KLM Customer Journey: Baggage

KLM TU Delft

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Improving passenger experience with baggage reclaim

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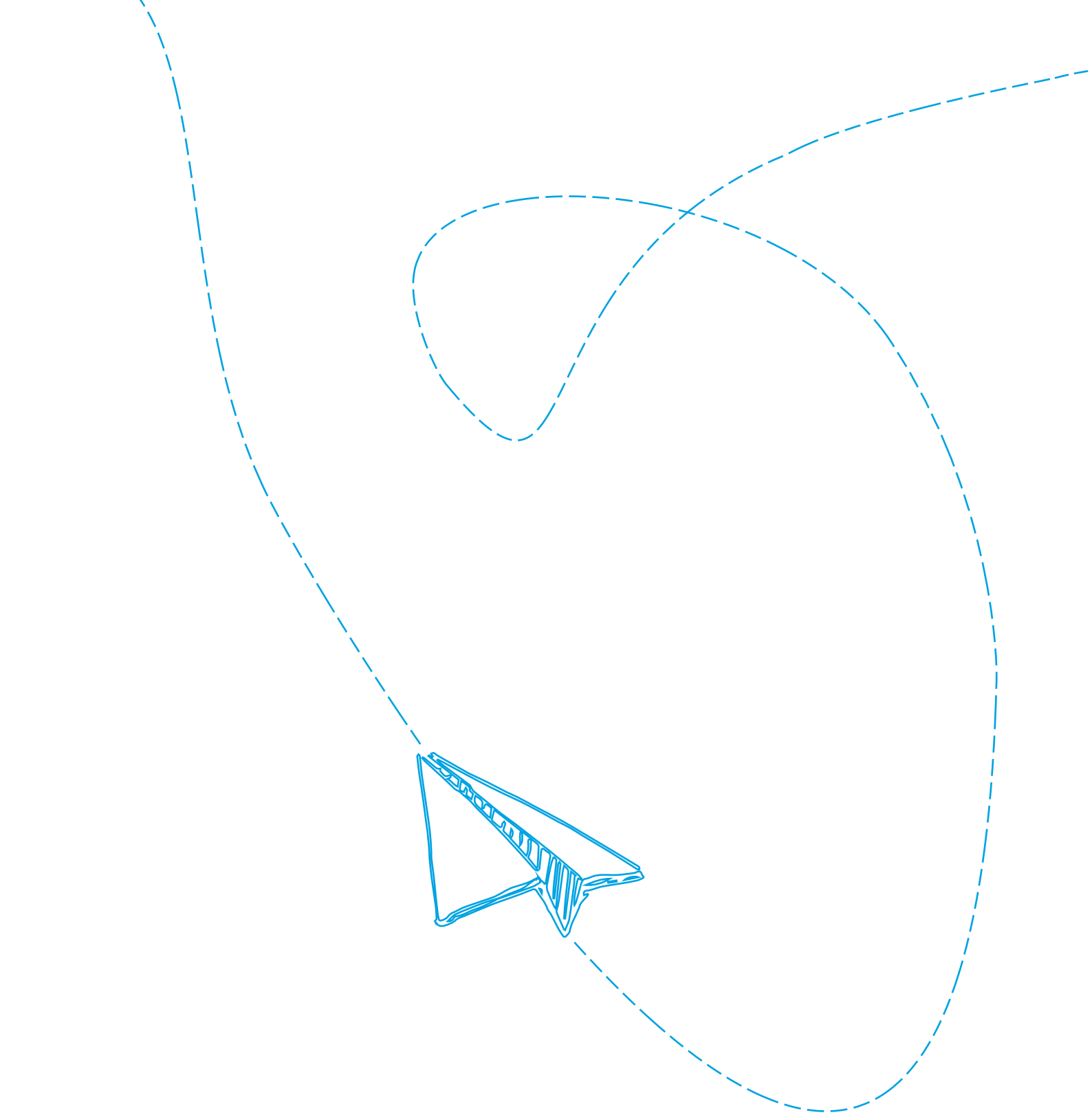


Introduction

This graduation project from TU Delft explores the passenger experience during baggage reclaim with KLM airlines. The project is in partnership with KLM Airlines and Personalized Airport Systems for Seamless Mobility and Experience (PASSME). As such, the objective of the research is to understand how to improve the experience of passengers when reclaiming their baggage upon arrival at their destination.

KLM would like to explore how they can improve passenger ratings of the airline and increase the likeliness of passengers to fly with KLM again. PASSME uses projects like this one to explore methods for improving the air travel experience for passengers traveling within the European Union. For TU Delft, this project seeks to gain new knowledge within the field of Design for Interaction. In this instance, the interactions and experiences of passengers during baggage reclaim.

The research will examine the interactions and experiences of passengers with the goal of understanding their motives, what factors influence their experiences and decisions, and what struggles and stresses they encounter during the reclaim process. Interviews and Journey Mapping will be leveraged to gain insights to answers these questions and search for solutions.

Many passengers choose to check their baggage. Of the passengers surveyed by SITA in 2016, 82% checked-in at least one bag on their last flight (SITA, 2017a). However, the current situation when reclaiming baggage is often chaotic and unpleasant and a source of stress for 40% of passengers (Bor & Hubbard, 2006). Concern about bags being lost, delayed, or stolen causes stress for passengers with checked baggage, coupled with a feeling of loss of control in their environment (McIntosh, Swanson, Power, Raeside, Dempster, 1998).

Additionally, due to crowding around the baggage reclaim belts, it can be difficult for passengers to see if their bag has arrived, leading to chaos and inefficiency (Anand & Rajaram, 2016). These conditions create an unpleasant end to the passenger's journey.

The currently unpleasant end of the passenger journey creates a problem for KLM, who seeks to gain returning passengers. KLM tracks passenger satisfactions though Net Promoter Score, or NPS. This metric evaluates how likely a passenger is to fly with KLM again or recommend KLM to friends and family. In a study conducted by KLM, it was determined that issues with baggage handling impact NPS by fifteen percent (KLM, 2017a). Thus, baggage handling is a good opportunity for the airline to focus on improving, so that passengers leave with a good impression and desire to recommend and fly with KLM in the future.

Prior research (Kahneman, Fredrickson, Schreiber, Redelmeier, 1993) suggests that people evaluate experiences based on the most intense moment and how the experience ended, rather than accurately reflecting upon the event as a whole. This phenomenon is described by the peak-end theory developed by psychiatrists Barbara Fredrickson and Daniel Kahneman (Kahneman, Fredrickson, Schreiber, Redelmeier, 1993). Kahneman's further research also indicates that evaluations people make based on the peak and end of an event will impact their willingness to repeat the experience (Redelmeier, Katz, Kahneman, 2003).

When applying this theory to this project, it stands to reason that passengers who end their journey with a more positive baggage reclaim experience will be likely to recall their entire flight experience as a whole more positively than passengers whose baggage reclaim experience ended on a more negative note. Thus, this end moment of the passenger journey becomes key when assessing the overall experience and likelihood of wanting to fly with the airline again or recommend it to friends.

This project will be focusing on the KLM passenger experience as it pertains to baggage reclaim. The main assumption of this project is that this last touch-point in the passenger journey - before leaving the airport - can be utilized to create an experience that leaves passengers with a good impression of KLM and desire to fly with them again. This project will explore how the baggage reclaim experience can be improved to help ensure passengers leave on a good note while working towards KLM's objective of increasing customer intimacy.

1.1 The Assignment

Based on user feedback, KLM chose several areas to focus on improving user experience with baggage. Three gaps were found in the current passenger experience that KLM wanted to focus on: real time whereabouts of baggage, smooth and carefree hand luggage process, and quick and convenient baggage reclaim upon arrival. Though the assigned focus area for this project is quick and convenient baggage reclaim, the three gaps are very closely related and the research and proposed solutions will pertain, to some extent, to all three gaps.

The assignment involves understanding the handling system for the baggage and how the responsibilities, equipment, and facilities are shared between the airport, airline, and other companies/stakeholders. The relationship between the airline and passengers is key to this assignment, as well as understanding and designing for the experience of passengers during the baggage reclaim process. The goal is to shift the current experience of passengers who find themselves dealing with a chaotic and inefficient environment, to an improved experience in which passengers will end their journey on a positive note.

Additionally, integration of new and future technologies will be considered in developing a new solution to best fit passenger needs. Details such as feasibility, branding, what information to share with the passenger and how to share it, must all be considered and evaluated through literature research, interviews, and testing. A successful solution must provide passengers with an improved baggage reclaim experience and help build brand loyalty.

1.2 Scope

The focus of this project is the user experience. It seeks to improve efficiency and communication within the domain of airport baggage reclaim. However, reducing actual waiting time is not part of this project. Through research involving KLM Ground Crew members, exploration was done into ways to possibly reduce the time it takes to get baggage onto the reclaim belts. After discussion with the Ground Crew members, it became clear that opportunities to reduce delivery time are very limited and unrealistic due to the increase in staff which would be required to make only a small impact.

Research shows that people's perception of time can alter greatly depending on how they are spending it (Maister, 1984). Factors such as inactivity, anxiety, and lack of information can lead to a wait being perceived as longer than it actually is (Maister, 1984). This project will focus on passenger's perception of time rather than reducing the actual time it takes to reclaim baggage.

The scope of this project has been limited to baggage reclaim at Schiphol airport. As Schiphol is KLM's main hub, KLM has greater control of these facilities. Additionally, at this location all the ground crew and baggage handlers are KLM employees, whereas other locations rely on service level agreements with external companies to manage this logistics (Aarts & Vogelpoel, 2017). Furthermore, as KLM's hub, and location that receives the most traffic from KLM passengers, Schiphol is a great location to run a pilot program which could later be expanded to other locations if desired.

The scope of the passenger journey will be from time of arrival at the destination airport, until the time the passenger is leaving the airport with their luggage. Rather than focusing only on the time at the reclaim area, this time-frame was chosen as it will likely impact how the passenger is feeling at the reclaim area. Studying this wider time-frame will also provide insights into what is important to passengers and what their goals, priorities, and state of mind are during this part of their journey.

Furthermore, KLM has chosen specific groups of passengers to focus on. The KLM Customer Insights team conducted a market research analysis of passengers, taking into account who was flying and on what occasion. From this data, thirteen demand spaces were created which describe groups of passengers who share similar needs during their air travel experience. KLM has chosen to focus on three of these groups which they feel have more specific demands and are more influenced by experience than cost. Passengers in these three demand spaces also have needs that are more in line with KLM's customer intimacy strategy. As such, this project will focus on these passengers. The three groups are described in more detail in chapter 4.4 KLM Passengers.

Figure 1.2 Passengers waiting for baggage at Schiphol baggage reclaim area

1.3 Approach and Research Outline

The first phase of the project seeks to understand the current baggage handling system and passenger experience, as well as to understand what technologies could be integrated in a future solution. This was accomplished by interviewing experts such as employees at Schiphol and KLM working in the baggage reclaim department, and employees who specialize in evaluating passenger satisfaction and experience. Furthermore, existing passenger feedback was used to understand how passengers currently perceive KLM and the current baggage reclaim experience. In addition to passenger experience, this project will explore the logistics of the baggage handling at KLM. By studying this system, insights will be gained into how the baggage handling system currently works, and how it could be adapted by new practices and/or technologies.

In the second phase, issues are identified possible solutions explored that might meet the objectives of an efficient and personalized baggage reclaim experience. This phase involved mapping the current passenger journey and understanding how it can be improved. Insights from qualitative passenger research were key to completing this mapping.

Understanding these insights, and keeping in mind the goal, ideation explored concepts from which a final direction was chosen. In the end of the third phase, a selected concept was chosen to prototype for validation. The results of the user test were analyzed in the fourth phase to refine the concept and make future recommendations. In finalizing the concept, consideration was given to the impact on the user experience and the relationship between the passenger and KLM.

Phase 1: Current Situation

2. Context

A first step in this project was to understand the context and factors and stakeholders who will influence the situation and may play a role in the project. This chapter explores the airline industry, PASSME and Schiphol airport as stakeholders, as well as the current baggage handling system and factors which may influence this system in the future.

Figure 2. Schiphol Airport

2.1 Airline Industry

In an increasingly global world, there is more and more demand for air travel. According to data from the International Air Transport Association (IATA), the number of air travel passengers is increasing each year, with more than 3.8 billion passengers in 2016 (IATA Economics, 2017). However, the airline industry is both changing and competitive. Originally, airlines were regulated by governments who controlled routs and pricing. When these regulations were lifted, airlines had fewer rules and are now free to set their own routes and prices. The airline industry had previously been prone to monopolies from large carriers who could demand high fairs. Now, these large carriers face competition with the introduction of low-cost carriers (De Neufville, 2016) As a result, these large carriers, such as KLM must rethink their strategy to remain completive.

When low cost carriers entered the market, the fairs of larger, traditional airlines dropped to remain competitive. However, reduced airfare led to increased travel. Between 1995 and the number of passengers rose by 42% globally. In the European market, air travel increased by 60% between 1995 and 2000, 9% between 2000 and 2008, and 2% since then (De Neufville, 2016).

Deregulation also changed the way airlines price their tickets. Previously, only two fares were allowed, first class and economy/coach. These prices were typically determined based on the distance of the flight through a mileage based formula. With regulations lifted, airlines began changing their pricing structure to focus more on service than distance. By unbundling services, airlines could charge á la carte for items such as larger seats, on-board food, and checked baggage (De Neufville, 2016).

In a new, more completive industry, KLM is currently differentiating themselves by focusing efforts on improving passenger experience with the ambition to become the most passenger centric, innovative, and efficient European network airline. A focus is set on developing "customer intimacy" which describes the close and personalized interaction each passenger feels with KLM. Therefore, KLM collects data about passenger experience and satisfaction to identify which key areas need improvement. Baggage complaints are consistently listed amongst the top ten irritators for KLM passengers (AirFrance KLM, 2017).

Figure 2.1 With deregulation, traditional airlines shifted focus to service and began charging á la carte for services like premium meals and in-flight entertainment - photo from KLM.com

2.2 Important Stakeholders

Two important stakeholders to be considered in this project are the PASSME initiative and Schiphol airport. PASSME is working in partnership with KLM, TU Delft, and other organizations to reduce air travel time, wait time, and improve passenger experience. Thus, the research and outcomes of this project will be relevant to the PASSME initiative. Schiphol airport was chosen as the focus for this project due to the fact that it is KLM's home base. Thus, it is important to understand the airport facilities and how the organization interacts with KLM.

2.2.1 PASSME

The Personalized Airport Systems for Seamless Mobility and Experience or PASSME initiative is a European Union funded project with twelve partner organizations working between June 1, 2015 and June 1, 2018 to improve the experience of air travel. The twelve partners are Delft University of Technology, The University of Nottingham, Optimares SpA, Netherlands Aerospace Centre, KLM Royal Dutch Airlines, Schiphol Airport, German Aerospace Centre, Hamburg Airport, Hamburg University of Technology, Almadesign, Carr Communications, and the Institute of Communication and Computer Systems (PASSME, 2017a). The goal of the project is to improve air travel by reducing door-to-door air travel time by 60 minutes within the EU and ensure less stressful and more enjoyable airport experience for both passengers and the aviation industry (PASSME, 2017b).

PASSME is focusing their efforts on four breakthroughs to meet their objectives.
1) Real-time passenger-centric system for managing passenger flows focusing on predictive analytics to enable airport and airline staff to adapt to passenger flows and demands.
2) Passenger independent system for managing luggage flows to reduce passenger time in airport and increase passenger control over luggage. Three luggage flows are considered: check-in luggage, carry-on luggage, and airport purchases.
3) Redesign passenger-centric airport and airplane interiors to improve passenger flows and optimize use of space for a more seamless experience.

4)Personalized device and smartphone application to provide passengers with personalized information to yield a more seamless and less stressful journey (PASSME, 2017c).

Furthermore, baggage is a focus area for PASSME. They recognize luggage as a stressful part of a passenger's air-travel experience with concerns about packing bags, space for carry-on items, and traveling with airport purchases. Thus, a focus has been placed on origin to destination baggage experience with the objects defined as:

-Minimizing the effects of baggage on passenger journey time with the goal of saving passengers thirty minutes. (half of the overall PASSME goal of reducing journey time by sixty minutes)

-Improving passenger experience by increasing ease of passage through the airport with fewer annoyances caused by baggage (PASSME, 2017c).

This project is particularly relevant since baggage reclaim is a focus of PASSME. Furthermore, the work aims to reduce stress and provide passengers with a more enjoyable airport experience with fewer baggage related issues.

This is an objective in line with the goals of PASSME. Therefore, the project is relevant to the efforts of the PASSME project, and the results may be included in TU Delft's contribution to the project. Additionally, prior research done as part of the PASSME efforts may be relevant to and leveraged during this project. In particular, the PASSME breakthroughs focused on managing baggage flows and providing passengers with personalization are likely to be relevant.

2.2.2 Schiphol Airport

Amsterdam Airport, Schiphol, has been KLM's home base since the airline was first founded. Since then both the airline and airport have grown significantly. Schiphol is now a large international hub which 70% of KLM's transfer passengers pass through on their way to their final destination (KLM, 2015a).

Schiphol airport was originally opened in 1916 as a military airbase. It began seeing civilian air traffic at the end of the first World War, and became the primary airport for The Netherlands in 1949. Since then, it has grown to become the third busiest European airport with more than 60 million passengers passing through the airport in 2016 (Schiphol, 2017).

Schiphol airport has one terminal split into three departure halls connected by a central plaza housing a number of facilities such as shopping and dining (Schiphol, 2017). This design is referred to as "AirportCity" and has become a model for other airports. Schiphol aims to be Europe's leading airport, and the preferred airport in Europe by providing smooth process and excellent facilities with the goal of a pleasant journey for all passengers (Schiphol, 2017).

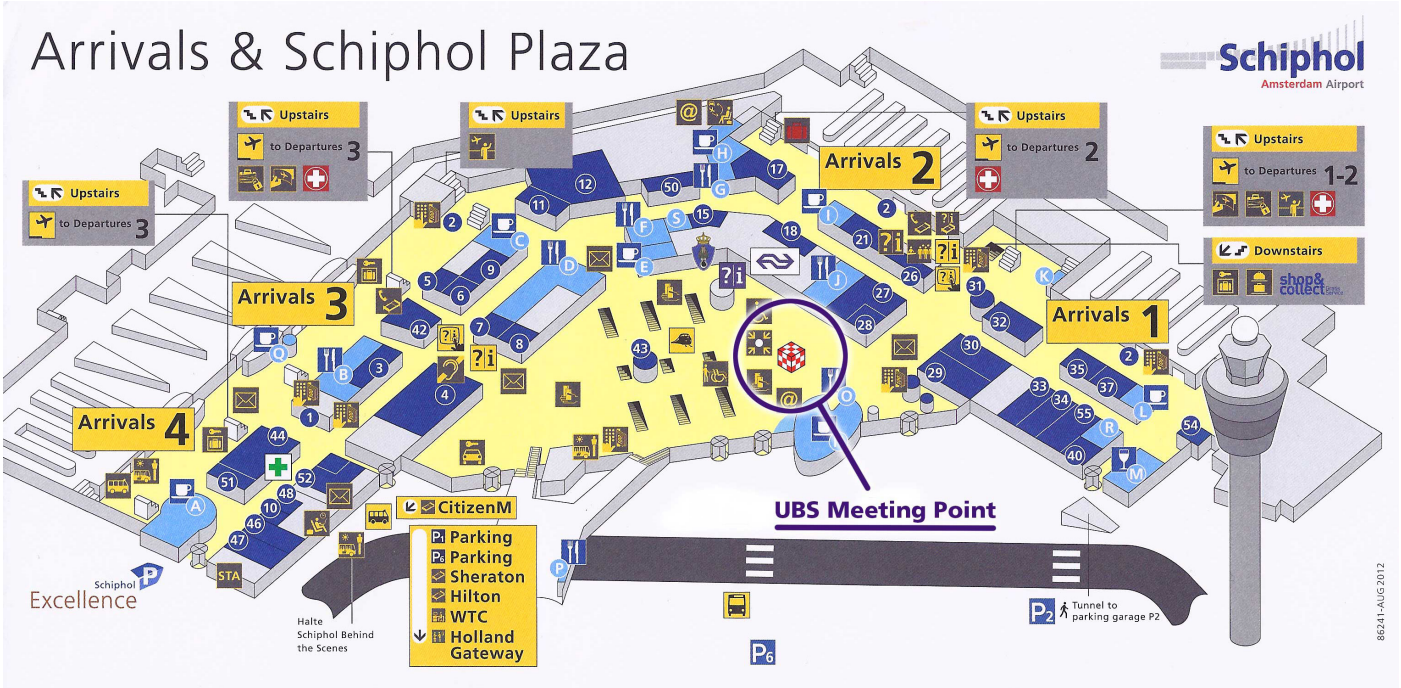


figure 2.2.2 Schiphol airport layout - image from KLM.com

figure 2.2.3 Schiphol airport baggage reclaim area

The baggage reclaim area in Schiphol is divided into three reclaim halls. Hall 1 is for charters and some foreign carriers. Hall 2 is only KLM arrivals, and with the exception of early morning hours, is almost all flights within Europe. Hall three handles intercontinental arrivals for both KLM and other large carriers (Eversten, 2017).

In each of these reclaim areas, there are currently a few methods by which information is shared with passengers. Screens above each belt indicate which flight's baggage is on, or will soon be arriving on the belt. This information is accompanied by estimated time at which incoming baggage is expected to arrive. Additionally, a floor walker is available to help answer questions and help passengers locate missing bags by communicating with ground crews. Staff can also be found at service desks in each hall to help passengers with questions and paperwork for missing bags. In Hall 2, a separate customer service room exists for KLM premium passengers, whereas special service desks for premium members are available in Halls 1 and 3 with the goal of offering these premium passengers the most efficient service (Eversten, 2017).

Since the scope of this project is focused on Schiphol airport, it is important to understand the setup and what is available at this location. By understanding the reclaim areas at Schiphol and how information in shared with passengers in these areas, it is possible to assess how effective the current solution is and what might be realistic in exploring solutions. Also, knowing that the "AirportCity" offers a variety of shopping and dining may impact possible solution directions.

2.3 Current KLM Baggage Handling System

When passengers check in baggage, each bag is given a unique tag containing a printed bar-code. These bar-codes contain booking details and passenger information, and are crucial for reuniting a passenger with their baggage should the baggage be misplaced or short-shipped. Currently, the KLM bar-codes are read by laser scanners which must be hand scanned by an employee or machine scanned by readers that are expensive and rather unreliable.

At creation of this tag, the bag is scanned into the KLM system before being transferred to the airport baggage handling system. Here, the baggage goes through a security x-ray and is sorted in preparation for being loaded onto flights. Containers are used to store the baggage on intercontinental (ICA) flights. Intercontinental baggage is scanned in the Schiphol baggage basement before being placed in the container. Then, the container is scanned and placed in the aircraft hold. The baggage on flights within Europe (EUR) is placed as bulk in the aircraft hold. Baggage traveling within Europe is scanned in the Schiphol baggage basement, and then placed on a cart. This cart is driven by ground crew to transport the baggage to the aircraft where baggage is scanned before being placed in the aircraft hold. These scans are designed to ensure registration of which aircraft hold baggage is placed in. This information is registered in the KLM Baggage Reconciliation System (BRS) which is used to track baggage and can also be used to shared baggage data with other airports.

Figure 2.3.1 Passenger checking in their baggage at the desk - photo from KLM.com

Figure 2.3.2 Ground crew transporting containers of baggage - photo from www.flickr.com/photos/jack_nealy

Upon arrival at the destination, airport ground crews will unload the baggage to be transported to the airport facilities where baggage is sorted and routed to connecting flights or onto the correct baggage reclaim belt. This unloading process typically happens as soon as the plane lands, but if many flights are arriving at once, the baggage may sit on a plane for a while before being unloaded. For larger flights, this unloading process can be quite time consuming.

Currently, only baggage continuing on to a connecting flight will be scanned once it reaches the airport. So, for bags at their final destination, there is no offloading scan to indicate that the baggage has been unloaded from the plane upon arrival. This creates opportunity for gaps in knowledge about the whereabouts of a particular bag. When a bag is misplaced, it can be difficult to know at which point in the journey it went missing. Additionally, this provides limited opportunity to proactively inform passengers if a bag has been short-shipped and will not be at the destination when they arrive.

Once unloaded from the flight, bags are transported to the airport facility by ground crew. The bulk baggage on the EUR flights are placed on carts, and the containers with the ICA baggage are transported on dollies. The distance from the arrival gate to the entrance where bags enter the airport system can require a lengthy drive by ground crews. This can add a lot of additional time to the baggage reclaim process. Additionally, this part of the baggage journey presents another opportunity for bags to be misplaced or fall off the cart.

At Schiphol, the ground crew unloading baggage from flights and bringing baggage to the airport facility are KLM employees. However, at other locations, KLM has contracted this work to other companies with whom they have service level agreements (SLA) dictating what is expected of them. This can make it difficult to implement and enforce any policy change.

When ground crew delivers the baggage to the airport facility, ownership of the baggage changes hands from ground crew to airport. From here, bags traveling onward are put through the baggage handling system where they are rescanned. Baggage with Schiphol as the final destination are not re-scanned, but placed by service employees directly onto the reclaim belts. Once on the reclaim belts, a sign above the belts will indicate which flight is being offloaded so that passengers can watch for their bag to arrive (Aarts & Vogelpoel, 2017).

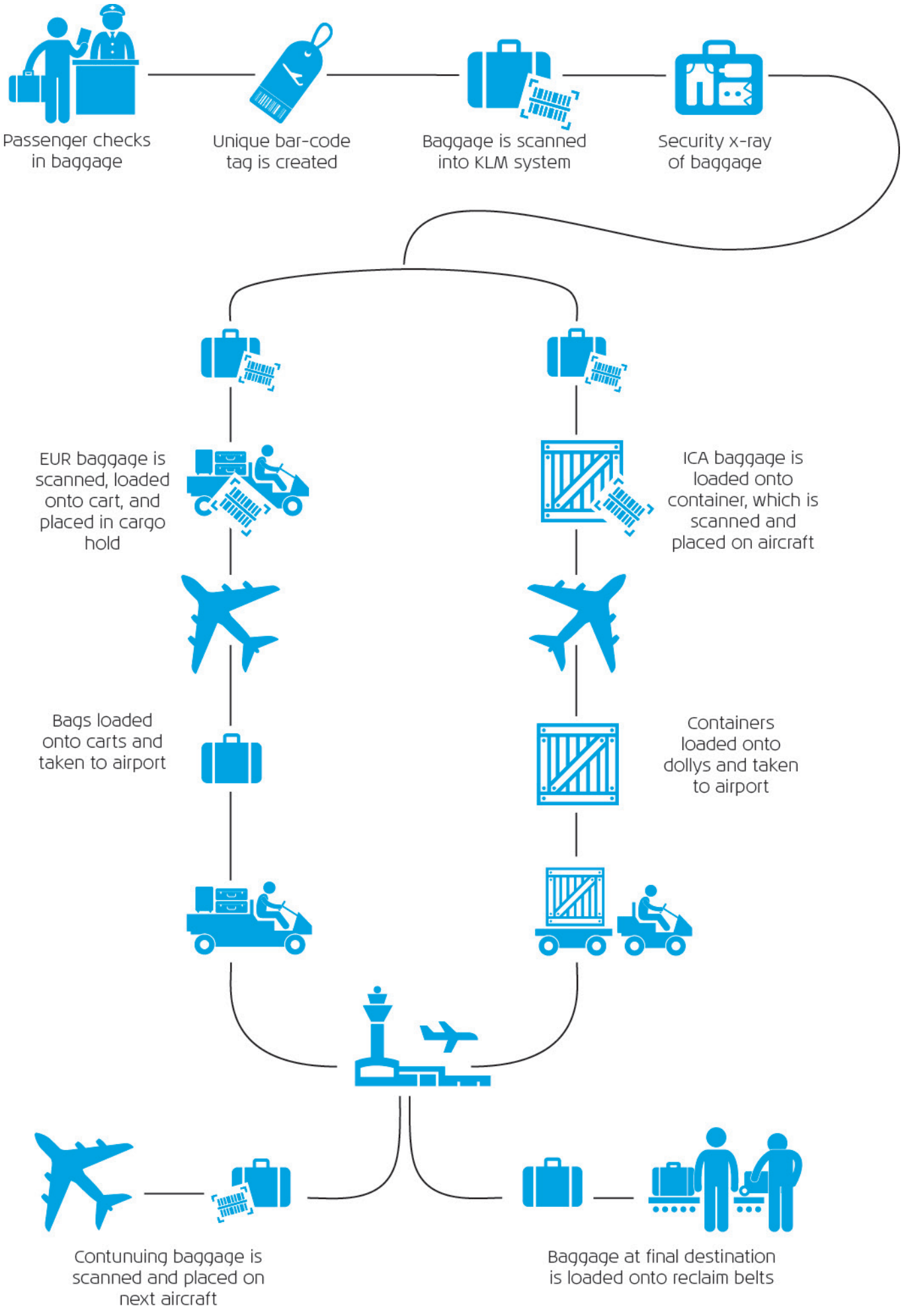


Figure 2.3 Diagram of Baggage Handling Process

2.3.1 Current Issues at Reclaim

Currently, when a passenger checks their bag, they usually do not get another update about the status on their bag until they are already in the baggage reclaim area. Here, signs above the belts indicate which flights are being unloaded onto which belts. At Schiphol, this information is also accompanied by an estimated arrival time. However, these time estimates are based on time tables from previous data that is often a few years old. Since there is not real-time information available, these estimations are often inaccurate, and can cause stress and confusion among passengers (Aarts & Vogelpoel, 2017). Furthermore, depending on the size of the flight, and amount of baggage checked, there can be as much as twenty minutes between the first and last bag on belt (Aarts & Vogelpoel, 2017).

This lack of transparency about the baggage handling system, provides passenger with limited information about the whereabouts of their baggage, which may lead to passengers experiencing stress.
Stresses affiliated with air travel experiences are related either to being airborne or to the travel process (Bor & Hubbard, 2006). The stresses from the travel process tend to be phycological and related to issues such as flight delays and baggage handling, with 40% of passengers reporting stress related to baggage reclaim. (Bor & Hubbard, 2006)
In a study of passenger behavior at Schiphol baggage reclaim, it was observed that once the majority of passengers had received their baggage, the remaining passenger began to exhibit signs of anxiety. This lead to crowded behavior amongst the remaining passengers, which can violate person fields of comfort and heighten the sense of anxiety (Persoon, 2016). On average, thirteen in every thousand passengers will arrive to find their bag is not yet at the destination airport (Eversten, 2017). In the event that a bag will not arrive on time, passenger typically don't find out until they are already at the belt. On some longer flights, it is possible to notify passengers more proactively, but this is often not the case. This creates a frustrating situation for passengers as they often wait until all bags are unloaded before realizing that there is a problem (Aarts & Vogelpoel, 2017).

When it is discovered that a bag is missing or will arrive late, passengers can use SITA's World Tracer system which is used by many airlines, including KLM to find their bag and get a status update. However, this requires them to fill out information about their bag, and then wait for notification once more information is available. Luckily, 95% of passengers whose bags are misplaced are reunited with their bags within one day. However, this process can cost them time and cause frustration and confusion (Aarts & Vogelpoel, 2017).

2.3.2 Conclusion

Passengers currently experience stress related to baggage reclaim (Bor & Hubbard, 2006). However, there is low instance of bags being misplaced (Aarts & Vogelpoel, 2017). It is possible that the issue causes stress among passengers may lie more in the lack of effective communication about the reclaim process and baggage whereabouts than the actual baggage return process itself. This is something which will be examined further in the project.

3. Future of Baggage Handling

3.1 IATA 753

In an effort to improve the baggage handling process, the International Air Transport Association (IATA) has created resolution 753 which outlines new guidelines for baggage tracking. IATA is an organization that provides global standards for the safety, security, efficiency, and sustainability of airlines around the world. Resolution 753 will be effective beginning in June of 2018 and will result in more scanning points for bags along their journey to their final destination. The resolution states that "IATA members shall maintain an accurate inventory of baggage by monitoring the acquisition and delivery of baggage." The goal being to keep track of where each bag is, and what party (airport, airline, or ground crew) has custody of it at any given moment (IATA, 2017).

To achieve this objective, the IATA resolution will require that members document custody changes when baggage is delivered and acquired by different parties in the baggage handling process. They must also have an accurate inventory of each individual bag on board a flight at departure. Additionally, members must be able to share information about these baggage handling events with other airlines as needed.

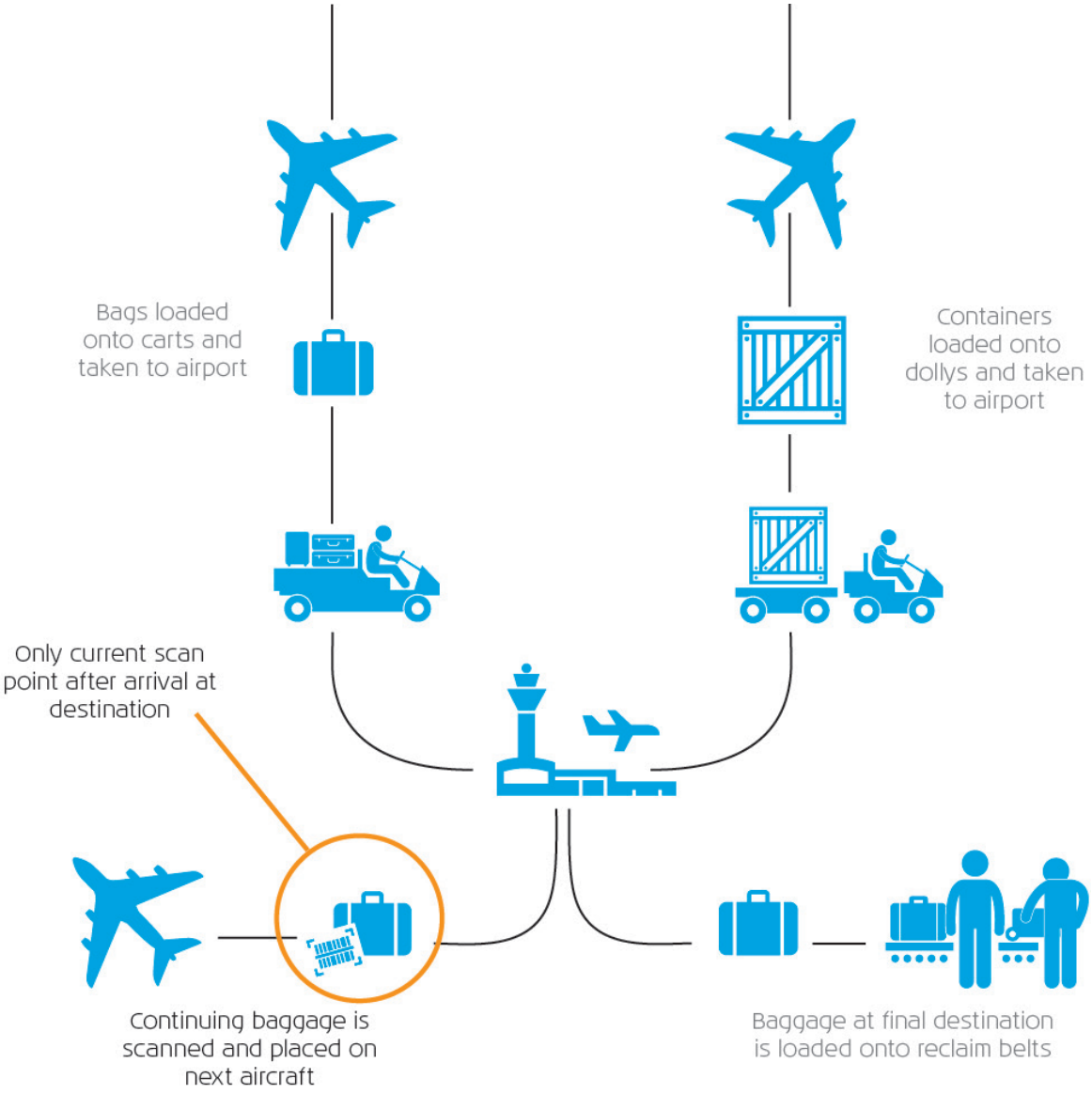
The detailed requirements of the new resolution dictates that members shall be able to:
- Demonstrate Delivery, of baggage when custody changes
- Demonstrate acquisition, of baggage when custody changes
- Provide an inventory of bags, upon departure of a flight.
- Be capable of exchanging these events with other airlines as needed (IATA, 2017).

These requirements seek to eliminate some of the issues with existing system surrounding where the bag is and what organization is responsible for it. Due to the fact that baggage changes custody several times during its journey, it can be difficult to know who is responsible for the bag at any given moment due to the current lack of scan points. Adoption of this resolution will also have additional benefit for participating airlines. The advantages to adopting this resolution are outlined by IATA as follows:

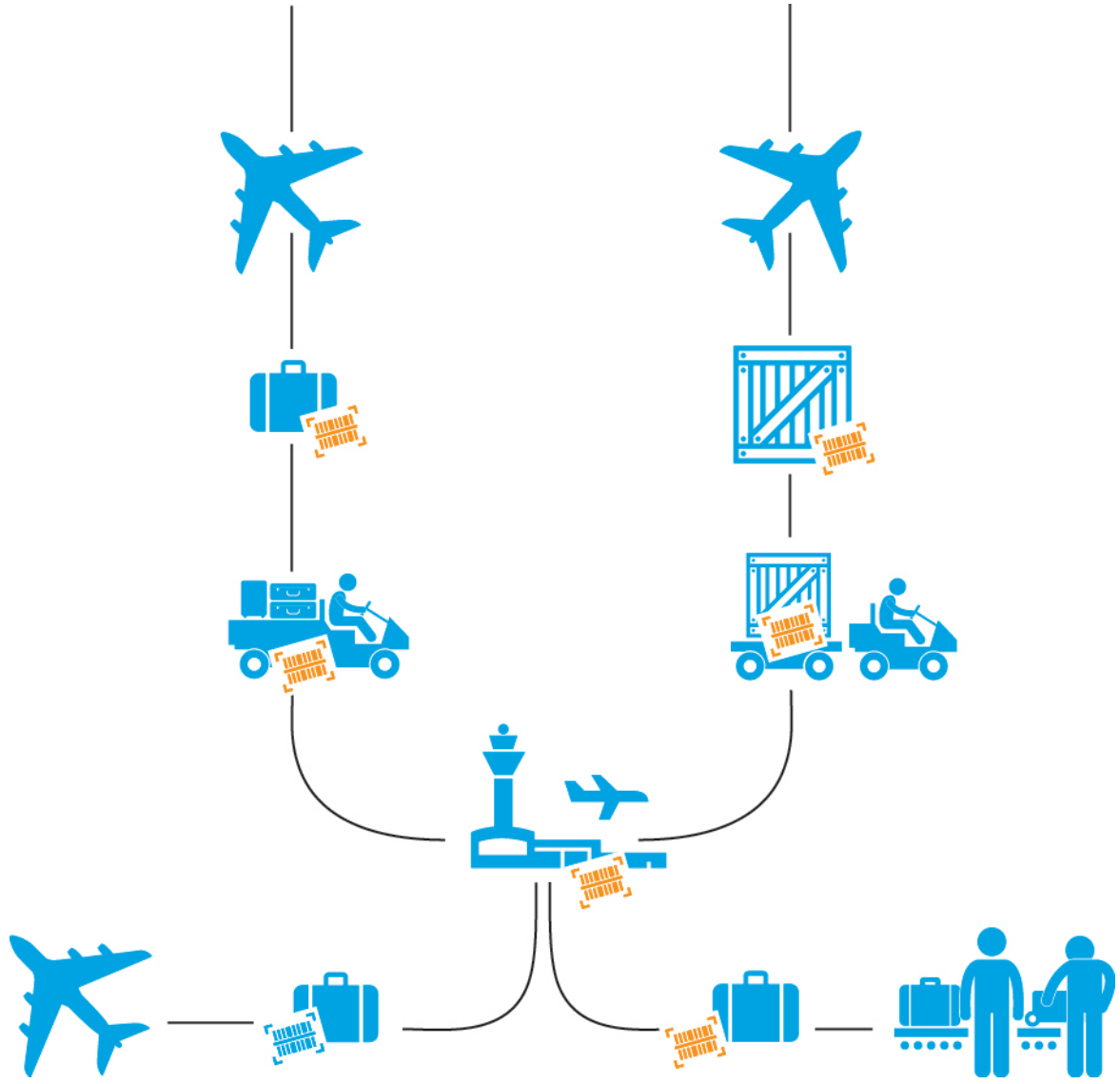
-Determining who has custody of the bags curing phases of transit to prevention of mishandling (IATA, 2017).
-Increase satisfaction of customers
-Minimize opportunities for baggage fraud
-Detect situations when bag is only partially delivered to final destination
-Speed flight departure by providing bag info to determine load order
-Provide additional metrics for service level agreements (SLAs) with ground crews
-Determine who is responsible for cost incurred by mishandled baggage

In addition to helping hold responsible parties be informed about the whereabouts of baggage and who has custody of it, this information could be helpful for passengers as well. With more scan points, it would be possible to provide passengers with more accurate estimation of when their bag will arrive on the belt. Additionally, the implementation of this resolution would make it possible to keep passengers informed about where their bag is at any moment, with the possibility to reassure them that the bag is on the plane with them, or that their bag is currently being scanned and sorted in the airport facility. Such information could help relieve passenger anxiety about misplaced baggage and reduce the tendency to crowd around the belt not knowing when bags will arrive.

With the laser scanning system KLM currently uses, these requirements are difficult to achieve. It would require many additional scan points, requiring either the installation of expensive laser scanners, or a significant increase in manual labor of workers who would hand scan bags. Implementing such a solution would not only be costly, but could increase delivery times if hand scanning is used. To meet the new IATA requirements outlines in resolution 753, KLM may need to consider new methods and/or technologies.



Currently, only baggage continuing onto a connecting flight is rescanned upon arrival. This creates opportunity for gaps in knowledge about where baggage is and is not compliant with the IATA 753 Resolution.



Under the IATA 753 Resolution, many more scan points will be required. This informs airlines where baggage is at all times and greatly reduces the changes of baggage being lost. This added tracking not only benefits airlines, but creates an opportunity for keeps passengers more informed about where their baggage is and proactively informing them if something unexpected occurs.

3.2 Technology Integration

Technological integration may also play a role in the future of air travel and baggage handling. One such technology is radio-frequency identification, or RFID. Two types of RFID technology are currently available: passive and active RFID. In passive RFID technology, a reader transmits a low frequency signal which is read by a metal and silicone sticker which contains no battery. Active RFID uses a battery, and often Bluetooth to transmit a signal to the reader (Ray, 2017). This technology is a key enabler of Internet of Things (IoT) solutions due to their high readability rates, low cost, and energy efficiency (Alsinglawi et al. 2017).

Figure 3.2 RFID Baggage Tag - image from http://www.aviationpros.com

While RFID technology has been on the market for some time now, it has yet to be well implemented within the airline industry. Hong Kong International Airport began work with RFID baggage tracking in 2004 and as of 2009, all bags leaving the airport have RFID baggage tags (Swedberg, 2009). Since implementing these tags, the airport reports an increase in read-rate accuracy of baggage tags from eighty percent to ninety seven percent. Read-rate accuracy is the percent of the time that laser scanners accurately scan baggage tags. Lower read-rates indicate that more bags are not being properly scanned. This can lead to gaps in knowledge about baggage whereabouts. This added efficiency decreases the average time to process bags, which can be particularly helpful during peak hours (Swedberg, 2009).

Some airlines have also begun implementing RFID baggage tags. As of 2016, Delta airlines has implemented RFID technology into bag tags in an effort to provide the airline with more data and precise information about where the bag is in its journey (Prince, 2016). RFID technology improved the accuracy of the baggage tracking as the readers detect a signal 99.85% of the time compared to the roughly 90% read rate with current scanning technology. RFID bag tags do cost a bit more, roughly ten cents per tag compared to three cents for current style tags (Rivers, 2016). However, the investment seems to be worth it due to the increased accuracy of tracking. In a study exploring the business case for airlines implementing RFID in baggage handling, it was estimated that there may be as much as $3 billion in savings due to improved data capturing about the bags in transit (IATA & SITA, 2017).

KLM is currently exploring a business case for implementing RFID bag tags in their baggage handling system. However, they have a complication that Delta did not face when implementing their RFID solution in North America. Namely, Delta owns all of the outstations it uses in North America, so implementation of the system and installation of the RFID scanners was a simpler process than KLM will be faced with. KLM does not own their outstations and will need to create contracts and discuss installation and use of RFID scanners at each of the airport facilities they use. This requires far more time negotiate with stakeholders and find solutions that work for each outstation (Brouwer, 2017).

Another technology to be considered in the baggage handling process is global positioning system (GPS). This tracking technology uses satellite communication to determine the speed and location of an object at any given time. A GPS receiver must receive signals from four satellites to be able to accurately determine its location (Crato, 2010). However, GPS technology is energy intensive due to their more complex processes and long-range data transmission (Ray, 2017). Additionally, it can sometimes be difficult to receive communication with satellites indoors. A study conducted at Schiphol airport exploring the possibility of using GPS technology in operations such as baggage handling at Schiphol. The study found that while GPS worked well outside at Schiphol, tracking objects indoors at Schiphol was problematic due to difficulty receiving satellite signals (Odijk & Kleijer, 2008). However, passengers are adopting GPS technology to track baggage themselves by means of GPS devices they can place in/on their bags and track via mobile applications (Aarts & Vogelpoel, 2017). This has led to situations where passengers know better than the airline where their baggage is (Aarts & Vogelpoel, 2017). Even if GPS is not the best technology for airlines to adopt, they need to find a solution that allows them to track bags with the same level of accuracy to avoid such situations, which can be quite embarrassing for the airline.

Figure 3.2.2 GPS device which can be purchased by passengers to track baggage -image from www.amazon.com

3.3 Passenger Expectations

Modern airline passengers base their expectations not only on what other airlines offer, but what services are present in other industries as well (Kollau, 2016). They are used to quick and convenient solutions such as ordering food or transportation services directly from their smart device. Additionally, they enjoy being connected through real-time information. Airlines work to accommodate this desire through services such as flight tracking and in-flight Wi-Fi (Kollau, 2016). Passengers are also beginning to expect seamless end-to-end experiences, leading airlines to reconsider the passenger journey and understand how they can meet the new expectations. For example, United and American Airlines are now working with Uber to provide passengers with a seamless experience in arrange transportation for their onward journey (Kollau, 2016).

Many companies now offer GPS tracking solutions for passengers to track their belongings themselves. This has the potential to create awkward situations for airlines, as instances can arise where the passenger knows where the bag is, but the airlines does not. This is damaging to passenger's confidence in the airline (Aarts & Vogelpoel, 2017). Over the past few years, smart bag and tag concepts have hit the consumer market. However, few of these solutions share data with airlines. Though some solutions have been developed in conjunction with airlines, these options currently lack the ability to share data across airlines. This can pose a problem for passengers whose total journey includes transfers across multiple airlines (SITA, 2017b).

Since implementing their RFID baggage tracking solution, Delta has begun providing passengers with real-time baggage tracking. They released an enhanced feature to their mobile application which allows passengers to track their bag (Swedberg, 2016). Thus exhibiting that the possibility exists for improving passenger experience, not only through better baggage handling, but the ability to share real-time information through the use of this technology. This is an important innovation as a 2017 air transport report on baggage reported that seventy six percent of passengers would like to have status updates about their baggage sent to their smart phones (SITA, 2017b). More airlines are expected to follow Delta in this move to providing real-time tracking of baggage as transparency becomes more of a passenger expectation (SITA, 2017b).

3.4 Conclusion

Given the guidelines for IATA Resolution 753 and the benefits it offers the airline if implanted, as well as passenger anxiety about baggage whereabouts, implementing a better tracking system seems like a good solution. In evaluating existing technologies which could make such a system possible, RFID is a good candidate due to its low cost and high reliability. There are some time-consuming hurdles in implementing an RFID baggage tracking solution, and it will involve a substantial upfront investment. However, there is reason to believe that implementation of such a system could improve the baggage handling process, lead to reduced KLM revenue loss due to mishandled baggage, and ease passenger anxiety. These benefits are likely well worth the investment. Implementation of an RFID baggage tracking solution would likely improve KLM baggage handling operations while presenting an opportunity to improve passenger experience.

4.1 KLM Company History

Founded in 1919, no other airline has been operating under its original name as long as KLM. After a merger in 2004, KLM is now part of the Air France KLM group, the largest airline group in the world. Additionally, KLM holds Transavia, and Martinair as wholly-owned subsidiaries which focus on low-fare travel and cargo transport (KLM, 2015b).

Today, KLM's 32,000 employees provide service for passengers all over the world to approximately 130 destinations. The company focuses on providing passengers with innovation, safety, and efficiently through service-oriented and proactive operation (KLM, 2015b).

4.2 KLM Operations Today

In an effort to help make travel hassle free, KLM currently provides a number of services to their passengers to help ensure smooth travel. Based on 2016 performance, KLM was rated the most punctual airline in the industry (KLM, 2017a). The airline also offers services aim which to meet passenger needs and keep them informed about operations so that they are provided for, and can deal with unexpected situations. KLM offers flight information and tracking, as well staff available to answer questions any time of day through a number of communication channels. Though services like this are common in the airline industry, KLM tried to ensure that they offer top quality care, through efficient and thoughtful response. For example, their twitter page has a countdown clock that lets passengers know approximately when they can expect a response (O'Leary, 2017). Part of the research of this project will be to evaluate the needs reported by passengers to assess if these are the correct strategies and what gaps still need to be address to improve passenger experience.

Like many airlines, additional services are available to KLM loyalty members. Through the Flying Blue program, passengers who fly with KLM frequently earn flyer miles which they can use to upgrade flights to gain perks such as extra leg room or bring extra luggage at no additional cost. These miles can also be used to access the many airport lounges KLM has around the world (Flying Blue, 2017). Loyalty miles can be used to level up a passenger's flight status to earn levels starting at Ivory and advancing to Silver, Gold, and Platinum. Each of these levels has benefits designs to make these frequent flyers feel recognized and appreciated. These benefits include rewards such as lounge access, discounted flights, and priority services such as early boarding and priority baggage handling (KLM, 2017b).

Figure 4.2 KLM offers customer services through a number of online platforms - image from klm.com

Furthermore, KLM makes an effort to make all passengers feel recognized. The airline does things like run campaigns designed to show passengers that they care about them. Through their "FlightFunding" social media campaign, KLM shared stories to help passengers gain crowdsourced funding to travel. Through this program, a KLM passenger received funding to fly to Canada to meet her grandson (O'Leary, 2017).

In their #HappytoHelp social media campaign, KLM scanned online posts by passengers who were having difficulties with their travels. Even if they were not KLM passengers, KLM employees would intervene and try to help with the issue. Solutions such as passport retrieval and online advice were offered to travelers. This resulted in over 14,000 #happytohelp on Instagram, and many pleasantly surprised passengers (Couasme & Gurgey, 2016). To date, KLM has not done any promotions specific to baggage reclaim.

While these campaigns are memorable for those impacted, they will not reach all passengers. So, KLM needs to be diligent in understanding the market and making sure they are able to provide for passengers adapting desires by providing travelers with what they want and need during their travels. One way the organizations seeks to do this is by gaining passenger feedback. Through their passenger feedback program, KLM encourages passengers to let them know what they enjoyed about their flight and what went wrong. Through the satisfaction survey, interested passengers can fill out a satisfaction survey online after a flight. The Quality Observer program consists of Flying Blue members who wish to give their input. As participants, these passengers make observations during their entire flight process and log the experience through photos and descriptions to provide KLM with an in-depth view into what processes and services are working smoothly, and where there is room for improvement (KLM, 2017a).

While these tools can be very helpful, the amount of data can be difficult to digest. While the KLM customer experience department does use this data to recognize overall trends, individual inputs, and therefore key insights can sometimes be lost. One of the ways KLM hopes to better use this data in the future is through the customer journey mapping tool, which is currently under development. It will allow them to organize key findings and keep records of ideas and results of how impactful their solutions have been.

4.3 KLM Future Ambitions

Going into the future, KLM has the ambition of being the most customer centric, innovative, and efficient airline in Europe. They aim to always accommodate modern needs by identifying and developing for the latest market opportunities and staying up to date on new technologies that can improve processes and customer experience (KLM, 2015b).

Innovation is key to the company's plan to become a leader in customer intimacy by using technology to enable staff and provide passengers with personalized experiences. Digital systems have already enabled staff to send personalized, sometimes hand-written messages to passengers, or alert cabin crew to events such as birthdays so they can provide small gifts. Through use of their CRM (customer relationship management) system, KLM is working to ensure front line staff as all the information necessary to act proactively and provide passengers with the best, and most personalized experience (Future Travel Experience, 2017).

"From research and practice, we know that the way we interact with our customers has the largest impact on how they experience their journey with us."

- Michel Pozas Lucic -Vice President Customer Innovation and Care - Air France-KLM (Future Travel Experience, 2017).

Ability for staff to be proactive is also important. KLM's most premium passengers already have access to a personal concierge who can help them with their travel. However, KLM is also exploring ways to use technology to extend some of the advantages of such a service to all passengers. Technologies such as artificial intelligence and chatbots are being explored to make this possible. Biometrics and robotics are also being explored to create an improved flow for passengers, and virtual and augmented reality are being explored for airport wayfinding and in-flight entertainment (Future Travel Experience, 2017).

While KLM does have a strategy in leveraging technology to improve customer service, they also need to be mindful about how they implement solutions. One example of a potential issue is the growing concern amongst users about privacy and security of their online information. KLM should work to ensure that passengers feel comfortable with the level of personalized care being offered. There can be a fine line between a level of customer intimacy which leaves customers feeling personally cared for, and leaving customers feeling their privacy is being violated.

One example of when a company's attempt at providing customized service went wrong is the case of the personalized adds sent out by a retail company. The company tracked user data and shopping trends to send adds and coupons that were personalized to shoppers. In one instance, they send adds for baby items to a teenage girl who was living with her parents. Although the predicative analytics were correct, and the girl was pregnant, it was not a nice way for her parents to find out. So, while to technology worked accurately, the desired customer experience was not achieved (Hill, 2012). Thus, it is important that KLM critically asses the solutions and suggestions being offered to ensure that they meet user needs, and create a feeling of intimacy without making leading to feelings of violation.

Figure 4.3 KLM aims to leverage technology (such as biometric scanning seen here) to improve passenger experiences - image from http://aviationtribune.com

4.4 KLM Passengers

To best design for passenger needs, KLM must understand who their passengers are. In an effort to do this, the Air France KLM Customer Insights team preformed a market research exploration and analysis. In this exercise, the Customer Insights team analyzed who was flying and on what occasions. Based on this information, thirteen demand spaces were identified. These demands spaces represent all KLM passengers and the different needs they have in various scenarios.

While this is an insightful overview, it is difficult to design for such a large range of users. As such, KLM chose to focus on three of these demand spaces which share common needs to enable development of solutions that meet more specific needs. These demand spaces are "a good start", recharge in the skies", and "let me work".

These groups were chosen because they have more specific demands which are not driven by cost of travel. Rather, these travelers value schedule, flexibility, and experience and are willing to pay more to have their demands met. Additionally, the needs of these travelers are in line with KLM's customer intimacy strategy. The three groups identified are described as follows:

"Recharge in the skies"

This demand space represents roughly six percent of KLM passengers and eight percent of KLM revenue. These are business class frequent flyers who travel on long haul flights. For them, a balance of work and relaxation is key. They want to be able to restful enjoy a smooth, efficient travel experience that gets them to their destination on time. As regular flyers, they are familiar with the procedures and want to optimize planning. They want to feel acknowledge through their status as an important passenger; demanding the best personal service to enable to balance they seek. If there are going to be changes or disruption, they want to know about them in advance.

"Recharge in the Skies" -image from KLM presentation

"Let me Work"

This demand space represents roughly eleven percent of KLM passengers and twelve percent of revenue. This group has a highly active lifestyle and is focused on their careers. For them, connectivity, timeliness, work, and efficiency are key. They are frequent flyers and enjoy traveling but it is important that they stay connect, and have the tools they need during travel such as Internet, power, and USB ports during flight. It is important to them that they have all the travel information accessible through their mobile device. This gives them the feeling of control to ensure an efficient experience, and is also fun for them. Loyal frequent flyer members because they value benefits such as working efficiently in the lounge, Wi-Fi access and other benefits that make the trip easier, and the acknowledgment and status. They like to travel in the front cabin and their tickets are paid for by their company.

"Let Me Work" -image from KLM presentation

"A good start"

This demand space represents roughly fourteen percent of KLM passengers and five percent of KLM revenue. For this traveler, the experience in the airport is key. They are on a short to medium haul flight, so the in-airport experience is a big part of their journey. The efficiency and facilities the airport offers are of key importance. An example of desired efficiency this group values is having their personal details stored so that KLM can find the best flight options for them. While this specific example pertains to preflight experience, it may be interesting to explore how this level of personalization and efficiency can be applied to the airport experience. These travelers want to feel taken care of so that their experience is efficient and enjoyable. In preparing for their trip, they want to be organized so that they can experience the efficiency that allows them to relax in comfort during the trip.

"A Good Start" -image from KLM presentation

In total, these three groups represent thirty one percent of passengers and twenty five percent of revenue. Furthermore, KLM identified "moments of truth" for each demand space based on passenger feedback. These moments are determined by KLM as key indicators of if a passenger's experience will be positive or negative. Baggage reclaim is a "moment of truth" for both the "A Good Start" and the "Recharge in the Skies" travelers, so it is very important for them that this step goes smoothly.

Efficiency is a major theme shared by all of three groups of travelers. "A Good Start" passengers want to make the most of their time in the airport, while the "Recharge in the Skies" passengers wish for thorough planning to enable a smooth process. "Let me Work" passengers hope to make the most of their time by being productive. Additionally, the "Recharge in the Skies" and "Let me Work" demand spaces enjoy feeling that their needs and desires are acknowledged by the airline when they receive personalized attention through services such as customized planning and the resources they need to use their time wisely.

Phase 2: Passenger Journeys

5. Introduction

Based on the project brief provided by KLM and initial research in Phase one, the following aspects of the passenger experience during baggage reclaim are examined.

5.1 Time Well Spent

Though it may not be possible to reduce the time it takes to deliver baggage to passengers, it may be possible to improve their satisfaction with the wait time. Prior research indicates that satisfaction is based on perception of time rather than actual time. (Davis & Heineke, 1998). Perception of time can impact user experiences and evaluation of service. In one study, restaurant customers who were displeased with how long they had to wait for their food were more likely to rate the food poorly. (Davis & Heineke, 1998). In bank customers, waiting times impacted customers overall rating of quality of service (Davis & Heineke, 1998).

Context is one aspect that can influence perception of time. In restaurant observation, customers were more likely to be impatient during lunch, when they likely had work or something to get back to, than at dinner, when they were more likely to have free time (Davis & Heineke, 1998). This is important for KLM as many passengers in baggage reclaim are eager to get on with their journey. This increases the likelihood that they will be impatient Thus, time perception is of key importance.

Research also shows that occupied time goes faster (Maister, 1985). However, while having an activity or distraction can help make it seem as though time passes faster, the activity must be relevant to the context. For example, giving menus to customers waiting in line at a restaurant provides them with a task relevant to the context, and helps them prepare for the next step. However, playing music when a person is on hold on the telephone can cause further annoyance as this is not related to the objective of the call and does not aid in the process (Maister, 1985). If KLM were to choose to provide passengers with an activity while they wait for their baggage, the context should be carefully considered to ensure the activity is the right fit for the reclaim experience.

Furthermore, knowing how long the wait will be can improve the perception of the wait. This allows the person waiting to accept the situation rather than feel anxious in anticipation of when the wait will end (Maister, 1985). KLM currently has estimated arrival times displayed in the baggage reclaim halls. This may help with passenger perception of time. However, these times are frequently inaccurate and there can be long waits between the first and last bag off the belt.

When no explanation is given for the wait, people may be left with a feeling of powerlessness which can lead to irritation (Maister, 1985). This indicates that if KLM knows the cause of baggage delay, it may be wise to share it with passengers to avoid further frustration.

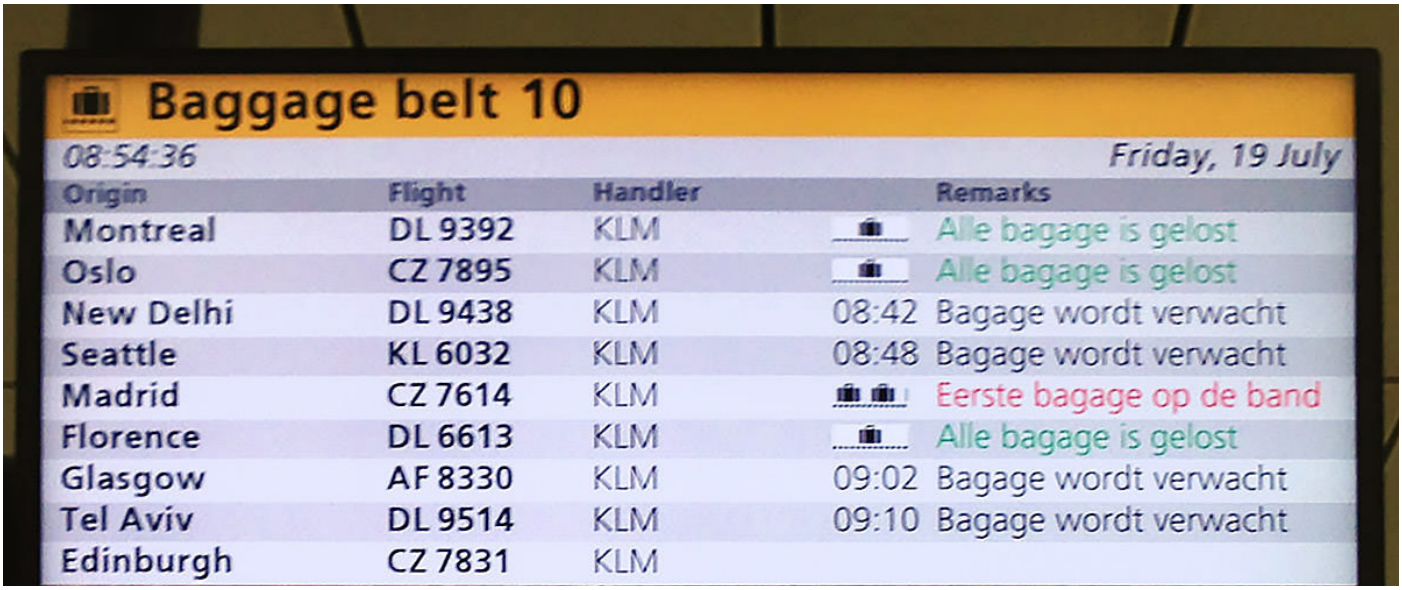


Figure 5.1 Display showing estimated arrival times at Schiphol baggage reclaim area - image from https://www.blogography.com/photos60/SchipholLuggage.jpg

5.2 Convenience

Prior research shows that convenience is related to compatibility of the user's lifestyle and needs, with dimension of time, place, ease of acquisition, use, and execution (Ozturk, Bilgihan, Nusair, & Okumus, 2016). Research shows that level of effort the user must exert is an indicator of if something is convenient or not. (Chang, Liang, Yan, & Tseng, 2013). An intervention is perceived by users as convenient if it aids them in completion of their task (Ozturk, Bilgihan, Nusair, & Okumus, 2016).
Furthermore, studies show that one-on-one relationships which offer personalized experiences increase user's perception of convenience (Ozturk, Bilgihan, Nusair, & Okumus, 2016). There is also a link between convenience and user loyalty (Ozturk, Bilgihan, Nusair, & Okumus, 2016). So, it may be that increasing passenger's perception of convenience during the baggage reclaim experience will lead passengers to be more likely to fly with KLM in the future.

5.3 KLM Loyalty

In assessing how baggage reclaim will impact how passengers reflect on their experience, and how likely they are to fly with KLM again, it is important to note that baggage reclaim is the last step in the passenger journey before leaving the airport. It is the last point of contact the passenger has with KLM at the end of their journey. This means that as the end moment of the journey, baggage reclaim could play a significate role in how the passenger reflects on their experience with KLM.

The peak-end theory by doctors Fredrickson and Kahneman asserts that experiences are evaluated primarily on the peak and end moments of a journey. It is these key moments that people will use to rate their experience when looking back (Redelmeier, Katz, Kahneman, 2003).

In applying this theory to KLM's baggage reclaim issue, it is important that when analyzing the passenger journey, there is a focus to gain insights into the peak moments as well as how passengers feel at the end of their journey when they are leaving the airport with their bag. Capturing not only the end, but also the peak moments in the journey requires a broader understanding of the passenger arrival experience, rather than focusing on only the moment when the bag is reclaimed.

As such, research in this project expands the scope of the reclaim experience to explore the journey leading up to the reclaim moments and what peaks may exist there. The passenger journey was expanded from the baggage reclaim moment to include the passenger experience from arrival at the gate to departure of the airport. By expanding the scope, the objective is to understand the moments leading up the reclaim experience and how they impact the mindset of the passenger as they enter the reclaim hall. Additionally, by expanding the scope, a more holistic view of the passenger experience can be gained. Thus, providing insights into not only the end moment, but also the peak moments in the passenger journey. By identifying these moments and what cause them, insights can be gained into how to work towards improving the experience with a focus on ensuring that passengers end their journey on a positive note.

6. Research Questions and Methods

Given KLM's goal to develop a quick and convenient baggage reclaim experience with the goal of improving passenger satisfaction, and the likelihood of passengers choosing KLM again in the future, the following research questions were formulated.

1) Since it is not feasible to reduce the time it takes to deliver baggage to the reclaim area by a significant amount, how can the experience be improved so that passenger perceive the time to be well spent?

- 1a) What do passengers currently do while waiting for baggage?
- 1b) Why do they choose they current course of action?
- 1c) How would passengers like to spend their time while waiting for baggage?

2) What about the current baggage reclaim experience is perceived as inconvenient by passengers and how can this be improved so that passengers can enjoy a smooth process?

- 2a) What is preventing passengers from enjoying a smooth process?
- 3b) What additional service, information, or other intervention might add convenience to the reclaim process?

3) How can this part of the passenger's interaction with KLM be improved to help ensure they reflect positively on their experience with the airline?

- 3a) Since baggage reclaim marks the end of the passenger's air travel experience, how can this moment be utilized to end the experience on a positive note?
- 3b) How do passengers currently feel when leaving the airport with their baggage?

To answer these questions, the current passenger experience must be understood to gain an understanding of what issues result in negative passenger experiences, and what is needed to improve the enjoyment and convenience of this part of the passenger journey. First, an analysis is done of prior KLM passenger research to determine themes in the needs KLM identified in their users. Next, an analysis is done of direct KLM user quotes, to validate the assumptions made by the KLM research, and gain deeper insight into the specific issues passenger's face and what they value during travel. As well as what factors determine how they evaluate their experience. These steps are aimed at addressing research questions about the current baggage reclaim experience and issues being faced, as well as what factors determine how passengers evaluate their experience.

Next, interviews are conducted with six frequent flyers to gain in depth, direct feedback about how this group experiences baggage reclaim and the journey from arrival from gate to departure from airport. Later, two journey mapping sessions are held with a total of fifteen participants. The goal of these sessions is to understand the peak and end moments of passenger journeys and identify themes as to what most influences passenger experience. These steps are aimed at better understanding current issues passengers face and understanding what needs to be provided for passengers to reflect more positively on their baggage reclaim experience.

7. Research Approach

KLM has a resource in their online tools which acts as a platform for passengers to review their experience. Through these tools, direct passenger quotes were obtained to gain insight into the current experiences. Feedback from the Quality Observer and Customer Satisfaction Programs were used for gaining direct passenger feedback. The Quality Observer program involves a process where selected Flying Blue members observe and document their experience during a particular flight. They take photos, and describe the key moments along their journey and explain what went well and what did not. In the Customer Satisfaction Program, passengers fill out an on-line survey after their flight. They also have the opportunity to give direct quotes about their experiences, often highlighting the best and worst moments.

These direct passenger quotes provided qualitative data to gain insights into the specific concerns and experiences of passenger. Reading one hundred of the most recent passenger quotes, it was possible to learn what issues passenger report as memorable in their airport arrival experience. These quotes were submitted online my KLM passengers who are recounting the highlights of their most recent travel experience with KLM. In these tools, passengers are focused more on reporting key moments or factors that influenced their air travel experience, rather than tracking their journey. While this is not a strong recourse for journey mapping, it does make it possible to search for themes in what impacts passenger experiences. In this exploration the themes of efficiency and communication emerged. Through reading and analyzing these quotes, deeper insights could be gained into the causes of passenger experience than what was obtainable through the KLM demand space research alone. Analysis was done my identifying themes among the various quotes. In each quote which was read, the underlying theme of what shaped the passenger experience was identified. My tracking the occurrence of these themes, it can be assumed that the most common occurrences represent the most key issues for influencing passenger experience. Combining these resources, it was possible to track themes, and find key quotes that capture the reasons why passengers feel the way they do during their journeys.

In the analysis of passenger feedback, the themes of communication and efficiency had the highest instance of reoccurrence. The level of perceived efficiently greatly influenced how passengers rated their experience, with low perceived efficiency causing frustration in passengers, and perceived high levels of efficiency leading to positive feedback from passengers. Communication effected passenger's levels of anxiety. When key information such as baggage whereabouts was unclear to them, it leads to stress. Whereas, clear communication about details such as when to expect baggage to arrive and which belt to be at lead to a smooth process which passengers evaluated positively.

By leveraging this resource, it is possible to gain insights directly from KLM passengers to gain a more in-depth understanding of the current KLM passengers experience This provides a look into what KLM passengers report as being valued in their air travel experience, and what common pain points they struggle with. It also provides input from all KLM users, not just those in the targeted demand spaces. KLM believes that by targeting these demand spaces, they will likely meet many of the needs of all of their passengers. By comparing the insights gained from this feedback with what is valued by the targeted demand spaces, it is possible to test this theory.

A generative approach is taken through customer journey mapping exercises. This technique is leveraged as a way to gain qualitative data about the passenger experience. Journey mapping examines the steps a customer takes and may include an end to end journey, like in this research, or a specific point of interaction with the company (Richardson, 2010). There are many methods for conducting journey mapping including interviewing, observations, or having the customer map their own experience. Through these types of activities, one should gain an understanding of the customer experience and understand the following points:

1) Actions: What is the customer doing?

2) Motive: Why are they taking these actions and how are they feeling?

3) Questions: What uncertainties may arise for the customer during the journey?

4) Barriers: What may keep the customer from accomplishing their goal or enjoying a smooth process?

By using this method to understand the current passenger journey, it is possible to uncover the existing issues which lead to inefficiency and unpleasant experiences. Knowing when and why these issues occur creates a solid base for exploring solutions.

For this project, two sessions were held in which groups of passengers used workbooks to document and discuss their travel experience and journey through the baggage reclaim process. Leading into the journey mapping, participants briefly share their favorite aspects of travel with the group and discuss. Next, participants us the workbooks to map their experiences from time of arrival at the gate, until leaving the airport with their checked baggage. Each participant maps the steps of their journey, and then rate each step as positive, neutral, or negative. Once completed, participants select the best and worst moments and discuss these points in their journey with the group to look for common themes. After these discussions, participants do a brief group brainstorming session on how to address the issues they identified.

8. Analysis of KLM Direct Passenger Quotes

8.1 Efficiency Quotes

Much of the passenger feedback dealt with the issue of efficiency in the arrival and baggage reclaim process. Passengers value their time and want to ensure they spend it well. The experience passengers have while traveling should be as smooth as possible in order to meet expectations and avoid confusion and stress. The following quotes serve to illustrate the important of efficiency to the passenger during arrival and baggage reclaim.

"Priority luggage was last on belt. This is normal at this airport. It also resulted in missing a train."
-KLM passenger traveling from Amsterdam to Stockholm

For passengers, air travel is one component which fits into the larger context of their schedule and what they are aiming to accomplish. It is important to understand this to best design for the most efficient air travel experience.

"I still find weird[sic] that by traveling together with two other people (the all three of us on a business class flight), having put physically and literally altogether our bags on the connecting flights belt, only mine (Platinum level and BC flying) got lost. Very approximate way of operating." [sic]
-KLM passenger traveling to Calgary, CA

A passenger's schedule involves not only themselves but also the people they are in contact with. This may include people they are traveling with. If there is a disruption for one of these parties, it will impact the entire group.

"luggage took >30 minutes to arrive on belt, in fact +/-10 suitcases in time, the rest from our flight more than 20 minutes later. belt stopped, luggage from other flight arrived before remaining luggage of our flight"
-KLM passenger arriving in Amsterdam

Passengers expect a timely and smooth process. It can be disruptive to the journey if events take longer than expected or happen in an order not in line with passenger expectation.

"Luggage needs to arrive more promptly after flight. A wait of 20 minutes AFTER walking to Immigration and then clearing Immigration and walking to baggage claim is too long. Non-priority bags were being returned prior to priority bags."
-KLM passenger traveling from Tel Aviv to Amsterdam

The experience passengers have while traveling should be as smooth as possible in order to meet expectations and avoid confusion and stress. The theme of efficiency is key not only for the three focus demand spaces but impacts all KLM passengers. Thus, it is crucial that the proposed solution addresses this issue by working to ensure an efficient process.

8.2 Communication

In addition to identifying efficiency as a key issue for passengers, the direct passenger feedback made clear how important it is for KLM to have effective communication with their passengers. Clear communication is key to keeping passengers informed. There are several means by which information is shared with passengers including on line, airport signage, and staff in airports and on board flights. When these communication tools are not used effectively, it can lead to confusion and an unpleasant and inefficient passenger experience. The following quotes serve to illustrate the importance of communication between KLM and the passenger during arrival and baggage reclaim.

"Luggage arrival was complete chaos. Took a very long time before news reached part of the passengers that cargo door was broken. No proactive information was given, had to go find it."
-KLM passenger traveling from Amsterdam to Hong Kong

Sometimes, unfortunate circumstances and delays cannot be avoided, but passengers want to be informed about these situations as proactively as possible so that they can adjust their plans accordingly. When they are left without information, passengers are unsure of what to do or when the situation may be resolved.

When passengers do receive information, it is important that it is both accurate and to a level of detail that provides them with full clarity. Information provided to passengers about their travel informs their decisions making and flow of their journey.

"I hate it when the sign says ""first baggage on belt"" when clearly nothing was coming out!"
-KLM passenger traveling from London Heathrow to Amsterdam

Discrepancy in what a passenger is being told, and the reality of the situation they are facing is frustrating and can make an unpleasant situation (waiting) even worse.

"There was a lot of confusion about the delivery carousel no. It was announced that it was changed and everyone moved just to discover that the original announced carousel was used"
-KLM passenger traveling to Houston Texas

Passengers base their decisions on the information the airline provides. When passengers are faced with inaccurate information, it can lead to them making decisions that can needlessly cost them time and effort. This results in them feeling understandably discontent.

For passengers who are in the arrival phase of their journey and collecting their baggage from reclaim, having the correct information helps to facilitate a smooth process. When there is a change in the situation, they need accurate and timely updates in order to react to the change, and possibly adapt their plan. As one passenger pointed out, proactive information can be especially helpful in dealing with unexpected changes. When an unplanned delay is encountered, lack of communication about the situation can lead to further passenger frustration as it leaves them with unanswered questions about what is going on and when they can expect a resolution to the situation.

Even when the process goes smoothly, passengers appreciate helpful updates. Confusion is caused when information is not accurate or shared with passengers in a way they can easily access and understand. This can cause frustration and disrupt the flow of the passenger journey, leading to negative reflection on the experience.

8.3 Conclusion

Efficiency is important to passengers during airport arrival and baggage reclaim. Passenger expect and smooth and timely experience. Disruption to the airport arrival and baggage reclaim process can create a ripple effect in the rest of a passenger's planning, such as onward journey or coordinating with travel companions.

Lack of clear communication can cause frustration, while clear and proactive communication is appreciated and can even turn an otherwise unpleasant situation into a positive reflection of good service. During the baggage reclaim experience, effective communication can ensure that passengers have the information they need to plan for making the most of their time. This can intern make the reclaim process more efficient.

An interesting insight was that passenger perception of efficiency has little to do with the actual amount of time it took for them to receive their baggage. Different passengers had varying expectations for how long they should expect to wait. For example, multiple passengers reported having an approximately thirty-minute wait. Some found this to be timely, while others were frustrated with having to wait this long. This indicates that perceived efficiency has less to do with the amount of time the process takes, and more to do with how the process compares to passenger expectations.

This observation is further verified by instances when the estimated time of baggage arrival displayed did not match with when baggage actually arrived. Even when the wait time was not very long, if the expectation which has been set by the display was not met, passengers were unhappy.

9. Business Traveler Interviews

9.1 Setup

The target demand spaces identified by KLM, have a focus on business travelers with "Recharge in the Skies" and the "Let me Work" focusing predominantly on passengers traveling for business, and "A Good Start" split evenly between business and leisure travel. Additionally, "Recharge in the Skies" and the "Let me Work" include passengers who are more likely to be frequent flyer program members who enjoy premium services.

To gain a more in-depth understanding of these users, interviews were arranged with six frequent flyers who travel for business trips. These interviews took place over the phone and lasted about one hour on average. The interviews began with some warm-up questions about the participant's travel habits such as how often they travel, where they are traveling to/from, and who they may be traveling with. These questions were designed to ease participants into the interview while providing context for their travel.

Next, participants were asked to describe their most recent baggage reclaim experience. The goal was to understand what these passengers valued and what caused discomfort and/or uncertainty. Participants were asked to describe the steps they took from gate arrival at the destination airport, to the moment they left the airport with the baggage. They were asked to describe not only the steps they took, but what motivated them to make these choices.

By having a one on one conversation more detailed questions could be asked about what passengers did and why, as well as how they felt in certain moments. After the interviews, key insights and themes were explored.

9.2 Participants

Six passengers were interviewed who are frequent flyers, traveling for business purposes. All of passengers interviewed were enrolled in frequent flier programs. One travel best fit the "A Good Start" profile, two better fit "Recharge in the Skies", and three participants matched the "Let me Work" demand space.

Due to limitation in who was available to interview, the passengers were mostly non-European, and only one flew with KLM. Four were frequent flier members with Delta, one with KLM, and one with Southwest airlines. Five of the passengers were male, and one was female. The ages of the passengers ranged from 32 to 54. Five of the participants were American and one of Dutch.

9.3 Insights

By listening to participants recount their arrival and baggage reclaim experiences, it was possible to discover what is important to these passengers and what causes issues for them. During the interviews, it was also possible to ask why they took the actions they did in an effort to understand their motives. As before, the themes of efficiency and communication were important to these passengers.

9.3.1 Efficiency

Efficiency was a theme with all passengers interviewed. Again, the previously identified themes of fit into their larger schedule, seamless process, and maximizing downtime surfaced in these interviews.

The passengers interviewed most often traveled for work and choose their flight times based on when they needed to arrive for meetings. Disruptions in this schedule could cause them to miss work. When they did describe traveling for vacation, passengers expressed a desire to get to their destination so they could start enjoying their vacation. No matter the reason for flying, time spend during the air travel journey was a component that fit into their larger schedule and none of them wanted to spend their time waiting around an airport.

It was also important to the participants interviewed that the process was smooth and efficient. Some of the passengers mentioned stopping by the bathroom or grabbing a coffee on the way to the reclaim area. However, most typically they went directly to the baggage reclaim. When asked why, they said it was because they were unsure when the bags would arrive and they wanted to be present when the bags did show up. Participants reported that this was to avoid any disruption with their bag being accidentally picked up, or taken off the belt in their absence, as well as to quickly move on to the next step in their journey. Passenger also expressed an interest in getting through the steps quickly. So, after deplaning, passengers described a tendency to go directly to the next step in fulfilling their mission of leaving the airport and getting to their destination.

Since they were often traveling for work, they wanted to ensure they were productive with their time. During the interview, PAX-1 mentioned using the time while waiting for his bag to send emails to coworkers. Or, he would sometimes use the time to pick up the keys to his rental car. He was always trying to do something with these moments of "down time" rather than sitting around waiting. However, he did state that not knowing how long the wait for baggage would be made it difficult to know how to use this time.

9.3.2 Communication

Again, passengers interviewed reported that sometimes the methods in which the airlines communicated were ineffective. When passengers were asked if there was any indication about when they could expect their bag to arrive, they reported that either no information was visible to them, or that the information provided was confusing or not useful.

An example of this is that many participants reported that rather than estimated time of arrival, screens would display verbiage such as "plane landed", "unloading" or "baggage on belt". Passenger found this to be unhelpful and the meaning was unclear and they were not able to connect it to estimated arrival time.
"I know the plane landed. I was there. Tell me something useful." -PAX1

A similar system is used in the arrival halls at Schiphol. The screens above the reclaim belts display brief message such as "baggage expected" to provide a status update. Such messages should be meaningful to the passengers reading them.

Many passengers interviewed expressed an interest in having more information communicated by the airline. Changes in flight information, and whereabouts of baggage were key pieces of information that passengers sometimes felt were not communicated to them.

During her interview, PAX-2 said "knowledge is power." She felt that if the airline stayed in contact with her and communicated key information such as arrival times and expected delays, she could choose how to adapt and best use her time.

Inconsistency also caused issues. One participant described issues with consistency of messaging relating to what information the airline was conveying about when bags were expected to arrive. In this instance, screens above the reclaim belt showed that there was an expected fifteen-minute wait.

However, at the end of the fifteen minutes, the time displayed on the screen was increased to ten additional minutes, and later ten more. This reduced the passenger's confidence in the airline and made the waiting experience even more frustrating.

These interviews also sought to explore what types of communication might be important to passengers during the arrival and baggage reclaim process in addition to communication with KLM. While there was little interest in communicating with other passengers, interviewed participants did express and interest in communication with Friends/Family/Coworkers. Many stated a desire to be in contact with people not traveling with them. A recurring theme in the interviews was wanting to have Wi-Fi and/or cell service to be able to stay in touch with friends, family, and coworkers, and to be connected to the outside world. In some cases, they were letting people know they had arrived, or arranging pick-up from the airport. In others, they wanted to be able to connect to email to stay up to date with coworkers about plans and projects. Some simply liked feeling connected to their friends through social media or check the latest news report. Thus, it is important to consider passenger's connection to the outside world and ability to communicate with others during the arrival and baggage reclaim process.

9.3.3 Additional Insights

Many passengers expressed a desire to "freshen up" after their flight. This was especially true after long haul flights, but even the passengers on shorter flights mentioned leaving the plane feeling a bit dirty after sitting in close quarters with so many strangers. A desire to take a shower, change clothes, or brush teeth was expressed.

Refreshments were also mentioned. Many passengers expressed an interested in a small snack or coffee (pretty much all of them wanted coffee). It seems that the travel is a bit draining so a nice little "pick me up" is desired upon arrival.

Since the participants interviewed were frequent flyer members, they were questioned on their relationship with the airline to gain an understanding of if and how they felt acknowledged and how this might relate to KLM's focus on customer intimacy.

Three of the participants interviewed did not feel they got much of the rewards programs they were enrolled in. One received personalized welcomes from the flight crew, and the staff even decorated the lounge and give him and his wife gifts when they flew with them on their honeymoon. However, this is quite an extreme example.

One participant preferred the Southwest airlines rewards program to Delta's because it provided her with smaller, but for frequent rewards. This may be an indication of passenger's preference for instant gratification. Smaller, more frequent rewards or motivators may make passengers feel more appreciated, and little things that can be enjoyed in the moment may better enhance the experience.

9.4 Conclusion

In understanding the current passenger journey, it is clear that efficiency and communication are key to improving the passenger experience. By more clearly communicating options and information, passengers can choose how to use their time, mapping a journey for themselves which they feel is the best use of their time.

The general sense of apathy most participants expressed about rewards programs was surprising. However, the preference one participant expressed for instant gratification rather than building up for a larger reward was an interesting insight. This could indicate the mindset of travelers and suggest exploring a shift in how KLM approaches their loyalty rewards. However, more passengers would need to be questioned about this issue for validation. In the scope of this project, it may be interesting to explore ways to guide passengers to finding little rewards or moments they can enjoy during their baggage reclaim journey.

9.5 Limitations

Due to time limitations and access to business passengers, there were some limitations which may introduce bias in the result. It was unfortunate that so many of the participants were American, especially since KLM deals more frequently with European travelers. This may introduce cultural bias in the results. However, KLM does have an increasing number of global passengers particularly from North America and Asia. International business travelers often fit the "Recharge in the Skies" demand space. Additionally, the majority of participants were male, however, both the "Let me Work" and "Recharge in the Skies" demand spaces are identified by KLM as being mostly male passengers.

10. Journey Mapping Sessions

10.1 Setup

To gain further insights into the experiences of passengers during baggage reclaim, a generative technique was used. Two journey mapping sessions were held. In the two sessions held, participants were given booklets to fill out with information about themselves and their most recent flight experience. After completion of the workbooks, participants engaged in sharing and discussing their experiences before taking part in a brief ideation session to generate and evaluate ideas for improving the issues they identified.

The goal of these sessions was to understand current passenger journeys, and identify themes pertaining to what passengers like and dislike about the current situation, and see how these themes compare to the previously identified themes. Additionally, the exercise aimed to understand how different people's preferences and circumstances may impact their perception of the situation. The journey mapping was done with the peak-end theory in mind, with the mapping exercise guiding participants to identify their feelings along their journey, highlighting the peak moments, and evaluating the end moment when they left the airport.

Figure 10.1.1 Booklets used for Journey Mapping

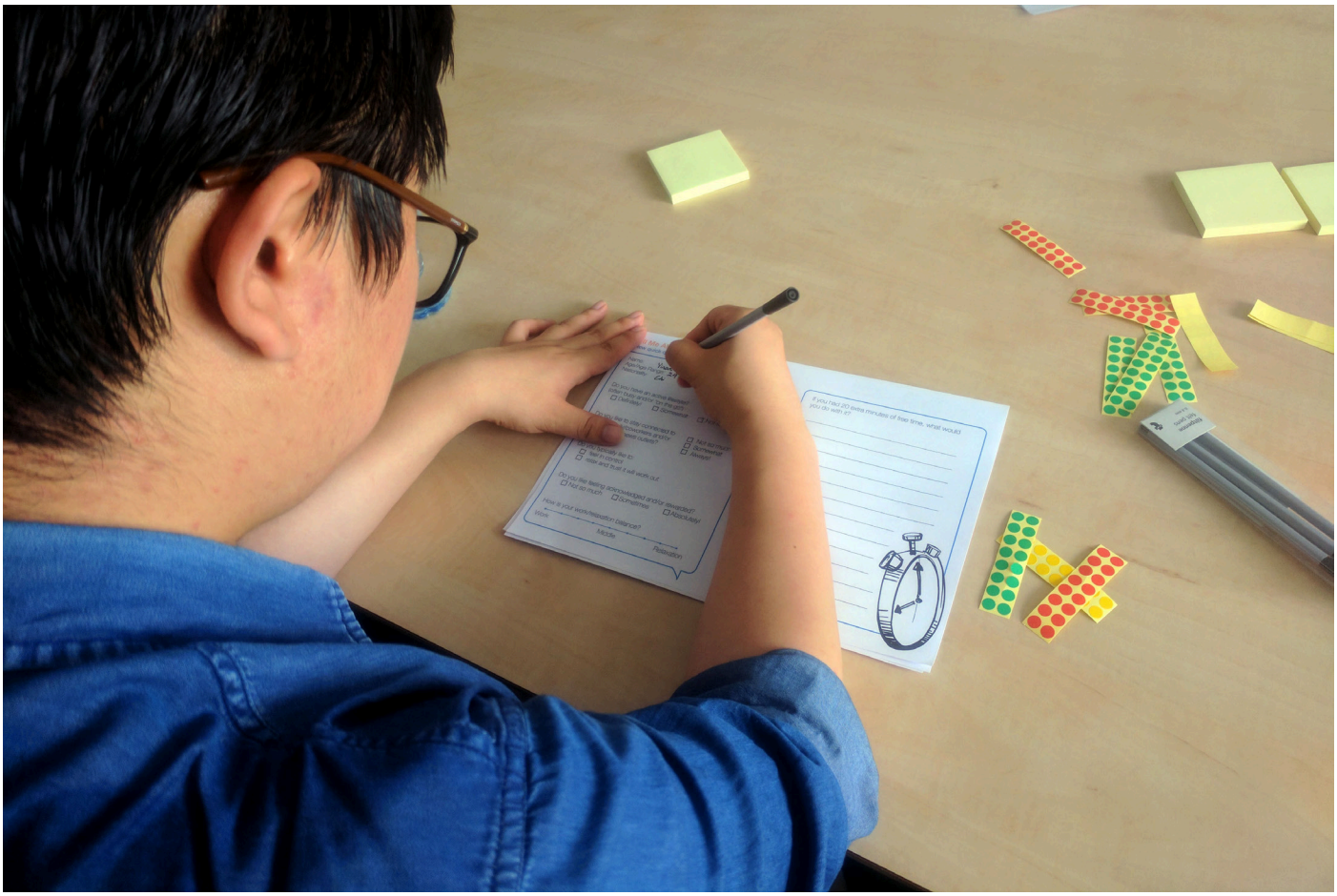


Figure 10.1.2 Participant using workbook to map is baggage reclaim journey

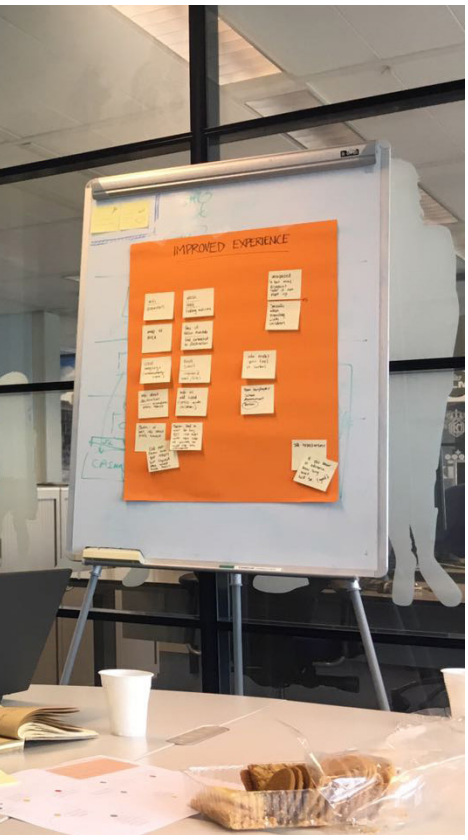
The first two pages of the booklet asked participants about themselves. Page one asked for basic information about name, age, and nationality, along with questions such as work/relaxation balance, and desire to be recognized that were meant to evaluate which demand space each participant most closely fit. The second page simply asked participants to describe what they would do with twenty minutes of free time. These pages deliberately came before introducing details about the project goals and the journey mapping exercise. Participants were encouraged to answer questions freely independent of what they perceived to be the goal of the session and the context of air travel and baggage reclaim. However, the questions on the first page were meant to evaluate which of the three demand spaces each participant most closely fit, and the question about what they would do with twenty minutes of free time was asked with the average reclaim waiting time in mind. (participants were not made aware of this fact)

The journey mapping section of the booklet asked participants to recall their most recent experience retrieving checked baggage at the destination airport. It asked them to consider the whole experience from arrival at the gate to departure from the airport. As previously discussed, this broader scope gives context for the situation in which the baggage collection takes place, taking into account their expectations, concerns, and thoughts during this process. Thus, providing the opportunity to understand what factors, influence the baggage reclaim experience.

After mapping their experience, participants used the provided stickers to rate each step of the journey as positive, neutral, or negative in terms of their emotions in that moment. This provides an overview of where peak moments during the journey are with the aim of identifying themes. Next, participants were asked to identify the peaks in their journey and describe the most pleasant and most unpleasant moments in their journey on post-its. First, each participant read their most pleasant moment to the group, and a brief discussion was held about the identified issue. These discussions lead to more in depth understanding of these moments and conversation about why these moments were preferred and helped identify themes in what moments participants most enjoyed and why these were their favorite moments. Then, participants each read their least favorite moment to the group and discussed in a similar manner. With the objective of again, gaining deeper insights and identifying themes in these pain points during the journey.

After discussing these positive and negative peak moments, participants were encouraged to brainstorm on ways to address the issues they identified. The group discussed concepts and these ideas were recorded on post-its and displayed on a poster. After discussion, participants were asked to vote on their two favorite concepts. Using a blue sticker for their first choice and an orange sticker for their second favorite. Based on these votes, four top concepts were identified. The group then discussed why they thought these solutions were the most impactful to the passenger experience.

In addition to discussing solutions, the group debated different methods of implementation. For example, in the second session, many participants agreed that information about the destination and onward journey was helpful to passengers. However, they had differing opinions as to if this should be done in person by an employee, through a mobile application, or through signage in the airport. They were encouraged to discuss the pros and cons of each method and the unique experience created by each of these different methods.



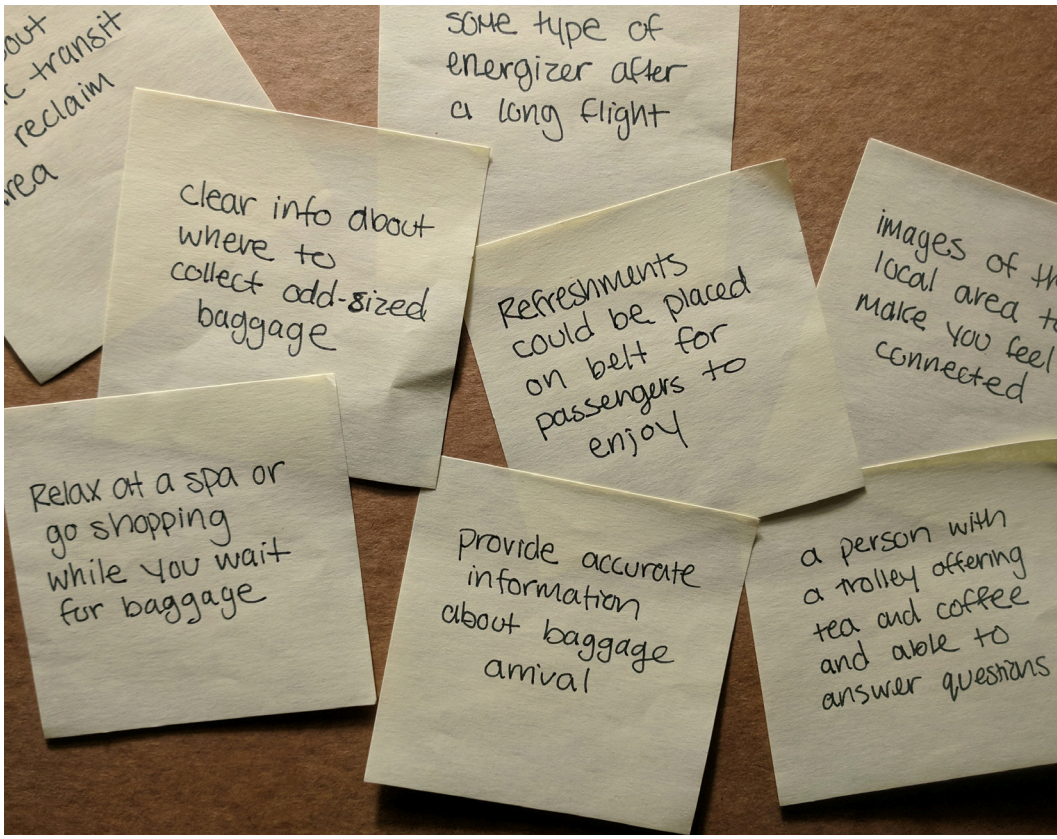


Figure 10.1.3 Concepts generated during group brainstorming on improving the baggage reclaim experience

Of the ideas generated, some of the favorites of the participants included concepts about providing information about local transportation, an opportunity for passenger to freshen up after their flight, giving refreshments to passengers, sounds and imagery that connect passenger to the local environment, and accurate information about baggage whereabouts.

These concepts sought to provide solutions to the issues the participants had previously identified such as fatigue after flight, stress about baggage whereabouts, and confusion about how to navigate the local area.

Participants were encouraged to imagine the ideal scenario. So, some concepts may be less realistic due to limitations such as budget, but all ideas were taken into consideration when moving to the ideation phase.

10.2 Participants

The first creative session was conducted at TU Delft with nine design students who have experience with traveling and checking bags. Participants represented six different nationalities including, China, Finland, Brazil, Columbia, Greece, and The Netherlands. Their ages ranged from 22 to 28. Their travels were all personal.

The second creative session, conducted at KLM involved six KLM employees from customer experience and/or ground services who also have experience traveling with checked baggage. All participants were Dutch and their ages ranged from 25 to 53. The travel experiences they described in their journey mapping was also travel for personal reasons rather than work.

Figure 10.2 Participants at the session held at KLM

10.3 Insights

After the workshop, the results of the journey mapping were analyzed. Keeping in mind the prior research which demonstrates that experiences are rated by the peak and end moments (Kahneman, Fredrickson, Schreiber, Redelmeier, 1993), these moments in the participant journeys were analyzed. Exploring the causes of the positive and negative peak moments, as well of the end moments as reported by participants, themes were identified. Efficiency and communication were strong themes in both their positive and negative peak moments, and efficiency was an important issue in the end moment of the journey. Thus these issues were heavily considered during the ideation phase with the aim of ensuring proposed solutions addressed these issues to provide passengers with clear communication about important matters such as baggage whereabouts with the goal of creating a smooth and efficient baggage reclaim process.

10.3.1 Positive Peak Moments

When describing peak positive moments, communication was a key influencing factor. Namely, six participants cited the moment they received their bag from the reclaim belt as the positive peak moment in their journey. However, this was more of a moment of stress relief than joy. In describing this moment, each of the participant described feeling a stress buildup before the bag arrived due to lack of communication about when to expect their bag. Several passengers expressed anxiety that their bag may not have made it to the destination at all.

Seeing the bag arrive on the belt, relieved the stress caused by the lack of communication about the whereabouts of the bag. In identifying this common peak moment, a key issue was revealed which shows that passengers need to have clear information conveyed about the location and estimated arrival of their bag to reduce stress.

Other causes of positive peak moments were feelings of being in control and having accomplished their mission. Three participants described the moment they left the plane as their peak positive moment. All three described a feeling of regaining control, which they felt they had lost while being constrained to the aircraft. They enjoyed the feeling of freedom to make their own choices upon entry into the airport.

Two participants described their positive peak moment as when they gained a feeling of having accomplished their mission. One reported feeling this when the plane touched down, while the other felt it upon being picked up from the airport.

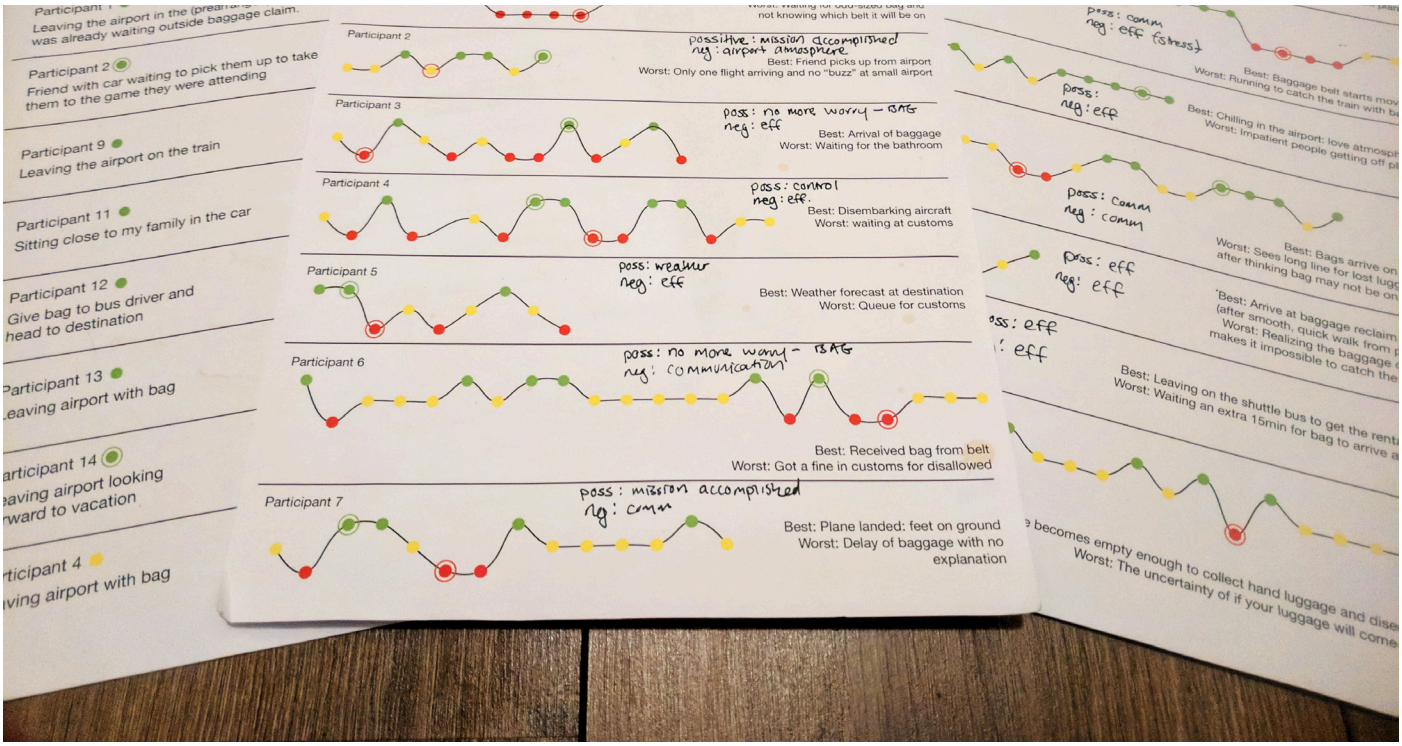


Figure 10.3 Analysis of journey mapping

10.3.2 Negative Peak Moments

Communication and efficiency were clearly key influencers in the negative peak moments reported by participants. Seven participants cited a lack of efficiency as the cause of frustration that lead to the negative peak in their journey. Five of these had to deal with waiting, either to disembark from the plane, or in line for the bathroom or customs. The lines were often longer than expected, and were simply not how participants wanted to spend their time. Additionally, one participant described being frustrated by the impatient people he had to wait with. This lead to passengers being rude to each other and created an unpleasant atmosphere, making the wait even worse. Two passengers explained that an efficient journey caused them to miss the train they were expecting to catch after their flight. In these instances, the inefficient process in the airport caused further delay in the participant's planning, for which they had to readjust and make new plans.

Another leading cause of negative peak moments was ineffective communication. Seven participants cited poor communication as the stressed which caused their negative peak moment. Of these, five were lacking communication about the bags they had checked. One participant had an odd sized bag, and was unclear as to what belt it would arrive on, and when to expect it. Another participant experienced a delay in baggage arrival time with no explanation as to the cause of the delay, while another participant had to wait fifteen minutes longer than the time estimate displayed on the screen.

10.3.3 End Moments of Passenger Journey

Of the fifteen participants, seven rated their end moment as positive, six rated it as neutral, and two found the end of their journey to be a negative experience. The end moment participants were asked to focus on was leaving the airport with their baggage. Efficiency was a key factor for this moment. The seven participants who rated the end of their journey positively, experienced a smooth process, and many were even pleasantly surprised by how seamless their departure from the airport was. Most of these participants had already made arrangements for how they would leave the airport such as being picked up by friends or shuttle bus, or knowing where to catch their train. These participants reported enjoying a smooth process, a feeling they accomplished their mission by arriving at their destination. Participants who did report negative feelings at the end of the journey attributed these feelings to confusion and lack of information which made it difficult for them to continue with their onward journey.

10.4 Limitations

While there was an effort to ensure some diversity in participants, there are some issues that could introduce bias. In the first group, all participants were under thirty. This age demographic may have different concerns and priorities than other age groups as well as different expectations about ease of process and level of communication and transparency between themselves and the airport and/or airline. Furthermore, as KLM employees, the second group of participants could be bias towards their employer as well as have views on the airline industry and process that other travelers may not. Furthermore, the participants may not have been the best fit for the target demand spaces identified by KLM.

10.5 Conclusion from User Research

The user research conducted made it clear that efficiency and communication are key issues for passengers during the arrival and baggage reclaim process. The process is very goal oriented and passengers wish to accomplish each step in a smooth, efficient way. Clear and accurate communication is key in achieving this. Not only do efficiency and clear communication lead to a smoother journey, but they also lead to the passenger feeling more in control during the process. Moving into the concept phase of the project, ideas focus on ways to improve these aspects of the passenger experience.

Phase 3: Concept Development

11. Inspiration from Literature

To gain inspiration into how the identified issues of efficiency and communication can be dealt with, research was done into existing solutions. Both theoretical research and solutions implemented by other companies/industries were considered. The goal was to explore what insights may be applicable in finding a solution for KLM.

11.1 Efficiency

In a study on waiting experience across various industries, it was discovered how customer perception waiting varies based on context. The study found that while waiting, people find themselves in either a telic state or paratelic state. In a telic state, people waiting are more serious and goal oriented, whereas in a paratelic state, they are more relaxed and likely to enjoy the process (van Hagen, 2011).

When interacting with organizations offering a more functional service such as an airport or post office, customers tend to be in a more telic state and have a goal oriented focus, are conscious of the time, and typically find the wait tedious. In these situations, the study suggests that those waiting want to have a feeling of being in control and enjoy real-time information and a calm environment with limited stimulation (van Hagen, 2011).

However, in other contexts, such as a museum, when patrons tend to be less goal oriented, the wait may not seem as painful. In some instances, waiting may even add to the experience such as when excitement builds while waiting for a thrill ride at an amusement park. During waits like these, customers don't require the same sense of control, and may prefer a more stimulating environment (van Hagen, 2011).

Based on this study, passengers waiting to reclaim baggage are likely to be in a more telic state in which they are goal oriented and desire information that will help them feel in control. This assumption is supported by the findings in the user interviews and journey mapping sessions. When applying the findings of the prior research to the baggage reclaim solutions, providing data, such as real-time information should increase passenger's feeling of being in control. This will make the wait seem less tedious and improve how passengers perceive the efficiency of the process.

Furthermore, the study suggests that people who frequently have the same waiting experience, such as a frequent flyer traveling the same route, are likely to experience the wait in a telic state. However, people less familiar with that particular wait, and may view it as a new experience, and be more likely to perceive the wait in a paratelic state (van Hagen, 2011). In the case of passengers waiting to reclaim their baggage, it may be interesting to explore ways to reintroduce some degree of newness to the experience to frequent flyers in the hopes of shifting their mindset to a more paratelic one.

In another study, the link between customer expectation and satisfaction was examined. It was determined that customers are satisfied when expectations are met, delighted when their expectations are exceeded, and dissatisfied when reality falls short of their expectations (Davis & Heineke, 1998). An example of this from the journey mapping session was the passenger had to wait fifteen minutes longer for his bag to arrive than the time displayed on the screen above the reclaim belt. This left the passenger dissatisfied with the process, which he perceived to be inefficient.

There are multiple factors which may influence customer expectations about wait time such as company advertisements, word of mouth, or previous experiences (Davis & Heineke, 1998). An example of this from the interviews with the frequent flyers, some mentioned learning how long the baggage reclaim process usually took at different airports and would set expectations accordingly.

The same study also revealed that perceived wait time can be influenced independent of actual wait time. An example of this can be seen in a hotel which was dealing with customer complaints about elevator wait times. Initially, the hotel attempted to solve the issue by implementing a scheduling algorithm which slightly reduced wait time for the elevator. However, customer complaints persisted despite the reduced wait. It wasn't until the hotel installed full-length mirrors beside the elevator doors on each floor that the complaints stopped. The conclusion was that the mirrors solved the problem by given customers something to occupy their attention with (Davis & Heineke, 1998). This is encouraging news for KLM as the logistics of transporting bags from the plane to the reclaim belts makes it difficult to reduce delivery times without costly staff increases. It would be more preferable for KLM to find a solution which reduced perceived wait time through occupying passenger's interest than attempting to reduce actual wait time.

11.2 Communication

In the user studies conducted, it was observed that the decisions passengers made during their journeys were based on information provided by airport and/or airline, such as expected baggage arrival times. In instances where information was not clearly or accurately provided, the result was confusion and frustration. These instances often disrupted the flow of the user journey as it could result in users not knowing the correct location to go to, or when to expect their baggage. Passengers require clear communication with KLM to help guide their arrival and baggage reclaim journey, but what is the best way for KLM to share key information?

In a study exploring passenger experience with Schiphol airport and NS Railways, it was discovered that passengers desire convenience in the form of as little unnecessary mental effort as possible. It was also found that mental efforts of the passengers can be minimized when clear information is provided. (van Hagen, Martens, Pruyn, 2017). The study found that passengers want to feel that they are in control and that providing relevant information to help guide passengers can help achieve a sense of control. (van Hagen, Martens, Pruyn, 2017).

The same study found that negative feelings such as anxiety during the travel process can be avoided through clear communication. By anticipating and proactively answering passenger's questions such as where they need to be, distance to the gate, and how much time they have, passenger stress levels can be reduced. With this information, passengers can plan accordingly and spend time relaxing instead of looking for answers. (van Hagen, Martens, Pruyn, 2017).

Figure 11.2 Passengers reading display board at Schiphol Airport

11.3 Conclusion

In exploring how an intervention can improve KLM passenger experience with baggage reclaim, efficiency and communication are key factors. Providing passengers with clear communication enables them to plan their journey efficiently so that they can feel their time is well spent. Both the content of the communication KLM has with its passengers and the way it is presented will impact the passenger experience. It is important to find the right balance between guiding passengers and enabling them to find their own way. In searching for solutions, the focus will be on what information is relevant to share with passengers, and what level of information control is appropriate.

12. Refined Design Brief

The original project brief as provided by KLM was to focus on quick on convenient baggage reclaim. However, a refined objective can be formulated taking into consideration KLM's goals and insights from the project research. It was discovered that it is difficult to make significant changes to the speed at which baggage is delivered to the reclaim process, the passenger experience can be made to feel more efficient if passengers feel their time is well spent. Research also identified that convenience can be achieved when passengers feel relaxed and in control of the situation. Clear communication between KLM and passengers is key to facilitating this feeling of relaxation and control.

The current process, as described by participants, is a bit like being lost in a hedge maze:
-It can be difficult to gain a clear overview of the situation
-Passengers are often unsure of next step in the process.
-Key information, such as accurate baggage arrival times, is often missing

In considering a new interaction vision, the importance of efficiency and communication are considered in providing passengers with a feeling of control which allows them to relax and enjoy a more convent baggage reclaim experience.

The interaction vision of a trusted co-pilot was chosen. And the following interaction vision was formulated:

Guide passengers through their arrival and baggage reclaim experience by ensuring a feeling of **clarity** and being prepared to enjoy a **smooth process** and a feeling that time is well spent.

Clarity in the baggage reclaim experience can be gained through clear communication between KLM and passengers about key information pertaining to their arrival and baggage reclaim process. Keeping passengers up to date on the status of their baggage, as well as what options there are for how to spend wait time provides passengers with more control and ability to choose the options which are best for them. In the ideation phase, the most effective way to provide this clear communication will be explored.

A smooth process is related to efficiency and passengers consciously choosing how to spend their time. When passengers have key information, they feel in control and can formulate a plan which best fits their needs and interest. This presents the opportunity for passengers to choose how to spend their time so that they feel the time is spent wisely. Thus, proposed solutions should clearly communicate what options are available to passengers, so that they can take control and enjoy a baggage reclaim experience in which they feel their time is spent wisely.

13. Ideation

During the ideation phase, the insights from the user and literature research were leveraged to explore concepts that would improve the KLM baggage reclaim experience. The goal of these concepts was to search for ways to provide passengers with clear communication that would guide them to enjoy an efficient arrival and baggage reclaim experience in which they felt their time was well spent.

In addition to improvements to efficiency and communication, both the aspects of travel which participants identified as being enjoyable, as well as the aspects they found problematic were considered. For example, many participants expressed an interest in the local culture at the destination, and curiosity about local dining, attractions, and transportation systems. They also mentioned issues with fatigue upon arrival, and confusion with aspects of to how to navigate the arrivals and baggage reclaim process.

13.1 Concept Generation

The two main issues identified were:
-A feeling of efficiency achieved through a clear plan of action and feeling of the passenger being in control and using their time wisely
-A need for clear communication between KLM and passengers about key information such as baggage whereabouts

Concepts were generated about what could enable passengers to use their time more efficiently. This exploration looks for ways to help passengers feel in control, formulate a clear plan of action, and enjoy their baggage reclaim journey.

Some concepts focused on ways KLM can communicate key information with passengers. These ideas explored technologies such as on-line communication, as well as utilization of assets which are available in the airport such as signage and display screens.

Sub goals were identified as ways to enhance the passenger experience by addressing both the aspects of travel they reported as being enjoyable, as well as the ones that are problematic. Concepts were generated for these issues as well. While these issues are not as pressing as the main issues of efficiency and communication, they were explored as a way to enhance the passenger experience with the goal of making the baggage reclaim journey not only efficient, but enjoyable. This way, passengers can end their air travel experience with KLM on a positive note which will increase their likeliness of remembering the overall experience positively and wanting to fly with KLM again. (Redelmeier, Katz, Kahneman, 2003).

The top aspect of travel that passengers reported as being enjoyable was connect with the local culture in the destination. Participants listed activities such as exploring local cuisine, interacting with local people, and enjoying local architecture and attractions. Concepts were generated to explore ways to connect passengers to the culture and environment at their destination.

A main negative aspect of travel participants described was a feeling of fatigue upon arrival. They reported being tied, hungry, and wanting to freshen up. Thus, concepts were generated on ways to help passengers feel energized upon arrival so that they could continue into the baggage reclaim experienced refreshed and clear headed.

13.2 Selection Criteria

At the end of each ideation round, the concepts generated for evaluated based on feasibility and impact. Feasibility is assessed by how realistic it would be to implement the proposed solution. This includes aspects such as cost, time to implement, and technical viability. In assessing impact, the project amount of change to the passenger experience is evaluated. By doing this assessment of concepts, it is possible to see which concepts are the most realistic based on having the right balance of being feasible, but also having a meaningful impact on the passenger experience.

Another metric which was used to narrow down concepts was evaluating both the fit with KLM and the fit with identified need. By doing this, it was possible to see which concepts not only met passenger demands, but provided a solution in a way that was in line with KLM branding and methodology.

13.3 Final Direction

The final direction chosen was to develop a feature to be integrated into KLM's existing application which will help passengers navigate the arrival and baggage reclaim process. This application will provide key information about when and where bags will arrive with real-time data provided by RFID bag tags. It will also provide passengers with options of how to make the most of their downtime while waiting for their bag. This may include features such as, arranging transportation for their onward journey or exploring the local culture and local events.

A mobile application was chosen because this platform allows for information to be communicated to passengers in a personalized and dynamic way. Through this medium, passengers can choose to view the information relevant for them. This is not possible when using communication methods such as airport displays, which contain only generic communication for all passengers. Having communication through a passenger's phone on the other hand, allows for the information being displayed to be tailored to the specific passenger, and gives the passenger the power to explore and select the options that best fit their needs. Additionally, a Wi-Fi enabled device enables the opportunity for real-time updates on data such as baggage location, local events and weather, and public transportation for the passenger's onward journey.
In exploring how the application feature can best aid passengers, levels of information control are explored through two mock-ups. In one mock-up, the is a higher level of guidance from the application. This is designed to guide passengers through each step of the journey, but offers them a limited about of information control as passengers have to deal with the process one step at a time, and work within the constraints provided.

In the second mock-up, the passenger has a much higher level of information control. All of the information is presented upfront, and the passenger decides how they want to use it. They can prioritize ad make their own plan.

The goal of exploring these options is to understand which method best enables the desired interaction vision. Is the higher or lower level of information control more effective in enabling user to plan an efficient baggage reclaim process? Do passengers able to balance the cognitive load of exploring the information on their own, or would they rather be more guided in their experience? These two mock-ups will be used to determine if a higher or lower level of information control is preferred in the context of the arrival and baggage reclaim journey.

Phase 4: Final Concept, Conclusions & Recommendations

14. Validation

Validation testing sought to discover if the proposed solution would produce the desired effect of providing passengers with clear communication to enable a smooth and efficient baggage reclaim experience. This test sought to understand how effective the concept is, which method of sharing the information was most effective, and what changes may need to be made to best fit user needs.

14.1 Test Setup

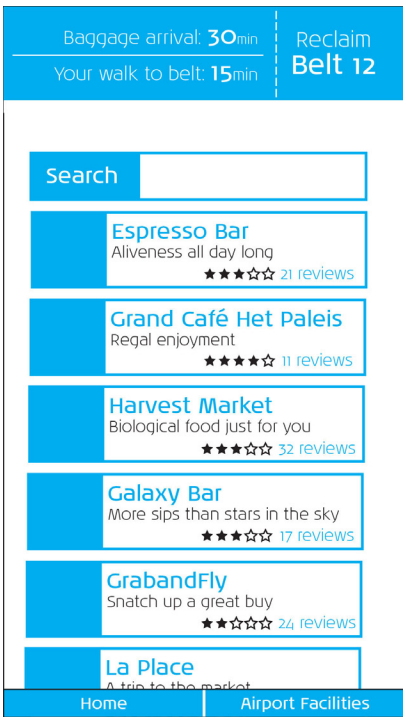
To assess what level of information control best fits passengers arriving at Schiphol, two prototypes were created to be evaluated by participants through A/B testing. These prototypes were interactive wire-frame mock-ups of the two applications. Mock-up A was designed to provide a high level of information control by having screens which give an overview of all available options. Mock-up B was designed to have a lower level of information control by highlighting the most likely options for users to select and not showing all of the options at once. Participants were able to interact with the prototypes by means of a smart phone which was provided to them for testing.

The user testing was conducted at Schiphol Airport so that participants were in the target environment with all of its potential stresses and distractions. Participants were provided with a brief description of how the prototypes were being developed for passengers arriving with checked baggage before being provided with a scenario for executing the evaluation of the two application concepts. In this scenario, participants were told to imagine traveling with checked baggage on a business trip from Munich to Amsterdam. Participants were given four tasks to accomplish upon arrival, including reclaiming checked baggage, using the application mock-ups.

After completing these tasks with the first application mock-up, participants were asked questions about their experience with the mock-up, what they did and didn't like, how clearly information was communicated, and how they would imagine this proposed solution impacting their arrival and reclaim journey. This was then repeated with the second application mock-up.

Upon completing the provided tasks on each mock-up, users were asked a series of questions to compare the mock-ups and describe which one they preferred and why. The test was designed to take around fifteen minutes as participants typically have a limited amount of time available in an airport setting. Six participants took part in the testing. Half of them began with mock-up A and half began with mock-up B.

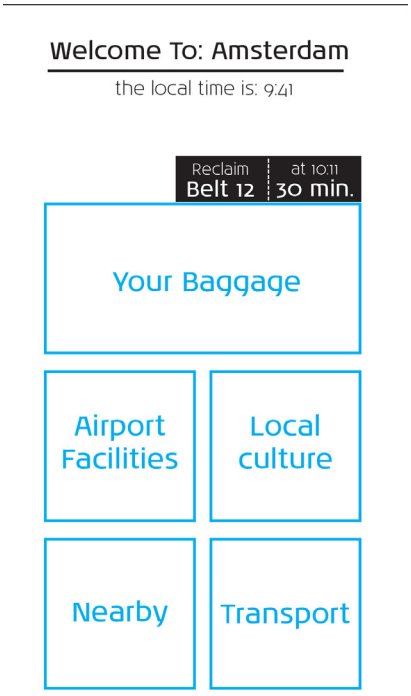
A

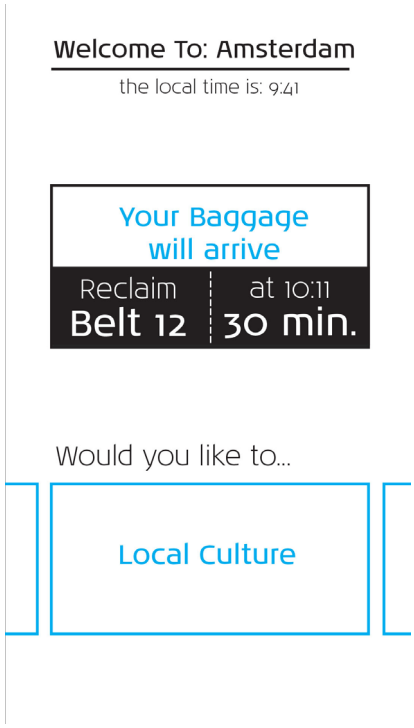


B

Both of these screens display options for finding food and drink in Schiphol Airport. However, wire-frame A shows all options equally, whereas wire-frame B highlights some top choices based on categories and passenger reviews.

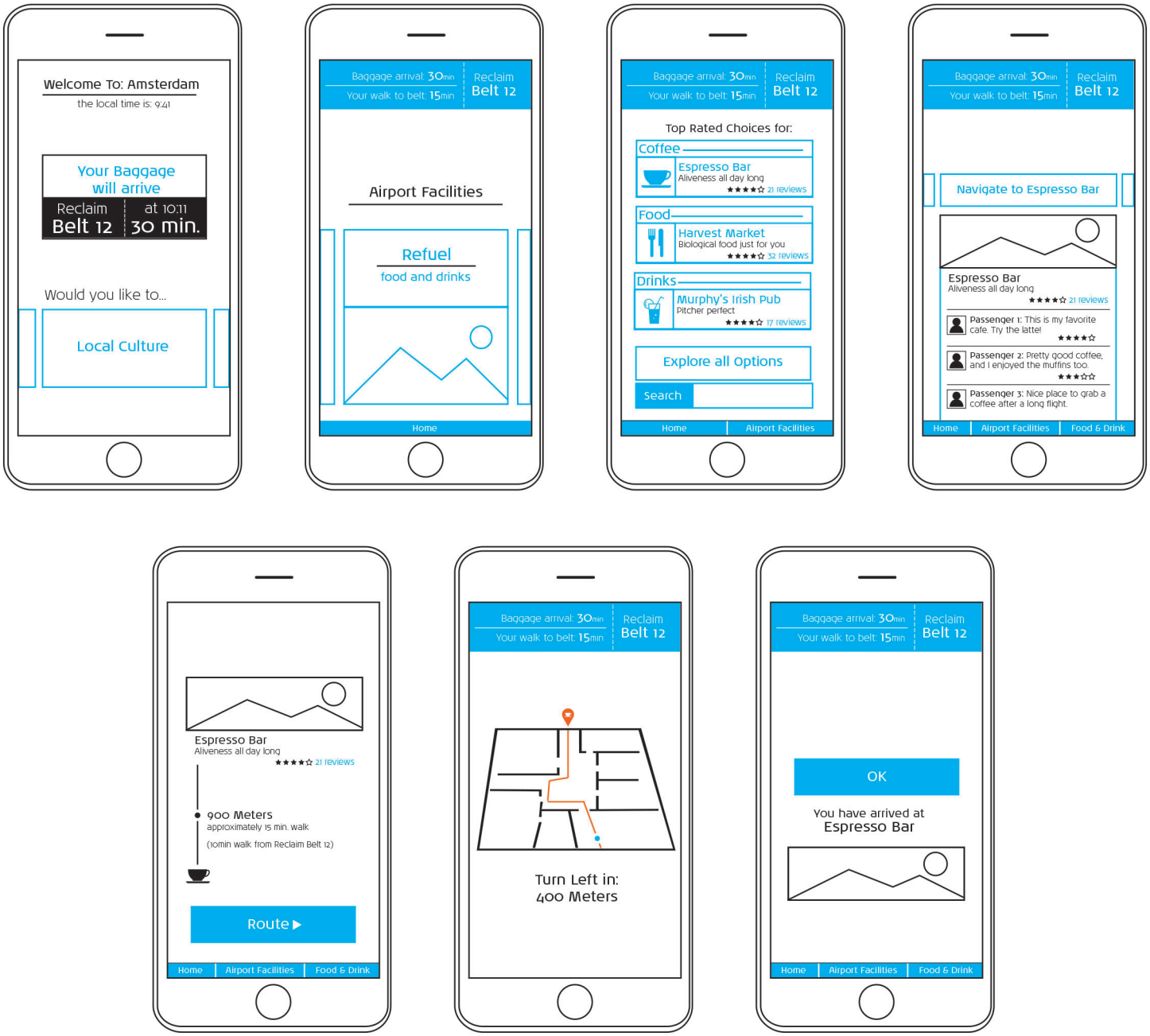
A





B

On the home-screen, wire-frame A gives an overview of all options whereas wire-frame B tries to predict what option the passenger will prefer and only show that. In option B, passengers have option to scroll through the options rather than seeing them all at once.



User flow to navigate to cafe in Schiphol Airport using the Mock-up B, which uses a guided approach with a lighter cognitive load by attempting to predict that user's next move.

Figure 14.1 Prompt, prototype, and bribe used in user testing

14.2 Test Results

Of the six participants involved in the testing, five preferred mock-up A which provided an overview of all options. Despite the increased cognitive load, participants indicated that they felt more in control when they could see all of the options. Some of the participants did acknowledge that it was a lot of information at once, but reported that they were still able to find what they were looking for and enjoyed having the clear overview of all options.

The one participant who preferred mock-up B said they found it easier to take in the information in smaller amounts. They found the overview in mock-up A to be a bit overwhelming. However, the participant did mention that after using it couple of times and having a better understanding of the options, mock-up A may offer a better experience. This is encouraging as many of KLM focus passengers are frequent fliers who are more likely to use the application more often.

Though participants largely found communication in both mock-ups to be quite clear, there were a couple of wording issues which caused confusion. For example, the first task was to grab a cup of coffee in the airport upon arrival. In mock-up A, the home screen contains both the option "airport facilities" and "nearby". The intention was that participants select "airport facilities" to find a cafe in the airport. However, a couple of users selected "nearby" as it was not clear to them that this option was intended to display options close to, but outside of the airport. Thus, in a final concept, it would be important to ensure that all wording clearly expresses the desired intent.

Figure 14.2 Participants testing mock-up applications at Schiphol Airport

14.3 Conclusion

Participants clearly favored mock-up A over mock-up B, indicating that passengers are willing to take on a higher cognitive load if it provides them with a clear overview so that they can make informed decision. Most participants mentioned desire to feel in control, and felt that the approach taken in mock-up A was more effective at achieving this.

All participants mentioned liking the display of when and where they can expect their baggage to arrive. They said this information would indeed influence how they spend their time during their arrival and baggage reclaim journey, and they felt it would lead to using their time more efficiently. However, it was unclear to some participants that the information about baggage arrival was interactive and could provide them with direction to the reclaim belt. Once they were shown, they really liked this feature, so a final design should ensure that the visuals make it more apparent which parts of the application are interactive and can provide additional data.

Many participants mentioned that they enjoyed the navigation feature provided in the application. They mentioned that it can be difficult to find things in a busy airport and the airport navigation feature is something that would really help them. Participants also appreciated the information about transportation option and what is located around the airport. However, they were split on if the "local culture" option was something they would use. Some participants felt it was a nice addition to the application, but others preferred to only focus on the more functional features of the application.

The main insights were that participants want to utilize such an application to gain a feeling of control which enables them to use their time in the airport more efficiently. Despite the higher cognitive load, seeing all options at once is preferable to most participants as it provides a clear overview to help them make their choices. Functional features such as in airport navigation and real-time baggage tracking were the aspects of the application participants found most valuable.

15. Final Design

Since user testing indicated that mock-up A which provides passenger with an overview of their options was preferred, this method of displaying information is chosen for the final concept. The final design provides passengers with a clear overview of the facilities available in the airport, information about local culture and transportation for the onward journey, and sampling of what restaurants, hotels, and attraction in the area surrounding the airport.

The proposed solution is to integrate this concept as a feature in the existing KLM mobile application. Since KLM has already defined a visual style for their application, this feature will adopt this style for seamless integration. Furthermore, KLM has a well-established voice when communicating with passengers. It is professional, but not overly formal. It is friendly and personal. Like having a casual conversation with a peer. This is considered in the final design and the wording chosen in the application. Photo of the airport facilities and nearby area are used in the application to help passengers recognize the locations they wish to visit as well as to immerse them in the local environment.


Baggage arrival: 30min
Your walk to belt: 15min
Reclaim Belt 12
Welcome To: Amsterdam
the local time is: 9:41
Your Baggage
Airport Facilities
Local Culture
Near Schiphol
Transport

15.1 Fit for KLM

This solution is a good fit for KLM as it is in line with the company objectives of providing excellent customer service and providing for the needs of their passengers. Furthermore, KLM already has a mobile application designed to help make travel with KLM a more smooth and enjoyable experience for passengers. This feature could be integrated into the existing application to provide additional service for passengers during arrival and baggage reclaim.
This is a logical and feasible solution for KLM. It leverages methods they already employ to address their goal of providing an improved baggage reclaim experience. For passengers who already use the KLM mobile application, this new feature will blend seamlessly into the existing application to provide additional functionality to improve their experience. Passengers who do not yet use KLM's application will likely be familiar with similar mobile application. So, the threshold to learn to use this new application will be low. Additionally, solutions such as this can help to build passenger loyalty by providing passengers with a positive experience which achieves KLM's goal of increasing Net Promoter Scores (NPS) which indicate how likely a passenger is to recommend KLM and fly with them again. Extending KLM's service to the arrival and baggage reclaim process, and even helping passengers with the next steps on their onward journey will help to ensure passengers end their travel experience with KLM on a good note, thus remembering their interactions with the airline fondly.
Thus, this solution can be seamlessly integrated into KLM's existing offerings and works to achieve their goals of improving both NPS and passenger baggage reclaim experience.

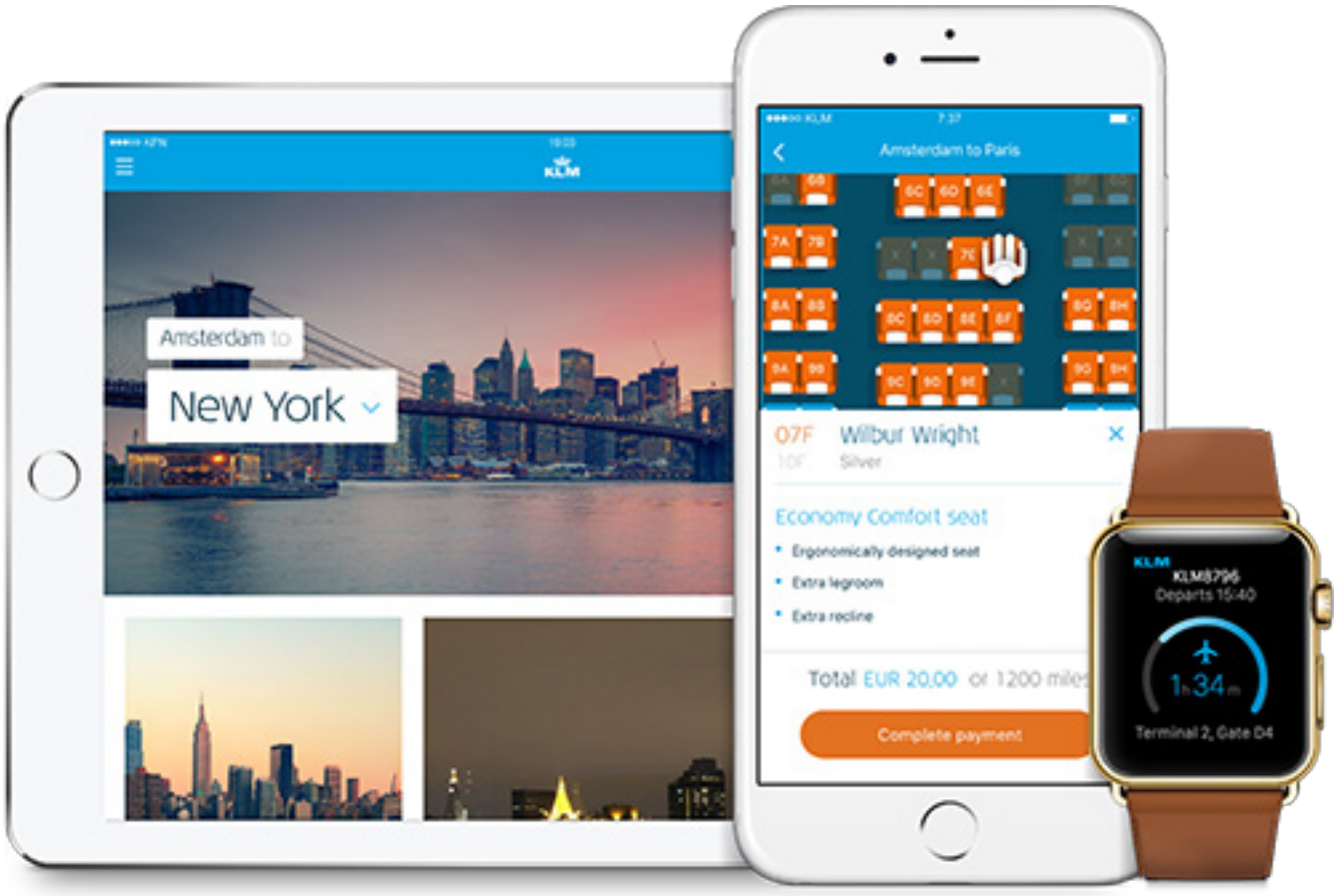


Figure 15.1 This new feature can be integrated into KLM's existing mobile application (seen above) -image from www.KLM.com

15.2 Implementation

Real-time baggage tracking is a key component of this proposed solutions. The implementation of this feature is contingent upon implementation of RFID baggage tracking. Thus, this tracking system is a prerequisite for the application. KLM is currently researching implementation of such a baggage tracking system, and it is feasible that it could be available in the near future. However, implementation of this system will be costly and time consuming, and it is possible that kinks will need to be worked out before data can be considered reliable enough to share with passengers.

Assuming the RFID baggage tracking is in place, the implementation of this service should not be too much of a challenge. As KLM has an existing mobile application designed to help passengers with their travel experience, the logical thing would be to integrate this solution as a new feature to the existing application. This will likely have few technical challenges as a team is already supporting the existing application. However, some of the functions of the application, such as the real-time updates on baggage location will require wi-fi or cellular data. While wi-fi is available at Schiphol, should this feature be expanded to other airports, this will be a consideration.

Many KLM passengers already use this KLM mobile application. Thus, they can easily learn to benefit from this new feature, and KLM can even promote it within the application should they choose. For passengers who do not yet use the KLM mobile application, KLM has opportunities to make passengers aware of the advantages at time of booking, in in-flight material, through signage in the airport, atonements made in flight, via e-mail and social media, and any other channels through which KLM communicates with their passengers. Signage could be placed at baggage reclaim areas, or employees in the reclaim areas could promote the new feature. It may even be possible to have information about the application on the baggage tags. If RFID were to replace the need for bar-codes on baggage tags in the future, there would be more real estate KLM could utilize to share information with passengers. Should they wish, KLM could offer online or in application tutorials about this new feature.

15.3 New Passenger Experience

The current passenger experience involves anxiety about the whereabouts of baggage and uncertainty about how to spend time in the airport. The proposed solutions address these issues by providing real-time information about baggage location as the baggage is making its way to the reclaim area. It also provides passengers with information about the airport facilities which they can utilize as well as information for planning their onward journey, as well as ways to help passengers experience of a bit of the local culture. This helps passengers have a feeling of being in control and guides them to making choices in which they feel their time is well spent. Thus, this solution offers passengers an improved experience by relieving anxiety about baggage while helping them make the most of their time in the airport while waiting for their checked luggage.

16. Conclusion

KLM's goal was to provide passengers with a quick and convenient baggage reclaim experience. The proposed solution accomplishes this by providing KLM passengers with a greater sense of control through clear communication, which can enable them to enjoy a more efficient baggage reclaim journey.

Furthermore, by providing passengers with more information, and therefore more choice, each passenger is able to navigate a baggage reclaim journey that best first their unique needs and desires. This will lead to more pleasant end moments to the passenger experience with KLM, thus increasing the likelihood that passengers will reflect fondly on their interactions with KLM and wish to recommend them and fly with them again.

16.1 Impact

This solution will change passenger experience during baggage reclaim by giving passengers more control of their situation. This reduces anxiety and gives them more flexibility in how they send their time, and thus improves their perception of the wait time and efficiency of the process.

Similar solutions could be implemented in various other contexts outside of air travel and baggage reclaim as well that share some of the same challenges. Any situation in which users are faced with a wait or perceived lack of efficiency may benefit from some of these findings. Instances involving tracking or sharing real-time status updates may also benefit from some of the findings in this report.

The research during this project uncovered insights into how to improve perception of time and efficiency, how clear communication can improve process and decision making, and what levels of information control lead to users to have a feeling of being in control. These insights have a wide range of applications. However, when seeking to apply these findings, it is important to consider the context as what works in the context of a baggage reclaim journey may not be as applicable in other scenarios.

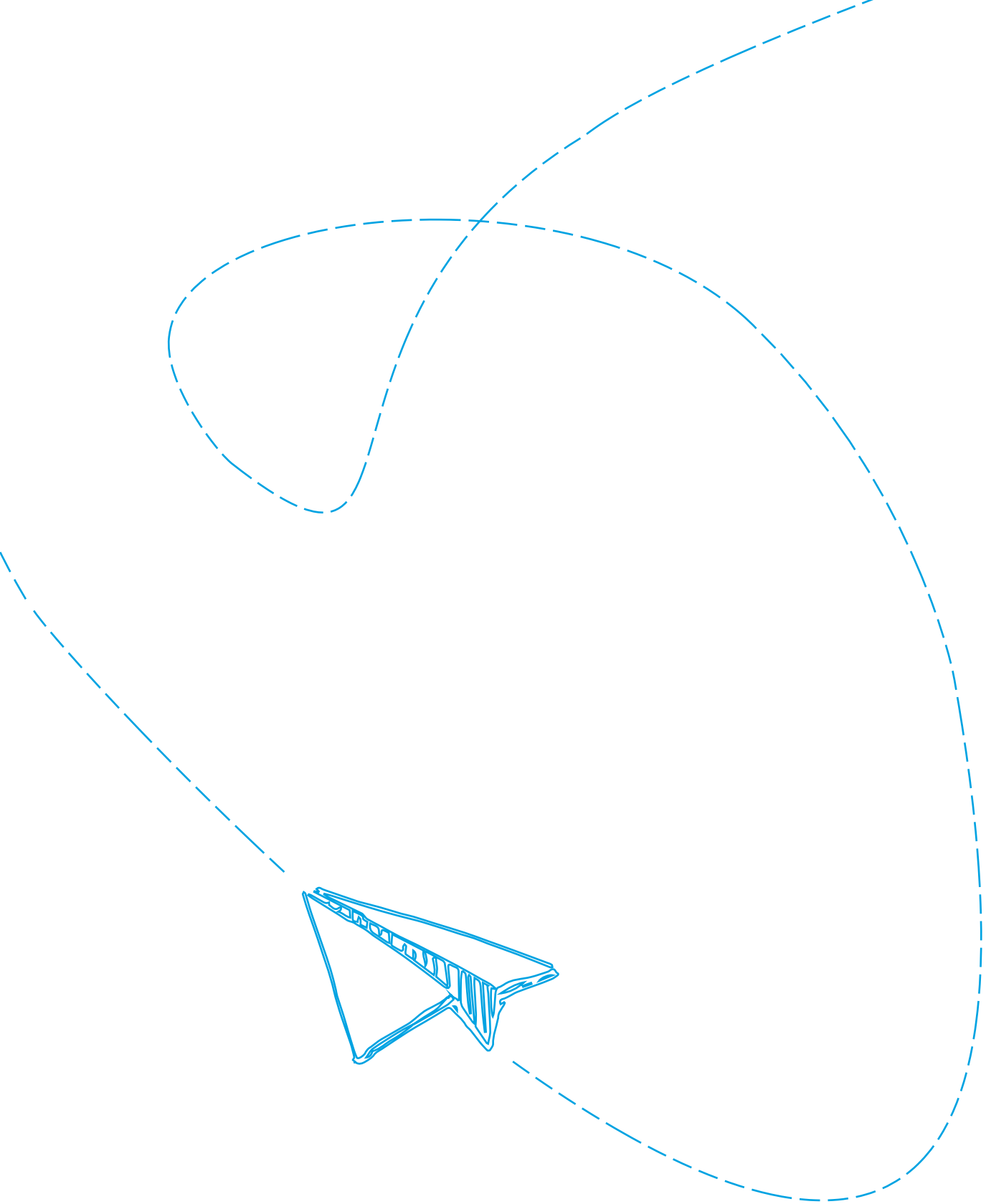
16.2 Recommendations

Should KLM wish to implement this concept, additional user testing is recommended. The tests conducted in this research had a limited number of participants who may not fit KLM target user groups as closely as desired.

There is also a lot of opportunity to expand upon this concept should KLM wish to do so. For example, since the application feature provides passengers with information about businesses and attractions in the area surrounding the airport, KLM may wish to collaborate with these companies and organizations to offer promotions to passengers such as discounts on admission to nearby museums.

Since this concept assumes the implementation of RFID baggage tracking, there may be opportunity to use this information to developed a KLM employee facing application in relation to baggage tracking and reclaim. Such a solution may help ensure smooth baggage handling operations, or could be used in on boarding new crew members.

Additionally, the adoption of RFID baggage tracking could change the format of baggage tags, eventually making bar-codes obsolete. KLM could see this as an opportunity to redesign their baggage tags to improve passenger experience. For example, instead of a bar-code, tags could have personalized messages to KLM frequent fliers, discount for local restaurants, or fun facts about the local area. Small interventions like this may help ensure passengers end their journey on a positive note.



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