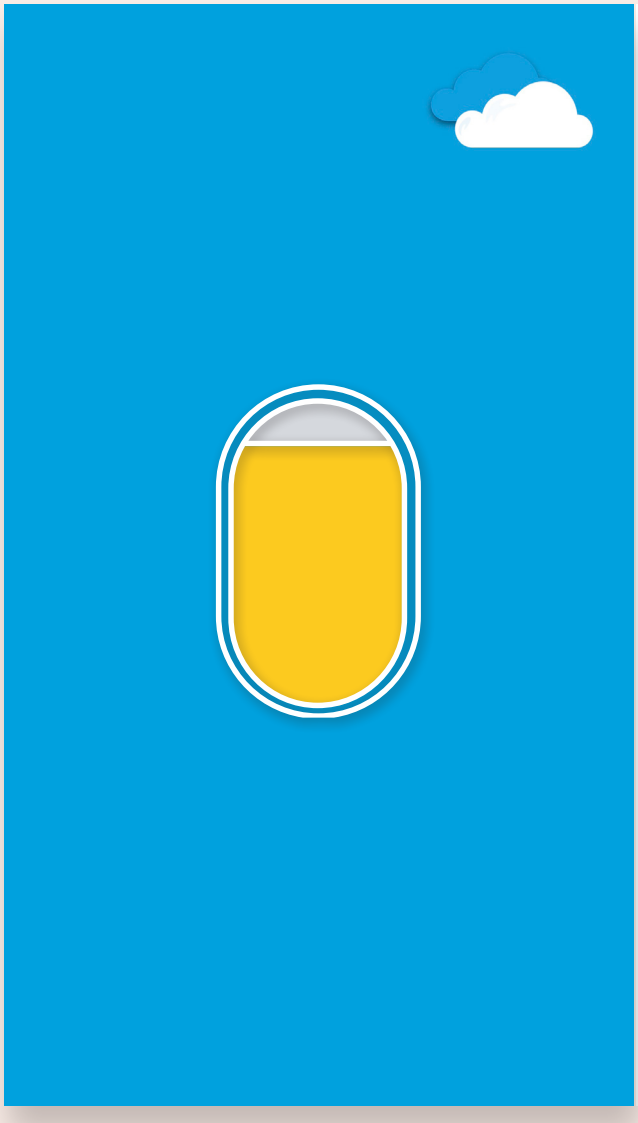

PERSONALIZATION FOR THE ONBOARD PORTAL

Enhancing the passengers' inflight experience by emotion and data-driven design

Graduation Thesis
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EXECUTIVE SUMMARY

Introduction

To be a differentiating and substantial airline, KLM strives to be customer centric with a customer intimacy value discipline. Not only does the organization actively satisfy the individual passenger by catering to their specific needs, they position their capabilities around the passenger's projected demands. From a passenger perspective, this means that the passenger is recognized individually from in person to digital interactions throughout their travel journey. From an organization perspective, this means that supporting such interactions requires obtaining passengers' knowledge or collecting passenger data. Both perspectives describe personalization, where sufficient and suitable passenger data can provide unique, tailored services and content. However this is not the case for KLM's onboard portal. The current Onboard Portal does not optimize customer intimacy and passenger data to recognize passengers individually and achieve personalization. This issue leads to the **research question: How to enhance customer experience using personalization for the onboard portal?**

The aim of this thesis is to use a design framework towards personalization possibilities for the onboard portal in enhancing the passenger experience.

Theoretical framework

The theoretical framework is fundamentally derived from Pieter Desmet's Design for Emotions framework (2002) and inspired by Myrthe Montijn's master's thesis: Data-Driven Design for Emotional Engagement - Designing a digital interaction for the Nike Store (2017). Since the framework has been used in another industry, the framework in this project is used for personalization of KLM's onboard portal.

This framework is explained according to the research question in three parts. First, enhancing customer experience correlates to emotion-driven design. Emotions are the foundation to making decisions and are the driving force of creating a closer connection to the customer. To discover the customers' emotions, the Design for Emotions framework or basic model of emotions is used. Additionally, the model projects positive emotions for the target group when using the stimulus, which results in increase usage and attachment to the product. Secondly, personalization refers to gaining a holistic customer view through acquiring consumer data types, such as behavioral and attitudinal data. Thirdly the combination of these two parts make up the design framework, which merges emotion-driven design and data-driven design models together to aid in building an emotional, intimate customer relationship.

The framework aids in the analysis and ideation phases of the project.

Onboard Portal

The project is approached in three phases: analysis, ideation, and concept development.

In the analysis phase, an internal, external, and customer research are performed. The internal analysis acknowledges that the organization is actively pursuing personalization with setting the goal to contextualized experience. However, the infrastructure to do so is not yet accessible as the touchpoints do not share data. Upon reviewing passenger data types, more attitudinal data can be gathered to realize passengers' personal preferences and desires. Additionally, the onboard portal is at the very beginning of personalization level, which indicates the necessity to design for the next level of personalization. In the external analysis, an examination into competitors reveals the importance of including pre and post flight moments into the onboard portal. Also, the relevant trends discovered contribute to the unique selling point of the portal, such incorporating more movement with the UI/UX. For customer research, the defined target group is business frequent flyers. A qualitative research with generative research techniques is conducted on these flyers, which concludes with the emotion, relief, to focus on when designing the portal. From all the analyses, **a design challenge is created to guide the design process: The onboard portal should be an interactive personalized inflight web portal that is connected to other touchpoints throughout the travel journey to enable business, frequent flyers to feel relief for a convenient, smooth travel journey.**

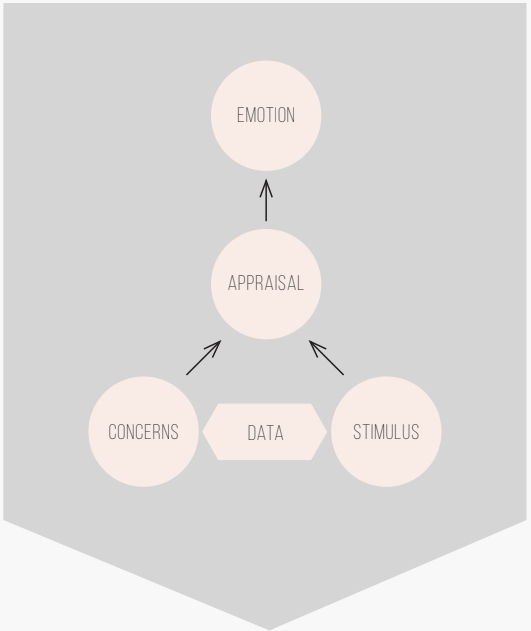
In the ideation phase, personalization is considered for the onboard portal and the entire system, or travel journey. Hence an interaction vision, which identifies how users can interact with the product, and concepts are established for the system and onboard portal. With the evaluation of the concepts, one, 'Your view' onboard portal, is chosen to be further developed.

The last concept development phase, showcases the final 'Your view' onboard portal design. 'Your view' onboard portal is an informative, personalized, active site for business flyers. Your view caters content due to the passenger's data or previous chosen preferences in the system. The portal provides a clear overview of the inflight and post flight environments with features,

such as a personalized inflight schedule, connecting flight information, and destination airport map showing baggage and transportation information. It is connected to other touchpoints for a seamless user interaction.

Conclusion

To conclude the project, a roadmap is produced to show how personalization can be reached. In addition, final recommendations are written for the organization.



GLOSSARY

API
Application Programming Interface. A set of commands, functions, protocols, and objects that programmers can use to create software or interact with an external system. It provides developers with standard commands for performing common operations so they do not have to write the code from scratch. (Christensson, 2016)

IFE
Atands for Inflight Entertainment. This is the backseat screen that contains numerous content, such as movies, shows, music, map of flight status, etc.

OBP
Stands for Onboard Portal. This is the web portal that is used to connect to wifi in the airplane. Once the airplane reaches 10,000 feet, wifi connection is possible. Thus, the onboard portal is only available for the time that the airplane is at 10,000 feet or above.

PNR
Passenger Name Record, consists of the personal information for a passenger and also contains the itinerary for the passenger

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KLM Royal Dutch Airlines

CHAPTER 1

INTRODUCTION

This project is about KLM, personalization, and the Onboard Portal. The report starts of with an introduction to KLM and personalization. Next the assignment is explained with the problem definition and goal of the project. Lastly, the process of the thesis is described in the approach section.

1.1 BACKGROUND

KLM

Profile

"The ocean of air connects us all," dreams Albert Plesman, the founder of the Royal Dutch Airlines, Koninklijke Luchtvaart Maatschappij voor Nederland en Koloniën or KLM (KLM Brand Identity, 2017). Founded on 7 October, 1919, Plesman's dream came true with European and intercontinental flights shortly after. Today, KLM flies about 75,000 passengers everyday. With KLM's home base at Schiphol Airport, the airline contributes to Schiphol's status of being one of the four most important airports in the European Union, which ranks as the third in passenger numbers (KLM in brief, 2017). On top of that, the merge with Air France in 2004 has proliferated the joint airlines into the largest European airline group. Together, Air France KLM carries more than 77 million passengers per year with 573 aircrafts and flies to 243 destinations in 103 countries (KLM.com, 2015).

Strategy

KLM's vision is to become the most customer centric, innovative and efficient European network carrier. With this, KLM wants to be customers' first choice by focusing on the customer intimacy value discipline. This value discipline is a part of the value discipline model with two other disciplines, product leadership and operational excellence, introduced by Michael Treacy and Fred Wiersema (Figure 1: KLM strategy). Treacy and Wiersema states that by focusing on one of the three disciplines while meeting industry standards in the other two, companies are able to deliver superior customer value (Treacy and Wiersema, 1993). Not only do companies know what to do for their customers, they also align their complete operating model to the chosen value discipline.

For operational excellence, companies operate on decent products and services at competitive prices. Practicality, ease of use, and optimization are the focal point for customers. Airlines, such as EasyJet and Ryanair fit into this discipline. Both of these airlines offer basic flight services and lower ticket prices than their competitors. They target tight budget flyers, who just want to fly to their destinations quickly. This means that the airlines maximizes their aircraft volume capacity with more seats and less luggage space.

On the other hand, product leadership excels in providing customers with innovative, cutting edge products and services. These companies have to be extraordinarily creative, quick in commercializing their ideas, and continuously solving problems in new ways. They challenge themselves to consistently be the best in class. Airlines, such as Emirates, British Airways, Singapore airlines, fall into this category. All of these airlines present high quality services and products, such as well-designed cabins and flight attendants carrying the passengers' bags to their seats. Unlike the budget airlines, these influential airlines care about being the product leader rather than profit.

Lastly, customer intimacy means segmenting and targeting markets precisely and then tailoring offerings to match exactly the demands of those niches; these companies combine detailed customer knowledge with operational flexibility so they can respond quickly to almost any need, from customizing a product to fulfilling special requests (Treacy and Wiersema, 1993). They value customer loyalty over any costs for the long run. This is how KLM differentiates from other airlines. KLM focuses on the individual behind the customer, because KLM understands that every customer is different (KLM, 2015). Every action from marketing campaigns to digital touchpoints that KLM does involves catering to customer's needs and desires. Not only are customers deeply valued, the airline has also centralized this intimate relationship with employees. Thus empowering employees to service passengers in more meaningful and touching ways.

Figure 1 KLM strategy

PERSONALIZATION

A key strategy to customer centric enterprises is personalization. Customer centric enterprises applies the capabilities to detect customer's needs to proactively satisfy them, and to strategically position the enterprise capabilities around the customers' future requirements (Tseng, M. M., and Piller, F. T., 2003). Such capabilities refer to personalization, which is based on the knowledge of customer needs. From a customer point of view, this knowledge, such as customers' preferences and behavior, personalization has the ability to provide content and services tailored to individuals (Hagen, P., 1999 as cited in Adomavicius, G. and Tuzhilin, A., 2005, p. 83). In this way, customers continually are drawn to using these streamlined products or services. From an organization point of view, obtaining this knowledge may involve various ways, such as explicit customer information from call centers or direct interviews, or implicit data collection through a software system. The latter method means that the system learns and adapts to the users. The following section reveals what is needed to manage this system in order for customers to experience personalization.

Personalization with the use of data

Integrating personalization into the organization not only requires gathering a vast amount of data (i.e. big data), but also analyzing the data (i.e. big data analytics). Big data, defined by IBM, is a term applied to data sets whose size or type is beyond the ability of traditional relational databases to capture, manage, and process the data with low-latency; it has one or more of the following characteristics: high volume, high velocity, or high variety (IBM). It comes in different sizes and from a multitude of sources, such as web, social media, video, sensors, devices, etc. Examining these diverse data sets in advanced systems and software is referred to as big data analytics. Through big data analytics, patterns, trends, customer preferences, and other crucial information may be discovered. Businesses are able to make better and faster decisions.

Organizations are eager to benefit from big data to deliver personalized experiences for their customers. Big data offers the opportunity for interactions to be based on the personality of the customer, by understanding their attitudes and taking into account factors such as real-time location to help deliver personalization in a multi-channel service environment (Kelly, 2015). Connecting customer data to the right content with real time reaction enables the customer to feel individually valued. Jamie Turner, chief technology officer at address management firm Postcode Anywhere, believes personalised customer service is essential for survival in the digital economy (Kelly, 2015).

Personalization impact

From the consumer perspective, personalization enhances customers' lives and increases engagement and loyalty by delivering messages that are tuned to and even anticipate what customers really want (Gregg, Kalaoui, Maynes, and Schuler, 2016). Here are some figures on personalization results:
86% of consumers say personalization plays a role in their purchasing decisions (Infosys, 2013)
73% of consumers prefer to do business with brands that use personal information to make their shopping experiences more relevant (Nasri, 2012)
45% of online shoppers are more likely to shop on a site that offers personalized recommendations (Saleh)
40% of consumers buy more from retailers who personalize the shopping experience across channels (Mummert, 2013))

From the business perspective, brands that create personalized experiences by integrating advanced digital technologies and proprietary data for customers are seeing revenue increase by 6% to 10%, two to three times faster than those that don't (Abraham et al., 2017). Additionally, personalization can deliver five to eight times the ROI on marketing spend, and can lift sales by 10% or more (Ariker, Heller, Diaz, and Perry, 2015).

Personalization in the airline industry

While digital native companies are the first to adopt personalization, other sectors are much slower. According to a Mckinsey report, digital native companies are built for data and analytics–based disruption from their inception; it is easier to design new IT systems and business processes from scratch than to modify or overhaul legacy systems (Henke et al., 2016). These analytics leaders, such as Alibaba Group and Amazon, have the investment in data infrastructure and abundance of top analytics talent.

On the other hand, personalization in the airline industry faces more difficulties. The challenge is that airlines are not digitally ready. Sixty percent of airline managers say that there are neither processes implemented across functions, organizational structures in place nor the deep analytical skills needed to support big data projects (Boxever, 2014). Furthermore, obtaining the full 360 profile data of the customer may not be realistic for many airlines because most passengers are infrequent flyers. According to an Accenture analysis of customer data from a large network carrier, almost half of its frequent flyer program members appear to be one-time fliers, or made less than one transaction in a three- year period (Accenture, 2016). But even if the customer's full 360 profile data is not met based on low flying frequency, data can be retrieved throughout the travel journey in multiple touchpoints. Oscar Munoz, chief executive of United Continental Holdings Inc., said, "We have enough data about who you are, where you fly, and more importantly, over the last period of time when we've delayed you, canceled you, made you change your seat, spilled coffee on you—we have the points of failure and the points of success" (Bachman, 2017). Additionally, Boxever and Airline Information research on "Big Data in the Travel Industry", discovered that airlines perceive that big data was

well implemented in revenue management (21.9% of respondents), customer loyalty (20.2%) and marketing promotions (18.7%); all this data has been generated for numerous years and analytics as used as well (2014).

Traditionally all this data has been segregated in various IT systems, but now many airlines are gradually funneling it into a customer service strategy - with flight attendants becoming the face of hyper-personalized service (Bachman, 2017). Airlines that are fully engaged in the digital transformation, not only strategize for their technologies and business resources, but also tackle the culture shifts. This results in a conjoint, innovative airline where digital strategy and airline strategy merge as one.

On the flipside of acquiring data and not utilizing it properly contributes to negative impacts of impersonal communications. 55% of consumers said three out of four travel offers they receive are irrelevant to their needs and preferences (Boxever and Airline Information, 2014). Because of impersonal messages:

23% indicated they would delete that company's mobile app

28% are less likely to visit that company's website

40% are less likely to buy from that company moving forward

50% are less likely to open the next offer that comes from that company

59% said they would unsubscribe from that company's content

1.2 ASSIGNMENT

ONBOARD PORTAL

This project is initiated by KLM's digital department for the Onboard Portal (OBP) to improve customer's inflight experience. The OBP is the web portal on the connected aircraft, where passengers have access to the internet and KLM's applications via their personal devices, such as mobile and laptop. Currently on the OBP site (onboard.klm.com), not only are passengers able to connect to the wifi, passengers are able to view basic information: a flight guide that provides information about their flight, the aircraft details, cabin crew demographics, suggested exercises while flying, and destination content.

Context

Because wifi is currently equipped and increasingly being installed on aircrafts for long-haul distances, the context of this project is based on long-haul flights. The current aircrafts with wifi availability are nine Boeing 787 Dreamliners and one Boeing 777-300 aircraft. Short-haul flights are not yet included in the strategy of wifi connection.

Timing

Since the OBP is relatively new because wifi exists in only ten aircrafts, it is imperative to design for the next or upcoming development rather than the distant future. Additionally, increasingly more aircrafts will be equipped with wifi technology in the coming year; thus developing a strategy for the OBP now sets the foundation for further progress.

PROBLEM

Even though KLM is strategically invested in customer intimacy and large amounts of data may exist about passengers, the current OBP does not recognize passengers individually through the frontend user interactions and utilize passenger data properly through backend developments.

First off, the contents and offerings on the portal are for everyone, where everyone is able to view and receive the same general information and services. This means that passengers have to browse through all the content, but not all the content and offerings suit everyone's preferences. Also, an initial presence of personalization exists with using the flight itinerary data to show passengers flight destination articles. But passengers still view generic destination information for everyone flying to the same destination point. This indicates that the current contents and offerings are not tailored to passengers individually. Thus passengers' individual data profiles are not considered and utilized. Since the OBP does not acknowledge who passengers are, the needs and desires of passengers are not best met.

Secondly, the portal does not enable intimate customer relationships with the brand. As stated before, customer intimacy companies directly cater to customers by matching customer knowledge or customer data with operations, including services and products. In the OBP case, only a one-way transfer of information exist on the platforms, meaning that passengers can view content and offerings. But there is no feedback based on the passengers' actions and profiles from the portal. Passengers cannot communicate back to the portal their needs.

In conclusion, the problem statement is:
KLM's current Onboard Portal does not optimize customer intimacy and passenger data to recognize passengers individually and achieve personalization. With the impersonal offerings and communications due to the disconnection of customer data on the OBP, customer experience may be jeopardized. Customers cannot engage in a dynamic connection to the portal. Thus, the customer experience for the OBP needs to be enhanced using personalization.

Goal

The aim of this thesis is to use a framework, derived from another research, towards personalization possibilities for the onboard portal in enhancing the passenger experience. Though the framework was used in another industry, using the framework for this project proves how viable it is. The framework supports the **research question: How to enhance customer experience using personalization for the onboard portal?**

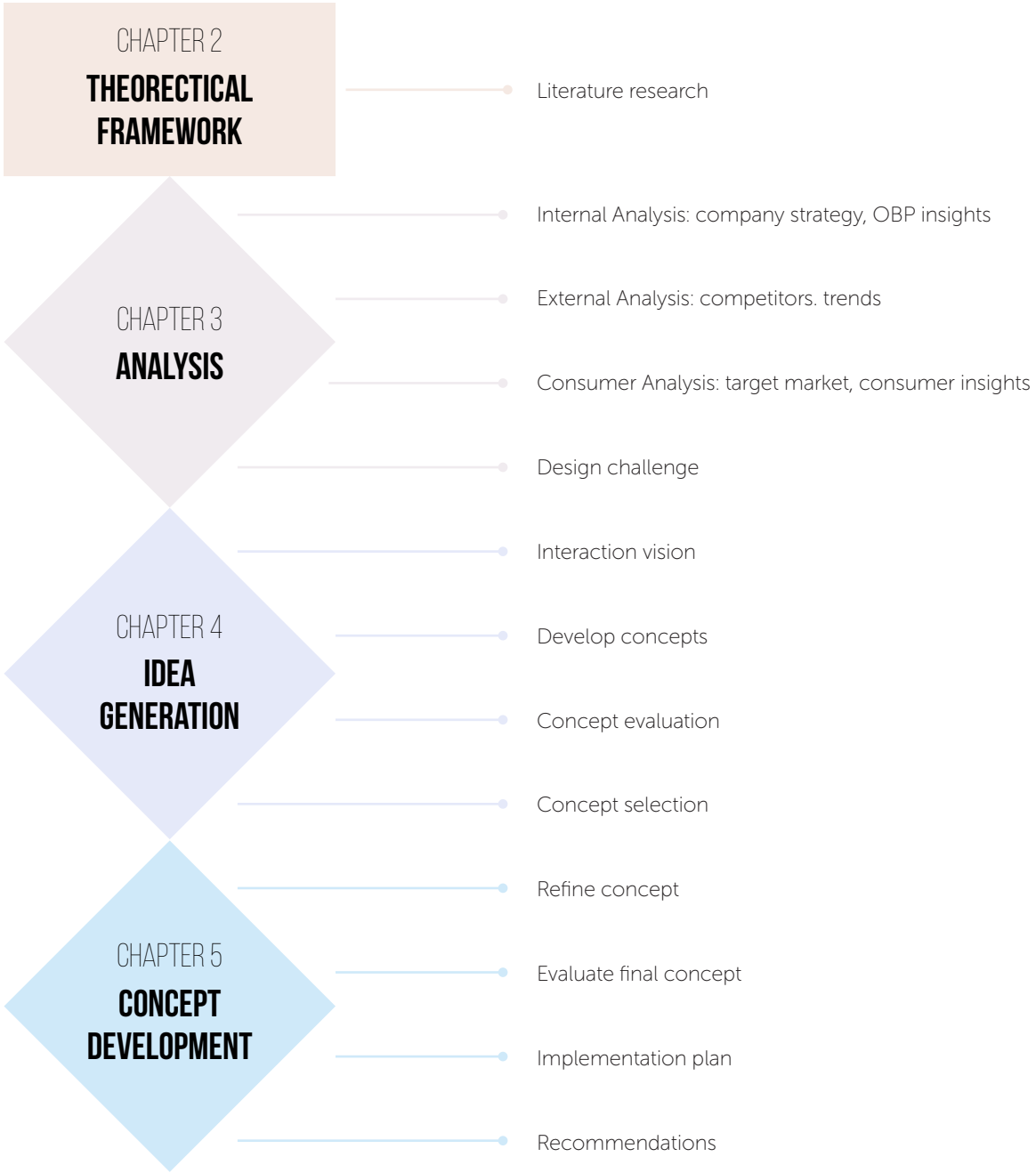


Figure 2 Process

1.3 APPROACH

The project starts off with a theoretical framework followed by three phases: Analysis, Ideation, and Concept development. See figure 2: Process. The theoretical framework sets up the tone for the rest of the phases; it determines what needs to researched and what needs to be included while designing. For the diamond shaped phases, inspired by the Three Diamonds Condensed CPS model by Jan Buijs and Marc Tassoul (2007), a convergent and divergent process occurs within each one. Each phase starts off with an objective, then diverges into multiple explorative areas and in the end converges with a conclusion for the next phase. Although the phases are shown in a pragmatic order, each phase is not solely performed chronologically. The entire process is rather iterative with constant back and forth movement between the phases. As seen in the Process diagram, the chapters of the report correspond to each phase.

Theoretical framework

The framework was inspired by Myrthe Montijn's theoretical framework in her thesis: Data-Driven Design for Emotional Engagement - Designing a digital interaction for the Nike Store (2017), who is also influenced by Pieter Desmet's, a professor of Industrial Design Engineering at Delft University of Technology, emotions framework: 'basic model of product emotions' (2002). Since the framework has been used in another industry, the framework in this project is used for personalization of KLM's onboard portal. The framework aids in the analysis phase by subdividing the research question into three parts. Each part explains the emotional and data-driven models influence upon the project.

Analysis

This phase consists of internal, external, and customer analyses. Internal analysis starts off with looking at the company's perspective on personalization, current capabilities, and products and services available. Following this is the external analysis with explorations into relevant competitors and trends. Then the customer analysis dives into a qualitative research with a specific target group: business, frequent flyers. To sum up all of these findings, a the design challenge statement is formulated with 'how to' phrases. This statement is a guide for the design process in the next ideation phase. Additionally, this Analysis chapter sections concludes with design directions that act as design guidelines for the ideation phase.

Ideation

After gathering all necessary research, the ideation phase kicks off with an interaction vision that serves as a design guide for designing concepts; it acts like a metaphor for how users can interact with the product or service. Once concepts are developed, they are evaluated with internal stakeholders and the interaction vision qualities. This phase concludes with choosing a OBP concept to be further developed.

Concept development

In the final phase, the chosen OBP concept is refined in a digital prototype. Then evaluation and feedback sessions with internal stakeholders and passengers are held. The evaluation points out improvements that can be made and whether passengers value the product. To successfully implement the personalized OBP concept, a roadmap with progression towards the goal of personalization is created. In conclusion of this project, recommendations are given for the organization.

CHAPTER 2

THEORETICAL FRAMEWORK

This chapter introduces a theoretical framework, which is fundamentally derived from Pieter Desmet's Design for Emotions framework or 'basic model of product emotions' (2002) and inspired by Myrthe Montijn's master's thesis: Data-Driven Design for Emotional Engagement - Designing a digital interaction for the Nike Store (2017). The framework in this project is used for personalization of KLM's onboard portal. To understand the framework in the context of this project, the following questions are formulated and explained in the next sections:

- How to enhance customer experience?
- How to enhance customer experience using personalization?
- How to enhance customer experience using personalization in the Onboard Portal?

2.1 CUSTOMER EXPERIENCE

HOW TO ENHANCE CUSTOMER EXPERIENCE?

CUSTOMER INTIMATE RELATIONSHIP

A customer intimacy strategy entails an intimate relationship with each customer (Weinman, 2015). Companies are focused on meeting customers needs rather than market needs. In order to understand what customers want and know how they want to be served, companies perform quantitative customer research or data analytics to uncover patterns about customers behaviors. However, 80 percent of companies say they deliver superior customer service, and yet only 8 percent of people think these companies deliver superior customer service (James, Reichheld, Hamilton, Markey, 2005). This is because knowing the quantitative customer behavioral results does not reveal the reasons behind behaviors and decisions.Thus, discovering the cause of customer's behavior reveals their emotions. Emotions operate as a basic mechanism for making decisions; Making sense of the mechanisms behind the finest human achievements - high reason, ethics, law, and artistic, scientific and technological creativity - cannot proceed without an understanding of emotion (Damasio, 2006). Every decision that customers make involves emotions as the driving force. Without emotions, making decisions on logic alone may be difficult for some people. Emotional response, identified with unconscious memory, is produced faster than the cognitive one (Smart Insights. 2017). This means that emotions are influential in decision making and cannot be ignored. Charles Darwin states that emotions are functional for the survival of the species and the individual; This function is adaptive: when an individual is engaged in some behavioral action, an emotion will overrule this action with another action is this action ensures the safety of this individual (Desmet, 2002).

Hence emotions play a prominent role in the products that customers interact with. If negative emotions are felt when using a certain product, customers will most likely not use that product again. But if positive emotions are experienced, customers may interact with the product longer and be more attached. Thus companies that understand customers emotionally can project greater returns on product use and loyalty.

DESIGNING FOR EMOTION

"The emotions of product consumers and users are too important to be ignored in design processes; the ability to design products with a positive emotional impact is of great relevance to the discipline of design," states Pieter Desmet and Hendrik Schifferstein, who are professors of Design for Experience and Design aesthetics under the faculty of Industrial Design Engineering at Delft University of Technology (2012).

In order to understand emotions, one must understand how people make judgments about the world (Desmet, 2002). These judgements or appraisals elicit emotions. Without appraisal there can be no emotion, for all emotions are initiated by an individual's appraisal of his or her circumstances (Desmet, 2002). This is known as appraisal theory. Pieter Desmet has rendered the theory into a 'basic model of product emotions' to evoke emotions from the user when going through an experience or using a product. As seen in figure 3, his model has three variables:

Appraisal

An appraisal is a non-intellectual, automatic evaluation of the significance of a stimulus for one's personal well-being; it is this personal significance of a product, rather than the product itself, which causes the

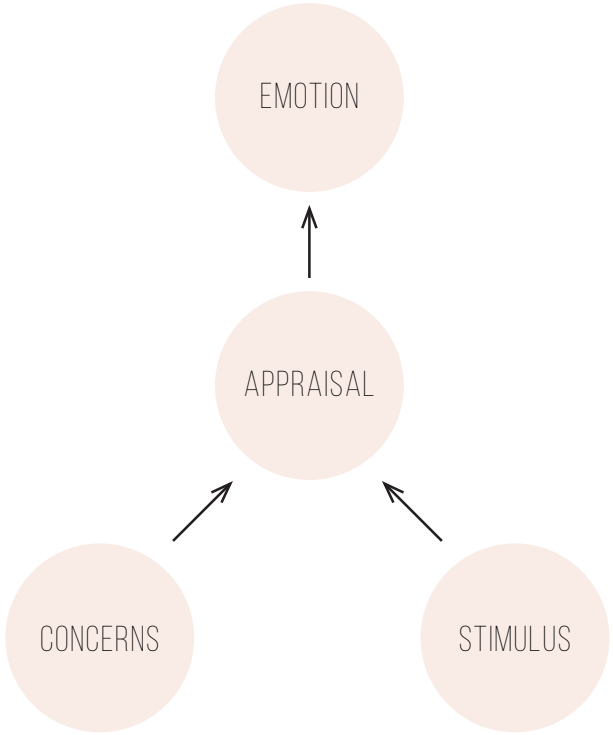


Figure 3 Basic model of emotions

emotion (Desmet, 2002). Since it is between the emotion and stimulus, different people evaluating the same product or stimulus experience different emotions.

Concern

Concerns can be regarded as points of reference in the appraisal process; the significance of a stimulus for our wellbeing is determined by an appraised concern match or mismatch (Desmet, 2002).
Desmet matches concern types to appraisal types: goals with motive compliance, standards with legitimacy, attitudes with appealingness, knowledge with novelty.

Stimulus

A stimulus can refer to a product, event, or experience. Events that are appraised as facilitating goal attainment elicit positive emotions, such as satisfaction and happiness, whereas those that are appraised as frustrating goal attainment evoke negative emotions, such as frustration and anger (Desmet and Hekkert, 2007). Thus people, who use a product more, probably experience positive emotions versus people, who use a product less, probably experience negative emotions.

In this project, the model will be used to understand emotions of the target group in the current travel experience. Then the practice of emotion-driven design takes place: the activity of designing products and services with the deliberate intention to evoke predefined target emotions (Desmet, Fokkinga, Ozkaramanli, Yoon, 2016). These targeted emotions will support the design challenge, which states the intended emotional response of the users for the new product development. The aim is to introduce the positive emotions to the users in response to the newly developed product or stimulus.

Key Insights

- When performing customer research, must delve into concerns and emotions that people feel and experience.
- Concept development phase: should evaluate the final concept with the the intended emotion for the target group

2.2 PERSONALIZATION

HOW TO ENHANCE CUSTOMER EXPERIENCE USING PERSONALIZATION?

CONSUMER DATA

Today's digital universe contains 2.7 zettabytes (2.7 x 1021 bytes) of data, and expect to grow to 35 zettabytes by 2020 (Chen et al., 2014). With the increasing, enormous amounts of complex data gathered, or big data, finding and structuring the data that is relevant presents challenges. An individual's data is scattered in multiple platforms, systems, and channels, and is presented in different formats. Without configuring and evaluating all the data in suitable methods, understanding the customer individually would be inconceivable. Thus, to gain a holistic view of the customer, a 360-degree view of the customer is able to capture all necessary and meaningful data from channels and systems. The 360 degree view helps answers: Who and where the customer is, what the customer has done, what the customer is interested in, and who the customer knows. See Figure 4: 360 degree view of the customer.

The 360 degree view of the customer consists of five types of data:

Contextual data: location, time
Descriptive data: demographics, name
Interactive data: interactions, dialogues
Behavioral data: search history, orders, usage history
Attitudinal data: opinions, preferences, needs, desires

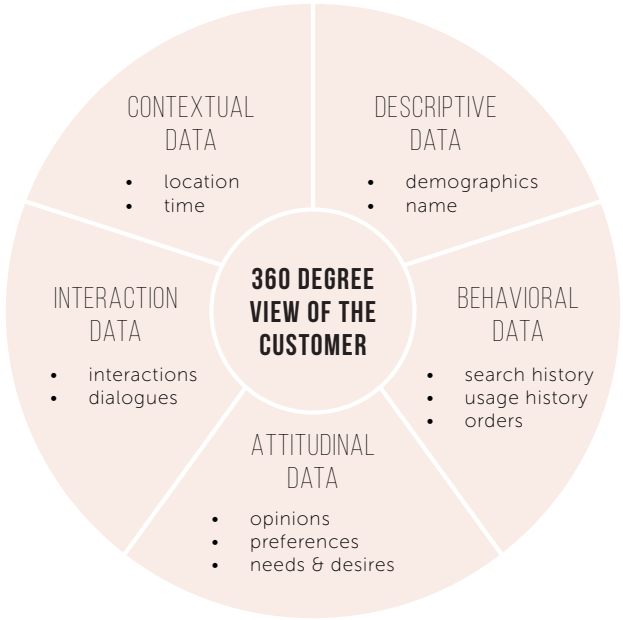


Figure 4 360 degree view of the customer

(The data categories is generated from multiple sources: IBM, 2014; Clouder, 2016; Chuck Schaeffer, 2017. Can be seen in the Appendix A.)

The 360 degree view reveals customers' insights into how to cater to, upsell and retain customers. It allows for the delivery of personalized and contextual, engaging experiences. At the same time, it indicates what aspects of the customer profile is missing and needs more attention. In addition, it facilitates predictive analytics. Once data is collected, a stream of predictions are calculated, such as what the customer may like or be interested in purchasing.

PERSONALIZATION LEVELS

Evaluating customer data is not the only solution to personalization. Organizations also must have a personalization strategy with a goal in mind and milestones to accomplish throughout. An approach to viewing personalization at four ascending stages is from Boxever, a Data Science company with a Customer Intelligence Cloud for Travel. See figure 5: Personalization maturity curve. On the X axis is 'capability', which may refer to business or technological capabilities. On the Y axis is 'customer value', which is the effect of the capability.

The first stage, 'mass merchandising', is when a few customer segments with a large amount of people in each segment exist. Simple variables are acknowledged, such as language, product categories, and region or country. Typical outbound communications occur, such as announcing a new product release. This stage also includes no real optimization capabilities on a website for instance.

The second stage, 'macro segmentation', has the goal of knowing who the customer is. About twenty segments exist based on lifestyle and RFM (recency frequency monetary): how recent did the customer purchase, how often does the customer purchase, and how much did the customer spend? Marketing consists of email campaigns and basic web optimization or personalization.

Third stage, 'micro segmentation', is constructed with approximately two hundred segments. Here, context and propensity scores are applied, such as purchase and specific product propensisities. Identity resolution for those who have logged in and offline data to understand purchase history is activated. Also, content and offers are adjusted in near real-time based on look alike behaviors of the targeted segments. One example of this stage is Pepsi rewarding customers, who use fitness apps, such as MapMyRun and Nexercise, with a surprise bottle of Propel Fitness Water when they run a certain distance. As soon as the app records the required mileage, Pepsi sends the free of charge drink straight to the user's registered address (Cornick, 2017).

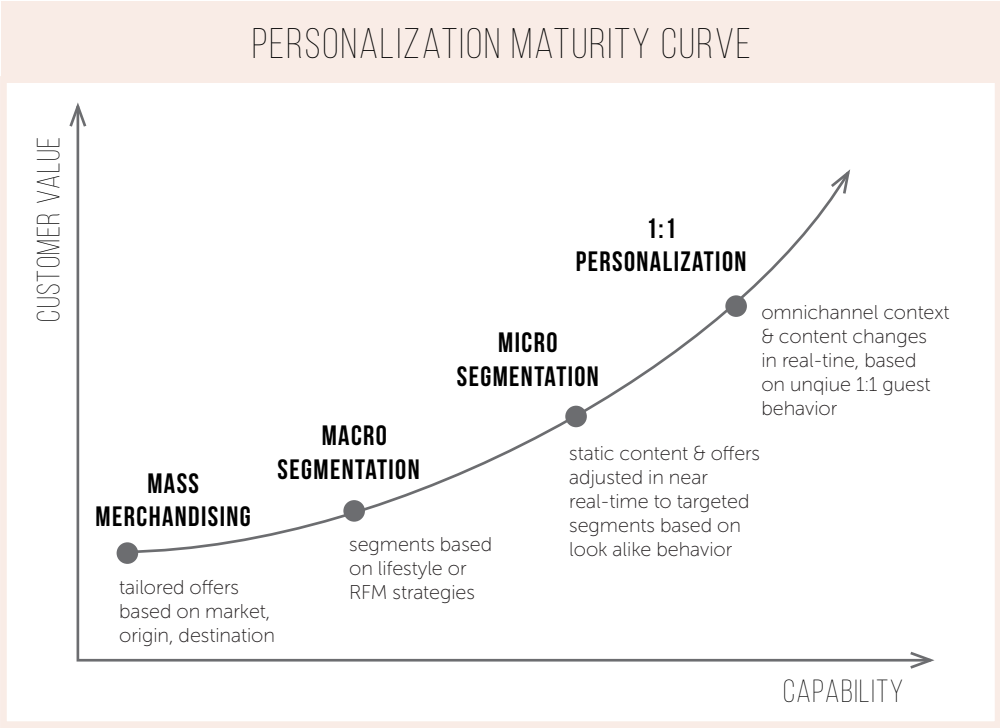


Figure 5 Personalization maturity curve

Lastly, '1:1 personalization' is micro segmentation done exceptionally well. The goal is to give the perception that the customer is being treated in a personal way. Two measurable traits are omni-channel and real-time capabilities. Omni-channel, rather than multichannel, means consistent experience on all channels. For example, the same personalized content is available on various devices. Real time means extremely fast responses for the on-going connected experience on multiple channels. An example of 1:1 personalization comes from Walt Disney's Orlando resort, where visitors use MagicBands to reserve rides, unlock hotel rooms, and make purchases; guests at Disney's new Shanghai resort can do the same things with their smartphones (Abraham et al., 2017).

Key Insights

- Use the 360 degree view of the customer to evaluate data that KLM currently has
- Use the personalization curve to evaluate analysis topics, such as where KLM and the OBP is placed currently

2.3 CONCLUSION

HOW TO ENHANCE CUSTOMER EXPERIENCE USING PERSONALIZATION IN THE OBP?

DESIGN FRAMEWORK

The previous insights from enhancing customer experience and personalization are conjugated into developing a design framework (Figure 6). In other words, this design framework marries emotion-driven design and data-driven design models together to aid in building an emotional, intimate customer relationship. With the foundation of the framework as Desmet's basic model of emotions, emotions are the driving force of creating a closer connection and comprehension of the customer. The basic model of emotions projects positive emotions for the target group when using the stimulus, which results in increase usage and attachment to the product. Adding onto the basic model of emotions is applying personal data in creating more personalized experiences. The personal data, which is made up of the 360 degree view of the customer, is placed in between customers' concerns and the stimulus. This is because personal data moves back and forth between the two. It influences and aids in determining customers' concerns, when customers are using the stimulus. When reviewing the stimulus, patterns in personal data are discovered and acknowledged, which then outputs specific customer concerns. Also, when a set of concerns are focused upon, relevant personal data is reflected back into the stimulus - telling the stimulus what to do to address those concerns. This means that these concerns identify which personalized offerings are to be projected into the stimulus. If the concerns change according to the real-time personal data, then the stimulus must also adapt to meet those concerns.

In retrospect, the personal data supports the emotional connection with the customer. Since personal data tells who the customer is, what the customer has done, what the customer wants, where and when the customer has interacted with the stimulus, and how the customer uses or interacts with the stimulus, the personal data provides a supportive evidence or better understanding to the customers' concerns and stimulus, which then makes a more accurate, reliable, and stronger basis for the intended emotion. This intended emotion is resonated in the stimulus to contribute to a positive impact for the customer.

The design framework is used in this project to aid in distinguishing the design challenge. Each section in the analysis phase uses the framework from analysing the current data and personalization status to discovering emotions of the target group. With the stimulus being the Onboard Portal, the intended emotional response and the concerns to be focused on are revealed in the customer analysis section. Also, the proposed appraisals are developed through the interaction vision for the OBP. Once the design challenge is defined, ideations for the OBP are created. From here a final OBP concept is developed, in which the target group evaluates if the intended emotion is achieved.

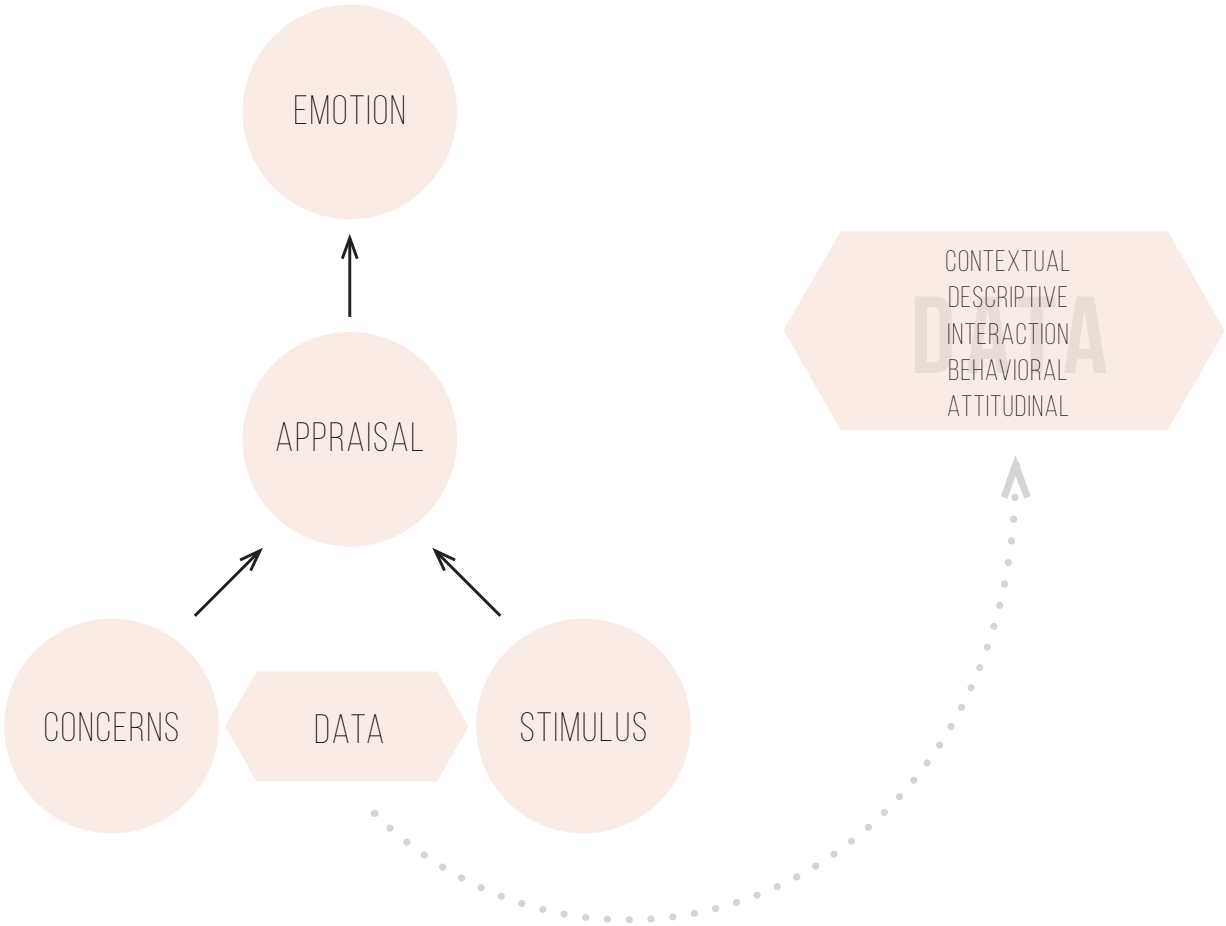


Figure 6 Design Framework


KLM

CHAPTER 3

ANALYSIS

The analysis phase consists of internal, external, and customer analyses, which reveals findings to formulate the design challenge. The internal analysis is performed in order to discover what is the current personalization status of the organization. Then, external analysis investigates airline competitors and relevant trends to uncover differentiating aspects for the OBP. Thirdly, the customer analysis includes in depth qualitative interviews with the target group to reveal passengers' concerns and emotions. Concluding the analysis phase is a design challenge statement that drives the design process.

3.1 INTERNAL ANALYSIS

The internal analysis encompasses how personalization is perceived within the organization. This involves an investigation into KLM's current personalization status and goal, and an evaluation of passenger data. Also, an overview of services and products and an examination of the OBP is included.

PERSONALIZATION AT KLM

Views on personalization

With the aim for customer intimacy, KLM created a guide, KLM Compass, to serve as a tool for showing how the organization culture should be shaped and how employees should treat customers. (Figure 7 KLM Compass) One of the main points in the compass shows that the desired customer experience is for customers to feel recognized, easy to deal with, comfortable, and touched. By the staff eagerly reaching out to customers, customers know that KLM cares for them.

True to the compass, KLM employees also adopt this mentality into personalization perspectives. A UX Manager, Wilbert Baan, states personalization means that the passenger is recognized not only in one area, but throughout all the touchpoints, so that they do not have to login again or be asked the same questions again. This means that being recognized for customers is consistent in all areas of the travel journey. When the passenger performs a task on the website, all service agents should recognize this task. A Product Strategy Manager, Charles Hageman, says, "personalization means that I am approached by a company or the company is communicating with me; they know me.. what's relevant to me. Same as for KLM's perspective: that we know our customer, give relevant info, offers and services, we are actively available rather than pushing information."

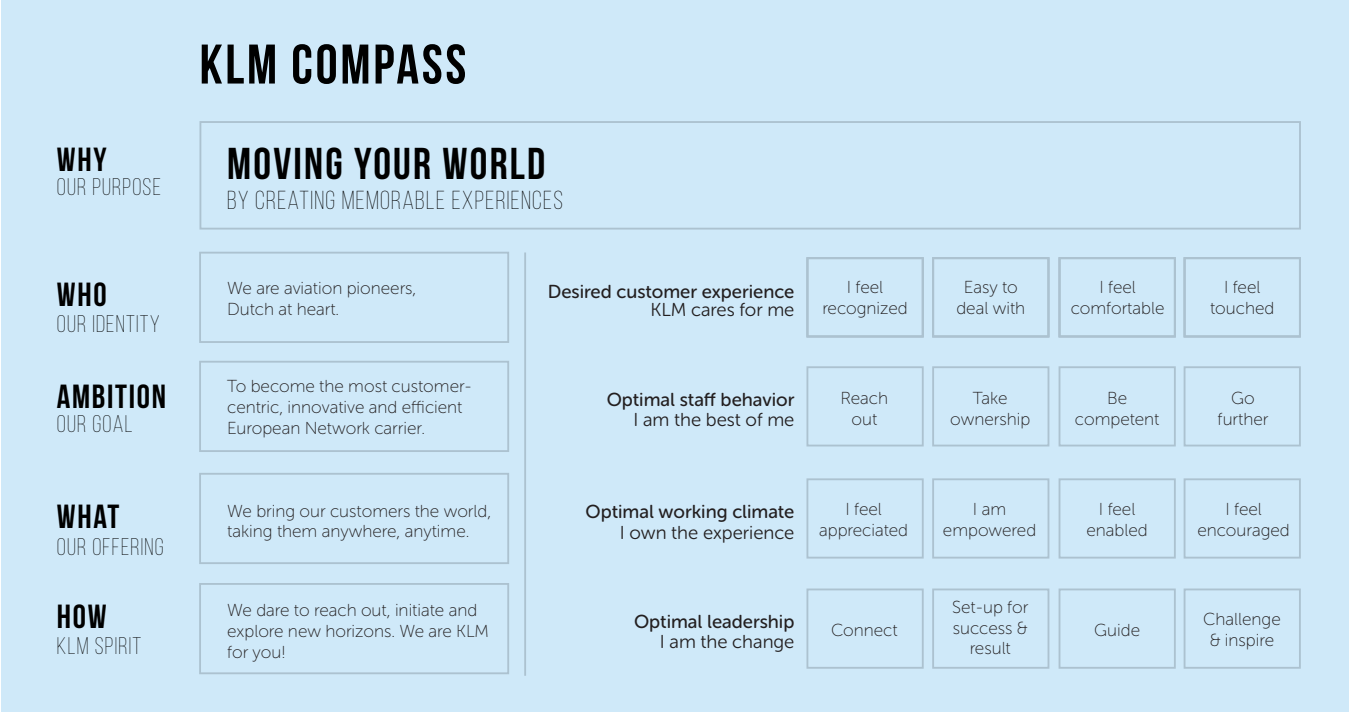


Figure 7 KLM Compass

Personalization Status and Goal

Personalization is an investment that KLM is actively achieving. One example towards more personalized services is the MyFlight app for flight attendants, where they are equipped with tablets to view passengers' data. This data is gathered from Flying Blue accounts and social media. Flight attendants are able to view passengers' status, for example if the passenger has special needs or has gone through an earlier disruption. Flight attendants may also strike up conversations with passengers and provide additional information. Furthermore, passengers may purchase products or upgrades through the tablet. Through this app, flight attendants are able to provide individual, unique services that shows their sincere and caring gestures.

In the development side, the Customer Data Management (CDM) team is intensely pursuing personalization since it's fruition in 2015. The CDM lead manager, Cosmando Byarugaba, states that their ambition for 2017 and 2018 is to enable personalization in every customer interaction in all touchpoints. The team tackles personalization with four main ambition points:
1 Know and recognize more customers
2 Know more about customers
3 Expose data to customer touchpoints
4 Be accurate with customer data

In first point of knowing and recognizing more customers, passengers are known and recognized via their PNR (passenger name record); The PNR refers to the passenger identification account, which holds personal information and the travel itinerary. This then enables the possibility of knowing more about the customer. This second point encompasses the big data platform, which captures real time data from all platforms; Types of data sets include Flying Blue status and activities, bookings, flight irregularity data, departure control data, call center notes, and social media cases. All this data is organized into various categories, which then outputs customers' 360 view.

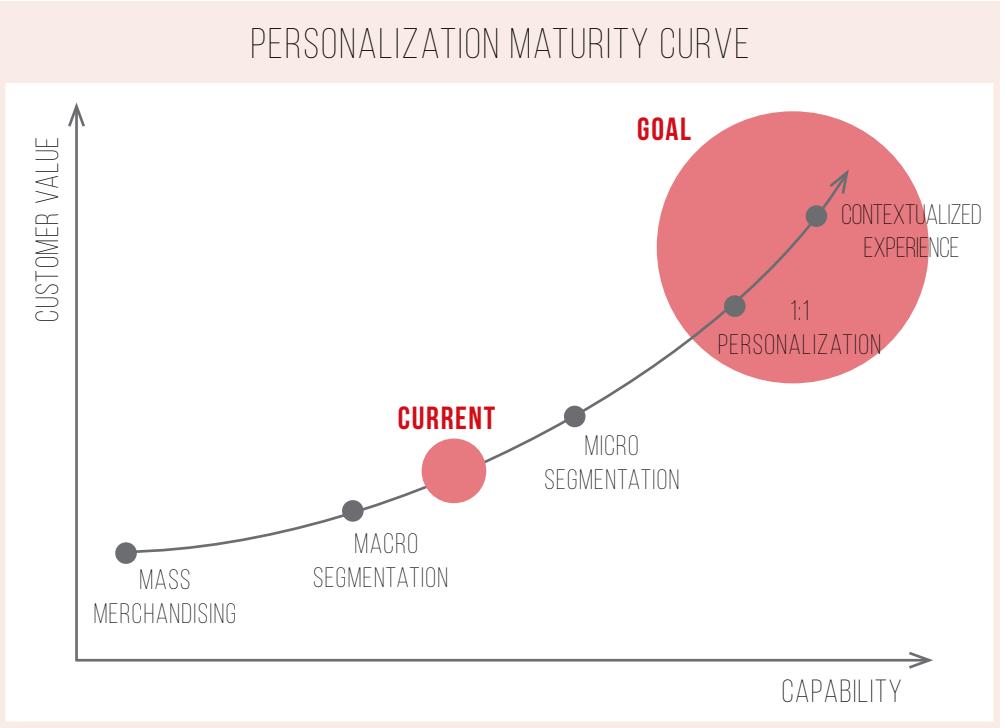


Figure 8 KLM current personalization status and goal

Then, all this data needs to be exposed to customer touchpoints via APIs (application programming interface or a software library), so that marketers and designers are able to understand what customers want to create personalized experiences. Lastly, be accurate with customer data means to perform continuous data quality checks and to be updated with the new European data protection laws.

In each ambition point, the CDM team is eagerly reaching maximum potential. For instance in 2017, fifty percent of the customer based was recognized through PNR and in 2018, the goal is to increase customer recognition to sixty percent during booking to first time bookers, bookers who did not login and have a Flying Blue account, and customers who book through social media platforms. Additionally for knowing about abou customers, the aim for 2018 is further enrichment of the customer 360 view with more data feeds from feedbacks, surveys, reviews, and third party data (Byarugaba, 2018).

All these ambition points in acquiring customer data, reveal that KLM is at the second stage of the personalization maturity curve, as pointed out in figure 8. The current data gathered, for example consists of passenger's flight purchase history, which entails knowing where the passenger has flown, which airports the passenger regularly flies to, and how often the passenger flies due to miles accumulated.

Thus, the individual product propensities or purchase propensities are already known. However, two aspects are not yet resolved: customer segmentation and personalized offerings. Although Flying Blue accounts are segmented into obtained miles, traveler personas are not yet defined thoroughly and used widely within the organization. A few persona profiles were developed in the past from the Customer Insights team, but these travel personas are not yet conjoined with the big data gathered. Since customer segments are not formulated and utilized, personalized offers are not yet available to passengers. As mentioned before individual product propensities are already gathered; But when offering products or services to the passenger, these various offerings have to be programmed to match and sent to the right passenger groups. Plus when exposing the vast amount of data to customer touchpoints, such as to the website development team, the product design teams do not know what to do with the data because it is not yet analyzed according to the customer segments. This results in the inability to provide passengers with personalized offerings and moving further along the personalization maturity curve.

Even with the current effort in personalization goals, the CDM's ultimate ambition is to evolve from personalization to contextualization. See Figure 8 for the contextualization goal after 1:1 personalization. Contextualization goes beyond the levels of personalization. "Contextualization is the ability to deliver smarter, more-customer-centric interactions that feel like they were tailored for each user and his or her specific set of circumstances. It must be more dynamic and more predictive than current personalization techniques" (Byarugaba, 2017 as cited in Forrester). Contextualization not only involves knowing users, it also recognizes user's current context. This means that surrounding contextual data - to recognize the where and what - is gathered in real time. This includes: time, date, special events like holidays, the weather, the current season, geolocalization, the devices being used, the state of the body, recent digital footprints (where you went, what you said, what you clicked on, search history, likes). All this data can predict users' actions, thoughts, and needs to deliver the right content at the right time. Since there are so many variables in the travel experience, contextualization corresponds well with airline products and services. Hence, keeping in mind the possibilities of contextual data when designing may be eye-opening.

Data of passengers

Although there are numerous amounts data sets gathered in the big data platform, an evaluation of passenger data is performed across touchpoints according to the customer 360 view data types. This is to determine what data is being used in the touchpoints and useful for the onboard portal.

As seen in figure 9, the KLM app and website recognizes basic flight preferences of the passenger, such as the usual departure airport, travel class, and meal type. In Facebook and Twitter platforms, direct and instant conversation occurs to book flights. Also, users may express their interests in destination information with emojis. Overall, the fundamental data types are captured, such as Flying Blue accounts, current and past flight bookings. Although a few preferences and interests are captured, more attitudinal data can be realised with personal preferences, needs, and desires throughout various aspects of the travel journey.

Design direction

- Should recognize passengers throughout the travel journey
- Should keep in mind the personalization goal of 1:1 personalization / contextualized experience
- Should include more attitudinal data: personal preferences, needs, and desires in designs

		KLM APP / WEBSITE	FACEBOOK / TWITTER	COUNTER / CALL CENTER	OBP
PASSENGER DATA	**ATTITUDINAL**	• flight preferences: usual departure airport, usual arrival airport, travel class, preferred meal type	• destination interests from emoji service		
	BEHAVIORAL	• browsing history • booking history	• booking history	• booking history	
	INTERACTION		• interactions with facebook messenger chat for booking flights, customer complaints, destination info	• complaints: disruptions, lost luggage	
	DESCRIPTIVE	• Flying Blue account • passenger identity	• Flying Blue account • passenger identity	• Flying Blue account • passenger identity	• Flying Blue account
	CONTEXTUAL	• time and location according to current & past flights • time of check-in	• time and location according to current & past flights • time of check-in	• time and location according to current & past flights • time of check-in	• time and location according to current flights

Figure 9 KLM passenger data

SERVICES AND PRODUCTS

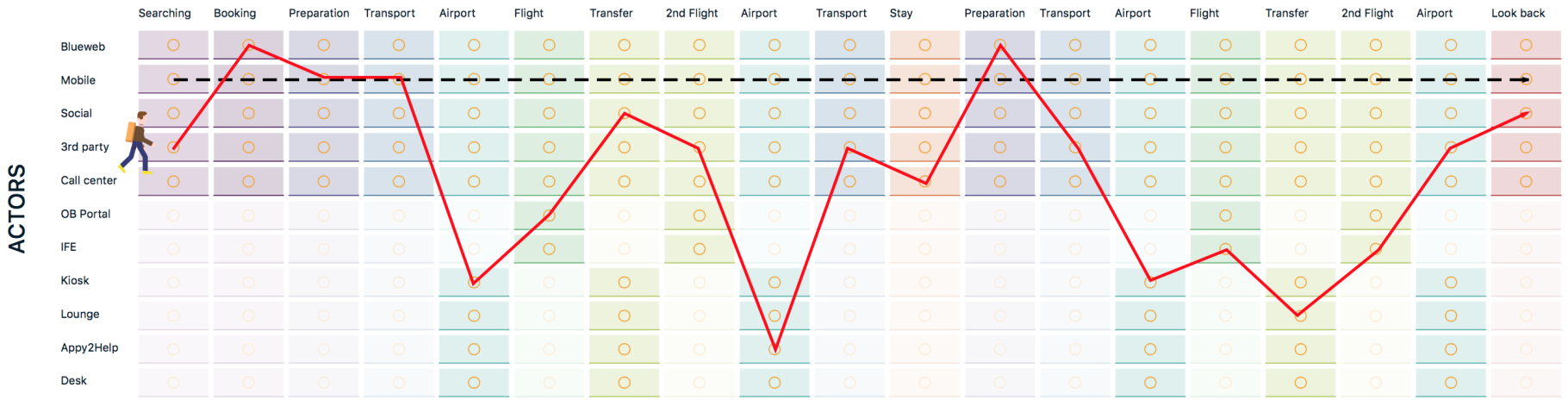


Figure 10 KLM customer journey (Wilbert Baan, UX Manager, 2017)

Touchpoints in the Customer journey

In figure 10, the entire customer journey is mapped out in cohesion with touchpoints. As seen, the passenger uses different touchpoints in each step of the journey. Because of this observation, two findings are detected in this graft.

First, the different touchpoints may seem to all interact with each other with omnichannel presence, in which they share the same backend data. But in fact, the touchpoints are multichannel or largely not connected to each other; This is also referred to as personalization gap in data. For example, what a passenger does on the website, such as what he searches for, is only recorded under the website data and this data is not transferred to another touchpoint, like the app. Also when a passenger explores destinations that he/she is interested in on the website, these click behaviors is not transmitted to other touchpoints. Thus the other touchpoints do not realise that the passenger is interested in those specific destinations. This reveals that all the data should be shared across all touchpoints, so that in the front end the touchpoints are all connected to recognize passengers. In this way, passengers can smoothly experience their journey without any extra inconveniences.

Secondly looking in on the touchpoints, each touchpoint is designed with different user interactions. Although all the touchpoints are designed with the intention of making the passenger feel recognized from KLM's Compass, the touchpoints do not have a unison approach to passenger recognition. For instance, a Flying Blue profile on the app is in a different format with different user interactions than on the website. What is seen on the website should also be seen in the same way on the app, or how the user interaction on the website should be carried out the same way in other touchpoints.

The main website is designed in a different way than the My Flight site and blog. This can create confusion for the user, in which the user has to mentality register that this is the same airline but all the touchpoints have to be navigated in their own distinct ways. In conclusion, the touchpoints do not share the same vision, which leads to a more scattered and chaotic customer journey. Instead, all the touchpoints should have a cohesive vision with the same interactions to simplify or make the passenger's journey easier.

Design direction

- Should connect touchpoints / design touchpoints to interact with each other.
- Should design all touchpoints with the same interactions, and cohesion throughout the entire passenger journey

Backend/ data:

- Should consider data being shared across touchpoints, so that the passenger can be recognized in all touchpoints throughout the journey

ONBOARD PORTAL

Currently, the onboard portal (figure 11) contains wifi connection information; flight to and from points; a few destination content articles; a flight guide (figure 12) with fun facts including cabin crew demographics, inflight exercises, and aircraft information, such as the type of aircraft, cruising speed, and wing span length. Users can also login to their Flying Blue account, in which they will see their miles, flight reservation, and wifi vouchers.

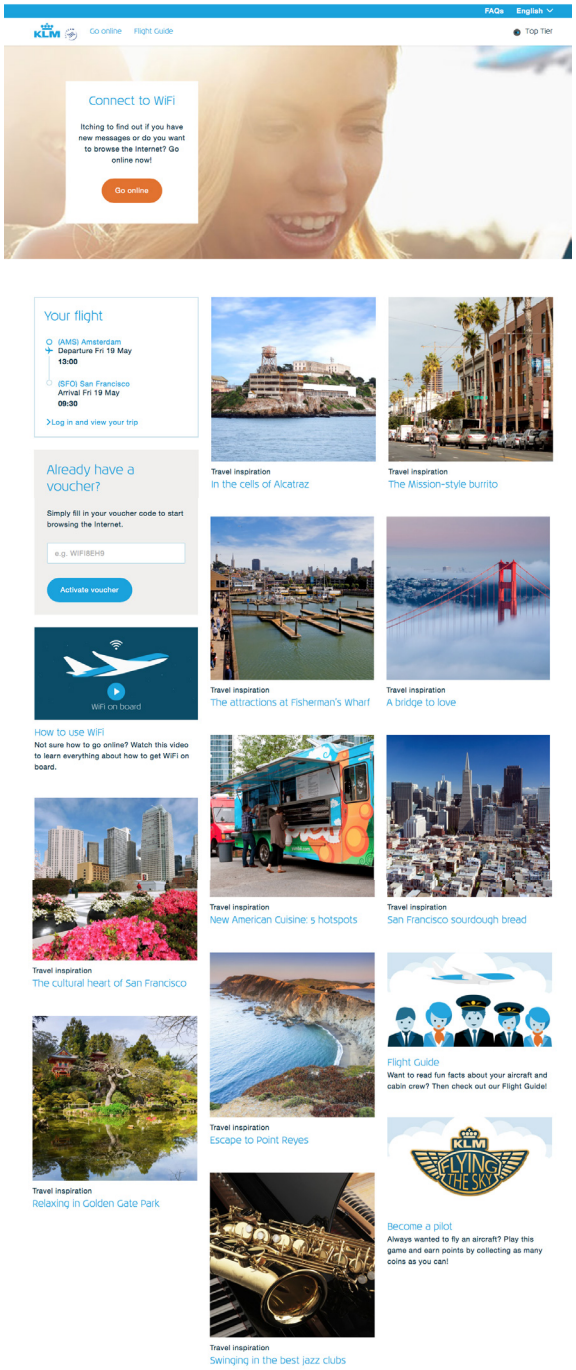


Figure 11 Onboard Portal (onboard.klm.com)

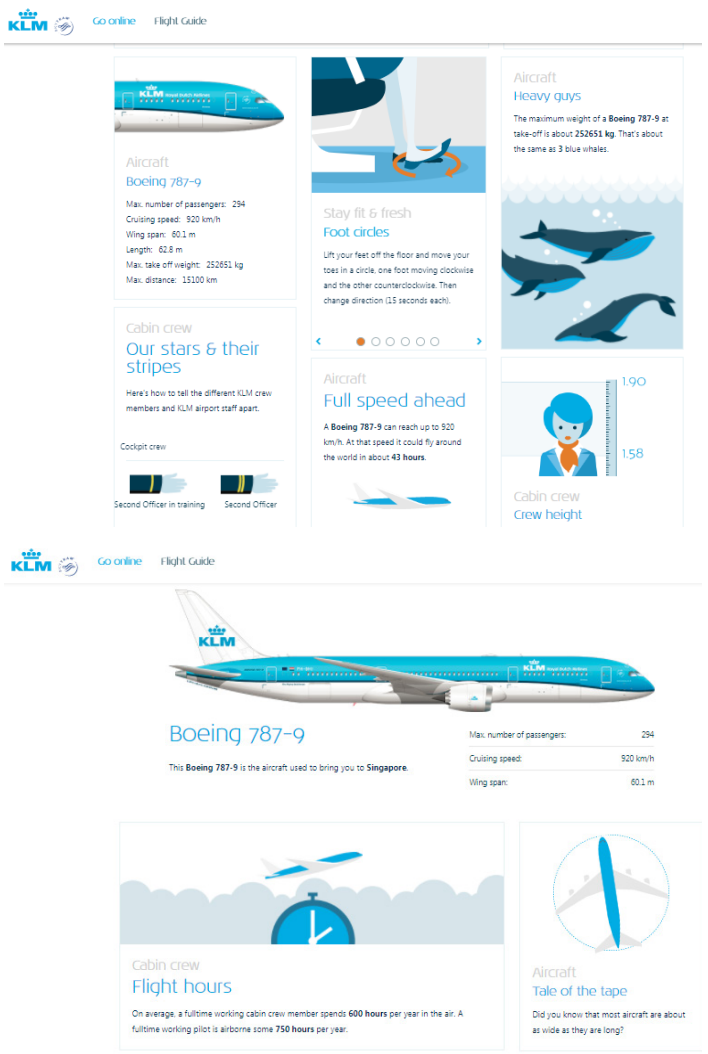


Figure 12 Onboard Portal flight guide page

Passenger Flow

The onboard portal can be accessed once the aircraft is at 10,000 feet via personal devices: mobile, tablet, and laptop. At this point, the passenger can view the contents on the page because the portal is already loaded on the aircraft server. Then, the passenger can connect to wifi and have access to internet. See figure 13.

This flow is made to examine when the OBP can be accessed and what is available to view without wifi connection. Although the portal's main purpose is provide wifi connection, the flow proves that the portal can serve to provide other information and services for the passenger.

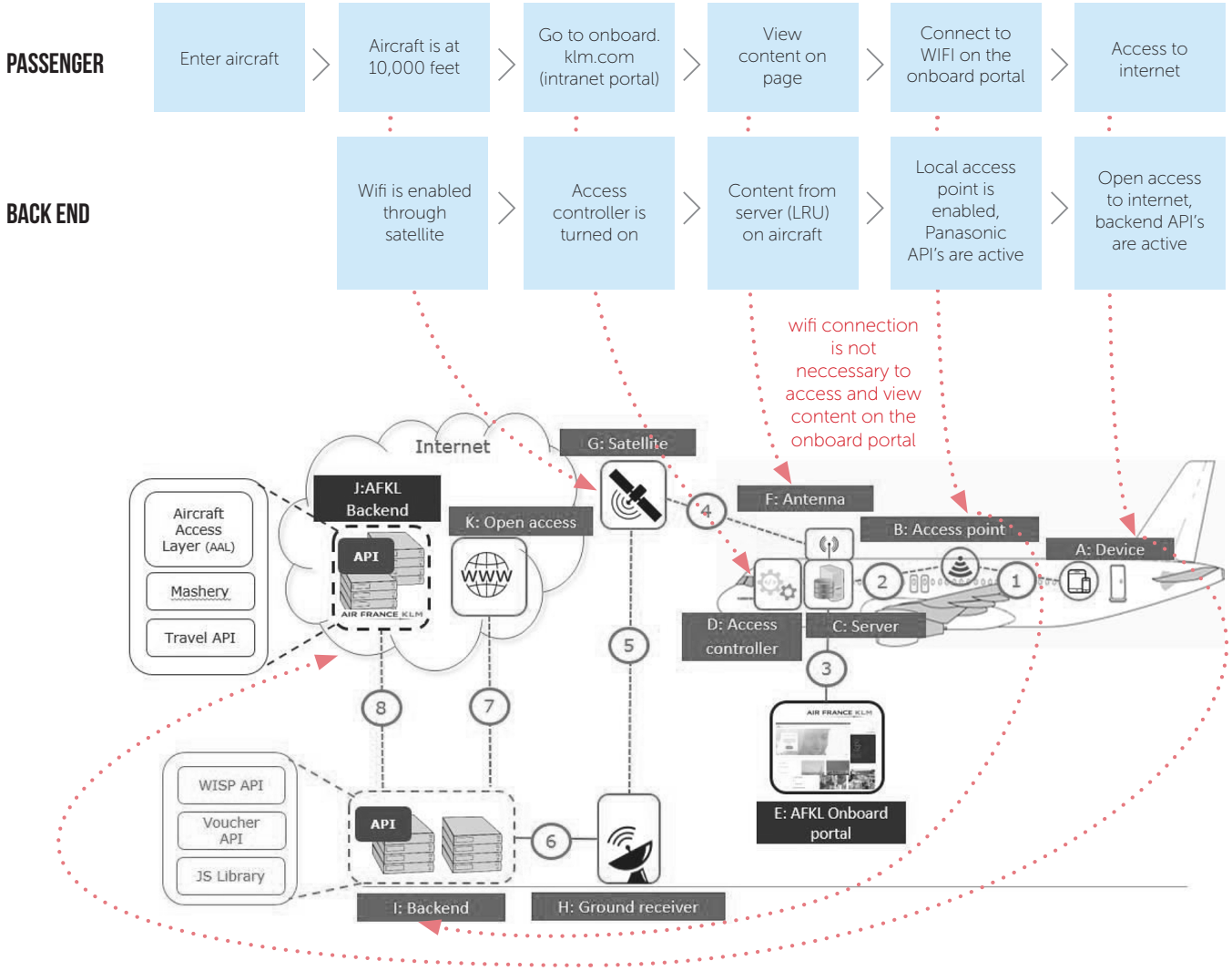


Figure 13 Onboard Portal flow

Personalization in the OBP

In terms of the personalization status of the current OBP, it is situated at the beginning of the curve. (Figure 14: Onboard Portal personalization placement) It is a part of the first level, mass merchandising because currently passengers' flight itinerary is taken into account to provide destination content articles. Making use of the flight itinerary or the passenger's contextual data is the first start of recognizing the passenger. This shows that the OBP has potential in tackling personalization for passengers. Thus when designing for the OBP, the next level of personalization should be considered from mass merchandising to macro segmentation. This involves not only knowing about passenger's flight itinerary, but also who the passenger is based on the purchase history of flights and auxiliary items, behaviors on touchpoints, and chosen preferences. In this next level of personalization, passenger segments have to be increased in order to send more tailored offerings and propel into the micro segmentation level.

Also, like the previous section about the data from each touchpoint, the OBP's data is not currently linked to other touchpoints. When a passenger continuously purchases a certain wifi package, other touchpoints, such as the main KLM website and KLM app, do not know this. This presents a missed opportunity of recognizing the passenger and offering additional services. If the OBP can utilize data from other touchpoints and vise versa, the passenger will be more engaged in the airline's services and brand.

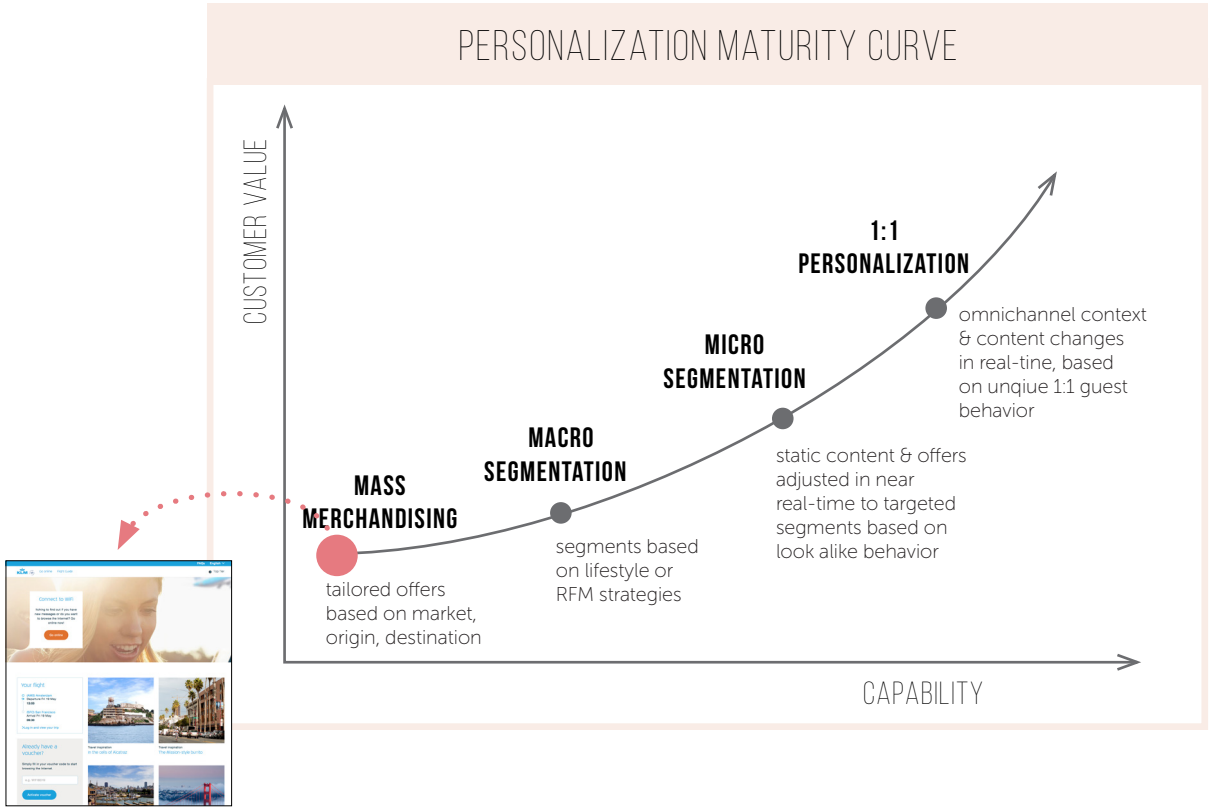


Figure 14 Onboard Portal personalization placement

Design direction

- Should design for the next level of personalization (from mass merchandising to macro segmentation) for the OBP
- The OBP data should be linked with other touchpoints

3.2 EXTERNAL ANALYSIS

The external analysis involves exploring competitors and current trends, which contributes to various insights to aid in designing for the onboard portal.

COMPETITORS

A competitors analysis is performed to examine other airlines' products and services in comparison to KLM. Within the examined products and services includes the OBP's standing to see whether it is influenced by the ranking of the airlines. This airline ranking is announced by Skytrax, a UK based consultancy that conducts research for commercial airlines and the world's largest airline passenger survey. With this passenger survey, customers make their own, personal choices as to which airline they consider to be the best (Skytrax). A detailed competitors chart is seen in the Appendix B.

From this ranking, the top ten airlines are further analyzed along with KLM, as seen in figure 15 Competitors. In reviewing pre and post flight services (Figure 16 Competitors - pre/post flight services & inflight services), these airlines extend their services a bit further in the customer travel journey, such as providing exclusive chauffeur-driver service to and from the airport and acknowledging the transit period by offering city tours. Also, some of the airlines have personal check-in service, such as a service agent checking-in the the passenger while he or she is waiting in the lounge.

For the inflight services, personal services extend into the meals service. For instance, dining anytime the passenger wants to eat, food and beverage specialists that suggest wine pairings, and reserving meals that are created by notable chefs. Additionally, the back seat entertainment (IFE) includes an extensive amount of content, even with Live TV.

When inspecting the onboard portals (Figure 17 Competitors - onboard portals), most of the airlines have simple sites with wifi connection information. Some of the portals have news and destination, and shopping information. This indicates that the onboard portal's main purpose is for passengers to connect to the internet. Other than internet connection, these airlines do not invest much into their portals. Nonetheless one of the airlines, Lufthansa is utilizing their portal in the demand shopping space. Passengers on in-bound long-haul Lufthansa flights to Frankfurt airport can pre-order a selection of duty free from retailers at the airport via the Lufthansa inflight portal and have their orders delivered to them by the airport's 'runners' at their arrival gate (Future Travel Experience, 2016). Plus, Lufthansa is trialing in-flight grocery shopping and home delivery service: Passengers can connect to the onboard Wi-Fi, select the REWE, a German supermarket chain, service, select and purchase their groceries, and choose a convenient time for their order to be delivered to their home address (Future Travel Experience, 2017).

Moreover, the portals of the ten airlines do not contain personalization or recognition of the passenger. The most recognition is the showing the weather of the destination.

In conclusion, these top airlines extend their services beyond the inflight journey. They take their services one step further to entirely fulfill the passenger's journey. Thus a design direction is to design beyond the inflight journey into pre and post flight moments. Furthermore, although the airline's onboard portals are simple for the purpose of wifi connection, opportunities to utilize the portal in serving the passenger in other ways can be explored. Also surprisingly even with personal, one-to-one services that these airlines provide in the travel journey, their onboard portals do not recognize the passenger. Hence as a differentiator, KLM's OBP should adopt personalization to truly recognize and know passengers. In the age of the digital era, sincere human interactions should be translated into digital platforms.

Design direction

- Should design beyond the inflight journey into pre and post flight moments
- As a differentiator, Should project personalization into the digital platforms: Onboard Portal and travel journey touchpoints, as physical personalized services. Merging digital and physical worlds.

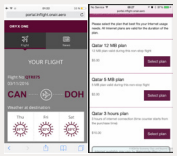
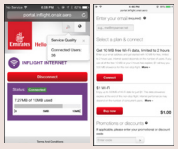
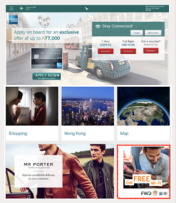
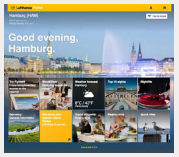
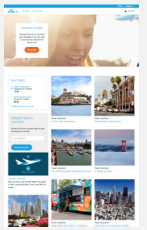
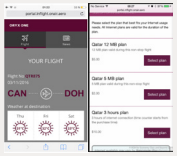
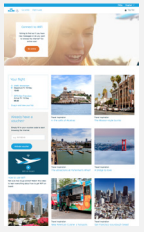
	1 QATAR AIRWAYS	2 SINGAPORE AIRLINES	3 ANA ALL NIPPON AIRWAYS	4 EMIRATES	5 CATHAY PACIFIC	6 EVA AIR	7 LUFTHANSA	8 ETIHAD AIRWAYS	9 HAINAN AIRLINES	10 GARUDA INDONESIA	22 KLM
PRE/POST FLIGHT-SERVICES	- Chauffeur-driver service		- Car Valet Service: drop off your car at the airport w/ complimentary limousine service and get it back upon your return.	- Chauffeur-drive: for First & Business Class.	- Duty free shopping: preorder w/ delivery	- Duty Free shopping	- Transport: Carsharing w/ car2go, Lufthansa Express Chauffeur, Express Shuttle, Express Helicopter w/ HTM - Digital baggage services: See where your baggage is at any time.	- Chauffeur-drive: for First and Business Class - Preflight shopping: delivered directly to your seat on board.	- Limo Service: limousine airport transfer service for Business Class		- Shopping: Online tax-free shopping - KLM Wannagives: surprise someone inflight, Our cabin crew will deliver the surprise once he or she is airborne.
AIRPORT SERVICES	- Transit visa - Transit tour	- Transit Programme: receive a Changi Dollar Voucher (CDV) valued from S$20 when you transit through Singapore. - Free Singapore Tour	- Priority lanes for security check: for Business Class w/ priority baggage service		- priority boarding: for business class		- Shopping: collect order at airport shop or gate - Food delivery: "Taste & Travel" gourmet service, ordering F&B items for delivery to the gate.			- Check-in Premium service: for Platinum Card & Business Class - Valet Service: Passenger Service Assistance (PSA) for check-in process	- Priority chech in : for Business Class, or Flying Blue Gold or Platinum or SkyTeam Elite Plus member - self-service kiosk
LOUNGE SERVICES	- shower and restroom facilities	- First Class Check-in Reception while in lounge - Relax experiences: massages, manicure/ pedicure treatments, haircut, gym, shower facilities		- gourmet cuisine -spa treatment	- shower and restroom facilities		-Lounge Shopping: can use an iPad to browse and purchase items from the airport's duty free and travel retail stores, and have them delivered to the lounge within 30 minutes.	- shower and restroom facilities - spa treatment			- shower and restroom facilities
INFLIGHT SERVICES	- Meals: Pre-Select Dining - Connectivity: send SMS and MMS or access your email	-Meals: Book the Cook - Connectivity: Surf, tweet, or send a text message - Link own device to your seat: view the current flight path and location; browse and save movies, TV, & music	-Meals: food & beverage specialists & chefs -IFE: Sky Live TV (CNN, etc) - Duty-Free Shopping on IFE - e-books: on IFE, economic, sports, lifestyle, and tourist magazines, comics	- Meals: local flavours of your destination - Open environment: open areas for mingling with 55" LCD TV screen - IFE: TV Live - Connectivity: 20MB free the first 2 hours; In-seat phone, SMS and email	- Service: Asian hospitality, personalised service - Connectivity: e-commerce platform collab w/ Net-A-Porter and Mr Porter, same-day delivery.	- Meals: locally sourced, sustainable ingredients - IFE: Connecting Gate Information (CGI) - check info for the arrival times, baggage collection and connecting flights status. - Duty Free Onboard Shopping: on IFE - Connectivity: SMS & e-mail service	- Meals: local flavours of your destination - IFE: live TV channels , Audio Books, eJournals , 'myAudio'and 'myVideo' to create personal playlists within the Inflight. - connectivity: Send SMS/MMS messages	- Meals: Dine Anytime - you decide when you want to eat. - IFE: Live TV channels, share videos with neighbor, Order food&beverage, Inflight Shopping on IFE	- Meals: fresh ingredients	- IFE: Live TV - Connectivity: Access emails and social media networks	- KLM's Meet & Seat: lets you find out about interesting people who will be on board your flight, share your Facebook/LinkedIn profile -Meals: Anytime For You for Business Class to decide what and when they want to eat on board..
OBP											
OBP FEATURES	- connect to wifi - wifi plans - flight # - flight from & to - weather at destination - news	- connect to wifi - wifi plans - flight # - flight from & to - weather at destination - remaining data to consume - pause Wifi - shopping: Krisshop	- connect to wifi - flight # - flight from & to - weather at destination - news - flight time left - destination time - business info - art & culture info - technology info - sports info	- connect to wifi - wifi plans - remaining data to consume - # of connected users	- connect to wifi - wifi plans - remaining connectivity time on flight - flight time left - destination content - map of flight - shopping > inflight shopping with delivery to arrival destination. - e-commerce > collab w/ Net-A-Porter, same-day delivery	- connect to wifi - wifi plans - remaining connectivity time on flight - news > Eva airline news.	- connect to wifi - wifi plans - log-in to account - weather at destination - time at destination - destination content > top 10 sights, nightlife, restaurants, country general info - shopping > pre-order duty free, trials in-flight grocery shopping and home delivery service	- connect to wifi - wifi plans - flight time left - map of flight - weather at destination - news > destination news.	- connect to wifi - wifi plans - flight from & to - shopping > duty free	- connect to wifi - wifi plans - flight time left - link to airline website	- connect to wifi - wifi plans - log-in to account - flight from & to - flight guide > aircraft info - destination content > articles of places to visit

Figure 15 Competitors

	1 QATAR AIRWAYS	2 SINGAPORE AIRLINES	3 ANA ALL NIPPON AIRWAYS	4 EMIRATES	5 CATHAY PACIFIC	6 EVA AIR	7 LUFTHANSA	8 ETIHAD AIRWAYS	9 HAINAN AIRLINES	10 GARUDA INDONESIA	22 KLM
PRE/POST FLIGHT-SERVICES	- Chauffeur-driver service		- Car Valet Service: drop off your car at the airport w/ complimentary limousine service and get it back upon your return.	- Chauffeur-drive: for First & Business Class.	- Duty free shopping: preorder w/ delivery	- Duty Free shopping	- Transport: Carsharing w/ car2go, Lufthansa Express Chauffeur, Express Shuttle, Express Helicopter w/ HTM - Digital baggage services: See where your baggage is at any time.	- Chauffeur-drive: for First and Business Class - Preflight shopping: delivered directly to your seat on board.	- Limo Service: limousine airport transfer service for Business Class		- Shopping: Online tax-free shopping - KLM Wannagives: surprise someone inflight, Our cabin crew will deliver the surprise once he or she is airborne.
AIRPORT SERVICES	- Transit visa - Transit tour	- Transit Programme: receive a Changi Dollar Voucher (CDV) valued from S$20 when you transit through Singapore. - Free Singapore Tour	- Priority lanes for security check: for Business Class w/ priority baggage service		- priority boarding: for business class		- Shopping: collect order at airport shop or gate - Food delivery: "Taste & Travel" gourmet service, ordering F&B items for delivery to the gate.			- Check-in Premium service: for Platinum Card & Business Class - Valet Service: Passenger Service Assistance (PSA) for check-in process	- Priority chech in : for Business Class, or Flying Blue Gold or Platinum or SkyTeam Elite Plus member - self-service kiosk
LOUNGE SERVICES	- shower and restroom facilities	- First Class Check-in Reception while in lounge - Relax experiences: massages, manicure/ pedicure treatments, haircut, gym, shower facilities		- gourmet cuisine -spa treatment	- shower and restroom facilities		-Lounge Shopping: can use an iPad to browse and purchase items from the airport's duty free and travel retail stores, and have them delivered to the lounge within 30 minutes.	- shower and restroom facilities - spa treatment			- shower and restroom facilities
INFLIGHT SERVICES	- Meals: Pre-Select Dining - Connectivity: send SMS and MMS or access your email	-Meals: Book the Cook - Connectivity: Surf, tweet, or send a text message - Link own device to your seat: view the current flight path and location; browse and save movies, TV, & music	-Meals: food & beverage specialists & chefs -IFE: Sky Live TV (CNN, etc) - Duty-Free Shopping on IFE - e-books: on IFE, economic, sports, lifestyle, and tourist magazines, comics	- Meals: local flavours of your destination - Open environment: open areas for mingling with 55" LCD TV screen - IFE: TV Live - Connectivity: 20MB free the first 2 hours; In-seat phone, SMS and email	- Service: Asian hospitality, personalised service - Connectivity: e-commerce platform collab w/ Net-A-Porter and Mr Porter, same-day delivery.	- Meals: locally sourced, sustainable ingredients - IFE: Connecting Gate Information (CGI) - check info for the arrival times, baggage collection and connecting flights status. - Duty Free Onboard Shopping: on IFE - Connectivity: SMS & e-mail service	- Meals: local flavours of your destination - IFE: live TV channels , Audio Books, eJournals , 'myAudio'and 'myVideo' to create personal playlists within the Inflight. - connectivity: Send SMS/MMS messages	- Meals: Dine Anytime - you decide when you want to eat - IFE: Live TV channels, share videos with neighbor, Order food&beverage, Inflight Shopping on IFE	- Meals: fresh ingredients	- IFE: Live TV - Connectivity: Access emails and social media networks	- KLM's Meet & Seat: lets you find out about interesting people who will be on board your flight, share your Facebook/LinkedIn profile -Meals: Anytime For You for Business Class to decide what and when they want to eat on board..
OBP											
OBP FEATURES	- connect to wifi - wifi plans - flight # - flight from & to - weather at destination - news	- connect to - wifi plans - flight # - flight from & - weather at d - remaining d consume - pause Wifi - shopping: K							o wifi & to > duty free	- connect to wifi - wifi plans - flight time left - link to airline website	- connect to wifi - wifi plans - log-in to account - flight from & to - flight guide > aircraft info - destination content > articles of places to visit

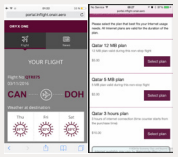
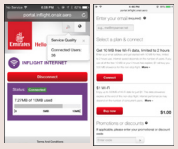
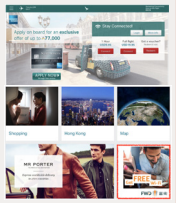
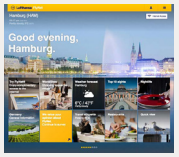
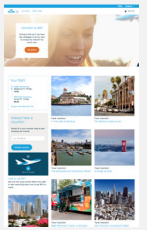
PRE/POST FLIGHT SERVICES

- CHAUFFEUR-DRIVER SERVICE
- CHECK-IN SERVICE W/ PRIORITY AND PERSONAL TREATMENT
- TRANSIT SERVICE

INFLIGHT SERVICES

- MEALS: ANYTIME, F&B SPECIALISTS, LOCAL FLAVORS OF DESTINATION
- IFE: LIVE TV
- CONNECTIVITY: SMS, MMS, EMAIL IS MARKETED

Figure 16 Competitors - pre/post flight services & inflight services

	1 QATAR AIRWAYS	2 SINGAPORE AIRLINES	3 ANA ALL NIPPON AIRWAYS	4 EMIRATES	5 CATHAY PACIFIC	6 EVA AIR	7 LUFTHANSA	8 ETIHAD AIRWAYS	9 HAINAN AIRLINES	10 GARUDA INDONESIA	22 KLM
PRE/POST FLIGHT-SERVICES	- Chauffeur-driver service		- Car Valet Service: drop off your car at the airport w/ complimentary limousine service and get it back upon your return.	- Chauffeur-drive: for First & Business Class.	- Duty free shopping: preorder w/ delivery	- Duty Free shopping	- Transport: Carsharing w/ car2go, Lufthansa Express Chauffeur, Express Shuttle, Express Helicopter w/ HTM - Digital baggage services: See where your baggage is at any time.	- Chauffeur-drive: for First and Business Class - Preflight shopping: delivered directly to your seat on board.	- Limo Service: limousine airport transfer service for Business Class		- Shopping: Online tax-free shopping - KLM Wannagives: surprise someone inflight, Our cabin crew will deliver the surprise once he or she is airborne.
AIRPORT SERVICES	- Transit visa - Transit tour	- Transit Programme: receive a Changi Dollar	- Priority lanes for security check: for		- priority boarding: for business class		- Shopping: collect order at airport shop			- Check-in Premium service: for Platinum	- Priority chech in : for Business Class, or Flying
LOUNGE SERVICES	- sh faci							showe cilities spa tre			troom
INFLIGHT SERVICES	- M Din - C SM acc		l flavou nation onmer or min TV sc ty: 20M 2 hours e, SMS					Meals: you de ant to IFE: Liv hare vic eighbo od&be hoppin			eat: about e oard your In For Class nd o eat
OBP											
OBP FEATURES	- connect to wifi - wifi plans - flight # - flight from & to - weather at destination - news	- connect to wifi - wifi plans - flight # - flight from & to - weather at destination - remaining data to consume - pause Wifi - shopping: Krisshop	- connect to wifi - flight # - flight from & to - weather at destination - news - flight time left - destination time - business info - art & culture info - technology info - sports info	- connect to wifi - wifi plans - remaining data to consume - # of connected users	- connect to wifi - wifi plans - remaining connectivity time on flight - flight time left - destination content - map of flight - shopping > inflight shopping with delivery to arrival destination. - e-commerce > collab w/ Net-A-Porter, same-day delivery	- connect to wifi - wifi plans - remaining connectivity time on flight - news > Eva airline news.	- connect to wifi - wifi plans - log-in to account - weather at destination - time at destination - destination content > top 10 sights, nightlife, restaurants, country general info - shopping > pre-order duty free, trials in-flight grocery shopping and home delivery service	- connect to wifi - wifi plans - flight time left - map of flight - weather at destination - news > destination news.	- connect to wifi - wifi plans - flight from & to - shopping > duty free	- connect to wifi - wifi plans - flight time left - link to airline website	- connect to wifi - wifi plans - log-in to account - flight from & to - flight guide > aircraft info - destination content > articles of places to visit

PRE/POST FLIGHT SERVICES

- CHAUFFEUR-DRIVER SERVICE
- CHECK-IN SERVICE W/ PRIORITY AND PERSONAL TREATMENT
- TRANSIT SERVICE

INFLIGHT SERVICES

- MEALS: ANYTIME, F&B SPECIALISTS, LOCAL FLAVORS OF DESTINATION
- IFE: LIVE TV
- CONNECTIVITY: SMS, MMS, EMAIL IS MARKETED

ONBOARD PORTALS

- SIMPLE SITES FOR WIFI CONNECTION AND WIFI PLANS
- NEWS, SHOPPING, DESTINATION CONTENT
- NO PERSONALIZATION

Figure 17 Competitors - onboard portals

TRENDS

A part of the external analysis includes investigating relevant trends, such as airline industry, web portal, consumer and UX trends. These trends will help reveal current and future possibilities for personalization in the onboard portal. (See Appendix C for the complete chart of all the trends and descriptions.)

Airline industry

In the airline industry, the **digitally empowered traveler** means that travelers need automatic transitions between platforms as 71 percent of them move between devices (tablet, desktop, mobile) when researching a trip (Eastham, 2013).

Continuing on with digital empowerment, for airline meal trends besides **ordering via the IFE, mobile based ordering** is also introduced. Here, passengers may order their meals on the mobile app during booking and up to 1 hour prior to departure. Also, **customizing your meal** is gaining positive feedback; arBaltic is working on a food ordering system that allows passengers to customize their buy-on-board meal, where passengers can virtually 'drag and drop' their preferred meal items onto a digital airline tray and create one of more than 70 pre-order meal combinations (Kollau, 2016).

In the IFE, more features are being integrated, such as **shopping via IFE** and **Netflix streaming**. Even the map includes the ability to **book airport transfer** and provide **destination-based offerings**, such as previewing a virtual open-top bus tour of a city. The IFE trends also includes adding on advanced technologies, like **biometric identification** that can enable secure payment authorization and personalized programming. Additionally, the entertainment experience is taken to another level with personal **visionary goggles**, where passengers can be immersed in 2D, 3D and 180 degree video content. Most interesting of the IFE trend is: **from In-Flight Entertainment to In-Flight Engagement platforms.** Passengers' expectations have evolved from a passive 'Please entertain me' to a proactive 'I want to entertain myself; the holistic experience with deep ongoing engagement is desired from the passenger and pushes airlines to move from an in-seat system, where an airline is looking at cost line, to an in-seat solution coupled with connectivity that moves to a revenue line (Kollau, 2017).

Web portal trends

Like the digitally empowered traveler trend mentioned before, **cross-device journeys** is a significant factor in enabling seamless multi-channel experiences. Customers desire a unified journey and expect to be supported at any time and place. Because of this, the **digital marketing** of portals is transitioning into strategic platforms for customer applications. Since the web portal has great effect of the lifetime value of customers and is not only for the purpose of an integration platform for enterprises, digital marketers are looking for different ways to enhance sales results, enhance lead generation, and implement different marketing techniques (IT Chimes, 2016). Thus, obtaining **lean portal features and solutions** can aid in offering the right content to specific customers. Long gone are the traditional portals that are too complex, full of unnecessary features, and have gone over budget and deadlines. Lean solutions include capabilities like analysing data, targeting, content and campaign management.

Consumer trends

Personalization of consumer goods in 2017 has shifted from purchasing luxury goods to experiencing services. This **personalize it** trend includes **products that fit you, learn about you, are curated by you, and tell a story.** Products that fit you is seen in many brands from fashion and sports brands to universities with customised curriculums. An interesting personalized product that integrates personal data is from iFit and Altra, where a smart running shoe is designed to collect data about your stride as you run, allowing you to stay better informed about your personal biomechanics (Kasriel-Alexander, 2017). Products that learn about you tailors to consumer tastes and

preferences. These products, such as Amazon, Airbnb, and news sites, take in consumer search and purchase data to offer recommendations and promotions. Moving on to products curated by you, entails subscription services that ask subscribers to complete a user profile first in order for receive a tailored product mix. These businesses use algorithms to continuously learn about their customers through their feedback. Products that have personalized touches to tell a story can be seen through crowdfunding platforms, where consumers can discover how products are produced along with who the creators are and their journey of developing the products.

Another consumer trend is **customers' own role in the post-purchase experience**. Online reviews give customers the ability to share their buying experience and product issues. Here, consumers have the power to influence other consumers and improve businesses.

UX Design

One UX design is to create **more movement** within apps and websites, for instance movement in images or ads that are obvious and subtle. Other than creating an amazing looking interfaces, **content-centered experiences** should also be attended to. The content should be well-curated, easily accessible, and not sacrificed due to an awesome interface.
Another UX design trend for 2018 is **smarter personalized user experiences**. With the demand in personalized experiences, mobile and web applications will be invested more in: in-app chat features for interactions with other users or access to instant assistance; age-responsive capabilities that adjust things like font sizes and colors based on the age of the user; login memory features that help users quickly get into the application; in-app messaging based on how users typically interact with an app (e.g., offering promotions based on what purchases an user makes with their app); and push notifications timed to be delivered when users are most active to encourage consistent engagement (Queble, 2017). This has warranted the need for developing digital interfaces that have human like qualities, which are aware of the past behaviours of customers and will adapt to their current needs.

In more advanced technologies, **voice-activated interfaces** and **augmented reality** trends are becoming more popular with how consumers are transitioning their digital interactions. Both of these trends cater to more human-like, real-time experiences that tap into the other senses.

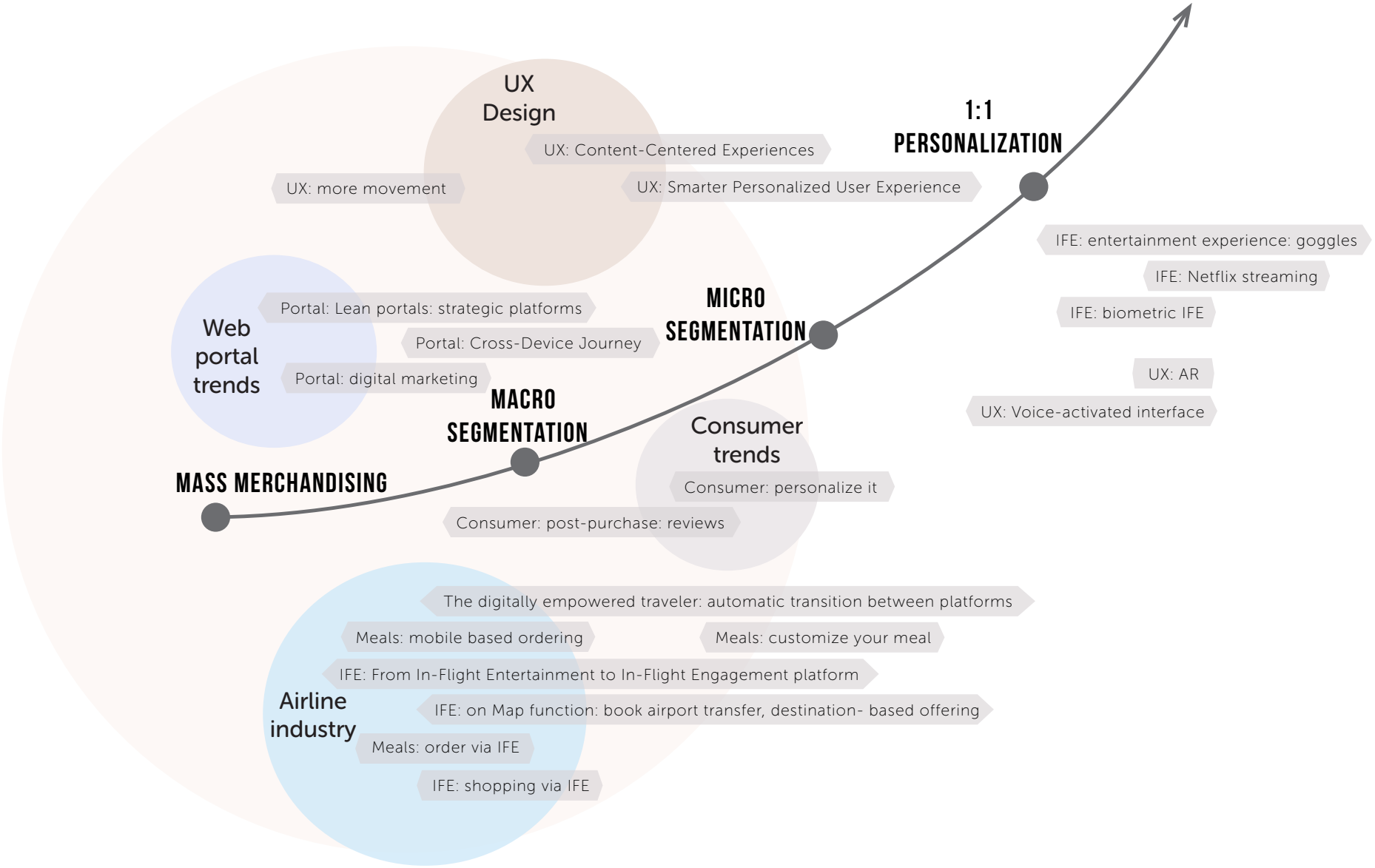


Figure 18 Trends with the personalization curve

Trends according to the personalization curve

Since there are numerous trends explored, the trends are placed along the personalization curve to determine which trends are relevant. In the previous section, 3.1 Personalization in the OBP, an established design direction is to design for the next level of personalization. Hence in figure 18, the large beige circle highlights the qualified trends to be placed in the design requirements of this section.

Trends, such as **lean portal features and solutions** and **more movement** within the UX design are placed closer to the beginning of the curve because they both can be implemented first for the OBP. To give a scenario: if the OBP initially collects and analyzes data of the portal usage on the back end, designers of the OBP can then implement **content-centered experiences** because they would be able to understand which features and content passengers are more attracted towards. Also, if **more movement** is implement within the UX design first, users can be accustomed to these non-static interactions, which gives way to **personalize it** trends where content can be curated by the user.

Additionally, **lean portal features and solutions** and **more movement** trends are placed between mass merchandising and macro segmentation personalization levels because they both are a progression towards knowing who the customer is, which is the goal of macro segmentation. Once the customer is known through RFM and lifestyle data, such as flight purchase history, **smarter personalized user experiences** can be provided, such as specific destination recommendations on the OBP and travel information notifications. Also, **personalize it** trends, where products learn about the user or are curated by the user, is placed in macro segmentation and leads into micro segmentation. By continuously gathering passenger's data and allowing passengers to make their own choices, the airline can determine passenger's personal preferences and highly favored items to provide near real-time, unique offers.

However, a few trends do not qualify to be integrated into the next personalization steps of the OBP. Trends, such as **voice-activated interfaces** and **augmented reality, biometric identification** are placed within the last two levels because they require more supporting advanced technologies with real-time capabilities. These advanced technologies go beyond what the OBP can acquire at the moment.

Design direction

Airline industry

- Should digitally empower the traveler with automatic transitions between platforms.
- Should incorporate mobile ordering through the OBP.
- Should enable customizability.
- Should include post flight features.
- Should have proactive, deep, ongoing user engaging platforms.

Web portal trends

- Should implement lean portal as strategic platforms with data analysis, content & campaign management, specific targeting for Content-Centered Experiences.

Consumer trends

- Should have personalized characteristics: Products that fit you, learn about you, curated by you, personalized touches that tell a story
- Should include post-purchase elements, where customers own role in the post-purchase experience

UX Design

- Should design with more movement in UI/UX
- Should incorporate Smarter Personalized User Experiences: instant assistance, login memory features, in-app chat and messaging, push notifications

3.3 CUSTOMER ANALYSIS

This section explains the target group being focused upon, then the customer research aim, methods, and findings. With the conclusion of the customer analysis based on emotion-driven design, an intended emotional response for the target group is highlighted. This intended emotion will be projected into the design challenge in aid of designing for the OBP.

TARGET GROUP

The target group is chosen based on the Demand Spaces, an extensive market research that is composed of customer segments introduced by KLM's Customer Insights team. The Demand Spaces is made up of six typologies or groups of persons with similar attitudes towards air traveling (i.e. busy ambitious travelers, functional minded travelers, travel lovers, premium brand service seekers, etc) combined with seven occasions that are based on customer's region, haul, purpose of travel, and booking time (i.e. Europeans long haul personal, Europeans long haul business, to Europe last minute, to Europe planned business) (2015). These typologies and occasions formulate thirteen passenger groups. Of the thirteen, KLM focuses on three: 'A good start', 'Recharge in the skies', and 'Let me work'. These three passenger groups are KLM's priority because they reflect the propensity in frequent flyers and purchase propensity in travelers who are most likely to pay for premium tickets. Out of these three groups, two ('Rechard in the skies' and 'Let me work') will be this project's target group, as seen in figure 19. Since this project's context is for long-haul connected flights, 'A good start', which is classified under short and medium haul flights does not comply. Also, 'Recharge in the skies' and 'Let me work' both contain flyers who are more likely to connect to the internet inflight. According to the Demand Spaces study, 52 percent of 'Recharge in the Skies' travelers use the wifi onboard and 50 percent of 'Let me work' travelers use the wifi onboard, which are one of the highest amongst the thirteen groups.

Both of these travel groups are predominantly male with an age range from the millennial generation to forty-four, highly educated, full-time employees, and a part of the mid to top level frequent flyer program memberships. They fly business or first class on intercontinental flights for business purposes, where an average of 54 percent of them work inflight. These frequent, business flyers are known to take international work trips as often as once a month or once every two or three months (Mander, 2015). Additionally, majority of them book flights by themselves, and sometimes with travel agents or their secretaries. 'Recharge in the skies' travelers are functional-minded travelers from Asia, Americas, France and Netherlands. Because they fly long distances, they seek for the best work and resting environments. Thus, not only cabin comfort and relaxing lounge spaces are critical to them, these spaces also need to be supporting their work in providing internet connection, power outlets, and access to all relevant information. Adding to this, 'Let me work' travelers are Europeans and non-Europeans, who are travel lovers, premium brand seekers, and live an active lifestyle. Their main need is connectivity and work. This means that they seek for quiet environments, where they are undisturbed. Mobile accessibility is crucial for them to receive real time information. These frequent, business flyers will be further examined with in depth qualitative research in the next section.

Figure 19 Demand Spaces

TRAVEL JOURNEY RESEARCH SETTING

Purpose

In order to understand the comprehensive concerns, implicit needs, and emotions of business, frequent flyers on long-haul flights, a qualitative customer research is performed based on their entire travel journey from leaving their hotel or home to settling in at the destination hotel or home. Although a primary inflight customer research has been conducted from take-off to landing (as seen in appendix D), the findings and results are not significant enough to provide an overall perspective of the business, frequent flyers' travel journey. Looking at the inflight journey alone has presented a narrow perspective of what happens inflight only. Therefore, their entire travel journey is analyzed because what is experienced and felt in the beginning of the journey may affect the inflight experience and after flight experience. Plus, the entire journey includes relating passenger's contextual factors, such as how their work schedule and the frequency of their business trips affect their travel journey. For instance, if the business flyer has to be at the other company's office early in the morning for a meeting, the flight would have to be overnight and on-time, which causes the flyer to be cautious and diligent of all his actions from planning his transportation methods to getting enough rest and food throughout the travel journey. (The full interview guide of the travel journey research is in the Appendix E.)

Participants

Seven participants are chosen for the customer research, which are gathered based on the researcher's surrounding network in the Netherlands. Since the customer research has to be in an in-person interview with generative research techniques, as described in the below section, the participants are based in nearby proximity for the researcher to travel and meet in person. For participants, who are based in another country, it would be difficult to perform the generative research techniques through a phone call or Skype. Although these participants are based in the Netherlands, their nationality does not matter. This is because both of the demand spaces, 'Rechard in the skies' and 'Let me work', are made up of Europeans and non-Europeans. Additionally, these participants qualify for the research by having a recent history of business flights in the past year at least once every two or three months. This means that they have to fly for business purposes preferably through their company.

As seen in figure 20, six male and one female business flyers participated in the travel journey research. Their age ranges from twenty-five to forty-five years old and their nationalities ranges from European to Chinese and American:

P 1: age 30-35, female, American
P 2: age 40-45, male, British
P 3: age 30-35, male, Dutch
P 4: age 25-30, male, Chinese
P 5: age 40-45, male, American
P 6: age 25-30, male, German
P 7: age 25-30, male, American

Figure 20 Participants

METHOD

The customer research is conducted through in-person, one-on-one interviews. To understand the target group's entire travel journey, participants are asked to go through a context mapping exercise first. Context mapping is a generative research technique that allows the researcher to see what is going on at the tacit and latent levels of what people know, feel, and dream (Sanders, L. & Stappers, J., 2012). At the surface level, questionnaires and interviews expose what people say, which reveals explicit knowledge. This uncovers people's behaviors through what they say. Another surface layer of knowledge is observative, in which observations of the research group identifies what people actually do. However, delving into deeper layers of knowledge, such as tacit and latent knowledge, involves what people make, which exposes what people know, feel and dream (refer to figure 21). Make tools and techniques borrow from design and psychology, and involve participants by having them perform a creative act with respect to the subject under study (Sanders, L. & Stappers, J., 2012). In this case, the creative act is the context mapping method, where participants map out their entire travel journey from leaving their home or hotel to arriving at their destination home or hotel. Participants are asked to render their latest business, long-haul flight journey with the aid of example images and words, including positive and negative emotion words. (see Appendix E for full interview guide of the Travel journey customer research). Since this project involves emotion-driven design - to evoke emotions from participants, positive and negative emotion words are encouraged to aid in expressing their appraisals of the stimulus: an event or product in the travel journey. Adding on to mapping their current travel journey, participants are then asked to map out their desired travel journey experience with different images included with positive and negative emotion words. The desired experience exposes the participants' latent knowledge, which are thoughts and ideas that are not experienced yet, but on which an opinion can be formed based on past

experiences (Sanders, L. & Stappers, J., 2012). Knowing how participants view their perfect travel experiences, reveals their deep concerns and goals. Figure 22 shows a participant mapping out his current and ideal travel journeys using the provided images and words. After the mapping out the current and ideal scenarios, participants explain what they have written, drawn, and placed in the timeline.

These interviews are recorded in order to be transcribed and then analyzed, which involves a statement card method. This method is when interesting passages are chosen, interpreted, and categorized to find patterns.

Appendix F contains an additional customer research on testing the OBP, where participants are asked about their interests in the current content and their opinions in repurposing and improving the portal.

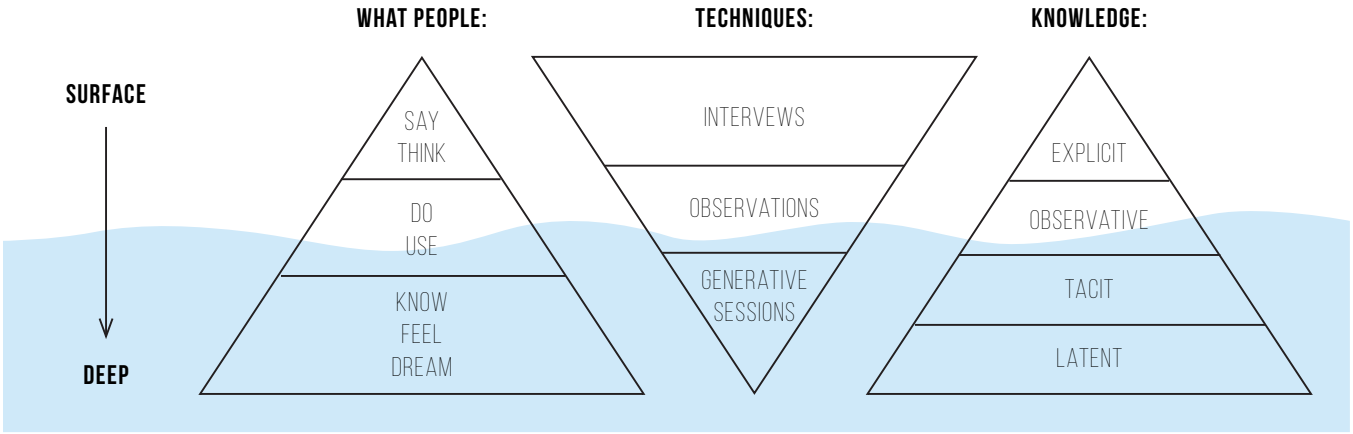


Figure 21 Levels of knowledge in what people say, do, and make

Figure 22 A participant in the content mapping session

FINDINGS

This customer research has brought about unexpected insights about frequent, business flyers travel journey. A couple of patterns are discovered from emotions experienced to behaviors and desires.
For example, at the beginning of the journey when the business flyers are preparing to leave their place, they experience positive emotions, such as excitement and energeticness and also negative emotions simultaneously, such as stress, restlessness, insecurity, and anxiety. When they reach the airport, their most despised part is going through security check because of the lengthy amount of time it takes. This is seen figure 23, where the emotion line dips into the negative portion. When it comes to their long-haul flight journey, two different flight journeys exist: day and overnight flights. This is surprising to discover two differently experienced flight journeys, which is not revealed in the primary inflight research. The day flight is usually taken for the outbound direction to another country, so that the business flyers can arrive at their destination in the afternoon or evening. Here, the business flyers work for approximately one to two hours at the beginning of the flight. They try to not sleep to prevent jet lag and adjust to their destinations' time zone. Also, they prefer to eat first and do not want to wish to be bothered for the second meal. On the contrary, the overnight flight is usually taken on the weekends and for the inbound direction to arrive in the morning. The business flyers do not work and sleep instead, since they have to be in the office in the morning. Also, they prefer to sleep and get rest over eating. For both flight journeys, the common lowest experienced moment in the travel journey is from the second half of the flight to three hours left before landing. The flyers experience boredom because they cannot sleep and have nothing else to do. They want to land as soon as possible. Near the end of the flight, they are thinking of the next steps they have to take, such as checking how to get out of the airport and where they have to pick up their luggage. After their flight, some of the business flyers arrange their transportation beforehand and some do not. They experience frustration of navigating through the airport and figuring out how to get to their hotel.

Beyond examining the flight journey is discovering their business trip schedule. This reveals their frequency in having to travel, which can be physically draining. Also, their packed work trip schedule uncovers that they do not have much time to do other things outside of work hours. With such a busy agenda and repeated, long travel journeys, business flyers desire a smooth, easy going journey without any distractions and extra, inconvenient steps. This is seen in figure 23, where the ideal scenario is overall very positive. The two negative dips are the security and immigration check points; these are uncontrolled situations that every traveler must go through.

For the complete travel journey findings with supporting excerpts from participants see Appendix E.

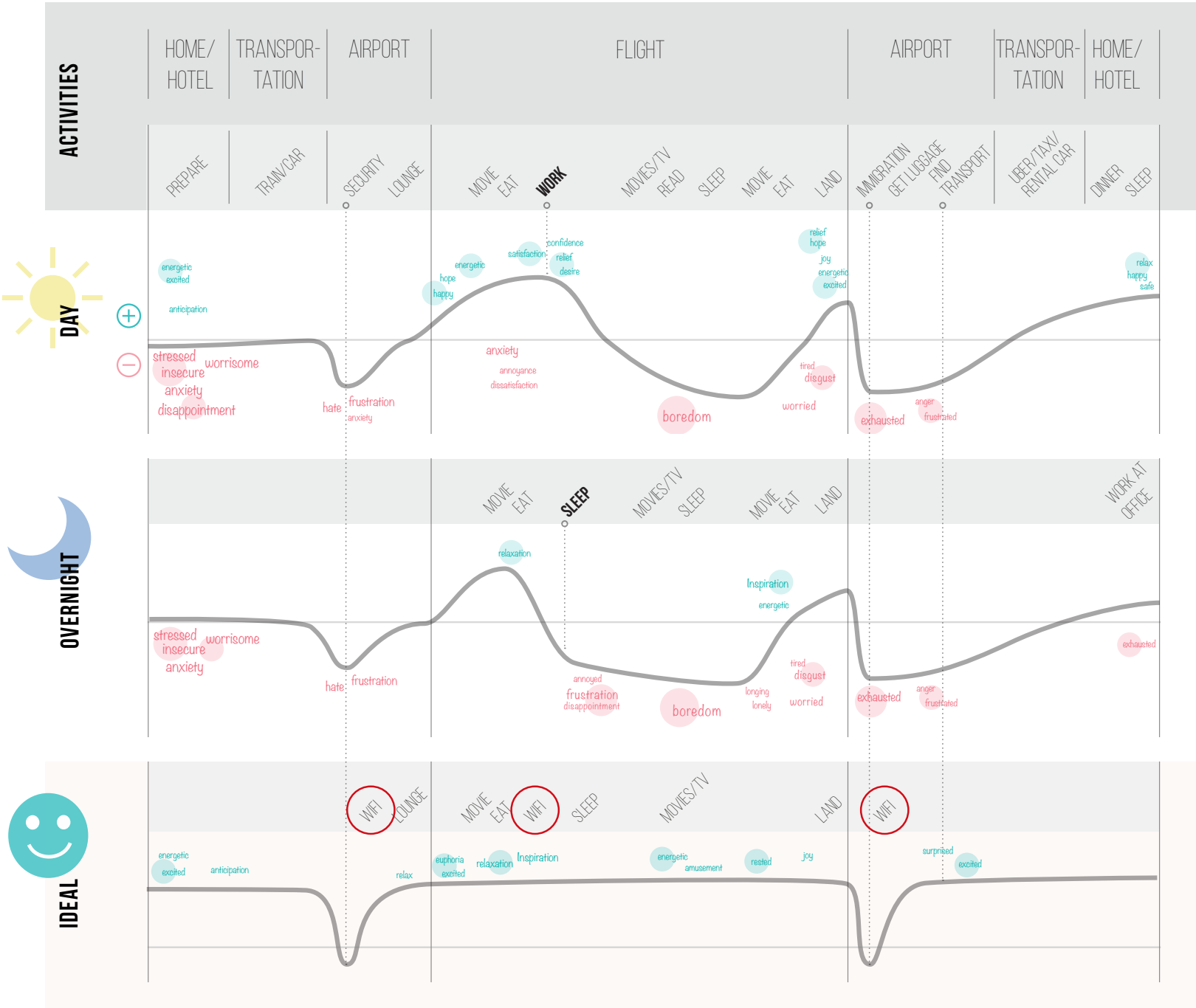


Figure 23 Passenger travel journey

RESULTS

Discovered Main Emotions

In reviewing the findings, patterns of three main emotions emerge: **annoyance, boredom, and distressed**. These emotions, along with the relating concerns, appraisals, and stimuli or the events in the travel journey are placed into the emotion framework, as seen in figure 24.

ANNOYANCE

For **annoyance**, business flyers are annoyed due to being exhausted from traveling too much, the long travel time, trying to prevent jet lag with the time difference, and having a tight work schedule.
With all these factors, they try to avoid any disturbances and aim to be relaxed and comfortable throughout the travel journey.

"It's annoying to have a 10 hour flight in between and you kinda just wish you could, you know, snap and be there. So I guess that kinda gets frustrating."
P 7: age 25-30, male, American, travel journey research

When preventing jet lag, this participants explains that he has to plan out this sleep during the flight:
"If I take the very early flight, like 8:30am, and I need to get use to the jetlag, usually I push myself to sleep. So when I get in the US, it's also in the morning. So if I sleep sometime in the flight, I can just prepare for jet lag."
P 4: age 25-30, male, Chinese, travel journey research

Exhaustion is usually felt when the plane has landed, as described by this flyer:
"Tired, exhausted from travel. So when I go to the office in the morning, right after flying, it's not very nice feeling. You need to crash not, somehow... often you're like: I had a long travel, you're tired."
P 3: age 30-35, male, Dutch, travel journey research

BOREDOM

For **boredom**, travelers are very bored the second half of the flight due to difficulties in sleeping and having already explored all the entertainment options. As seen in the day and overnight travel journeys in figure 23, this is the lowest moment for flyers. Also, business flyers are bored of the consistent, same travel routine, where they have become familiar with most of the travel settings and experience little variations.

"I start to feel bored. You're sitting there and it's only half of the total flight time. I also know about all the entertainment they have, so you can't be curious anymore. I just check the flight status. And you just .. goof around in the entertainment system. It's the most hard time. For example, 3 or 2 hours before landing. That's the most boring time."
P 4: age 25-30, male, Chinese, travel journey research

"Kind of if you're in the dead middle of the flight and you're browsing more movies and you're going down your priority list of things you've already seen or never heard of, or heard of but the the movies just aren't that very good. You're kinda in this desperation of like.. Ok i'm stuck here; how do i most make use of my time."
P 7: age 25-30, male, American, travel journey research

This participant explains that why he dislikes going to the same destination:
"I guess there isn't much variety when you're.. There's just a lot more anticipation and you kind of know what people you're meeting with.. There's less variety in it. It's a

lot of mundane means of flying."
P 7: age 25-30, male, American, travel journey research

Because of this boredom, travelers want unique services that surprises them at unexpected moments.

"At the airport. Best I have is a taxi driver, who was waiting for me with a cup of coffee. It was out of his own move. I was like, Oh, that's really nice. Nobody told me, or I didn't tell him. He just said, I figured you could use a coffee. So that was really nice. I would like to just grab a cup of coffee. It's kind of like a ritualistic thing. Well the same cab driver that got me a cup of coffee said to me, Let's go visit a few sites. That's a nice thing to experience."
P 3: age 30-35, male, Dutch, travel journey research

DISTRESSED

For distressed, travelers feel anxious for not knowing what lies ahead of them due to uncertainty of the situation. They fear extra steps they have to take. Thus they want relief in knowing helpful and relevant information. In their ideal situation, seen in figure 23, a smooth and stress-free journey is desired with easy, convenient solutions.

"If somebody takes away the doubts you may have. For instance getting car, doing it like Emirates, if you say, Arrange the car. You don't have to think about it for a second... Convenience is a.. It has to be because travel is kind of to the side for me for the work. So I know that it's useful for me to be on location. But the travel for me needs to be almost not unnoticeable, but just fluidly."
P 3: age 30-35, male, Dutch, travel journey research

"But to me, I want as little interaction as possible. Like I know where I'm supposed to go, just let me do my thing, I'll be there, it's fine. Don't delay. Don't introduce. Just I'm fine... At the kiosk, at Amsterdam sometimes they said can I check you in, Please go see a gate agent. I hate that. As a paying passenger and with my profile, that's a pain point for me.. So that's another step, right? It's not a huge thing; it takes a minute or something. But with that mentality of traveling and knowing your routine, it's just easier to have it all under my control."
P 5: age 40-45, male, American, travel journey research

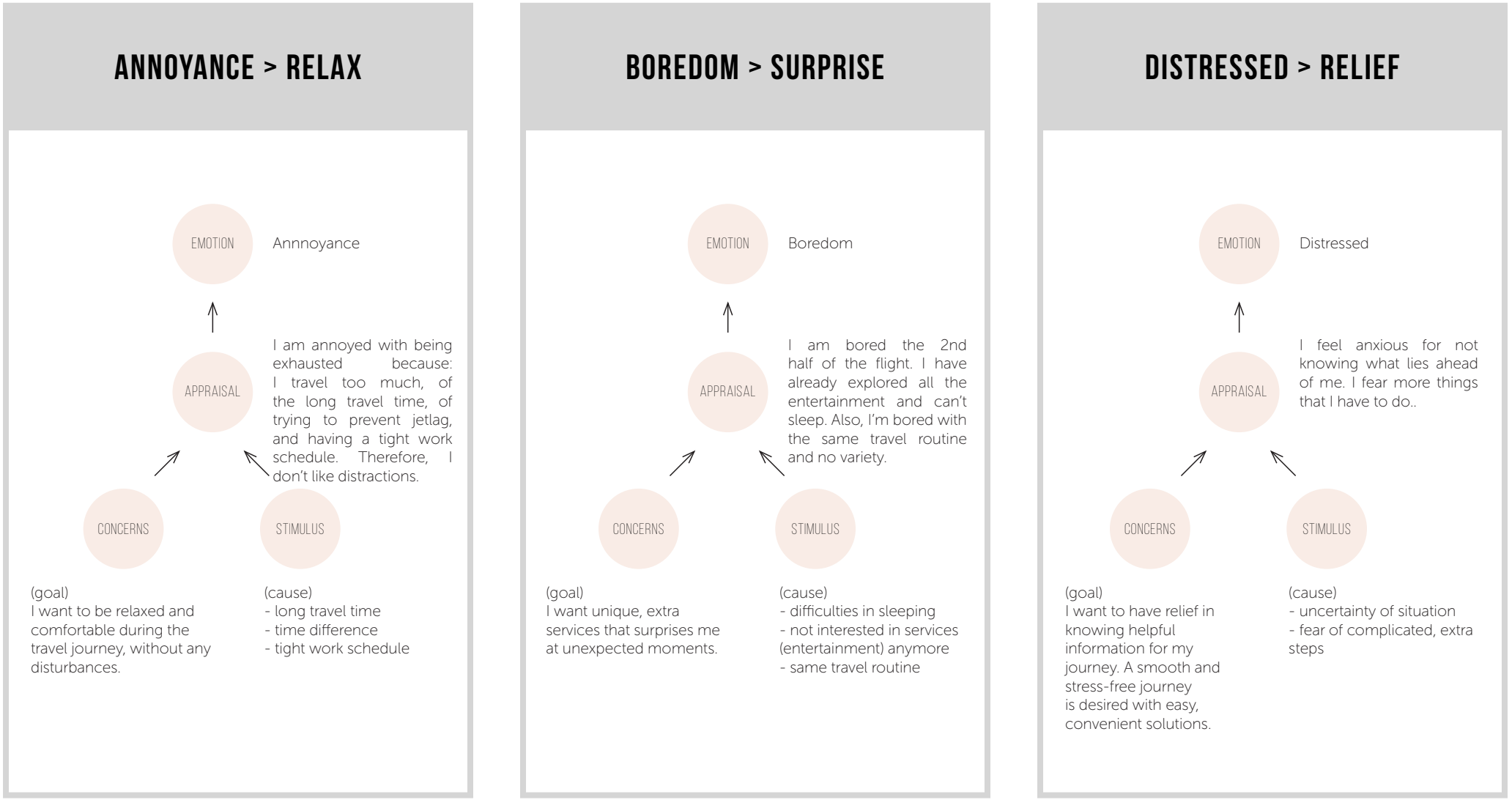


Figure 24 Three main emotions

Focused Emotion

In reviewing the three emotions, one emotion is chosen as a design focus for the target group. This is based on three factors: uncontrollable circumstances of the stimuli, priority of the travelers' concerns, and maturity in the personalization curve. See figure 25 Emotion evaluation.

First, uncontrollable circumstances of the stimuli means that the events or causes of the emotions are out of hands of the airline. For instance, the emotion, annoyance, is caused by long travel time, time difference, and tight work schedule. All of these causes are out of the hands of the airline. There is nothing that the airline can do about long travel time because the business flyer's flight has to be long-haul for more than eight hours. The same applies for the business flyer's work schedule. For boredom, the cause of having the same travel routine is also uncontrollable. But difficulties in sleeping and not interested in entertainment options can be somewhat solved by the airline. When looking at distressed, the stimulus of uncertainty of the situation and fear of complicated, extra steps can most definitely be resolved by the airline.

The second factor refers priority of the travelers' concerns. When looking at the emotion, distressed, the traveler's concern is to have relief in knowing relevant, practical information; this would be the fundamental priority over the other concerns. Once travelers are relieved with relevant information provided, then they can be surprised with unique, extra services provided at unexpected moments, and after that they can feel relaxed and comfortable with the services offered.

Thirdly, the emotions are placed according to the personalization maturity curve. Being distressed and desiring relief of practical travel information is applied to the first personalization stage, mass merchandising. This is when travelers can receive simple travel information, such as destination content. The travel information can then be more personalized in the next stages based on increasing, personal data gathered. Once more personal data is gathered, such as in the second stage of macro segmentation, where the product purchase history is known, the airline can surprise travelers with unique, personal offerings and recommendations. Thus, travelers can be less annoyed with their uncontrollable circumstances and more relaxed with services and products catered for them.

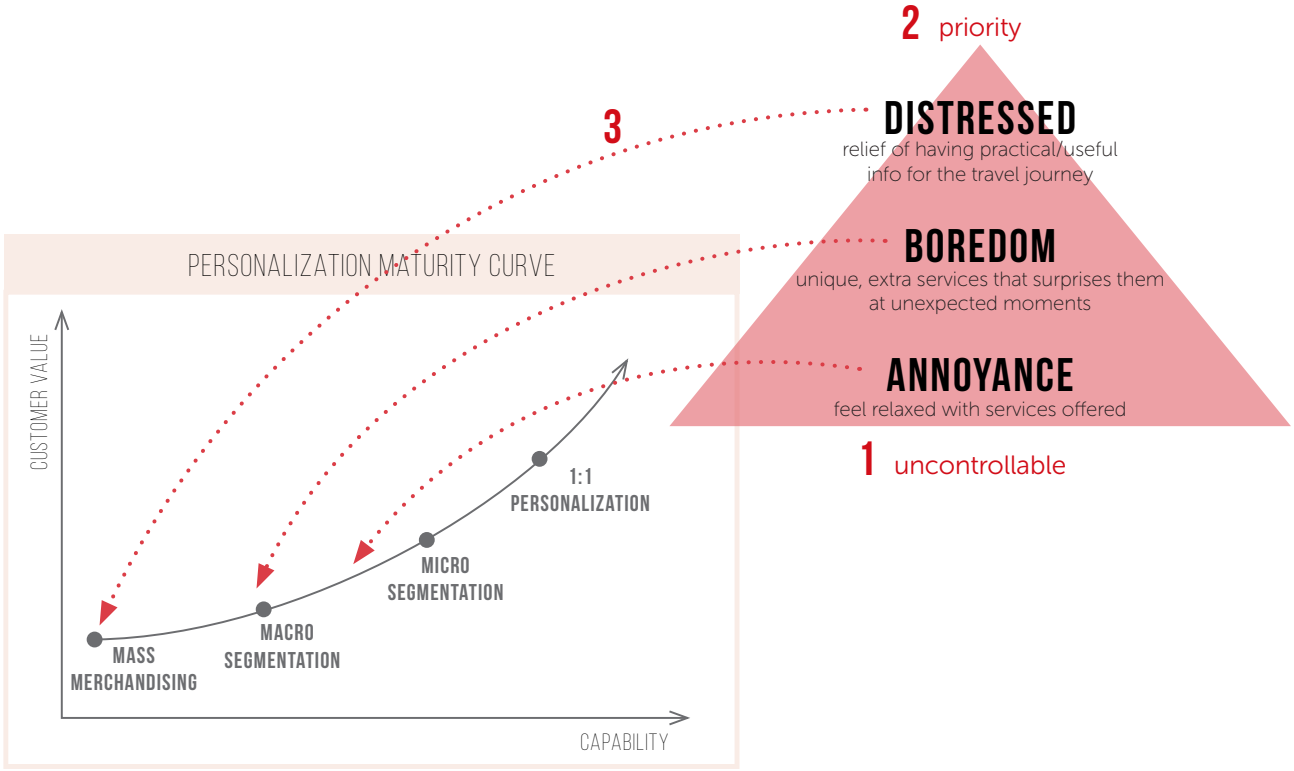


Figure 25 Emotion evaluation

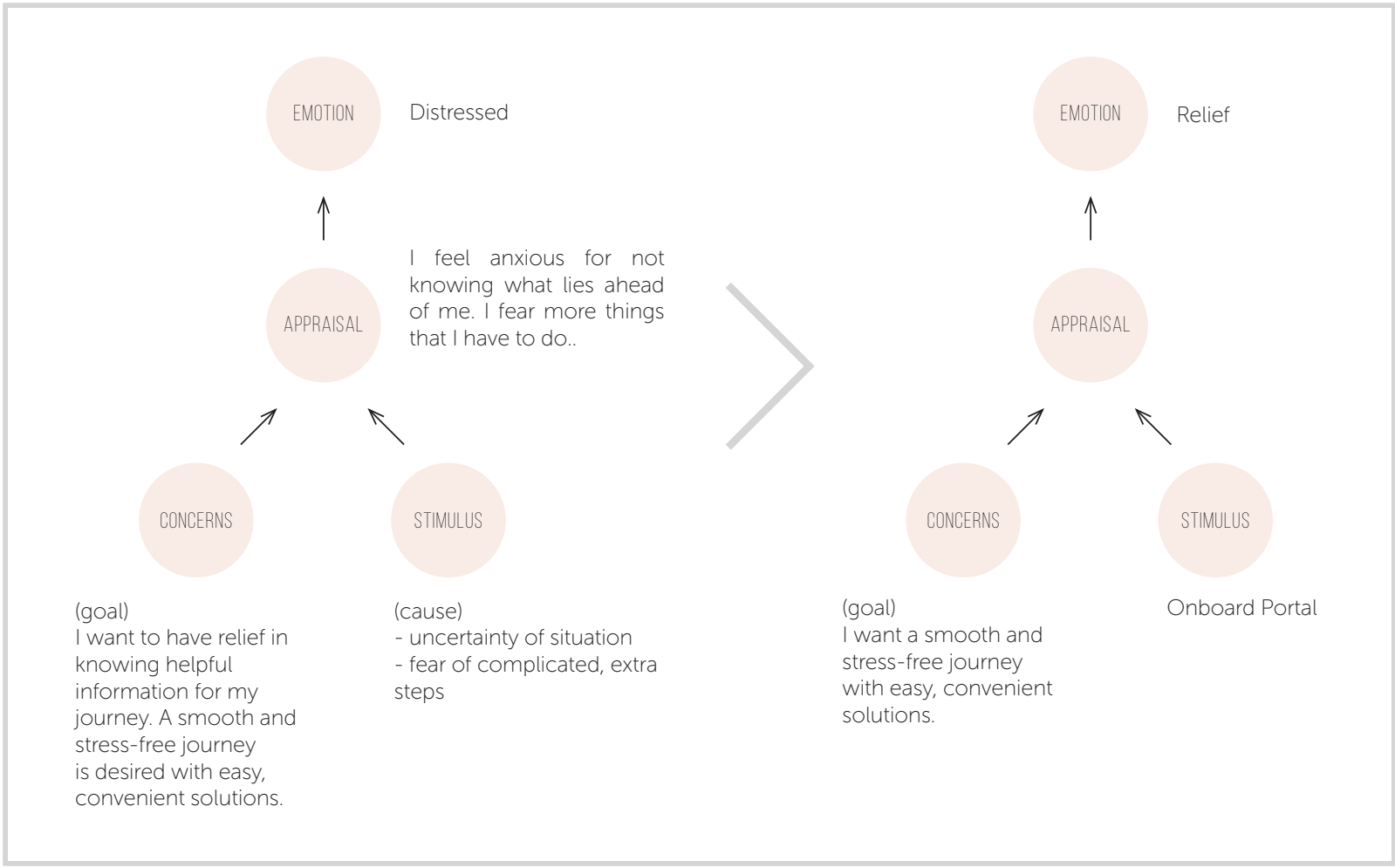


Figure 26 Intended emotion

In conclusion, the emotion, 'distressed', is the chosen focus in conjunction with the Onboard Portal development. In emotion-driven product design, selecting distinct target emotions offers possibilities for product differentiation and targeting a positive emotion that is unconventional for the product category can stimulate design innovation (Desmet et al., 2016). Additionally, negative emotions cause the user to withdraw from the product. Whereas positive emotions stimulate product purchase intentions, repurchase intentions, and product attachment; products that evoke positive emotions are bought more often, used more often, and are more pleasurable to use (Desmet, 2012). Hence, 'distressed' is converted into the positive emotion, 'relief', which is the desired, intended emotion for the target group when using the Onboard Portal. Figure 26 Intended emotion shows this conversion of emotions. With 'relief' as the positive impact, it will be included in the design challenge for designing the stimulus, the OBP. The concern remains the same as business, frequent flyers desire a convenient, smooth and stress-free travel journey. The appraisal is not filled in as it will be discovered in the next chapter: Ideation.

Design direction

- Should enable business, frequent flyers to feel 'relief' when interacting with the OBP

3.4 DESIGN CHALLENGE

The design challenge is a statement that defines what should be designed and for whom the product is designed for. It positions the product's unique selling point and expresses the emotional consumer relationship in enhancing the target group's inflight experience. It is used as a guide in the design process seen in the ideation and concept development phases. The following section provides explanations of the elements that formulate the design challenge.

SUMMARY

In reviewing personalization, figure 27 Summary shows an overview from the three analyses sections. The letters (A, B, C) corresponds to elements in the design challenge. For internal analysis (A), as stated before, the OBP is currently at the beginning of the personalization maturity. Thus, it is crucial to design for the next personalization level to reach macro segmentation. In order to do this, not only should passengers be known holistically by their data gathered, but also the OBP data should be managed and connected to other touchpoints throughout the passenger's travel journey. This then provides a coherent journey even on multiple channels.

From the external analysis (B), compelling trends, such as proactive, deep, ongoing user engagement; customizability; personalized characteristics of products that learn about the users and are curated by the users; more movement within UI/UX elements; and smarter personalized user experiences with instant assistance and push notifications should be taken into account in the design process. Additionally, as indicated in the competitors analysis, personalized experiences involves the passenger being recognized with unique, one-on-one attention in the digital platforms as in the physical world. These trends and competitor findings serve as a unique selling point for the OBP.

Lastly from the customers analysis (C), business, frequent flyers are concerned over the uncertainty of their travel steps ahead of them and fear more steps that they have to take. They seek for products or services that provide a smooth and stress-free journey with easy, convenient solutions. With this, they can experience relief, which is the intended emotion for them to feel when using the newly designed OBP.

Moreover personal data, referring to the 360 degree view of the customer is incorporated into the design as an example, made-up data representing a business, frequent flyer. In order to use real data of passengers, a working native (built from scratch with algorithms) prototype will have to be built. Therefore, a basic, imitation profile of a business, frequent flyer is seen in the ideation phase.

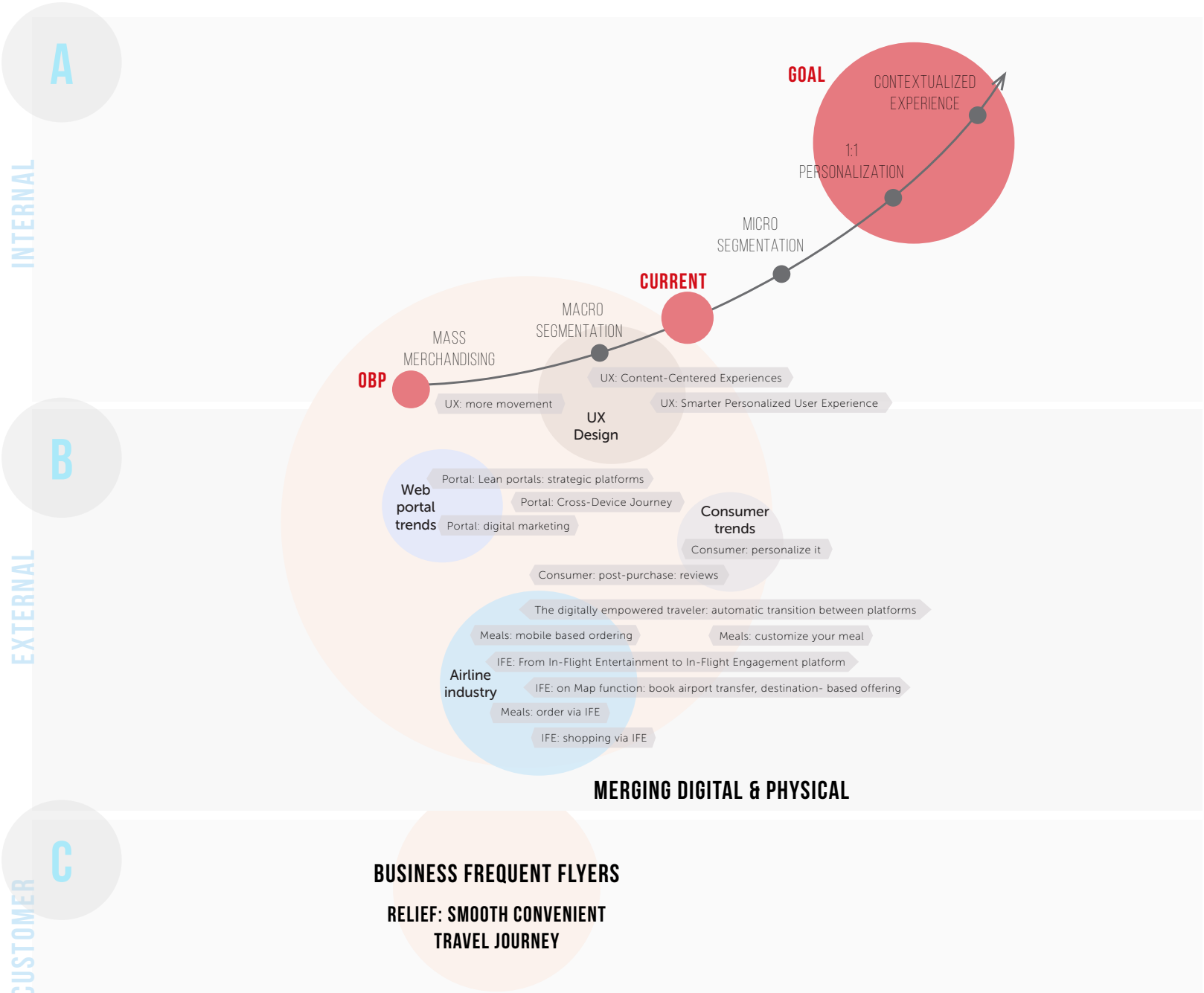


Figure 27 Summary

DESIGN DIRECTIONS

All the design directions are gathered from the analysis sections and formulated into six 'How To' phrases, which act as design guidelines. (Appendix G shows all the design directions categorized into six segments or six 'How To' phrases.) The four phrases from the left relates to the frontend user interface and the two phrases from the right relates to the backend developments. These phrases can be utilized in the ideation phase to promote designs inline with the research.

Stimulus
Onboard Portal

Emotion
Relief

Concern
I want a smooth and stress-free journey with easy, convenient solutions.

DESIGN CHALLENGE

THE ONBOARD PORTAL SHOULD BE AN INTERACTIVE PERSONALIZED INFLIGHT WEB PORTAL THAT IS CONNECTED TO OTHER TOUCHPOINTS THROUGHOUT THE TRAVEL JOURNEY TO ENABLE BUSINESS, FREQUENT FLYERS TO FEEL RELIEF FOR A CONVENIENT, SMOOTH TRAVEL JOURNEY.

B
A
C

How to:

How to acknowledge passengers with more attitudinal data throughout the travel journey?

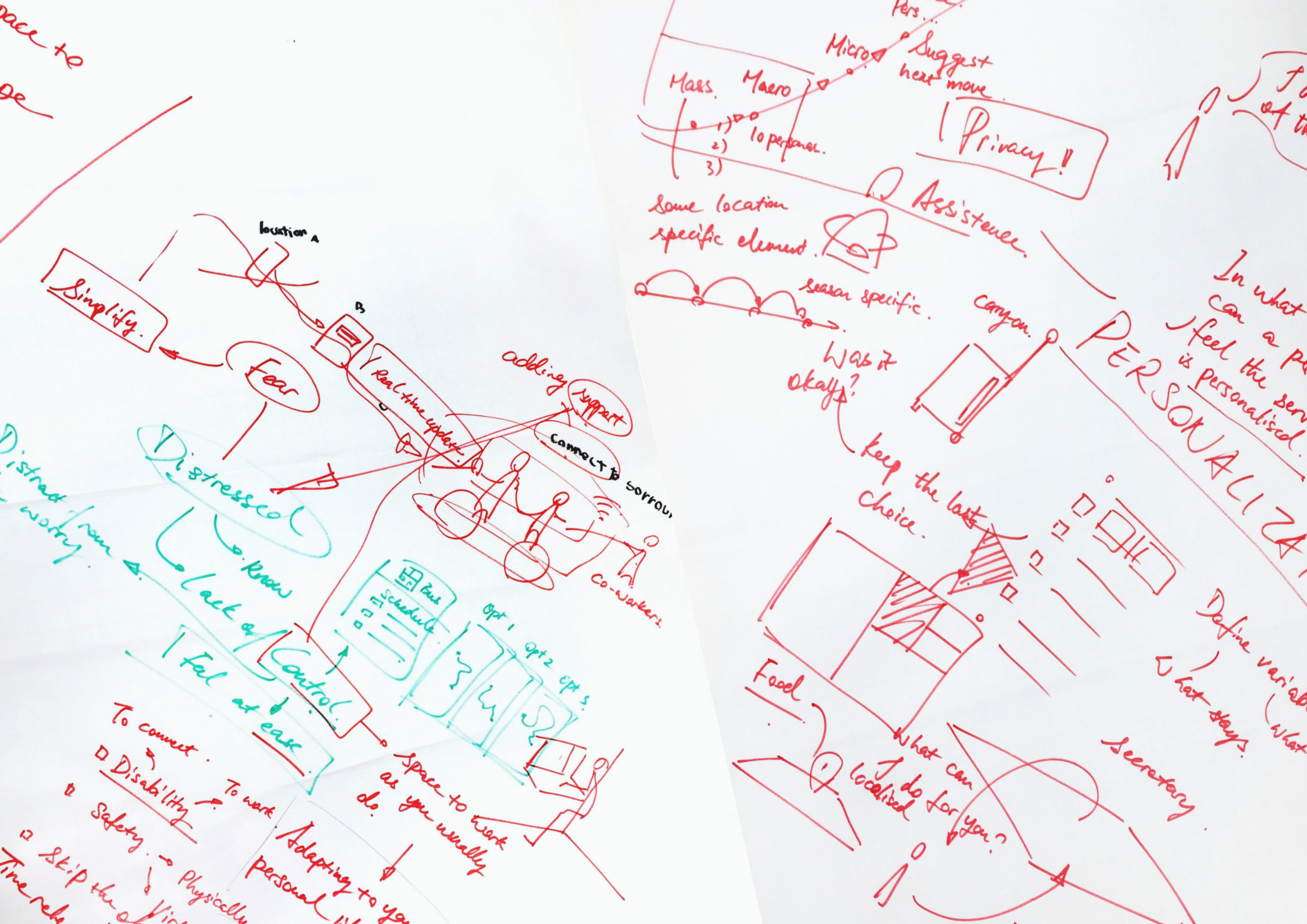
How to create engaging platforms that merge the digital and physical worlds?

How to create smarter personalized experiences that learns about the passenger and gives the passenger control?

How to connect touchpoints with the same interactions for cohesion throughout the entire passenger journey?

How to consider data to be shared across touchpoints?

How to design for the next level of personalization with consideration of the personalization goal?


Micro
Suggest next move.
Macro
Mass.
1)
2)
3)
Privacy!
Some location specific element.
Assistance.
season specific.
Was it okay?
keep the last choice.
Simplify.
Fear
Location A
B
Real time update.
adding support
connect to
Co-workers.
Distressed
Distract from worry.
Know
Lack of control
I feel at ease.
To connect.
To work.
Disability
Safety
Physically
Skip the
Time rela
Bus
Schedule
opt 1
opt 2
opt 3
Space to work as you usually do.
Adapting to your personal
Canyon.
PERSONALIZA
Define variab
What stays
Food
What can I do for you?
localised
Secretary
In what
can a
I feel the
is personalised.

CHAPTER 4

IDEATION

To initiate the design process, the interaction vision pinpoints users' experiences, feelings, and moods with the product. This then supports how the product's features and functions should be designed. The chapter, then, explains concepts developed for the system (involving the entire travel journey) and the OBP. At the end, a OBP concept is selected to be further refined in the last project phase.

4.1 INTERACTION VISION

Since the design challenge defines what should be designed. The interaction vision indicates how to design the product or service. It serves as an interaction vision guide that signifies how users can interact with the product. Unlike storyboards that usually show product-user interactions on a very functional level, the interaction vision represents the actual experience the interactions should evoke (Pasman, Boess, and Desmet, 2011). When focusing on product properties, designers may be fixated on materials, functions, and the user's needs. However the interaction vision aids designers in viewing the product beyond these function-related properties to express and identify qualities the interactions between product and user should have to actually induce the intended experience (Pasman, Boess, and Demet, 2011). These qualities are presented in three words for the product. Adding onto the qualities is an event or moment that is unrelated to the project's context, in which is presented by a brief statement or explanation communicated through an image or other forms of media. This chosen event or moment helps make sense of the qualities with a real-life scenario.

As shown in figure 28, two interaction visions are created: one for the entire travel journey or system and the other for the OBP. The system (entire travel journey from searching to settling in at the destination) is included and developed first because the OBP cannot be personalized first without knowing how the entire system's personalization works. When answering the research question: How to enhance the customer experience using personalization, the use of personalization is discovered first through the system, which then relates to the inflight experience with the OBP. Also, the OBP is not a stand-alone touchpoint; as defined in the design challenge, it is connected to other touchpoints throughout the travel journey, which means that data is connected on the backend and frontend interactions are in sync.

The System

From previous insights three key qualities were chosen for system interaction, which are effortless, trust and control. These selected qualities are represented in the moment when room service is ordered at a hotel, which is very easy to do. Once the guest calls to order food, the guest chooses what he or she wants; But he or she can still change the order afterwards and add on more items before, during, and after the meal. Also, the guest knows when the food will arrive to his or her room and trusts the hotel kitchen staff to deliver the best results.

The OBP

For the OBP, the interaction qualities, chosen based on previous research insights, are taken-care of, one-of-a-kind, and overseer. The moment of wearing glasses, in which everything becomes much clear symbolizes how users should feel when using the personalized OBP. Initially the person without glasses is insecure, uncertain, and not able to clearly see anything. But when the specifically prescribed glasses are put on, the person is content to know what is going on around his or her surroundings, see even details, and be able to well-adapt to his or her environment.

These interaction qualities of the OBP fulfill the appraisal of the basic model of emotions (shown in figure 29). They act as the intended experience for business, frequent flyers to feel relief when using the OBP. which should provide convenient solutions for a smooth and stress-free travel journey.

The next step is to develop concepts for the system and the OBP based on the interaction visions. To gain a fresh, outside perspective, an ideation workshop is held with other master design students from the TU Delft. Details and results of the ideation workshop is in Appendix H.

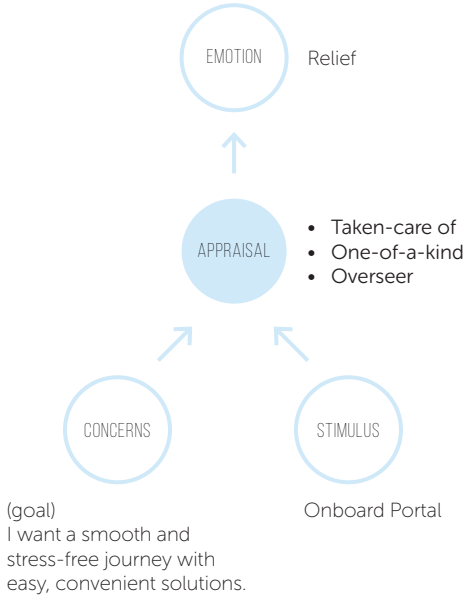


Figure 29 Basic model of emotions with appraisal

SYSTEM

- Effortless
- Trust
- Control

That moment when you order room service at the hotel: it's super easy, you know what you ordered and when it will come. You can still make changes or order more before, during or after the meal.

ONBOARD PORTAL

- Taken-care of
- One-of-a-kind
- Overseer

That moment when you wear your prescription glasses: everything becomes much clearer.

Figure 28 Interaction vision for the travel system and OBP

4.2 SYSTEM CONCEPTS

Based on an ideation session with other design students from the Industrial Design department of TU Delft, two ideas came about for the system with the overarching theme of a digital assistance. (The ideation session is explained in the Appendix H). Since some business flyers book flights through their office secretary or travel agent, the idea of digitizing this assistant arose. Also, the secretary or agent already knows the business flyer's usual travel itinerary, wants, and preferences. The two digital assistant ideas are: Customizable and Ask questions. Table 1 is an overview of the system ideas. (Further details of the two systems are seen with storyboards in Appendix I.)

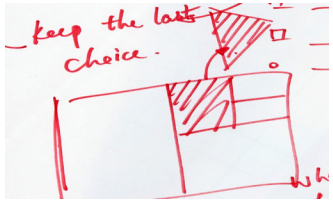
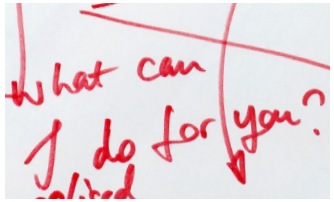
	DIGITAL ASSISTANCE	
	SYSTEM 1: CUSTOMIZABLE 	**SYSTEM 2: ASK QUESTIONS** 
STARTING MOMENT	After I booked my flights and throughout the journey in multiple touchpoints.	Before searching for flights or when I'm enrolling as a new member.
ACTIVITY FRONT END	I get to customize services and preferences that I want to see in all the touchpoints at anytime.	I get personalized content delivered at the right time and right place.
ELICIT EMOTION	The passenger has an ease of mind to have control over own interests at any point in the journey.	The passenger feels admired that he is being recognized throughout the travel journey.
PERSONALIZATION BACK END	• traveler types determined by features choosen • aid in next level of personalization • goal: AI learning, 1:1 personalization	• traveler types determined by answers • aid in next level of personalization • goal: personality types

Table 1 System concepts

EVALUATION OF SYSTEMS

The two system concepts are evaluated in terms of desirability, feasibility, and viability by the interaction vision qualities and internal stakeholders. First, the interaction vision qualities of the system are rated according to its potential in each system concept. As seen in table 2, both systems are rated equally on the potential for trust and effortless. Although effortless is perceived differently in each system, they equally do not have a high effortless potential. In system one - Customizable, users are able to customize their preferences throughout multiple touchpoints in the travel journey, which may be viewed as too much work. In system two - Ask questions, users have to answer a set of questions before searching for flights, which adds an extra long step for flyers to do. Also for the potential of control, the customizable system scores higher because users are able to manage, change, and choose their preferences or desired content whenever they want.

Secondly, internal stakeholders have given their insights of the two systems through one-on-one meetings. These internal stakeholders include: a UX manager, a Digital Experience Manager, a Head of UX strategy and design manager, a UX interaction designer, and two Service Designers. They are asked for their input because they are either directly involved with the OBP or have expertise with developing other KLM digital touchpoints. They acknowledge the company's and customers' needs. Questions about feasibility, viability, desirability are asked about the two systems. (Their individual feedback is in Appendix J). They noted that system one - Customizable is more desirable for customers and is function based since users consistently choose what features or services they would like. Even though stakeholders favor this concept, it is not feasible for KLM because it involves AI technical capabilities and all the touchpoints' data have to be connected, which KLM does not have the infrastructure yet. On the other hand, system two - Ask questions is not attractive for the user experience because there can be too many questions at the beginning. However, this system fits in well with KLM's environment due to being more in line with current, similar projects. Thus, it is more feasible now because it can be integrated into current projects. Also, it is more viable in terms of having a long term vision for the future because this system can lead to determining the personality types of passengers, which takes personalization into a much advanced level.

INTERACTION VISION:	SYSTEM 1 CUSTOMIZABLE	SYSTEM 2 ASK QUESTIONS
Effortless potential	2	2
Trust potential	3	3
Control potential	3	2

Table 2 Evaluate systems with interaction vision qualities

SYSTEM CONCLUSION

When the two systems were evaluated, the idea of combining them came across everyone's minds. The questions from the Ask questions system can be separated throughout touchpoints, so that users are not too overwhelmed in the beginning. Also the questions can start off with basic concerns of the traveler. Then more questions about the traveler's preferences can be asked at the right moments throughout the journey. For instance, asking the traveler to choose his or her meal during the booking process is most likely not the right timing because travelers book in advance and will not remember what they have chosen the day of their flight. Therefore, presenting travelers the option to choose their meals during the check-in process, which is 24 hours before the flight is more suitable.

The structure of the combined system - Questimize is seen in figure 30. In the back end, the big data platform continuously gathers data and learns about the traveler to output personalized content and recommendations. This combined system still coheres to the interaction vision moment of ordering room service at a hotel. Like ordering room service, the traveler can easily choose his or her preferences on the touchpoints through simply designed questions or suggestions. Also, based on the traveler's choices, he or she knows what to expect and receive. For example as seen in the system user flow, figure 31, on the next pages, Kevin, the business traveler, checks that one of his concerns is the flight schedule in the beginning search process. After he books his flights, he gets the option to choose the flight schedule he prefers. He then receives the detailed and personalized flight schedule the day before his flight or after checking-in online.

This user flow is an example of a scenario for a business frequent flyer, Kevin, who decides to answer the additional questions for personalized services. Kevin, who is a thirty-four year old Dutch male and a Gold Flyer Blue member, flies long-haul trips as much as once every other month. His booking history shows that his usual flight route is from Amsterdam to Kuala Lumpur and he has a future flight to Sydney. First, Kevin logs in to his KLM Flying Blue account. Then he searches for flights and checks that his concerns are: flight schedule, meals, wifi, and transfer info. During the search process, he is able to see flights that have with wifi since he marked wifi as his concern. After he books a flight, he chooses a few preferences, such as the type of flight schedule, meal type, and notification receiving method. The day before he flies, he checks-in, chooses which Vegan meal he wants, and gets to see his personalized flight schedule. A few hours before heading to the airport, he gets a notification that his flight is on-time. At the airport and KLM lounge, he is able to see a lounge portal that has personal content, like the time left before boarding. Also, he answers fun questions, like preferring red wine over white and coffee over tea. After he boards the aircraft, he receives a notification that his flight has wifi and the link to the onboard portal site to connect. This user flow helps set the stage for designing for the OBP.

COMBINED SYSTEM: QUESTIMIZE

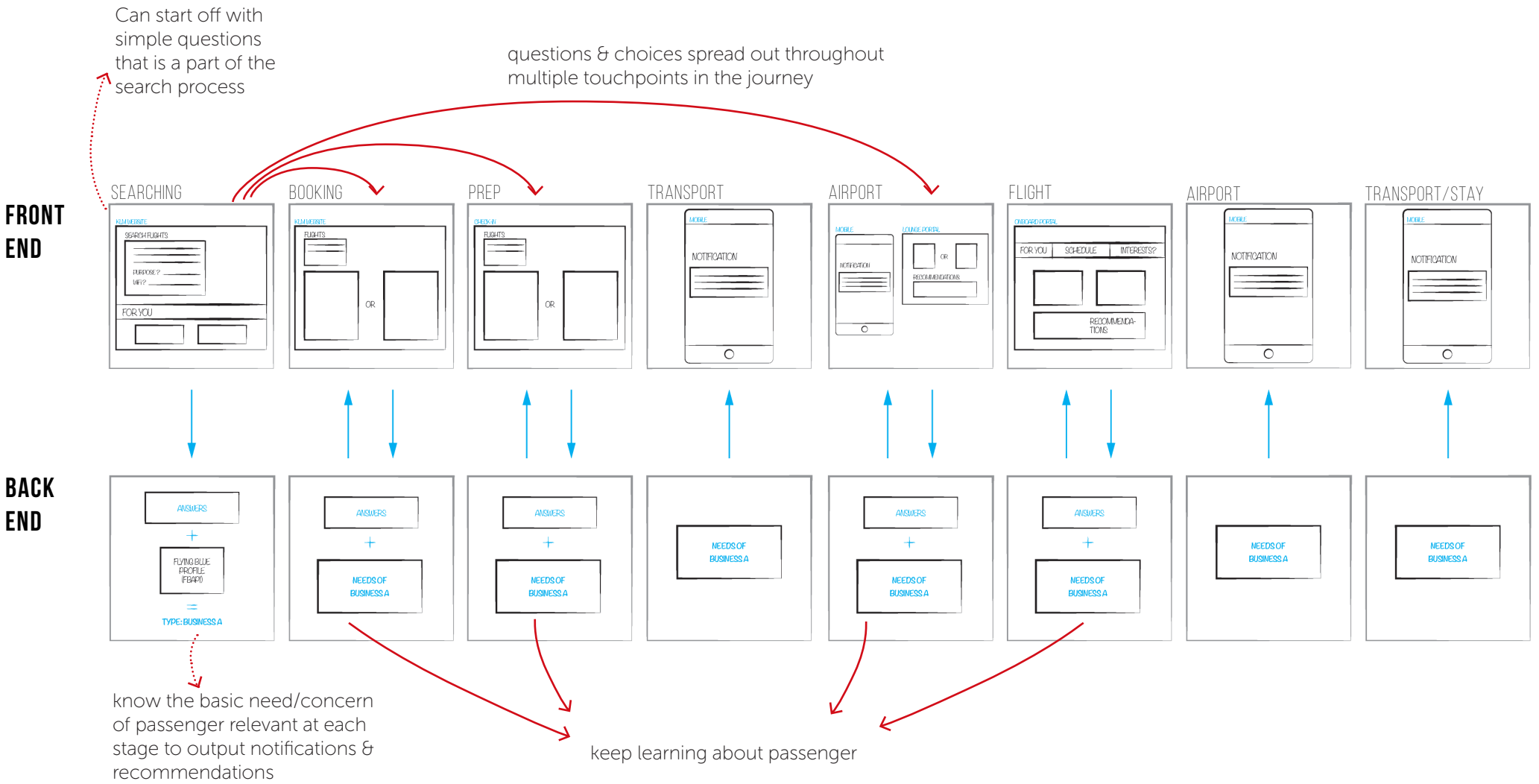


Figure 30 Diagram of combined system - Questimize

SYSTEM USER FLOW

PASSENGER DATA

- Kevin S.
- male
- Age: 34
- Flying Blue: Gold - 68000 miles
- Nationality: Dutch
- Booking frequency: 1/every other month for long-haul
- Booking history: AMS-KUL
- Future bookings: KUL-SYD

SEARCHING

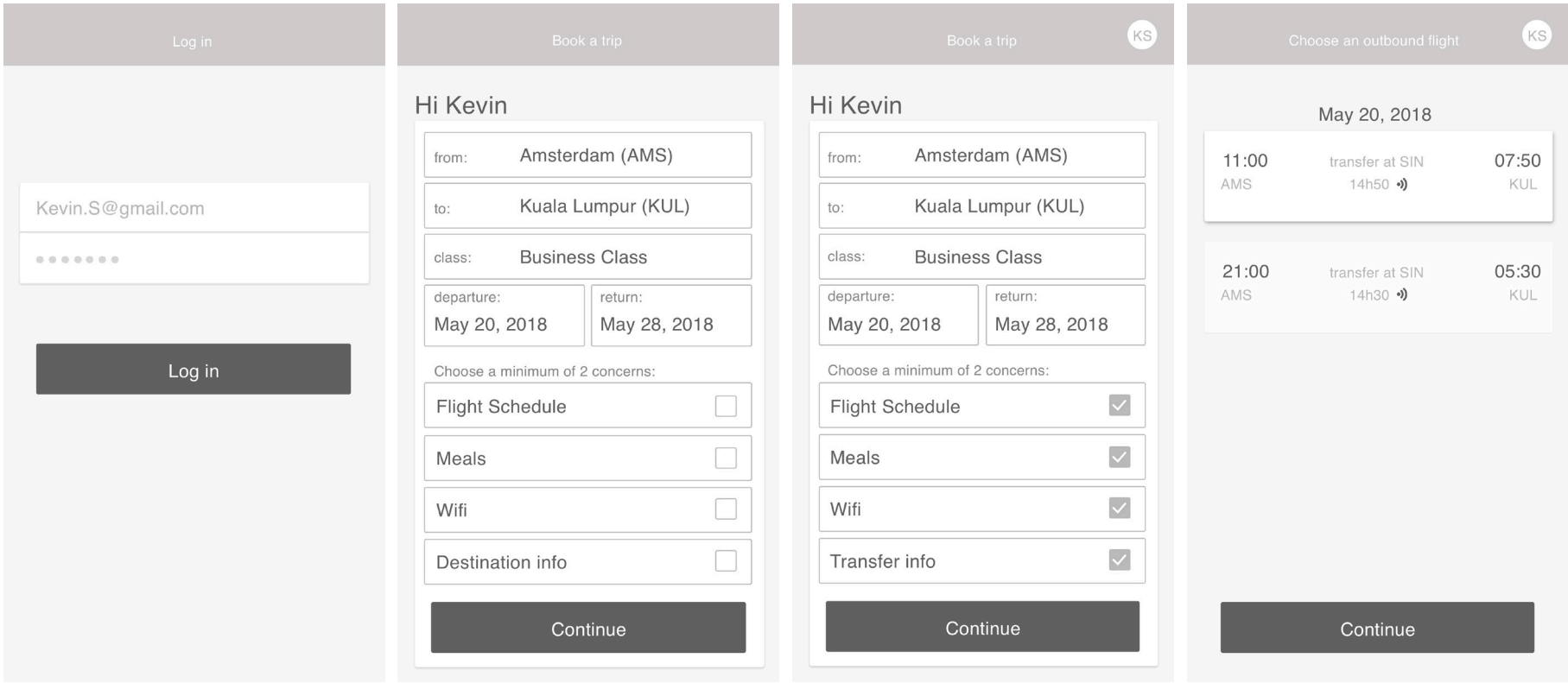


Figure 31 System user flow from searching process to boarding flight

BOOKING

PREP

Choose your preferences

KS

May 20, 2018

11:00 AMS — transfer at SIN 14h50 — 07:50 KUL

Choose a schedule type

Dinner & Rest | Rest & Breakfast

Regular | Dine anytime

Meal preferences

Vegan

Notifications

Whatsapp

Skip | Continue

Outbound overview

KS

Your outbound flight

May 20, 2018

AMS 11:00 — transfer at SIN 14h50 — KUL 07:50

Transfer info

AMS — SIN — 1hr15 — SIN — KUL

Wifi plans

Vegan options

Check-in

KS

May 19, 2018

AMS 11:00 — 14h50 — KUL 07:50

Choose your Vegan dinner

Clean Vegan

Warm hearty

Continue

Check-in

KS

View your flight schedule

Your flight to Singapore

Welcome to your live inflight schedule for flight KL731.

11:00 / 19:00 Amsterdam — Departure

11:35 / 18:35 Wifi available — Be connected and work as long as the aircraft is above 10,000 ft.

15:00 / 22:00 Meal service — Clean Vegan meal — View more

15:45 / 22:45 Beverages — View more

17:30 / 00:30 Lights off — Check out your destination info, news, guides, weather … — Destinations

TRANSPORT

KLM Royal Dutch Airlines Whatsapp

May 20, 2018

Good morning Kevin.
Your KLM flight 7962 - AMS to KUL is on-time. Boarding starts at 10:30 AM.
See you at Schipol airport soon.

7:00 AM

AIRPORT

Lounge portal

Hi Kevin
Welcome to the KLM lounge

Your interests

Board your flight in 45 minutes. Gate 6B

Lounge Amentities

Your preferences

Red or White

Coffee or Tea

Lounge portal

Hi Kevin

Your preferences

Red

White

Coffee

Tea

Save

FLIGHT

KLM Royal Dutch Airlines Whatsapp

May 20, 2018

Hi Kevin.
Welcome to your flight - AMS to KUL. Wifi is available through the portal. You can connect at onboard.klm.com

10:40 AM

4.3 OBP CONCEPTS

Since knowing how personalization works within the system, knowing what to implement and design in the OBP can be doubtlessly established. The ideas generated from the ideation session with other TU Delft design students (Appendix H) and the results from the current OBP testing with fourteen passengers (Appendix F) influence ideas and features to be included during an individual brainstorm session (Appendix K). Two concepts came about for the OBP: Your view and Zoom-in. Table 3 is an overview of the concepts. The concepts are digitally created using UI/UX tools, such as creating wireframes on Sketch and working prototypes on InvisionApp. The architecture diagram can be seen in the next two pages.

OBP CONCEPT 1: YOUR VIEW

Concept one - Your view starts off by the passenger clicking an airplane window that says 'look over', as seen in the wireframes on the next page. Then the passenger can view 'your flight' and 'your world' tabs on the top. 'Your flight' shows a layout of everything about the flight, such as the flight schedule, live map with connecting flight information, meal and destination information. 'Your world' shows recommendations and offers based on the passenger's data or past actions on touchpoints. This concept is designed with inspirations from the layout and interacts of Pinterest and Flipboard apps, where flat, active layouts with two columns are used. Like the moment of putting on glasses, this design gives passengers the ability to have a clear overview of all the relevant and practical information. Also, the act of putting on specifically prescribed lenses relates to act of the passenger answering additional preference questions beforehand in order to receive a tailored vision into his flight and world. (A larger architecture diagram of the wireframes is shown in the Appendix L.)

OBP CONCEPT 2: ZOOM-IN

Concept two - Zoom-in starts off by the passenger clicking on the airplane, which then zooms into the passenger's top view of his or her seat (see page 69 of the wireframes). The passenger may zoom in and out to view other parts of the plane. Around the passenger's seat are topics represented through an icon, such as map, meals, schedule, and destinations. This user interaction is very simple going back and forth between the topics' pages and the main page of the passenger's seat. The zoom-in interaction allows passengers to magnify on his or her surroundings. Thus like seeing through tailor made glasses, the passenger is able to see focused, personalized topics and have a peripheral view of his or her environment. This gives the passenger a sense of spatial and physical relation in the digital context. (A larger architecture diagram of the wireframes is shown in the Appendix L.)

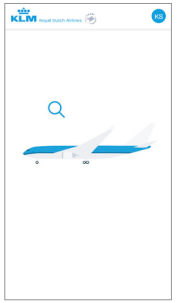
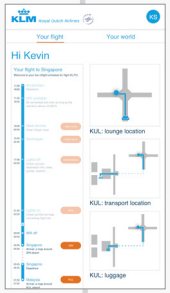
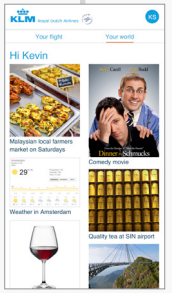
	CONCEPT 1: YOUR VIEW	CONCEPT 2: ZOOM-IN
MOMENT	Throughout the inflight journey: from when the OBP is first seen for wifi connection to when the plane is no longer at 10,000 ft.	Throughout the inflight journey: from when the OBP is first seen for wifi connection to when the plane is no longer at 10,000 ft.
ACTIVITY	 Flat layout of all services and features: Starts off with a airplane window. Then, the passenger gets a view into his world and his flight, which is a layout of services and features.	 Interactive zoom capabilities: Starts off with an airplane. Then, the passenger gets to zoom into the plane to a top view of his seat / plane environment. Elements in the top view can be further zoomed-in on, such as the schedule.
ELICIT EMOTION	The passenger feels satisfied with the basic overview of inflight services, and is content with relevant personal information shown at the right time.	The passenger feels curious to zoom into the plane and discover services/information. He is surprised that the interactive layout shows him his environment inside and outside the plane.

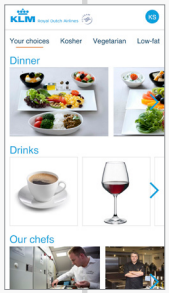
Table 3 OBP concepts

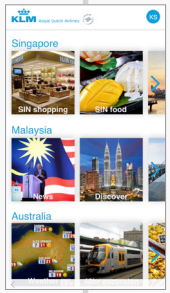
ARCHITECTURE OF CONCEPT 1: YOUR VIEW

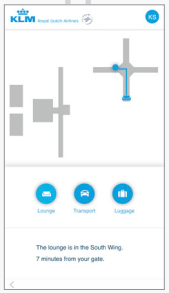
Active 'Your view' page - content changes according to time

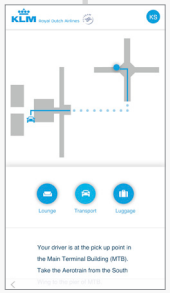


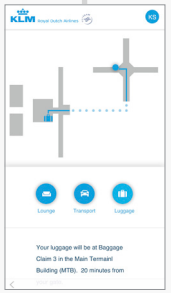


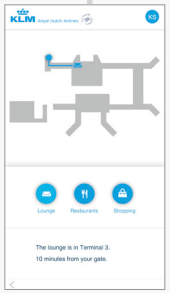


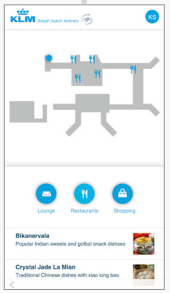


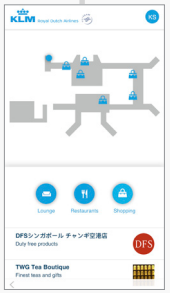


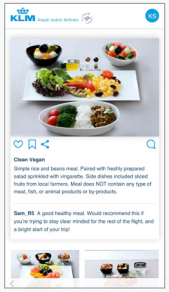


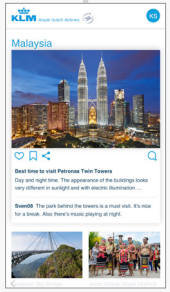


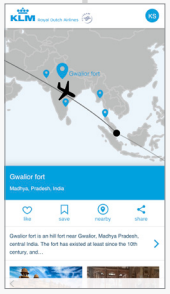




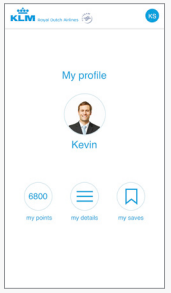




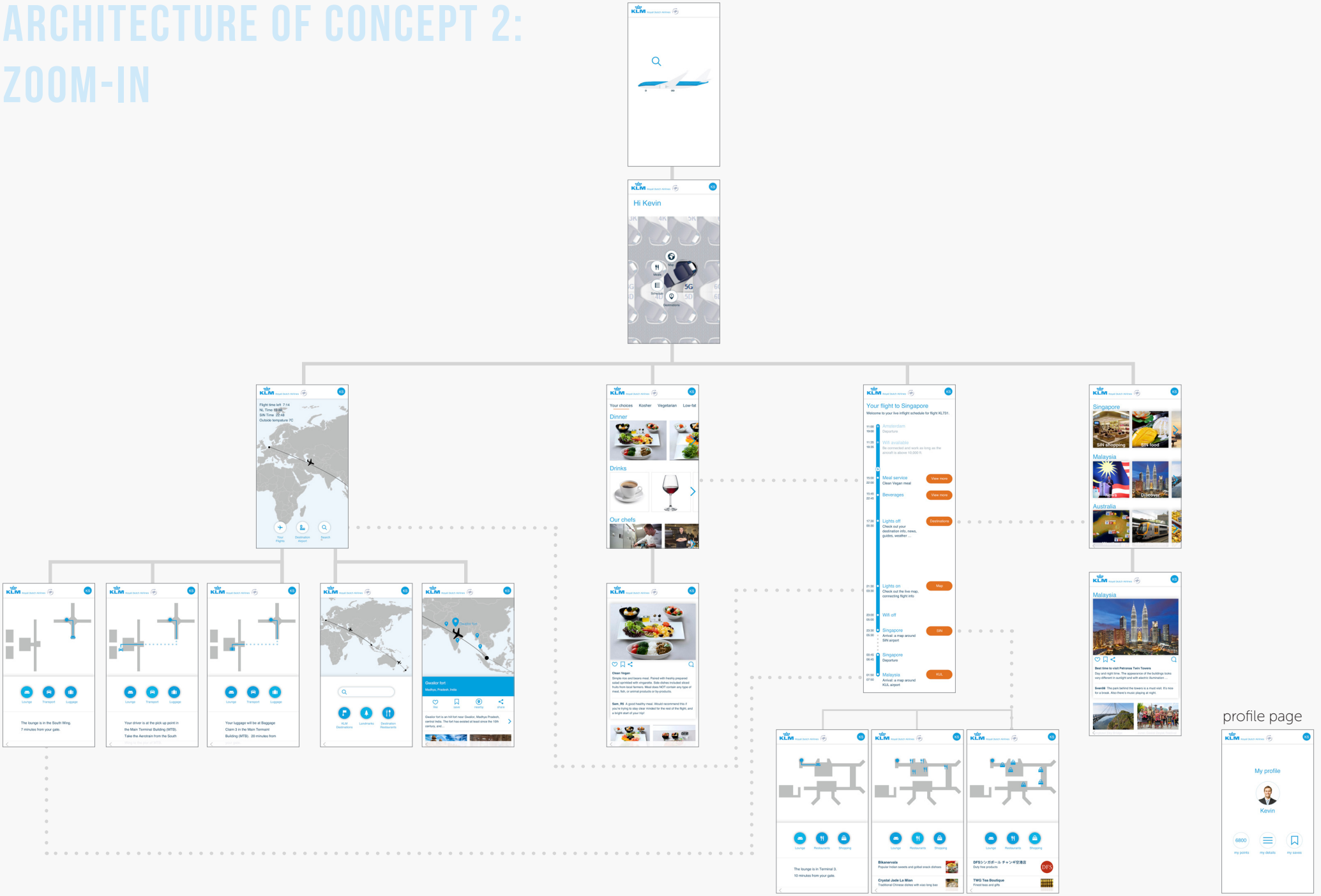




profile page



ARCHITECTURE OF CONCEPT 2: ZOOM-IN



NON PERSONALIZED OBP

To give a comparison of a scenario without personalized services and offerings, figure 32 shows how the OBP would look like. This is when Kevin, the business flyer, decides to not answer any of the additional questions or choose his preferences from the search process. The OBP would only show generic information that already exists on the paper flight menu, such as all the meals and beverages available to everyone. The OBP would not know any preferences about Kevin and would not even show a basic flight schedule because there is no indication that Kevin wants to see the schedule. Some people may not even want to see the flight schedule, thus it is not included on the non personalized OBP. Knowing what this non personalized example of the OBP contains gives an apparent distinction with the personalized OBP.

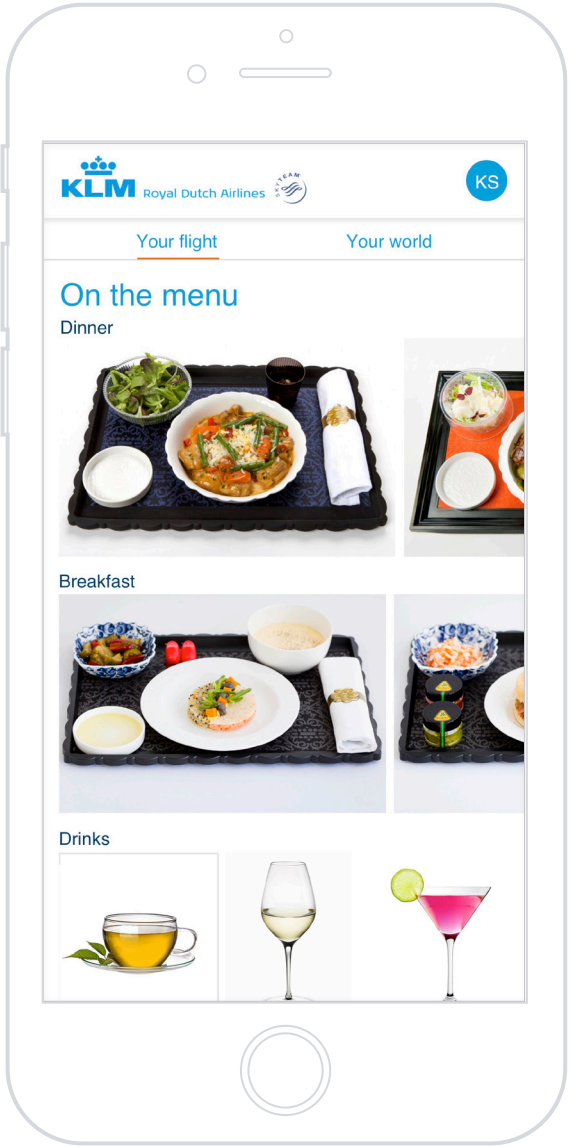


Figure 32 Non personalized OBP

4.4 OBP CONCEPT SELECTION

EVALUATION

The two OBP concepts are evaluated with internal stakeholders according to the three OBP interaction vision qualities: taken-care of, one-of-a-kind, and overseer, as seen in Table 4. These internal stakeholders are the same managers and designers, who evaluated the system ideas in the previous section, System concepts. Since they already know the system conclusion or how personalization works within the combined system: Questimize, they are able to provide essential feedback on the two OBP concepts. They are asked to evaluate the two OBP concepts through working prototypes on InvisionApp.

Concept one - Your view is perceived as more visually appealing with an active overview of events happening inflight, which makes it score higher in the potential of taken-care of and one-of-a kind qualities. The double column layout that has continuously changing content is "more inspiring and feels like stuff is happening," Wilbert Baan, a UX manager says. Thus, being taken-care of relates to the tailored content changing according to the next occurring events for the passenger. However with the two column layout, passengers cannot read the small descriptions in the schedule; passengers may not click on the schedule for a larger view. Additionally, the structure of this concept is confusing, which results in the concept scoring lower on the overseer quality. There are a lot of different ways to get to the same information.

Whereas, concept two - Zoom-in scores higher for the potential of the overseer quality. It has a mentally pragmatic perspective, where passengers can visualize their surroundings, see the possibilities around them, and zoom in on those possibilities. Vahid Babaloo, a Digital Experience Manager, states that this concept with the dashboard of topics around the passenger's seat "shows that you're in control." Although the user interaction is very simple and easy to find everything, the topics can be seen as generic. Hence a suggestion is to highlight the importance of hierarchy of the topics according to the passenger. For instance, if the passenger's concerns are connecting flight, disruption, and baggage information, the topics around the passenger's seat should reflect this so that the passenger have an easy, direct access to those concerns.

SELECTION

Concept one - Your view is the leading inspiration for the final OBP concept design. Although it has an overall higher score in the qualities, some aspects of concept two may be implemented into concept one. Concept one's strengths consist of visually, active, tailored content that provides a clear, personal perspective of everything happening. However, the strength of concept two, where users have a physical, spatial overseer feeling with easy navigation through the site, can be incorporated into concept one. In addition, suggestions to include alternative personal elements in the design are considered, such as details of each flight crew and the ability to communicate with the crew or others.

INTERACTION VISION:	CONCEPT 1	CONCEPT 2
		
Taken-care of potential	4	3
One-of-a-kind potential	3	2
Overseer potential	3	4

Table 4 Evaluate OBP concepts with interaction vision qualities


KLM
Your flight
Wifi info
Hi Kevin
Your flight schedule
Connecting flight
KS
15:00
22:00
15:45
22:45
17:30
00:30
Your meal
Beverages
Lights off
What's next
Onboard Wifi
Connect to Wifi
Clean Vegan dinner

CHAPTER 5

CONCEPT DEVELOPMENT

In the last phase with the previous evaluation of the two OBP concepts, the final OBP concept is developed through a digital prototype. This provides the ability to evaluate and test the concept with internal stakeholders and business flyers. Furthermore, a roadmap is presented to indicate how to reach the goal of personalization and contextualization. Lastly, the chapter ends with recommendations for the organization.

5.1 FINAL OBP CONCEPT

The 'Your view' Onboard Portal is an **informative, personalized, active site for business flyers. Y**our view caters content due to the passenger's data or previous chosen preferences. From the previous steps that the passenger went through during the search process to the airport (seen in figure 31 System user flow), data is generated and analyzed to provide the passenger relevant, personalized information on the OBP touchpoint. With this example system user flow for the business flyer, Kevin, the OBP is designed with certain features to fit Kevin's personal preferences and choices. For instance, since Kevin has chosen one of his concerns as the flight schedule in the search process, he is able to see the flight schedule on the OBP. Also since he has chosen the Clean Vegan dinner during the check-in process, the OBP provides details on the meal and Kevin is able to read comments from other passengers. Additionally, the evaluation of the two OBP concepts in the ideation phase contributes to the final OBP design. The OBP final concept, Your view, provides the passenger with **a much clearer overview of the inflight and post flight environments; it combines visual simplicity of the layout and innate interactions for easy navigation.**
(The concept is developed in the UI/UX tool, Sketch, and prototyped in Principle with animation and more interaction capabilities.)

On the main page, Your flight, seen in figure 33b , the top tabs consist of various main topics tailored for the passenger, in this case Kevin. Since he has marked his concerns in the search process as: flight schedule, meals, wifi, and transfer info, the first four tabs correspond to these concerns. The following tabs: map, baggage & transport, destination, entertainment, and your crew, are additional supporting features for Kevin's travel journey. Each tab leads a separate page, which is seen in the next pages. In addition, the Your flight page has **a tailored schedule** for Kevin with active links that also lead to the supporting pages. At the bottom of the page is a banner that shows **live content, which updates according to the real-time flight schedule.** This main page acts as a live feed on what is happening at the moment. It introduces other services and offerings beyond wifi connectivity.

The next tab, Wifi info, allows passengers to purchase an inflight wifi plan. Then the Connecting flight page, figure 33d, first shows **a map with the live status of the connecting flight.** The passenger is able to see where their second aircraft is coming from and if there is a going to be a delay. Furthermore, the **connecting airport map** is shown with where the lounge and food places are in relation to the passenger's arrival gate. Next is the Meals and Beverages page, figure 33e, which tells **detailed information on the meal** that Kevin has chosen beforehand and **shows comments** from other passengers. For the drinks, Kevin can **order instantly** and not worry about getting the flight attendant's attention. For the Map page, figure 33f, a live map is displayed with the flight time left. The bottom buttons allows the passenger to see closeby landmarks and KLM destinations, which enables the passenger to explore other destinations and inspire them to fly with KLM in the future.

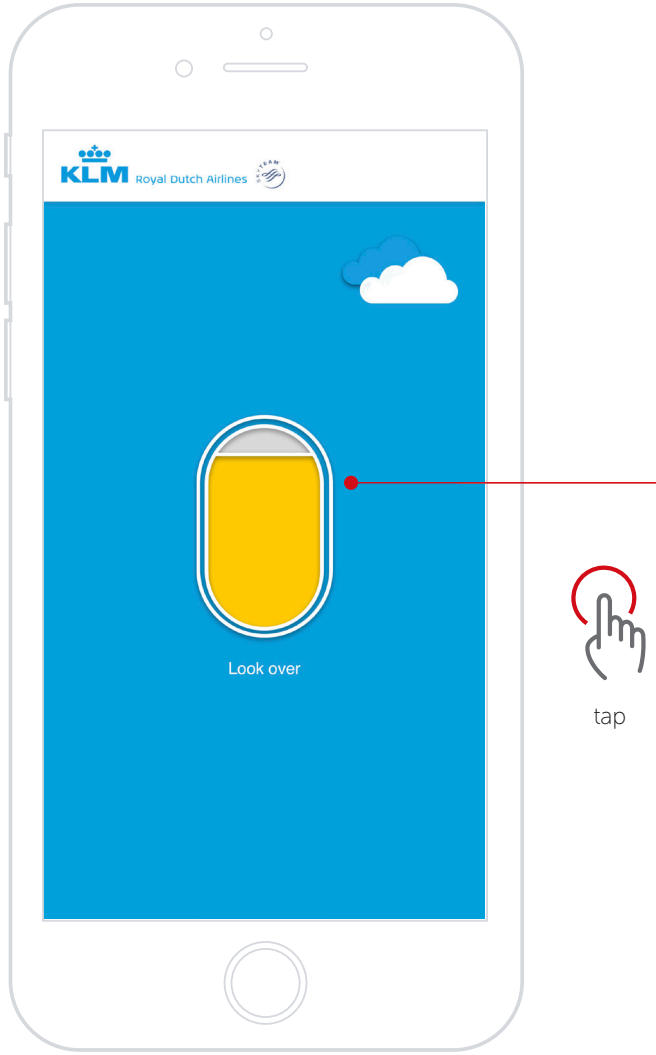


Figure 33a Your view

YOUR FLIGHT PAGE

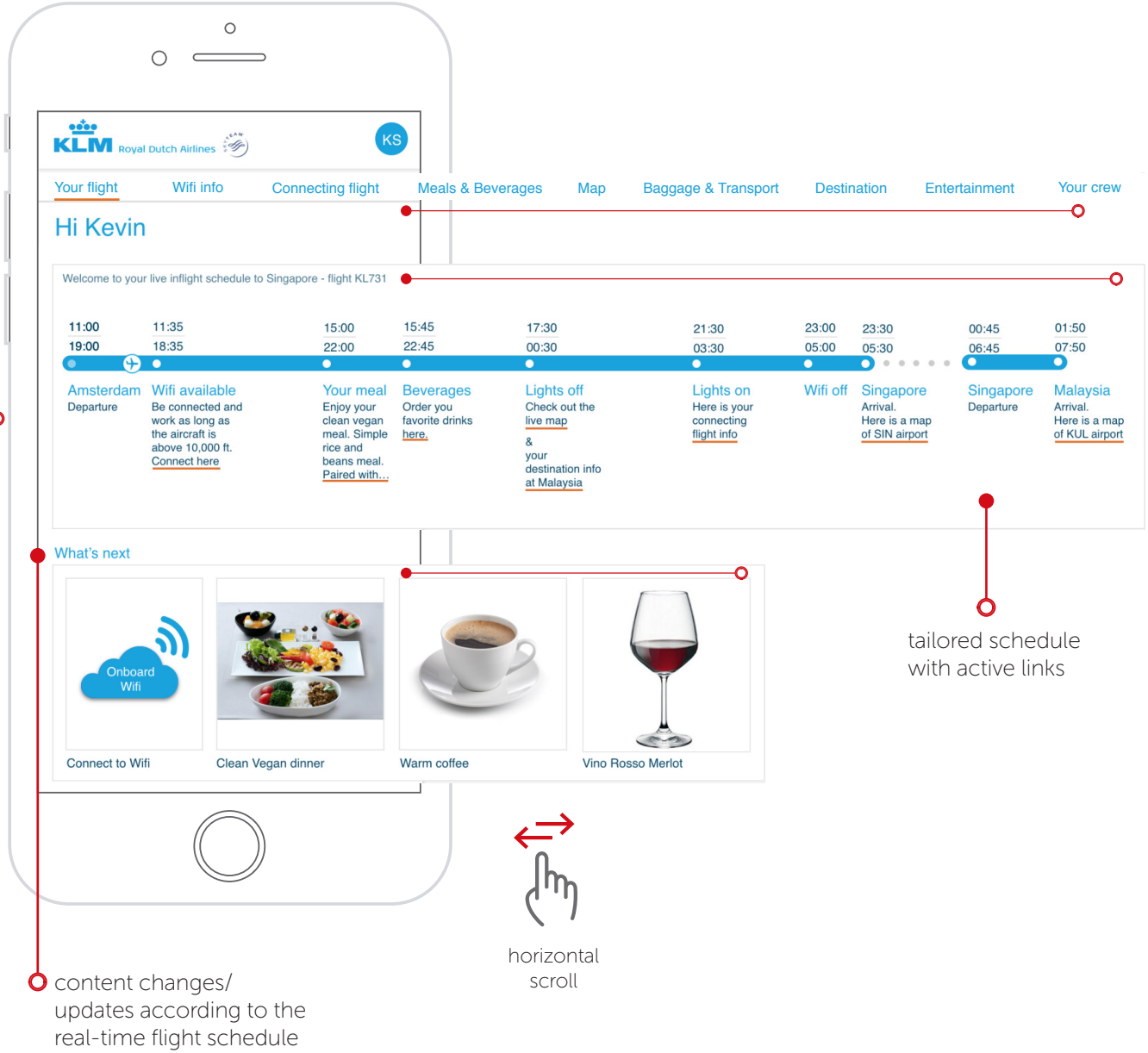


Figure 33b Your view

WIFI INFO

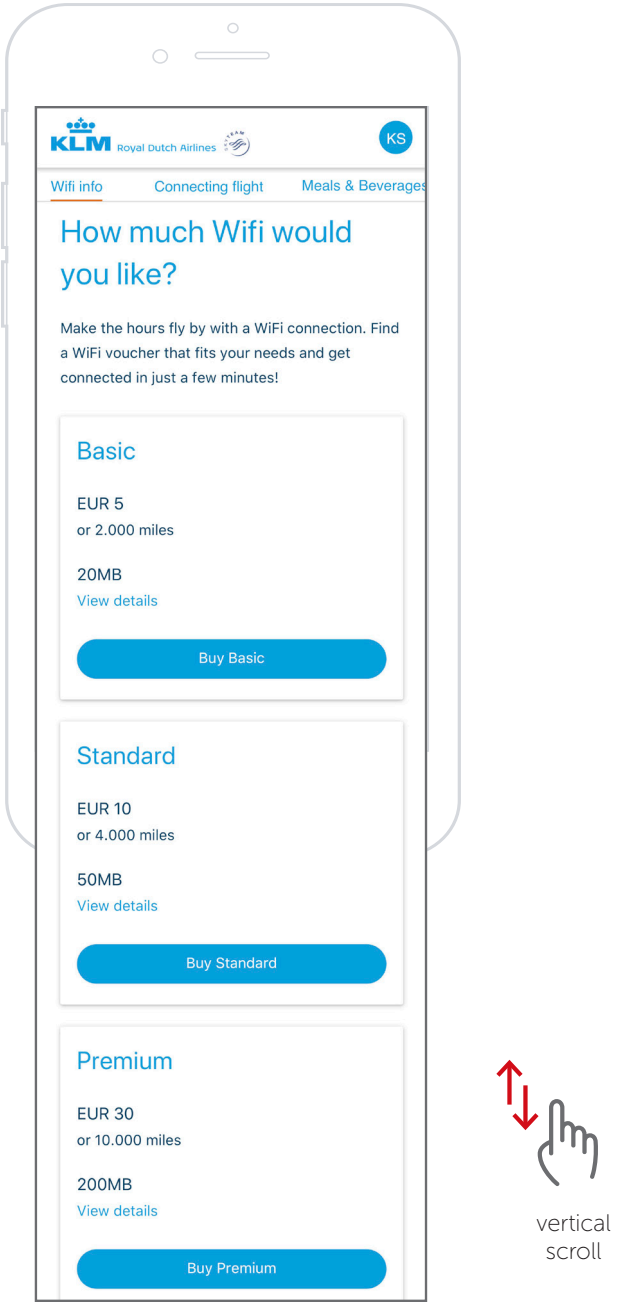


Figure 33c Your view

CONNECTING FLIGHT PAGES

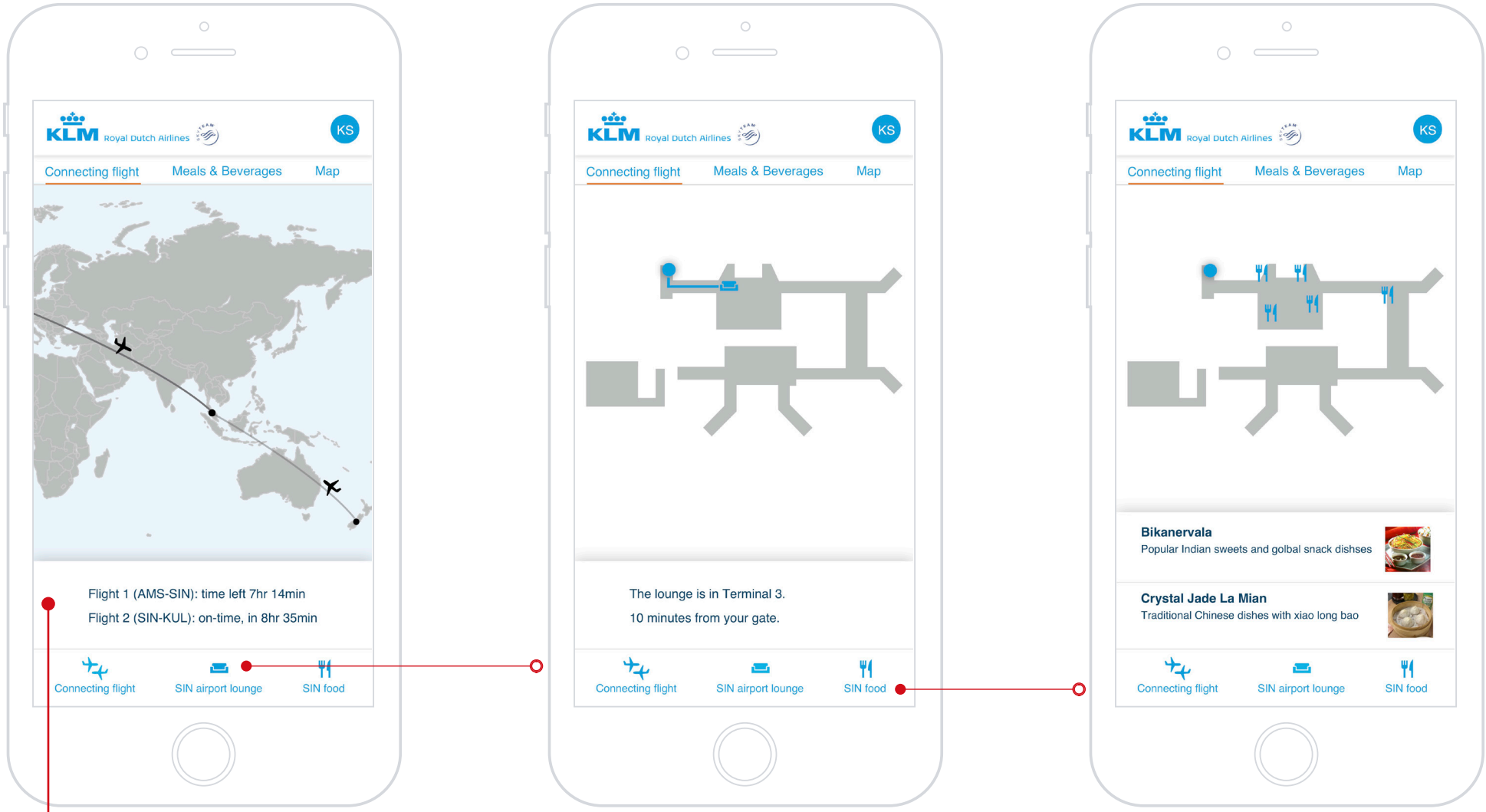


Figure 33d Your view

MEALS & BEVERAGES PAGES

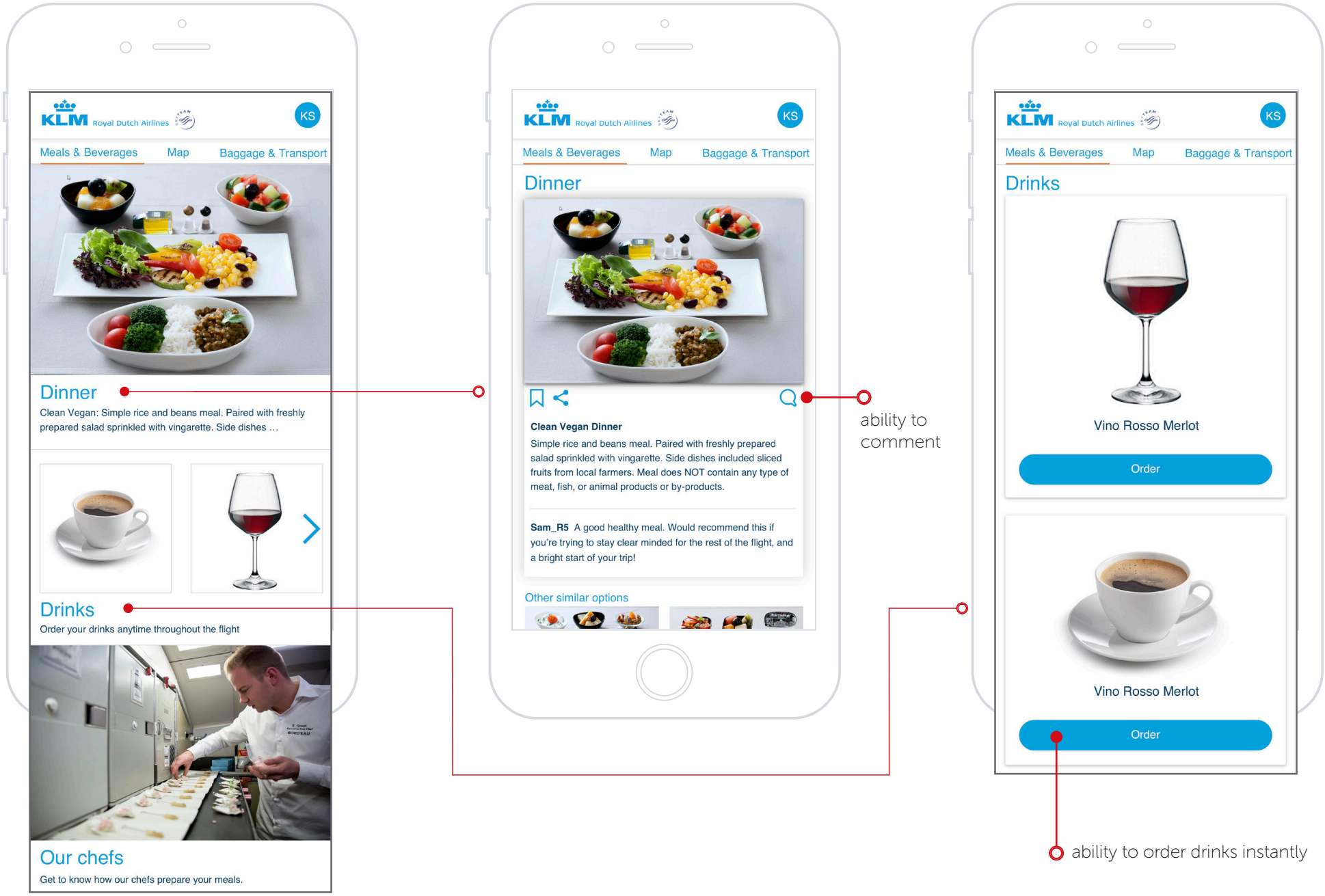


Figure 33e Your view

MAP PAGES

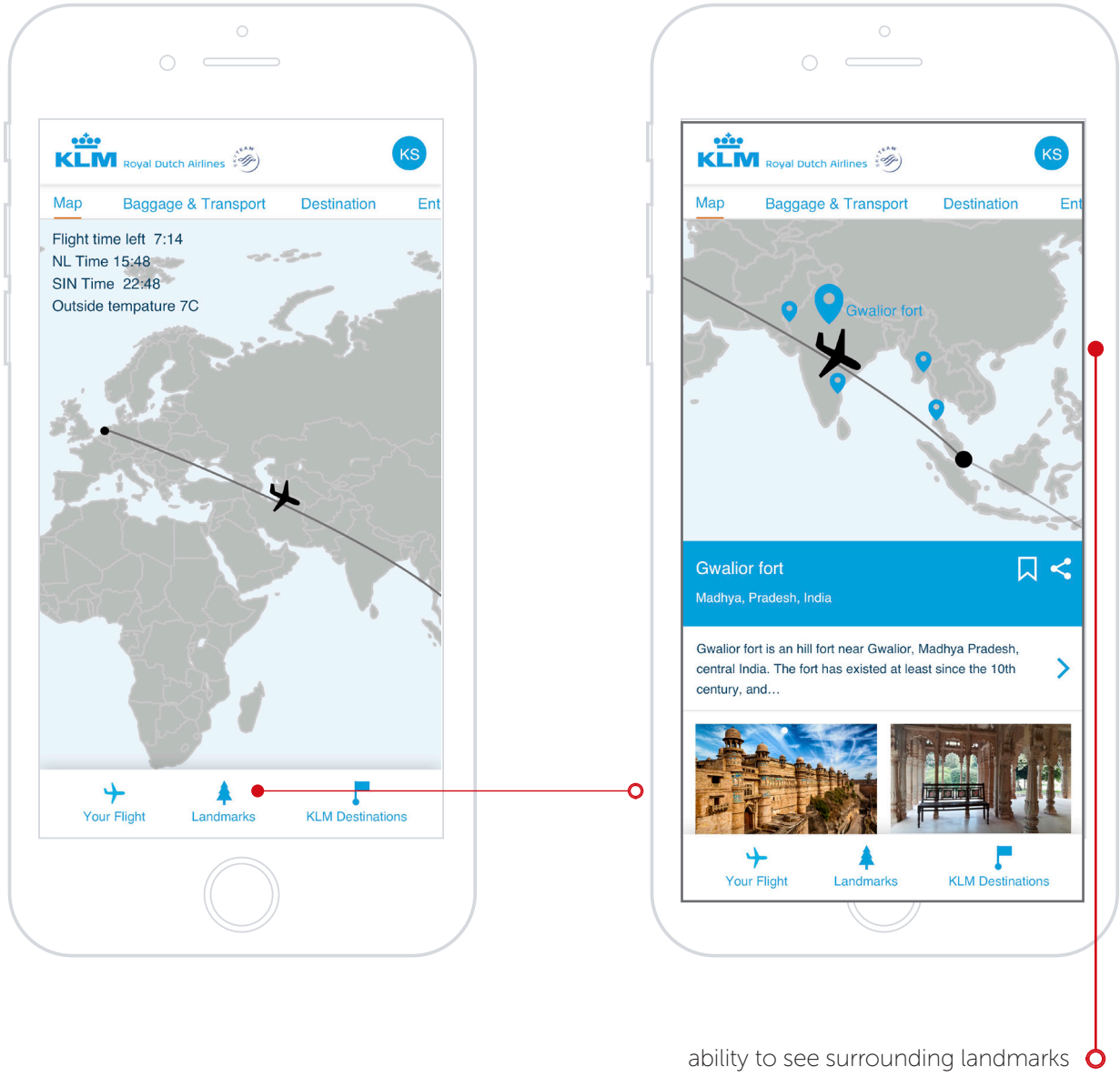


Figure 33f Your view

The Baggage & Transport page, figure 33g, displays a **map of the destination airport with the locations of the luggage, transport, and lounge.** Here the passenger can **save or share** the page for later use after the flight. After this is the Destination page, figure 33h; it shows places to see and news of the destination. At the bottom of the page, the passenger **can participate in choosing a simple destination preference,** such as visiting festivals or the farmers market. This **allows for continuous learning of the passenger to provide custom recommendations.** This preference selection is also implemented in the next page, Entertainment, figure 33i. If the passenger picks sports as a enjoyable genre to watch, the touchpoint can recognize this and offer more sports channels inflight. The last tab, Your crew, figure 33j, reveals **more details and a story on each flight crew.** It adds a **personal touch** to knowing who is serving the passenger. A message can also be sent to the cabin attendants.

BAGGAGE & TRANSPORT PAGES

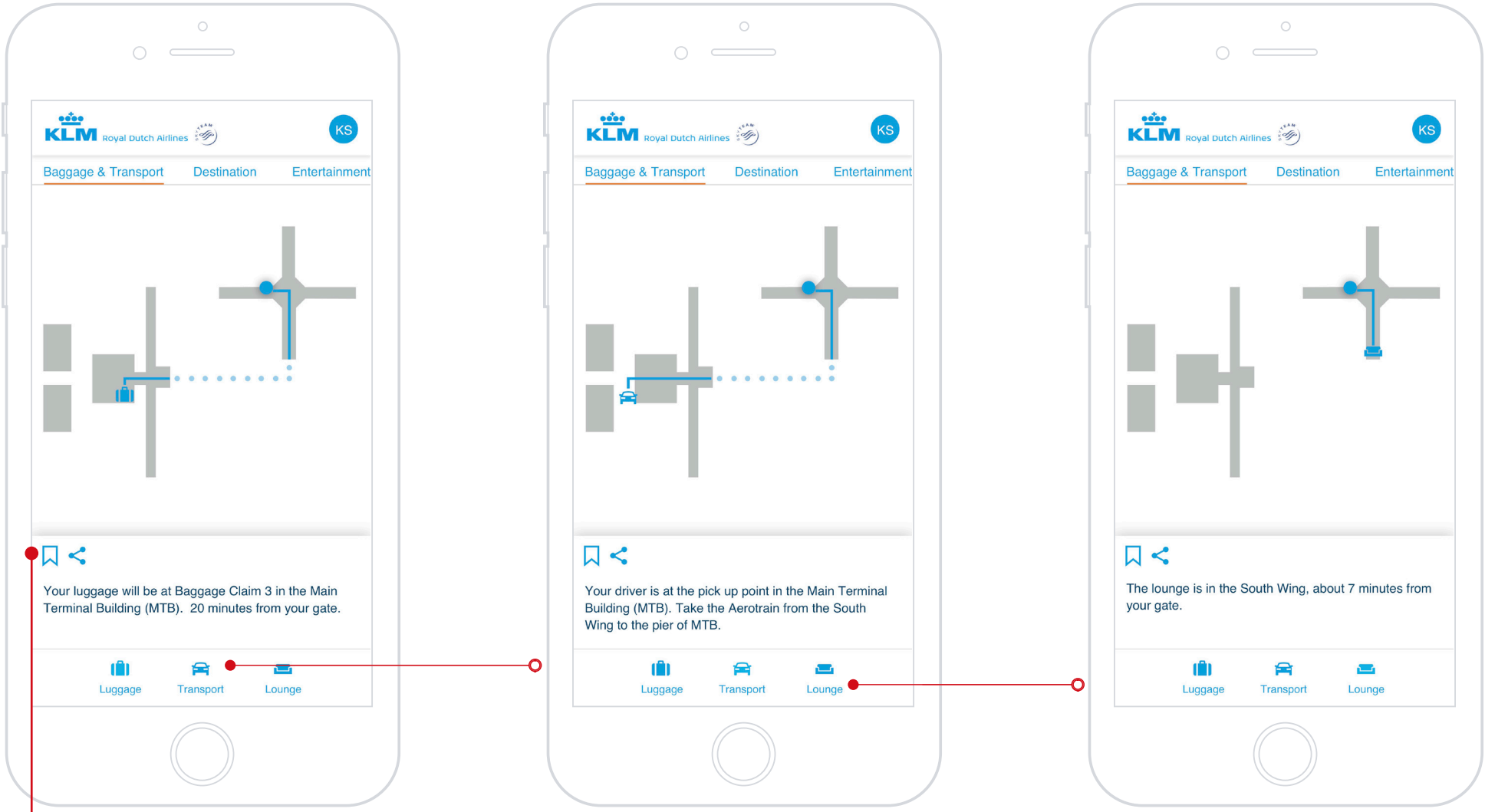


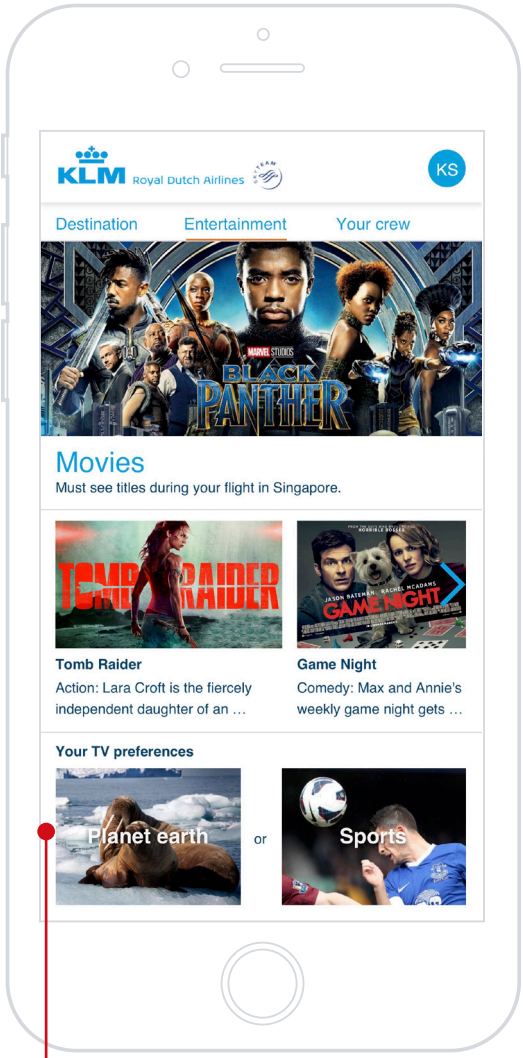
Figure 33g Your view

DESTINATION PAGES

can answer preferences for activities the passenger favors at the destination

Figure 33h Your view

ENTERTAINMENT PAGE



can answer entertainment preferences to get personal recommendations

Figure 33i Your view

YOUR CREW PAGES

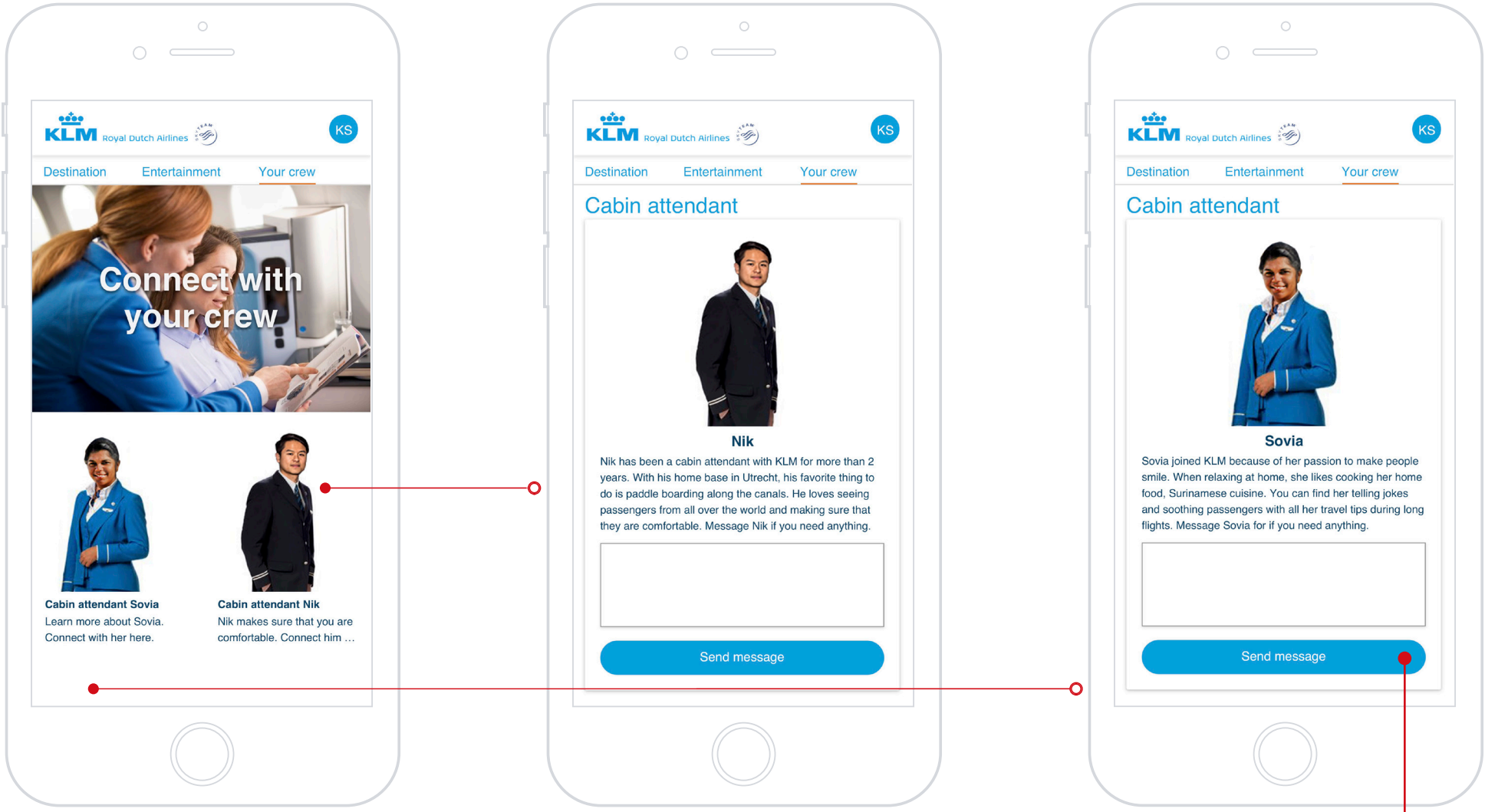
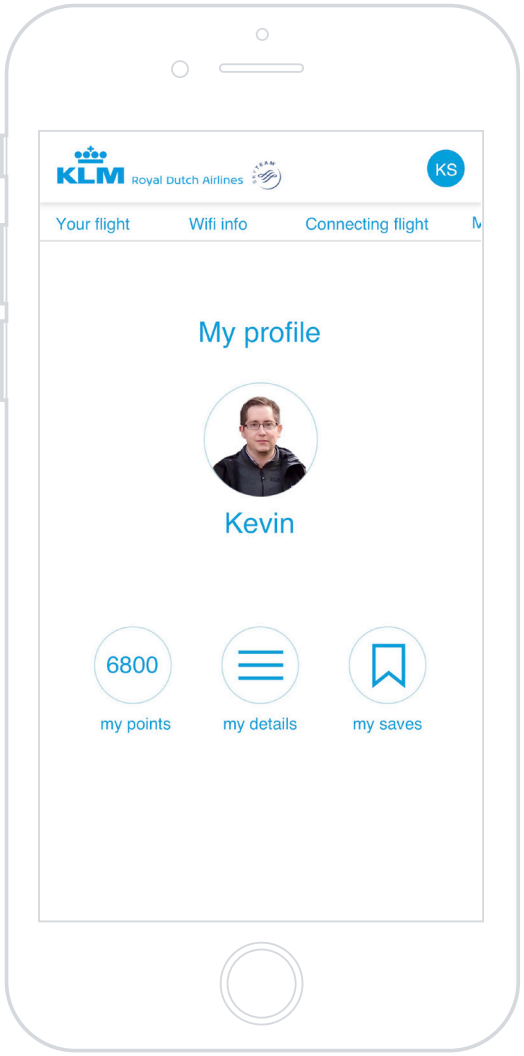


Figure 33j Your view

PROFILE PAGE



CONCEPT EVALUATION AND FEEDBACK

The final OBP prototype is reviewed on the researcher's phone and evaluated with internal stakeholders and a few business, frequent flyers through individual feedback sessions. In order for the stakeholders and business flyers to test the OBP prototype and comprehend the features that are placed in the final prototype, the system user flow (Figure 31) is explained first from the search process to boarding the flight. Then, they are handed the researcher's phone to view and explore the Your view OBP.

Internal stakeholders

The internal stakeholders are the same people, who evaluated the two systems and previous two OBP concepts in the ideation phase. The stakeholders are asked for a general assessment of the final prototype. On getting initial access to the OBP, they are fond of seeing the ability for the passenger to get a text message about wifi connectivity with the link to the onboard portal site. This is because passengers currently do not know about wifi capabilities on their flights. On the final OBP prototype, they favor the rich content presented in the main page and other pages. Since they have seen the primary developments of the OBP from the first iterations in the ideation phase, they acknowledge the changes and progress in the final prototype. For the top tabs, they noted that there may be too many topics and some of the topics may be clustered together. They question the order of the topics, also, like the Entertainment and Your crew tabs may be a part of the front tabs; one suggestion is for the passengers to prioritize the topics when they choose their concerns in the search process. Additionally, one manager noted that for a more friendlier and human-like quality, the schedule may incorporate people or the flight crew. Their feedback also includes critiquing smaller details for a clearer communication, such as certain terms can be named differently and the time on the schedule can be reiterated into approximate time left instead of the exact times of the day. Other suggestions for more features to implement are weather of the destination, rebooking flights, and choosing seats for the second flight.

Target group

Four business, frequent flyers have participated in the final concept evaluation. Some of these business flyers are the same people, who have participated in the travel journey customer research. They are asked to imagine that they are on a long-haul business flight and to express their likes, dislikes, and feelings when evaluating the portal. The concept evaluation guideline and the participants' individual feedback is seen in Appendix M.

These business flyers have positive and negative feedbacks on the final concept. Overall, they favor the useful information on the portal. One tester says,

"it's cool and thoughtful; feels like i'm really being taken-care of."

Tester 3: male, age 25-30, final OBP test.

Another tester imagines that when having this OBP portal on her next flight, she may feel:

"relaxed because i'm know my schedule; it helps you prepare" and "confident because I don't have to worry about all the stuff in my head."

Tester 1: female, age 30-35, final OBP test.

Tester 4 says the portal may provide

"a sense of relief in having expectations for when you'll be fed or what movies are onboard and that you'll have wifi." Male, age 25-30, final OBP test.

In addition, they favor the ability to view their schedule, connecting flight, and baggage and transport information. They like the fact that they are told the distance or time it takes from their gate to their luggage pickup point.

Surprisingly, for the preference questions on the destination and entertainment pages, some of the testers do not mind answering them because they know that they will receive customized recommendations. However, tester 4 notes that the way the question is presented now may be a bit odd; rather helping him find something to watch can be better.

For the top tabs, testers also point out that there are too many topics and they can be organized into categories. Also for the time on the schedule, having two times shown is confusing and probably being more vague is better. For the entertainment page, one tester suggests that this page can acts as a remote that is integrated with the IFE. Another tester would like to watch movies and shows directly on the OBP.

These testers, like the internal stakeholders, would like to see booking flight and shopping features. More than the ability to communicate with the flight crew, the testers desire to chat with other passengers as well, such as a MSN chat. Other suggestions include: viewing future trips of finding the next trip, featuring special drinks of the month, and incorporating immigration information on the airport map.

5.2 IMPLEMENTATION

ROADMAP

In order to implement the personalized OBP concept, a roadmap is proposed. This roadmap (Table 5), shows the steps necessary to be performed from the first level of personalization to the goal, contextualized experience. On the frontend are customer facing interactions for the OBP and the system. On the backend are internal developments for: other touchpoints teams, Customer Insights and Design teams, OBP team, and data management. At the first level, the OBP can start off with displaying basic, semi-tailored information, such as general inflight schedule, connecting flight, food and beverage information, based on the passenger's current available data, such as Flying Blue account profile, flight itinerary, and seat location. Simultaneously, other touchpoints in the system can incorporate basic questions on passengers' concerns and preferences, which generates more meaningful, attitudinal passenger data. For the Customer Insights and Design teams, primary passenger segments should be defined to be used for the whole organization. Also, more movement within digital experiences can be incorporated. Design teams, currently, follow Google Material Design, a system for uniting style, branding, interaction, and motion under a consistent set of principles, which provides a centralized approach for all the design teams (Google Material Design). This may be a unified approach and yet constraining to be bound by a set of rules. Perhaps incorporating UI/UX trends with Google Material Design principles can promote more innovation in the digital user experience.

At the macro segmentation level, the OBP can adjust to more personalized content and offerings, such as food, beverage and destination recommendations, and detailed flight schedule, as passenger segments increase. The passenger can start to have a sense of purchase control by having the ability to review products and services.

In the micro segmentation level, product propensities and passenger behaviors are reviewed to produce near real-time offerings. At this stage, more detailed preferences may be gathered from passengers to create more engaging and customizable functions in the touchpoints.

The last two levels, one-to-one personalization and contextualization, presents suggestions of what the OBP may look like. For example, the flight schedule can be in sync with the schedule of the entire travel journey, delivery can be available for food and beverages, and even advanced technologies, such as biometrics and third party partnerships, like Netflix streaming capability, can be integrated. In order for passengers to receive instant personalized messages and offerings at the right place and right time, all the touchpoints should be linked from frontend interactions to backend data for a smooth customer experience on any device.

		MASS MARKETING	MACRO SEGMENTATION	MICRO SEGMENTATION	1:1 PERSONALIZATION	CONTEXTUALIZATION
FRONTEND	**OBP INTERACTIONS**	• basic inflight schedule • basic connecting flight info • all food&beverage info • order F&B • basic flight status map • basic destination info • basic entertainment info • book flights	• more personalized flight schedule • transparent connecting flight info • F&B recommendations • customer reviews on products and services • map: nearby landmarks & KLM destinations • destination recs • crew story & info	• active, real-time schedule • destination airport maps with arrival gate • more personal F&B recommendations • view future flights and book on map • more personal destination offerings • communicate with other passengers	• flight schedule is extended to other travel journey schedules • F&B and shopping delivery in airport • flight map is viewable on other touchpoints • biometrics	• flight schedule is in sync with entire travel journey • flight map is in sync with other maps and features • F&B and shopping delivery to home • netflix streaming
	SYSTEM INTERACTIONS	• passenger is able to answer basic questions and choose options on their concerns in the touchpoints	• passenger is able to provide more personal preferences in the touchpoints	• passenger has more engagement and customizability on touchpoints	• receive instant messages & notifications • cross device smooth transition	• receive specifically tailored instant messages & notifications
BACKEND	**OTHER TOUCHPOINTS TEAMS**	• incorporate basic questions & choices for passenger's concerns into touchpoints	• incorporate more personal questions & choices into touchpoints	• incorporate specfic personal questions & choices into touchpoints	• omnichannel (cross device) capability • real-time (fast responses) capability	• all touchpoints smoothly interact with each other anywhere & anytime
	CX & DESIGN TEAMS	• research & define primary passenger segments • UI/UX: more movement in images and text	• increase passenger segments to 20 groups • design to focus on the passenger segments	• increase passenger segments to 200 groups	• design all touchpoints with same interactions	• design all touchpoints with same interactions
	OBP TEAM	• easy login access (via seat # or QR code) • login recognition of passengers	• target offerings & content to specific passenger segments	• target offerings & content to specific passenger segments based on behavior	• target offerings & content to individual passengers based on all 360 degree customer data	• target offerings & content to individual passengers based contextual data
	DATA MANAGEMENT	• data analysis of OBP • use CAPI, IAPI, FBAPI, and other APIs • gather passenger data from questions and preferences > attitudinal data	• gather more passenger data from questions and preferences	• link data with other touchpoints • analyse context and propensity scores	• predict best options for each passenger	• implement contextual data with passenger 360 data • predict best options for each passenger

Table 5 Roadmap

5.3 CONCLUSION

RECOMMENDATIONS

To further prosper in customer intimacy and personalization, the following suggestions are composed based on the learnings and reflection throughout this project:

Define customer segments

A key factor to customer intimacy is segmenting customers in order to meet customers' needs with specific, tailored offerings. This is also significant in the personalization stages, where segments are analyzed according to the customer's full data profile. Although initial segments are defined within certain teams of the organization, not all customer-facing teams utilize or agree to the same customer segments. This creates confusion among teams, where the same products and services can be designed and marketed differently towards the same customer group. Thus, establishing customer segments across all teams sets the foundation to succeeding in customer intimacy and personalization.

Incorporate Emotions

To enhance customer experience, the customer should be well-understood from their needs and pain points. But rather than analyzing the customer journey to discover and focus on improving customers' pain points or concerns, a deeper perspective is to analyze the cause of customer's behavior, which reveals customers' emotions. Through investigating customers' judgement or evaluation on the stimulus, event or experience, researchers are able to discover their underlying emotion(s). Emotions can be the fundamental influence upon making decisions. Thus applying the emotion driven design model that is used in this project to customer research, can serve as an impact in building an intimate customer relationship.

Conjoint personalization vision across the organization

Leading companies share some common ways of working: they collapse silos, create dedicated cross-functional personalization teams, locate all team members together, and work fast (Abraham et al., 2017). Although personalization does not comply to one team, personalization efforts should be shared across the organization. Not only should current personalization developments be aligned, the strategy to achieve personalization goals should also be reached together. Perhaps a strategy that includes an overarching roadmap, which identifies how each team can contribute to reaching the goal, can provide a unison approach for everyone. This can show a transparent, clear, and collective effort that brings diverse team visions together.

Organize customer data profile

With the immense amount of increasing customer data being gathered, structured ways of analyzing data is preferred for operational excellence. A suggestion is to organized the data into the 360 degree view categories. This allows for a comprehensive perspective on what types customer data that are absent and already collected. For instance, this project insinuates that more attitudinal data can be sourced to proceed with personalization goals.

Link touchpoints

With many customer-facing touchpoints across the travel journey, a streamlined customer experience can be challenging to achieve. An option can be to focus on one platform that houses all services, content and necessities for the passenger, such as the KLM app. When additional products or touchpoints are created, customers may not be drawn to using another application that can complicate their experience. Also, centralizing the user experience to one platform can united multiple teams' vision in frontend and backend developments.

In the meantime, the OBP can be linked to other touchpoints, such as the MyFlight app for the flight crew. This may enable instant and direct communication to express the passengers' inflight needs.

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