Enhancing User Experience on Cruise Ships through Wayfinding Improvements

Vanja Valenčak
LOST ON BOARD

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Vanja Valenčak

Master of Arts Thesis
Industrial and Strategic Design

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ABSTRACT

Cruise ship vacations have become one of the most popular forms of leisure travel. Cruise ships are themselves being designed as a tourist attraction to the extent that some cruise companies have more recently even begun advertising their ships as a travel destination, and not the ports that will be visited. Moreover, cruise ships provide passengers with feelings of control and liberation that they may not normally experience in their everyday lives. However, despite the experiences offered and the popularity engendered by cruise vacations, passengers still encounter significant problems while on board — they are readily prone to losing their way.

This thesis aims to enhance user experiences on cruise ships by identifying the reasons for wayfinding difficulties and the consequences of passenger disorientation. Based on literature review, field studies and User Experience Target method, I focus on the feeling of control as the user experience target and generated design proposals. The concept presents wayfinding improvements in the hallways of the cruise ship cabin areas. The design proposals were evaluated by users and experts from marine industry.

This Master thesis was completed for the Triad 2013 project, a part of the Cruise and Ferry Experience program (Aalto University), funded by the FIMECC I&N program.

Keywords: cruise ships, user experience driven design, user research, concept design, wayfinding, interior design of hallways
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Helsinki, 2013.
Vanja Valencak

I dedicate this thesis to the memory of my mom, Ljilja Valencak.
1. INTRODUCTION
1.1 Background: Triad project

This thesis was completed for the Triad 2013 project, a part of the Cruise and Ferry Experience program, funded by the FIMECC I&N program. The program was created with the goal of providing international and multidisciplinary research and education within the passenger ship context. Established in 2009 within the School of Engineering, Department of Applied Mechanics at Aalto University, this project connects students from across different fields of expertise to provide mutual support while conducting research and writing our individual theses. This is accomplished by sharing data and knowledge on a similar starting topic. Each year, one or two Triad groups are formed consisting of three students. Besides myself, Virpi Ahvenainen from the School of Business and Martin Jogeva from the School of Engineering were selected for the Triad 2013 that started in January 2013.

Every Triad group had monthly meetings with a steering group. The steering group supported us throughout the entire process of choosing a topic, conducting research, and writing our theses. Our steering group was fortunate enough to include three Aalto University professors from the School of Arts, Design and Architecture, the School of Engineering and the School of Business, an architect from the Aalto Built Environment, a doctoral student from the School of Arts, Design and Architecture, and industry experts from STX Europe, Foreship, Royal Caribbean Cruises, Ltd and Arctech Helsinki Shipyard Inc.

1.2 Forming the topic

The first theme provided for our theses was to forecast the future trends of the passenger ship structure, business model/servicescape, architecture and design with an evolution analysis. This initially entailed narrowing down and modifying the topic according to our findings, preferences, and motivations, which the steering group subsequently needed to approve.

This thesis will focus on the passengers’ experiences on cruise ships. I aimed to explore what causes the emergence of negative experiences. Moreover, close attention will be paid to areas which can transform positive experiences into negative ones. The research, upon which the topic of this thesis was developed, was inspired by reading the previous Masters’ theses conducted within the Triad project, the travel reports of cruises undertaken by Triad students, and the literature related to cruise ships. Interestingly, the passenger reviews from the website, CruiseCritic.com, provided even deeper insights. However, in order to expound upon this understanding, it is necessary to further explicate and analyze the culture of cruising.
1.3 Cruising Culture

How and when it all started
According to Levander (2010), all ships that can carry more than 12 passengers can be considered to be passenger ships. Cruise ships thus represent only one type of passenger ship. Besides cruise ships, other types of passenger ships include ferries and fast ferries. Levander (2010) also narrowed down the key differences between these passenger ships to the destination and length of transportation. Regarding the former, a cruise ship will start and finish its journey in the same port, while ferries will transport passengers and cargo from one port to another. The length of transportation also varies significantly: cruise ships can last at least two days; ferries can last from a couple of hours to one day; and fast ferries operate on shorter routes, lasting only a couple of hours.

A special category of cruise ferries do exist which have large accommodation areas and spaces for leisure activities. While some field studies were conducted on cruise ferries in order to familiarize the Triad group with the interior design and layout of ships in general, the focus of this study is placed primarily on cruise ships as mentioned above.

Short history of cruising
The first sailings with cruise ships started in the 19th century and were mostly cross-Atlantic journeys. Thereafter, the cruising industry experienced remarkable growth until the 1960s. However, it all changed when commercial jet aircrafts started crossing the Atlantic. The development of the aircraft industry and the introduction of new airplanes made transatlantic cruises less attractive; and by the beginning of 1970s, many cruise lines went bankrupt. Those which managed to remain in business transformed cruising into the experience that most people recognize today: cruise ships were no longer used just for the purpose of transportation, but also the thrill of the journey which became a crucial part of every trip. (Ward, 2009)

In the late 1970s, cruising regained its popularity by providing shorter leisure voyages in warmer seas for passengers who wanted to spend their holidays on board (Ward 2009, 2013; Ahola 2010). However, from the 1970s until today, the cruise ship industry has changed dramatically: it has become the fastest growing sector of leisure travel (Brida and Zapata 2010; Kwortnik 2008) with the largest markets in North America and Europe and the largest emerging markets in Asia, Australia, and South America (European Cruise Council 2013).

Cruise product
The cruise product is becoming more attractive and accessible to the mass market (Kwortnik 2008) where passengers of all ages can spend unforgettable vacations. Cruise companies are offering all-inclusive trips with plenty of on-board and on-shore activities, including fitness and sports facilities, entertainment, and duty-free shopping (Ahola 2010). The ship
itself is designed as a tourist attraction (Brida and Zapata 2010) to the extent that some cruise companies have even begun advertising their ships as a travel destination, and not the ports that will be visited. The proof that the “ship is an attraction itself” is evidenced by the large number of passengers that fail to disembark in ports; a point which reasonably suggests that the ship has a sufficient amount of enticing activities on offer (ibid.). In addition, an array of other reasons which attract people to cruises, such as convenience, destinations, activities and services, being-at-sea fetish, weather, value, and word of mouth (Hung and Petrick 2011). Moreover, cruising is associated with relaxation, enhancement of kinship relationships or friendship, and convenience of travel. (ibid.)

Cruise lines
The cruise industry is composed of three multi-brand groups that dominate almost the entire market (World Tourism Organization, 2010). Those companies are:
1. Carnival Corporation (which owns Carnival Cruise Lines, Costa Cruises, Cunard Line, Holland America and Princess Cruises);
2. Royal Caribbean Cruises (which owns for example Celebrity Cruises and Royal Caribbean International);
3. The Star Cruises Group (which owns NLC America, Norwegian Cruise Line, Orient Lines and Star Cruises).

These cruises can last from two days to a couple of months. The average cruise length is 7.3 days (CLIA 2011a). Passengers can choose from a variety of cruises: short trips to nearby places, longer voyages within large regional areas, or around the globe journeys (Marti 2004; Ahola 2011). There has been remarkable annual growth in the number of cruise passengers. Since 1980, the industry has had an average annual passenger growth rate of 7.6% (CLIA 2011). In 2012, that number reached 22 million (Ward 2013). In addition, the increased number of passengers has led to a reciprocal growth in the cruise ship industry (European Cruise Council 2013).

In recent decades, as the volume of passengers that ships could accommodate grew, the ships became larger and larger. Ships operating today can be divided into several categories. However, for the purpose of this thesis, only the passengers’ capacity on board will be discussed. According to Ward (2009), there are four divisions regarding capacity:
1. Boutique Ships can have between 50 and 200 passengers
2. Small Ships can have from 200 to 600 passengers
3. Mid-Size Ships are intended for 600 to 1,600 passengers
4. Large Resort Ships are built for 1,600 to 6,000+ passengers.

This evolution in ship size has resulted in some rather impressive figures. Currently, the largest ship in the world, the Allure of The Seas from the Royal Caribbean international (RCI) fleet, has a length of 362m, a beam of 65m, and a height of 18 decks (RCI 2013).
1.4 Finding problem areas

As reported by the CLIA (2011b), “cruising highly satisfies passengers – most (94%) heap praise on cruising, and nearly half (45%) say they were extremely satisfied.” However, despite the great satisfaction of passengers, the literature also reveals some major concerns related to cruise ships and cruising culture which tend to be responsible for the negative experiences encountered by passengers.

The causes of these negative experiences can take many forms. For instance, Ward (2008) acknowledges that on large resort ships navigating one’s way around the ship can be a frustrating experience, taking “at least a few hours or a day or so” due in large part to confusing signage and long queues. In addition, Ward (2008) further argues that as the ships become larger, the more impersonal the accompanying service tends to be. Adding to these concerns, Kwortnik (2008) states that the ship environment can easily ruin the experience with physical stimuli (e.g. unpleasant noises, smells, temperature, lighting, etc.) and with social factors (e.g. crowding, crew and other passengers). In addition, Nawijn et al. (2013) conducted research about how passenger emotions changed over the course of a trip and concluded that passengers feel the best during the middle of the trip and the worst at the end. According to the authors (2013), the reasons for their negative emotions are the stress about return travel and regrets because the holiday is over.

To alleviate some of these concerns, Hung and Petrick (2011) concluded that cruise companies should also strive to fulfill cruisers’ desires for learning/discovery, self-esteem/social recognition and bonding, which they argue tend to be currently lacking on cruise ships. Yarnal et al. (2005) note positively that ships and vacation spaces in general play an important role in countering the stress of passengers’ lives.

To ascertain a broader perspective of user experiences, it was necessary to conduct qualitative analysis in the form of researching online cruise ship customer feedback and directly interviewing cruise ship passengers. The results of this particular research subsequently provided the basis for my thesis topic.

Reviews from the website, Cruise Critic (2013), revealed that the quality of food, the layout of cabins and restaurants, and the courteousness of staff members played an important role for passengers when judging the satisfaction level of the experience. Besides these reasons, some passengers wrote about how hard it was to keep track of their family members. As previously mentioned in the literature, passengers also complained here too about the long lines, the complexity of the ships’ layout, and troubles in wayfinding. When it comes to the layout and wayfinding, some comments were more noteworthy than others:
“Learn which end of the ship the dining rooms, Windjammer and theater are located. You can’t look out and see where you are so this helps.”
“If you have to go the length of ship, use the Promenade or Central Park. Not as boring as walking through hallways.”

(about the Oasis of the Seas, written on 01.09.2013)

“The only deck that can’t be walked front to back is Deck 3. Carnival uses a two dining room (forward/aft) setup with the galley in the middle, so it cuts that deck in two. You can walk front to back on all the other decks, although you will have cut through the upper level of the forward dining room on Deck 4. It sounds more confusing than it is, if you review the deck plans before you go you will do fine.”

(about Carnival Cruise Lines, written on 06.11.2011)

Continuing my research, I was highly motivated to determine if the hallways really are “boring”, and if wayfinding is difficult for the majority of passengers on board. Among several other websites, I unexpectedly discovered one blog entitled “Finding your cabin”, written by Kavin (n.d.). Among the different advice related to solving the problem of finding a cabin, he wrote:

“Cruise ships are kind of like casinos - full of lights, sounds and smells that are exciting and distracting and, thus, can keep you a bit disoriented until you find your way around. If you are cruising aboard a luxury line, a personal steward will likely escort you to your cabin. If you are aboard a regular cruise ship (the majority of ships), you will have to find your own way. Do yourself a favor and familiarize yourself with your cruise ship’s layout before you even step aboard.”

As discussed, I conducted interviews with five former cruise passengers. The following represent some of the more interesting quotes related to the aforementioned problems:

“Sometimes I felt totally lost, but then you learn to identify couple of routes how to get to the main restaurant. I felt like an old person, because I couldn’t orientate myself around the boat.”

“Since it is such a huge boat you can’t even feel, if you don’t see from the windows, in which direction it is moving. I didn’t know where the front and back were. If you are in the middle, without windows, it is not easy to orientate yourself at all.”

“All places have some kind of identity. Of course, they try to create a feeling of luxury and that kind of atmosphere. But cabin corridors were really plain somehow. There is nothing that I can really remember. I didn’t get the feeling that it was well designed.”

First-time traveler of Oasis of the Seas (Large Resort ship)
Another passenger of MSC Fantasia (a Large Resort ship) reported that he had no difficulties in wayfinding or any remarks to give on the layout of the ship. However, he did mention that it is normal for a passenger to get lost a couple of times until he or she learns the right way. The interviewee added that hallways appeared “normal, with discreet lighting”, but he also suggested that they felt rather long. He measured how much time it took him to go from one hallway end to another - 1 minute and 50 seconds. Similarly, in one of the previous Triad group travel reports (Ahola et.al. 2011), the group noted that “the long, narrow and monotonous corridors are in need of more hierarchy and landmarks that enhance the sense of location. Changes in colors, materials or anything would also make the navigation easier.”

Consequently, what the passengers’ reviews and interviews clearly demonstrate is that there remain neglected areas on cruise ships where presumed positive experiences are instead creating negative ones, where all the glamour disappears, and where people are having difficulties finding their way.

1.5 Research objective and research questions

Based on the hypothesis that passengers have significant difficulties in wayfinding and that hallways are monotonous, I formulated my research objectives and research questions. The main goal of this study is to enhance user experience on cruise ships by providing design-based solutions.

To accomplish this goal, the research will investigate problems and features which are reducing passengers’ positive experiences on cruise ships, especially in hallways. Proposed solutions for the found problems will be illustrated with the renderings of the concept. Problems in wayfinding, also known as disorientation, are considered a stressor, which occurs when passengers become confused with the layout of the environment (Danielsson 2008). In addition, this can lead to individual frustration and loss of personal control (ibid.).

In this thesis project, I aim to explore the following research questions:

First, are hallways and wayfinding turning passengers’ experiences from positive to negative on the cruise ship? If yes, what causes the change of experiences?

Second, how can user experience be enhanced in discovered problem area?
1.6 Research process and methods

The research for the thesis consists of a literature review, field studies, data analysis, illustration of the findings, idea generation, and building and evaluating the concepts.

The literature review was completed throughout the entire research process. It provided me a deeper understanding of the selected area of study, as well as the theoretical background for creating the concepts. UX-driven design was reviewed to further understand the passengers and their needs, while the interior design perspective was studied in order to better ascertain how environmental elements are affecting the users.

To truly understand cruising culture and the reality of cruise ships, the Triad group went on a seven-day cruise to conduct research. Besides the cruise ship, field studies were also conducted in ferries and hotels. The method used in all of the field studies was participant observation, where semi-structured interviews and observation provided valuable data that shaped the development of the thesis. The two methods employed, participant observation and semi-structured interviews, will now be briefly explained.

In order to collect and interpret data, qualitative and quantitative methods were used. For the purpose of this thesis, two simple definitions of what those methods are, as proposed by Murray (2002), will be introduced. As Murray (2002) explains, qualitative research focuses on the characteristics of people and events without comparing them in terms of measurements, because the amounts and measurements demonstrated by people and/or events are the focus of quantitative research.

Participant observation is a method of qualitative research where, as Mackellar (2013) notes, “the researcher becomes a part of a social setting and makes descriptive observations of him/herself, others, and of the setting”. This method allows the researcher to truly understand and experience the life of the participants within the researched environment (Atkinson & Hammersley 1994). In addition, Evans (2012) proposes a list of questions that the researcher needs to answer during the observation from which I have selected those ones that are related to my study:

“What is happening here? Who is taking part?”
“What are the spatio-temporal arrangements/limits of the interaction?”
“How are social relations organized and structured through this practice?”
“What bodily skills are required to participate and what materials/tools?”
“What is the aesthetic/the feel/the flow of action? How can I take part?”

As a method for collecting data and to gain a better understanding of the research topic, semi-structured interviews were used. These interviews have to have a planned structure in a way that all interviewees are asked
common questions which will act as a conversation starter and will raise
the discussion (Carruthers 1990; Pyrhonen 2013). All the questions have
to cover the central themes of an area of interest in order to understand the
interviewees’ way of thinking about the research topic (Pyrhonen 2013).
This type of interview allows researcher to adjust questions and to control
conversation according to the responses of the interviewee (Ahola 2011,
ibid.).

Based on the analysis of the literature review, field studies and especially
insights from the passengers, I illustrated the findings (see the chapter
number 5) which were evaluated by experts from the marine industry and
passengers of cruise ship and ferries. The evaluation was completed in
Helsinki and Turku and will be explained in chapter 6.
2. BUILDING A FRAMEWORK
3. LITERATURE REVIEW
2. BUILDING A FRAMEWORK

2.1 User Experience

In order to fulfill the desired goals of this study, which are mostly striving to improve passengers’ experiences, User Experience (UX) Driven Design must be analyzed more closely.

First of all, it is important to explain what experience is. The word is derived from the Latin word experiential (to test or try) and is used to explain everything that is perceived, understood and remembered (Caan 2011). Some authors suggest slightly different definitions of what UX actually is. According to Roto et al. (2011), the term ‘user experience’ is associated with an interaction with a product or service, where close attention is placed on emotions and experiences that people have before, during or after the encounter. For Hassenzahl (2008), UX is a momentary and evaluative feeling that appears while interacting with a product/service. Moreover, the author introduces two aspects of how people may perceive products/services: “pragmatic” and “hedonic” qualities. “Pragmatic quality” focuses on the perceived functionality of the product/service, while “hedonic quality” refers to the fulfillment of basic human needs. Furthermore, Hassenzahl (2008) argues that the achievement of human needs for autonomy, competency, stimulation, relatedness, and popularity are directly responsible for positive experiences while pragmatic quality influence positive experiences indirectly through the functionality of a product/service. The author also suggests that if people fulfill their hedonic needs through interaction with a product/service, they will attach hedonic characteristics to it. Moreover, Kim et al. (2011) state that the most important aspect of UX design is to provide satisfaction and enjoyment for users by bridging the gap between basic needs and the product, system or service.

The factors that influence UX are context (e.g. social setting), user’s internal state (e.g. current desires, needs, expectations) and system (e.g. functionality, complexity) (Roto et al. 2011, Hassenzahl et al. 2006).

In the study conducted by Wright et al. (2005), the authors imply that we cannot design an experience, because both user and the artifacts are a part of the encounter and are involved in forming the experience. For that reason, the authors conclude that we can only design for experience by understanding the users and their needs.

2.2 UX Target method

In order to design for an experience, the User Experience Target method (Zhang 2013; Kim et al. 2011) will be used in this research. UX target is a method where one (or more experiences) that needs to be fulfilled during the interaction with a product/service is chosen before a design process.
starts. UX target is also used as a guideline for designers who must ensure that product will fulfill the desired needs (Zhang 2013; Kim et al. 2011). Different authors suggest somewhat different divisions of basic human needs (Kim et al. 2011). For the purpose of this thesis, I will use the one proposed by Sheldon et al. (2001) where ten psychological needs were determined by investigating a variety of relevant theories. Those needs are autonomy, competence, relatedness (belongingness), physical thriving, security, self-esteem, self-actualization, pleasure/stimulation, popularity/influence and money/luxury. A brief explanation by Sheldon at al. (2001) can be found in Table 1.

<table>
<thead>
<tr>
<th>LIST OF BASIC HUMAN NEEDS</th>
<th>SHELDON ET AL. (2001):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>“a feeling that activities are self-chosen and self-endorsed”</td>
</tr>
<tr>
<td>Competence</td>
<td>“attaining or exceeding a standard in one’s performance”</td>
</tr>
<tr>
<td>Relatedness (belongingness)</td>
<td>“a sense of closeness with others”</td>
</tr>
<tr>
<td>Physical thriving</td>
<td>“a feeling that the biological requirements of physical organism are satisfied”</td>
</tr>
<tr>
<td>Security</td>
<td>“a sense of order and predictability within peoples’ lives”</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>“a sense of personal worthiness and importance as well as a sense that people are moving toward an ideal world or version of themselves”</td>
</tr>
<tr>
<td>Self-actualization</td>
<td>“a sense of long-term growth”</td>
</tr>
<tr>
<td>Pleasure/stimulation</td>
<td>“the need for pleasurable stimulation”</td>
</tr>
<tr>
<td>Popularity/influence</td>
<td>“the need to gain friends and influence them and others”</td>
</tr>
<tr>
<td>Money/luxury</td>
<td>the need for material achievements</td>
</tr>
</tbody>
</table>

Table 1

Products and services tend to fulfill multiple needs; however, the most critical one for wayfinding problems will be investigated through the literature review and user study. To accomplish this, a proper framework for this thesis must be found.

2.3 The framework

The organizational theorist Tim R.V. Davis (1984) developed a framework in order to investigate the influence of the physical environment on people’s behavior in offices. The same framework was used in other studies (e.g. Bodin Danielsson 2008) due to its structural division of the environmental elements that influence user experiences and thereby their behaviors. For much the same reason, the aforementioned framework will be used in this study as well.

As the author (Davis, 1984) contends, it is crucial to consider the three components of the physical environment that have an effect on the users’ experiences:

1. Physical structure refers to the architectural layout of the ship (general arrangement) and physical placement of furnishings that have an impact
on the passengers.

2. Physical stimuli are elements of the environment that users are aware of and that directly influence their behavior, such as noise, lighting, air conditioning, among others.

3. Symbolic artifacts refer to the elements of the surroundings that are “communicating” with users about people, their roles or positions, status differences among others.

In the next chapter, all three aspects of the environment will be analyzed in much greater detail.

3. LITERATURE REVIEW

Following the chosen framework, the literature review will first focus on the passengers and their motivations for taking the cruise, their behaviors and their expectations. After which, the focus will shift to the environment of the cruise ships.

3.1 Getting to know the passengers

Cruise ship passengers are mostly from North America and Europe, while the largest emerging markets are located in Asia, Australia, and South America (European Cruise Council 2013, CLIA 2013). There are many categories of existing and potential cruisers. For the purpose of this thesis, the ages of the passengers will be listed and categorized. Moreover, the forthcoming paragraphs will also explain more precisely who the travelers’ companions are.

According to the Cruise Line International Association passengers’ survey (2011b) and GalaxSea Cruises of San Diego ratings (n.d.), the distribution between the three age demographics of cruisers is relatively even, though weighted more toward the older passengers: 36% are over 60 years old; 36% are between 40 and 59 years old; and the remaining 28% are under 40 years of age. 30% of all passengers are experiencing the cruise for the first time while the other 70% are repeat customers. The first time cruisers tend to be younger than the repeat customers: 15% are over 60 years old, 38% are between 40 and 59 while 47% are under 40 years old (table 2).

<table>
<thead>
<tr>
<th></th>
<th>ALL PASSENGERS</th>
<th>FIRST TIME TRAVELERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 40 years old</td>
<td>28%</td>
<td>47%</td>
</tr>
<tr>
<td>Between 40 and 59</td>
<td>36%</td>
<td>38%</td>
</tr>
<tr>
<td>Over 60 years old</td>
<td>36%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Table 2

When it comes to the travelers’ companions, spouses hold the first place (77%); at the distant second and third places are friends (19%) and children under the age of 18 (18%). However, according to Ward (2013), 4 million cruise passengers (25% of all passengers) are traveling as singles or single
parents, even though the world of cruising is designed for couples.

The major influencers for passengers to opt for a cruise are: the destination (35%), overall experience (19%), the ship itself (12%), the cost (23%) and facilities available — e.g. spa, gym, child facilities, etc. (11%) (CLIA 2011 b). In addition, Hung et al. (2011) categorized the motivations for taking a cruise as “convenience, destinations, activities, services, a being-at-sea fetish, weather, value of money, and word of mouth”. Moreover, the authors added that cruising is also linked to relaxation and enhancement of relationships/friendships.

Interestingly, the 2013 study by Nawijn et al. found that emotions are in flux during a trip. According to the authors, emotions are short-lived and change according to the stimuli in the environment. Furthermore, emotions are changing on a daily basis, and passengers feel the best during the middle of vacation. On the other hand, passengers feel the worst at the beginning and end of the trip. As the authors conclude, the reason behind negative emotions lies in adjustments to the new environment, culture and later with regrets that the holiday is over, stress about return travel, jetlag, etc. It should be noted that their data did not reveal why passengers have the most positive emotions in the middle of the trip.

In addition, Yarnal et al. (2005) indicate that the behavior of passengers is changing in the vacation environments. Cruise ships provide passengers with a sense of control and liberation that they may not normally have in their everyday lives. The reason for the change lies in the fact that they are separated from their usual surroundings and problems. Besides that, on a cruise ship there are none of the typical constraints that passengers normally experience as they will most likely not see their fellow passengers again, contributing to the feeling of liberation. Moreover, their research suggests that ship spaces play an important role, because they allow people to meet and to “adopt behaviors and identities that are not the norm” (ibid.).

As the 2005 study by Yarnal et al. exemplifies, ship spaces affect behaviors positively by connecting passengers and releasing the stress of their everyday lives. In the next section, ship spaces will be explored from three different perspectives as physical structures, physical stimuli and symbolic artifacts. As Rosenbaum et.al. (2011) note, the aforementioned elements of the environment influence passengers’ behaviors; they are largely responsible for passengers’ approach/avoidance decisions and will shape their overall experience.
3.2 Physical structure

In order to understand how ship spaces affect passengers, it is important to explain what the space represents from an interior design perspective. According to Edwards (2010), “architectural interior space is a volume surrounded by the arrangement of a building”. People are an inevitable part of every space, and their presence provides a shape and purpose to every interior (ibid.). In addition, Kwortnik (2008) took an illustrative example from Gove et al. (1992) to explain that spaces are a setting for a play that is facilitating the performance of actors where interior design needs to impress the audience and exceed their expectations. Moreover, the perception of “a setting” creates certain emotions and beliefs, which then influence behavior (Bitner 1992).

When explaining how the space is affecting people, Bitner (1992) acknowledges that the spatial layout and functionality of the physical surroundings are especially key in every environment. Moreover, the author states that those elements must be carefully considered when exploring or designing interiors. With the term “spatial layout”, the author is describing machinery, equipment, the way furnishings are arranged, and the spatial relationships among these objects. On the other hand, “functionality” is explained as the “ability of the same items to facilitate performance and to accomplish set goals”.

A somewhat similar division can be found in the research conducted by Davis (1984) who explained physical structure through a behavioral perspective. The author divided physical structure as an architectural design (constructive elements) and physical placement of furnishings that influence or regulate social interactions. Moreover, as Bitner (1992) explained, with the changes in interior design, interaction between people can also be achieved, as well as people’s transition from one place to another.

The following examples will describe how physical structure can affect social interaction: the smaller the space, the more intimate the relationships will be among people (Davis, 1984); as the space becomes larger, the more impersonal the service (Ward, 2008) and social interactions are (Davis 1984).

On the other hand, physical structure can also relate to comfort. For instance, Tulimaa (2012) suggests that the location and interior design of a cabin on a cruise ship should be carefully considered, because those elements of physical structure affect the physical and mental comfort of the passengers. In addition, the importance of comfort was emphasized in the study of Yarnal et al. (2005) where it was noted that cruise ship spaces were manipulated at the expense of accommodating more passengers. When it comes to the physical structure of hallways, Brebner (1982) wrote five main aspects of hallway design concept:
“1. Visibility, which argues for straight lines or gentle curves and adherence to lighting standards;
2. Avoiding intruding items which can cause bottlenecks (e.g. doors which open into the corridor, using corridors as storage areas);
3. Activities taking place in adjoining spaces, which can determine the acceptable level of noise which will be transmitted from the corridor;
4. Junctions and terminuses of corridors which, in most cases, need to feed into wider areas to accommodate the increase in volume;
5. Signposting for everyday and emergency use.”

In the Finnish building standards (1994), it is mentioned that hallways readily show signs of wear and tear and should be designed with that in mind.

3.3 Physical stimuli

As mentioned in the previous chapter, physical stimuli are elements of the environment of which users are aware of and that directly influence their behavior, such as noise, lighting, air conditioning, temperature, air quality, and disorientation (Davis 1984; Bodin Danielsson 2008).

Kwortnik (2008) researched how the environmental elements of cruise ships influence behavior and noted that passengers complained about the smell, especially the smell of fuel oil. They were reconsidering future sailings also because of the smoking on board. Noise from other passengers, the ship structure, and the workers also had the influence on cruisers. Other common complaints were lighting and ship motion. As the author (ibid.) states, ship motion can influence decisions about the time of year to cruise, which cabin to take, and whether to cruise at all. Physical stimuli can also refer to social factors which affect passengers and their overall experience. According to Kwortnik (2008), those social factors are crowding, queues, crew co-production, and friendship.

However, it is important to bear in mind that what constitutes a problem and what influences a passenger do not necessarily mean that they will have the same effect on fellow cruisers. Furthermore, some passengers can perceive the previously mentioned physical stimuli as desirable characteristics of cruising (ibid.). Conversely, when physical stimuli are perceived as a threat, such as noise, disorientation and crowding, the stimuli become “environmental stressors” (Bodin Danielsson 2008). What is common for all environmental stressors is that they lead to a loss of personal control (ibid.).

Since this thesis focuses on wayfinding on cruise ships, the following sections will explore what wayfinding strategies people are using, what helps and hinders them during the wayfinding process. After which, personal control will be clarified.
3.4 Wayfinding

Berger (2009) defines wayfinding as the act of finding a way to a destination and wayfinding design as the art of helping people find their way. A need for wayfinding clues started when physical structures became larger, more complicated, leading to people having difficulties navigating spaces on their own. The solution was provided through speech, touch, print, signs, color coding, architecture, and landscape (ibid.).

It is important to remember that on cruise ships especially, passengers are coming from different countries. This means that signs and all other “tools” for wayfinding must communicate with all guests equally. For that reason, Berger (2009) states that signs need to be read nearly universally, through symbols, numbers, letters, and multiple text listings. Similarly, Villar et al. (2013) researched the difference between two positions of signs — on the floor and wall — to determine which one assisted users more. The results showed that there were no significant differences. However, the authors note that users navigate more efficiently when the signs were continuously positioned on the floor.

According to Carlson et al. (2010) there are three factors which influence wayfinding: the physical structure, cognitive map of the users, and strategies and spatial abilities of users. When it comes to physical structure - visual connectivity, complexity of the layout, and differentiation of the environment are crucial factors influencing wayfinding (ibid.). Abu-Ghazzeh (1996) emphasizes that the degree of differentiation is the degree to which different parts of a physical structure or environment resemble each other. Moreover, the author acknowledges that the visual access of distant destinations is a key element of the physical structure. Therefore, the author suggests that one location should be visible from several points along the route as visibility of different locations eases the transition from one place to another. However, Abu-Ghazzeh (1996) concludes that successfully providing visual access will not help if the level of differentiation is low.

A cognitive map is also called “a mental map” or “a picture in the head” (Rudolph et al. 2001). It refers to a mental image of the environment (ibid.) that people are subconsciously building when moving throughout a space. It is crucial that the whole environment is constructed according to the same principle, because people will assume that a building or ship is, for example, symmetrical, even though only one side was explored. People also tend to think that different floors look the same; if they do not, it can cause disorientation (Carlson et al. 2010). Rudolph et al. (2001) further point out that if the environment has some inconsistencies, these must be clearly marked, so that people will not become confused.

When navigating through an environment, strategies and spatial abilities enable users to reach their desired destination. Two strategies have been
identified for wayfinding: a route-based strategy and orientation-based strategy (Carlson et al. 2010; Lawton 1996). In route-based strategies, people are following and memorizing the route that was followed. Conversely, in orientation-based strategies, people tend to employ global orientation markers, such as the position of the sun (ibid.).

Lawton (1996) suggests that gender differences exist in wayfinding strategies. The author argues that men are more likely to adopt an orientation strategy, while women tend to use the route-based strategy. Moreover, the author acknowledges that women are more likely to experience spatial anxiety compared to men. Moreover, the author states that the spatial anxiety leads to a loss of personal control.

The literature review revealed an important user experience, loss of personal control, which occurs when difficulties in wayfinding appear. For that reason, the next section will discuss the feeling of control according to the relevant studies.

### 3.5 Personal control

Cruise ships are growing in size and in the amount of passengers they can accommodate. For that reason, visual connectivity, complexity of layout, and low differentiation of the environment are causing disorientation of passengers. It can sometimes take a few hours for passengers to find their way around the ship (Ward 2013), which finally causes a loss of personal control. In order to gain a better understanding of what personal control actually means and how it affects user experience, the literature which is not strictly related to wayfinding will also be introduced.

According to Dion (2004), control is fundamental to psychological functioning and to one’s own self-image. As the author explains, people will maintain a better image of themselves as well as personal competence if they feel in control.

Averill (1973) states that there are three types of personal control:
1. Behavioral control which refers to direct action on the environment and response which may directly influence or change the characteristics of a threatening event;
2. Cognitive control refers to the interpretation of events,
3. Decisional control is related to having a choice among alternative courses of action.

However, for Burger (1989) who examined negative reactions over perceived personal control, he describes it through the cognitive control. For his part, control is the “perceived ability to significantly modify events”. In the same regard as Averill (1973), Burger explains that people may not maintain control over one event, but they will interpret it in a way which allows them
to believe that they have more or less control than before. In addition, the author introduces occasions when the feeling of control is less desirable: 1. when it leads to concerns about self-presentation; 2. when it decreases probability that desired outcomes will be achieved; 3. when it leads to an increase in attention. 

On the other hand, Bitner (1992) acknowledges that increased perceptions of personal control lead to increased pleasure. In addition, other physical stimuli, which are also positively perceived, may increase perceptions of personal control (ibid.).

As previously mentioned, the behavior of passengers is changing in vacation environments (Yarnal et al. 2005). Cruise ships provide passengers with a sense of control and liberation that they would not normally experience in their daily lives. The reason for this change lies in a fact that they are separated from the usual surroundings and problems (ibid.) Furthermore, Duman et al. (2005) note that as passengers perceive more control over the vacation spaces, their feelings of adventure, thrill and escape will be fulfilled as well. Moreover, the authors state that control plays an important role in the evaluation process. Having multiple options to choose from increases the feeling of control, which then leads to increased pleasure (ibid.).

In terms of influencing this feeling of control, another critical factor is the implementation of technology. Lee et al. (2002) explain how innovations can lead to a loss of personal control such as through their example of when self-service technologies are implemented. As they suggest, the underlying reason for the perceived loss of control is a result of users needing to take a greater role in service while simultaneously having more responsibility over the production of services. Yet, when users believe that the innovation is beneficial and rewarding, they are more eager to adopt it. In order to prevent this loss of personal control, reminiscent of Duman et al. (2005), the authors propose to offer multiple options that users can then choose from, as well as flexibility in making and changing decisions regarding the innovation.

Bodin Danielsson (2008) acknowledges that personal control is “a fundamental component in different coping strategies”. In addition, the author adds that another related coping strategy, personalization, can provide users with an increased feeling of control over a place. Perhaps not surprisingly, personalization is thus also mentioned as an emerging trend on cruise ships. Given the significance of this related coping strategy, the literature related to personalization will be reviewed in the next section.
3.6 Personalization

Personalization refers to an adjustment of the environment according to passengers’ needs and desires. It can be observed from two aspects – group and individual. When studied from a group aspect, personalization enables a sense of group identity and belonging. Moreover, the interaction with personalized elements in the unknown environment can ease the adaption to the new place and enable a sense of security (Bodin Danielsson 2008).

Kwortnik (2008) notes that personalization has become an emerging trend on cruise ships whereby passengers are able to rearrange their cabins with the pictures of their relatives or by decorating cabin doors according to special occasions. Personalization can be readily found among the online reviews (e.g. cruisecritic.com) such as cruise staff members placing stickers (as a surprise) on the outside of passengers’ cabin doors if they are celebrating special events. Kwortnik (2008) acknowledges that personalization is rare in service contexts, but that it demonstrates the uniqueness of a cruise vacation whereby the cruise environment plays an important role in shaping passengers’ experiences. In addition, the author also suggests that the symbolic significance of cruise ships contributes to the feeling of self-identity.

3.7 Symbolic artifacts

Symbolic artifacts refer to the elements of the environment that are “communicating” with users about the social setting (Davis 1984). In the literature, symbolic artifacts are also known as affordances, a term which will appear in the following review. Beyond the already discussed significance of symbolic artifacts, it is worth exploring its other definitions as well.

When it comes to architecture, Maier et al. (2009b) note that affordances can be used for understanding the relationship between built environments and its occupants with respect to the form, function and meaning of architectural elements. Moreover, the authors state that the ultimate utility of affordances is the purpose of the system and its organization.

For Srivastava et al. (2012) and Maier et al. (2009), affordances represent the opportunities for action offered by a product. However, even more importantly with regards to perception, the information about a product, environment or social interactions is acquired directly, so that no mental processes are required (Goldstein 1981).

To further illustrate the significance of affordances, it is worth exploring a few more examples of its effect. Windows, for instance, afford the user an exchange of air and light, as well as illumination of the interior and a view of the exterior (Maier et al. 2009b). However, visual perception has its limits
a flat sign can afford sighted people with information, but not for the blind (Fadel et al. 2009a). Affordances can be both negative (harmful to users) and positive. However, whether they are positive or negative, affordances must be learned (Goldstein 1981).

Affordances can also influence the behavior of users (Srivastava et al. 2012). Based on the appearance of a product, a user can expect to perform an action that might not be possible, or conversely, a user might not recognize that a specific action is possible at all (ibid.). Moreover, affordances tend to communicate information about a particular organization or group of people (Davis 1984). For example, Graver (1996) emphasizes the importance of the location. He acknowledges that height and status are proportional for offices, but inversely proportional for retail establishments. The author further explains that the higher a law firm is located in the building, for example, the more successful it is perceived to be. On the other hand, the same cannot be said for a bookstore — the ground floor of a busy street is an ideal location for it, which cannot be said for a law firm. Bitner (1992) notes that the type of office furniture and decoration also influences opinion about whether an employee is successful and/or reliable.

According to Maier et al. (2009b), there are two types of affordances. Those are artifact-user affordances and artifact-artifact affordances. The former refers to the relationship that is directly useful to users. Artifact-user affordance is an interaction between users and artifacts, where artifacts are “giving” clues to their potential use. However, artifact-artifact affordance refers to the relationship between two artifacts which may be indirectly useful to users, but cannot be manifested by either artifact alone (Maier 2009a). For example, chairs that can stick to another chair must afford that action (ibid.). As Maier et al. (2009b) conclude, structure, behavior and purpose are the three main categories of any affordance relationship.

Affordances can also reveal what is the relationship status between people. Brebner (1982) notes that the distance people keep from one another serve as cues to their relationship together with the behavior they express. If individuals are perceived to be a part of a group, other individuals will walk around them, in order not to intrude their space. On the other hand, if people perceive that a group consists of individuals who do not know each other, but are looking at something together, others tend to stop and join the group. Brebner (1982) notes that people have a tendency to match their walking speed to the people around them, because they do not want to intrude on others’ personal space. The author mentions that pedestrians walk faster, the closer that others were to them. When it comes to wayfinding and behavior in terms of affordances, Zimring et al. (2005) suggest that attractions and landmarks can impact the route and distance pedestrian travels. Moreover, the presence of others influences pedestrian decisions and behavior. The authors (ibid.) note that if pedestrians have a choice, they will move towards places with more people and activity. In
addition, according to their study, routes are often chosen based on the interest rather than distance; trips through interesting places always seem shorter compared to unpleasant ones.

However, affordances can also be misleading. Graver (1996) acknowledges that sometimes information about the possibility of action can be misleading or non-existent despite the presence of affordances. As the author explains, unplanned behaviors may occur because of overlooked factors, e.g. plants that are supposed to reduce accessibility might attract even more people (ibid.).

Another symbolic artifact that influences how people perceive a space is color which will be described in detail in the next section.

### 3.8 Effects of color on perception of space

Bitner (1992) indicates that the quality of materials used in construction, artworks, presence of certificates and photographs on walls, floor coverings, personal objects, and colors displayed in the environment can all communicate symbolic meaning. For instance, Edwards (2011) emphasizes that people associate higher social standards with darker colors.

The importance and influence that color could imply for this thesis is readily apparent since the easiest and usually most inexpensive way to improve a space is just by changing its color scheme (Pile 1988). For that reason, it is worth exploring the features of color and its effects on the user perception. To begin with, it is essential to first explain what color is. According to Dodsworth (2009), color is our perception of the different wavelengths of visible light waves. Colors have a strong impact on our moods and emotions (Lin 2004; Dodsworth 2009). In addition, people’s reaction to color also depends on their cultural and personal experiences (Rihlama 1999). However, in this review, the focus will remain on how users’ perceive a space based on the colors that are used, without delving into the effect of different cultures or personal experiences on perception.

Numerous authors (e.g. Dodsworth 2009, Pile 1988, Rihlama 1999) acknowledge that individual colors can make spaces appear smaller or larger. Warm colors (e.g. yellows and reds) will appear closer than they actually are, while cool colors (e.g. blues and greens) and lighter tones seem to be further away (ibid.). When it comes to objects, if two exact same boxes are placed next to each other, the one that is painted in lighter colors will appear lighter and larger compared to other painted in darker colors (Pile 1988). Red, blue, purple, orange, yellow and green are the “heaviest” colors in terms of the perception of objects (Brebner 1982). The aforementioned effects of color are also used to improve the layout of the spaces. For example, Rihlama (1999) suggests that low rooms can seem higher if the ceiling is painted in light blue, or if it is needed to optically make
the ceiling lower, it should be painted in strong, warm colors (like reds, pinks, or oranges). In an environment where warm colors are used, people perceive it as a warmer than it actually is. On the other hand, cool colors are used for sunny and warm spaces (Pile 1988, Brebner 1982).

People tend to perceive the color scheme of a space as natural, if it is the darkest at the floor and growing lighter towards the ceiling; however, an exception can be made for hallways. Floor colors can be orange, yellow or blue to create variety and enhance movement (Pile 1988; Rihlama 1999). When it comes to long and narrow hallways, they can be improved by painting the side walls in lighter and cooler tones while the end walls should be painted in strong and warm colors. In this way, the end of the hallways will appear closer, and the sides will expand outward.

Brebener (1982) states that in a warm-colored environment, time tends to be overestimated, whereas in a cool-colored spaces, time tends to be underestimated. The author suggests that this reflects the fact that cool colors are more suitable for places where routine or monotonous tasks are performed. Rihlama (1999) also suggests that powerful and plentiful use of colors is suitable for places where people will not stay for more than a moment, because “strong and loud” colors can disturb the vision and affect mental balance.

While the literature review arguably revealed hardly any information about how to specifically improve hallways, the following advice can be found on the SF Gate’s website (2013). One suggestion offered to cover walls with a high gloss paint, because it will reflect the light and make narrow hallway look wider. For the same purpose, mirrors can be used. It is also important to visually break the space, and for that reason, placement of different colored carpets, artwork or even furniture can visually shorten the hallway. Besides the “strong and loud” colors on the end walls, the website suggested having a colorful or interesting piece of art, which will occupy the user’s vision and shorten the perceived length of hallway. In addition, light should be used to eliminate all shadows, which often make long hallways narrower and darker.

Rihlama (1999) states that lighting and colors in a place without windows must be designed to simulate nature as well as possible. Moreover, Lin (2004) acknowledges that lighting can also influence behavior. The author explains that environments are perceived as more pleasant if the lighting is designed to harmonize with furniture and accessories. Furthermore, the author states that lighting has an influence on users’ behaviors to which she provides an example that general conversations happen in bright environments while more intimate ones happen under softer lights. When it comes to personalization, on the website SF Gate’s website (2013) it can be read that family pictures hung on the hallway walls contribute to the feeling of coziness and make the environment more pleasant.
It is also important to mention colors in terms of affordances. Pile (1988) notes that a door will blend into the surrounding wall if it is designed to match it. However, he argues that the door will be emphasized if it is painted in contrasting colors. Rihlama (1999) emphasize that in a long hotel hallway color can help people to find a certain room. To conclude, color can in numerous ways modify interiors to appear larger, smaller, wider, or narrower, and when combined with light, it can influence not just perception, but also users’ behaviors.
4. FIELD STUDIES
The following section describes the qualitative research methods mentioned in the introduction chapter. Data from the field studies was collected between February and May 2013. During that time, cruise ferries, hotels, and cruise ship were observed. In order to get a better understanding of the research environment and possible wayfinding problems, I decided to visit as many ferries operating in the Baltic sea as time permitted due to the similarity of spaces on cruise ships and ferries. After collecting the relevant data on the ferries, it seemed logical to visit other places where designers must face similar problems regarding wayfinding and repeated spaces like hallways and cabins, and where they had the freedom to decorate without various constraints. Unlike hospitals which also have numerous hallways and rooms, hotels are intended for relaxation and enjoyment which made them an ideal location for further research. The final destination for the field studies was the cruise ship. The findings from the field studies will be introduced in chronological order (table 3).

<table>
<thead>
<tr>
<th>VISITED</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 February 2013</td>
<td>MS Finlandia, (Eckero Line)</td>
</tr>
<tr>
<td>3 April 2013</td>
<td>MS Amorella (Viking Line)</td>
</tr>
<tr>
<td>3 April 2013</td>
<td>MS Viking Grace (Viking Line)</td>
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<td></td>
<td>Glo Hotel Art</td>
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<td></td>
<td>Kamp Hotel</td>
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<tr>
<td>From 22 to 29 April 2013</td>
<td>Hilton Helsinki Strand Hotel</td>
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<td></td>
<td>Hilton Helsinki Airport hotel</td>
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<tr>
<td></td>
<td>Pullman Hotel Changwon (online benchmarking)</td>
</tr>
<tr>
<td>From 12 to 19 May 2013</td>
<td>MS Navigator of the Seas (RCCL)</td>
</tr>
</tbody>
</table>

Table 3
Locations and dates where field studies were conducted

The ferries and cruise ship were visited together with two other Triad group members and our supervisor. The role of the supervisor was to provide necessary advices and support when needed. While the Triad members conducted their own research on board, some assistance was also given to each other. They assisted me in collecting data in the observed environments by interviewing passengers, by executing tasks prepared beforehand, and by sharing experiences together with our supervisor in group discussions after each visit.

The research method used in the field studies was participant observation. As Mackellar (2013) explains, the method allows the researcher to become a part of a social setting, during which he or she needs to make a descriptive observations of him or herself, others, and of the setting. This method allowed me to understand and experience the life of participants in the research environment.

To assist in the compiling of field notes, I always carried a digital camera, notebook and Dictaphone with me. Short notes were written down during
the observation, while semi-structured interviews were recorded and transcribed after the visits. All of the findings were written down in more into detail after each visit to the ferries and hotels, and at the end of every day on the cruise ship. Wu (2011) explained in her study how notes should be written by citing Russell (2001, p373): “the faster you write up your observation, the more details you can get down”.

In all of the aforementioned places, the intention was to investigate:
- if the physical structure, physical stimuli, or symbolic artifacts ease the users’ transition in the environment
- in what ways do the passengers find their ways
- what kind of difficulties do passengers have in finding their way
- what the passengers tend to complain about,
- if the layout of hallways was designed differently compared to other spaces in the environment.

The introduced framework was used for the data analysis. The physical structure, stimuli and symbolic artifacts were used to cluster the findings, allowing each thematic cluster to be explained in a detailed manner.
In the following chapters, the processes and findings from the field studies in the ferries, the hotels and the cruise ship will be explained in greater detail.

4.1 Research on cruise ferries

MS Finlandia
The first ferry we visited was the MS (Motor Ship) Finlandia that is part of Eckerö Line fleet. We went from Helsinki to Tallinn and back on 5 February 2013, and we spent around 6 hours on board. During that time, the Triad members and a staff member from the information desk were interviewed. In addition, they were given an assignment to find a specific cabin. After they found it, they needed to describe every step of their quest, together with the strategies used for wayfinding.

All members of Triad group used the Plexiglas maps (Figure 1) where the simplified deck plans were shown. However, all three of us had problems with using them. First of all, the red dot, that indicated the passenger’s current position, was too small resulting in difficulty in locating it. Secondly, the color coding was used on the ship, but it was hardly noticeable. The ship had four staircases that were supposed to be used as landmarks. Each staircase had its own color (red, blue, yellow and green) that correspond with the colors shown on the map. Moreover, areas around the staircases were also marked with the same colors (e.g. the entrance of the shop, dots on the walls, areas around the elevators, and lights on the staircases). Two Triad members failed to notice color coding in the first few hours at all (even though one of them regularly travels with cruise ferries).
Color coding is used to ease a transition from one place to another and to help users in wayfinding. However, no information about the existence of different colors was provided on the MS Finlandia, and for that reason some passengers made no use of it (Figure 2).

The hallways around the cabin areas were exactly how passengers’ reviews described them on cruise ships. In terms of colors, materials and signs, they all looked exactly the same on every deck (figure 3). When it comes to decoration, there were no pictures, paintings or other artworks. However, when it comes to symbolic artifacts, the differentiation between the atmospheres between hallways in cabin areas and all other places on the ship was obvious. Carpet covered the floors which was absorbing the noise from walking. Since not many passengers could be seen in that area, the whole environment gave the impression of the space where silence was mandatory. The ceiling was made out of glossy material in which the environment was reflected and influenced the perception of space – it seemed higher than it actually was. Surprisingly, even though a color coding was used in the staircases, there were no signs in the hallways (between two differently colored staircases) about the color towards which the passengers were moving. In addition, when compared to other spaces on the ship, which were carefully designed and easily distinguished by the layout (figure 4), the hallways seemed like neglected areas that were in need of renovation.
The other usage of affordance could be seen on the floors outside of the cabin areas. Places (e.g. bars, shops, and restaurants) were separated mostly visually (figure 5), by different materials on the floors. It was interesting to see how people were following the given routes without even paying attention to it.

In order to discover the nature of passenger complaints, I interviewed the staff from the information desk. The interviewee (age 32, female, from Finland) explained that passengers had problems in finding different places, especially restrooms. She believed that the ship was lacking suitable signs to guide them. Furthermore, she said that it is not unusual to find passengers looking for places on the complete opposite side of the ship. The interviewee explained why that was happening: “It is a new ship and people are still not used to it.”

**MS Amorella**

The second cruise ferry that the Triad group had visited was the MS Amorella, which is a part of the Viking line fleet. We went from Turku to Mariehamn on 3 April 2013. As on the previous ferry, the Triad members and staff were interviewed. The trip with MS Amorella lasted around five and a half hours. During that time, I had some difficulties in finding the correct way. Moreover, we had organized meetings on board and due to time constraints, wayfinding difficulties contributed to the feelings of anxiety. Since the previous experience on the MS Finlandia was completely the opposite, I tried to discover the underlying reasons for the negative feelings experienced.

First of all, the ship was larger with more decks that I needed to explore in a shorter amount of time. There were no noticeable differences between the decoration of the decks. Subsequently, during time I spent on board, I had difficulties in memorizing specific locations that I could use as landmarks. However, what I found interesting was that, except for the problems with conceptualizing the layout, the services provided on board were similar to those on the MS Finlandia. Both ferries had bars, restaurants, clubs for elderly and children, cabins, car decks and so forth, so there was nothing drastically different on any of those ferries. Different spaces were separated both visually by using different materials, and physically by placing fences.

The MS Amorella did not support wayfinding by using color coding. Instead, a large amount of signs were used. Unfortunately, they were not designed in the same graphic style, which contributed to the feeling of visual noise (figure 6 on the next page). Rather oddly, animals were used as icons indicating the location of car decks. In some areas, touch screens provided information about different activities and different locations on board. However, I would argue that signs could have been displayed in better locations, because I got lost while trying to find the conference room.
According to the interview with the receptionist (age 52, female) passengers who parked on deck 5 had problems with finding their cabin. Those passengers did not know how to reach decks with the cabins. One passenger (age 31, male, from Finland) revealed that he did not feel lost on the ferry; however, based on his previous experience, he was aware that if he made a wrong turn at some point, he would end up searching for a cabin for a long time. When asked if he knew where the front and back were, he said: “Not necessarily, especially if the ferry is not moving, if you cannot see at the end of the corridor, if you don’t have any daylight, then you don’t know.”

In another interview with a staff member (age 28, female, from Finland), it was noted that passengers especially those of a mature age complained that it was difficult to find their way. The interviewee thought that those passengers were not using signs, since they were not visible enough. Moreover, the interviewee assumed that there were not enough signs to guide the passengers.

The hallways on the MS Amorella were almost the same as the hallways on the MS Finlandia. The differences in interior design were hardly noticeable even though the MS Amorella was built in the 1980s. The cabin doors on this cruise ferry were painted in two colors, and the carpets had more graphic details (figure 7). It is worth mentioning that even those small differences contributed to the impression of a slightly better designed environment. What could not be seen on the MS Finlandia, however, was the sauna in...
the cabin area (figure 8). It was easier to differentiate hallways around the sauna by memorizing it as a landmark.

One form of entertainment that could be seen on board which instantly enhanced positive experiences was a mime performer (figure 9). The passengers showed interest in the performance by participating in all the actions that the mime was suggesting.

To conclude, although I had difficulties in understanding the layout of this ferry given the time limitations, what definitely hindered my understanding was the lack of easy-to-notice landmarks as well as confusing signage.

**MS Viking Grace**

The last cruise ferry that the Triad members visited was the MS Viking Grace from the Viking Line fleet. Immediately after the MS Amorella docked in Mariehamn on 3 April 2013, we boarded the MS Viking Grace.

Since the ship was brand new, even before stepping on the MS Viking Grace, we had high expectations regarding its design, layout, and service. Compared to the previous ferries, the modern interior design overwhelmed us. It was obvious that close attention was paid to the details on every single deck, and it was difficult to identify even one corner that was not carefully designed. A simplified diamond shape was used to unify all the elements on each deck - from the waste containers to the carpet patterns, lamps and so forth (figure 10 on the next page).

On the official Viking line website (2013), the Viking Grace is advertised as “a completely new generation of cruise ferries with its revolutionary and environmentally friendly Liquefied Natural Gas fuel system and award-winning interior design.” Although the ecological improvements that this ferry introduced separates it from other visited vessels, that particular aspect will not be further explored in this research since it had hardly any
effect on the passengers’ transition to board the cruise ferry, wayfinding, or overall experience in the researched areas.

On this ferry, we had organized a tour where a female receptionist (age 29, from Finland) led us through the decks while providing valuable information. Compared to other ferries, it was much easier to memorize all the places in a short period of time, after seeing them with a guide for the first time. One of the significant aspects pointed out during the tour was that the Swedish and Finnish languages were dropped from the signs so that only English language was used (figure 11).

Similar to the MS Finlandia, the MS Viking Grace had color-coded staircases. Except for the information we received from the receptionist, we did not see any other information about color coding. I was curious to know if passengers do notice the colors on the staircases and the receptionist said:

“*Maybe not that easily, but when I tell them, they do. There is also information on the Info board about color coding, but people may not read it, because they want to see the boat and they get lost really easily.*”

In addition, even if passengers were aware of color coding (figure 12), they needed to memorize the locations of different colors and places around those areas. I could not help but wonder if people actually have time to learn all of that and if they need that kind of knowledge at all?

Regarding my study, the largest improvements in the hallways were different carpet patterns on every deck (figures 12a,b). Each carpet had a different insect or amphibian on the bridge-patterned carpet. However, those differences were hard to notice and passengers needed to look closely in order to distinguish the correct carpet/deck.
Compared to the other visited ferries, another improvement that could be seen on the MS Viking Grace were the vending machines in the hallways (figure 13). Besides the obvious reasons of providing refreshments for passengers, the placement of such an object provided an easy-to-remember landmark and definitely broke the monotonous layout of the hallways.

However, even with the previously mentioned improvements, the passengers still had difficulties to find their cabins. Although the ferry had a magnificent interior design, we were quite disappointed with the overall structure of the ship, because it was almost the same as on the other ferries. The design of hallways was long and narrow, without easy-to-notice differences. Moreover, while interviewing the receptionist after the tour, she revealed that passengers were complaining about difficulties in finding their cabins:

“This is such a big boat and finding the cabin can sometimes be challenging. That is what they (passengers) are disappointed about. Normally, you have bigger numbers in the aft and smaller in the fore. But this is all way around; it’s nothing they’ve been used to.”

When asked how they solved the problem, the receptionist said that signs and crew were assisting passengers.

“We try to get as much crew as possible when passengers get into the boat, so that they can easily find the cabin. Of course it is difficult for the first time.”

The last question I asked the interviewee was to describe how it was for her (regarding wayfinding) when she started to work on the ship. She revealed that it was difficult and compared the ferry to a labyrinth. Even more surprisingly, the receptionist revealed that she was not confident while finding her way on the ferry:

“I came when we were in the dock, while the boat was built. It was ready, but it was labyrinth for me, you know, for the first time. Now it has been clearer. The carpets I told you about, they help a lot, but crew areas are still mystery for me too. Sometimes I get so lost, but then I just ask someone.”

We had no access to the crew areas to see how different they were. On the other hand, we did have a chance to see the cabins, and another improvement was the projected light on the cabin floor (figure 14).
4.2 Research in hotels

After visiting the cruise ferries, I did site-visits to four hotels in the Helsinki metropolitan area (from 22 to 29 April 2013). Due to similarities between the cabin areas of passenger ships and hotels in terms of the interior design and the layout of floors, hotels were the next destination for the field studies. I made an observation on the physical environment in the hotels and conducted semi-structured interviews with managers from each hotel. I discovered what the problems were regarding wayfinding. The most interesting results from that research will be discussed in the next sections.

Glo Hotel Art

The first hotel I visited was the Glo Hotel Art where I stayed for a couple of hours. The manager of the hotel (female, from Finland) provided me with a key for entering every floor and a key card to one room, so I was able to walk freely through the hotel and familiarize myself with its layout. After the observation tour, I arranged an interview with the manager.

Glo Hotel Art has 6 floors and around 170 rooms. The interior design of the hallways near the rooms was rather plain, and the effort was put mostly on the lighting. Some walls were without any decoration, while others had pictures or mirrors. The different categories of rooms were not located on separate floors and were not divided visually in the hallways. Compared to the ferries, the hotel hallways were much wider. Otherwise, there were not too many differences between them. As on the ferries, most of the hallways had no natural light. A patterned carpet was used on the floors, and a vertical stripe pattern was used on the walls (figure 15).

In terms of wayfinding, I was using mostly the signs and room numbers for orientation. Almost every sign contained information about the location of the reception which I found especially useful (figure 16). Maps were not used for navigational purposes and as manager explained, the reason was the size of the hotel — it was too small. The only map that I saw was located on the room door, which was showing where the emergency exits were. Information about the hotel offerings and location of different places were given in the brochure and on the TV in every room.

In terms of distinguishing the differences and similarities between the hotels and ships, I discovered a place in one hallway which deserved attention. The extension in one hallway was used for the placement of coffee and vending machines, and one chair (figure 17). Regarding affordances, all the elements of the space were “telling” guests that they should not stay for a long period of time in that area, as well as to not make noise in the hallways. The placement of only one chair without any table made it harder for two or more people to have a long conversation which could disturb the other guests.
Kämp Hotel

The second hotel I visited was the Kämp Hotel. Based on the interview with the manager (male, from Finland), I discovered that the hotel has 179 rooms which are located between the 3rd and 9th floors. The maximum capacity is around 390 guests. Compared to the previous hotel, Kämp had furniture in the hallways, mainly for decorative purposes (figure 18). When asked if guests used the sofas and chairs on those floors, the manager said that he had not seen them being used.

Regarding the wayfinding, the manager revealed that it was supported through signage, and information provided at the front desk and on TV in the rooms through the information channel. In the booklet, placed in the rooms, all the services were also explained. However, he added that even though guests heard and read at least once the necessary information, they often required additional help, which they received by calling the information desk. When asked about the critical place in the hotel where people were having difficulties concerning wayfinding, the manager mentioned the 2nd floor where the meeting rooms were located. As he explained, visitors with arranged meetings, not the hotel guests were having difficulties trying to find the correct way to the 2nd floor. The signs that could direct visitors were missing. The manager said that sometimes extra signage was put in the lobby to indicate where the meeting was, as well as arrows to the elevators. The best solution that he discovered was to have staff members in the lobby directing guests to the right floor, which at the same time made their service personalized.

When it comes to affordances, I was surprised when I discovered that finding elevators on the floors where the rooms were located was a challenging task. The elevator doors were made from exactly the same materials as the room doors, and it was hard for me to distinguish them (figures 19-21). Moreover, the doors that were leading to the emergency exits were exactly the same as the room doors, which made them hardly noticeable. With the exception of the signs showing the location of the exits, the doors were not affording their purpose. I could not help but wonder if in the case of an emergency, would only the signs on the ceiling be enough for people to know which way to go.
The next hotel I visited was the Hilton Hotel in Hakaniemi. Following the arrangements in the previous visits, the manager (male, from Finland) introduced me to the layout of the hotel while I interviewed him.

Based on the interview, I learned that the hotel was built in the 1980s. The hotel had 6 floors and 190 rooms. The different room categories were located at the same floors. The central area on the floors with rooms was an open, round area (figure 22a,b) in which the elevators were located in. The open space was protected by glass through which it was possible to see what was happening on the other side, on the floors below, or even in the restaurant located right in the center of the open space.

Paintings, lamps, sculptures, plants, furniture, and mirrors were used for the decoration of the hallways (figure 23). The ice machines were located on every floor near the elevators. Each floor with rooms looked exactly the same, except for the last one — the 6th floor, with the largest suite. In the hallway, in front of the mentioned suite, much lighter colors were used for the carpet and doors. Every floor had a different color for the window and door frames (figure 22a). When I asked the manager and receptionist (female, from Croatia) if they had seen it, they denied it. Surprisingly, the floors had color coding, however no one noticed it. Probably the colors were too similar, and no one was informed about the color differences.

When it comes to wayfinding, navigation was accomplished with signs with the room numbers and arrows, as well as arrows in combination with the names of the spaces. According to the interview with the manager, the largest problem regarding wayfinding that hotel was facing was observable in the doors on the 2nd floor (figure 24). The doors leading to the rooms were made out of almost the same material as the surrounding walls, which presumably made them largely indistinguishable by the guests.

Although I had planned to visit only above mentioned hotels, I realized that I did not find what I was looking for and needed to visit other hotels. As on the ferries, all three hotels had exactly the same floors where rooms were located. The managers from the Kämp and Hilton hotels told me that I should visit also the Hilton Helsinki Airport Hotel, built in 2007, because it was facing difficulties regarding wayfinding. For that reason, another Hilton hotel became my next destination.
Hilton Helsinki Airport hotel

As in the other hotels, I interviewed the hotel manager (male, from Finland) and made an observation of each floor. According to the interviewee, the shape of the hotel was initially like the Latin “U” letter, but after another part was built, the hotel morphed more into an “O”-shape. This distinctive “O-shape for the blueprint of the room floors tended to worsen the wayfinding. As the manager said, guests could end up walking round and round without knowing where to go. As he further explained:

“When you walk out the room on the long corridor, both ends look similar. How to choose the right one? Also, you cannot necessarily remember from which way you came and entered the room, then again you will be walking around. It is only couple hundreds of meters, but it might be frustrating for the guests.”

Therefore, small signs and arrows leading to the elevators and front desk were placed on the walls. The item I did not find in the other hotels were the shoe cleaners located on every floor of the hotel. Instead of pictures, mirrors with white graphics were hung on the hallway walls. As the literature also revealed, the placement of the mirrors in hallways made them visually wider. Other than that, the hotel hallways had hardly any innovation (figure 25).

The numbers on the rooms were confusing in a way that rooms across from each other had a difference of about ten numbers. Also, the signs with the room numbers were placed on an angled door extension, so if guests were moving towards that extension, the visibility of the signs would be perfect (figure 26). However, if the guests were moving in the opposite direction, the extension would block the visibility of the numbers, making it absolutely impossible to see the room number before the guests were standing right in front of it.

Another problem was encountered in the elevators. Just one out of the three elevators was able to reach the 1st underground floor (where the sauna and gym were located) which confused the guests (figure 27). To conclude, the main problems regarding wayfinding difficulties in this hotel came from mistakes in the physical structure.

After the visit, I was still disappointed because I could not identify the differences between the floors. Based on internet research and recommendations by colleagues, I did online benchmarking on one hotel in South Korea, the “Pullman Hotel Changwon”.
Online Benchmarking: Pullman Hotel Changwon, South Korea

I discovered that this hotel decorated all of its floors differently. On the website of the Pullman hotel, only pictures of the rooms could be seen. Therefore, I contacted Pullman hotel via email to ask if they could send me photos of their hallways. The reply was positive, and soon after I received 37 photos of their hallways. The photos revealed that the diversity of hallways was accomplished by the usage of different carpet patterns and lights (figure 28).

In summary, the most important findings related to the researched topic will be listed in the table number 4 on the pages 56 and 57.

Figure 28
Pullman Hotel Changwon: Hallways
4.3 One-week participatory observation on the cruise ship

From 12 to 19 May 2013 the Triad group went on the MS Navigator of the Seas (RCCL) in order to conduct research in the real environment of a cruise ship. The MS Navigator of the Seas has been in service since 2002. The maximum capacity is 3,114 passengers and 1,213 crew members. This ship was chosen because the cruise lasted for 7 days and had 2 cruising days which were crucial for the field studies (table 4). During the other days, passengers were visiting ports, and the number of potential interviewees was drastically reduced.

After the most suitable cruise ship for our research was chosen, I was curious to discover the kind of comments that passengers were posting on CruiseCritic.com about the MS Navigator of the Seas. Moreover, I wanted to know if there was any praise or complaint related to the area of study. Surprisingly, among the more than 20 comments read, not a single one was about wayfinding difficulties, layout, or cabin areas. Most of the comments were about the excellent service, entertainment, occupied chairs at the sun deck, elevators at the peak times, restaurants, and age of the ship.

<table>
<thead>
<tr>
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<th>PORT</th>
<th>ARRIVE</th>
<th>DEPART</th>
<th>ACTIVITY</th>
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</thead>
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<td>12. May</td>
<td>Civitavecchia (Rome), Italy</td>
<td>5:00 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. May</td>
<td>Messina (Sicily), Italy</td>
<td>10:00 AM</td>
<td>7:00 PM</td>
<td>Docked</td>
</tr>
<tr>
<td>12. May</td>
<td>Cruising</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. May</td>
<td>Piraeus (Athens), Greece</td>
<td>6:00 AM</td>
<td>5:00 PM</td>
<td>Docked</td>
</tr>
<tr>
<td>12. May</td>
<td>Kusadasi (Ephesus), Turkey</td>
<td>7:00 AM</td>
<td>5:00 PM</td>
<td>Docked</td>
</tr>
<tr>
<td>12. May</td>
<td>Chania (Souda), Crete, Greece</td>
<td>7:00 AM</td>
<td>3:00 PM</td>
<td>Docked</td>
</tr>
<tr>
<td>12. May</td>
<td>Cruising</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. May</td>
<td>Civitavecchia (Rome), Italy</td>
<td>5:00 AM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4
The Triad group went on Eastern Mediterranean cruise which started and ended in Rome.

Since people were on vacation and enjoying leisure activities, it was sometimes challenging or impossible to conduct long, in-depth interviews. Of the 23 passengers interviewed, they came from the United States, England, Ireland, South America, Canada, Serbia, and Norway and ranged in age from 25 to 76 (see Appendix A). The cruise experience of the interviewees varied widely: for nine interviewees it was their first cruise; for six of them it was their second; and for the rest it was their third to seventh cruise. Besides the passengers, I also asked staff members for their opinion and arranged a meeting with one operator from the information desk.

In followings, I present the findings from participatory observation in MS Navigator of the Seas, which were analyzed with the focus on its physical structure, stimuli, and symbolic artifacts, and most importantly how the passengers experience those elements.
Troubles in information delivery

The problem we encountered numerous times on the cruise ship was a lack of information. The Cruise Compass (the brochure delivered to the cabins each day with all the relevant information about the next day), cruise TV channel, Plexiglas maps on the walls and announcements were the main information sources. However, during the interviews with passengers and while observing ourselves, we discovered that all of us were too lazy to read or listen to the provided information.

Unfortunately, due to the lack of information, passengers did not have a chance to explore everything that the ship was offering. One woman from Argentina (first cruise, in her 50s, traveling alone) said that she had difficulties in finding the locations of many places. She wanted to participate in yoga classes, and she used the opportunity during our interview to ask me where the gym was located. She did not know that we were standing only 10 meters away from the gym.

One passenger from South America said that it took him one and a half days to learn the layout of the ship. Although he was confident in his knowledge of the ship’s layout, he mentioned that he discovered the outside restaurant only on the 3rd day. In addition, the woman from the United States (age 26, 3rd cruise) said that she did not know how to reach the rock climbing wall. In the Cruise Compass, it was mentioned how much the dining fee in some restaurants was, but we could not find the information that the food was free of charge in all the other places. In addition, it was not mentioned which activities were free of charge so some passengers did not want to participate in some of them as they mistakenly thought they would need to pay an additional fee. As the woman from the United States (age 26, 3rd cruise) said: “I don’t know in which places service is free. It must have been done intentionally, so that people could spend more money on board.”

Passengers’ situated strategies for wayfinding

I was curious to know which environmental elements the passengers were actually using for wayfinding. Moreover, I was investigating what were the strategies that the passengers were creating during transition on the cruise ship.

1. Visual clues

The most common visual clues for passengers were landmarks, which helped them to memorize specific locations and orientate themselves according to the position of the landmark. Based on the interviews, it was obvious that even the most unintended elements of the environment became landmarks for some passengers, such as the table with the white table cloth, placed in front of one hallway (figure 29). On the other hand, some of them were more obvious and were mentioned by numerous passengers. For instance, the most commonly used elements were elevators, pictures, curved walls in hallways (figure 30) and the Promenade (the open space in
the middle of the ship with shops and bars on both sides) (figure 31).

Half of the interviewed passengers mentioned that they were using maps for navigational purposes. However, the other half without maps said that "what you see on the map is always different from what you see when you reach the desired place", or that it was hard to use the maps, because "you never know how to rotate them".

The next visual clue was color coding, used only on the carpets next to the elevators, on the stairs and to mark exits from the hallways (figure 32). However, some guests did not notice the color differences on the carpets at all, and they told me that it was unfortunate, because it might have assisted them while navigating. There was no information provided by staff members about the color coding.

The other clues included following cabin numbers and counting doors from the landmarks. As the woman from United States (age 26, 3rd cruise) explained that she knew that her cabin was on the left side of the elevators and the third door from the landmark. She added that her strategy was unreliable, because once, following her memorized steps, she ended up opening the wrong cabin door.

The next most commonly used strategy was looking through the windows in order to know which direction the ship was moving. In addition, some passengers used the inside windows and balconies to count how many decks they needed to travel up or down.

2. Guidance from other people
Besides visual clues, numerous passengers were relying on guidance from other passengers or staff members. The most commonly used explanation was that if passengers could not find what they were looking for on their own, they would ask someone directions. One room attendant said that the passengers were too lazy to read the signs, and he was answering questions about the location of different places on a daily basis.

3. Following other passengers
The last strategy I discovered was following other passengers. Passengers in a group tend to have a leader. For instance, since I am not confident in my own navigational capabilities, I became a follower in our group. It was easier for me to follow others every time we were together, without thinking about the route we were taking. Therefore, my navigation problems continued until the end of the cruise.
Confusing layout of the ship
During our conversations, most of the passengers mentioned that wayfinding was challenging on cruise ships. I wanted to know what caused the difficulties regarding the ship’s layout for those passengers. The relevant findings will be introduced below.

On the 2nd and 3rd decks where numerous cabins were located, it was impossible to travel the whole length of the ship. The solution was to go up to the 4th deck and then back down. During the interviews, many passengers mentioned those decks as a problem that could have been avoided with better interior design. Moreover, on the Cruise TV channel, the problems with the 2nd and 3rd decks were emphasized so people were informed on how to reach the opposite sides of those decks.

Front and Back?! Where is what?
Passengers complained that they had troubles knowing which direction the ship was moving and where the front and the back were. The guests were confused by the similarity between the front and backside of the ship (figures 33-35). One interviewee from Norway (age 27, 2nd cruise) commented somewhat inaccurately on the 5th day of the cruise that the decor was exactly the same in the front and the backside of the Promenade. The layout was similar, but the decor was completely different.

One passenger from Finland (age 33, 5th cruise) said that the places were actually perceived by the service, and not the other way around. For him, the disco did not have a different layout.

Another issue regarding the layout arose during one task I provide to one Triad member. The task was to find a cabin written on the piece of paper. During the execution of the task, the Triad member became lost. The problem was in the exact same layout of the hallway on different sides of the ship. The curved wall that he had used as a landmark to find his own cabin in the middle of the ship was repeated several times along the length of the hallway which made him think he knew where he was.

As already mentioned, the passengers were using elevators near the Promenade as an important landmark. However, the elevators became another environmental element that caused difficulties. The ship was equipped with two sets of elevators. One set was located in the front side of the ship while the other one was in the back. As the literature review revealed, people assume that two symmetrical parts of the building look exactly the same, even without exploring both sides. However, the elevators on the ship were asymmetrical which caused some confusion among passengers. The signs on the elevators displaying which decks that the passenger could reach did exist. However, they were too small and not easily recognized (figure 36).
The woman from United States (age 26, 3rd cruise) said that the problem she faced was that after spending some time in one place, she forgot where she had come from. When asked why she thought that happened, she divulged that she was on her honeymoon relaxing and did not want to bothered thinking about anything.

During the interview with the front desk assistant manager (age 31, England), I discovered that he also had troubles with finding his way, even though he had worked on the ship for more than 10 months:

“*The ship is bigger than any hotel they (passengers) have been on land. People do find it difficult to find their way around. Even I have to follow the signs to find some cabins. Sometimes if you throw me off the gangway, if I’ve been on shore and come on board, I can’t figure out which way is which to get to my own cabin. But again, there are arrows on the wall that indicate the fastest escape route, and by that I can locate myself.*”

**Your language is not my language**

One problem that numerous passengers complain about when asked about the signs and maps was the technical language used on the cruise ship. People were not sure what the term “aft” (back side of the ship) was (figure 37). In contrast to aft, the term used to describe the front side of the ship was “forward”, which was relatively easy to understand. Even on the 5th day of the cruise, a group of 4 passengers from England in their 50s and a woman from Canada (age 47, 7th cruise) wondered what “aft” means.
Lack of visual differentiation in different hallways
The hallways on the cruise ship were almost the same as the hallways on ferries. The main difference was observed on the walls of the cruise ship which were covered with pictures, posters and framed sculptures. The interior design of the hallways was exactly the same on almost every deck. The only difference was in the door’s color on the highest cabin deck, where the suites were located. However, the physical structure of the hallways was different: some of them were long whereas others were angled and short which made the monotonous environment somewhat more interesting.

Two most common answers from passengers, when they were questioned about their impressions of the hallways, were that they were completely unaware of the appearance of the hallways. For most of them, the hallways were simply all right, just as they expected. Another answer was that the hallways were long and claustrophobic with a low ceiling, unpleasant odor and relatively similar looking throughout the entire ship.

Personalized cabin doors
In the research on the shipscape influences on the leisure cruise experience, Kwortnik (2008) argued that personalization has become a growing trend, which “contributes to the cruiser’s self-identity”. One of the aspects that the passengers mentioned often in the online reviews of numerous cruise ships were the stickers placed on the cabin doors by the room attendant when passengers were celebrating an important event in their lives. On the MS Navigator of the Seas, stickers were also placed on cabin doors. Compared to the luxurious layout of the ship, the stickers did not have the same aesthetical value as their surroundings (figure 38). However, the personalization of the cabin with the stickers definitely made the monotonous hallway layout more appealing. During interviews, I discovered that those stickers were also used as landmarks.

![Figure 38](MS_Navigator_of_the_Sea.jpg)

MS Navigator of the Seas:
Sticker on cabin door
Insecurity in use of a key card

Another valuable feature that the ship offered was the key card (figure 39). It has multiple functions, including a wallet (connected to the passenger’s personal account), identification, and a door key. Having to carry only one object instead of three made the passengers’ lives on board much easier. However, the key card was extremely sensitive to magnets, and it stopped working whenever it was too close to cell phones, laptops, or purses. For that reason, the passengers felt insecure every time they were required to use it. In our group of four, one person was forced to change the card more than ten times. In addition, since there was no need for wallets or purses, passengers often had problems with the placement of the card, especially if they had no pockets. For that reason, guests were buying card cases that could be found in shops on board.

Figure 39
MS Navigator of the Seas: the key card

4.4. Summary of main findings

It is important to mention that despite all the difficulties that the passengers encountered, there was an imperative for them to have fun during their vacation and not to allow any stressor to spoil their leisure time. When I asked passengers how they felt when they had difficulties in wayfinding, one couple from England (age 76, 2nd cruise) intimated that they felt “confused, not confident”. Another woman from the United States (age 26, 3rd cruise) confessed that she felt frustrated. However, what I found interesting in their responses was that none of them wanted to pay attention to the problems they were experiencing, preferring instead to keep their satisfaction high.

The summary of the main findings can be seen in the table on the next page.
<table>
<thead>
<tr>
<th>NAME</th>
<th>STRENGTHS</th>
<th>THREATS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FERRIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MS Finlandia</strong></td>
<td>- Spaces are divided visually by the usage of different materials; - Color coding.</td>
<td>- Unclear Plexiglas maps with deck plans; - Indistinguishable color coding / Lack of information about color coding; - Same layout of hallways on every deck; - Missing signage to indicate towards which color staircase the customers are moving; - Lack of directional signs; - Lack of available seats that did not belong to any service (bars, restaurants).</td>
</tr>
<tr>
<td>(Eckero Line)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entered service 2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MS Amorella</strong></td>
<td>- Spaces are divided visually by the usage of different materials; - Sauna in cabin area was used as a landmark; - Mime performer enhanced UX.</td>
<td>- Inconsistency in directional signage; - No color coding; - Same layout of hallways on every deck; - Confusing interior layout.</td>
</tr>
<tr>
<td>(Viking Line)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Built 1988</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MS Viking Grace</strong></td>
<td>- Color coding; - Different carpet patterns on each deck; - Vending machines in hallways (used as landmark); - Organized tour introduced all spaces on board, which helped further individual exploration of the ferry.</td>
<td>- Missing signage to indicate towards which color staircase the customers are moving; - Lack of information about color coding.</td>
</tr>
<tr>
<td>(Viking Line)</td>
<td></td>
<td></td>
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<tr>
<td>Entered service 2013</td>
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<tr>
<td><strong>HOTELS</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Glo Hotel Art</strong></td>
<td>- Directional signs contained information about the location of the reception; - Placement of coffee and vending machine in one hallway.</td>
<td>- Same layout of hallways on every floor.</td>
</tr>
<tr>
<td>NAME</td>
<td>HOTELS</td>
<td>STRENGTHS</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>Kamp Hotel</td>
<td>- Same layout of hallways on every floor; - The exact same color and pattern was used for elevator, emergency exit and room doors, which made them indistinguishable. - Missing directional signage for the 2nd floor.</td>
<td></td>
</tr>
<tr>
<td>Hilton Helsinki Strand Hotel</td>
<td>- Ice machines on every floor; - Color coding on every floor.</td>
<td>- Same layout of hallways on every floor; - Indistinguishable color coding / Lack of information about color coding; - Some doors blended into the surrounding walls, because of the materials used for their production, which made them indistinguishable.</td>
</tr>
<tr>
<td>Hilton Helsinki Airport Hotel</td>
<td>- Mirrors were placed on the hallway walls which visually widen them; - Shoe cleaners and ice machines were located on every floor.</td>
<td>- Confusing room numbering; - Only one of three elevators could reach the first underground floor, which confused guests.</td>
</tr>
<tr>
<td>Pullman Hotel Changwon</td>
<td>- Differentiation of hallways; - Usage of lights for hallway differentiation.</td>
<td></td>
</tr>
<tr>
<td>MS Navigator of the Seas (RCCL) Entered service 2002</td>
<td>- Passengers’ situated strategies for wayfinding: usage of landmarks, color coding and maps, following cabin numbers, counting doors, looking through windows, following other passengers and asking for directions; - Personalized cabin doors according to special occasions; - Key card replaced a wallet, key and ID, and therefore simplified the life of passengers on board.</td>
<td>- Lack of information; - Confusing layout of the ship; - Technical language used on signs; - Same layout of hallways on every deck; - Placement of the key card caused troubles for some passengers.</td>
</tr>
</tbody>
</table>

*Table 5 Summary of main findings*
5. DESIGN PROPOSALS
The previous research and especially field studies revealed important issues regarding wayfinding that users had in hotels and while on board the passenger ships. Unfortunately, tackling all of them and providing creative solutions for these newly discovered problems is a challenging task for a single designer. Therefore, this thesis proposes an initial concept which will solve some of the more critical current issues. In this chapter the chosen UX target, main goals, concept development and final solutions will be presented.

5.1 UX target

The purpose of the UX target method (see the chapters 2.1 and 2.2) is to select one or more experiences that the design concept or product will provoke before, during, and/or after the encounter with the users. Like design drivers, target experiences need to be selected before any design process and will be used as guidelines for designers during the entire process (Zhang 2013; Kim et al. 2011).

Similarly to the UX target method (e.g. see Zhang 2013) employed in other studies, the UX target was chosen based on the three key criteria. The first and the most important is understanding the users and their needs through user studies, a literature review, and the designer’s UX vision. By virtue of the user studies, those experiences that passengers had or would like to have while on board the cruise ship became clear (see section 4.3). Moreover, all of these experiences became more or less connected to one of the most basic human needs — the feeling of control. On the other hand, even before the field studies, the literature review revealed the same need which occurs during wayfinding difficulties. For that reason, the feeling of control was chosen as the target need, and will be used as a guideline in the design process.

5.2 Design drivers

According to Wikberg and Keinonen (2002), design drivers are used for defining the main goals that the concept or product needs to fulfill "without going into an in-depth analysis of requirements”. Furthermore, the authors emphasized that the design drivers are based on findings from the user studies, literature, and similar products. However, they acknowledge that the final selection of design drivers is not based only on mentioned findings, but also on the business strategy and designers’ vision. The authors further explain: “sometimes design drivers are downright obvious sounding truths, which, even so, have not been taken into consideration in the design of the product”.

After selecting the UX target, design drivers were created, which will be used as a goal for design-based solutions. Those design drivers are:
• **Clear customer-centric information delivery.**
The current information sources have to be replaced with ones which the passengers will understand and use regularly. For instance, the signs have to be written in a customer-centric language: terms that are well-known in the marine industry have to be replaced with language that all passengers can understand;

• **Intuitive recognition of the environment through a differentiation strategy**
The design elements at different locations must be differentiated for intuitive recognition of the environment. For example, it is necessary to avoid the exact same elements and environment layout in different locations to support the passengers’ own wayfinding strategies.

• **Enhance fun experiences.**
All improvements and innovations should provide pleasurable and fun experiences for the passengers.

### 5.3 Concept design

The cruise industry has a rather conservative culture (Quartermaine and Peter 2006). As Quartermaine and Peter (2006) explain “for most critics, it seems, ship design stopped in 1930s, yet passenger vessels today are the largest, the most expensive, and certainly the most complex and popular ever built”. During the history of purpose-built cruise ships, only minor changes have been made to the existing cabin areas (Kauppi 2012).

Since cruise ships have a long service life (Kauppi 2012) and the cost efficiency is important, my strategy for design solutions is focused on the redesign of existing hallways by using current technologies, rather than altering the ship structure. Although some emerging technologies are solving wayfinding problems, such as smartphone applications for indoor positioning and glasses with navigation screens, these will not be employed as a solution for the aforementioned problems. Instead, one of the primary goals of this concept is to provide intuitive recognition of the environment where passengers are not obligated to carry any additional gadget (except for the key card).

With the understanding that any larger change will be challenging to implement into any ship design, I decided to create the initial concept in two levels: 1) color improvement and 2) personalization through the usage of current technologies. The former is probably the most inexpensive and easiest to implement, while the latter would require more efforts on maintenance, for example, a continuous upgrade of technologies.
The first level proposal: Color improvements

According to Ahola (2010), limited amount of space is an important feature of every cruise ship, and that aspect must be well considered when designing the cruise ship’s interiors. Citing Kopec (2006, 266), Ahola emphasized the enhancement of the illusion of space. As the literature review demonstrated (see section 3.8), the changing of color schemes is one of the most economical ways of improving a space (Pile 1988).

Similar to the literature review, the passengers from the cruise ship had related ideas. They inferred that the usage of colors could solve their wayfinding problems:

“..Maybe if the carpets were colored differently, that would help me.” (76, England, 2nd cruise)

“Allways look almost the same. Only the pictures are different, but when I’m not paying attention, they all look the same. You can’t say that one hallway is totally green or red or maybe gold.” (25 years old, female, 1st cruise)

“For example, if key cards had the same colors as carpets...” (56, Canada, 7th cruise)

After the idea generation where possible directions were considered (see Appendix B), it seemed that the one idea worth developing further was reflected most in the users’ needs and desires — namely, color improvements. However, there was a threat in just following the suggestions from the passengers. According to which, each hallway would ideally be colored differently with a single color for each. However, it could possibly result in users remaining unaware of the differentiation. This concern came from the examples on almost every visited ship, where the staircases were colored differently without passengers noticing them. With the exception of the user studies, the inspiration for the concept came from the literature review. Rihlama (1999) suggests that places without windows have to simulate nature in order to make people feel comfortable.

The concept was created following the theory of affordances (whereby information about the product, environment, or social interactions is received directly, so no mental processes are required (Goldstein 1981)). Moreover, the intention behind the color-based concept is to make every hallway readily distinguishable, so that passengers will know immediately and confidently that they are in the correct place. Intuitive recognition of hallways provides passengers a sense of control so they will no longer be faced with the challenge of understanding in which part of the ship they are located. As passengers perceive more control over the vacation spaces, feelings of adventure, escape, and thrill will also be fulfilled (Duman et
al. 2005). Imitating places which remind people of leisure time, travel destinations, and holidays are one possible example of how the hallways could be decorated and where they might be developed further.

The user experience can be positively affected by having completely different decor for the long and narrow hallways, which could foster an impression that the transition of passengers on board is as equally important in every part of the ship. This could be accomplished by decor that reminds passengers of nature, sand and a relaxed environment, or even a quaint old street in Santorini, Greece. (Sketch 1 and 2). As Zmimring et al. (2005) explain, people choose their routes according to their interests, no matter the distance while trips through interesting places always seem shorter.

Sketch 1
Hallway as an old street in Santorini

Sketch 2
Hallway inspired by nature

Sketch 3
Hallway with dark color at the end walls
In sketches 1 and 2, the “strong and loud” color is applied to the end walls in order to visually make the long hallway shorter. The effect is made possible since warm colors appear closer than they actually are (Dodsworth 2009, Pile 1988, Rihlama 1999). Sketch 3 shows an example where the end color is cooler and darker. In this case, the hallway appears longer than it actually is. Moreover, in both designs, the side walls are painted in cooler colors, because those colors create the perception that the walls are further away than they actually are (ibid.). In this way, passengers will benefit from the illusion of a wider environment. Following the theory of affordances, the doors are painted in contrasting colors in order to avoid blending into the surrounding walls.

In order to fulfill the desired UX target, all hallways on one deck have to have different themes. However, bearing in mind the case of the cruise where one passenger became lost following a landmark he mistakenly thought he recognized, the order and position of different hallways have to remain the same on each deck. Consequently, the passengers will be able to recognize on which side of the ship they are located, by memorizing the layout of one deck.

If providing multiple themes for one deck is a challenging task for a single company, another possible solution is the option of renting or selling hallways. For example, one artist could decorate one hallway according to his/her vision, or even different companies could do the same. If one company rents a hallway, all of their products could be advertised on the walls without a need for an actual store on the ship. The passengers could then have the possibility of ordering products they saw in the hallways, which will be delivered directly to their cabins (sketches 4 and 5).

**The second level proposal: Personalization through the usage of current technologies**

Personalization is a coping strategy which provides a sense of control over the environment (Bodin Danielsson 2008). It also refers to an adjustment of a space according to the passengers’ needs and desires. Moreover, interaction with personalized elements can alleviate the adaption to the new environment. Likewise, when studied from a group perspective, it enables a feeling of group identity and belonging (ibid.) (See section 3.6).

Ahola (2010) notes that cruise ships are micro-communities. Therefore, every concept created for cruise ships should strive to encourage and support interaction among passengers. As Hung and Petrick (2011) explain, cruise companies should also strive to fulfill cruisers’ desires for self-esteem/social recognition and bonding — aspects which are currently missing on cruise ships.

Another solution was proposed to help passengers to customize their cabins even before they enter the ship (sketch 6).
According to the Royal Caribbean International's (RCI 2013b) official website, “guests are requested to complete Online Check-In no later than 3 days prior to the cruise in order to expedite the pier check-in process.”

For that reason, another feature that could be included in the online check-in is to provide passengers an option to attach a digital photo to display on their cabin doors. In that way, even the entrance of the cabin could be personalized. In addition to seeing the picture of the guests selected on the screen of their cabin door, it will accelerate the passenger’s adaptation to the unknown environment (sketch 7a-c). Moreover, if passengers decide to have family pictures on their doors, it will contribute to the feeling of coziness, making the environment more pleasant (SF Gate website 2013).
The presence of a screen display on the cabin door provides multiple functionality. According to Ward (2009), around 4 million cruise passengers (25% of all passengers) travel as singles. Interaction with others is especially important for those passengers as well as for creating a sense of belonging. For that reason, screens could have options to encourage interaction between people. For instance, they could like specific picture or leave a message to each other (sketch 8).

Another important feature of a screen is the replacement of the current low quality stickers. If passengers are celebrating important events or anniversaries, messages provided by the staff members can appear on the screen as a slideshow. Since it would be a digital image, it can be customized according to the type of events celebrated and the persons celebrating them (sketch 9).

**Improving wayfinding**

According to the Triad group’s experience on the passenger ships, it was difficult to locate the exits or upcoming turns while walking through the hallways. Some of the reasons for this include: the length of the hallways, their narrowness, and vaguely indicated entrances to other hallways. As explained in section 4.3 (figure 32), the only differentiation in the hallway carpet color signaling an intersection or exit was not easy to follow and went unnoticed. Therefore, it is crucial to use familiar common signs which will afford their purpose. As an example, sketch 10 demonstrates how an arrow on the floor, projected from the ceiling or integrated in the carpet, can help to navigate passengers. The placement of an arrow on the floor was inspired by the literature review (see section 3.4) which explained how users navigated more efficiently if the signs were positioned on the floor, as well as by projected images in the MS Viking Grace cabin (see figure 14). In addition, small written signs are placed on the ceiling in order to mark the exits from the hallway better.
As revealed in the interviews above, the passengers also faced a problem with key cards. As suggested by their comments, wristbands instead of key cards would positively improve their experience while on board the cruise ship. The placement of key cards, their sensitivity to magnets, and need for card casings are problems easily resolved by utilizing wristbands. Moreover, for the purpose of easy hallway recognition every band has exactly the same pattern as the hallway where the passenger’s cabin is located. Examples of the wristband design can be seen in sketches 11 and 12.

Sketch 10
An arrow on the floor indicates an intersection

Sketch 11
Wristband
Two technologies that could be utilized in wristbands are QR codes and RFIDs (sketch 12). The usage of RFID allows the tracking of passengers, which can also enable easier wayfinding. For instance, when a guest enters the hallway where his/her cabin is located, the frame of the right cabin door will emit a light. In this way, passengers will not be obligated to count cabin doors or follow the door numbers, but instead navigate by the light on the door frame — they will know precisely, without thinking, where their cabin is.

Sketch 12

“QR or Quick Response Codes are a type of two-dimensional barcode that can be read using smartphones and dedicated QR reading devices, that link directly to text, emails, websites, phone numbers and more.” (Piranha 2014)

“RFID stands for Radio-Frequency Identification. The acronym refers to small electronic devices that consist of a small chip and an antenna. The chip typically is capable of carrying 2,000 bytes of data or less. The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying information.” (Technovelgy.com website 2014)
During the seven day cruise where each member of the Triad group traveled to the cabin at least three times a day, we noticed that we rarely saw our neighbors. However, in those cases where two or more nearby door frames start glowing at the exact same time, the passengers will need to follow the cabin numbers of the glowing door frames in order to find the right one. On the other hand, when only one door frame is emitting light, passengers will be more certain about the location they need to reach. Moreover, increased control over the cabin area will encourage guests to explore cabin areas as well as engender feelings of adventure, thrill, escape, and pleasure. Hopefully, the passengers will no longer be forced to rely on only the same, learned routes. (sketch 13)

The placement of the existing technology in the wristband opens up a whole new world of possibilities. After the passenger’s location is known,
7. CONCEPT EVALUATION
8. CONCLUSION
7. CONCEPT EVALUATION

7.1. In-depth interviews with AttrakDiff questionnaire (2013)

Getting to know the users and their needs, along with an evaluation of the design solutions are mandatory when designing for UX (Roto et al. 2009). Therefore, after all concept levels had been developed, their evaluation became the next step in this research.

In order to test whether the UX target was reached through the concepts and if the chosen problems were solved, two sessions with Finnish users were organized at the Aalto University Design Factory. One interview was conducted with a former female passenger from a cruise ship who was also a member of the Triad 2012. Another evaluation session was organized with two engineers. One participant from the group interview had been on a cruise ship before, while all three of them were regular passengers of Baltic Sea cruise ferries.

User’s profile

<table>
<thead>
<tr>
<th>GENDER</th>
<th>AGE</th>
<th>OCCUPATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>User 1</td>
<td>Male</td>
<td>34</td>
</tr>
<tr>
<td>User 2</td>
<td>Male</td>
<td>30</td>
</tr>
<tr>
<td>User 3</td>
<td>Female</td>
<td>27</td>
</tr>
</tbody>
</table>

Evaluations with users can sometimes be challenging, because users “have trouble imagining and giving feedback about something they have not experienced” (Matthing et al. 2004). Due to the threat that the users would find the evaluation sessions too demanding, two sessions with Finnish experts were also organized. One group evaluation session with three experts from one of the largest shipyards in Finland was organized in Turku, as well as one individual interview with an expert from the marine industry in Espoo.

Expert’s profile

<table>
<thead>
<tr>
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<th>AGE</th>
<th>OCCUPATION</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Expert 2</td>
<td>Male</td>
<td>34</td>
</tr>
<tr>
<td>Expert 3</td>
<td>Male</td>
<td>&gt;40</td>
</tr>
<tr>
<td>Expert 4</td>
<td>Female</td>
<td>39</td>
</tr>
</tbody>
</table>

According to Roto et al. (2004), when it is impossible for users to test and experience concepts, the main features with some level of interaction must then be presented. In cases when interaction between users and the product is not possible, the authors suggest that the work needs to be verbally presented. Therefore, every evaluation session started with a 30 minute long presentation. The prior research, findings, and UX target
were explained verbally with the help of slides displayed on a screen. After which, the concept was presented by showing rendered images of both concept levels.

After the concept introduction, the evaluators were asked to fill out a questionnaire consisting of two parts: the first about the evaluator (name, age and occupation) and the second about the AttrakDiff-based questionnaire (AttrakDiff 2013). AttrakDiff is a questionnaire which provides sets of contrasting pairs of words with a scale between them. The users and experts were required to evaluate concepts spontaneously by marking the scale between the contrasting words at the position that was the most applicable to the concept. As Roto et al. (2004) explain, the results demonstrate the hedonic and pragmatic qualities of the concepts. This questionnaire was used as a tool for in-depth interviews about the presented concepts, not for the quantitative statistics of the study.

The AttrakDiff has 28 contrasting word pairs. However, in the example given in the UXUS tutorial by Roto et al. (2012) which paraphrases Hassenzhal and Monk’s (2010) study “The Inference of Perceived Usability From Beauty”, it was explained that only 10 contrasting pairs were used for the evaluation of numerous websites. Following that example, the questionnaire had 11 pairs of words which were used for the evaluation of the pragmatic and hedonic qualities of concepts. The most suitable for the specific concept evaluation, these 10 pairs, were taken from the questionnaire that can be found at the AttrakDiff official website (2013). However, one pair was changed slightly according to the discovered wayfinding issues and feeling of control: helpful/unhelpful.

The results of the experts and users answers to the Attrakdiff-based questionnaire can be seen in table 6. The contrasting pairs of words explored the perceived functionality of concepts (pragmatic quality), as well as the fulfillment of basic human needs (hedonic quality). Similar to the explanation of the short version of Attrakdiff found in the UXUS tutorial (Roto et.al. 2012), the pairs referring to pragmatic quality are:

confusing – structured,
impractical – practical,
unpredictable – predictable,
complicated – simple,
helpful – unhelpful,

while the hedonic qualities are:
undemanding – challenging,
dull – captivating,
tacky – stylish,
cheap – premium,
brings me closer – separates me.
In addition, the perceived attractiveness of the concept was evaluated through the contrasting pair motivating – discouraging.

Finally, the last part of evaluation session was a discussion, which lasted approximately 30 minutes. During the discussion, evaluators were asked to share their opinion about the introduced concepts and UX target. Each evaluation session lasted no more than an hour. All of them were recorded and transcribed. In the following section, the results from the AttrakDiff-based questionnaire and discussion will be introduced.

7.2 Findings

User 1

<table>
<thead>
<tr>
<th>confusing</th>
<th>impractical</th>
<th>unpredictable</th>
<th>complicated</th>
<th>undemanding</th>
<th>helpful</th>
<th>motivating</th>
<th>dull</th>
<th>tacky</th>
<th>cheap</th>
<th>brings me closer to people</th>
<th>separates me from people</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

User 2

<table>
<thead>
<tr>
<th>confusing</th>
<th>impractical</th>
<th>unpredictable</th>
<th>complicated</th>
<th>undemanding</th>
<th>helpful</th>
<th>motivating</th>
<th>dull</th>
<th>tacky</th>
<th>cheap</th>
<th>brings me closer to people</th>
<th>separates me from people</th>
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<td>0</td>
</tr>
</tbody>
</table>

User 3

<table>
<thead>
<tr>
<th>confusing</th>
<th>impractical</th>
<th>unpredictable</th>
<th>complicated</th>
<th>undemanding</th>
<th>helpful</th>
<th>motivating</th>
<th>dull</th>
<th>tacky</th>
<th>cheap</th>
<th>brings me closer to people</th>
<th>separates me from people</th>
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The results from the users and experts were slightly different. Arguably, they show that experts had a more positive attitude towards both the pragmatic and hedonic qualities of the concepts than the users. The explanation for the answers derived from the discussion I had with the participants after they completed the questionnaire.

When it comes to the pragmatic qualities of the concept, the users believed that the color differentiation of the hallways would help them find their way in cabin area more easily. Different hallway themes and decorations by artists also brought positive comments. However, the users had completely

**Attrakdiff-based questionnaire results**

*Expert 3 was only interviewed after the concept was presented due to time constraints.*
the opposite opinions about the branded hallways. Some of them found them fun and helpful during navigation and were very passionate when convincing others to change their minds, while others had concerns about the potential disturbance that the advertisements could cause.

*If the graphics are distinguishable enough, you could give people directions like ‘you can find your cabin by going through Gucci until Louis Vuitton and turning left on Rolex.’ It’s like street names. You can use it as a funny and useful reference. It is useful way for navigation, because you can recognize the whole floor; you don’t need to look at the numbers or doors.” (User 1)*

“I really like the idea of colors and themes. I like the idea of nature and destinations, but I’m not digging the idea of branding. Strategic partnership with certain brands can boost sales volume and can differentiate hallways. However, as a user, I don’t want to be bombarded with advertisements. It is nice to see those commercials, but if I see them for 7 days, it will be tiring. On the other hand, I don’t mind seeing Santorini and nature for 7 days. I like the idea of outsourcing it to artists.” (User 3)

In addition, they concluded that changing the patterns in the hallways is inexpensive and possible in the traditional marine industry. Moreover, during the discussions, the users had proposals as to how the hallways could be decorated: one interviewee suggested that local artists of the cruise destinations could decorate them, that children’s graffiti could be used, or that travel agencies could place pictures of destinations in hallways.

*Marine industry is an old fashioned and everything on a boat is practically oriented. That is why all the materials are the same, all hallways are identical, different restaurants may look the same, so there might be a lot of financial issues for crucial changes. But then again, you can just use different colors if the furniture is the same. That is why I think that color coding is really good. You can just add wallpapers, coloring schemes etc.” (User 1)*

On the other hand, although the experts agreed that the color improvements would assist passengers and suggested that it would be fun and easy to remember, they were concerned about the costs that those changes would cause and therefore believed that it is likely cost-prohibitive. They were also concerned about the safety regulations and materials that could be used in production. They were especially worried about emergency situations and if those themes and colors might hinder passengers who are in danger. From the hedonic quality perspective, the experts were worried that some passengers may not even like the brand of the hallway they are staying in, which could create negative feelings.

*“Even though we built those ships, I don’t know where the turn is. I think that the signs should be clearer, because I got lost in the hallways. Different*
colors have been in use on some ships, but not everybody notice it. It is not clear enough. With this (color improvements) it would be clearer.” (Expert 1)

“Santorini is nice because it is so easy to understand, so different but it doesn’t have that hotel feeling. Somehow this industry is always depending on making hotel alike environments.” (Expert 2)

“It is very expensive to have different materials, because, every color is different material. For that reason I don’t even like the ships where you have different decks. For example if you have 10 decks, that means that you have 10 items more, because the color makes different item and it kills the situation.” (Expert 3)

“There should be a particular place where you are adding the advertisements or themes. Maybe if the whole wall is not covered, maybe if only the upper part is, or small areas that you are changing every now and then. If you are changing the whole setting, then it’s quite expensive.” (Expert 4)

Both the users and experts had mostly positive attitudes towards the placement of screens on cabin doors. During the evaluation sessions, users suggested that the screens could replace messages for room attendants as well as breakfast orders which could be uploaded immediately. However, what concerned both the users and experts were the pictures on the screens. They were against the idea of pictures of the passengers, due to safety issues. Instead, all of them suggested that they would use some other picture.

“If some guys see you in the bar, they can search for you and find your room. Then you will have a problem. I like the screens, because you can also implement other stuff there.” (User 2)

According to one of the users, the problem with the usage of any picture as a landmark is the rotation of passengers. As the evaluator explained, the cruise line he used had numerous ports where passengers could embark and disembark. The result was that during the 7 days of a cruise, some passengers left the ship while others occupied the same cabin. In that case, the picture on the door will change. Moreover, it means that the landmark will change. Some evaluators were against interactions between passengers through cabin door screens, but instead they proposed to keep only the possibility of leaving comments for passengers who are celebrating special events. As one user explained, he was against social media on board, because he is going on a cruise to spend his holiday with friends and family and does not want to spend time on messaging other unknown passengers or liking their pictures.

“For me, I would keep it so that for special events, you have those signs on the screens “Just married”, “Happy birthday” etc. and leave the option for other passengers to write nice messages and advices for them. That is as
far as I would go. I wouldn’t go for “liking pictures”, because I’m the first one who wouldn’t do that.” (User 3)

One of the experts was also afraid that the placement of pictures on every door might have negative consequences:

“If you have pictures on doors, it is a lot of visual information. If you cannot remember where your cabin is, then you won’t be able to see your own face among all those pictures. It can turn out to be even more confusing environment than it already is.” (Expert 2)

All evaluators agreed that the graphics on the wristband, which matches the hallways, were helpful. In particular, the female participants had strong positive emotions related to the wristbands instead of the key cards. A female expert suggested that implementing a screen on the wristband would be an even better tool for wayfinding. However, the male evaluators said that they disliked having anything around their wrists. They would prefer having multiple options for its placement. One male expert said that he would rather use his cell phone instead of a wristband, because he is afraid that he would lose the wristband, but probably not his phone. In addition, he was worried what would happen if someone loses wristband. The usage of RFID and hallway recognition of passengers was especially appreciated by the experts.

“The idea about door recognition is very good. You can also think about how to call the door and how it can signal its inhabitants to avoid extra fuss and disturbance to other passengers.” (Expert 3)

To conclude this chapter, the results of the evaluation sessions demonstrate that the concept could solve the identified problems and enhance user experience, especially the UX target. Both concept levels were evaluated as helpful, and users believed that those could assist passengers during the wayfinding process. The discussion showed that users and experts perceived the concept as fun and easy to remember, which confirms that the design driver, Enhance fun experiences, was accomplished. The users’ comments prove that the design driver, Intuitive recognition of the environment, was also fulfilled. Besides those mentioned, the evaluators believed that the design solutions were captivating, motivating, stylish, and premium. Every concept level motivated both the users and experts to contribute with their ideas and develop them further.

Although they saw possibilities, the experts pointed out the challenging aspects of implementation of the design proposals in terms of costs and safety regulations. In addition, the usage of wristbands raised some discussion between genders; in contrast to the females, the male examiners disliked them. Moreover, the assumption that the users would find the concept challenging for evaluation was incorrect since they had similar
findings as experts. The reason was that all of the technology already exists so it was easy for the evaluators to imagine how it could be implemented. Finally, the evaluators did not perceive the concept as an initial step, but more as a final one. The renderings of the concepts looked too realistic and even raised questions about the missing safety signs. The concept should have been presented with drawings that would illustrate the actual stage of the development.

8. CONCLUSION AND FUTURE WORK

In this study, I explored what kinds of difficulties passengers have during the wayfinding process on cruise ships and developed design proposals for better wayfinding. By doing so, the ultimate aim of this thesis was to provide more pleasurable experiences for the cruise passengers.

The findings from the field studies demonstrated that a large number of passengers had difficulties in understanding the layouts of the cruise ships and had challenges with finding their way on board. Besides the first-time cruise travelers who found wayfinding challenging, the more frequent passengers, such as those on their seventh cruise, continued to have difficulties. The layout of hallways was described as monotonous, which in turn made navigation harder. Those findings should not be ignored since other studies (see section 3.1) argue that passengers want to spend their leisure time relaxed, liberated, and separated from their everyday problems. Moreover, given that the average length of a cruise is 7.3 days and that large environments, such as cruise ships, cannot be memorized in such a short period of time, wayfinding deserves close attention in order to fulfill the passengers’ expectations. As Rosenbaum et.al (2011) explain, the environment influences passenger behaviors; it is responsible for the passengers’ approach/avoidance decisions and will shape their overall experience.

The field studies revealed the wayfinding problems that cause negative user experiences on the cruise ships. Therefore, the main goal of this thesis was to enhance the user experience in those identified areas with design-based solutions. The UX design methods were used throughout the research process in order to develop the design concepts. Based on the literature review and the field studies, the feeling of control was set as the target user experience, which later led to derive three main design drivers: 1) Clear customer-centric information delivery, 2) Intuitive recognition of the environment through a differentiation strategy, and 3) enhance fun experiences.

As an industrial designer with hardly any previous knowledge of passenger ships, I was prevented from investigating its structure and making alterations to the positions of hallways. I limited my concepts therefore to those potentially easy-to-implement solutions that could solve the current issues.
Executing the research from this perspective shaped my possibilities and left the concepts at an initial stage. Therefore, the final design concept proposes an implementation strategy in two levels: 1) color improvement and 2) personalization through the usage of current technologies. As one of the main features, the concepts indicate that every hallway on one deck should have a different theme, which would be intuitively recognized. The evaluation with users and experts confirmed the importance of the initial concept; however, it also pointed out challenges and limitations.

In this study, the evaluation of the design proposal was carried out with two-dimensional visual models. According to the experts’ comments, all of the features of concepts are easy to test in order to see to what extent they help the passengers. They also suggested the use of light, which can be also used for hallway recognition. In the future study, conducting an experience prototyping (Buchenau and Fulton Suri 2000) with prospective users and experts might produce more sufficient data for figuring out to what extent the proposed design could ensure the feeling of control for the passengers. In this study, I limited this as future work as the focus of this study is to highlight the main problem areas of wayfinding to envision design solutions for improving it.

This research addresses many questions for further investigation and design opportunities. For example, information delivery was considered one of the crucial problems on board. How can it be improved? Could organized tours after embarkation help passengers to find their way more easily? Is it a possibility in terms of cost or logistics? How could existing and emerging technologies improve intuitive space recognition?

With the hope that this topic will be further researched, I want to finalize this study with a quote by Shashi Caan, an architect and designer:

“We are happiest and most well-balanced when we are mentally stimulated rather than stuck in a monotonous existence, be it visual or intellectual – a reality that the spaces we design should reflect.” (Cann 2011)
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Sketches

Pictures used for rendering sketches 2, 3, 6, 12:

**Bamboo door** available at http://media.backyardxscapes.com/media/catalog/product/cache/1/image/9df78eab33525d08d6e5fb8\d27136e95/b/a/bamboo-fencing-natural-3-4in-flipped_1.jpg
(Retrieved: 23 Jun 2013)

**Wall** available at http://media.backyardxscapes.com/media/catalog/product/cache/1/image/9df78eab33525d08d6e5fb8\d27136e95/b/a/bamboo-fencing-natural-3-4in-flipped_1.jpg
(Retrieved: 23 Jun 2013)

**Branches** available at http://lydias.free.fr/0%20tubes/fleurs%20branches/element27_ks.png,
http://www.dzd.co.uk/images/23206.jpg,
(Retrieved: 23 Jun 2013)

Pictures used for rendering sketches 1, 7b:

**Door** available at http://farm1.static.flickr.com/128/359629165_ddbb2b3ab6_o.jpg
(Retrieved: 25 Jun 2013)

**Windows** available at http://static.freekpi.com/foto-gratis/ventana-azul_2858545.jpg,
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(Retrieved: 25 Jun 2013)

**Floor** available at http://www.belgarddesignpro.com/images/..png
(Retrieved: 25 Jun 2013)

Pictures used for rendering sketches 4, 5, 7a, 7c, 10, 11:

(Retrieved: 23 Jun 2013)

**Official LV advertisement on the wall** available at http://2.bp.blogspot.com/-cIQ-MkgDGxw/UEvel_p8ERI/AAAAAAAAACI/nuIj43duvvc/s1600/Louis-Vuitton.jpg,
http://theinspirationroom.com/daily/print/2010/9/louis_vuitton_bono_and_all.jpg,
http://1.bp.blogspot.com/-XqKs9tbSS5e/UPal56bsW_I/AAAAAAAACBM/bFesxlF2uI/s1600/BIG-Louis-Vuitton-Iconic-Mini-Bags-on-the-Coolest-Girls-4.jpg,
http://4.bp.blogspot.com/-BjNSKVTWgM/UP58QLLR0zlI/AAAAAAAHAqk/SBJy7bMbduk/s1600/jacey-etalhion-louis-vuitton-spring-summer-2013-02.jpg,
http://wearesodoee.files.wordpress.com/2012/12/louis-vuitton-campaign-ss-2013-31.jpg,
http://1.bp.blogspot.com/-PQhZ1ck9FpY/UP58P7F4D1I/AAAAAAAHAhg/Q2VwORdx9HE/s1600/jacey-etalhion-louis-vuitton-spring-summer-2013-01.jpg,
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http://1.bp.blogspot.com/-ka8LKVIPyY/USvYqLZ8i_I/AAAAAAAACX0/TrAmUtetuus/s1600/Louis-vuitton-ss-2013-by-Yannis-Vlamos.jpg
(Retrieved: 23 Jun 2013)
APPENDICES

Appendix A

Interviewees’ data from the cruise ship:

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Appendix B

An idea maps for design solutions