Designing to Optimise the Passenger Experience at an Airport

Team Report User Experience Theory & Practice (DDM150) - Eindhoven University of Technology

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INTRODUCTION

During the course User Experience Theory and Practice, three relevant user experience (UX) design challenges were presented by representatives from different companies. These challenges were tackled by student teams that each focussed on addressing one of the challenges. Every team presented possible design solutions, statements which align with theories and design guidelines in order to start a discussion about specific aspects. These challenges give each team the opportunity to demonstrate and apply their growing understanding of UX. It also helps to reflect on results, design tools and evaluation methods.

In this report, a short summary of the challenges will be discussed. Furthermore, a general reflection about the challenges and their respective companies will be presented. The first design challenge was to design a trustworthy and user-centred service for people to be able to buy their dream car, fully online, via CarNext. The second design challenge was to design for a child car seat manufacturer and brainstorm on a concept that enables a good user experience for a 'smart child seat'. The third design challenge was to optimise the customer experience of passengers that travel through an airport.

As team twelve, we were assigned the third challenge. Which was to improve the passenger experience at an airport. Further details of this challenge, our solutions and connected theory are presented in the next chapter.

TARGET CHALLENGE

Our UX design challenge was given by the company Essense. The goal of the challenge was to optimise the customer experience of passengers that travel through an airport. To get a good overview it was essential to analyse the entire journey that passengers make, and evaluate all possible 'touch points' between airport and passenger. As a result, relevant solutions should be presented with the support of a Service Blueprint. The Service Blueprint is a useful tool to oversee how and where services can be improved for a better customer experience.

For this challenge, every team had to focus on one specific customer profile. Teams are required to think of solutions which best suit the needs and desires of their customer profile, whilst taking the other passengers into account as well. Our team was assigned with the 'demanding' customer profile (see image 1). To make sure we would best capture the essence of this passenger, we created a user story and scenario. Further details on the 'demanding' customer profile can be found in Appendix 1.

With the storyline and user scenario solid, a Service Blueprint was made to the needs and desires of the 'demanding' customer. This Service Blueprint can be found in Appendix 2. When evaluating the Service Blueprint, there were two phases which offered opportunity for improvements. Phase four is the phase in which the passenger passes through security. For many passengers this is a phase which causes anxiety, frustration and stress. It requires some patience, a quality our 'demanding' passenger does not have. In phase five, the passengers travel to their boarding gate and wait until their boarding time. Both these phases include longer waiting times which the 'demanding' passenger sees as lost time. "Waiting time is always one of the variables that usually gets the most weight in the utility functions of a transport mode, because it represents the time that the user sees as lost and the loss of time is irritating (Litman, 2008)." For this reason, we have created two different solutions which diminish the waiting time. These solutions are elaborated in a new Service Blueprint, as shown in Appendices 4 and 5.

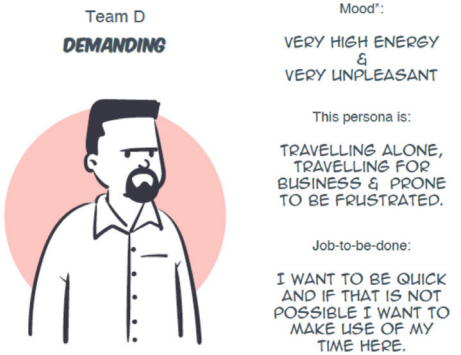

Image 1: The 'demanding' customer profile

Solution one - Step by Step

The first solution is named ‘Step by Step’ and is implemented in phase four during the security check. This solution is designed to create empathy, practically use the waiting time and create less frustration for more experienced travellers. When going through security, passengers first arrive in the security hall. Here all passengers are presented with the same question; ‘How familiar are you with going through security?’. Underneath this question there are two possibilities for the passengers to choose from, one lane is labelled as; ‘Help others to help yourself’, the other lane is labelled as; ‘Step by Step’. Passengers can choose the lane which they are most comfortable with.

To elaborate, the lane ‘Help others to help yourself’ is targeting the people who travel often, are familiar with the regulations and travel alone or in small groups. The lane ‘Step by step’ is designed for people who do not travel often, are insecure, need guidance and are less flexible. Perhaps people who are travelling with small children or have more hand luggage, electronics or liquids than usual. Passengers are given a sense of control when assessing themselves in order to determine which lane is best suited to them, this can be put in relation to the theory of perceived control. “Perceived control [...] is one’s perceived amount of control over behavioral performance, determined by one’s perception of the degree to which various environmental factors make it easy versus difficult to carry out the behavior.” (Montanño & Kasprzyk, 2008)

The idea is that next to the line of waiting people that have to go through security, there is a belt with trays on it, just like at a buffet. With this idea, people can already prepare themselves and their hand luggage for security, whilst they wait in line. Transforming the waiting time to useful preparation time. This idea is implemented in both lanes which the passengers are able to choose from. Both lanes are located opposite each other, so passengers are able to observe and communicate with each other, designing it to be a social translucent system. “In socially translucent systems we believe it will be easier for users [...] to observe and imitate others’ actions [...] to create, notice, and conform to social conventions.” (Erickson & Kellogg, 2000) Meaning that more insecure passengers are able to observe, imitate and communicate with the passengers who travel more often. “We see social translucence as a fundamental requirement for supporting all types of communication and collaboration.” (Erickson & Kellogg, 2000) Another target of this translucent system is to design for creating empathy amongst the different groups of passengers. “The definition of empathy is the ability to be aware of, understanding of, and sensitive to another person’s feelings and thoughts without having had the same experience.” (Battarbee, Suri, & Howard, 2014) Through the open and translucent design, passengers are encouraged to understand, help and communicate with each other.

The last relevant part of this solution is the information which is shown to passengers when passing through security. In the ‘Help others to help yourself’ lane, passengers receive minimal information on what actions are needed before the security check because they should already be familiar with the procedure. Considering the proceedings are well-known to these passengers, they might physically interact in their periphery of attention. In order to get their full attention, they are given information to help the opposite lane and lead by example. In the ‘Step by Step’ lane, passengers receive step by step information and instructions on what to do to pass through security as effectively as possible. “In line with divided attention theory, we describe the center of attention as the one activity to which most mental resources are allocated at any moment in time.” (Bakker & Niemantsverdriet, 2016) Most passengers in this lane will be interacting with focused attention.

The solution, the general set-up and more details are shown in Figure 1 and 2.

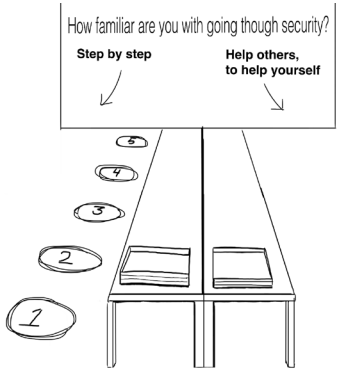

Figure 1: First visualisation of Step by Step

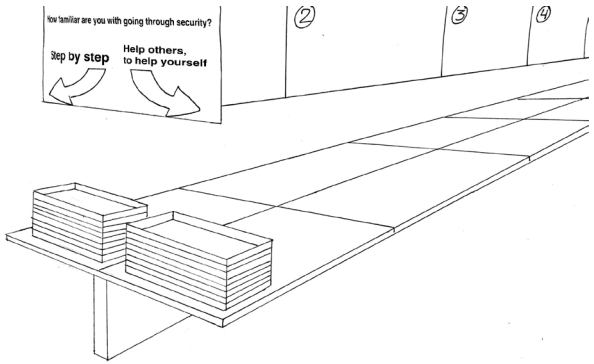

Figure 2: Second visualisation of Step by Step

After presenting our solution to the challenge to the client, we received some feedback from them. They were positive about both ideas, plus they liked the names of the concepts. It made them easy to remember and keep apart. However, they raised a point of discussion about the ‘Step by Step’ concept. There is a concern that people ignore the signs and just choose the shortest line because they are interested in getting through security as fast as possible. A solution would be to have passengers tick a box when purchasing the ticket, stating that they want to use the ‘Help others to help yourself’ row. This can also be changed by the passenger later, if they realize that they want to use the faster row after ticket purchase.

Solution 2 - WorkSpot

The second solution is named ‘WorkSpot’. This solution is designed to make people traveling for work effectively use their waiting time before boarding the airplane. We support these travelers by creating dedicated workspaces and by providing them with personalized information regarding boarding. This way, the waste of time is limited because travelers can work without constantly being distracted or having to keep an eye on the boarding screen. The work space is divided in two; there are small phone booths for working in silence and there is a common workspace in which you can work at large tables. The workspaces are equipped with power, Wifi, and ethernet in order to provide the ‘basic working needs’ in order to be productive. You can find the ‘WorkSpot’, by following the route that is indicated on the floor. This route starts right after security and will direct travelers to the WorkSpot so they easily know where to go. To secure your spot in ‘WorkSpot’, you can make a reservation when booking your tickets, or at the information desk at the airport.

In order to limit the number of distractions, WorkSpot helps travelers by providing them personalised information regarding boarding. When the traveler arrives at the place he wants to work, he can scan his boarding pass at the desk. This activates a personal light that turns on when the boarding gate has been announced. This personal light is placed in the corner of a desk, just outside of a person’s line of sight. This light is relatable to the interaction-attention continuum (Bakker & Niemantsverdriet, 2016). With this solution, the traveler doesn’t need to pay attention to the gate number screens, and only shifts the attention of the user when the information is relevant. When the light is off, it means that the gate number is not yet known. This implicit interaction indicates that the underlying system is constantly updating the flight information and confirms that the gate is not yet announced. This information is not yet relevant for the traveler, and can be placed outside of the attentional field. When the gate number is announced, the light on the desk turns on. The attention of the user is shifted for a short while, and lets him know that he needs to leave shortly. It is then in the periphery of the attention. The user is aware of the information and can choose to act accordingly. When the light starts to blink the traveler needs to proceed to his gate. Blinking will make sure the light is in the center of attention, making it a focused interaction, nudging the traveler to leave.

It is important that only people that want to work or read in peace will use WorkSpot. Children, or groups of people that are talking about anything other than work are not allowed. This will be achieved by utilizing social translucence (Erickson & Kellogg, 2000). By making WorkSpot look like an office by means of banners, signs and icons comparable to the icons in the silent sections in trains, it is made clear that the WorkSpot space is intended for work only. By making it visible that it is a workplace, we create awareness and accountability. Other travelers see that WorkSpot is intended for concentrated work and become aware of the fact that they are expected to behave accordingly. They should not disturb the others and if they do so anyway, the working people can ask them to stop or leave due to accountability that is part of social translucence.

The demanding user profile is a person who wants to use his time efficiently when he needs to wait. In this time, he needs to be concentrated in order to be productive. When we relate this to the Integrated Behavioral model (Montanño & Kasprzyk, 2008), we can name the intention of the behavior ‘concentrated & productive working’. There are three factors that influence this intention. The attitude of this traveler is explained earlier as someone who needs silence in order to be concentrated and productive in his work. He needs to work, because others expect it from him, as he is on a business trip. This perceived norm can come from his colleagues or his boss. The one factor that is lacking at the moment in the airport is the personal agency to actually do work, as there are not many places in the crowded boarding area to concentrate.

WorkSpot accommodates working travelers by giving them the option to work effectively. This enhances the perceived control and self-efficacy of the traveler, as it is easier to concentrate. Without WorkSpot, travelers might have the intention to work but are not able to do so because of the lack of good workplaces. Since this is a problem that cannot be solved directly by the traveler, it can affect the desired behavior ‘concentrated & productive working’. With WorkSpot, the airport can solve this problem by providing travelers with good workplaces that improve the personal agency (Montanño & Kasprzyk, 2008) and will therefore contribute to stimulating the desired behavior. Sketches of the ‘WorkSpot’ concept are shown in Figure 3 and Figure 4.

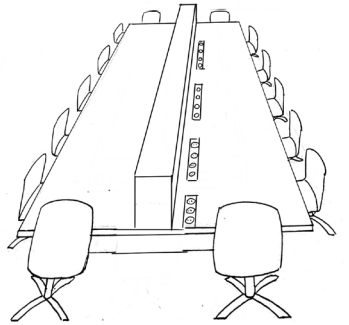

Figure 1: First visualisation of Step by Step

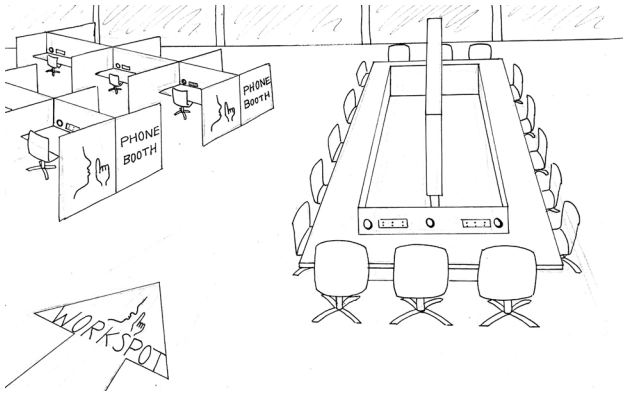

Figure 2: Second visualisation of Step by Step

A second point of discussion after the presentation was made about the 'WorkSpot' concept, it is important to consider all interests from all parties connected to the airport facility. In the case of 'WorkSpot', the commercial interest of the airport is not examined because when people spend their waiting time working, they do not use the commercial facilities. For example, the chance is smaller they will buy anything at a store or sit at a restaurant for food or drinks. When reevaluating this idea and taking the commercial interest into deliberation, a possibility could be to place the 'WorkSpot' nearby restaurant options. Perhaps the 'WorkSpot' could be placed near a Starbucks, making it more accessible and tempting for working people to buy a drink or food.

OTHER TWO CHALLENGES

The first design challenge concerned redesigning the website of CarNext and was commissioned by Mirabeau. The assignment was to improve the buyer's flow by providing a fully online, trustworthy and user-centred service. We will discuss the solutions that stood out to us and we will briefly describe what we see as the greatest missed opportunity.

Group one and three used a direct approach and focussed on optimizing the customer journey, by limiting the choices provided to the user and by creating transparency to foster trust and loyalty. The arguments mentioned were strong, and were all related to different theories from the course, which made their considerations well informed. What they could have highlighted more, is how their decision improved the buyflow. Where group one and three used the direct approach, group two and four used the informed approach to design for more trust. For example, one concept was to match the car to the buyer, in a tinder-like fashion. By limiting the choice and by comparing the cars, the user should be reassured that this is indeed his dream car. Mentioning disadvantages of the car as well as the benefits is a strong point of this concept because it will likely increase trust.

The concepts presented were original and had potential, but sometimes lacked a human-centric approach. One of the benefits of CarNext is their knowledge, which is an opportunity that the groups did not fully benefit from. The filters could be adjusted to ask information on the user himself rather than the 'dream car' the user is looking for, because those questions will most likely be easier to answer. CarNext can utilize this information to give personalized advice on the potential dream car of that particular user.

The second design challenge was commissioned by Van Berlo. The challenge was to design for a child car seat manufacturer and brainstorm on a concept that enables a good user experience for a 'smart child seat'. Below the results of the different teams are briefly summarized and missed opportunities discussed.

Group five focussed on the experience of the baby. Their concept was a sleep routine assistant with a heart rate sensor, speakers and an app with basic data for the parents to keep track of their child's sleeping patterns. The overall concept was very good, however, the concept could have been further enhanced through personalization and more extensive gathering of data. Group six presented "Autonanny", a concept with a camera focussed on the baby and a screen for the parents in the front of the car. This screen shows the baby's emotion to the parents without making it too distracting. We believe there is still a missed opportunity for this group when linking their concept to theory. This will help them formulate why their concept will improve the experience. Group seven designed "Travelnap" based on interviews with young parents, the problem came to light that the most challenging is the transition from car to stop. Their concept has vibration and sound modules integrated into the child seat, creating a smoother transition for the child. Similar to group six, the connection to theory needs to be made which will further elevate the choices of the design created. Finally, group eight focussed on the topic of car seat installation. Their concept combines a light and screen which confirm whether the child seat is installed and connected properly. The theory used is good but there are opportunities for improvements when focussing on the theory about habits. Habits seem to be more related to good design instead of experience. Also, this design seems to only be helpful for the first time of installing the carseat after this, users should be more familiar with the procedure.

GENERAL REFLECTION

Differences between the challenges

One of the biggest differences in either challenge is the differences in the artifacts to be designed. The first challenge is perceived as very digital, the output of the challenge is a digital product, in the form of a website. Whereas the second challenge was aimed at more physical product design. In the 3rd, and last challenge, the focus was on service design in the form of a service blueprint. Furthermore, in the first challenge the target customer of CarNext is very broad. The target customer is everyone above 18 with a driver's license. In the second challenge the target customer of the smart car seat is more narrow. This product is aimed specifically at parents or guardians of children who need a car seat. In the last challenge however, the target group is both narrow and broad. While the challenge itself focuses on a specific persona, which is based on user research, the whole service blueprint focuses on everyone that is involved in the service, making it very complex.

Differences between the three companies

Mirabeau is a digital design agency, and from their presentation it becomes evident that they approach UX from two different sides: the business perspective and the 'human behind the user'. For the business perspective, they need to stay up to date with the current age we live in, related to the paradigms for value creation (Brand & Rocchi, 2011). By understanding how people behave in paradigms, they can create innovative designs. Within the challenge for CarNext they also take two approaches. The direct and informed approach, looking at UX as how much information the user gets. They want to deeply understand their customer, and optimise the flow of the digital designs they make. As the user needs to perform a certain behaviour on these online platforms, the designers can design for an intended behaviour related to the Integrated Behavioral Model (Montanño & Kasprzyk, 2008).

In the second challenge, the second company Van Berlo took the approach of 'experience pillars' of the client,reassurance, premium feel, assistance and seamless integration. This gives specific labels to the UX and sets boundaries for the design process. The pillars are closely related to Hassenzahl's "how" "what" and 'why' (Hassenzahl, 2010). By formulating the pillars, the why, Van Berlo designs from these latent needs of users and creates fitting products.

In the last challenge, the company Essence looks at the UX as something that is there for the user, and also something that needs to be provided by backstage processes. They also have a strong connection with the business side of UX, urging designers to make tradeoffs if necessary. In the service blueprint this was very clear. The blueprint is connected to a whole journey of a specific customer profile experience. Using Mixed Perspective (Smeenk, 2019) methods, it is possible to understand how that profile behaves. Using the Integrated Behavioral Model (Montanño & Kasprzyk, 2008) this behaviour can be designed for, and used to optimise user experience from multiple customer profiles.

How our insights on user experience redefined

This course contributed to our general understanding of user experience. We realised that there is a big difference between usability and user experience, even though they are connected and influence each other. Strengthening our understanding of and the distinction between these terms will help us create better products and or services for the users we are designing for.

Everyone in our group agrees that the Service Blueprint that we used in the Essense challenge has changed our view on user experience (design). By working with the blueprint, we realised how important but complex the business side of projects is or can be. Knowing what goes on "behind the scenes" results in very practical solutions that do not only work from a user perspective, but also fit the business goals and possibilities. The insights into the trade-off between good user experience, time and money, and the conscious choices that have to be made here, will be very valuable in our future projects.

Within the course, we were provided with very relevant literature that can be used in a wide variety of projects that we are currently working on, or will be working on in the future. Using this, and new relevant literature will help us improve the design process, make predictions on the impact of designs and create good final designs that are a result of our efforts to create a good user experience.

WEEKLY LOGBOOK

The logbook describes and summarizes the activities done within the last weeks of the course. However, due to the unforeseen circumstances of the COVID-19 virus some changes had to be made to the course in general. All challenges except the first were done online, which made us unable to participate in the discussions of the second challenge.

Week 4

During this week, the first challenge was given to the first four groups. We each prepared ourselves for this challenge by reading the information available on the challenge. This made us at least informed what subject was tackled, and what approaches the groups would take. During the case, we made notes during the presentations and participated in the discussions if possible.

Week 5

Within this week, the second challenge was given and discussed by groups 5 till 8. This was done online, so we watched the discussion afterwards and took notes on this. This week was also used as preparation for our own challenge: improving the user experience in an airport for a demanding user profile. We designed from our own experiences at the airport. We started by reading the challenge, developing a user scenario and creating an initial service blueprint to investigate the current situation at airports. From this blueprint, we located areas where the experience of a demanding user could be improved. We split up in teams of two to work on these different areas.

Week 6

During the last week of the course, we made some final adjustments to the final service blueprint, that contained our solutions to improve the user experience. This final blueprint and our solutions were presented online to the client. During the presentation of other groups, we gathered feedback and shared this feedback afterwards.

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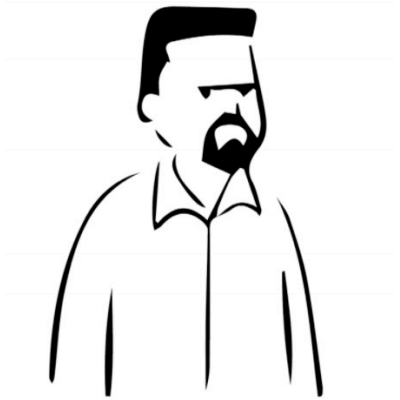
APPENDICES
Appendix 1 - The 'Demanding' Customer Profile

The 'Demanding' Customer Profile



Ben Jensen

Salesman | 36 yrs

"

I want to be quick and if that is not possible, I want to make use of my time here.

"

Mood

very high energy & very unpleasant

User Story

Ben is a successful salesman and representative for a big company. He frequently travels for work to present and promote a line of products. He still has the desire to become team manager in the future and is working to prove himself worthy of that promotion.

User Scenario

During this business trip, Ben is travelling to a conference by airplane. He will depart from Schiphol airport and return in three days. The company is paying for his trip and therefore money is not an issue, he is able to travel comfortability to his destination and back.

Goals & Aspirations

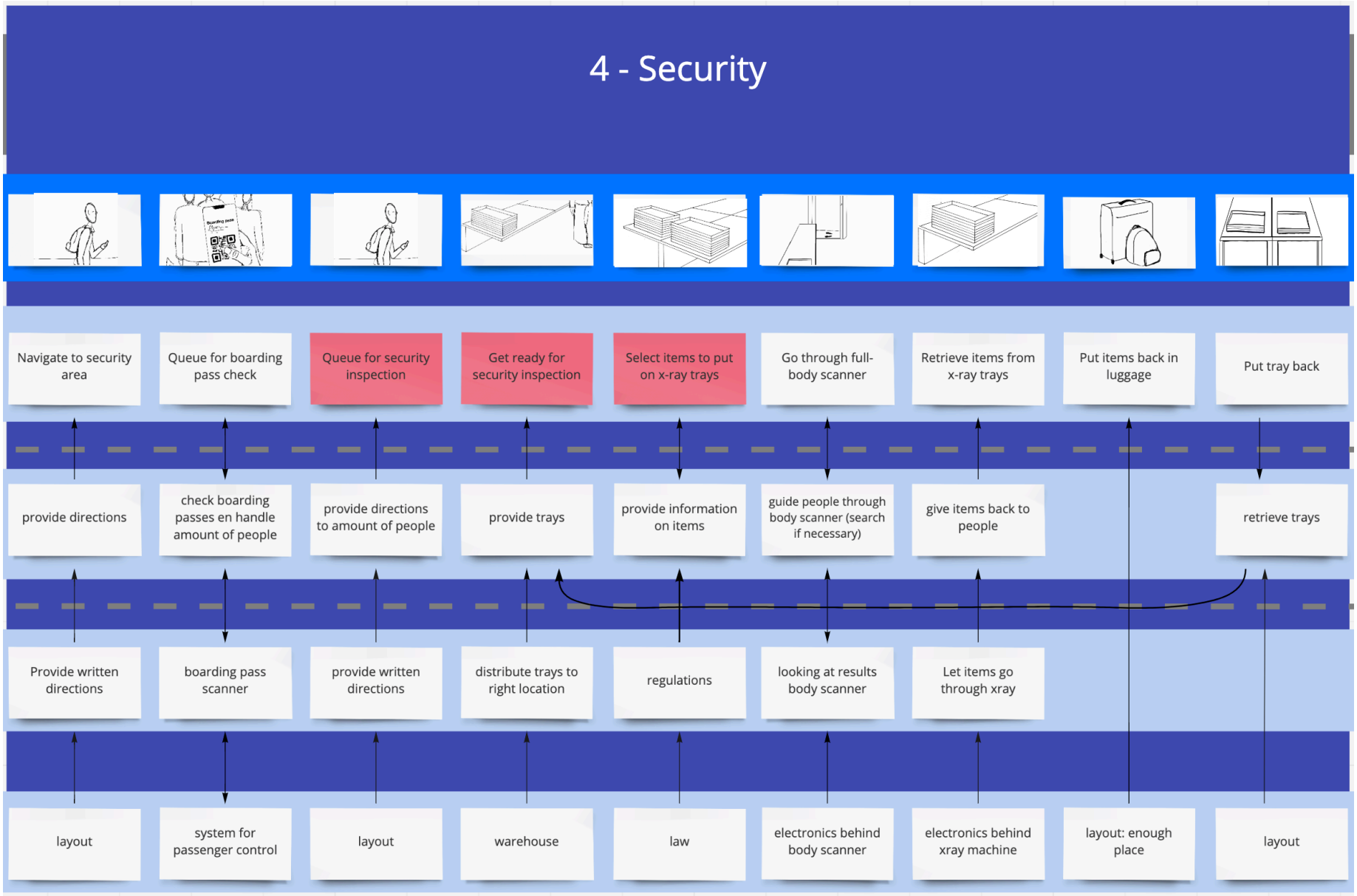
- Become the best salesman within the company
- Work more effectively so he can spend more quality time with his familiy
- Become team manager

Likes & Dislikes

- Airport Wi-Fi
- Work stations
- Efficiency
- Long waiting lines
- Unpacking at security
- Unexpected occurences

Appendix 2 - Original Service Blueprint

Appendix 3 - Original Service Blueprint, pain points



5 - Going to and waiting at boarding gate

Walk by duty free

Buy gift at cash register

Wait for gate number to be announced

Find space to work

Kill time and work while keeping an eye on the screens

Look for gate number

Go to gate

Provide help for shopping

Check out item by cashier, scan boarding pass

Information screens and announcements

Information screens and announcements

Follow signposting to gate

Keep shop clean & filled

Register buyed item

Show information on screens

Provide WiFi and power

Gate number confirmed

Flight is prepared

Shop layout

Stock management

Keep information up to date

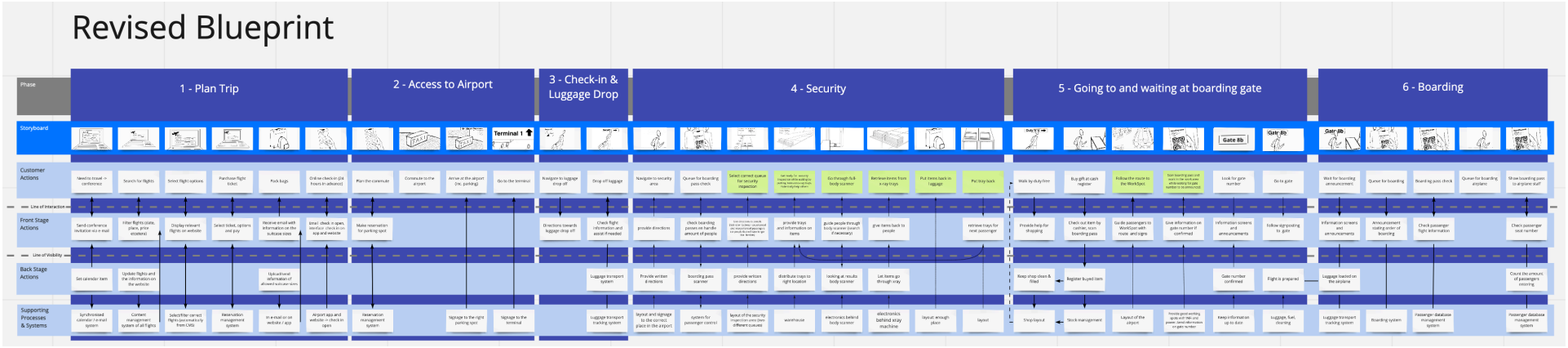
Gates layout

Comfortable and quiet working space

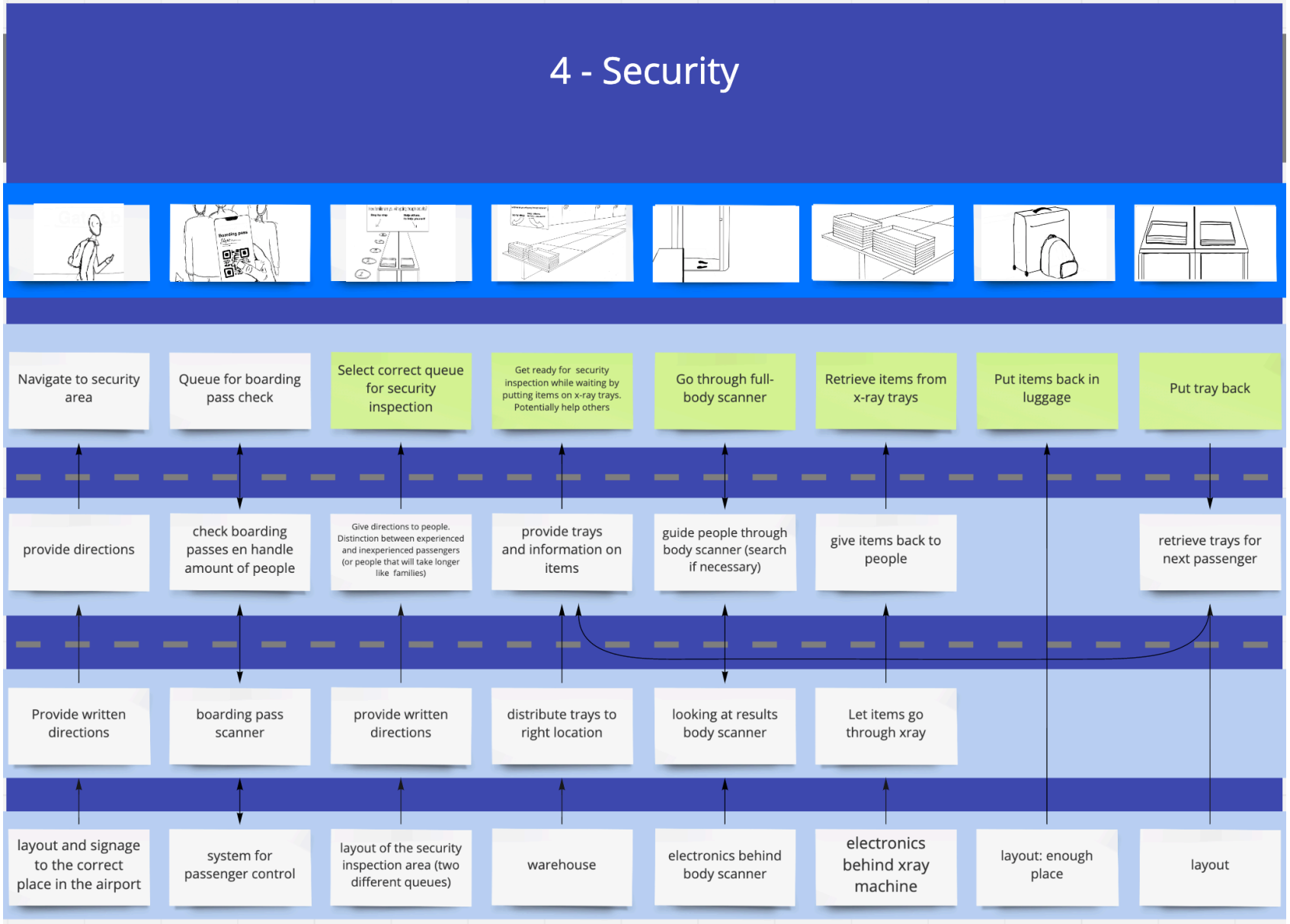
Keep information up to date

Luggage, fuel, cleaning

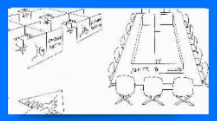
Appendix 4 - Improved Service Blueprint



Appendix 5 - Improved Service Blueprint, solutions



5 - Going to and waiting at boarding gate



Walk by duty free

Buy gift at cash register

Follow the route to the WorkSpot

Scan boarding pass and work in the work area while waiting for gate number to be announced.

Look for gate number

Go to gate

Provide help for shopping

Check out item by cashier, scan boarding pass

Guide passengers to WorkSpot with route and signs

Give information on gate number if confirmed

Information screens and announcements

Follow signposting to gate

Keep shop clean & filled

Register buyed item

Gate number confirmed

Flight is prepared

Shop layout

Stock management

Layout of the airport

Provide good working spots with WiFi and power. Send information on gate number

Keep information up to date

Luggage, fuel, cleaning