process followed in order to reach the results, could be improved.

After having followed the planned methodology it is easier to see the flaws this can have and, in this particular case, it feels that the balance between practical and theoretical was not completely achieved. This is shown by the importance the practical case takes over the research part in some steps of the result definition.

Therefore, although I think the steps are the ones needed, a better definition of how they should be intertwined would be needed in order to reach a better and more balanced outcome.

Moreover, and regarding the Research/Design/Validation phase division, it greatly helped planning the project and distributing the time resources available.

7.2 Result discussion

With this design process I intended to find a solution for those problems and weaknesses I was able to identify on the process Forsman & Bodenfors currently uses. This was possible due to the combination of the observation and experimentation step, which provided the insights from the agency, and the literature research step, which provided some possible solutions to the issues identified.

The main points I wanted to take care of were the lack of evaluation and user involvement, and the lack of control over the creativity and multidisciplinary teams. In order to tackle the first of them I introduced evaluation into the "Solution

development” step, making it an iterative process. Moreover, a user testing is recommended after the implementation is finished.

Regarding the second of the main problems, the new design process intends to channel the agency’s high level of creativity by adding a more structured set of steps, which strengthens the relationship between the decisions and the information they are based on. In addition, and in order to ease the transition between the steps within multidisciplinary teams, the new process summarizes the outcome of every step into a report. These reports make it easier when making decisions based on previous tasks and to share information with other team members.

However, in order to confirm its validity, this advantages need to be tested by applying the improved design process resulting from this master thesis within a real advertising project. This is rather hard to achieve in a short time span, since changing the way a big advertising agency works is ambitious and risky for their economy.

Nevertheless, one can try to see what could have changed within a project if the improved version of the design process was applied. In the case of the Universeum project, I believe that many of the problems we encountered would have been avoided.

For example, a better decision-making due to the more structured way of working and the control over creativity could have been able to keep the team from choosing their favorite option without taking into account the feasibility study done. Choosing the right design option would have changed the negative reaction from the decision-makers at Universeum, shortening that way the total duration of the project.

7.3 Generalizability

The process followed in order to carry out this master thesis has been clearly divided into tasks and described in a way that is easy to apply and repeat. However, in case of a reproduction of this project, since the advertising agency chosen would be different , so would be the results from that phase.

Therefore, since one of the biggest parts of the work is practical and based on the relationship with an external company, the outcome may extremely differ due to the experiences lived during the experimentation and observation phase.

However, these differences wouldn’t do anything but contribute to the generalizability of the resulting process, since all the proposed methodologies could be combined to take into account the most situations and needs possible.

7.4 Future work

The main task pending to be carried out is to test the proposed design process in a real environment, since the advantages described are purely theoretical and based on my experience within F&B. Therefore, in order to confirm it's validity it needs to be applied into a real advertising project.

Moreover, this could be complemented with interviews with designers and art directors from different advertising agencies in order to gather their first opinions about the design process and its viability.

Finally, these results are just an answer to the problem and many others may exist. Therefore, as with any other proposed process, it needs to be refined by other point of views and experiences in order to achieve the most general and complete design process possible. This would almost guarantee that the proposed methodologies could be successfully applied to any type of advertising project.

Therefore, and in order to expand the scope of the results, the participation in a project within a different advertising agency would be strongly recommended. Each agency has their own way of working, and basing the results on just the experiences of one of them could easily contaminate the outcome.

8. CONCLUSION

The intention with this master thesis was to find a way to successfully apply interaction design methodologies into the advertising industry and its projects, as defined with the main research question. In order to do this it was necessary to understand the specific needs and ways of working of the advertising industry and, based on this information, find those interaction design methodologies that could be suitable to be applied into an advertising project.

Because of this reason, the research phase of this master thesis was planned to be divided into two main steps: the first one consisting on an observation and experimentation within a real advertising agency, and the second one related to the literature research necessary to collect all the candidate methodologies.

However, although the structure of the master thesis and the division of the work into Research/Design/Validation phases was followed as planned, it wasn't the same situation with the expected time planning, since the experimentation phase was longer than expected. This was caused by the interaction with the client, which is not usually taken into account when taking an academic research point of view. This interaction is not always, not even usually, as easy and smooth as one could expect before diving into it. However, it is necessary for the project to be successfully finished.

The result of this master thesis is a design process with a set of steps and methodologies that try to answer the special needs advertising projects have.

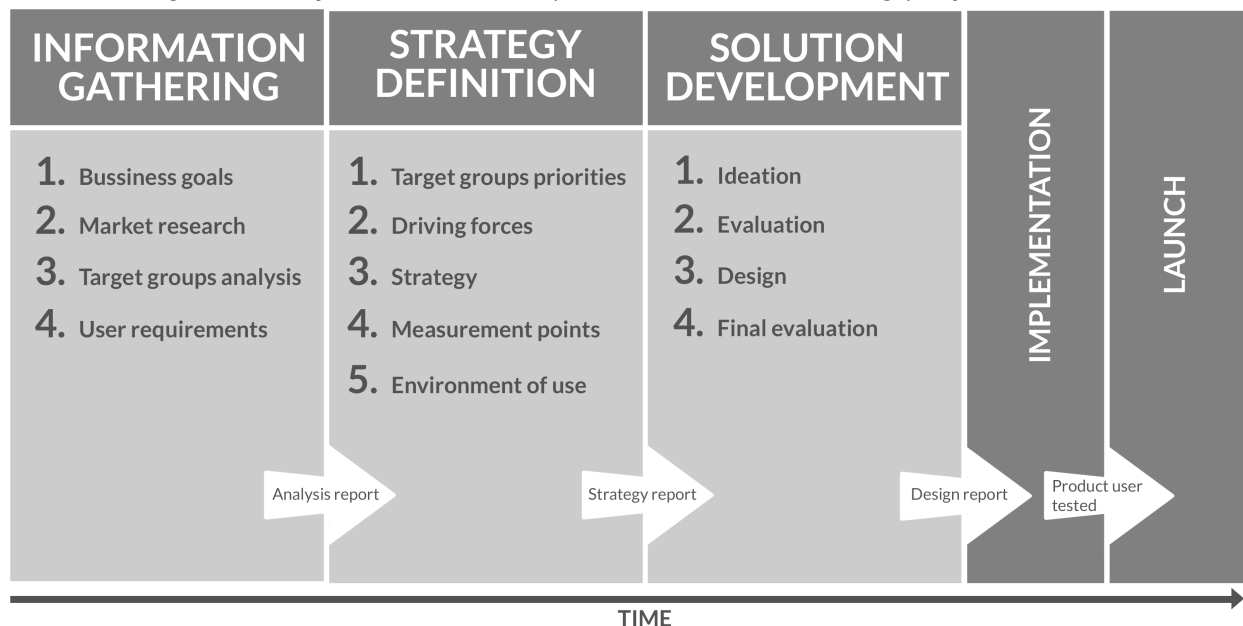


Figure 13. Improved version of the design process for an advertising agency.

The design process is divided in 3 main steps: Information gathering step, Strategy definition step and Solution development step.

The first of the steps consists on gathering information about the business issuing the project, their market and their users in order to better understand the product to be designed and what it needs to deliver.

With the second of the steps the strategy to follow is defined, summarized into a purpose the product needs to achieve. In this process is crucial the information previously gathered, since it is the base of the reasoning behind the strategy. In addition, within this step the driving forces of the potential users are studied and related to how they help achieving the defined strategy.

Finally, with the strategy defined and all the information needed gathered, the solution is ideated in the third step. The whole ideation process needs to be based on how each of the functionalities helps answering the strategy purpose.

These three steps, coupled with the recommendation of use of multidisciplinary teams and tools like effect maps and reports between the steps, give an answer to most of the problems an advertising agency must face during any of their projects without having a big negative impact on their strengths.

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APPENDIX I: Statistics from www.universeum.se

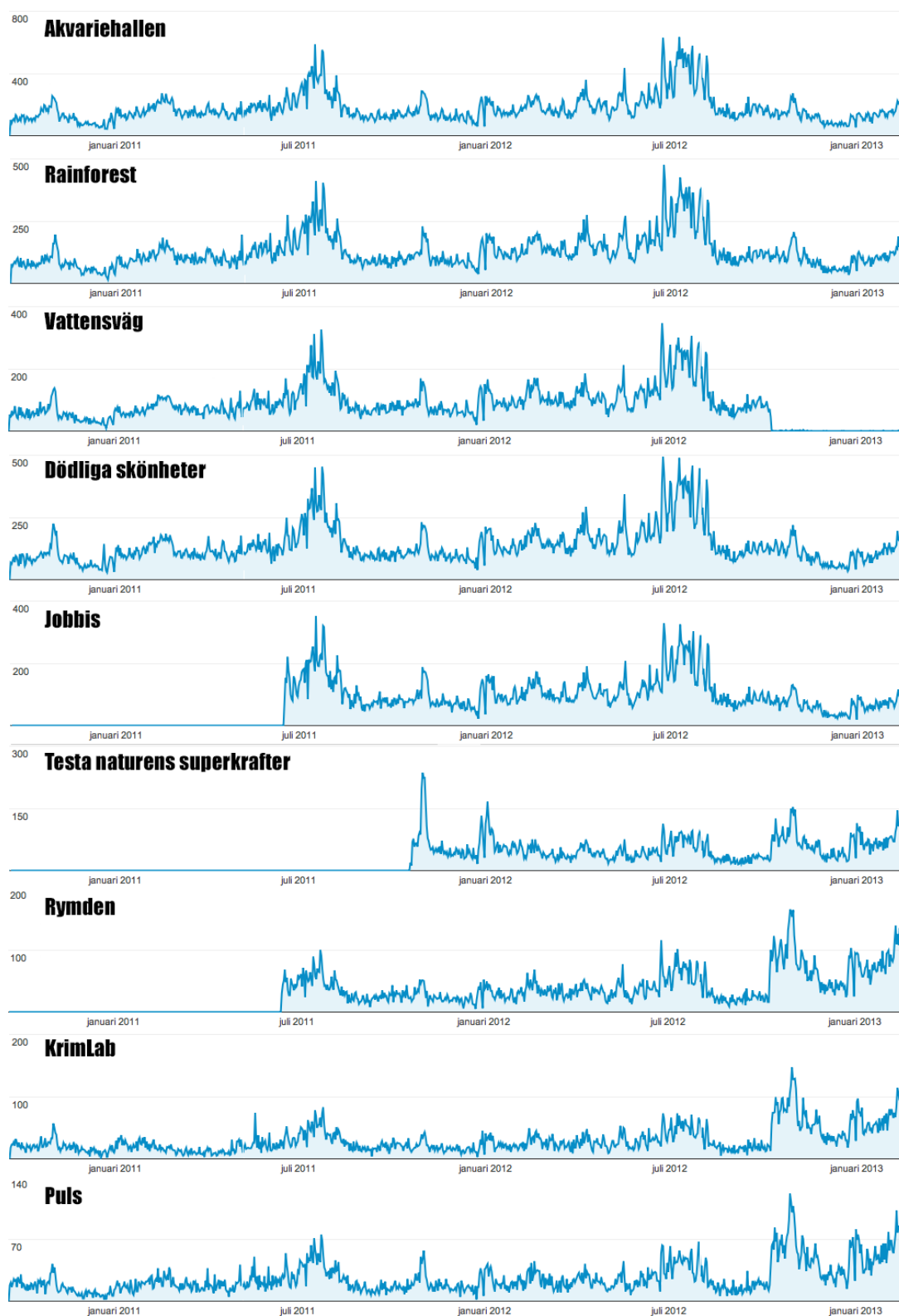


Figure 1 Distribution of the visits among different exhibitions' sites Source: Google Analytics.

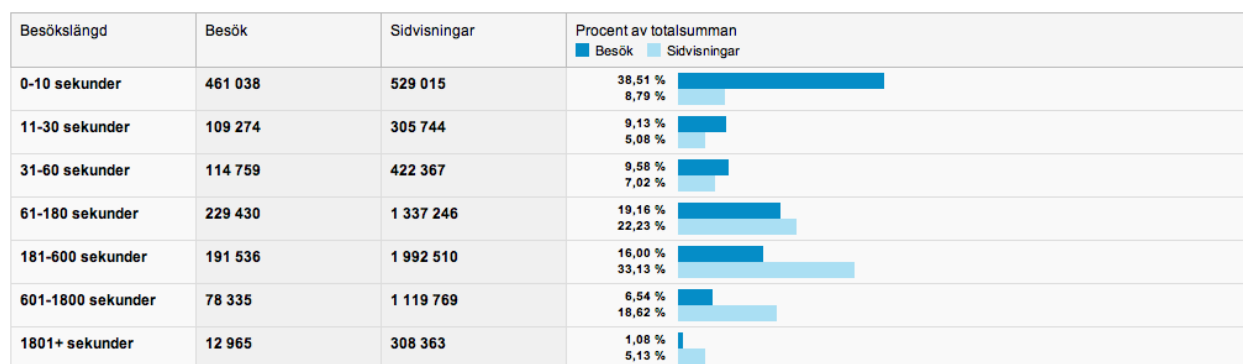


Figure 2. Distribution of the time spent by visitors and amount of pages viewed Source: Google Analytics.

1.	Homepage	889 657	14,79 %
2.	Visit us	356 583	5,93 %
3.	See and do	342 848	5,70 %
4.	Opening hours	267 592	4,45 %
5.	Programme	252 511	4,20 %
6.	Prices	196 675	3,27 %
7.	Homepage	194 265	3,23 %
8.	News	171 019	2,84 %
9.	Aquarium	154 873	2,57 %
10.	Deadly beauties	120 194	2,00 %
11.	Rainforest	111 258	1,85 %
12.	Homepage	98 404	1,64 %
13.	School programme	78 956	1,31 %
14.	Explora	76 262	1,27 %
15.	Water's way	72 190	1,20 %
16.	Private page	71 230	1,18 %
17.	Private page	70 574	1,17 %
18.	Events	70 440	1,17 %
19.	Sharks camera	69 273	1,15 %
20.	Contact	68 023	1,13 %

Figure 3. Distribution of the total number of pages viewed. Source: Google Analytics.

1.	Homepage		194 649	 16,26 %
2.	Opening hours		25 705	 2,15 %
3.	Homepage		10 777	 0,90 %
4.	Prices		5 077	 0,42 %
5.	Prices		4 103	 0,34 %
6.	Opening hours		3 973	 0,33 %
7.	Aquarium		3 829	 0,32 %
8.	Programme		3 733	 0,31 %
9.	Homepage		3 205	 0,27 %
10.	Programme		2 965	 0,25 %

Figure 4 Distribution of the total number of pages viewed from mobile phones. Source: Google Analytics.

1.	akvarium göteborg	2 184	 0,31 %
2.	hajar	1 780	 0,25 %
3.	barnkalas göteborg	1 660	 0,24 %
4.	årstider	1 428	 0,20 %
5.	göteborg akvarium	861	 0,12 %
6.	varför har vi årstider	790	 0,11 %
7.	varför har vi dag och natt	743	 0,11 %
8.	varför har vi olika årstider	699	 0,10 %
9.	ormar	630	 0,09 %
10.	stjärnbilder	514	 0,07 %

Figure 5 List of non-branded search words used. Source: Google Analytics.

1. universeum	9 781	44,51 %
2. (not provided)	4 878	22,20 %
3. universeum göteborg	1 289	5,87 %
4. universeum göteborg öppettider	655	2,98 %
5. universum	227	1,03 %
6. universeum inträde	144	0,66 %
7. universeum.se	131	0,60 %
8. göteborg universeum	130	0,59 %
9. universeum öppettider	85	0,39 %
10. universum göteborg	83	0,38 %
11. blå trädvaran	77	0,35 %
12. universum göteborg	75	0,34 %
13. barnkalas göteborg	63	0,29 %
14. www.universeum.se	62	0,28 %
15. universeum pris	60	0,27 %
16. varför har vi olika årstider	60	0,27 %
17. universeum priser	55	0,25 %
18. universeum dinosaurier	53	0,24 %
19. varför har vi årstider	51	0,23 %
20. varför har vi dag och natt	50	0,23 %

Figure 6. List of search words used. Source: Google Analytics.

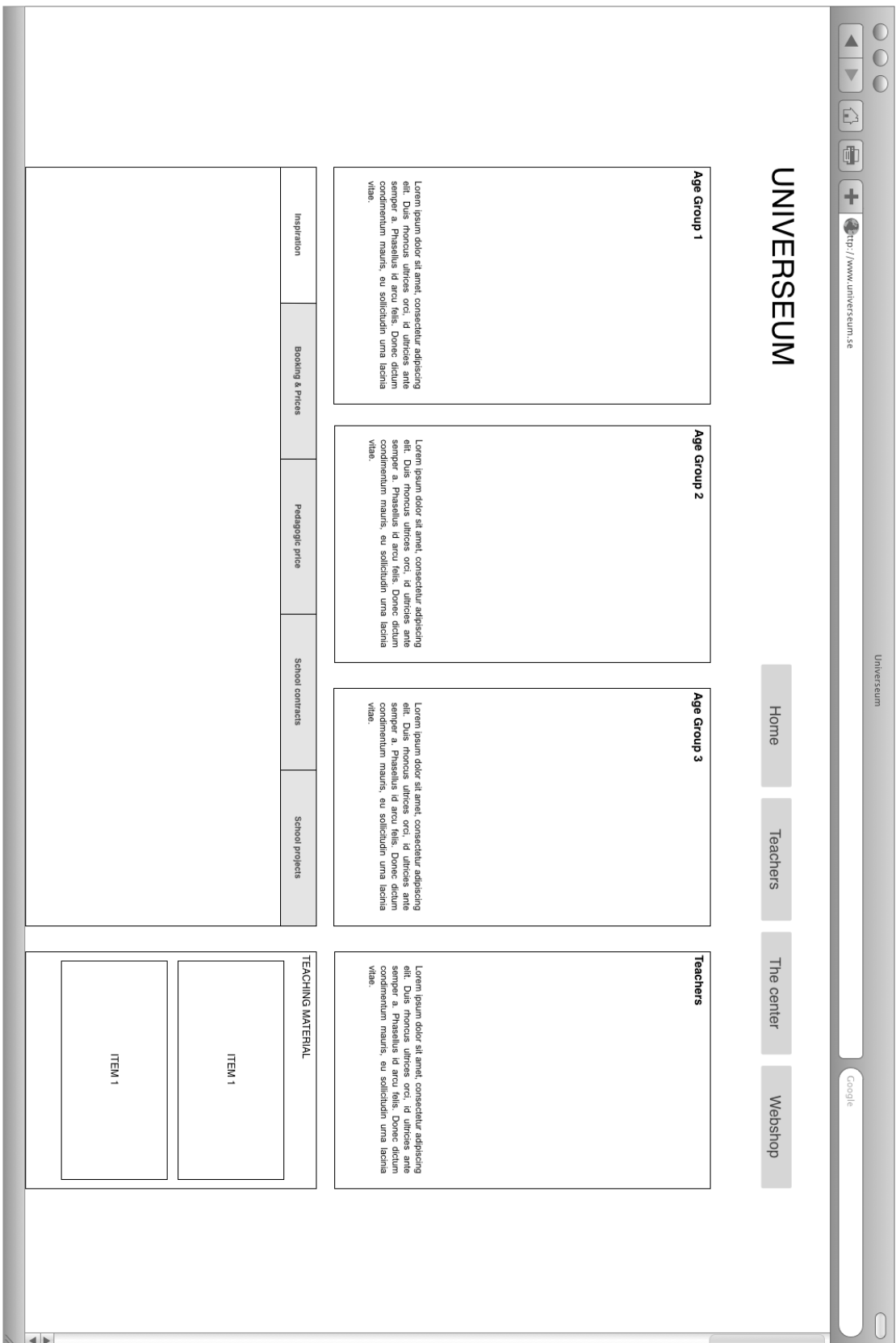
1. goteborg.com	20 616	17,40 %
2. facebook.com	8 660	7,31 %
3. google.se	7 116	6,00 %
4. goteborg.se	4 763	4,02 %
5. ilovegoteborg.se	3 605	3,04 %
6. visitsweden.com	2 931	2,47 %
7. bamsajter.se	2 841	2,40 %
8. webbkameror.se	2 487	2,10 %
9. reiseplanetten.no	2 011	1,70 %
10. barnsemester.se	1 835	1,55 %
11. gp.se	1 740	1,47 %
12. kemi2011.se	1 736	1,46 %
13. anet.tradedoubler.com	1 611	1,36 %
14. stenaline.dk	1 406	1,19 %
15. m.facebook.com	1 396	1,18 %

Figure 7 List of sources of referred traffic. Source: Google Analytics.

1.	320x480	115 157	 18,04 %
2.	1366x768	91 234	 14,29 %
3.	1280x800	70 504	 11,05 %
4.	768x1024	52 015	 8,15 %
5.	1280x1024	38 278	 6,00 %
6.	1920x1080	29 564	 4,63 %
7.	1680x1050	27 957	 4,38 %
8.	1440x900	25 543	 4,00 %
9.	1024x768	23 516	 3,68 %
10.	1600x900	13 598	 2,13 %
11.	1920x1200	10 491	 1,64 %
12.	720x1280	8 564	 1,34 %
13.	480x800	8 102	 1,27 %
14.	1024x600	7 551	 1,18 %

Figure 8. Distribution of the screen resolution among visitors (non-displayed values are 0-1%. Source: Google Analytics.

APPENDIX II: Solution for www.universeum.se



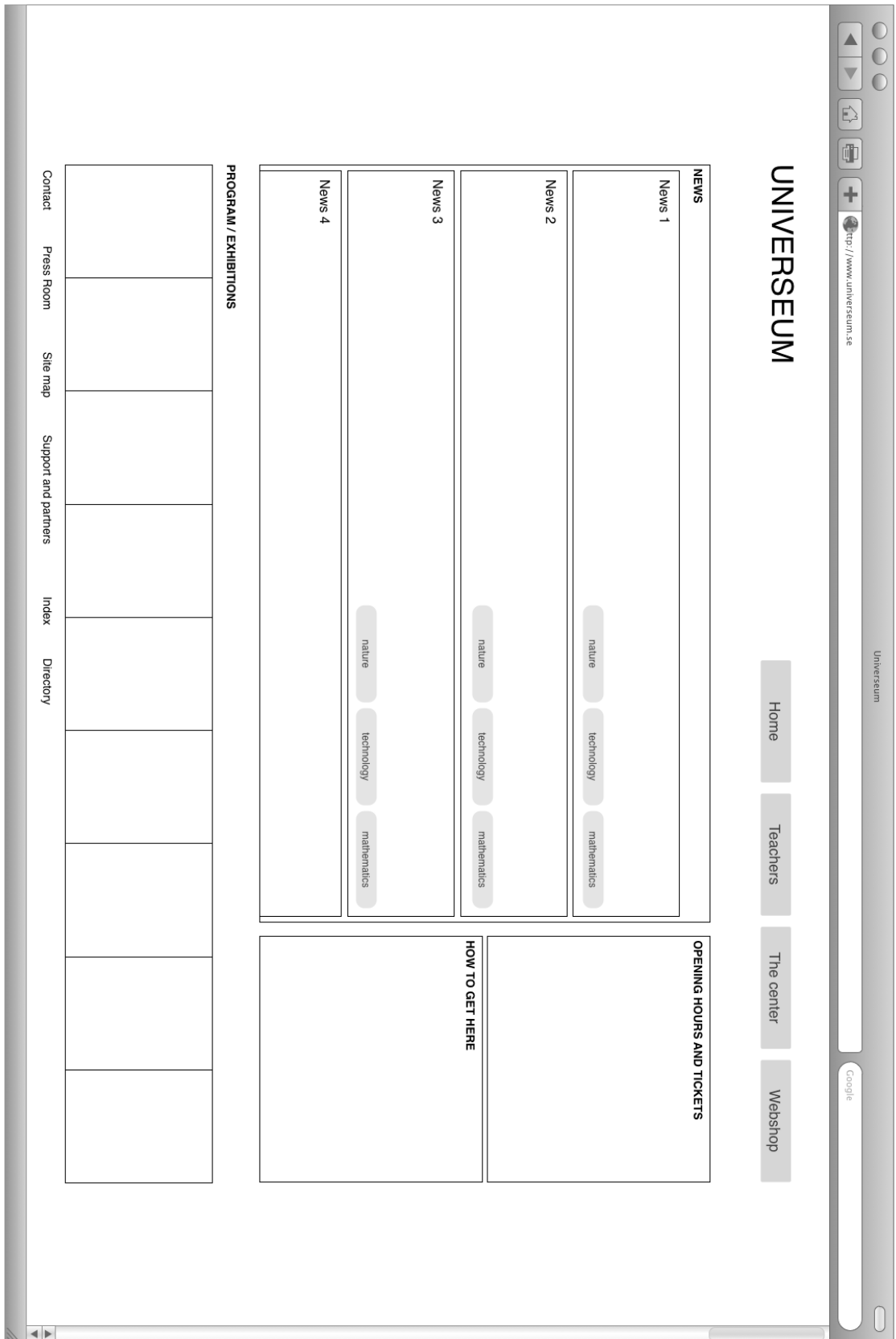


Figure 2. First wireframe for the homepage. Source: F&B

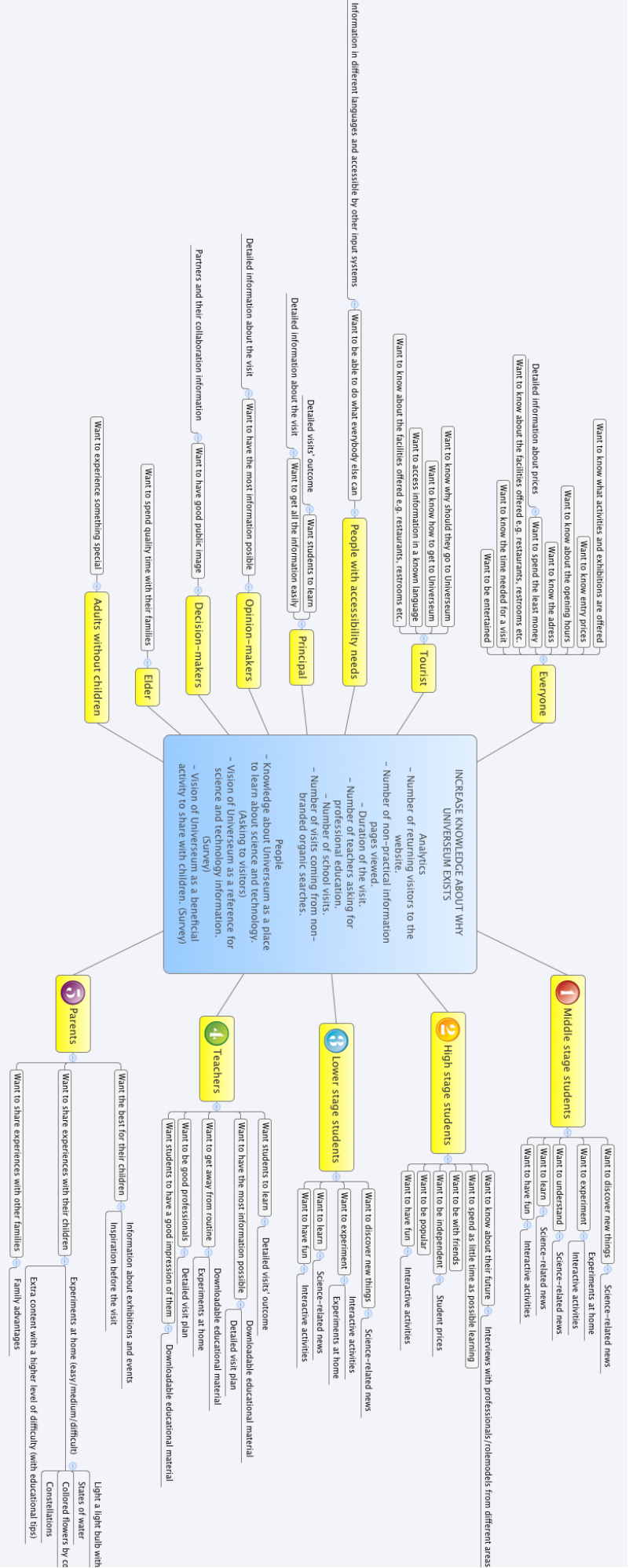


Figure 2. Effect map for the Universeum project. Source: F&B

