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**CULTURAL DIFFERENCES AND LOCALIZATION IN
USER INTERFACES**

**Opinnäytetyö
KESKI-POHJANMAAN AMMATTIKORKEAKOULU
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ABSTRACT

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<p>With growing global markets and more demanding customers plain translation of applications is not enough. Designing modern user interfaces for international purposes needs careful planning. International co-operation has increased in projects, so special expertise and knowledge of cultures is required from user interface designers.</p> <p>This thesis focuses on cultural differences in user interfaces. The objective is to examine cultural aspects of user interfaces using examples, and present tangible methods for localizing user interfaces for different cultures.</p> <p>A short description and evaluation of a user interface design process is reported in the last chapter. The design was made for a project in Ochanomizu University in Japan so special attention is paid to the differences between Japanese and western cultures.</p>		
Key words User interface design, culture, cultural dimensions, localization, cultural differences		



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<p>Pelkkä ohjelmistojen ja sovellusten kielellinen kääntäminen ei enää riitä kun maailmanmarkkinat ovat kasvaneet ja asiakkaat ovat yhä vaativampia. Nykyaikaisten käyttöliittymien suunnittelu vaatii huolellista asioihin perehtymistä. Yhä kansainvälisemmät projektit vaativat myös käyttöliittymien suunnittelijoilta erityisosaamista ja kulttuurien tuntemusta.</p> <p>Tämä opinnäytetyö keskittyy kulttuurieroihin käyttöliittymissä. Tavoite oli tarkastella käyttöliittymien kulttuuripiirteitä esimerkkejä käyttäen ja esittää konkreettisia keinoja käyttöliittymien lokalisointiin.</p> <p>Työ sisältää lyhyen kuvauksen ja arvioinnin käyttöliittymän suunnitteluprosessista. Käyttöliittymä suunniteltiin Japanissa, Ochanomizun yliopistossa tehtyä projektia varten, joten Japanin ja lännen välisiin kulttuurieroihin on kiinnitetty erityistä huomiota.</p>		
Asiasanat Käyttöliittymäsuunnittelu, kulttuuri, kulttuurien ulottuvuudet, lokalisatio, kulttuurierot		

ABSTRACTS
TABLE OF CONTENTS

1 INTRODUCTION.....1

2 CULTURE AND USER INTERFACES.....2

3 HOFSTEDE’S CULTURAL DIMENSIONS5

3.1 Power distance (PDI)6

3.2 Individualism versus collectivism (IDV)9

3.3 Masculinity versus femininity (MAS)10

3.4 Uncertainty avoidance (UAI)12

3.5 Long-term versus short-term orientation (LTO)13

3.6 Indulgence versus restraint (IVR)14

4 USER INTERFACE DESIGN16

4.1 Basics of UI design: usability16

4.1.1 Communicating with the user17

4.1.2 Errors and error prevention17

4.1.3 Helping the user18

5 LOCALIZATION19

5.1 Dates and formats19

5.2 Colors19

5.3 Typography and texts21

5.4 Pictures and pictograms22

6 EXAMPLES OF CULTURAL DIFFERENCES AND LOCALIZATION OF USER INTERFACES24

6.1 Facebook in Japan24

6.2 Typography in web-design25

7 BOOKAIDEE PROJECT27

7.1 The concept27

7.2 Design process28

7.2.1 Sketching and wireframing29

7.2.2 Paper prototype31

7.2.3 Final design and web interface32

7.3 The project from a cultural point of view32

8 CONCLUSIONS34

REFERENCES36

APPENDICES38

GRAPHS

GRAPH 1. Iceberg model of culture.

GRAPH 2. Screen capture from www.uum.org.my.

- GRAPH 3. Screen capture from www.tue.nl
- GRAPH 4. Screen capture from <http://exite.co.jp> and <http://woman.exite.co.jp>.
- GRAPH 5. Screen capture from www.kbstar.com.
- GRAPH 6. Screen capture from BBC's localized version in Arabic.
- GRAPH 7. <http://cocacola.co.jp> uses a lot of text saved in images.
- GRAPH 8. Sketch of the launcher, and the sign-in functionality screen of BookAidee.
- GRAPH 9. Wireframe model of BookAidee application.
- GRAPH 10. BookAidee launcher screen.

TABLES

- TABLE 1. Characteristics of power distance with example countries.
- TABLE 2. Characteristics of individualism vs. collectivism with example countries.
- TABLE 3. Characteristics of masculinity vs. femininity with example countries.
- TABLE 4. Characteristics of uncertainty avoidance with example countries.
- TABLE 5. Characteristics of long-term versus short-term orientation with example countries.

1 INTRODUCTION

Usability and user centered design have been a key point for many companies in recent years. The industries of software and game development have reached a point where good is not enough anymore. The consumers have become aware of usability and the significance of good user interfaces. Even though marketing has a great role in guiding consumer behavior, the customers have become more demanding. The internet has been a changing factor in decision making since it is a very powerful media to share opinions and experiences about products. The competition in the market is fierce and the information about poor designs and bad experiences travel fast via the web.

Companies are keen to invest in user experiences. Internationalization brings even more challenge into user interface design. Big corporations with massive resources are not the only ones launching products all over the world in different countries and different cultures. Plain translation of the manual is not the way to achieve international success with products. Several language options and other customizable properties have to be taken account from the first steps of the design process. Internationalization is a big business and many companies have seen a market for new business model and gone from translation services to localization and optimization services.

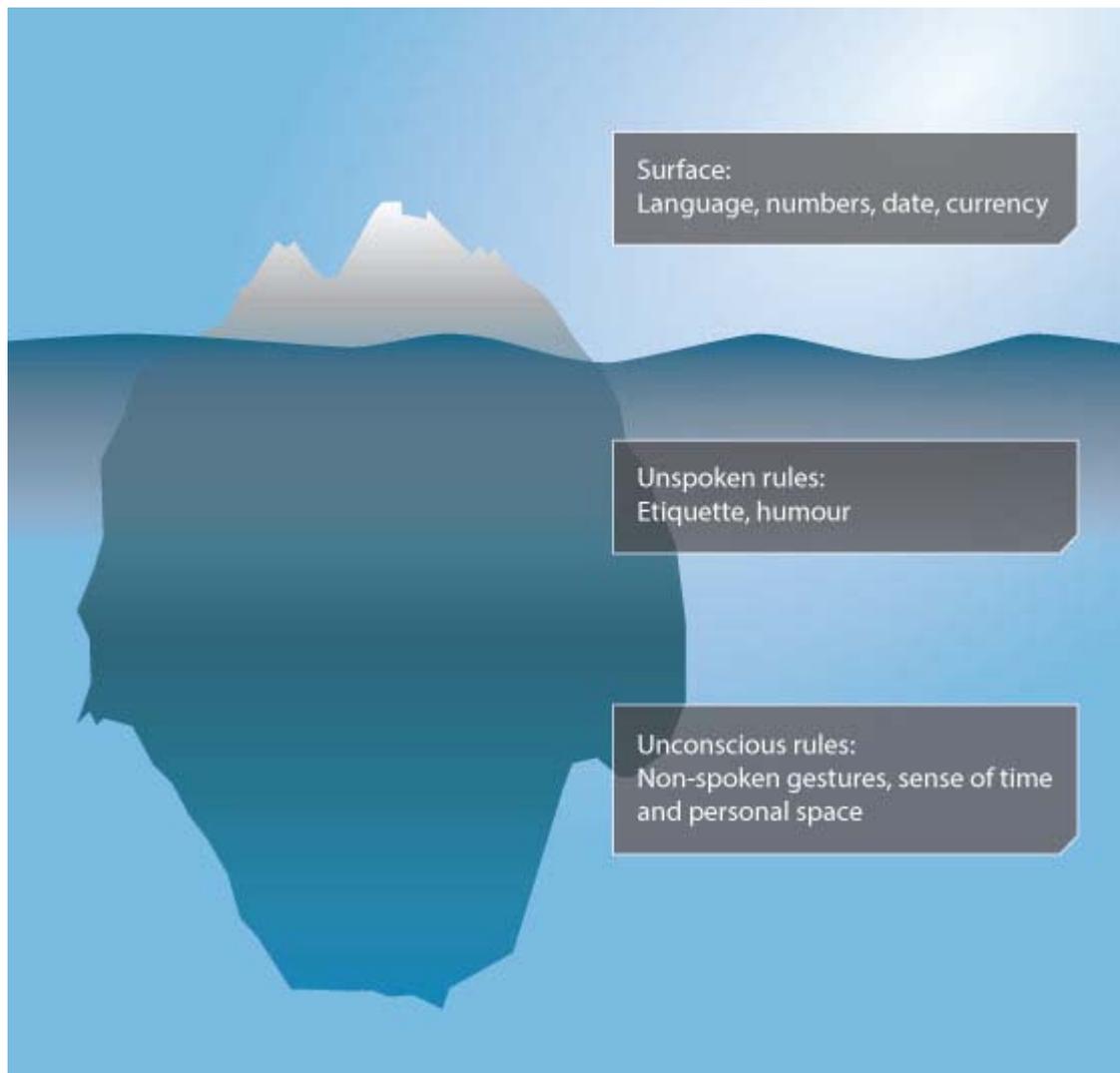
This thesis examines some factors that should be taken account when designing user interfaces of software applications or websites for international markets. For this thesis I studied the basics of user interface design and localization from a cultural point of view. As a westerner, more specifically as a Scandinavian I had the opportunity to participate in a project in a foreign culture. I spent three months in Ochanomizu University in Tokyo as a user interface designer for an RFID-project. Chapter two introduces some theories that have been used defining differences in cultures and chapter three discusses the basic principles of user interface design and tangible methods of localization. In chapter four I will introduce some examples that characterize well the difference of cultures in user interfaces. Chapter five is about the project I was involved in and I will describe some of the design process and evaluate my work based on the cultural theories presented in this thesis.

2 CULTURE AND USER INTERFACES

A shared set of values that influence societal attitudes, responses and preferences can be defined as culture. Without diving too deeply in the definition, it can be assumed that in a sense, culture is something that an individual has developed by learning and adapting to the norms of the surrounding society. Several people in the same society, in the same country or community can share characteristics of culture, but in the end, culture is something that is not easily measurable.

Famous culture anthropologist Geert Hofstede wraps the concept of a culture into a modern metaphor: “Culture consists of the unwritten rules of the social game. It is the collective programming of the mind that distinguishes the member of one group or category of people from others.” (Hofstede & Hofstede, 2005, 4.) This thought of groups or categories of people can be stretched beyond national borders and ethnical groups. This thesis concentrates on culture differences among nations, but there can be huge sub-cultures among these nations that shouldn't be ignored. There are growing culture differences among the groups in societies like between the elderly and the young generation that has been brought up in a technology-centered world.

When looking into a culture from outside it is impossible to see all the nuances' that build the core of the traditions, behavioral models and characteristics. Nancy Hoft has presented seeing a culture as an iceberg. Only a small part of the tip, the surface, is visible above the water and it consists of obvious and visible things that are relatively easy to study. The rest of the iceberg is invisible under the water so deeper understanding of a culture is required to study them. (Hoft 1995, 59.)



GRAPH 1. Iceberg model of culture. (Adapted from Hoft 1995, 59.)

Cultural models are a way to understand the nuances of strange cultures. Often they point out the differences that might bring up misunderstanding between cultures, and therefore these models are widely adapted to different purposes in business, work and travelling. In chapter three the cultural dimensions theory of Geert Hofstede is presented more widely, but there are several other theories too.

Edward T. Hall has a theory of high-context and low-context cultures. Trompenaars' theory concentrates on task-orientation of groups and societies and David A. Victor's well-known LESCANT- model studies differences in language, environment and technology, social organization, context, authority and nonverbal behavior. (Victor 1992.) Each model is adaptable, shares mutual aspects and should be used within a context because of the unique and changing nature of cultures and societies.

In user interfaces, demand for cultural optimization and localization exists. The first graphical UI's were developed in the United States and the user interfaces today may still utilize concepts and features from those early days (Reimer 2005). Even though programs, applications and websites all over the world share similar elements it has become clear that most user interfaces are not universal. Several studies show that the users are more likely to get a good user experience from a product that has been localized for their culture (Nielsen 2011). But how to know what cultural aspects are so significant that their existence should be taken account in the design process of a product?

3 HOFSTEDE'S CULTURAL DIMENSIONS

The theory of Geert Hofstede, a Dutch cultural anthropologist, is one of the most adaptive cultural theories. His idea of cultural dimensions has been widely used for user interface studies. Hofstede's dimensions are the result of a long study of finding the universal features of cultures.

In late 60's and early 70's Hofstede collected and analyzed a large amount of data that was based on a survey made for IBM staff in 40 countries. Originally the questionnaire researched work attitudes of the international employees of the company. From this data, Hofstede developed a cultural model based on key features that affects all cultures studied: uncertainty and ambiguity, concepts of masculinity and femininity and relationships between individuals and groups. (Hofstede, 1991.)

The cultural dimensions -model was first introduced in 1980 in a book called *Culture's Consequences: International Differences in Work-Related Values*. In 1997 Hofstede published "Cultures and Organizations: Software of the Mind" and over the years it became one of the most popular theories about culture. The model has been applied to cross-cultural matters in business, international negotiation, management, marketing and many other subjects. Updated version of the book was published in 2005 by Geert Hofstede and his son Gert Jan Hofstede, and again in 2010 with a help of Professor Michael Minkov. (Hofstede, 2012.)

The original model had only four dimensions, but over the years many new researches have supplemented the original study and now the model has six dimensions of national cultures: power distance, individualism, masculinity vs. femininity, uncertainty avoidance, long term orientation vs. short-term orientation and indulgence vs. restraint.

The theory has received some criticism over the years. It is said that one of the weaknesses of the study is that it assumes that each country has only one dominant culture (Marcus & Gould 2000). The first data for the theory was collected from the employees of a single company and therefore it has been claimed that the people working in IBM are too homogenous or like-minded for the theory to be accurate. (McSweeney, 2002, 95.)

However, any of the known theories can be used as a base for studying and understanding cultures, but one must not forget the fact that people are unique and these theories are just guidelines and not written in stone to be literally absorbed. The models should be understood as a collection of observations that enrich and widen the point of view on cultures.

Aaron Marcus and Emilie West Gould have used Hofstede's theory as a base for studying cultural aspects of interfaces. *Crosscurrents – Cultural Dimensions and Global Web User-Interface Design* published in 2000 studies the effect of the dimensions in web-user interfaces. In the next sub-chapters the dimensions will be presented as Hofstede described them and the features of the dimensions will be reflected into web-user interfaces based on the paper of Marcus & Gould.

3.1 Power distance (PDI)

Power distance can be defined as “the extent to which the less powerful member of institutions and organizations within a country expect and accept that power is distributed unequally”. (Hofstede & Hofstede, 2005, 46.)

In countries with high power distance, it is completely acceptable that the authority in the society is focused in a certain level of social hierarchy and money is a mean of power. Inequalities among people are expected and even desired. At home the father is the head of the family and the roles of a man and a woman are very clear. Hierarchies in organizations are tall. At work or school the teachers and supervisors are persons whose authorities have to be respected and valued. Children must not speak of their opinions and they are taught to obey the authorities from early on and older generations are highly valued. (Hofstede & Hofstede, 2005 57-59.)

Low PDI countries tend to value equality between genders as well as supervisors and subordinates and think that inequalities among people should be minimized. Children treat parents and older relatives as equals and are taught to be independent, make their own decision and express their opinions. Democracy is appreciated in low power distance countries and the power is usually given to specialists and experts.

(Hofstede & Hofstede, 2005, 57-59.)

Power Distance (PDI)			
The level of acceptance of unequal distribution of power in society.			
High	Low	High (value)	Low (value)
<ul style="list-style-type: none"> - Tall hierarchies in organizations - Strict relationships between superiors and subordinates - Older generations and teachers highly respected - Obedience expected from children 	<ul style="list-style-type: none"> - More acceptable that subordinates express opinions - Children treated as equals and are taught to be independent 	<ul style="list-style-type: none"> Malaysia (104) Slovakia (104) Guatemala (95) Japan (54) 	<ul style="list-style-type: none"> Austria (11) Israel (13) Denmark (18) Finland (33) Netherlands (38)

TABLE 1. Characteristics of power distance with example countries.

According to Marcus & Gould in user interfaces PDI can be seen as highly (high PDI) and or less-highly (low PDI) structured access to information. The dimension can affect to the way the interface or elements emphasize the social and moral order and its symbols: is it frequent or infrequent. Is there a focus on expertise, authority, certifications and official stamps or logos? Focusing into the importance of leaders rather than citizens, customers or employees is a sign of a high PDI culture in a website. Is there a freedom to explore or is security and restrictions important? (Marcus & Gould, 2000, 36.)

Examples of high and low power distance web interfaces in Marcus and Gould's paper were the websites of two universities. For this purpose I retrieved new screenshots from the same addresses and the differences are still visible: Malaysian University Utara www.uum.org.my clearly shows its emblems on the top left corner and the vice-chancellors 1st of May message is top news in the site. However, changing banner on the top of the page that represents the official flower of the school in this screenshot, also have images of students of both sexes and various nationalities so the focus is not entirely on the authorities.

TEXT SIZE 

Portal Rasmi Universiti Utara Malaysia (Universiti Pengurusan Terkemuka)
Reset   W3C | Makiubalas | Peta Laman | FAQs | Bantuan | Bahasa | English

 UTAMA PELAJAR PELAWAT ALUMNI PENYELIDIKAN PENERBITAN HUBUNGI KAMI

Official Flower
Bougainvillea

BERITA TERKINI



**PERUTUSAN NAIB
CANSELOR SEMPERNA
HARI PEKERJA
1 MEI 2012**

LAIN-LAIN BERITA

-  UUM Perkenal Program Baharu September Ini
-  ITU-UUM Anjur "ITU GIRLS ICT DAY"
-  600 Setiausaha dan Tetamu Diraikan dalam Minggu Setiausaha
-  Media Rakan UUM - Naib Canselor
-  Tun Dr Mahathir Mohamad Menyeru Rakyat Bersyukur
-  UUM Perkasakan Aktiviti Pengantarabangsaan
-  Teks Ucapan Naib Canselor Sempena Hari Pengasasan UUM
-  Peluang, Motivasi dan Usaha Langkah Mencapai Kejayaan

[\[ARKIB\]](#)

AKTIVITI AKAN DATANG

-  First Qualitative Research Conference 2012
-  8th Knowledge Management International Conference 2012 (KMICe2012)
-  3rd International Conference on Communication and media 2012 (ICOME'12)
-  The 4th Biennial International Conference on the Teaching & Learning of English in Asia : Forging Ahead (TLEIA4)
-  Aktiviti Kampus
-  Seminar 'Pengurusan Cemerlang' Di Sarawak

cari...

UNIVERSITI

- > Tentang Kami
- > Jabatan, Pusat dan Unit
- > Perpustakaan Sultanah Bahiyah
- > Pusat Perhubungan & Kerjasama Antarabangsa (CIAC)

KOLEJ AKADEMIK

- > Kolej Sastera dan Sains (UUM CAS)
- > Kolej Perniagaan (UUM COB)
- > Kolej Undang-Undang, Kerajaan & Pengajian Antarabangsa (UUM COLGIS)

PUSAT PENGAJIAN SISWAZAH

- > Othman Yeop Abdullah (Perniagaan)
- > Awang Had Saleh (Sastera & Sains)
- > Ghazali Shafie (Undang-Undang, Kerajaan & Pengajian Antarabangsa)

SOROTAN

- > Bantuan Kewangan Pascasiswazah
- > Amanat Tahun Baru 2012 Naib Canselor
- > Rakan Antarabangsa & Kerjasama

SEPTEMBER 2012 INTAKE

GRAPH 2. Screen capture from www.uum.org.my.

The page of the Dutch University of Technology Eindhoven www.tue.nl focuses entirely on students, their choices and achievements. Holland is a low power distance country with an index of 38, see table 1.

TU/e Technische Universiteit Eindhoven University of Technology

Studentenportaal Medewerkersportaal A A Contact Zoek

Studeren
Onderzoek
Innoveren
Universiteit

IK DROOM VAN VERLICHTING DIE MET MIJ MEEDENKT

Energy Zon als dé energieleverancier van de stad

Nieuws

TU/e-team wint RoboCup Dutch Open
01 mei 2012
Het robotteam Tech United Eindhoven heeft de RoboCup Dutch Open gewonnen. Het team van de TU/e won m...

Acht masters op één
27 april 2012
Acht masters van de TU/e komen als beste uit de bus in de Keuzegids Masters 2012. De TU/e staat op é...

Agenda

- ICMS "Aan de Dommel" lecture by prof. Clemens van Blitterswijk
7 mei 2012
- Masterevent
7 mei 2012
- Eindhoven Girl Geek Dinner #2
7 mei 2012
- 17th Joint Workshop on Electron Cyclotron Emission and Electron Cyclotron Resonance Heating
7 mei 2012 t/m 10 mei 2012
- Masterclass: beleggingen in kansrijke, niet-genoteerde bedrijven
11 mei 2012

Direct naar

- Route en plattegrond
- Vacatures
- Bibliotheek
- Sportcentrum (SSC)
- Promotie-agenda
- Feiten en cijfers
- Strategie 2020
- Column rector, 2 mei 2012

Drie Koninklijke lintjes
27 april 2012

56e Dinsdags Nieuws in het teken van duurzame ambities TU/e
25 april 2012

Symposium voor TU/e-eredoctor Harel: Van Turing naar Harel
24 april 2012

Collegevoorzitter Peels benoemd tot AWT-bestuur
23 april 2012

Vijf dagen lang 'robot battles' op de RoboCup Dutch Open
18 april 2012

Wetenschappers vinden langgezocht Majorana-deeltje in Eindhovens nanodraadje
13 april 2012

EnergyDays
"Nuclear energy: fission and fusion" op 31 mei.

TU/e opnieuw beste TU
Keuzegids Universiteiten 2012.

Masterevent: 7 mei

IK DROOM VAN EEN HART DAT ZICHZELF KAN GENEZEN
TU/e Bachelor College

GRAPH 3. Screen capture from www.tue.nl.

3.2 Individualism versus collectivism (IDV)

Individualistic and collectivistic cultures can be expressed as cultures of "I" and "we". In individualistic society the members are expected to take care of themselves and only the immediate family. A larger share of public or private income is spent on health care than in the low IDV counties. In highly individualistic cultures the needs and interests of a single person are ahead of those of community and individual ownership and personal achievement is valued. Showing emotions of happiness is encouraged and showing sadness discouraged, in collectivistic cultures exactly the opposite. (Hofstede & Hofstede, 2005, 92-104.)

Collectivistic cultures are family-centered and employer-employee relationships are more like a family link. The individual aims to benefit the group and resources should be shared among group members. Also laws and rights can differ by the group and the economic system is dominated by the state. (Hofstede & Hofstede, 2005, 92-104.)

Individualism versus collectivism (IDV)			
Society's orientation to group or individual achievements.			
Individualistic	Collectivistic	High (value)	Low (value)
- Individuals are expected to take care of themselves and only immediate family - Values personal achievement	- Emphasizes the input of the individual for the group - Extended family relations	USA (91) Australia (90) Finland (63) Japan (46)	Guatemala (6) Ecuador (8) Taiwan (17) Romania (30)

TABLE 2. Characteristics of individualism vs. collectivism with example countries.

In web-design the characteristics of individualism vs. collectivism may be seen as maximized motivation on personal achievement in highly individualistic cultures, and favoring the group achievement in collectivistic cultures. Materialism, consumerism, hype of change, uniqueness and argumentative speech and encouragement and tolerance of extreme are signs of individualistic culture. Collectivistic web-designs might accentuate official slogans, social effort, experience and wisdom of leaders and tradition and history.

(Marcus & Gould 2000, 37-38.)

3.3 Masculinity versus femininity (MAS)

Masculinity and femininity index describe the compassion of a culture. This dimension is the only one where men and women have been studied in separate groups since the other dimensions didn't provide particular difference in answers between the two genders.

(Hofstede & Hofstede, 2005, 119.)

In a masculine culture emotional gender roles are distinct: women are supposed to be modest and tender and men tough and confident. A society with a high masculine value prefers achievement, heroism and self-confidence. Material values and money are important and positions at work should provide challenges and chances for promotions and honor. Attitude at school is competitive and children are taught to look up to successful characters and failing in tests is often a great shame. (Hofstede & Hofstede, 2005, 136-147.)

Feminine cultures value modesty, cooperation, caring and quality of life. Gender roles are dissolved and men and women share household chores. Children are taught to be modest and compassionate. Showing a big ego and trying to exceed others are considered rude. Feminine cultures typically have higher share of women working in professional jobs than masculine cultures and careers are optional for both genders rather being optional for women and compulsory for men in masculine cultures.

(Hofstede & Hofstede 2005, 136-147.)

Masculinity versus femininity (MAS)			
The separation of traditional gender roles.			
Masculine	Feminine	High (value)	Low (value)
- Society prefers achievement, heroism and self-confidence - Traditional distinctions between gender roles	- Values quality of life, security and the environment - Dissolving gender roles	Slovakia (110) Japan (95) Ireland (68)	Sweden (5) Norway (8) Costa Rica (21) Finland (26)

TABLE 3. Characteristics of masculinity vs. femininity with example countries.

In web-user interfaces high masculinity cultures would concentrate on traditional distinctions of gender, family or age and navigation should be based on control and exploration. In feminine cultures the blurring of the gender roles, mutual co-operation and support would be emphasized (Marcus & Gould, 2000, 39). Marcus and Gould used a Japanese version of excite.com as an example of the difference between masculine and feminine website.

Japan is a very masculine culture, with MAS index of 95, see table 2. In Japan excite.com has a different news portal for women (woman.excite.co.jp). As comparison, Marcus & Gould used a Swedish version, MAS index 5, of excite.se where there was no separate version for women and the front page was built very gender neutral. The Swedish version doesn't exist anymore but the fresh screenshots show that excite.co.jp still separates the genders to different sites. However, nowadays many news portals in feminine countries do this separation for marketing purposes so it can't always be interpreted as a sign of masculine culture.



GRAPH 4. Screen capture from <http://excite.co.jp> on the left and <http://woman.excite.co.jp> on the right.

3.4 Uncertainty avoidance (UAI)

Uncertainty avoidance expresses how the members of a culture feel about situations of uncertainty and ambiguity. The index measures from high to low.

Cultures with high uncertainty avoidance index are keen to maintain strict rules and behavioral guidelines. The unexpected things in life are a threat and often cultures of high UAI experience high stress and anxiety in family life. Unusual behavior is not tolerated and what is different is thought to be dangerous. Members of high UAI countries often have an inner urge to work hard and emotional need to be busy because time is money. (Hofstede & Hofstede, 2005, 176-189.)

Societies with a low uncertainty avoidance index have a more relaxed attitude towards rules and less stress and anxiety is experienced. Children are brought up with more lenient

way and there is a curious attitude towards what is different. Unlike in high uncertainty avoidance cultures showing emotions and aggressions is not recommendable. Rather than having strict rules low UAI societies are more tolerable towards chaos and ambiguity. (Hofstede & Hofstede 2005, 176-189.)

Uncertainty avoidance (UAI)			
How the members of a society feel about uncertainty and ambiguity.			
High	Low	High (value)	Low (value)
- Strict rules and behavioral guidelines	- More relaxed attitude toward rules	Greece (112)	Singapore (8)
- Unusual behavior and ideas is not tolerated	- Less inclined towards change	Portugal (104)	Jamaica (13)
		Japan (92)	Sweden (30)
		Finland (59)	Ireland (35)

TABLE 4. Characteristics of uncertainty avoidance with example countries.

Features of uncertainty avoidance in user interfaces could be seen as simplicity, limited choices and restricted amount of data in high UAI cultures. Also navigations would be intended to prevent users from getting lost and reducing errors caused by the user. Low UAI cultures would emphasize the maximal content and choices and accept the possibility that the user would wander around and try different routes to navigate.

(Marcus & Gould 2000, 41.)

3.5 Long-term versus short-term orientation (LTO)

Long-term versus short-term orientation is about persistence, thrift, respecting traditions and committing to social duties. LTO is one of the dimensions Hofstede found later, after complementary studies from several colleagues. It was mainly found because many Asian cultures, conflicted by the Confucian philosophy, have very special characteristics that many western cultures lack. (Hofstede & Hofstede, 2005, 208-209.)

Long-term oriented cultures are oriented towards future rewards. They value thrift and perseverance. Children are taught to be thrifty and work values include honesty, learning,

the ability to adapt and self-discipline. The importance of profit is seen on the long run instead of concentrating on the profit of the current year. Long-term oriented cultures prior common sense against abstract rationality and pay little importance for leisure time. (Hofstede & Hofstede, 2005, 207-232.)

In short-term oriented cultures work values are freedom, achievement and thinking oneself. Saving or investing is not the way to handle money and usually the focus is on achieving quick results. Children are taught to be tolerant and respect others.

(Hofstede & Hofstede 2005, 207-232.)

Long-term versus short-term orientation (LTO)			
How the society deals with the search of virtue.			
Long-term	Short-term	High (value)	Low (value)
<ul style="list-style-type: none"> - Adapts traditions to changed conditions - Tendency to save and invest - Perseverance in achieving results 	<ul style="list-style-type: none"> - Fulfilling social obligations is important - Great respect for traditions - Focus on achieving quick results 	<ul style="list-style-type: none"> China (118) Hong Kong (96) Japan (80) Brazil (65) Finland (41) 	<ul style="list-style-type: none"> Czech Republic (13) Nigeria (16) Spain (19) United States (29)

TABLE 5. Characteristics of long-term versus short-term orientation with example countries.

Long-term oriented cultures would value content with practical value, relationships as a source of credibility and information and patience in achieving goals in user interfaces. Content that would focus on truth and certainty of belief, rules as a source of credibility and information and the desire for achieving fast goals and results would be a sign of short-term oriented culture.

(Marcus & Gould 2000, 42-43.)

3.6 Indulgence versus restraint (IVR)

Indulgence versus restraint was introduced in 2010 so there are only a few adaptations and descriptions of it and it was not reviewed in Marcus & Gould's study. IVR index describes the allowance of hedonistic ways of life in the society. (Hofstede 2011, 15-16.)

Cultures that are indulgent allow having fun and enjoying life rather than limiting them by strict social norms. Higher percentages of people declare themselves very happy and freedom of speech is seen important. In wealthy countries sexual norms are lenient and higher percentage of people are obese than in restrained cultures. (Hofstede 2011, 15-16.)

In restrained cultures people are less likely to remember positive emotions and fewer people declare themselves being happy. People may feel helpless and think that they have no control of what happens to them. Leisure time is considered not to be important. (Hofstede 2011, 15-16.)

4 USER INTERFACE DESIGN

Computer science has come a long way. Only in a few decades the industry rose, bloomed, took a setback and now is more available for anyone than ever. All eyes are on user interfaces, because the hardware today is very efficient and very small. Command-line interfaces and text-based interfaces that used to be the tools of geeks are hardly ever seen in these days, but they are still in use. Structures behind the curtains, like servers, often run on these simple and light interfaces that require some level of expertise to be actually used. But the money is on the devices that are mass produced and sold all over the world with as little changes as possible to make the best profit. The battle on the market is fierce, so companies like to stand out with their user interfaces.

4.1 Basics of UI design: usability

User interface design is a wide subject, and the platforms needing user interfaces can vary from smart phone screens to thumb-size music players and from industrial machines to websites. In general, the basic design principles that are used for designing posters, books and newspapers hold true, but user interface design has to go hand in hand with usability. Golden ratio, colors and legibility are very important, but the focus is on the dialogue and user experience. User interfaces are interactive; they respond, communicate and process depending on the user's commands. Therefore, before designing anything for user interfaces, it is useful to know something about usability.

There is more than enough textbooks and web articles about usability, but Jakob Nielsen, an well-known usability guru, has listed ten usability heuristics for interface designers to be used when designing and evaluating the system usability. Nielsen developed this theory in collaboration with his colleague Rolf Molich in 1990, and revised it later (Nielsen 2005). These ten commands of usability apply to all kind of interfaces.

These rules have common features and they are overlapping each other, so here they are combined to three categories:

4.1.1 Communicating with the user

Nielsen says that it is important for the user to know what's going on and is the system functional. For example progress bars and loading animations are tools to show the user that requested actions are being processed. The language and logics used in the system should be on the same level with the user and consistency and standards in using terms and actions is required. Using too technical terms in products aimed to standard computer users can be misleading, confusing, and complicate learning the system. On the other hand, when a product is designed for a wide range of users, shortcuts and customizable functions can speed up the usage of the product for experienced users, so the interface should be built flexible and efficient. (Nielsen 2005.)

Especially when designing user interfaces to international use and to different cultures, using the right language and expressions is crucial. When translating applications, a native speaker with knowledge of special vocabulary should be used whenever it's possible. Translation machines and text generators have become more common but are not intelligent enough to understand context and translate without mistakes.

Some cultures have several languages and in some the spoken language differs greatly from the written one. In these cases, it might be convenient if the user can change the language on the fly. Especially if the application has several users the current user can choose the language he prefers, regardless of the choices of the other users. (Nielsen 2005.)

4.1.2 Errors and error prevention

Nielsen notes that “Even better than good error messages is a careful design which prevents a problem from occurring in the first place” (Nielsen 2005). Testing out the product early can bring up errors that the designer didn't even think of. Some errors can be avoided by presenting confirmation options before the action is processed. Although this requires that the user reads the message displayed and doesn't click the message away in frustration. (Nielsen 2005.)

The system should provide users feeling of control, so undo and redo functions, or clear “emergency exit” like close-button lets the user escape situations where, for example, some

buttons has mistakenly been pressed. When an error happens, the error message should be presented with understandable language rather than code, and the system should specify where the error happened and suggest a solution or action for the user. (Nielsen 2005.)

4.1.3 Helping the user

Nielsen suggests that best systems don't need help or documentation, but if they are necessary, they should be easy to search, not too large, focused on tasks that user is performing, and list tangible how-to-steps rather than abstract explanations (Nielsen 2005).

Studies show, that human short-term memory can store up to seven items at a time, but in reality the amount is closer to three or five. For smooth user experience the user interface shouldn't require the user remembering what to do, or what happened in the previous screen, but to make options, buttons and functions visible and easily recognizable. Minimalistic design is one solution to ease the memory load, so adding unnecessary functions and information that is rarely needed or irrelevant should be avoided or hidden. (Nielsen 2005.)

5 LOCALIZATION

Customizing a product aimed for a specific international market is called localization (Globalization and Localization Issues 2012). One of the simplest examples is the map of the world. For centuries cultures and nations have seen their own country as the center of the world. Europeans see the Asia as East and Americas as the West. But since the world is round, from the Chinese point of view, the Americans can be seen as East and the Europe as West.

When designing interfaces for global market, there are several aspects that should be considered as means of localization.

5.1 Dates and formats

Time and date play very important role for smooth communication and error prevention. Some cultures are not living the same year than the majority of the world's population. For some, the business week lasts for six days, they day the week begins varies and there might not be a concept of a weekend as the western world knows it. When designing an interface for the global market, date, time and numbers are one of the basic things that should be displayed the way it is accustomed for the target audience. (Nilafdeen 2009.)

For example Japan uses the Gregorian calendar and the date is displayed (YYYY年MM月DD日) where Y being the year, M the month and D the day. However, the Japanese era year is also in use in official documents and historical writings. The era year defines the year by the era name. The current era is Heisei and it started the day after the previous emperor Hirohito died in 1989. The next era will begin, when the current emperor will pass away. Year 2012 is Heisei 24. (Bryant, 2004.)

5.2 Colors

Colors are associated differently in cultures. The most common colors that can have associations in people's minds are the colors of the national flag. In marketing and branding colors are widely studied and used to create a certain type of feel for the brand or the company they represent.

The connotations can be cultural, but more and more colors are connected to brands and multinational corporations in people’s minds; red and yellow of McDonald’s and white and red of Coca-Cola are recognized all over the world. The concept of traffic lights, red for stop, yellow for caution and green for go, is widely recognized and often used in interfaces to guide the user.

Choosing color for user interfaces on global market is not an exact science, but it is useful to know some basic culture-related meanings of colors. Some cultures have many meanings also for certain color combinations, and in some cultures the symbolic of colors is stronger than others. In western world using just about any color and color combination is fine, but for example in India, Iran and China some colors and combinations have very highly respected and serious meanings. Certain groups of people, like political parties, religious groups and minorities can culturally be recognized by their colors. (Tektronix, 2007.) Appendix 1 presents some colors with international significance.

Colors are not understood the same in all cultures. A good example is pastel colors, pink and baby blue for instance. In the western world, pastel colors are commonly connected with babies and kids, but in Japan and South Korea it is common to use pastel colors in products that are in fact directed for adults. (Edmondson, 2005.)



GRAPH 5. Screen capture from www.kbstar.com.

In South Korea, pastel colors are connected with trust (Tektronix, 2007). Graph 4 is the main page of a South Korean bank (www.kbstar.com). Many other Korean banks are using the internationally safe and well-known blue in their logos and websites, but this particular bank is clearly targeting the South Korean audience.

5.3 Typography and texts

The Latin alphabet is only one of dozens character sets used to represent a language. When translating applications, words, expressions and sentences may take more or less space than in the language they are translated from, even though the character set wouldn't change. (Nilafdeen 2009.)

Some languages, like Japanese use more than one set of characters. The Japanese writing system consist of two different types of character sets, kana and kanji. Also Arabic numerals and the Latin alphabet can be used for example acronyms such as NATO and AIDS (Rose, 2011). All these characters can be used at the same time, so a single written sentence can have characters from each of these symbol sets what makes important to use the appropriate ISO standards.

Alphabetical sorting varies in languages, for examples in German language, the umlauts Ä, Ö, Ü are treated as their non-umlauted versions, therefore in alphabetic order Ulm would be followed by Ülm. In Finnish and Swedish for example Ä and Ö are treated as separate letters so they have their places at the end of the alphabet. (Esselink, 2000, 31-32.)

Flexibility of the user interface is very important from the beginning of the design process. It is common practice that text is presented as stings instead that they would be saved in images (Esselink, 2000, 46). Menu elements have to have enough space around them so when translated, the text has room to expand without affecting the design.

As mentioned earlier in chapter 4.1.1 the use of language and verbal style is important. There are many differences between British and American English, Canadian French and French as well as Mexican and Spanish terms and so on. Details like this may be small, but the importance of target audience study is great and detailed work will always be a sign of professionalism. (Esselink, 2000, 29-30.)

The concept of a graphical user interface was developed in the US and the practices have spread widely. Most users have gotten used to the menus being on the left hand side, but when designing applications and user interfaces for language-group that read from left to right, the order and placement of the menu should be considered differently. (Esselink, 2000.)

The screenshot shows the BBC Arabic website interface. At the top, there is a search bar and navigation links. The main header includes the BBC logo and the text "عربي" (Arabic). Below the header, there is a navigation bar with links for "الرئيسية" (Home), "الشرق الأوسط" (Middle East), "العالم" (World), "شارك برأيك" (Share your opinion), "اقتصاد وأعمال" (Economy and Business), "ثقافة وفنون" (Culture and Arts), "علوم وتكنولوجيا" (Science and Technology), "رياضة" (Sports), and "راديو وتلفزيون" (Radio and TV). The main content area is divided into several sections:

- Video Section:** A section titled "فيديو" (Video) with a sub-header "54321". It features a video player with a play button and a title "أردوغان يطالب بـ'حق السوريين في الدفاع عن أنفسهم' والمجلس الوطني يدعو للاعتراف به ممثلا وحيدا" (Erdogan demands 'rights of Syrians in defense of themselves' and the National Council calls for recognition of them as a sole representative).
- News Updates Section:** A section titled "أحدث التطورات" (Latest Developments) with a sub-header "المحتوى يتحدث تلقائيا" (Content updates automatically). It lists several news items with timestamps and brief descriptions.
- Featured Article Section:** A section titled "خبرت الشاطر مرشح 'الإخوان' لرئاسة مصر" (Formerly the Shاطر candidate 'the Brotherhood' for the Egyptian Presidency). The article text is on the right side of the page, starting with "رئيس الوزراء التركي يطالب، في مؤتمر 'اصدقاء سوريا' بدعم 'حق السوريين في الدفاع عن النفس' في حالة إجحام الأمم المتحدة عن التحرك في سوريا، والمجلس الوطني السوري يدعو للاعتراف به ممثلا شرعيا وحيدا للشعب السوري." (The Turkish Prime Minister demands, in a conference 'Friends of Syria' support 'rights of Syrians in defense of themselves' in case of the UN's failure to move in Syria, and the Syrian National Council calls for recognition of him as a legitimate representative of the Syrian people.)
- Image Section:** A section titled "تغطية مفصلة" (Detailed Coverage) with a sub-header "قمة وسط متغيرات كبرى" (Summit in the middle of major changes). It features a large image of a meeting and a caption "صفحة خاصة عن القمة العربية في بغداد" (Special page about the Arab Summit in Baghdad).

GRAPH 6. Screen capture from BBC's localized version in Arabic.

BBC has localized versions for several languages. In the Arabic version, see graph 5, the elements; the menu bar, biggest headlines and news stream, are mirrored compared to the main site, since Arabic is a language that is read from left to right.

5.4 Pictures and pictograms

Saving text to images can get troublesome when the application has to be translated. Iconography is a good solution, and localized messages can be displayed when the mouse is hovered over the item.

Icons that present actual everyday things are more widely recognized in different cultures than abstract icons. But are these metaphors recognizable for all cultures? Graphical user interfaces have familiarized the concept of a trash can as deleting the objects, even though trash cans don't look the same all over the world. However, in the early days of graphical UI's the concept of deleting objects, especially the silver-lidded American-type trashcan, caused some confusion among Thai users. The most common trash container used to be a basket, usually flies circling above it so the silver container didn't ring a bell for an average Thai user. When creating icons for user interfaces the target group should be considered. Variations of commonly used and recognized icons shouldn't be a problem, but when creating new icons the target group should be studied and the icons tested so the users understand what the icons are about. (Marcus, Armitage, Frank & Guttman 1999.)

There are cultural differences in using images in designs. This holds true to many other designs as well as user interfaces. Japan is known for heavy use of comic characters. In Japanese culture, banks, insurance companies and other serious businesses may have their own mascot that can be used in advertising and to represent the company. The custom is spreading in Asia and also in South Korea that is influenced by Japan, using drawn characters is acceptable. For example in many European cultures drawn characters are considered to be childish and would never be used by companies that are marketing their products for adults.

Especially in web designs the use of images and photographs is accentuated. Even companies that use global web designs in a way that the site structure looks exactly the same in all localized versions, the pictures may be different. Pictures are chosen to represent the target group of the local users, so American versions shows American looking people with different ethnic backgrounds and websites targeted to Asian markets show photos of the local target groups, Japanese users in Japan and Chinese in China.

6 EXAMPLES OF CULTURAL DIFFERENCES AND LOCALIZATION OF USER INTERFACES

Websites are a very good way to explore and get inspired by cultural differences and localization in user interfaces. Localized versions are important because they add value and appeal more to users. Few examples of localization around the world was introduced in the previous chapter, but this chapter presents some more examples of localization and cultural differences of Japan.

6.1 Facebook in Japan

Facebook is a well known brand over the world, but its march to global markets hasn't been a road without any bumps. Facebook faced some issues when landing in Japan in 2008. It is a good example of power distance and uncertainty avoidance dimensions described in chapters 3.1 and 3.4.

The power distance index of Japan is, 54, see table 1, and Japan also has one of the highest uncertainty avoidance indexes with a value of 92, as seen in table 4. Japanese online community embraces anonymity. Local social networks like Mixi and Gree are very popular, but the Japanese social media users didn't feel secure with Facebook so the popularity of the service has never exceeded the local social media sites. In Japan most of the people, even famous bloggers, hide behind nicknames and avatars of drawn characters in online communities. Facebook, however, requires registration with real name. Sharing the messages with co-workers, relatives and younger friends at the same time with your own name or decline the friend request of a superior might be difficult for Japanese. (Tabuchi, 2011.)

Later Facebook decided to serve its Japanese users with a custom feature that is not available anywhere else but Japan. This localized feature is an addition to the personal information form and when you fill your birthday, sex and address, you can also let your friends know your bloodtype. (Tabuchi, 2011.) Bloodtype is considered to be more important than your horoscope and according to Japanese beliefs it will determine your personality and character.

6.2 Typography in web-design

As mentioned in chapter 5.3, saving text to images may cause some problems and extra work when translating application. Many Japanese web designs use this method to achieve more appealing results.

Due to the amount of required characters and relatively small market, it is a difficult task to create fonts for Japanese language. Until recently, there haven't been many different typefaces available, especially for web-use. Although what comes to the style of typefaces, there are two main genres similar to serif and sans-serif: mincho and gothic. Mincho-type of font is based on brush-strokes so the width of the lines varies. Reducing the size of text when using mincho-fonts can lead to readability difficulties especially with kanji signs, because the thinner lines can disappear. In gothic fonts the width of the lines is even and the ends are blunt so they stay relatively readable also in small sizes. Mincho is used most often in publications meant for general audience, such as newspapers and books. Magazines, technical documents and texts meant for younger audience use often gothic typefaces. (Palmieri, 2004.)

The image shows a screenshot of a Coca-Cola website during a Christmas promotion. The page is predominantly red and white, featuring a large Santa Claus figure in the center. The Coca-Cola logo is visible in the top left. The page is filled with various promotional banners and text elements, many of which are integrated into the visual design. Key elements include:

- Top Left:** Coca-Cola logo and a red Habi Nest truck.
- Top Center:** A banner titled "ついに出発! ハビネストラックを体験しよう!" (Finally Depart! Experience the Habi Nest Truck!) with sub-sections for "最新運行スケジュール & イベントPHOTO" (Latest Operation Schedule & Event Photo), "ピカルの定理" (Picard's Theorem), and "ハビネストラック 出発式レポート" (Habi Nest Truck Departure Report).
- Top Right:** A banner titled "ココ・コーラでクリスマスギフトがアタル!!" (Coca-Cola Christmas Gifts are Here!!) with a deadline of "応募締切: 12月25日(日)24:00".
- Center:** A large yellow banner for "今すぐ応募" (Apply Now) with a "1pt" reward and "5,000名" (5,000 names) limit. Below it, a "3pt" reward for "ココ・コーラ ハビネストラック パーティーBOX" (Coca-Cola Habi Nest Truck Party Box) and a "15pt" reward for "PlayStation Vita 3G/Wi-Fiモデル" (PlayStation Vita 3G/Wi-Fi Model).
- Bottom Left:** A video player showing a truck in a snowy environment.
- Bottom Center:** A banner for "着うた(R) 無料配信中!" (Utauta (R) Free Distribution!) for the song "Aが歌うCMソング「ハビネス」を今すぐゲットしよう!" (Get the CM song 'Habi Nest' sung by A now!).
- Bottom Right:** A QR code and a banner for "着うたフル® 配信スタート!" (Utauta Full® Distribution Start!).
- Bottom Row:** Three smaller promotional banners: "常識をくつがえせ。Coca-Cola zero" (Break the常識. Coca-Cola zero), "2ポイントでペアチケットをGET! 劇場鑑賞ペアチケット 3,000組 6,000名様" (Get 2 points for a pair ticket! Theater appreciation pair ticket 3,000 sets 6,000 names), and "ミッションをクリアして当てよう! BMW Z4 1名様" (Clear the mission and win! BMW Z4 1 name).

GRAPH 7. <http://cocacola.co.jp> uses a lot of text saved in images.

In graph 6, a screen capture from Coca Cola's Japanese website, it can be seen that all the text surrounded with a turquoise rectangles are in fact images. Like in graph 6, almost all the web content in Japanese is written to be read from left to right. Originally Japanese is a vertical language and read from top to bottom and from right to left. Nowadays the reading order can vary, for example in newspapers it is possible to find articles written in the traditional style but also from left to right. (Palmieri, 2004.)

7 BOOKAIDEE PROJECT

In this chapter I will describe shortly the idea of the designed application, the design process and evaluate the end result. The goal of the project, from my interface designer point of view, was not to invent a new innovative technique for navigation, but to create a simple and easy-to-use interface.

The prototype was built in three months into a working prototype in Ochanomizu University in Tokyo. The project was realized with a fellow Finnish student who was responsible for programming and technical implementation. The prototype was designed first in English and then translated into Japanese.

7.1 The concept

In March 2011 Japan was struck with a magnitude 9 earthquake that shook not only Japan, but the whole world. Tohoku earthquake was one of the most powerful earthquakes in the modern history after 1900 when the record-keeping begun. The disaster killed more than fifteen thousand people and caused multi-million damages to the infrastructure and economy. (Moskowitz, 2012.)

Professor Itiro Siio from Ochanomizu University was in a conference in Tokyo when the earthquake hit on March 11th. He was evacuated to a gym hall nearby school among many other people who attended the conference. After the disaster he began to think what kind of system would help evacuees during these kinds of happenings. Professor Siio came up with an idea where books could provide comfort and pastime activity when the evacuation situation lasts for several hours or even for days.

Many evacuation sites are in schools and campuses that have libraries, so Book Aidee – system uses existing RFID-tags in books found in such locations. The system is portable; it can be used on any laptop or desktop computer that has Windows-OS and USB-port to connect the RFID-reader. The advantage of using a book instead of, for example a key ring or a card with and RFID-tag, is that books are appreciated, won't get lost easily and are more likely to be returned, like borrowing and returning books from a library.

The main idea of the system is simple; when a person enters the facility, he or she is given a book. The tag in the book is read at the entrance, and the ID of the tag is saved to a database. The system counts the number of the tags, so in all situations the amount of people inside the facility can be observed. This helps when providing food or other items to the people.

Later the user can save his personal information to the database, so he can be identified. The internet service connected to Book Aidee database allows people all across the world to search for their family members who might be on the site.

In the next few chapters I will shortly describe the design process of the BookAidee application.

7.2 Design process

Before starting to design anything for a certain purpose it is useful to list down the necessary requirements and functions. In a case of designing a user interface, this is very important because the final product has to be looked at as a whole. If some functions or requirements are added afterwards, it may affect to the usability of the whole product. Good user interface can be flexible, so if it's possible to extend the features of the application later, that aspect should be considered in an early state of the design process.

The user plays the main role using the applications so first of all the profile and the needs of the user had to be determined. For BookAidee, the most likely end user was a librarian who happens to be at work when the system is needed. We assumed, that the end user has basic knowledge about computers, and that the system is already installed to the computer that is meant to be used, and some training about the usage of the application would be given beforehand.

When designing the interface and the system structure, I kept in mind that the user interface has to be simple and easy to use. The situation, in an event of crisis or disaster, can be stressful, so we can't assume that the person operating the system would be able to remember exactly how to use the system even though he or she had training for it. Therefore

it is crucial to keep the functions simple and clear so previous knowledge of the system is not necessarily required. Ideal situation would be that anyone could use the system without a manual.

Requirements for the system functionality were:

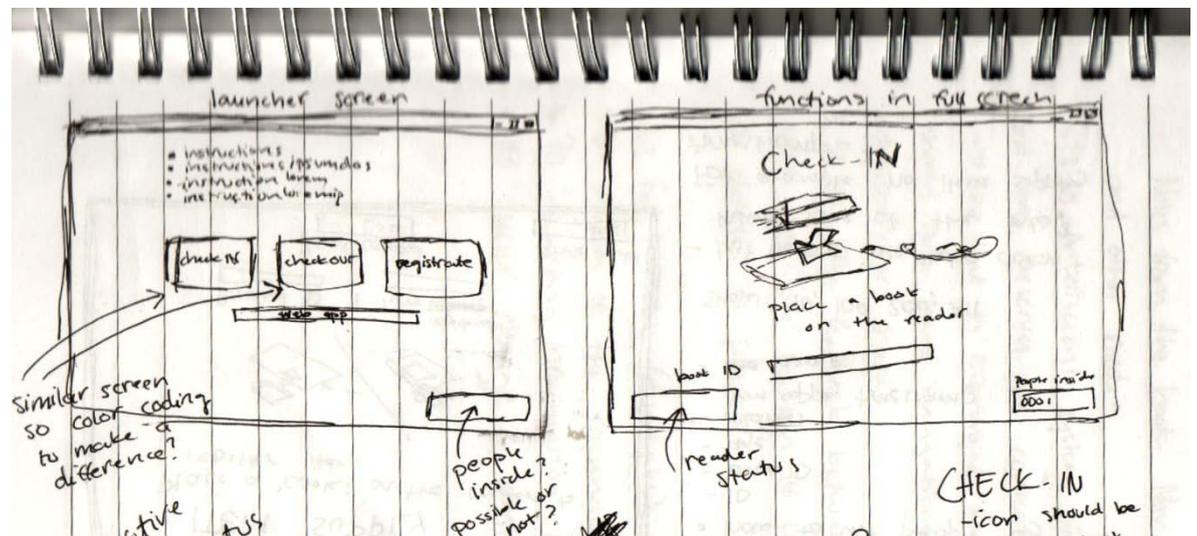
- Registering into the system and out from the system. In general, registering and un-registering a book into the system shouldn't take too long, because when a lot of people enter the facility, the system should be able to work fast and not to slow down the evacuation.
- The system should count the amount of people signed into the system and display the number.
- People should be able to save personal information into the system, and the information should be accessible via the web interface so searches could be made.
- The person should be able to change the book to another one without losing the personal information already saved.
- Power and internet blackout should be taken in account. When using computers is not possible, people should be able to use a paper-form to enter their information. Therefore updating and adding personal information should be made possible later when power and internet are back.
- Adding the information of the paper sheet into the database should be made possible via browser.

7.2.1 Sketching and wireframing

After defining the necessary functions for the application and the profile of the user I continued the design process with sketching. Sketching is a good way to realize your thoughts without using too much time and the ideas can be presented more easily to other project members.

In beginning I sketched some possible screen layouts for choosing the system functions, like how to change from checking-in people to checking them out. For simplicity, I turned down a couple of ideas of clickable menus and decided to design a launcher screen where all the different functionalities could be chosen clearly from one screen. This approach is

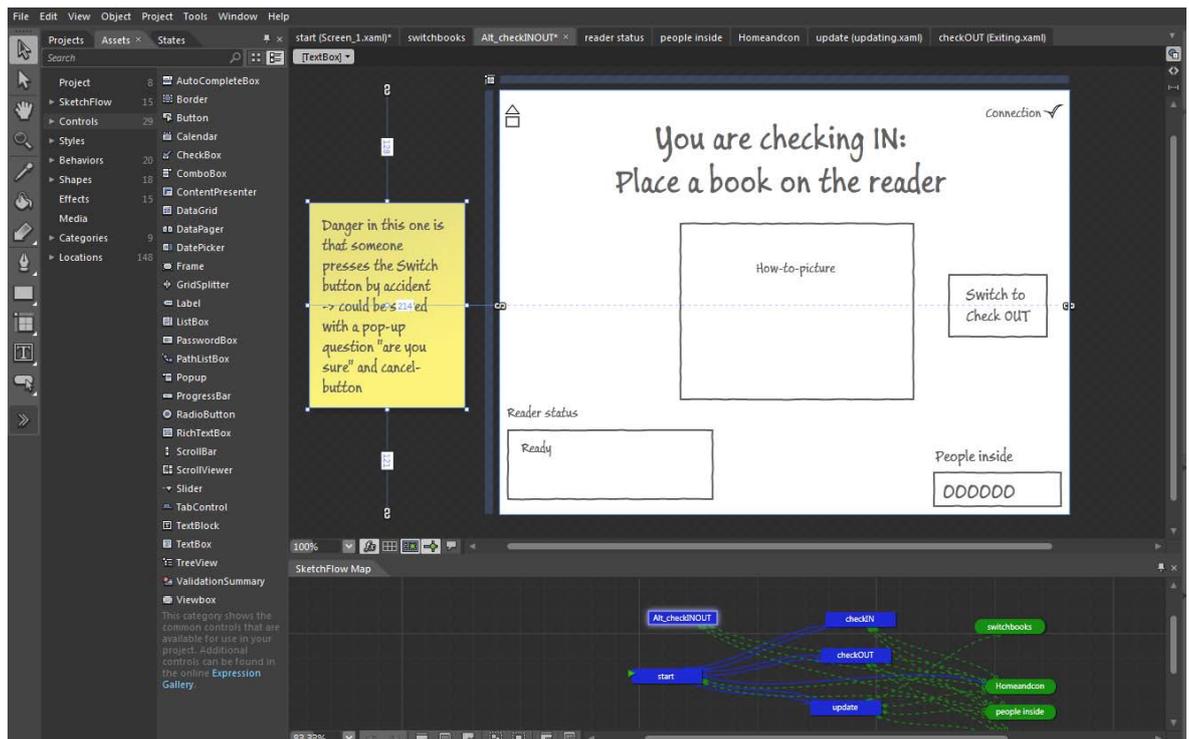
similar to a user interface in a website where you click on something you want to go to, instead of choosing it from a drop-down menu, for example. As seen from the sketch in the graph 6, the buttons are big and easily accessible and indicate with text what the functionality behind them is.



GRAPH 8. Sketch of the launcher, and the sign-in functionality screen of BookAidee.

After clicking on these buttons the screen would be changed to the screen of the functionality, with some instructions given so the user would know how to proceed as seen on the right in graph 6.

I created an interactive wireframe model of the application to show it to the supervising professor and to see better how the structure would form. The wireframe was created with Microsoft Expression Blend and in graph 7 the function screen of sign in can be seen. The connection indicator on the top right corner and the home button on the top left corner visible in the wireframe are not present in the final application. The connection indicator was left out because it would have been unnecessary information for the user. Instead, if connection to the database or the RFID-reader is lost, the application will show a full screen error message so the user can fix the problem immediately. The home button turned out to be confusing for the user after testing out the paper prototype.



Graph 9. Wireframe model of BookAidee application.

7.2.2 Paper prototype

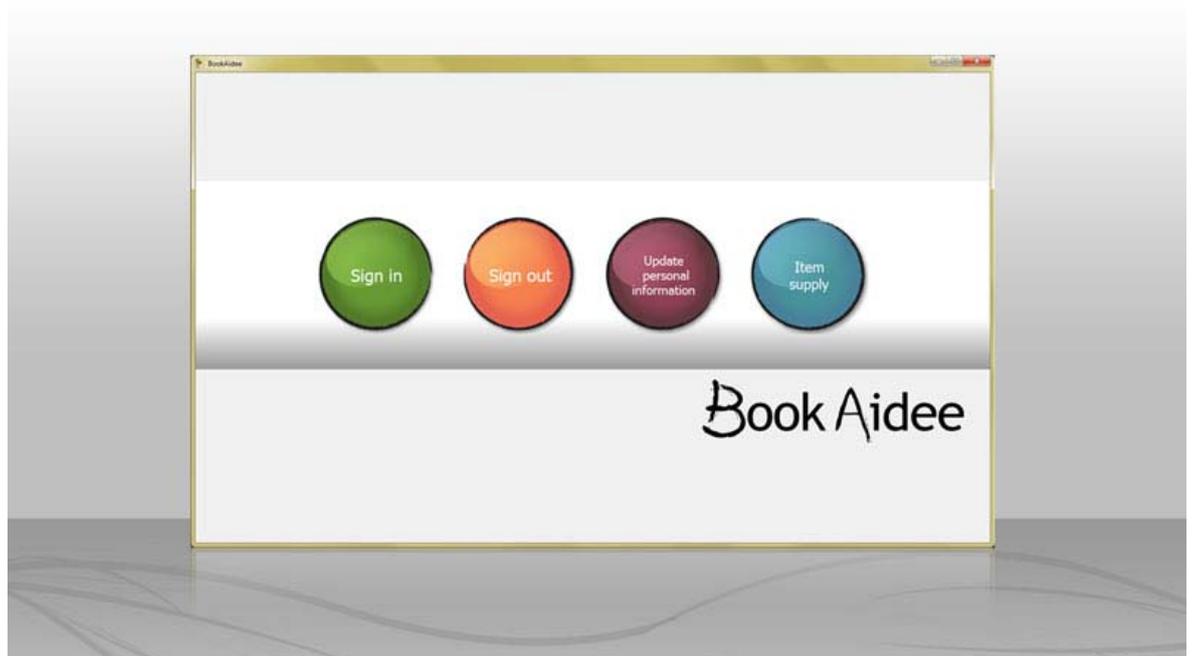
After the wireframe model was approved by the supervising professor, I decided to create a paper prototype to try out the application with a user. Paper prototyping is a low-cost and efficient way to test out if the design has usability problems before writing any code. (Nielsen, 2003.)

Ideal situation would have been to ask a librarian, a target group user, to test the paper prototype, but since using the application doesn't require any special knowledge, we decided to test with the nearest colleagues at the campus.

The prototype provided important information about unnecessary elements in the user interface. The application is not intended to be "browsed" like a website but rather to be set on a certain mode for longer periods of time. Changing between modes is the task of the librarian, who is the administrator, not the end user with the book. To prevent the possible situation that the end user returns unintentionally to the launcher screen, the home button was removed and returning to the launcher screen happens with a keyboard command.

7.2.3 Final design and web interface

The elements for the application, such as buttons, logos and images were created in Adobe Illustrator as vectors. The user interface was built on QT creator with a help of QSS styling files to achieve scalability. The application was then translated into Japanese.



GRAPH 10. BookAidee launcher screen. English version.

At the time of creating the web interface, which provides the possibility to search people from the database, the time for the project was almost up. The web interface uses a ready-made, open source MIT-licensed CSS and JavaScript framework. The Skeleton grid can be downloaded from www.getskeleton.com and it was used to add value to the web interface since it easily scales down for mobile devices.

7.3 The project from a cultural point of view

Our two-person team in BookAidee consisted of two Finnish students. We had consultations and feedback from our Japanese colleagues, but the situation for international co-

operation in the project was not ideal. Even though the Finns and the Japanese are said to be likeminded, creating the user interface required a lot of thinking. However, the end result was approved and praised by the supervising professor and received good feedback.

Translating the project went smoothly. All the texts in the project, except the BookAidee logo, were as strings inside the code, so there was no need to re-do any of the images, buttons or other graphical elements for the translated version. We had minor scalability problems with the translated version of the application but they were fixed with small changes to the QSS style sheet.

To appeal more for Japanese users the design could have been more cheerful. The approach chosen was clean and simple with tinted hues.

The application meets well the Hofstede's dimension of uncertainty avoidance. Japan is uncertainty avoidant culture with index of 92. The application has only limited choices in the launcher screen, as seen in graph 10, and the end user is guided with written instructions in the application. The administrator, the librarian, has the control of the application because the mode can only be changed with the special keyboard command and the web interface has a separate area for administrative purposes.

8 CONCLUSIONS

In the Internet everything spreads fast and designers all over the world are affected with the same styles and trends. There are even signs of decreasing cultural differences in web designs (Robbins & Stylianou, 2008). However, these signs are minor and are more to do with internet becoming more universal than changing cultures. Cultures change slowly and can't be absorbed through information networks; they have to be lived, learned and experienced.

When designing for foreign cultures, it is hard to know what is important. There is no perfect guidebook or tutorial on how to create culturally aware interfaces. All the bits and pieces of information seem to be spread all over and, I imagine, every culture, every translation and every project is a unique case that brings some of these pieces together.

There are years and years of experience, trials and errors and hundreds of hours of study behind great universal interfaces we all use every day. Operating systems, smart phones and websites that give a good user experience despite the language, time-zone or continent of the user are the results of sweat and tears of culturally aware user interface designers and engineers.

It is not easy to create an interface from a scratch, so using someone's good idea is not a sin. In a way, globalization has made the job of user interface designers easier. Elements, practices and symbols that are well known and widely recognized in many cultures are easily repeatable and safe to use. It doesn't mean though, that there is no space for variety, creativity and new ideas in user interfaces.

The human factor, the mind behind the product, is still very important in user interface design. The mind of a human, no matter the culture, works its ways through tasks in very different ways compared to machines. It is designer's job to respect the localization matters and give the user the keys for understanding the machine.

The future has a lot to offer. In just a few years user interfaces and user interactions have faced more changes than in the last decade. Touch input has been implemented on smart

phones and tablets and soon it will become common on many other devices. Gesture-based interaction in games has been a success, and it is finding its way to other interfaces and applications as well. New ways of interacting, especially gesture-based interaction may bring up cultural challenges since some hand and body gestures are interpreted differently in some cultures.

In ten years we might navigate through our user interfaces in ways never seen or imagined. The ability to adapt is more important than the ability to change and the connection between user interfaces and culture will be important in the future as well.

REFERENCES

- Bryant A. 2004. Calendar and Time. Modified 29 March 2004. Available: <http://www.sengokudaimyo.com/miscellany/calendar.html>
Accessed: 25 May 2012.
- Edmondson R. 2005. The Meaning of Colors – Color Symbolism. Available: <http://www.myuniversalfacts.com/2005/12/meaning-of-colors-color-symbolism.html>
Accessed 15 January 2012.
- Esselink B. 2000. A Practical Guide to Localization. John Benjamins Publishin Co., The Netherlands.
- Globalization and Localization Issues 2012. Available: <http://msdn.microsoft.com/en-us/library/aa292083>
Accessed 27 January 2012.
- Hofstede G. 2012. Biographical information about Geert Hofstede. Available: <http://geerthofstede.nl/geert>
Accessed 25 May 2012.
- Hofstede G. 2011. Dimendionalizing Cultures: The Hofstede Model in Context. Online Readings in Psychology and Culture, Unit 2. Available: <http://scholarworks.gvsu.edu/orpc/vol2/iss1/8/>
Accessed 12 May 2012.
- Hofstede G. 2005. Cultures and organizations: software of the mind / Geert Hofstede and Gert Jan Hofstede. McGraw-Hill, New York.
- Hofstede G. 1991. Cultures and organizations. Software of the mind. Intercultural Cooperation and its Importance for Survival. HarperCollinsBusiness, London.
- Hoft N. 1995. International Technical Communication: How to export information about high technology. John Wiley & Sons Inc, New York.
- Marcus A. & Armitage J. & Frank V. & Guttman E. 1999. Globalization of User-Interface Design for the Web. Available: <http://zing.ncsl.nist.gov/hfweb/proceedings/marcus/index.html>
Accessed 27 January 2012.
- Marcus A. & West Gould E. 2000. Crosscurrents – Cultural Dimension and Global Web User-Interface Design Available: <http://people.cs.vt.edu/~shaffer/cs6604/Papers/p32-marcus.pdf>
Accessed 27 January 2012.
- McSweeney B. 2002. Hofstede’s model of national cultural differences and their consequences: A triumph of faith – a failure of analysis. Available: <http://www.uk.sagepub.com/managingandorganizations/downloads/Online%20articles/ch05/4%20-%20McSweeney.pdf>

Accessed 13 May 2012.

Moskowitz C. 2012. One Year Late: Lessons Learned from Deadly Japan Earthquake. Modified 21 Feb 2012. Available: <http://www.ouramazingplanet.com/2479-japan-tohoku-earthquake-lessons-learned.html>

Accessed 25 May 2012.

Nielsen J. 2005. Ten Usability Heuristics. Available: http://www.useit.com/papers/heuristic/heuristic_list.html

Accessed 13 January 2012.

Nielsen J. 2003. Paper prototyping: Getting user Data Before You Code.

Available: <http://www.useit.com/alertbox/20030414.html>

Accessed: 22 May 2012.

Palmieri C. 2004. Japanese typography on the web and beyond. Available:

<http://www.lukew.com/ff/entry.asp?111>

Accessed 15 May 2012.

Reimer J. 2005. A History of the GUI.

Available: <http://arstechnica.com/features/2005/05/gui/>

Accessed 22 May 2012.

Robbins S. & Stylianou A. 2008. A longitudinal study of cultural differences in global corporate web sites.

Available: <http://www.aabri.com/manuscripts/09352.pdf>

Accessed 15 May 2012.

Rose C. 2011. Japanese typography: clarity within the neon mayhem. Available:

<http://desktopmag.com.au/features/japanese-typography-clarity-within-the-neon-mayhem/>

Accessed 15 May 2012.

Tabuchi, H. 2011. Facebook wins Relatively few friends in Japan. Available:

http://www.nytimes.com/2011/01/10/technology/10facebook.html?_r=1&pagewanted=all

Accessed 15 May 2012.

Tektronix 2007. The Color connection book series – international color guide. Available:

http://www.office.xerox.com/business-resources/colorconnection_book4_all.pdf

Accessed 13 January 2012.

Victor D. 1992. International Business Communication. HarperCollins Publishers Inc., New York.

APPENDICES

International meanings of color

	Color	Meaning
	Red	<p>Egypt and China: good luck. In China red is used widely in cultural ceremonies.</p> <p>India: purity, wedding</p> <p>Eastern cultures: joy, when combined with white.</p>
	Blue	<p>China: immortality</p> <p>Hindis: sacred color of the god Krishna</p> <p>Considered to be the safest color to be used globally</p> <p>Colombia: funeral</p> <p>Egypt: dark blue is for mourning</p>
	Green	<p>China, France, Egypt: according to studies green is not a good choice of color for packaging products.</p> <p>Color of Islam</p> <p>Ireland: Catholic, religiously significant.</p> <p>In some tropical countries green is associated with danger.</p> <p>Most western countries: indicates that the it is safe to go, for example in traffic lights</p>
	Brown	<p>Colombia: discouraging for sales</p> <p>India: color of mourning</p>
	Yellow	<p>Asia: imperial, sacred</p>
	Orange	<p>Ireland: Protestant, religiously significant</p> <p>United states: inexpensive goods</p> <p>Japan, China: color of love</p>

APPENDIX 1/2

	Olive green	Internationally connected to military
	White	Eastern culture: death, mourning Japan: color of gods, mourning. When combined with red represents happiness, life force and celebra- tion China: death, misfortune, mourning Iran: peace, sacred color of Mohammed
	Black	Western cultures: mourning, death
