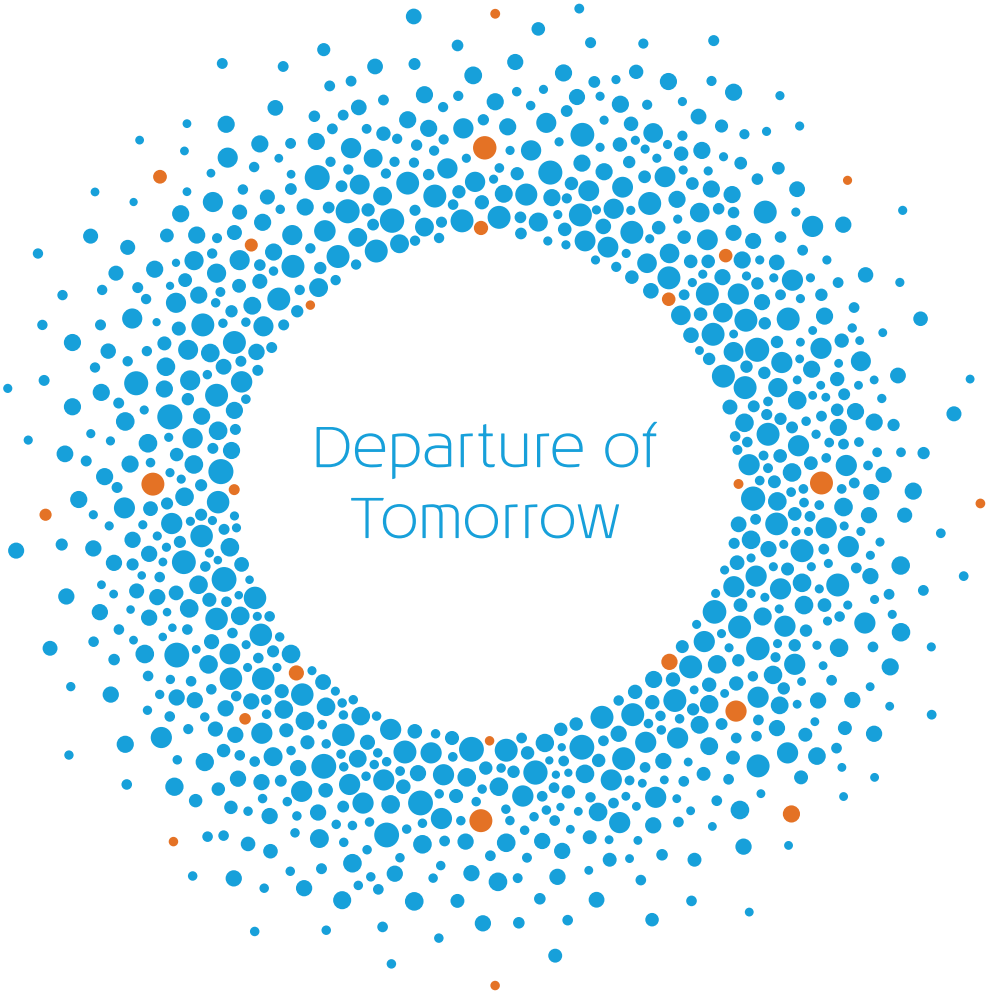

A design roadmapping research towards seamless departure journeys

CONFIDENTIAL REPORT

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"The only fun thing about queueing,
is the way it is spelled!"

- Departure customer feedback

Preface

Major societal change affects aviation in a big way. The year 2020 will go down in history as a pivoting point for airports and airline companies as they deal with a global corona virus outbreak. The global pandemic forced Air France-KLM to ground nearly all aircraft and to stop more than 90 percent of operations. Most employees are working from home, and many projects have been put on hold.

Priorities have shifted in an unforeseen way. It is safe to say that any internal budget will be deployed towards COVID-19 recovery. The success of Air France-KLM in overcoming these challenging times is tied to the company's ability to change the way it operates the business, and its will to learn to transform existing models, product offerings, and customer journeys. The importance of good design strategies and solid change management during this transition period cannot be overstated.

The thesis before you finalizes my five-and-a-half year journey in mastering product and strategic design in Delft. My final design challenge is to design a roadmap for departure at Schiphol. I am very fortunate to have experienced the day-to-day at KLM, and learn all there is to know about departure. On the bright side of things, all project research for Departure of Tomorrow was completed before the outbreak. This report presents a design roadmapping research which aims to project new user value-adding concept ideas over time, preparing KLM for a new future.

Acknowledgements

Silvia and Bram: many thanks for welcoming me in the team, for taking on the challenge, and for showing me all the inner workings of the company. Thanks for the good times, creative energy at the office, and dedication to the research and design work. We met the challenge head on, and asked each other many good questions in all the roadmapping activities. What I valued most in past months was your open mind in discussing new design ideas, learning together, and of course having a lot of fun in creative dialogue. Thanks for the trust and the best of luck in these challenging times: in which good design strategies become more important than ever.

Gert Hans, many thanks for supporting me in my own journey, for pinpointing and defending the design process in my work, and for challenging me to think better on my actions and to reflect. Thanks also for reminding me to be kind to myself when the work is demanding, for the cappuccinos, and for keeping it real.

To Sicco, thank you for pushing me to focus on the job at hand, and to better reflect on the "so what", rather than the "what". Learning to value-emphasize rather than value-blur, made me find the meaning in all the design work. Your ability to turn negatives into positives helped me out during the project. Thanks for the patience!

Special thanks to the Departure taskforce. Renee, I appreciate your input in journey mapping and always putting the customer first! Thanks to Renée as well, for showing me the process and for sharing the organizational ins and outs at the occasional coffee catch-up! Jan, thanks for your help, baggage expertise, and operational reality checks. Thanks Bob, for the creative energy and your interest in the design work, endless supply of questions, and challenges!

Thanks to Fons, Winfried, Marja, Tanvi, and all anonymized experts who contributed to the research. Special thanks to Ellen, Marieke, Judith, Bianca, Vanessa, and Jan for our sessions! With great appreciation, I also salute all X-builders and POs. Thanks for the good times and inspiration!

A huge thank you, to Margot and Loeke for being in my corner and for being such great friends. Thanks for helping me find the value in my work, and for all the rest. Best of luck to you both in the future; at yoga and at keeping it at 85.

Special thanks to SPD coolcats, IDE colleagues, and international friends. Sophie, thanks a lot.

Final thanks go out to Jeanneke, Frank and Esmee. Thanks for the faith, support, and welcome distractions in particular during the past couple of years. It has been an eventful journey, on to the next one!

Hans, thanks for the kind words. Take care.

Executive summary

This research was performed in order to design a roadmap for transforming the departure hall, by researching the way KLM could improve the customer departure journey. Hall capacity needs to grow to accommodate for an expected increase in passenger numbers: for welcoming, waiting, check-in, and baggage processing. Design roadmapping methodology is used for performing initial context research, and for mapping user value drivers, new ideas for departure, and pathways to a future vision.

The company context is researched by discovering KLM values and by mapping stakeholders in departure. Passengers are the primary stakeholders who interact with staff at the airport, and perform check-in and bag drop tasks in the departure hall. By mapping flow, user routing in the journey is made clear. By combining these insights with literature on waiting, passenger behavior, the perception of waiting, and an action mapping exercise, a journey overview is created. In order to truly understand customer journeys, interviewing with passengers was arranged in the live environment. Journey mapping yielded a journey experience overview and four personas in departure with specific service requirements, motivations for assistance, and needs. Market research in the form of a competitor analysis and DEPEST research provides the trend patterning needed for future visioning. A problem definition of current departure at the airport is established by reflecting on the airline's ambition to be most customer-centric, efficient, and innovative.

Most important in design roadmapping are user value drivers; the unmet needs of future customers. Understanding these needs allows forward-looking enterprises to transform processes and services in time to create new value. By introducing the analogous customer experience of upcoming seamless grocery shopping, the design team engaged in a value mapping exercise yielding five key user value drivers: convenience, comprehension, choice, confirmation, and care. An envisioned future departure interaction is explained by imagining the functional and emotional benefits of future solutions according to these five value drivers. A three component future vision statement is provided.

While the first half of the research focused on doing research and envisioning an improved future departure, the second part is dedicated to designing the roadmap. At this halfway point of the research, a switch from journey touchpoint research to changed strategic processes for new business development is made. Here, a roadmap offering a strategic pathway to the future is needed.

As the five user value drivers were found, what remains is mapping of new ideas for departure, and mapping of pathways to the future vision. For idea mapping, a tech scouting is performed in order to see what technology is available and to learn how these are relevant in reaching the vision. An integral ideation day yielded eight idea concepts spread over three horizons. The ideas aim at simplifying touchpoints, offering journey guidance, providing departure certainty and facilitate purchasing, shortening touchtime, and offering true care and recognition. Implications of horizon developments for a Staff of Tomorrow, and Operations of Tomorrow are explained.

These five themes in the mapped ideas shape the pathways to the three component future vision, or alternatively: the roads to follow to achieve the ambition. Here, the decision is made to construct two roadmaps for flexibility in creative dialogue: a strategic roadmap which quickly communicates vision outlook and strategic themes, and a tactical roadmap displaying full background information and concept idea information.

The two roadmaps are introduced and the approach and design choices are explained. A reflection on requirements set at the halfway point of the research is provided.

Finally, the research is concluded by means of a discussion which provides a brief summary of the work, states the implications of the research, and suggests four follow-up projects, as well as future design sprint HCWs for moving forward with Departure of Tomorrow.

The thesis concludes with a reflection on the value of creative dialogue and roadmapping at KLM, and a personal reflection on the project.

Reading guide

This guide visualizes and clarifies the double-diamond design approach to roadmapping, and offers an overview of the research. The first diamond contains all the design research activities that contribute to a solid context understanding, as well as visioning efforts performed by the design team. The second diamond explains the technology scouting and innovation pathway mapping efforts that clarify the road towards the future vision, which is mapped as a final research deliverable.

Abbreviations

DoT	Departure of Tomorrow
AAS	Amsterdam Airport Schiphol
GS	Ground Services
CX	Customer Experience
IMO	Information Management Organization
API	Advance Passenger Information
nps	net promoter score
ICI	internet check-in
ACI	airport check-in
NOBAG	no baggage
SSDOP	self-service drop-off point
ADC	Automated Document Check
A2H	Appy2Help
D2AA	Door to Arrival Airport
AR/VR	Augmented Reality/Virtual Reality

No time to read it all?

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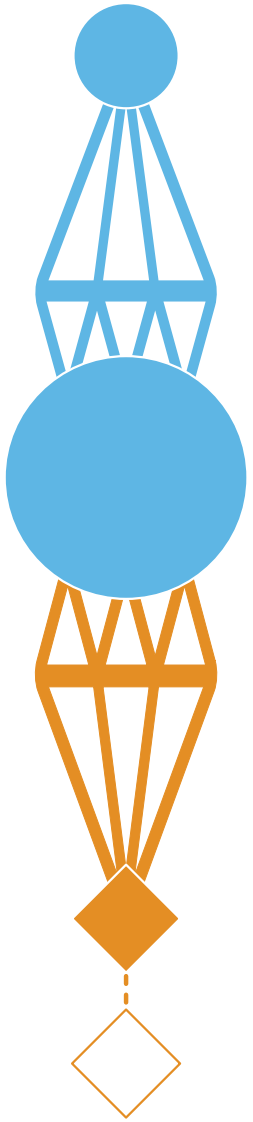
Opening texts in blue fonts offer an introduction to each paragraph.



01 Introduction
The design brief is provided: the objective, scope and approach.

02 Context
The departure context is explained: departure processes at KLM, stakeholder involvement, customer journeys, and creative trend research.

03 Future visioning
Visioning techniques lead to a future vision for Departure of Tomorrow; a roadmap objective.

04 Design challenge
From the research and visioning in the first diamond, a graduation scope for design roadmapping is chosen.

05 Road to Tomorrow
The second diamond features a tech scouting and idea mapping.

06 Pathway mapping
Reflection of the departure concept ideas provides the strategic paths towards the vision.

07 Roadmapping
A roadmap is constructed.

08 Discussion
Chapter 8 offers a recommendation for moving the innovation strategy forward and states limitations in the research.

09 Conclusion
The last chapter concludes the research and offers a reflection.

Contents

01 Introduction

This thesis aims at discovering how KLM can transform and future-proof departure processes and hall infrastructure at Amsterdam Airport Schiphol. Passenger departure involves all the actions customers have to perform to be able to board an aircraft: a travel document check in the booking stage, transportation to the airport, check-ins on mobile devices or at KLM kiosk checkpoints at the airport terminal, and baggage drop at departure hall drop-off points and agent desks.

KLM is in anticipation of rising passenger numbers and a shift in customer expectations, as they will connect with KLM agents, hosts, and touchpoints in the near future. This future is uncertain and cannot be predicted. However, design methodology can help in understanding changing contexts, shaping a future vision, and grasping the changing future needs of customers. In order to develop efficient, yet customer-centric and innovative new service solutions, design research about these future users is required.

1.1 The project

This chapter offers an introduction to the topic and covers the context of departure. Some more information is then provided as to what the objective of KLM Ground Services is, after which the research scope and design approach of the project are explained.

Consumers are flying more than ever. Worldwide, demand for air travel has doubled since 2006 to 4.6 billion scheduled passengers (Statista, 2019). IATA (2019) estimates passenger traffic to double once more by the year 2037.

At local airports, passenger traffic is rising (figure 1.1). In 2018, Amsterdam Airport Schiphol carried 71 million passengers (ICAO, 2019). This is equal to half a million airplane movements, which puts Schiphol in the top 4 of busiest airports after Dubai, London Heathrow, and Hong Kong International Airport. It is however important to understand that Schiphol's annual air traffic movements capacity is at maximum, until 2020 at least, according to Alders Platform (2008).

This increase in scheduled passengers creates stresses for airline and airport operations.

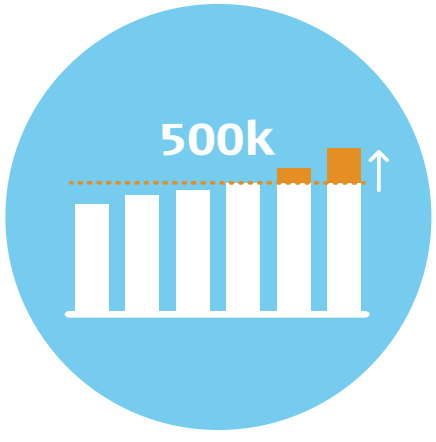


Figure 1.1: Schiphol capacity reached visualized

As customers are progressively entering airports to travel to business or leisure destinations, the amount of passengers that need to be welcomed, accommodated, and processed by airlines increases. These customers subsequently move on to security and boarding where the effects of rising passenger numbers are also felt.

Travelers are in queues throughout their presence at airports. Actually, they are in queues multiple times; during departure they wait at check-in and they wait before bag drop, at customs they wait in line before passing the security filter, and again at the gate where they wait to board the aircraft. A waiting customer is not a happy customer (Fodness, 2007). Additionally, departure congestion, or passenger "clogging' of departure flow infrastructure, poses a problem. Finally, airlines create value by keeping their aircraft (the most expensive assets) in flight as much as possible. A waiting customer is therefore not beneficial for turn-around efficiency. As the number of passengers is steadily rising, airports and airlines need to process customers more effectively throughout the departure journey.

There is a call for action to design seamless flow processes at airports. At Amsterdam Airport Schiphol, KLM wishes to redefine check-in and bag drop procedures at the departure terminal in order to solve the problem of waiting. This research aims at understanding how KLM can improve the customer departure journey, how customer touchpoints can be simplified and optimized for departure speed, and what future processes in departure halls could look like.

1.2 Objective

At KLM, the Ground Services department is responsible for all ground operations at the airport. It consists of sub-departments, such as Passenger Services (PS), Apron Services (AS), Baggage Services (BS), Business Development, and others. Two years ago, Ground Services (GS) introduced one KPI (key performance indicator) for all GS employees: Standard Process Time (SPT). The SPT describes the time between the opening of aircraft doors on arrival, and closing of all doors right before departure. All processes related to turnaround, such as refueling, maintenance, or passenger and baggage loading affect the Standard Process Time.

In 2018's strategic ambition "Our Course" ("Onze Koers" in Dutch) GS stated its goal set for coming years: to improve the performance by realizing more on-time turnarounds (SPT), improving operability of staff, and continuously improving processes together (figure 1.2).

Figure 1.2: KLM GS' three key objectives

As previously discussed, customer flows and aircraft boarding affect turnaround time. In the airport's departure halls, customer, staff and operational requirements come together. A clear need for more efficient processes exists. This is why KLM established an integral taskforce to take on the "Departure of Tomorrow" design project. The project group consist of managers from Business Development (KQ), Passenger Services (PS), Customer Experience (CX), Information Management Organization (IMO), Digital, and KLM X. While each integral group member is responsible for bringing specific expertise to the group challenge and meetings, KLM X facilitates the project's creative design work activities, planning, and project output.

Joining the Departure of Tomorrow project was like getting on a moving train, or rather: on an aircraft during push-back. Some ground work had already been done. KLM's 2018 customer airport vision "Airport of the future" describes the strategic outlook on the future of customer off-airport, departure hall, airport area and gate, transfer, and destination experiences (see Appendix B). The key objective in short: in order to deliver the most customer centric, innovative, and efficient airport experience, KLM shows hospitality and care and provides a convenient, transparent and personalized airport experience, by offering an easy airport journey that makes customers feel recognized, comfortable, and touched. Future departure processes, technologies and lay-out of Departure of Tomorrow should be in line with this vision.

"Delivering the most customer centric, innovative, and efficient airport experience"

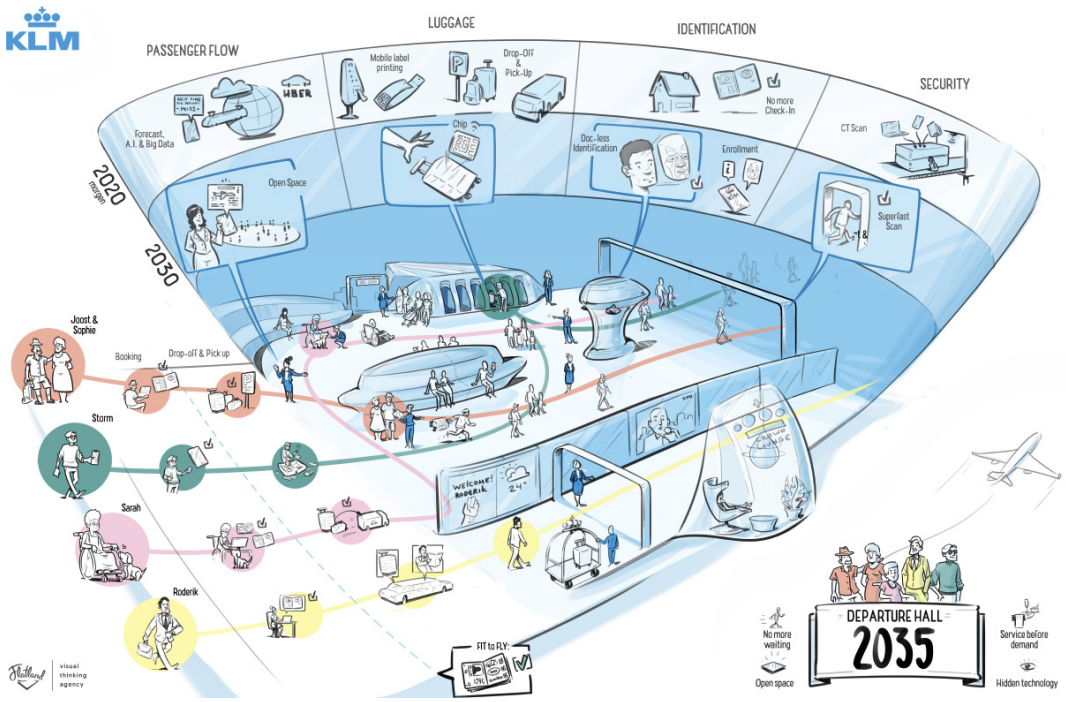


Figure 1.3: "Departure of Tomorrow" Vision 35 design sketch by Flatland (2018)

Zooming in on Departure of Tomorow, figure 1.3 illustrates the project group's future vision sketch of the departure hall that was developed with Flatland in 2018. The future vision is to transform the departure hall into an open space, where check-in and bag drop technologies are hidden from the eye and where a proactive staff offer customers service before demand, which results in zero waiting time. Visioning timespan currently is 15 years (succeeding by the year 2035).

A closer look at the vision, its components and potential implications and effects of its realisation will be taken in chapter 3.

The great challenge for the taskforce has been to translate the V35 future vision (figure 1.3) into actionable current design activities. Managers have a picture in their mind of how the departure lay-out could be transformed, but are unsure how to get there. This thesis aims at bridging this gap and at providing design guidance regarding the Departure of Tomorrow challenge through customer, process, and organizational research. Construction of a design roadmap based on all the research will be the final activity.

The point of departure for this project is clear. What lies ahead, what we will learn and how the project may evolve: we find out along the way.

A clear research question however has presented itself:

- *How can KLM improve the customer departure journey?*

The verb 'improve' here was chosen for extending the scope throughout the research stage to gain a broad understanding of the context, before focusing on a single component of the design challenge in the thesis. Traditionally, KLM has been keen on jumping on new opportunity. It is however important to see the bigger picture during this reconnaissance phase of Departure of Tomorrow.

Therefore, sub-questions exist as well. The following sub-questions will need to be answered before we can articulate a design challenge (Chapter 4):

- *Why is KLM looking to improve departure processes and passenger flow at SPL?*
- *What do departure processes look like; what is flow? What is departure efficiency? What causes customer waiting time in a departure journey?*
- *What do customers experience during departure journeys?*
- *How are trends changing the marketplace?*

After answering these questions, the objective is to lay out opportunities for departure innovation in a design roadmap. Design roadmaps focus on future opportunities to create user value rather than business implementation plans and planning overviews. Design roadmaps take changing user demands, market developments, and technological evolutions into account (Simonse, 2017). In this way, design roadmaps enable managers or designers to respond to future strategic challenges in a creative way. The methodology will be explained in paragraph 1.4.

1.3 Scope

During their departure journey, customers have specific needs. They need to check-in, they need valid documentation to comply with immigration requirements, and often they need to check luggage before moving on to customs. This project focuses on the customer departure journey (figure 1.4) which starts off-airport in the booking and home preparation stage, continues inside departure hall infrastructures where check-in and bag drop processes take place, and ends right before entering the security area at the airport. The research concerns possible psychological drivers or effects during departure preparation and transportation, as well as company touchpoint interactions within the physical departure hall space and off-airport.

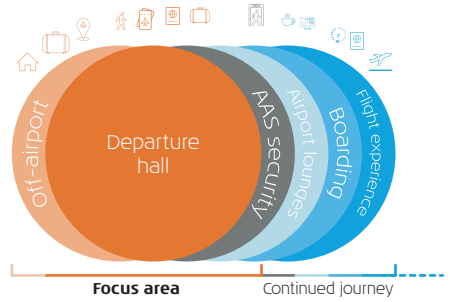


Figure 1.4: customer departure journey as portion of full journey

Departure of Tomorrow's project managers search for opportunities to speed up customer flows while improving service touchpoints throughout this micro-journey. This may involve eliminating departure processes, transforming existing customer touchpoints, or designing new customer interaction propositions. Importantly, focus is needed to not remove customer actions to solve for waiting time in departure, so they cause additional waiting times (or cause new logistical challenges) in other parts of the overall journey at the airport.

1.4 Approach

The challenge will be addressed in a Double Diamond design process (Design Council, 2005), visualized in figure 1.5. The ambition to find out how the customer departure journey can be improved.

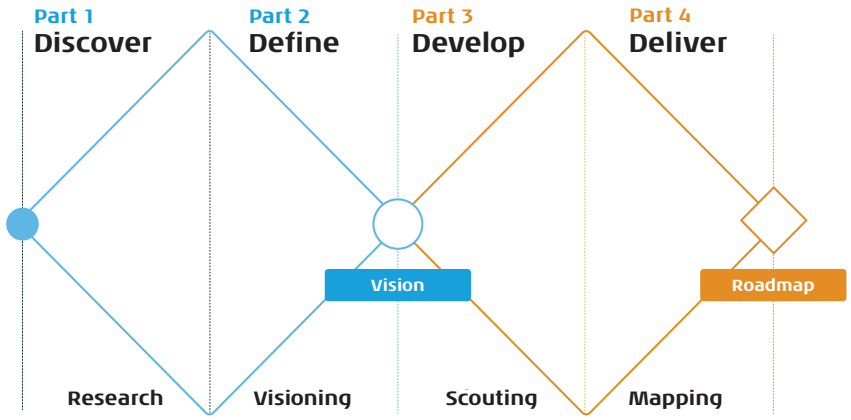


Figure 1.5: Double Diamond design process: researching, visioning, scouting, mapping

Discover
In the first phase, scope research in the form of stakeholder analysis, context mapping, literature reviewing, interviewing, and a creative trend research will shed more light on the broad and fuzzy project topic.

Define
During Define, the design challenge will become clear and by engaging in value mapping we will be able to find the drivers shaping customer experience. From a user value-driven approach, a future vision is determined.

Develop
Tech scouting towards the new future vision, but more importantly: ideas for applications of the technology, are explained in the third part of the research. An idea mapping exercise with the integral team will uncover new ways of looking at the problem.

Deliver
In the final phase all comes together as insights are brought together by constructing a design program and designing a visualized roadmap. Roadmapping methodology will be explained next.

Design roadmapping methodology
Design roadmapping, according to Simonse (2017), guides designers and innovation managers in uncovering new trends, scouting for new technologies and mapping future value wishes and product ideas on a roadmap. The process of roadmapping begins with value mapping: learning future value wishes or desired end-states from creative trend research and dialogue, in which a novel value fulfills an unmet need in the future. It then continues with idea generation with stakeholders and idea mapping: creating visual representations of possible solutions that fit the value requirements of users. Ultimately, the activity of pathway mapping offers a visualized overview in which time pacing of technology modules and future user demands are aligned, explained, and visualized. The next page explains the methodology background of the four parts (figure 1.5) in greater detail.

Creative trend research
Defined as "the act of understanding in combining and unifying the isolated data of sensation into a recognizable whole of a trend" (Simonse, 2017), creative trend research is about making sense of world developments. It can be described as the prelude to the great search for user values. It involves trend patterning, which is done in two steps: immersion (DEPEST, expert interviews, desk research, live experience) and synthesis (creative clustering of data).

Future visioning
Goal of visioning is to "find future user value drivers in order to shape a roadmap vision created from the future intent". As a future vision at KLM was already devised, this part of the research will instead critically re-assess the vision's content and challenge the vision for clarity, incorporated value drivers, artifact, and magnetism (Simonse, 2017). During future visioning, the first group dialogue needs to take place in which stakeholders come together to extract user values from the trend research and from the knowledge they have about processes, user experiences and desires for the future.

Scouting tech for ideation exercises
Before one can reconfigure processes and think of new technology solutions that can be part of a grand design innovation program, a thorough technology scouting is in order. By looking at what exists in the world, the state of the art is explained and learnings can be observed. When dealing with the future unknowns of new tech, scouting also helps to overcome complexity and allows managers to turn to proven (combinations of) innovation solutions. Creative dialogue is key in joining forces, in an integral way, to start building on the discovered future value indicators from trend research. This second group mapping exercise is dedicated to shaping new service solutions integrally: idea mapping. Goal of ideation is to generate ideas in connection to technology modules.

Roadmapping Departure of Tomorrow
The goal of the final activity in roadmapping is to forge a time pacing strategy for innovation programs in the future. Horizons of strategic life cycles are distilled from the research and ideation, as new headers towards which design and operational activities are adjusted. Taking competitive timing into account, the details of new design innovation projects can be plotted. Pathways towards the established vision are plotted on a visualized roadmap design, targeted at KLM audiences.

1.5 Discussion

Hall capacity needs to grow to accommodate for an expected increase in passenger numbers: for welcoming, waiting, check-in, and baggage processing. Design activities in visioning solutions to this challenge are difficult.

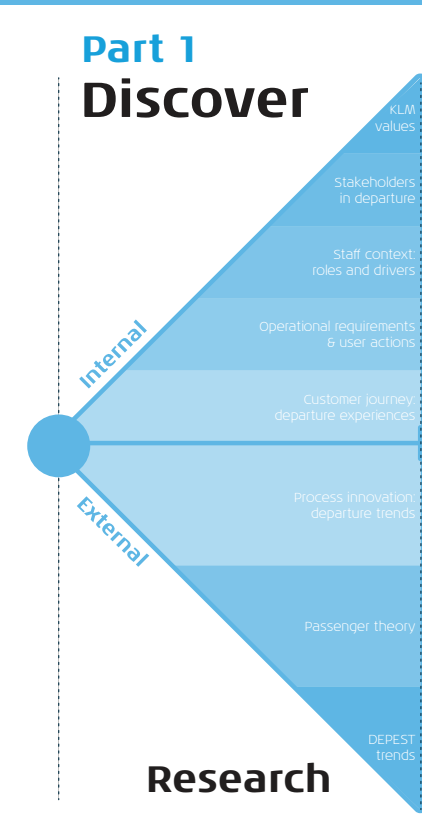
For innovation teams, design roadmaps have the potential to make fuzzy business problems clearer through deep dives into internal process management and external research activities and moreover to create group design approaches for a shared ownership of research. Different from business mapping exercises such as "product roadmapping", or "technology roadmapping", design roadmapping keeps user values at the center of every new design activity (Simonse, 2017).

As a visual artifact of strategy, roadmaps have the power to bring stakeholders together as well. By working together, a mutual foundation can be derived of what the context is, what ambitions exist between stakeholders, what they mean, what research has led to new insights, and how established briefs may need to be altered. Down the line, visual representations of strategy can be used as a tool for convincing managers, co-workers and other stakeholders to direct their actions towards a chosen path.

02 Context

Chapter 2 offers an introduction to the context of airline departure processes. It is important to fully understand the environment in which KLM wishes to shape and future-proof Departure of Tomorrow. More specifically, this chapter aims at understanding internal mechanisms and uncovering areas of amendable products and service offering. The goal is to gain an understanding of the problem.

By understanding the drivers for change of different stakeholders, we learn why it is important to improve departure processes. Also, understanding these processes and mapping customer experience sheds light on the current setting. By then looking outward, we find market opportunities to create new value for new customers and become able to accurately read the playing field before proceeding to value mapping in Part 2, to idea mapping in Part 3, and to pathway mapping in Part 4.



2.1 Departure context

This chapter will address the context of the research: departure processes at KLM and the experiences of users during their journey. First, the need for a modernized departure will be addressed after which the project stakeholders will be explained. A brief overview of current departure processes is given, and the causes of current waiting times in departure are presented. By means of a journey mapping exercise, current customer experience throughout the journey will be explained in paragraph 2.4. Ultimately, existing trends which are changing the market space will be presented.

Paragraph 2.1 aims to explain why KLM is looking to improve departure processes and passenger flow at Schiphol. The section covers the different objectives of internal departments, their respective motives for change, and innovation requirements.

2.1.1 Stakeholders of the research

Before diving deep into the context of departure and customer experiences during departure journeys, it is important to consider who has what to gain from transformed departure processes and how these motives for change differ and how they may match between all the different actors.

The roadmap deliverable of this research is meant to paint the picture of tomorrow's departure, and for this we need to understand the playing field. For roadmapping activities to be successful, it needs to be clear who the audience of the roadmap is. Upon starting the research, it quickly became apparent that nearly everyone in KLM is concerned with the way the departure hall is managed and has an opinion about how new processes ought to be designed. In the front-end of design (research and visioning stage) in particular, sufficient stakeholder understanding and strategies for stakeholder involvement by finding common motives for change are important (Tzortzopoulos et al., 2006). In this paragraph, methods for understanding existing internal company knowledge are presented.

2.1.2 Airport and airline concerns 2020

Airports are concerned with the projections for passenger numbers and capacity towards the year 2035 (Royal Schiphol Group, 2019). A doubling of passenger processing, including immigration processing and baggage handling, puts huge stresses on airport personnel and infrastructure. According to IATA (2018), the top 100 busiest airports by passenger volume do not have much excess capacity. IATA states 96 of these are likely to have major infrastructural development programs before 2030. Almost half of the top 100 airports, including Amsterdam Airport Schiphol, are already having issues concerning runway or terminal capacity.

Secondly, customers are not only flying in larger numbers, their expectations of the level of service they should receive during their airport visits are also becoming more demanding (IATA, 2018). Because passengers recognize they have options as a result of increased transparency in air travel product offerings online, they know what is available for them (Fodness & Murray, 2007). As they are able to view alternatives as well as tap into other people's traveling experiences, passengers are becoming educated travelers through personal online research.

At the same time, aviation and airline business conduct have been under a magnifying glass in recent times. Public support for air travel is decreasing as a result of environmental awareness and a growing recognition of the negative consequences associated with air travel. In 2018, CO_2 emissions from aviation in The Netherlands were estimated at about 13 billion CO_2-equivalents, equal to half the total CO_2 emissions of transport and 6 percent of total greenhouse gas emission of the Dutch economy (CBS, 2019). From a broader societal viewpoint in which reduction of resource use and consumer waste is celebrated, air travel has become subject to scrutiny by policymakers, activist organizations, and the general public. Emissions of fine particulate matter, carbon dioxide, smoke, noise pollution, as well as efficiency gains are drivers for action for airports and airlines (ICAO, 2018).

2.1.3 Airline priorities

When researching the key priorities of airlines concerning passenger handling, you find three main themes (IATA, 2019; ICAO, 2019; FAA, 2019). Firstly, safety and security are viewed as most important. Airline safety concerns any protective measure against any accident, error (human or computer-driven), and unintentional fault in the design, construction, operation and mechanical maintenance of aircraft (Aeronews, 2015). Security on the other hand refers to the measures taken to maintain safe terminal, aircraft, and airport environments, such as surveillance by airport staff, border patrol officers, or Military Police.

Secondly, regulations and accountability are also highly important. Airlines are responsible for their passengers and can be subject to fines and reimbursements when disruptions take place, mistakes are made, or passenger rights are violated.

Finally, efficiency and operability come in at third. Although fuel and aircraft may be the most expensive resources airlines need, time surely is one of the most valuable assets. Working fast and at low-cost, as well as having assets serviceable during operations as much as possible is important. As introduced in paragraph 1.2, fast turnaround time is crucial for being able to make a profit (Intern on a Mission, 2018) in a landscape of low net margins, challenging ground operation work and expensive maintenance. Finally, time is of course also valuable for airline customers who want to get where they are going quick.

Figure 2.1: airline priorities and scope of research

The airline priorities described on the left (figure 2.1) are probably not the first things that come to mind when people purchase the products of air travel. Surely customers will choose for an airline they view as safe and secure, but this does not exclude many alternative airline carriers in 2020. Accountability is something people care about greatly, but mainly when problems arise during traveling. Within the third priority we could find service enhancement and product innovation.

These can be true differentiating factors for customer satisfaction and choice of carrier at moment of booking (Airline Trends, 2015). Seeing all kinds of different new service technologies being introduced in the marketspace (IATA, 2019) raises the question: what do customers experience when traveling with KLM and departing from Schiphol?

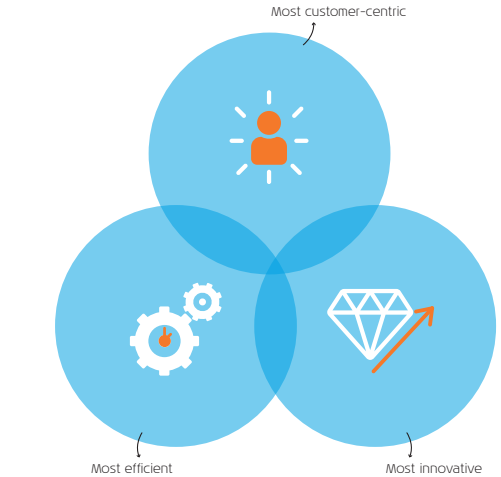


Figure 2.2: three ambitions of KLM

KLM has clear strategic ambitions: to be the most customer-centric, efficient, and innovative European airline carrier (figure 2.2). A fine aspiration (Appendix B). One can debate however about: what does it mean to be customer-centric? How does this work: putting the customer in the center? Does KLM truly know the customer? Are customer needs constant over time? Also, what exactly is departure efficiency? Does this concern only time? Finally: can innovation in itself be an objective? Or are solutions and product offerings which leverage innovative ideas referred to here? This design research aims to answer these questions.

2.1.4 Stakeholders

The departure hall and passenger flow concern many different people. Not only are customers who experience departure journeys, and the business development team which was tasked with future-proofing departure, stakeholders in this endeavour: other parties have their own specific pains and gains of changed departure infrastructure as well. It is important to understand the different internal motivations and ambitions which exist in companies (Majava et al., 2015). Figure 2.3 visualizes DoT's stakeholders.

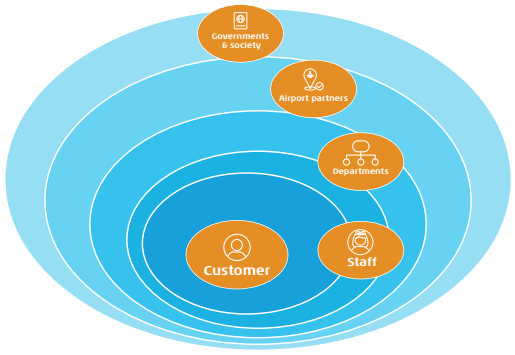


Figure 2.3: stakeholder plot

Primary stakeholder: the customer

The most important stakeholder throughout the departure journey is the customer. KLM's customers book flights, pay for tickets and services, and consume the product of air travel. KLM wishes to become the most customer-centric, innovative, and efficient airline carrier (2018). Placing the customer at the center of design activities is key in user-centric product development.

Who is this customer? Every day, KLM processes around 30,000 local passengers on average in the departure halls at Schiphol (KLM ODS, 2019). These passengers travel to intercontinental or European destinations. Figure 2.4 illustrates the basic journey of passengers. After booking, customers are currently able to self-manage predeparture information. Consulting the KLM website, Flight Guide overview, or the KLM app and Flight Status, as well as being reminded for check-in via push notifications to devices, they are able to view their flight information such as departure time, flight duration, and type of aircraft (Appendix C). Additional customer service channels are social media and service over telephone.

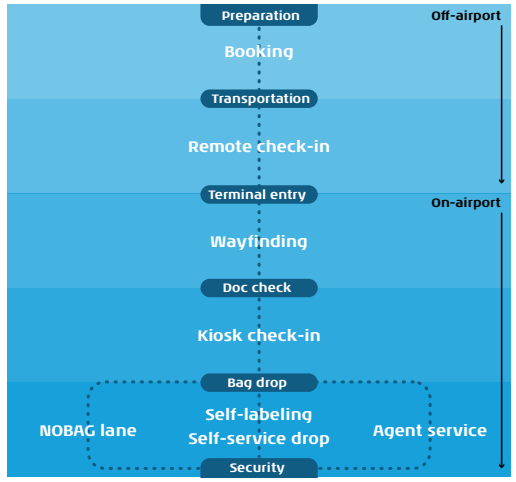


Figure 2.4: essence of a departure journey

Customers can travel to the airport by car or public transport. This may involve parking for the duration of the holiday or business trip, kiss & ride drop-off at the departure terminal, or taxi services and public transport exits at Schiphol Plaza. One third of local passengers are in need of service during departure, which involves an action at self-service kiosks, or bag drop SSDOP (Self-Service Drop-Off Point) interaction. Human agents are important for process understanding.

Depending on where they arrive, customers enter the departure hall immediately at front doors, or go there from Schiphol Plaza which is located one level below the departure terminals. As discussed: two main tasks have to be fulfilled: check-in and baggage drop. For check-in purposes, passengers must communicate to the airline that they have arrived and are planning to board the booked flight, they have to confirm that they are in fact who they say they are, and prove that they have legitimate documentation and authorization to enter the country of destination. Secondly, they must label and assign their baggage to the airline using self-service drop off machinery, or drop baggage at a traditional desk agent who verifies identity and performs the labeling then and there as well.

At Amsterdam Airport Schiphol, there are four ways of reaching the security filter after bag drop. As a result, eight routing paths for economy passengers, depending on drop interaction and off- or on-airport check-in, are visualized in figure 2.5.

Figure 2.5: flow map of on-airport processes

Passengers have had the opportunity since 1999 to check-in remotely online (Internet Check-In: ICI) and on devices. This means customers can arrive at Schiphol with either a printed boarding pass or digital mobile QR-pass on their phones (since 2009), ór without. These customers would still need to visit the self-service kiosk for printing a paper boarding pass (Airport Check-In: ACI). Some customers do both.

Segmented routing for economy class and Sky-Priority customers was created. For this research, the 14% Priority customers are excluded as the mandate lies with another department inside the company.

Customers without drop luggage (referred to as NOBAGs), visualized on the right in figure 2.5), can move on to security without seeing an agent as they have no departure service requirement upon entry.

Customers carrying bags will need a boarding pass (digital or printed at the SITA kiosk) for interacting with SSDOP and security entry gates. Kiosk interaction may involve waiting already. Next, as they go through the arch (pass through the KLM entry gate), they will follow three routes towards security (situated one level above departure halls): SSDOP, agent desk, or full service. Scarabee's SSDOP is a machine touchpoint, whereas the service desks are operated by agents.

Scope technology

NOBAG Joe

Just show me where I am expected.

"I want to be quick, and decide myself where I spend my time. Offer me a fast and hassle-free option."
"It was not indicated that I can go straight through here to go to security..."

Samsonite Megan

Let me do it, if I can do it.

"I downloaded the KLM app! You just check the signs for directions to where you have to be... done!"
"I would self-label at home; if I could!"

Traditional Archie

Guide me through the process.

"I tried to check-in.. but then this coupon came out. Too bad, I tried."
"Still, I find it important to just have some sort of personal contact when at the airport."

High-maintenance Kim

Help me with all this stuff!

"Cause you don't know. To get in the wrong line with all this stuff... would have been terrible. We were like: how are we going to do this?!"
"It's really a drag when you want to talk to somebody.. and then you can't find them."

Additional service hardware

Customers can also come across AAS scales, service kiosks at Ticket Center, AAS carts, and a dimension check machine in the departure hall. Finally, the excess baggage service point and odd-sized drop-off are located in the AAS corridor.

KLM's primary ambition is to be customer-centric. In user-centric product development it is useful to incorporate the customer during ideation of new services and products (Tuomela et al., 2014; Kujala, 2003). The customer involvement in this project, by means of semi-structured empathic interviewing, is further explained in paragraph 2.3.

Second stakeholder: staff

As secondary users of the departure hall infrastructure, staff is concerned with the changes made to existing processes and lay-out. There are ways of incorporating user knowledge into design research. In a context mapping exercise (Sanders & Stappers, 2012), the needs, use drivers, and painpoints of seven sampled agents (intern, flex worker, agent, land coordinator, shiftleaders) were researched by means of preparatory journals and interviewing.

Filled in journal diaries can be viewed in Appendix D. During interviewing (figure 2.6), a semi-structured open-ended conversational approach was used (Patton, 2002; Robson, 2011). The objective was to discover the agent's real opinion on the job; what does it mean to be an agent? To assess their view of agent work activities and responsibilities, passenger interaction and needs, what works well and what has been challenging in the past, specific daily exercises were structured. Also, the agents' opinion on passenger state-of-mind, check-in processes, hardware and general issues were discussed. This uncovered opportunities for improvement of staff-customer interaction, as well as painpoints of departure, according to staff.

Figure 2.6: discussing staff experience journals

Experience story

Once customers enter those revolving doors, they just don't know what to do anymore. And they will approach you first, since KLM, and the KLM blue: that is recognizable! You know? And they will say: "Flight 1903!". Since you need a little more, you ask: what destination, ma'am? Then they will come to realize: "Oh right, there are more flights departing from Schiphol...". Sort of an aha-moment...

Then they are totally confused! Large airport, lots of people... Then you just show them the Schiphol app: ma'am, you have to go here. And then here. Have you already printed your boarding pass?.

"No, not yet.". But luckily we are there to help!
And you will reply then in a calm manner: OK, one of my colleagues will assist you if it does not work out.

"OK,... but where can I drop my baggage then?"
At desk 12-15.

"Ok,... but where can I drop my baggage then?"
[sigh]

In the words of an agent

Findings

The reasons for agents to work at KLM and to engage with customers in the departure hall are dynamics of the job, hospitality or service-mindset, and being able to make human connects.

Dynamic job
- Experiencing diversity of new cultures.
- Being part of a diverse and interesting team.
- Putting out fires together; managing the flow, and doing my part in making sure all goes well.

Hospitality
- Being able to provide the answers, making customers focus, explaining to them what they need, and create the overview accordingly.
- Acting as an expert.
- Offering full service which is tailored to each customer's unique story and service requirement.

Human connect
- Being a people person first!
- Offering your ear to people, listening to the customers, hearing their story and showing empathy and offer a solution!
- Assuring people who are struggling that they cán do it: action-driven, but comforting!

Conclusions of these three topics, as well as the following six will be covered in the reflection (paragraph 2.1.5 and 2.5). Regarding transformed processes and a redesigned hall infrastructure, agents commented on walking pace passage, required staff preparation, and the "human factor".

Walking pace
- Clarity of process and lay-out is key.
- Time for a meaningful connect is still needed.
- Open departure hall has the opportunity to be experienced as very clean (bright and hygienic).

Staff prep
- If you want to create this: give me the tools.
- Offer me the training so that I will be capable.
- Prepare for me to have the time to do the job.

Human factor
- A blue welcome is a human, engaging welcome.
- There are many ways to display our brand values better in the departure hall.
- For a connect, you need openness: listening!

The painpoints of departure for staff can be plotted under three main themes.

Machinery
- SSDOP is often out-of-order and the PC systems are becoming increasingly outdated.
- For customers kiosk and SSDOP can be scary and are difficult to understand; because of stress!
- Machine interaction is dehumanizing for KLM.

Dealing with aggression
- Solving problems for impatient and violent customers extracts a toll.
- Arrogance: dealing with cranky customers.
- It is the job to turn frowns upside-down!

Physical strain of the job
- Standing all day can be hard physically.
- The shoes we have to wear!
- The hours and overall shifts can be heavy. You will be done for the day when you get home!

As secondary users of the departure hall, it would have been foolish not to include the real life experiences of staff. Beside discussing with staff who the passenger of tomorrow could be (Chapter 3), it is necessary to incorporate the changing jobs and needs of staff into the strategy.

Third stakeholder: internal departments and workers

Staff answers to Ground Services managers. On this level, business units inside KLM have to direct their projects towards improving customer care, more efficient processes, and a shift towards technological innovations in place. However, they view these ambitions differently. Understandably, process managers would view a "smoothened departure flow" in a functional form (a quicker, more efficient routing), different from customer experience managers who might translate smoothening into added service value. The departure taskforce is an integral business unit. Overcoming different thought worlds (Dougherty, 1992; Homberg & Jensen, 2007) can be challenging in integral dialogue.

Ground workers keep operations going and have a personal responsibility to keep operations moving. As they base decisions on facts and short-term requirements, they are generally not active in the conceptual space (Hatchuel & Weil, 2003). However, these stakeholders need to understand why systems have to change; in what vision these adjustments will fit. Resistance to change needs to be avoided, which can be difficult in settings where processes have been the same for many years. Workers may hold firm onto the old way of doing things (Oreg et al., 2011).

Presenting for the managers from another internal department at International Stations showed that they wish a uniform global vision for departure infrastructure, interior, and technology as well. International Stations oversee the 171 international hubs (outstations) of the company. Because of conflicting priorities over budget, business priority, general resource allocation inside the company, doubt, resistance to change, and even cynisism in businesses (Furst & Cable, 2008; Stanley et al. 2005), the stakeholders of Departure of Tomorrow can become uncertain.

For this reason, a clear communication has to be established to convey the message of seamless departure. What is important here, is communicating a uniform, broad yet concise summary of the insights. A roadmap can show how incremental changes contribute to the big picture. Moments of sharing strategy can be: internal demos, integral meetings, and planning events at KLM.

Fourth stakeholder: airport partners

KLM naturally shares the space at AAS with the airport and airport staff. In the small space of departure, people entering the airport become KLM customers when they reach the KLM entry arch. As customers wait in line at the airport, they rely on KLM and Schiphol staff to educate them and to guide them towards a successful check-in. After bag drop, they become Schiphol customers again when going through security, and moving on to lounge areas and gates.

Schiphol-Centrum has been KLM's home base airport since 1967. Since then, the companies have grown together and Schiphol has become the second busiest European airport with 71 million passenger in 2018. As passenger numbers are rising, Schiphol is similarly concerned with good flow through the physical spaces and with customer satisfaction. Other concerns of Schiphol are sustainable growth and governmental interventions, and indecisiveness of policymakers in particular (NOS, 2020).

With an eye on the future it is apparent that KLM and Schiphol cannot transform departure infrastructure alone and separate from one another. Growing together means opening up for a dialogue of creative ideation in the near future.

Figure 2.7 visualizes Schiphol's design vision for the interior of departure hall 1 (Schiphol Group, 2019). The airport wishes to update the departure interiors by transforming it into a bright, cleaner and modernized space. Reasons for this closely link to Project DoT's. A new Schiphol Pier A is delivered in 2023-2024. In figure 2.8 we see an additional departure area in which open spaces, quick passage, and fast service are strategic goals. Moving forward, it is important to understand that strict policies of collaborative ideation are in place to prevent unfair company synergies and competitive disadvantage. Creative dialogue has to be planned attentively.

Figure 2.8: bright and spacious interior of Pier A

Figure 2.7: Schiphol vision for departure spaces

Additional business partners
Other external stakeholders can be KLM's current and future business partners. In recent years, KLM has thought that it can be a technology developer as well; people at KLM are adamant for example, that technologies such as check-in kiosks need to be owned, self-maintained, and modified in-house. Both hardware and software. However, KLM is an airline, and not a tech developer.

External suppliers and start-up project partners could offer KLM the external and objective expertise which is needed for good performance and maintenance of technology components in future departure infrastructure. Decision-making of hardware purchases and partnering contracts are extremely important when deciding on future roadmap strategy, such as next-gen SSDOP.

Common-use self-service (CUSS) machinery has been implemented in customer airport journeys for many years now. At the cost of a unique differentiating factor, such white-label shared business models offer cost savings, efficiency benefits, and a single-touchpoint and uniform journey experience for customers at airports. Whereas KLM is proud of its blue branded kiosks, moving forward, considerations can be made for sharing new technologies with Sky partners (figure 2.9) or airport partners.

Potential parties can also be: the Military Police, insurance companies, and parties with whom departure intel could be shared for safety, newly created customer value, and throughput speed.

Figure 2.9: Sky partners

Fifth stakeholder: governments
The role of the Dutch government has been covered already, mainly in a dependency context. However, the Dutch government also relies on the airport in a big way.

For safety and security (paragraph 2.1.3), the government wishes to keep borders protected and to keep airport operations running smoothly. It relies on airport staff to do their part in securing the border. As a gateway to international business partners, the government is concerned with the way the airport and airlines manage passengers and deal with identity information. In relation to Departure of Tomorrow, a growing concern may be the privacy of citizens in coming years.

The country's national product is interlinked with the production of the airport and airlines: growth of tourism, cargo import, and general international attractiveness for business (Decisio, 2019) are factors here. KLM and Schiphol also employ over a 100,000 people combined.

Society
Finally, Dutch citizens and international travelers to The Netherlands rely on immigration processes. What KLM and the airport offer, is not just the product of air travel. Rather it is a connectedness to the world. Commutes to different places in the world start in the departure hall.

2.1.5 Roadmapping reflection
Concluding, for the final deliverable of the research this all means: creating magnetism in the roadmap. Stakeholders need to be drawn in by the vision so they may direct their actions towards a common objective. This way, a roadmap may offer ways of becoming able to have a focused and scoped conversation regarding transformation of business. The V35 vision outlook for example features an enthusiastic, energized, enabled, highly sociable and entertaining staff which approaches customers proactively (paragraph 1.2). It appears there is an opportunity to improve the work activities and responsibilities of ground agents in the departure hall. The same holds for managing effects new technologies in place have for "operations of tomorrow".

2.2 Departure processes

This paragraph provides an overview of departure processes by explaining user actions. Causes of waiting, consequences of current process handling, and perception of waiting are explained by a short literature review.

2.2.1 Causes of waiting
Much has been written on the causes of waiting, efficiency of airport passenger flow, and information processing in wayfinding (Fewings, 2001; Edwards, 2004; Wiener et al., 2009; Cheng et al., 2014; Janssen et al., 2015; Pitchforth et al., 2015). This research is not aimed at re-writing the book on departure waiting time, but looks to understand the perception of departure customers at Schiphol better. Focusing on departure specifically, it appears from the theory that major variables in poor flow are: obstacles and routing of physical spaces, bottlenecking, time efficiency of process handling, psychological wayfinding task understanding, group dynamics, and passenger stress of multi-tasking.

2.2.2 Passenger behavior and stress
This perceived stress as a direct result of airport actions impacts overall journey experience, perception of seamlessness, and nps. Figure 2.10 illustrates customer satisfaction throughout the journey as a downward slope commencing in departure (IATA, 2016). For both satisfied and dissatisfied travelers, the negative trend can be seen in the chart. In particular bag labeling and luggage drop decrease departure perception, whereas security checks, inflight services, and bag collection are most impactful overall.

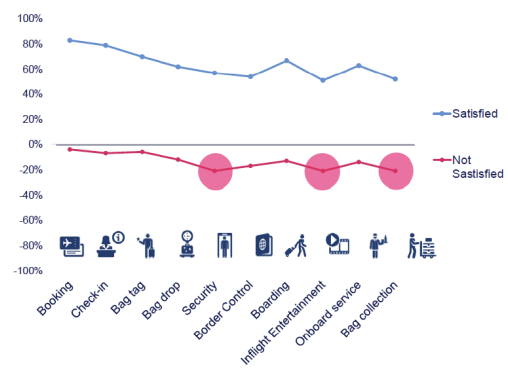


Figure 2.10: IATA passenger satisfaction chart

Furthermore, contextmapping with agents in combination with observational research in the departure hall showed that passengers will behave in a different way during departure than they would normally; displaying overextended mindspaces, illogical and emotional reasoning, and an overall burdened disposition.

2.2.3 The perception of waiting
This psychological view on waiting is generally not the main topic of queue management research. Economist David Mainster (1985) chose to not focus on the mathematical theory of waiting lines, but to study the personal experiences of waiting. Framing satisfaction in waiting processes in a straightforward formula as (Satisfaction) = (Perception) - (Expectation), Mainster argues it should be possible to influence customer perception of waiting to overcome nps effects of stress and discomfort of airport actions. Leveraging the perception of waiting could prove as effective as physically decreasing waiting time.

2.2.4 Departure efficiency
Having high throughput (from a process-minded viewpoint), while offering service as well (Customer Experience) is the objective of Departure of Tomorrow. In essence, process and CX want the same: a swift passage at the departure halls for the vast majority of customers. This suggests speed can be an nps metric. Paragraph 2.4 will go deeper into new needs and drivers of customers in departure, after a closer look at the actions customers perform when traveling.

2.2.5 Introduction to departure processes
What characterizes the product of KLM is a trinity of customer, staff, and operations. In this triade, the customer is the guest and consumer of air travel products, staff act as the human face of the organization and expert of process sequences, and operational workers manage information processes, baggage logistics, and hardware maintenance in the background. Every action affects all three actors during departure.

Chapter 2.1 explained the general context of departure and how passengers may enter the departure lounge. To become able to understand the journey of passengers in the departure window, team dialogue took place with the aim to plot the actions and touchpoints (figure 2.11). The following paragraph explains what actions customers may perform while departing.

Figure 2.11: action mapping exercise with CX

2.2.6 What affects passenger flow?

From a user-centric standpoint, it is important to understand the different actions customers have to perform during the departure preparation phase, transportation, and airport arrival stages. Their experiences and memories are linked to the actions and personal responsibilities in the process. Figure 2.12 shows all possible actions in departure preparation, transportation, arrival, check-in and bag drop sequences.

Before traveling, customers search (1), book (2), and prepare (3) their holiday or business commute. Currently, home preparation mostly consists of packing and an optional home check-in. Three quarters of total passengers check-in online at home or during transportation (4).

At the airport (5), customers who enter departure hall terminals become passengers who have an identity and a (wayfinding) service requirement. The way or speed in which actions are performed as they move towards security, is called flow.

Identication (6) is the first important step: proving that customers are who they claim they are, supported by proper identification documents such as a passport or ID card. Verification of identity and travel authorization secondly, is done by comparing passenger information stored in the documents to database uploads and physical characteristics. The airline is responsible for this. Documentations include visa and other international papers, ESTA or other immigration requirements, or diplomatic papers. Currently, not everyone who receives a boarding pass has proper authorization for traveling. These users will be serviced at desks in the departure halls. Also, NOBAGs who use a digital boarding pass (and do not see an agent in departure) may encounter authorization issues at the gate which have to be again solved by an agent in a reactive way (swiping). Customers with sufficient preparation in identification, verification, and authorization are referred to as "clean" passengers.

Beside making sure passengers are clean, staff are the human actors and touchpoints who welcome and guide people through departure. Floorwalkers at the arch welcoming point and throughout the banklining manage the flow. This involves assisting in wayfinding, facilitating customer departure actions, moving them forward, and solving problems for customers. Customers at this moment can choose to either skip departure altogether by traveling without hold luggage and self-preparing a boarding pass, or to enter the drop area. Routing to either SSDOP or desk is based on a decision of floorwalkers, based on observation and experience.

Further service requirement in the departure hall is mainly linked to four luggage drop options (7). Carry-on luggage may be brought onto the aircraft. On unexpectedly busy flights, passengers will receive an invitation to drop hand luggage at departure free of charge. Hold luggage is dropped at SSDOP or a traditional agent desk. Odd-sized, and animal drops are referred to as full service, as are departing Passengers with Reduced Mobility (PRMs) and Unaccompanied Minors (UMs: children traveling alone).

Agents at the desk compare the information of passenger identification documents to an Advance Passenger Information (API) system on PCs. This is where customers place their luggage

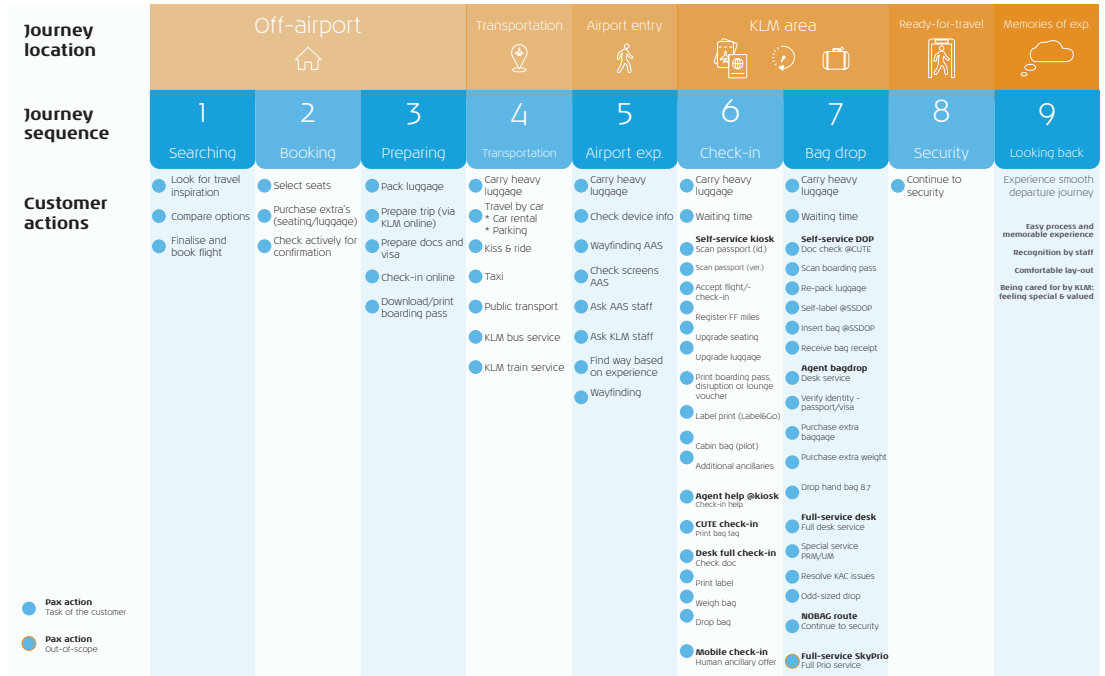


Figure 2.12: action map

onto conveyor belt entry points at the desk for weighing and labeling purposes. Full service agent assistance is similar, but more service-intensive. Actions such as finalizing reservations for pets, checking-in wheelchairs, or dropping musical instruments take place here. Target waiting times for Priority, economy, and full service are 0 minutes, 8 minutes, and 30 minutes respectively (on average). Scanned boarding passes activate SSDOP for a self-service bag drop. On the information side of bag drop processing, passenger and item of luggage are coupled throughout the total journey by means of a self-adhesive bag label. As of now, SSDOP routing still requires five agents; for swiping, guidance in baggage insertion and labeling, and additional cleaning at SSDOP desks.

Internal departments (paragraph 1.2) throughout the departure micro-journey (1-8) are in charge of optimizing the journey of passengers in different ways. Passenger Services employees manage the process and most directly connect with customers physically in the departure hall, as well as by telephone or online at the Service Center. Baggage Services manages bag flow and is increasingly concerned with IATA baggage implementation, or full track-and-trace intel throughout the journey (2018). Customer Experience designs new propositions for increased nps satisfaction and memorable experiences throughout the journey (9), whereas IMO manages APIs and process requirements. Business Development and KLM X test new concepts in the departure hall.

When reading the table in figure 2.12, it becomes clear there are many passenger actions. In some cases there will be double or even triple passport verification steps. Bulk of passenger responsibility happens at bag drop, where stress becomes most intense in the short window of departure. The challenges for a good departure process are: advancing clean passengers to lounges and gates, managing queues and creating a good flow, and getting customers to do the right self-service actions properly.

Moving forward in the roadmapping exercises, it will be important to look for departure efficiency innovations, as well as solutions which leverage the customer perception of waiting; eliminating waiting time in a more creative way than streamlining processes for marginal time savings.

2.3 Understanding journeys

What do customers experience during departure journeys? Using four personas, the answer to that question is provided in the paragraph as it explains the experiential journey of passengers and aims to pinpoint those good moments in the journey that are perceived as positive, as well as the negative aspects of departure passage.

2.3.1 User actions in passage

The objective of the context research was to paint a clear picture of Departure of Today. Now that we understand all the actions customer perform, it is time to learn to understand how customers appreciate these actions, and to discover how the actions affect their overall departure experience.

We have seen in previous paragraphs, that customer, staff, and operational requirements meet in departure. Good flow is important to all stakeholders. The following paragraphs will plot customer experiences over the different sequences in departure (preparing, transportation, airport experience, check-in, bag drop, entry of security filter). It will be interesting to learn how customers perceive self-managed actions in preparation, airport entry and wayfinding, kiosk interaction, and bag drop interaction.

2.3.2 Interviewing passengers

After the stakeholder research and flow mapping of paragraph 2.1 and 2.2's action mapping, the next design activity is journey mapping. In order to generate deep and real-life rich data, passenger interviewing was arranged in the live environment of the departure hall. A two-person interview team used a semi-structured open-ended conversational approach (Patton, 2002; Robson, 2011), using an interview guide and prepared probes for flexibility in moderating the conversation (Edwards & Holland, 2013). A decision was made to test in the hall, by asking passengers to participate in a ten minute interview at the blue-orange KLM booth (figure 2.13). A quick set-up using KLM's departure furniture was created on the AAS corridor in between the bay and the security window, with the airport's permission. It appeared that it was in fact manageable to build a quick testing booth using just the couches and a banner, and by asking passengers who were passing for their opinion in an MVP-setting.

Figure 2.13: builders in interview booth (AAS site)

A total of 43 passengers shared their experiences in airport wayfinding and the importance of home preparation and (digital) instructions, the hassle of carrying suitcases during transportation, experiences in dropping odd-sized (animal) luggage, interacting with the kiosk and dealing with double check-in actions, as well as the convenience of internet channels for self-preparation actions. SSDOP/agent routing and the interaction with digital and human touchpoints in the journey were discussed. Finally, future ideas for departure were asked of the interviewees to conclude the conversation and to assess what at this time could be viewed as "Departure of Tomorrow", in the words of today's customers. Paragraph 2.3.3 and figure 2.14 explain more about the insights (Appendix E).

2.3.3 Journey mapping

Strolling down the "informal fastlane", NOBAGs are able to walk straight on to AAS security at the airport as they have no drop requirement inside the KLM bay (as illustrated on page 21). The unique benefit for "NOBAG Joe" is the ability to travel light and quick throughout departure. Choices for self-service preparation actions are available, as well as the quickest routing. The ability to use digital boarding passes here is convenient and lends itself to worry-free passage. Notably, the experienced traveller is highly efficient in departure and prefers the online channels.

However, not all NOBAGs are experienced travellers. Departure stresses create uncertainty at the touchpoints of passage. At this time, NOBAG welcoming is not facilitated as the routing goes left and right around the welcoming spaces. Because the process is not fully self-evident, some NOBAGs will move into the KLM bay as they desire to confirm with an agent. Also, no check at kiosk or desk may result at ID issues at the gate. The customers with a luggage service requirement (BAGs rather than NOBAGs) are welcomed at the arch by floorwalking agents, and guided to banklining to either SSDOP or agent desks. The two paths have translated into two personas in figure 2.14: "Samsonite Megan" (in yellow), and "Traditional Archie" (light blue).

As Samsonite Megan carries luggage, she experiences a stressy pre-departure journey. Carrying a suitcase around is cumbersome and slow, but is needed for the trip. Personal welcoming at the arch and directions to SSDOP from agents are appreciated, as the persona needs primarily: facilitation of routing and actions. Samsonite Megan is able to self-manage her drop interaction. She views this drop-off action as exciting, straightforward, and smooth. Self-labeling is clear and easy. Overall lugging in the process and drop uncertainty are her negative experiences, as Megan seeks final drop confirmation as soon as the DOP has accepted the luggage. This currently is provided by an agent.

Traditional Archie does not share the same eagerness of engaging with SSDOP. Rather than directions, he needs guidance in departure processes. Archie is not aware of digital boarding pass availability and relies on traditional process knowledge. In a much more reactive way, he passes through departure. Similar luggage drop service as Megan, in combination with additional document check services are required as the kiosk menu is difficult to understand for Archie. In a stressy journey, he will look for an agent to perform the task for him. Welcoming at the arch becomes facilitation at kiosk and desk.

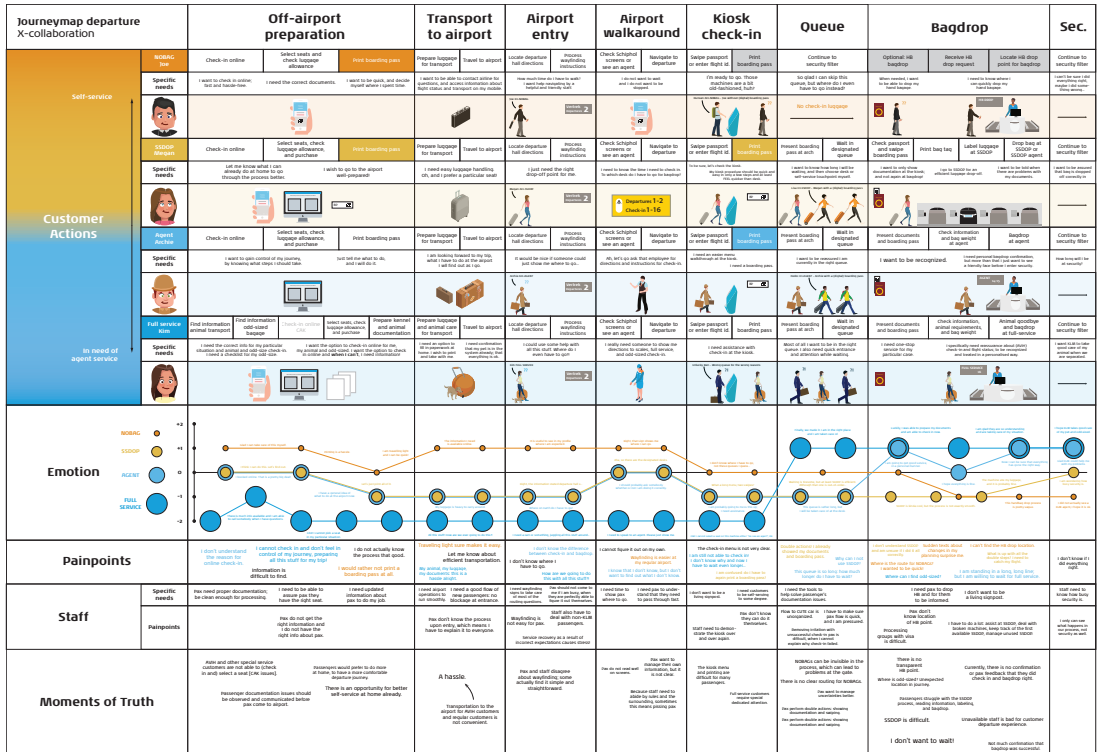


Figure 2.14: journey map of four routing personas

Archie potentially could end up at SSDOP, resulting in an uncertain and potentially scary departure experience. The personal connects in departure and moreover: questions answered, create a smooth and convenient experience for Archie. Unresolved uncertainty in traditional passengers is a risk for the airline.

Figure 2.15 provides the percentages of flow across the four different paths to security (NOBAG routing, shared SSDOP and desk routing and full service), as well as the SkyPriority percentage of 13.5. The chart shows that 4 out of 5 NOBAGs check in online, and roughly 3 out of 4 passengers with luggage as well. In reality, only 1 in 67 passengers is a full service customer.

In the research, this full service customer in departure is known as "High-maintenance Kim" who carries an odd-sized piece of luggage and an animal (as visualized on the right). Although the lowest in passenger numbers, these customers have the highest and potentially most important service requirement. The persona is characterized by good home preparation and a need for availability of information and the ability to contact the airline for specific questions. High stress is experienced in the odd-sized accompanied transportation journey. Interestingly, based on the interviewing, this turns around at the moment of reaching the queue for full service, where customers calm down in line. Personal full service offers peace of mind after a high stress pre-departure journey.

Journey personas

NOBAG Joe

Just show me where I am expected.

"I want to be quick, and decide myself where I spend my time. Offer me a fast and hassle-free option."
"It was not indicated that I can go straight through here to go to security..."

Samsonite Megan

Let me do it, if I can do it.

"I downloaded the KLM app! You just check the signs for directions to where you have to be... done!"
"I would self-label at home; if I could!"

Traditional Archie

Guide me through the process.

"I tried to check-in.. but then this coupon came out. Too bad, I tried."
"Still, I find it important to just have some sort of personal contact when at the airport."

High-maintenance Kim

Help me with all this stuff!

"Cause you don't know. To get in the wrong line with all this stuff... would have been terrible. We were like: how are we going to do this?!"
"It's really a drag when you want to talk to somebody.. and then you can't find them."

2.3.4 Roadmapping reflection

From interviewing and journey mapping, four personas were created from user service requirement and departure action independence. Needs have to be incorporated in the deliverable by using user value drivers as its foundation. Paragraph 3.2 explains value mapping dialogue of the team during future visioning (Part 2), whereas 3.3 envisions a Passenger of Tomorrow.

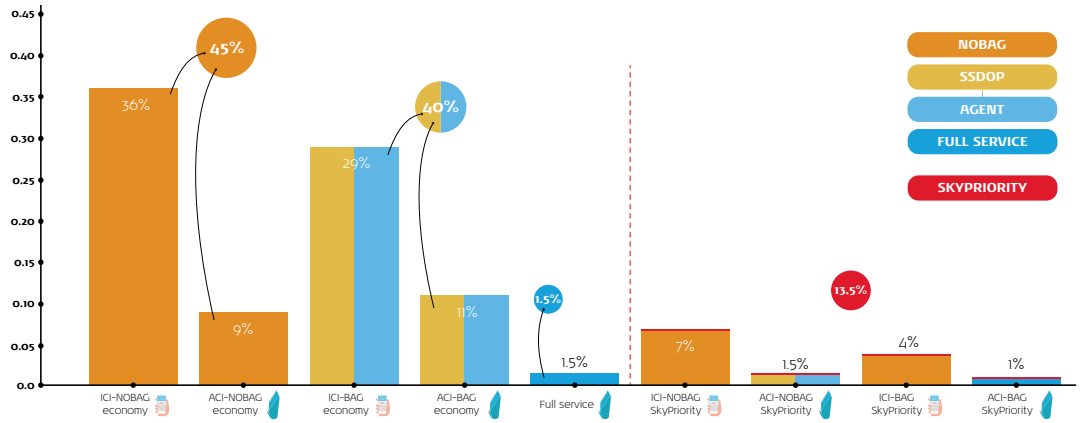


Figure 2.15: the percentages of bag routing departure (ODS, 2019)

2.4 Trends in departure

This chapter starts with an introduction of solutions for Departure of Today. This way, we can see what major technology and service solutions improve the customer journey (2.3) in this day and age. After this introduction, we will take a look at competition, and see how trends are changing the marketplace through a DEPEST analysis and trend patterning.

2.4.1 Departure of Today

KLM was the first in Europe to introduce a full self-service check-in in 2006 (Luchtvaartnieuws, 2006) using kiosks and luggage drop-off points. Increasingly, customers started to check-in online. Since then, self-service propositions in departure have become more prominent in the journey, and at the same time have been introduced in many other journeys of consumers, such as in grocery supermarkets, electronics stores, and post office experiences (Appendix F). Kiosks and internet preparation steps have evolved since 2006 and new services regarding flight preparation, such as Flight Guide and the KLM app, have emerged (Appendix C). Abroad, we see major investments in speed and flow seamlessness for passengers. Not only are convenient information channels made available for self-informing or on-demand phone assistance, entire terminals are redesigned or built to create a high throughput architecture; to offer customers a worry-free airport check-in experience as well as increasing airports' operational capacity for coming years. The next paragraph explains how the best airports in the world go about this.

We see airlines partnering up with tech entrepreneurs and designing new technologies in self-service and bag drop. Also, use of customer data and forecasting of customer flows for resourcing and service providing is gaining traction. A major part of aforementioned speed investments are dedicated to accelerated flow innovations such as biometric data being processed in information systems using personal devices, kiosks and smart e-gates. Biometrics can be explained as a collection of techniques with which the identity of a person can be determined or verified (Willemsen, 2008). Unique personal features can be matched to a person's identity such as fingerprints, facial characteristics, iris and retina scans, and voice recognition patterns, many of which have already become commonplace, integrated in consumer electronics. Regarding aviation, we find tech companies such as NEC, IDEMIA, ICM, and Vision-Box building the technology, in collaboration with U.S. CBP, airports, and airlines such as British Airways and Delta Air Lines. At this time it seems that the challenge lies in creating a proposition that works for any passenger and as importantly, all parts of the journey. Securing the tech by creating and being able to access a full database instantly, growing customer trust and stimulating product acceptance, improving user experience, and continued testing are important. The technology will need to be tested further with a sufficient passenger testing group (n>10,000-100,000) to learn whether the technology is ready (reliable) for full implementation so that it will work always and for any case (Vision-Box, personal communications, 12-10-'19; Appendix G).

The airline has already been working on some projects under the banner of Departure of Tomorrow. Examples are labeling at the kiosk, luggage pick-up and drop-off services, remote drops at parking locations at the airport, and others. In this paragraph we have learned that such examples of departure innovation are explored by competitors already also. Current projects however do represent the starting point of the mapping exercise (Part 4). Figure 2.16 demonstrates what we already know about the roadmapping deliverable; recognizable current initiatives in departure which we can place in the now.

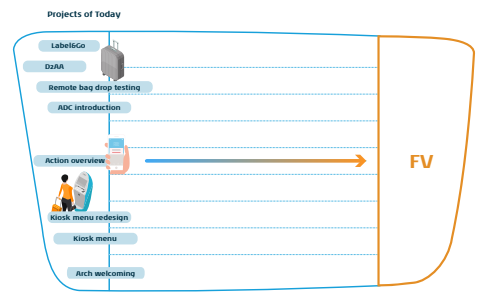


Figure 2.16: roadmap preview

2.4.2 Competitor analysis

When looking at smooth departure solutions of today worldwide, different solutions can be found. It is important for KLM to understand how the offered departure experience relates to competing customer journey experiences around the world. As we have seen, passengers are becoming more demanding, have higher standards than before, and are able to choose between air travel providers. To assess competitive risk, a competitor analysis can be performed.

What kind of competitors exists? We can first look at main product attributes and form competition (such as premium coke beverages when comparing the cola beverage market). Second, category alternatives (or non-premium cola brand substitutes) can be alternative options for the customer. Generic alternatives can be any solution that fulfills the same need (orange soda quenching thirst rather than a Coke). Ultimately, any alternative spending that can be imagined at the same expense poses a competitive risk (any other product at same dollar/euro, such as a donut or a Sharpie).

1) Form competition (similar features with similar values): *is the brand better than others?*

Within the aviation business, the most luxurious airlines such as Etihad, Singapore Airlines, Qatar, Emirates set the bar when it comes to customer experience, new technologies, and overall service innovation. These progressive competitive airlines, with notably deep pockets, are shifting standards through industry-changing visions when it comes to swift and frictionless journeys; and departures. Initially for first and business class customers, Emirates for example was the first to create a full integrated "biometric path" at Dubai International Airport (2018). In a similar fashion, ambitious airports such as Singapore Changi Airport are progressive form competitors. Terminal 4 is a brand new departure terminal where all touchpoints have been automated. Centralized security check touchpoints makes use of facial recognition technologies. This way, no human agents are in charge of check-in actions anymore. A shift towards technological innovation here was a step away from personal care.

Globally Schiphol finds itself at place 14, down from 12, in the top 100 of best airports according to air travelers around the world (SKYTRAX, 2019). Zooming in on Europe, Munich (place 7) and London Heathrow (at 8) score better than Schiphol. The top 5 airports in the world are visualized in figure 2.17 on the next page. Changi Singapore Airport is defending the number 1 spot for seven consecutive years already: best airport in the world 2013-2019. In addition to automated departure described on the left, the airport features a butterfly garden, koi ponds, German engineered kinetic art, self-developed bag drop machinery using Microsoft Kinect, and free cinema access for departure stress relief.

In second place Tokyo Haneda, awarded for cleanliness and clarity of processes and wayfinding as well as hospitality, is testing wayfinding companion robotics as a means to improve departure experiences. Incheon Airport, third on the list, differentiates by celebrating cultural heritage at the airport in the form of live performances in which Korean culture is demonstrated. Incheon is regarded as the cleanest airport in the world and is celebrated for landscaping of terminals. Hamad International Airport in Doha is home to Qatar Airways and is renowned for its architectural beauty. Interestingly, the airport has its own personalized design for self-service drop off points (figure 2.17), fitting the interior design. In the same way, number 5 on the list Hong Kong International Airport is adopting new baggage tagging technologies including RFID and automation to improve operational efficiency and customer experience at the airport.

Early adopters of departure innovations, such as Delta Air Lines or British Airways, are also form competitors. Qantas was early on scouting for new technology solutions as well in 2011 with industrial designer Marc Newson as creative lead. Innovative self-developed solutions such as a Q-card for fast check-in, electronic bag tags, and easy QuickDrop interactions are in place now (for domestic traveling). Other airports with a desire to streamline processes with a strong efficiency mindset are Munich and Heathrow. Similar airlines with similar experiences are most Sky partners (page 26).

Figure 2.17: an impression of the top 5 airports in the world

2) Category competition (same product category): *is the product form best in the category?*

At home base Schiphol, KLM is in fact the only airline with its own unambiguous welcoming space in departure hall 1 and 2. What sets KLM apart from other airlines is open and dominant branding throughout the departure hall. Beside blue kiosks throughout the terminal space, the KLM banner and heavy use of KLM-blue color settings (architecture, staff wardrobe and dedicated service area) leaves no doubt that this is where you check-in when flying blue (Heyligers Design & Projects, 2016). KLM shares the departure space and desk rows with Sky Partners.

When flow is challenged at Schiphol and customers are waiting for bag drop, the departure product is comparable to check-in at non-premium airlines (category competitors). Hall 3 hosts the alternative options for travelers including budget airlines such as EasyJet, RyanAir, or Corendon. Alternative airlines are often cheaper, but at the moment offer a similar departure journey. The same may hold for small, remote airports.

3) Generic competition (need fulfilled): *is the product category the best way to satisfy needs?*

There are alternatives to flying. Luxury railroad operators and other transportation companies are increasingly offering comfortable short-range substitutes to the product of air travel.

Other ways to fulfill the need of going to a different place in the world are telecommunication innovations, such as video-calling or upcoming hologram projection technologies.

4) Budget competition (same dollar/euro): *are the generic benefits the most appropriate way to spend money?*

Although it is tempting to place budget airlines in this category, budget competition is actually any imaginable alternative to a product or service purchase which can be obtained at the same expense. The product KLM sells is relatively valuable, and for most people a significant investment. Money can be spent only once and in different ways. For instance: instead of spending money at KLM and going on a holiday, consumers could choose to order that new kitchen to invest in their homes, finally take care of some long overdue car repair work, or get next-gen smart devices for the children. Budget alternatives are important drivers for spending behavior (Van Raaij & Crotts, 1995), which means customers could always spend differently.

2.4.3 Creative trend research

In order to shape trend patterns (clusters of trend information, end user service expectation, and thought leader expertise), an external deep-dive trend research is in order. Creative trend research consists of two activities: immersion and pattern creation. Immersion involves brainstorming, followed by a lot of desk research. An initial team brainstorm maps the area of interest for better understanding of the subject matter. Desk research, interviewing, online searches and book-reading, and empathic integral conversations make for an in-depth research effort by the team. A strategy for immersion is to make use of watch lists of blogs and dedicated websites (such as news websites, influential bloggers, sector-wide coverage sources such as Aviation Week, Passenger Terminal Today, as well as Reddit threats, and daily online research updaters like Secure ID News or biometricupdate.com), social media thought leaders, online channels, and events. Notifications and online channel subscriptions of relevant thought leaders offer clues as to where the marketspace and technologies are going and additionally make sure that information seeks you out rather than the other way around. Secondly, pattern creation uncovers trends in the absorbed information. Figure 2.18 visualizes a DEPEST trend analysis approach for immersion.

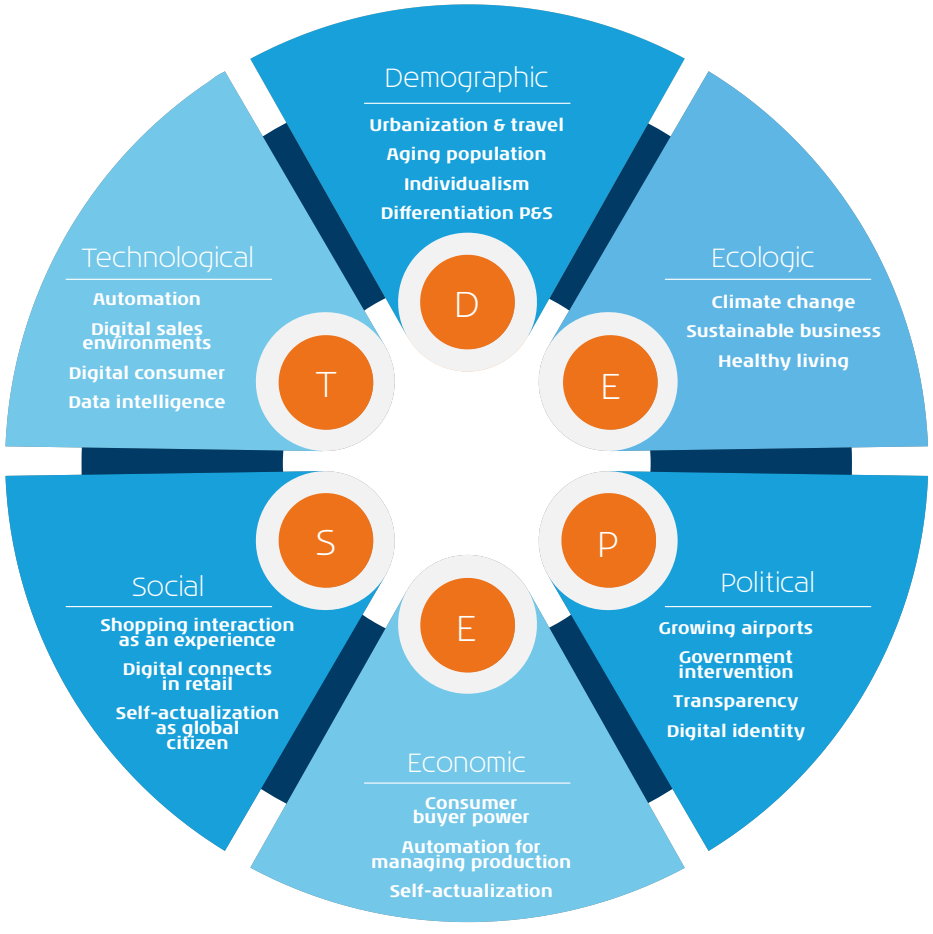


Figure 2.18: trend map

The most important trends are shortly explained below.

Demographic

Urbanization

More people move to the cities, seeking a higher standard of living in those urban areas due to good infrastructure and services available (Ritchie & Roser, 2019). The world population is growing fast and is expected to continue to grow until at least 2100 (Cilluffo & Ruiz, 2019).

Aging population

The elder:worker ratio of 1:3 will become 1:2 by 2035. Because of high quality of living, people live longer and work longer (CBS, 2019). Being healthy and staying active as a pensioner is important at old age (RIGO research and advice, 2019).

Individualism

The emerging Generation Z is known for being self-serving individualists. For that reason, they are also called the me-generation. They don't necessarily wish to own goods and services, it is consumption as access which they value over possession. Good customer services with quick responses is key (Francis & Hoefel, 2018).

Differentiation of products and services

Customers want companies to know them on a personal level. There is a strong demand for differentiating products and services that deliver an experience, rather than being purely functional (Vaccaro et al., 2019). A need exists for seamless experiences: smart systems, real-time information and one-touch (digital) interactions. Offering personal interactions requires companies to go beyond marketing and basic services (Vaccaro et al., 2019).

Ecological

Climate change

Already introduced in Chapter 1, climate change is one of the key themes in aviation these days. Being one of the most energy and carbon-intensive form of transport (Aviation Environment Association, 2019), controversy of growing airports exists. Airlines need new ways to change the eco-footprint of flight and ground operations.

Sustainable business

As a result, businesses are looking for any opportunity they can find for streamlining business processes and solving for inefficiency on the workfloor. This involves adopting business strategies towards the protection, sustaining, and enhancing of human and natural resources throughout the business (IISD, 2001). Corporate Social Responsibility (CSR) programs in companies promote a responsible mindset in business and push companies to act responsibly, accounting for impact to society (PWC, 2018). Impact assessments and audits help companies get a grip on the environmental and social effects their business has.

Healthy living

Prior solutions are just a selection of reactive and preventive measures against carbon-intensive (non-ecofriendly) business output. The end goal is to improve the overall quality of life and to minimize the negative effects of commerce and industry on society and the planet.

It is apparent that consumers, and Millennials and Generation Z in particular, care about healthy lifestyles (Robeco, 2019). As wholesome foods and good living become more important, consumers are willing to spend much more on goods that satisfy people and nature.

Political

Growing airports

In contrast to this, growing airports are directly affecting people's lives in the province of North-Holland. Collective aggrievement of the population about sound and air polution, and effects on wildlife (Schiphol Group, 2018) directed at the government creates stresses in the political landscape.

Government intervention

Aviation is highly dependent on government disruption (Phocuswire, 2017). Examples of governmental intervention in 2019 have been an accelerated gas tap closing in Groningen due to earthquakes caused by gas extraction: eight years ahead of schedule (Wiebes, 2019). A more sudden political decision, affecting all citizens and sectors of business, was lowering maximum

driving speed in The Netherlands, to compensate for nitrogen emission in the construction sector (Van Nieuwenhuizen, 2019). The way in which governments make disruptive decisions (new rulemaking, sanctions, closing borders) affects aviation in a big way.

Transparency
Not only do companies' CSR programs address environmental impact, businesses are also increasingly tasked with engaging in ethical business conduct and opening up their books. Beside financial accounting, openness of internal process information and the way the business is run has to be justified (Rooijendijk, 2019). Moving forward with Departure of Tomorrow, this could mean that proprietary practices, processes, and technologies are becoming increasingly viewable to outsiders. Transparency helps in building relationships and working together, as a strategy towards trust development (Schnackenberg & Tomlinson, 2016). Regarding self-service flight preparation, creating insight into information systems and operational processes with users can also be a form of increased transparency.

Digital identity
Personal communications (27-09-'19) at the Ministry of Internal Affairs in The Hague proved that the virtual passport (vID) is coming before 2025. Integrating the Privacy by Design principle strongly in the engineering process, a secure device application is being developed for carrying a digital substitute of identification documents. Similar to the digital passport containing biometric data (since 2006) and fingerprints (2009), the vID would compare facial characteristics to stored biometric data. The process in which this happens can be compared with liveness detection like Apple's Face-ID (U.S. Patent No. 20190044723, 2019).

Economic
Consumer buyer power
As a result of internet offering transparency, customers have gained control of (holiday) purchasing processes. Rising consumer expectations were introduced in paragraph 2.1.2 and increasingly, consumers have become able to do the processing job themselves as well: being their own cashier, self-managing delivery, and in the near future: becoming their own agent as well?

Automation for managing production
High-speed process automation in e-commerce has been developed to facilitate swift processes mentioned above, such as one-click online sales environments and self-service check-out.

Self-actualization of workers
KLM has had many strikes in 2019, trying to satisfy an unhappy workforce to ultimately reach a collective agreement with the unions for ground crew, cabin crew and pilots. Workers are increasingly looking for self-fulfillment in desirable jobs which are becoming increasingly specialized; difficulty exists in finding good and loyal employees in a narrow labor market (Performa, 2019).

Social
Shopping interaction as an experience
A need for original and innovative interactions continues to differentiate retailers as consumers are expecting unique experiences in both physical stores and digital (Deloitte, 2020).

Digital connects in retail
Shaping brick-and-mortar/digital, referred to as "phygital", offers accessibility, speed and convenience of online in the comfort of physical stores.

Self-actualization as global citizen
As urbanization and digitization continue to grow, Gen Z and Millennial consumers are becoming world citizens. Celebrating cultural heritage and diversity, Gen Z wants to be able to experience different cultures, connect with people from different backgrounds and nationalities, and visit new places in the world (Streetsense, 2019). An overall strong focus on purpose and values determines their spending behavior.

Technological
Automation
Gartner (2019) predicts automation will only intensify and will be known as hyperautomation. Hyperautomation is an unavoidable market state in which organizations must rapidly identify and automate all possible business processes (2019).

At airports around the world such as Sydney T1 and Changi, we see next-gen drop-off points which facilitate a quicker, more intuitive drop experience (paragraph 2.4.2). Regarding departure, recognizable automation at Schiphol in baggage management, as well as a shift towards electric and autonomous mobility can be found. Future implementations of hyperautomation for X-development could be: contracting an automation architect, leveraging A.I. and Machine Learning, end-to-end design mapping of automated processes, or developing digital twins of departure flows for assessing new (non-physical) departure hall infrastructure in testing.

Digital sales environments
Increasingly, e-commerce and online banking are becoming hassle-free as customer devices become more secure and banks, tech developers, and governments are driving change. An example of this in 2019 was when in addition to Android NFC payments, Apple Pay was introduced as a one-touch secure payment option at most major banks in The Netherlands.

Digital consumer
This need for quick, connected, accessible payment is part of a larger, constant demand for information support including customer services and social media. Consumers are increasingly informed, entertained, and empowered to manage their lives via online, unrestricted by location or connection. Expected 5G connectivity will add to this in coming years. The same standards of access, speed, and convenience discovered online, have to be met in (physical) daily life.

Data intelligence
Much can be learned from the behavior of digital consumers. Data has been called the new currency in digital economies. Analytical tools and methods can offer increased understanding into customer behavior, actions, and service requirement. Going further than business intelligence, customer data insights (such as the passenger flow percentages in paragraph 2.4) can help optimize the customer journey, fuel a sophisticated strategic marketing engine using predictive analytics, and monitor real-time customer experience (SAS, 2019).

In spite of Privacy by Design measures, user privacy impact assessments will become more important in coming years.

2.4.4 Trend patterning
Six clusters were found in the trend immersion.

Old and young ticking bucket lists
Baby boomers abroad have most to spend and have the time, plan online but are taken by the hand. Generation Z is taking over from Millennials: wish to experience new locations and cultures with a focus on purpose and values.

Connectedness: one-touch, clean and constant data consumption
Online availability of information at all times has become a given. Businesses have developed full service integration to please their customers: single platform engagements, swift customer interactions, and quick confirmation overviews of purchase behavior in intuitive and appealing information pushes to devices by marketers.

Self-service convenience
Time gains and easy processes as a personal reward are promoting self-service touchpoints. Easy and intuitive interactions make increasingly transparent retail tasks quicker.

Extraordinary service as an experience
Consumers immerse in brands fully in micro-moments. They are touched throughout; as a result of personalized service they engage with integrated services and new technologies.

E-dentity: internet individuality
Mobile passports are coming. Identity verification is a service that is shifting from traditional interactions (such as boarding an aircraft) to everyday consumption (e.g. entering a vehicle). Passport-free seamless ID access is the product rather than the passport itself, and information will be shared only if data is secured.

Businesses becoming truly smart
Advanced analytics are offering insights into user behavior, personalization, and marketing opportunity and allow for more effective decision-making for novel phygital service propositions.

2.5 Problem definition

Current departure flow cannot be sustained, as passenger numbers in departure will continue to rise and capacity has been reached. This means the infrastructure and processes of departure actions have to be changed.

Three components of ambition of KLM have become clear. The ambition of streamlining departure for a seamless user experience comes from a desire to operate in a customer-centric and continuous service-enhancing way. Second, the company wishes to become most efficient in processing passengers, speeding up turnaround, and overall: operating the business. Finally, KLM wishes to become the most innovative; jumping on new opportunity and engaging in technology innovation programs.

Regarding departure, the question has to be answered now: is KLM indeed customer-centric, efficient, and leveraging innovation in the journey of passengers?

Most customer-centric?
For most people, traveling and visiting the airport is a stressful endeavor. At Schiphol, passengers experience stress throughout the journey, because of multi-tasking, uncertainty during waiting, and going through difficult processes. As a result, they display undesirable behavior (for speed), making it challenging for floorwalkers to coordinate high throughput in the crowded departure spaces. Conversations with floorwalking agents led to the insight that staff has less time for being of service to customers than they would prefer; staff focus more on correcting check-in issues than engaging in a meaningful personal connect.

Most efficient?
In the past, waiting in queues has been a fixed activity in departure. Technology has made it possible in recent years to streamline all kinds of processes, such as (online) product purchase, package handling, media streaming, or reservation check-ins for example. Also, consumers have the capability and comparing mindset to look around and see how competitors are changing standards. The perceivable standard of efficiency is shifting. Self-service convenience is sought by consumers, through an intuitive and user-friendly interaction, with the aim of saving time and feeling in control.

Customer passage in existing departure lay-out is too slow because the touchpoints and routing have become inefficient. Customers are generally not clean upon entry, experience difficulty in wayfinding, and do not fully grasp the process actions as they are dealing with departure stress.

Most innovative?
Innovative departure ideas and journey interactions from the established V35 future vision are already in place at airports around the world. Examples are one-touch next-gen SSDOP interactions, biometric lanes, changed perception of waiting time at for instance Changi SIngapore and others. Competing airports are investing heavily in brand new terminals, the newest technologies throughout the customer departure journey, and uniquely branded stress relief concepts such as (cultural) art, luxury facilities, and live performances.

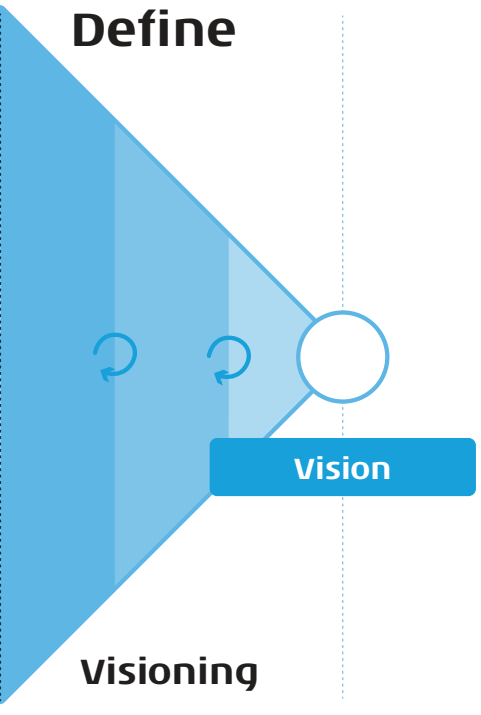
The current ageing departure infrastructure and the existing user journey do not match the ambition.

However, a unique opportunity exists for the Departure of Tomorrow taskforce to improve departure for all three ambition drivers. To do this, the components in V35 need to be isolated, researched, and mapped towards the future, as KLM designs an innovation program and strategy for the twenties. The research and mapping activities can be captured in roadmapping exercises.

03 Future visioning

KLM wishes to understand V35 better, and in particular the key future themes of departure. Because of its abstract products and services, departure innovation can be difficult to actualize, which means HowCan-We objectives are not easily extracted from the work. There are ways of understanding elements of V35 better. Paragraph 3.1 will cover analogous experience and offers similar solutions (in different markets) to problems in creating seamless experiences. Discussion of these analogies may demonstrate how the solution works when completed, and what future value is in fact created. After all, the goal of visioning is to learn to understand how the user will change in coming years and what this will mean for innovation programs today. Chapter 3 concludes with extraction of the values of these future users, and with challenging the established vision work (V35).

Part 2
Define



3.1 Analogous experiences

This paragraph explains how analogous experiences offer overview during design dialogue. The topic of seamlessness is reviewed by focusing on key qualities which V35 offers, and by examining what seamless tech solutions have been implemented in different markets.

3.1.1 Seamless solutions

"Seamless departure" is KLM's ambition. In the established V35 design visioning drawing (paragraph 1.2) we see many things happening which enable zero waiting time. So what is in the vision that creates seamlessness? Figure 3.1 offers four snippets of the key elements from V35 that improve existing journey touchpoints: changes in the physical space, automated check-in, walking pace service processing, and a quick luggage drop interaction with zero queueing.

Firstly, the open space (1) creates a spacious and deskless departure hall which is free of banklining and suggests a self-managing flow to security. Doc-less identification, secondly, allows people to pass through with passports in pocket (2) and without a standstill touchpoint for verification and authentication. Thirdly, a proactive staff who recognize customers (3) replace existing desk-restricted agents. These would become energized floorwalkers who seek out service-requiring departure guests. Finally, a swift & easy "Hole in Ground" drop interaction (4) visualizes the internal vision of a five-second bag drop.

The drawing offers a collection of different service, product, and technology solutions, making it challenging to grasp fully the non-physical innovation ambition for managers. Design methods to counter this are available.

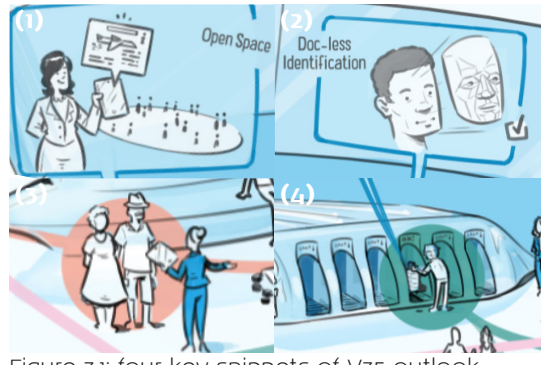


Figure 3.1: four key snippets of V35 outlook

Looking at other markets can demonstrate how visions can work (IDEO, 2019). What is referred to as "Analogous Settings" can help isolate elements of an experience, interaction, or product, and allows you to then apply them to whatever design challenge you're working on (2019). Meanwhile, it can be highly engaging in creative dialogue as you shoot ideas and similar experiences, linking ideas with your personal recognizable expertise as a consumer.

Digital innovations have transformed many retail service experiences in recent years. Consumers have increasingly become digital customers via online channels and smartphone enabled apps. In the largest retail category (groceries), business models such as e-commerce and e-grocery emerged. Grocery retailers have always been searching for new innovative solutions to new market demand (Keh, 1998). A similar shift towards seamlessness in grocery shopping in recent years has transformed that marketspace. Amazon Go, an automated convenience store without cashiers and self-checkout stations is an example of these innovative solutions. Using smartphones (figure 3.2), the traditional journey of grocery shopping is changed. The example of this hybrid solution to e-grocery was used for value mapping (paragraph 3.2) and idea mapping (Chapter 5) as an analogy to seamless check-in and bag drop. The likeness will be explained next.

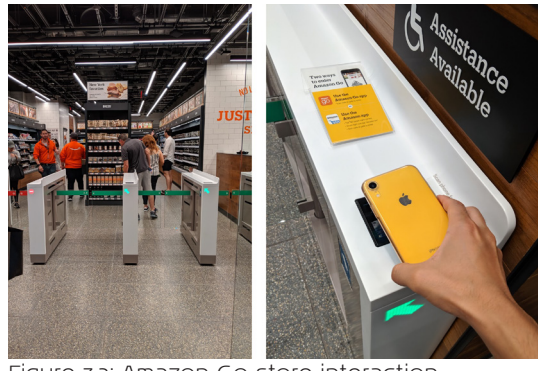


Figure 3.2: Amazon Go store interaction

3.1.2 Customer side

Using a generated personal QR-code via the Amazon application, turnstile access to the shop is granted. Identification and payment permission in this way is relocated to the very first step of the journey. Three key technologies (Amazon, 2016) monitor the presence and shopping interactions of customers: computer vision tracks customers through the entire store interior, while deep learning algorithms develop a high-level understanding of digital images and link the customer actions to entries in a digital shopping cart. Sensor fusion applications throughout the entire store make it possible for the system to list what is taken from shelves. Selected groceries are automatically added to virtual carts, and goods that are put back are removed again. This way, a live overview of groceries adds to a digital bill, which enables Amazon to promise a seamless experience: "no lines, no check-outs, no registers" (2016). Upon exiting the store, your phone will present the bill and the Amazon account presents a digital receipt overview. Being called Just Walk Out technology, the company offers a new way to experience a traditional retail journey, or alternatively: a "legal shoplifting" experience (Forbes, 2016).

In this example, smoothening the customer journey (figure 3.3) meant offering a digital-physical retail environment where traditional but unnecessary touchpoints are eliminated. Also, employee time is freed up for true service in the store. Subsequently, the tech developer is making shoplifting near impossible in the future. However, it also is one more step towards full self-service responsibility of customers in stores.

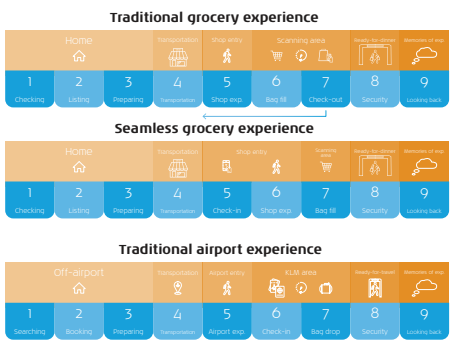


Figure 3.3: comparison of journeys

Appendix F demonstrates that many brands in the Netherlands known for sincere and honest Dutch products, such as Albert Heijn, CoolBlue, Perry and HEMA (Beerda, 2019), are shifting towards full self-service shopping environments with little to no register staff. This creates space for a staff interaction that is unconcerned with sales and the physical exchange of money, but focuses rather on service in the form of product expertise, advice, and guidance at self-service digital sales environments utilizing home delivery. Not excluded to (e-)grocery shopping, this concept is introduced in electronics stores, clothing warehouses, post offices and others.

In fact, Albert Heijn is exploring a similar seamless experience as Amazon Go in test setups in The Netherlands, for example at Schiphol Plaza (figure 3.4). The value of self-service interactions for customers in this shipping container concept store are: personalized product selection in a virtual cart (interactive online made available in-store), employees available for service, swift interaction (expertise and one-touch payment) or the option to fastlane (sense of autonomy), and increased insight and understanding of product options as customers become their own store clerks over time.

There are also disadvantages and risks to self-service business models. Consumer technology readiness is a condition of successful adoption of new models such as digital stores. Also, an unwillingness to participate for privacy reasons can keep customers away. Losing control over budgeting decision-making can be a result of retail innovation, as may the perception of service degradation at payment touchpoints.

Figure 3.4: AH Schiphol concept store

3.1.3 Staff side

Context research in Chapter 2 suggested that agent task descriptions will change. Similarly, jobs in brick and mortar retail stores are changing as a result of newly available digital innovations. These changes could clarify what seamless would mean for staff in V35.

In the fashion business, we see salespersons and register clerks transforming into personal shoppers and fashion (item) experts for brands and for clothes searching, fitting and purchasing experiences (Bonetti et al., 2018; Hagberg et al., 2017). Rather than focusing on quick selection and sales transactions at the til, store employees engage in the brand product offering and tailor needs to adaptive design capabilities, as they have become able to access in-store web-portals. Figure 3.5 shows an example of in-store personalized sneaker design kiosks.

Evolving from point-of-sale systems and self-service barcode scanners, Boston Consulting Group (2015) characterizes three novel benefits of digital in-store strategies: endless aisles (the availability of all brand SKUs), magic mirrors (or interactive screens) offering recommendations and virtual fitting for example, and clienteling (aforementioned staff acting as experts by using data on preferences and purchasing habits for customizable in-store experiences). Other digital solutions for in-store can be: in-store navigation, in-store self-service, QR web connects in the store aisle, customer tracking (such as Amazon GO), mobile wallets, self-checkouts, home delivery or pickup, in-store pickups, and loyalty programs.


Figure 3.5: Nike Town London's interactive kiosk

3.1.4 Operational side

Looking outward for digital innovations can also be of benefit to KLM's operational managers and workers in learning to manage excess flow and improving visitor accommodation at the airport.

Smartly automated processes and seamless flow experiences are important during large gatherings of people such as outdoor music festivals, concerts, and sport venues, and are becoming increasingly sophisticated. Such events attract an enormous amount of visitors and monitoring the population to ensure safety is not easy. For crowd control purposes, the upcoming Olympics and FIFA World Cup in Japan will be making use of facial recognition algorithms for event access control by NEC (Biometricupdate, 2019). The Olympics of 2024 in Paris are also looking into biometric event security. A more practical example of using live visitor data is capacity management at Light Night 2019 in Delft (Crowdcom, 2019) where additional intelligence was needed over a one-in-one-out capacity policy.

3.1.5 Roadmapping reflection

Analogous experiences show how seamless solutions are created for different product offerings in different markets. In this way, we see that journeys of check-in and bag drop are indeed not that different from a general retailing experience. After all, service interactions such as passport checks or bag drops could be seen as transactions similar to a cart check-oút or product pick-úp. Similar to airport check-in machinery, kiosks have made self-service available in retail. With speed and convenience as key user benefits, the next generation of self-service can be viewed as further digitization of physical brick-and-mortar inventory spaces: one-touch check-out.

Important areas of concern for future user value in technology-facilitated journeys are the privacy of users, new roles for empowered staff, security of information processing, and service perception levels in self-service environments.

3.2 Value mapping

This paragraph will explain the user value mapping exercises of the Departure taskforce. Design roadmapping activities could be described as sequences of the great search for future value wishes. The only way companies can design desirable products in the future is when product or service attributes and benefits fit the demands of users in that same timeframe; the unmet needs of the future are opportunities for forward-looking enterprises.

3.2.1 Method and outcome

Value mapping is the first group dialogue activity of design roadmapping (figure 3.6). Because roadmaps and future innovation programs have to match the new demands of users, it is crucial to form resolute definitions of value drivers. Value drivers can be found by creatively assessing the research, apparent problem, and insights of the context study. In the presence of expert stakeholders, the goal is to find and agree upon those drivers that may dictate why users will make use of your product in the future.

The value mapping session was prepared to once more cover the entire journey of passengers and consider the actions that exist in its stages. For a definitive specification of these stages, the sequences of departure in line with CX terminology were used once more for clarity and uniformity (and thus magnetism). The group activity was to challenge all steps for impact by color coding in red, orange, and green (eliminate, change or relocate to different journey stage, or keep the same).

Figure 3.6: value mapping exercise

Figure 3.7 on the right displays the mapping output. The journey location (stage) at the top divides the journey into six components. Within those six, CX defines nine conscious and experiential sequences for departure customers. Below, the table provides all actions in departure.

Elimination

Upon reflecting on each action a selection was made by color coding. During booking, actively having to check and monitor booking confirmation via e-mail surely can be improved in 2020. Performing online check-in in the long run and printing a physical boarding pass also hold no place in the future vision. At the terminal, accepting the flight at the kiosk, waiting in line, performing multiple doc checks at the CUTE cart or SSDOP, re-packing luggage in line, and dealing with Kiosk Assistance Coupon issues should be eliminated as well.

Change

Interestingly, the bulk of responsibility on the customer side at check-in and bag drop appeared entirely relocatable for more convenience. The table distinguishes changable and relocatable actions by means of the bold stage number annotations. These actions can be done in different stages.

Improving travel inspiration lies with Commercial and CX and was labeled out-of-scope for DoT. Seat selection according to the vision will transform into seat preference recognition. Document and visa preparation currently is provided by passengers, but is checked up to three times throughout departure. Automation of Doc Check is highly promising (IATA, 2019). Luggage transport can be facilitated (D2AA pilot). Wayfinding remains a major departure challenge. The kiosk and SSDOP actions are sub-optimal as of now. Double actions, difficult tasks, and kiosk-exclusive tasks may find a way to better touchpoints.

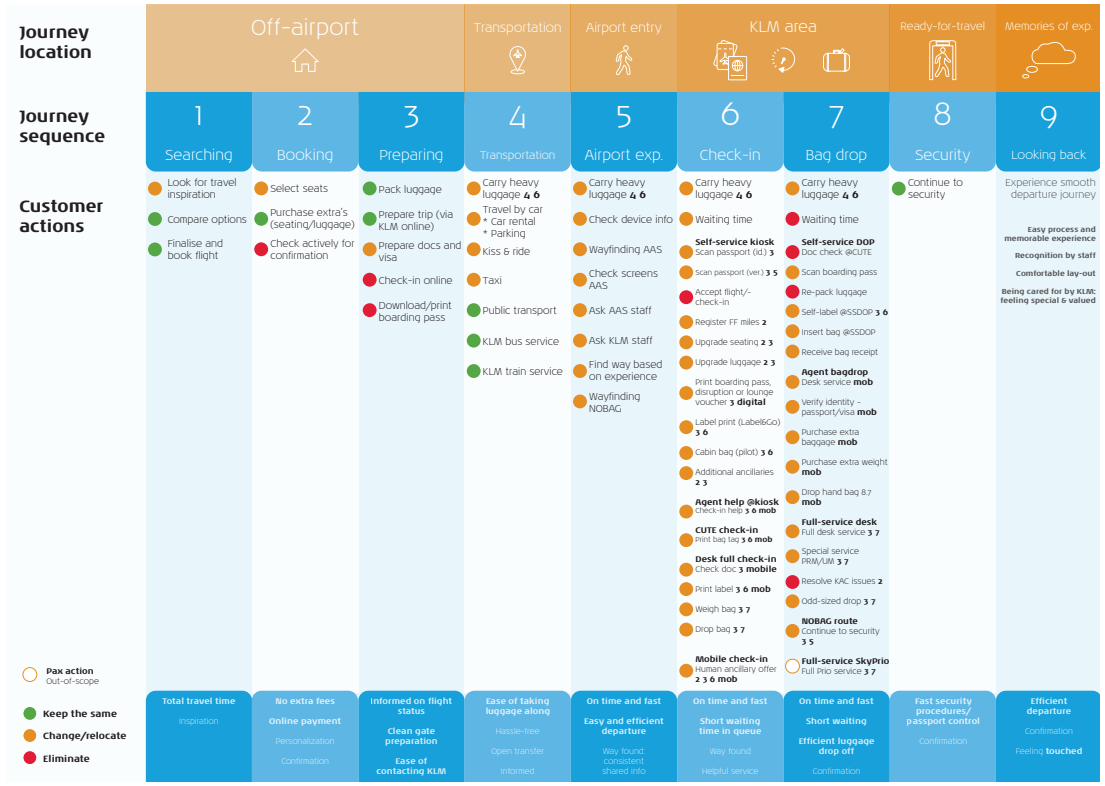


Figure 3.7: action map (paragraph 2.2) transformed into value map (Appendix H)

Keep the same

In the early stages of departure (home preparation) many good actions take place. Customers are at liberty to compare their options. Purchase actions such as selecting seating and additional luggage are deemed pleasant by the CX experts present. Standard traveling actions such as packing, self-planning, and mandatory security checks will stay the same. An interesting debate took place concerning transportation service. A shift towards responsibility on KLM's side was discussed and ideas in the form of new public transport facilities - a reappearance of the blue KLM train of 1986 (Luchtvaartnieuws, 2019) -, autonomous mobility, and short (electric) bicycle city trips on the day of departure were pitched. After finishing up the customer action review with the team, the main themes that exist in each journey sequence were extracted from the overview. Below the table, the use values are concluded.

3.2.2 Customer value drivers

From these use values (Appendix H), five drivers of value that are at the core of an optimal departure journey at Schiphol were distilled: convenience, comprehension, choice, confirmation, and care. These core values are explained next.

Convenience: *experiencing no hassle, preparing for clean gate, being on time and quick*
Customers are looking for speed and do not want to wait. They require smooth routing and desire simple KLM touchtime: easily and unhurriedly.

Comprehension: *understanding processes, way found, being informed on flight status*
Customers value process and routing instructions. They need clarity at lean touchpoints, and seek out information pop-ups during disruption.

Choice: *choosing the fastest lane, approaching available staff, being offered some options*
Customer departure preparation differs. Fastlaning is demanded by many, while some seek a human connect at analog (full service) touchpoints.

Confirmation: *hearing an affirming voice, seeing a friendly face, being assured during process*
Customers are seeking reassurance for doing "the right thing" via device or personal updates.

Care: *receiving departure stress relief, feeling touched, expecting recognition*
A warm welcoming and human eye for detail are what sets KLM apart. A personal touch is needed.

3.3 Passenger of Tomorrow

This paragraph discusses the extracted value drivers of customers and projects future value in the journey of departure customers. This way, functional and emotional benefits of future solutions are envisioned and an improved journey is explained. Also, two distinct mindsets in a future target group are presented which can lead to a new departure lay-out.

3.3.1 Future value explained

It is wise to anticipate future user demand and reflect on the discovered value drivers. As illustrated in figure 3.8, five things matter in departure. Incorporating the five drivers in the future departure process handling can create a valuable customer journey.

Convenience
Smoothness of journey experience and a walking pace flow is perceived by customers in the future, as a result of lean actions without lugging. Home preparation of customers and systems of the airline in place allow passengers to be clean for passage upon arrival. This means that check-in becomes even more proactive than internet check-in, and that passenger airport arrival is anticipated. Routing segmentation creates a convenient flow befitting the passenger's remaining departure product and service requirement and remaining action in a calming environment.

Comprehension
Simpler departure tasks allow for more comprehensible self-preparation actions. Here we take into account the flustered passenger state of mind. More logical routing towards differentiated touchpoints for fastlaning, next-gen self-service QuickDrop, and a full service welcoming point, become more understandable through a clear separation of services in a more open space, as well as nudging (paragraph 5.1) towards the touchpoints. A better understanding of processes in combination with fitting, visually persuasive digital self-preparation invites from the airline make sure customers are more aware and cleaner upon arrival. Finally, future off-airport alternatives to self-service bag drop at the airport are as intuitive and understandable as the options in new departure hall infrastructures.

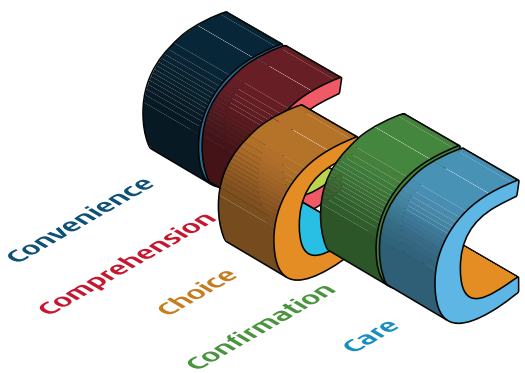


Figure 3.8: 5 C's of departure value

Choice
The Passenger of Tomorrow cares about having a choice in a personalized journey. For managable home preparation actions, KLM offers choices between digital and physical tasks which could enhance a feeling of control over personal to-dos.

User group ambiguity exists in the future. On the one hand, passengers choosing speed will only spend moments in departure as they self-manage their swift passage. Motives are expectance of one-touch self-service drops, time spending in lounges, or an overall journey efficiency. On the other hand we will see customers who remain to expect special service, at walking pace or stationary at full service touchpoints. The ambiguity exist in the choices: speedy passage vs facilitated care, use of innovative routing vs traditional touchtimes with agents, and acceptance of new technologies by early adopters vs refusal by (privacy reluctant) laggards. Important here is that staff remains available for questions, unlike automated processes at foreign airports.

Confirmation
In the journey, it is staff who provide an affirming voice. "Doing the right thing and doing things right" was a concern of passengers in interviewing. Future customers will perform actions and look for digital confirmations in real time, on-device or at a digital touchpoint. In connecting with human agents (and virtual agents in the long term), the Passsenger of Tomorrow expects a personal approval and explanation of processes as an addition. This also holds for future remote touchpoint locations.

Care
As mentioned on the left, human care throughout automated infrastructure can differentiate KLM's blue departure from for instance Changi's full self-service infrastructure. Floorwalking empowered agents in the future will remain the authorative flow managers, but shift from a correcting to a coordinating and servicing role in the departure hall. Open spaces and remote desk capabilities offer new service and business opportunities with regards to stress relief and entertainment in departure, in both physical connects and virtual facilitation.

Different departure mindsets
The four departure personas (Joe, Megan, Archie and Kim; page 32) in the future translate to two main departure mindsets. We already saw that NOBAG Joe and Samsonite Megan are able to manage their personal journey themselves, whereas Archie and Kim seek assistance for their departure uncertainty or desk service actions. Future flows will be, first: self-serving individualists (Gen Z and technology-welcoming efficient travelers, figure 3.9) who swiftly pass departure spaces willingly making use of new innovations the airline puts in place. Secondly, service-seeking people persons (the elderly and traditional passengers) will look for a personal connect and will spend time unhurriedly in departure.

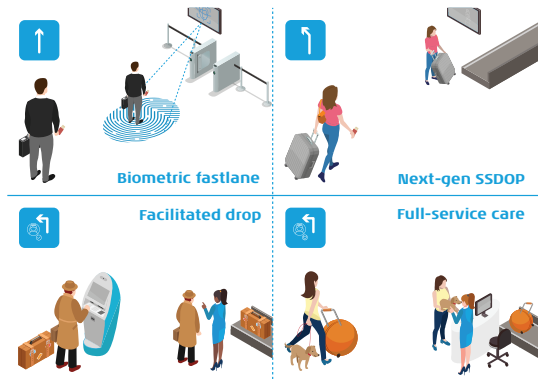


Figure 3.9: segmented routing in an open space

3.3.2 Benefit of segmentation

For a future lay-out this can mean better separation of flow for journey clarity, as well as operational efficiency. Currently, arch access is not clear to customers because of departure stress. Also, routing can lead to SSDOP and desk endpoints which can be confusing. A conversion to open spacing in the future offers the opportunity to incorporate better wayfinding logic in the customer journey. Separated flows can increase fastlaning capacity towards e-gates which facilitate walking pace verification, and clarify welcoming locations for dedicated care for different segments in special service (aided drop, odd-sized, full service). Use of interactive virtual support on kiosks in the future can replace the deployment of cartboard Shirley (figure 3.10) as a personalizable and on-location service touchpoint and showcase of innovation. An open space lay-out creates new ideation space for services.

Figure 3.10: wayfinding support by Shirley

3.3.3 Roadmapping reflection

The value displayed on a roadmap artifact in Part 4 (Delivery), is the value which is created for the Passenger of Tomorrow. This paragraph clarified manifestations of value driver solutions in the future. Changing needs have to be incorporated into the artifact. Recognizability of user needs should be quick: one of the first things viewers see and understand. It would be interesting to see ideas (concepts) change over time into different solutions and showcases of technology and innovation, and how these match with the five value drivers over time. Important will be to focus on the main benefits and clusters of value.

3.4 Challenging an ambition

This paragraph revisits the starting point of the project and reflects on the work that was done before the graduation research in front of you was started, now new insights have been gathered from contextual and visioning design work.

3.4.1 Off to a flying start

The ground work of GS managers had already led to creation of a strategic vision illustration (figure 3.11). Regretfully, the manifestation of future visioning did not give process and CX managers the certainty to decisively direct new short-term design activities towards this vision. Interestingly, the drawing accurately describes value-adding departure products and services. As introduced in paragraph 1.2, the environment of the spacious open departure hall lay-out with moving service agents ought to make processes more understandable and provide the desired convenience of a quick drop and readily available hosts. Doc-less identification is as convenient as it is going to get, and we also see the routing segmentation and choices for self-service QuickDrops or dedicated full service areas in the vision. The hall is depicted as a calming recreation space where people can relax and be assured and entertained by a caring staff who are experts.

3.4.2 Shortcomings of V35

The challenging nature of shaping short-term design sprints which contribute to vision value, using V35 in creative dialogue, has two causes.

The main drawing of the open space features solutions from different timeframes (or strategic horizons, further explained in paragraph 5.3), visualized together for realization in the year 2035. This way, Departure of Today innovations such as biometrics, QuickDrop interactions, and special departure treatments (paragraph 2.4) which are currently tested and are expected to become mainstream in coming years, are projected in 2035. This cannot be the case, which suggests intermediate forms of the drawing infrastructure need to exist. This can be an interesting finding moving forward in technology scouting.

Also, the vision contains unexplained technology solutions such as the camera pillar and "magical" mobile tablet substitutes to desk computers that allow for proactive information access by agents. Concrete tech application understanding is needed for envisioning intermediate Departure of Tomorrow settings. This way, the space between vision endstates and current existing (functional) requirements in the customer journey and airline operation is bridged and concretized. Moving forward, the taskforce desires to adopt strategies which involve products and concepts which are a given. The collection of solutions in V35 are naturally presented in a visionary manner, or: what the flow lay-out and machinery coúld look like. This keeps the ideas fuzzy and conversations on an abstract level. Actionable idea combinations from different journey sequences (preparation, transportation, airport entry, ...) can be better addressed in a roadmap deliverable. Part 3 and 4 will transform V35, the design roadmapping research of Chapter 2, and visioning work of Chapter 3 into a roadmap for Departure of Tomorrow.

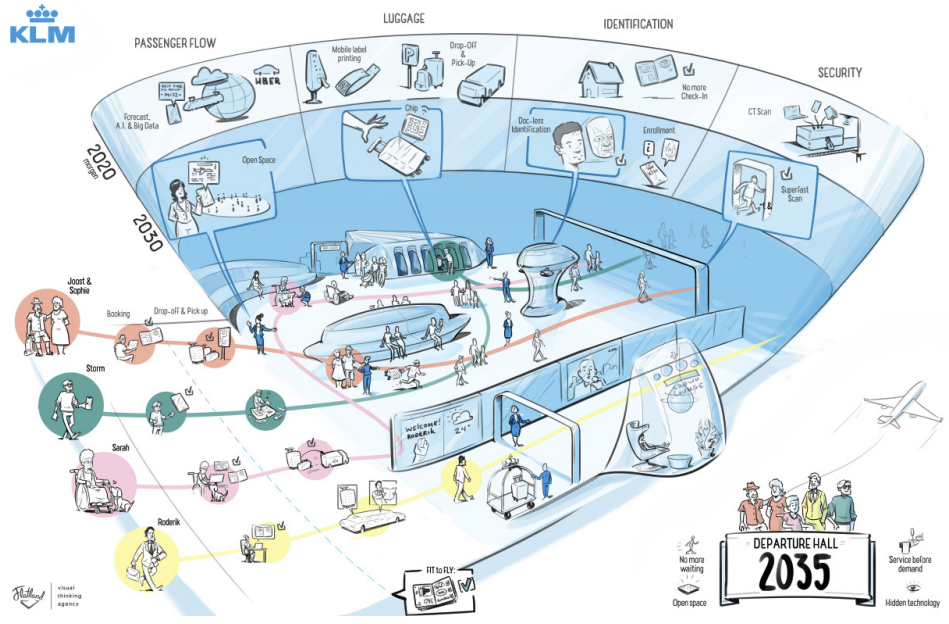


Figure 3.11: V35: no more waiting, open spaces, service before demand, hidden technologies

3.4.3 Rewards of building BLUEdeparture

KLM needs to differentiate departure experiences at Schiphol to have a competitive edge, and to communicate a customer-centric, efficient, and innovative ambition.

From what we have learned about the Passenger of Tomorrow, envisioned departure processes visualized on the left seem to be of value to the ambiguous target group: self-serving individualists are given the option to make a fast drop with zero waiting and would receive confirmation of successful luggage drop, enrolment, and departure products via online. A doc-less identification at walking pace offers convenience (no hassle) and a comprehensible departure presence. Service-seeking people persons in the hall can approach (or rather: are approached by) caring agents who can manage their uncertainties and assist in questions and remaining departure actions. These actions remain to involve full service and special service bag drops aid at a reception in the future open space or off-airport. However, before being able to deliver on the vision outlook and physically build such a new departure infrastructure, much still needs to be developed as the road ahead is unclear.

From an innovation management viewpoint, many things have been learned about the challenge of Departure of Tomorrow: concerns of stakeholders, departure actions affecting flow, journey experiences, and emerging trends. In design roadmapping, a good understanding of user values can offer more confidence in processing unknown unknowns of ideas for the future and create a parking space for these ideas. This allows designers and business developers to develop them in creative discussion, and to deliver on roadmapping visions.

Clear vision statements are important in explaining an ambition. At KLM, it has been challenging to accurately describe the vision without use of the vision drawing. The ability to communicate this vision for internal support is as important as the research which led to the vision, and as important as the accuracy of a vision. Because of the implications for internal systems, staff, and operational changes, having constructive conversations towards end goals becomes crucial.

3.4.4 Roadmapping reflection

We saw in paragraph 2.4 that existing departure projects for the short-term can be placed at the beginning of a future roadmap. Departure of Today solutions explain valuable concepts which can solve current issues or improve the customer journey within known scopes. As we do not know yet what could be possible, still unknown Departure of Tomorrow projects can be projected further in time (figure 3.12). The next paragraph will explain a three component vision for the future based on the context research (trend patterning) and visioning work (value mapping).

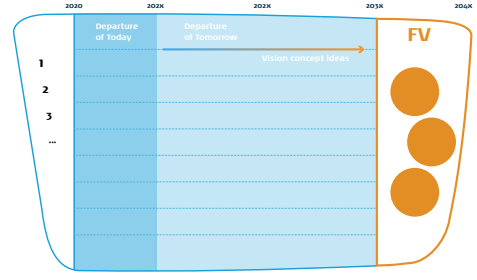


Figure 3.12: roadmap preview

3.5 Future vision

What a good future vision needs is magnetism; the internal quality of drawing stakeholders in and to enthuse, inspire, and activate them towards a certain action (Simonse, 2017). It needs to be clear and to-the-point, and leave no room for ambiguity in understanding. It must be constructed towards user value driver solutions, and the chosen artifact needs to fit the message and facilitate practical use.

Whereas the original V35 design poster was highly magnetic because of its beautiful artistry and incorporated visualized service solutions, it lacked the clarity and thus actionability towards building it. As a result, managers were unsure of how to continue in timepacing Departure of Tomorrow (paragraph 1.2). The research of Part 1 and visioning exercises of Part 2 now create a more concise picture of the challenge at hand. Using three key vision pillars, Departure of Tomorrow and its seamless customer experience can be explained: BLUEdeparture.

Facilitated One-Touch Self-Service
Departure hall Hole in Ground bag drop interactions will make bag drop truly effortless and as importantly: quick. Five-second one-touch menu interactions at a clear way-found hall location automatically match passenger information to bag drop service requirement. Dedicated spaces for odd-sized luggage and full service desk assistance will be designed for improved wayfinding and routing efficiency. Hardware sensors and intelligent software create a full scan of luggage and read electronic bag tags. Drop confirmation by virtual agents on immersive and interactive screens provide certainty. Full track-and-trace invitations are instantly pushed to next-gen devices. Home pick-up services, as well as remote drop locations become available with similar drop technology in place. Next-gen kiosks offer customers the entire KLM shop and additional departure support at their own convenience. As drop becomes effortless and quick, the roll of staff changes from a corrector of check-in information, to a coordinator of flow and entertaining proactive host.

Extraordinary staff: memorable entry experiences
KLM's mission is to create memorable experiences. Traveling experiences start in departure. As the first physical touchpoint, it is important for departure to be experienced as a pleasant, well-organized, and welcoming activity. Smooth processes are crucial here. As important as seamless actions and flow however, is the human attention which sets a caring airline apart.

Hospitable staff agents at landside, empowered by tools which access passenger data, are experienced by customers as recognizing, open and warm personalities. The blue departure hall is where you go for a meaningful, personal connect, and for a purposeful departure conversation. Empathic agents are availabe for departure action assistance, stress relief, and positive traveling anticipation.

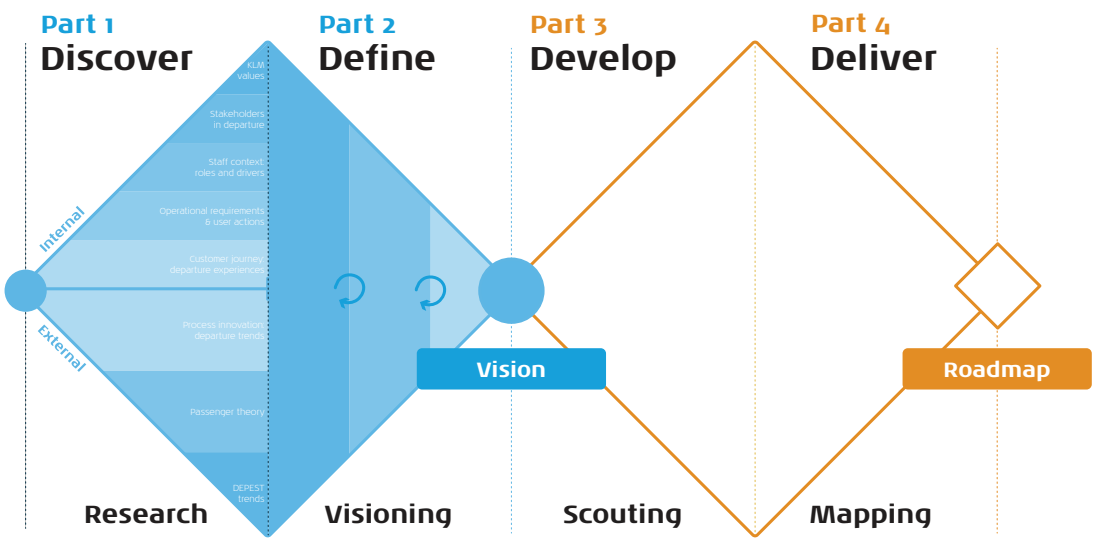
Self-managing Hall Intelligence Recognizing Live E-dentities
What makes all this possible is an automated departure hall check-in mechanism which is enabled by a doc-less identification system architecture. Sensors and advanced software allow passengers to continue to security at walking pace, and with their passports in pocket. By use of biometric data, virtual identification documents, presence-enabled service touchpoints, and self-service QuickDrop technologies, customers receive personalized departure services as they are recognized upon entry. In finding the right phrasing to describe the automated hall check-in intelligence, many word combinations were considered. The SHIRL-E acronym was designed as an internally recognizable name for a fuzzy collection of future technology solutions.

Currently, a clear path towards actionability in vision creation is missing (paragraph 1.2). A road towards the future vision is needed by business development teams to create new value in departure.

04 Design challenge

This is the halfway point of the research. Now that we understand the drivers for future value of passengers in departure and know which three key future vision pillars exist, it is time to define the design challenge for Part 3 (Develop) and Part 4 (Deliver).

Chapter 4 offers a short introduction to the design activities in the second diamond (figure below), in which the vision is transformed into a roadmap and innovation program overview. The chapter introduces the objective of the research: to pave the road towards a future approach and reaching visions, and bridging the gap between future desires and now-actions.



4.1 Achieving the vision

This paragraph briefly explains the focus of Part 3 and 4 of the research, and provides an overview of requirements for the roadmap deliverable.

4.1.1 Designing a roadmap

We have learned that the airline could improve the customer departure journey by facilitating quick, simple one-touch self-service touchpoints for departure actions, by empowering an extraordinary staff which creates meaningful departure experiences by proactively approaching guests making use of their data, and by building an automated hall check-in mechanism for back-end processes allowing for doc-less identification, walking pace passage experiences with zero waiting, and personalized departure hall services. The transformation program for departure would start with determining the newly envisioned service requirements, shaping renewed touchpoints, and researching the technology needed to move forward in business development (while remaining in the reconnaissance phase). Naturally, you first have to know what you are going to build and prove that this leads to a desired future vision, before pitching the vision openly and persuading stakeholders.

By means of a roadmap deliverable, the design objective is to capture the ambition and research of Departure of Tomorrow in an artifact to become able to plot a course in business development, to present an innovation program strategy to others, and to induce a desire to cooperate and join in on the project in-company. Whereas Part 1 of the research set out to research the context and learn how KLM can improve the customer journey and Part 2 extracted a future vision from the work, Part 3 will cover a technology and idea scouting for this vision journey that will serve as the bricks in the road towards the future. The objective here is to develop a structured yet broad approach to new business ideation. Main themes in the ideation approach will become pathways to Tomorrow, and offer the strategic planning input needed for moving forward deliberately and sensibly. By mapping the pathways and including ideas for departure in a visualized roadmap, all design research, visioning findings, design decisions, and idea developments should become insightful in Part 4.

4.1.2 Requirements for delivery

Chapter 7 will in Part 4 provide roadmap designs and explain the approach and outcome. Design requirements for roadmapping, based on context of use, visioning input, and methodology, are stated below in order to be able to test whether the roadmap output matches the intent and strategy of the communication in the end. The requirements were set in collaboration with the case-owner and mentor.

Context-specific requirements

- understandability: comprehensible for a multi-stakeholder audience inside the company.
- brevity; not much time of managers is needed to study and discuss the roadmap deliverable.
- actionability; the roadmap offers design ideas that are pragmatic and applicable in operations.

Visioning requirements

- future orientation; vision outlook is communicated and accentuated in the roadmap.
- approach; demonstrate a progressive step-by-step strategy to reach vision.
- timeframe; explain development of ideas and ambition over time for (R&D) managers.
- Departure of Today; include projects and ideas of today as well for recognizable elements.
- Passenger of Tomorrow; include changing value for customers.
- implications for operations: include future roles and authority of staff, as well as resources.

Methodology requirements

- clarity; a roadmap needs to be clear and unambiguous in its messaging.
- value drivers; pathways to a vision originate from customer needs: convenience, comprehension, choice, confirmation and care.
- magnetism; draw stakeholders in by highlighting the desirability of the vision.
- artifact; choose a fitting vehicle for communicating the strategy and develop an appealing visual embodiment.

Next, the design decision for Part 3 is concluded.

4.2 Design decision

At the halfway point of this research, a scoping decision is in order. A process is needed for designing the future. This is why the remainder of the research focuses on forming the strategic objectives that would deliver us a structured approach to reaching the three component vision. Roadmapping on a strategic level requires a controlled scope. Practical consequences of changes in the spatial environment are considered. However, remodeling departure hall infrastructure and leveraging perception of waiting in new concepts will not be part of the research as this can be a project in itself. Also, these would better fit the interaction and architectural design disciplines. Transformation strategy projected over time is provided, but departure hall infrastructure decision-making will not be part of the research.

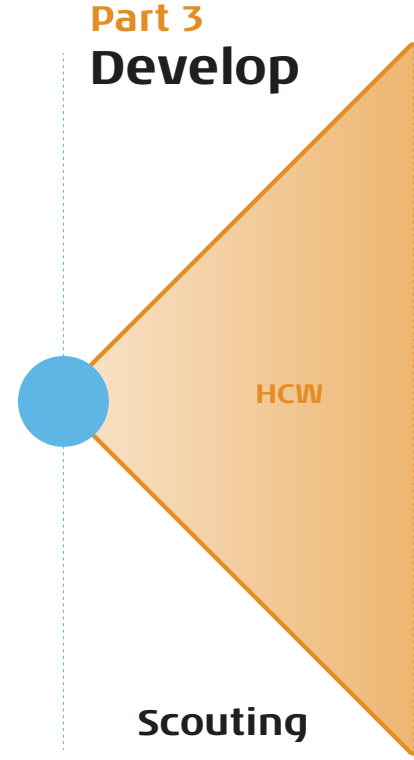
Similar scoping decisions hold for staff and departure operations. The project cannot provide a concrete gameplan for staff deployment in coming years. However, the strategy can provide vision for a Staff of Tomorrow. Part 3 will explain improved staff interactions in the future. Diverging design research of Part 1 showed that customer action communication is crucial in swift and worry-free customer journeys. For Operations of Tomorrow, a strategy is provided as well. Concrete decisions from gameplans, again, will be another project in the near future. Recommendations for building of Departure of Tomorrow, leveraging the perception of waiting, introducing a new staff proposition, researching better company communication for the departure micro-journey, as well as facilitation of special segment full service will be further explained in the discussion (Chapter 8).

The focused design challenge is to design a roadmap that explains future journey interactions and introduces those combinations of concept ideas which can pave the way towards the three future vision propositions of value: availability of facilitated one-touch self-service touchpoints, extraordinary staff-customer moments of interactions in departure, and a hall intelligence proactively cleaning passengers and recognizing live e-dentities.

05 Road to Tomorrow

Now we know the three strategic goals of the future vision, it is time to seek new technologies for new departure processes. After all, before it can be built, a future departure setting has to be researched and designed.

Part 3 (Develop) is covered in this chapter. It consists of technology scouting. Scouting offers insight into available and upcoming technologies that relate to the scope. A dedicated group ideation session with the taskforce followed by idea mapping creates a selection of concept ideas for short- and long-term. The chapter ends with a reflection of the implications the vision holds for staff and operational workers.



5.1 Tech scouting

This paragraph explains the benefits of scouting new technologies in roadmapping, and suggests a partitioning strategy to approach scouting of new technologies for the different departure sequences. Input for ideation dialogue in the next paragraph is generated.

5.1.1 Scouting as a strategy

Innovation in aviation has always involved new technologies or optimization of existing processes (Franke, 2007). Developing new business propositions and deciding on the technology modules can lead to long and difficult conversations when treating complex, fuzzy systems as one whole. Design roadmapping strategies aim to, in the second diamond, look specifically for rising technologies and product ideas for each product component.

In redesigning touchpoints in a multi-location journey, strategic partitioning can help in managing the search for new ideas and to scope findings to a particular attribute of the product, which in our case is the entire journey of departure. By using figure 2.4 from page 20 (reintroduced in figure 5.1), we find that we can divide new technology ideas over the five established journey sequences (home preparation, transportation, terminal entry, document check, bag drop). In the future, sticking to this approach in development ought to provide the overview, ability to focus on parts of the challenge and innovation scope, and assign value to ideas.

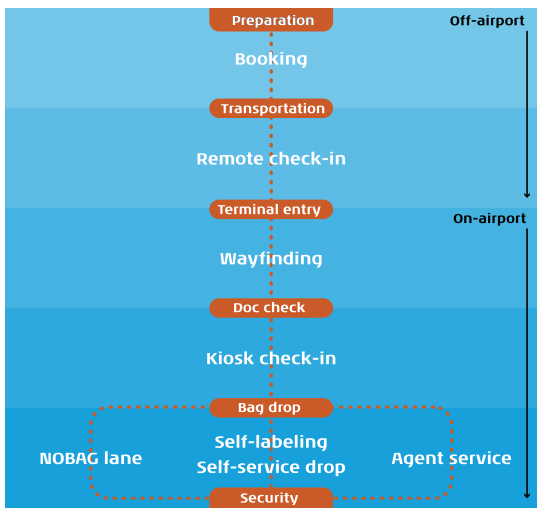


Figure 5.1: partitioning towards tech scouting

5.1.2 Scouting insights

Below, emerging technologies in the marketspace that could contribute to reaching a seamless experience are provided as input for idea mapping of paragraph 5.2.

Off-airport preparation

After booking, the sequence of preparation for departure begins. Customers need information concerning check-in, bag drop availability, and departure day planning (Appendix D). Value mapping (page 46) showed that time and stress relief benefits can be achieved by relocating the many actions performed in the departure hall to preparation sequences in the journey.

Retail settings in past years have shifted from physical stores, to consumers' homes, on-the-go locations, and hybrid forms we have learned to describe as phygital sales environments (Hagberg et al., 2016), due to consumer connectivity, transparent inventory communication, intuitive digital sales environments, and home delivery. Extended self-preparation actions can offer customers more convenience, better comprehension, and additional choice in the journey.

Self-preparation actions can serve as a customer strategy for seamlessness, widely adopted by the general public. Examples of these actions are reservations (timeslots) in transparent restaurant, cinema, or hotel booking systems, online home food delivery applications including menus, and weather predicting and planning applications for day planning, road navigation, or public transport planning. KLM already offers self-actions at convenient moments in preparation: online check-in and boarding pass preparation.

Boarding pass design is an interesting topic when discussing convenience (no hassle preparation for clean boarding) and comprehension of processes (understanding processes and feeling informed). Figure 5.2 visualizes Paul Akers' lean boarding pass design by Fastcap (Trachilis, 2014).

Figure 5.2: Paul Akers' lean boarding pass

Fastcap (2014) created this boarding pass, designed for humans rather than scanners, while respecting the principles of lean development: safety, quality, simplicity, and speed. In aviation, lean design has the potential to make preparation easier and understandable, and operations far more efficient (McKinsey, 2018). Other examples of (intuitive) instructions are transparent inventory information systems of companies such as IKEA and clothing stores. The Swedish multinational is increasingly engaging in AR/VR communication via online. An example is measuring furniture in real spaces in real-time using AR enabled devices at home, allowing for a better informed pre-purchase preparation.

Customers will demand a choice in preparation to perform checklist actions. Rather than boarding pass printing, these actions should concern digital boarding pass innovations. Biometric self-enrolment is coming, as IATA is ensuring that regulation will come into place soon (Biometricupdate, 2019). Innovations such as biometric selfie requests from the KLM application for single-token enrolment could be horizon ambitions. Similarly, choices in self-labeling emerge as electronic bag tag reading becomes available (British Airways, 2019; BAGTAG, 2019; One Bag Tag, 2020). Although six years later than announced, British Airways is trying to match Qantas' success with the 2011 Q Bag Tag. The Australian airline is the only large successful airline to achieve product adoption.

Customer service innovations for queries are A.I. chatbots, which are becoming increasingly sophisticated and human-like (Medium, 2019).

Transportation

An interesting space exists between leaving the house and arriving at the airport. Traditionally, luggage follows the customer's journey to end up at airport luggage processing systems. Also, check-in automation can smoothen the journey.

Luggage home pick up propositions have been tested by businesses such as PostNL and Travel Light since 2017, but have been discontinued. As of now, home pick-up and destination delivery remains a developing market, but is promising as 46% of passengers would prefer their bag to be delivered directly to the final destination if they could track it (IATA, 2019). SITA futhermore expects off-site bag drop offerings at hotels, stations, airport parking lots near airports to rise from 24% to 51% by the end of 2022 (2019). Improving innovations for bag identity (RFID electronic bag tags) and tracking capabilities following IATA's Resolution 753 for mandatory tracking at airports, loading and transfer locations, will be interesting to observe in coming years.

Geo-fencing, or targeting the GPS location of a consumer's device could serve as tactics to pinpoint departure customer locations and letting them know what actions still need to be performed (location-based check-in or remote bag drop) and where they are available at off-airport locations or via digital. Geo-targeting has already been used for data intelligence at Schiphol since 2015, relying on 2000 beacons transmitting a BlueTooth signal to devices. The technology is used for flow research and improvement of infrastructure.

Terminal entry

We have found that airport wayfinding can be a Herculean task for stressed passengers multi-tasking. A strong need for understandable processes and overseeable airport lay-out exists. Interestingly, Mijksenaar's black-and-yellow signage designs at Schiphol (1991-now) are world-renowned as the standard of good airport wayfinding treatment. Airlines and airports are searching for ways to streamline airport processes and to make actions easier to lower customer stress when they arrive, in different ways.

We found that removing actions from the departure space naturally eases journeys at the airport. Off-airport actions via digital could greatly improve wayfinding preparation in the form of visual process pushes, timeslot invitations, ancillary offerings, or odd-sized appointments.

Schiphol has, for almost thirty years now, been engaged and leading the pack in wayfinding design. Highly innovative on-airport wayfinding innovations however exist. During CES 2019, Delta Air Lines revealed their Parallel Reality sign innovation (figure 5.3). Expected to be introduced in Detroit late 2020, customers can expect personalized wayfinding information looking at the same screen as fellow passengers, seeing different information at different angles. The screen technology displays an adaptable viewing experience as customer are recognized through biometrics; a great example of first non-glasses Augmented Reality innovations. This market of AR/VR glass technology is expected to grow over $30 billion by 2030 (IDTechEx, 2019).

We learned from paragraph 2.4.2 that airports are transforming their interior design to offer stress relief by investing in landscaping (South-Korean Incheon), as well as kinetic art, displays of traditional culture, and cleaning. Interestingly, autonomous cleaning equipment (ACE, figure 5.4) is deployed at Changi for sanitation purposes, entertainment (currently as a fun novelty to look at) and as a showcase of innovation ambitions. Additional functionalities for customer support such as directions, monologues and jokes, and musical serenades are in the works as well.

Figure 5.3: Delta's Parallel Reality (2019)

Figure 5.4: Changi T4's ACE (2019)

Doc check

Innovations such as Parallel Reality can help in creating an informed routing. One step ahead of this, is logical routing: the way airports leverage social behavior and subconsious decision-making of humans to create good flow. Nudging is a persuasive strategy to alter people's behavior in a predictable way, without forbidding any options or changing economic incentives (Thaler & Sunstein, 2009). Banklining at Schiphol is a form of nudging. Figure 5.5 displays another good example of nudging in designing physical spaces. Nudging in physical spaces often involve floor designs, such as prefered waiting distances in a queue. However, they could be quickly made by placing banklining towards a specific place, or placing a strip of tape on an object. Examples at the airport are the infamous fly (now a golf hole) in the men's urinals, as well as nudging targeted towards smokers outside of Schiphol Plaza: guiding them to a designated smoking area.

Nearly all routing segmentations in airports are designed deliberately and guide passengers to where they need to go. This is why check-in kiosks are located right before the entry point of the departure bay. Common Use Self-Service (CUSS) kiosks have been around since 2003, and make check-in self-service possible for passengers. At Schiphol, you will find a wide array of different kiosk types (including KLM's blue SITA kiosks), displaying different screens and menu choices. At innovative airports such as Changi and Heathrow, discussions and development of uniform white-label kiosks are planned. Changi T4 features a proprietary self-developed kiosk design which prints bag labels and boarding passes (BTAsiaPacific, 2017). As mentioned, Qantas committed to next-generation ten years ago already, by introducing self-service check-in columns using frequent flyer cards (by Marc Newson). The airline accurately anticipated swiping, and single one-touch interactions to emerge. Swiping the cards, they would become boarding passes and a text confirmation message to a registered phone number concludes a swift and confirmed check-in.

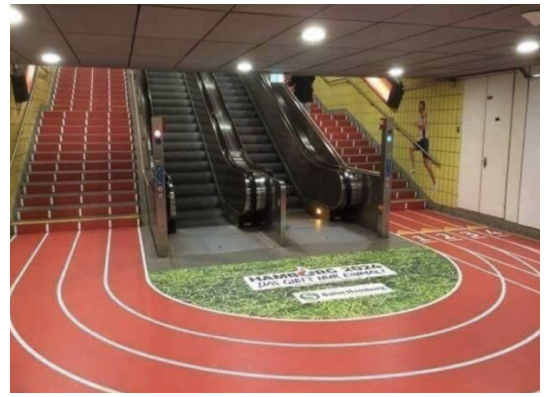


Figure 5.5: applied nudging for promoting stairs

Mobile desk capabilities were introduced using the CUTE cart. Disruption at Schiphol following the fuel pump issues of August 2019 proved that the Appy2Help mobile tablet application can be used to be of assistance to passengers on-the-go: viewing customer booking information, re-booking via digital, and checking-in customers for printing boarding passes via mobile printers. Upcoming mobile identity verification technologies are virtual identification (personal communications with a Senior R&D Advisor at the National Office of Identity Data, Dutch Ministry The Hague. 27-9-2019). vID will bring the passport to smartphones. Comparable to One ID initiatives from IATA, passengers will in the future experience a document-free process based on identity management and biometric recognition (2019).

Bio-enrolment at (off-)airport kiosks will become possible, as well as further adoption of the biometric selfie. As of now, use of biometric data remains scrutinized by critics, but industry is picking up the technology at a rapid pace. The global market for mobile biometrics is forecast to grow at 31 percent CAGR (biometricupdate, 2019). Another indication of devices taking over (concerning identity management) is an Apple patent for CarKey (U.S. Patent No. 20190039570, 2018). Not only opening locks, but tailoring an entirely personalized driving experience by logging on is in the works for automotive, much like user profile choices on a shared family computer.

Recognition for check-in using biometrics and smartphones is tested around the world. "Known-Traveller Digital Identity" is tested by The Netherlands and Canada. KLM has been testing "Happy Flow" biometric enrolment for some years now, in cooperation with Vision-Box (Appendix F). Delta/NEC, Vision-Box, and others have progressive ambitions for recognition throughout the entire journey, such as bag drop, lounge access, and boarding. Dedication to integrated (hidden from sight) scanning technologies in the form of arches (people) and SSDOP entry points (baggage) can be concluded from Delta's Parallel Reality promotional materials (2020).

Bag drop

KLM was a pioneer in 2008 introducing SSDOP. In coming years, the airline has an opportunity to recommit to this ambition by refurbishing existing departure spaces with next-gen SSDOP systems, implementation of electronic bag tags, and smart labeling at kiosks or off-airport locations. Different options for SSDOP are available such as uniquely designed DOPs (Hamad Airport) that fit the interior design seamlessly, or modular systems such as SITA's Scan&Fly (using hand scanners), and SITA's Drop&Fly (with integrated scanners reading labels) and systems from many other suppliers. A choice has to be made which type of drop lay-out creates the best (baggage and customer) flow, and customer experience. New machinery would also be ready for matching biometric tokens with luggage, allowing for QuickDrops, and full device track-and-trace confirmation activation.

5.2 Idea mapping

This paragraph explains the approach of transforming the input of design research (Chapter 2), user value extraction and future vision components (Chapter 3), translated to the established design decision (Chapter 4), into ideas for Departure of Tomorrow.

5.2.1 Method

In focus meetings in which future design idea requirements are set, participation of stakeholders is important (UX Collective, 2019). In order to organize a multi-disciplinary focus group, Customer Experience managers, Ground Services process managers supported by shiftleader agents, managers from IMO and KLM X, and Business Development were invited and sensitized (prepared for ideation) via mail.

The goal of the design sprint at KLM HQ (figure 5.6), was to build on context research of Part 1 and future user values found in Part 2 (5 C's).

Figure 5.6: day of idea mapping @HQ

After a quick introduction of all the preparation work (user insights, journey painpoints, scouting highlights) by the creative facilitator (author), an analogous brainstorm, as described in paragraph 3.1, was held. This allowed the stakeholders to get on the same page and to do a braindump by discussing all preconceived opinions on the topics of departure. Next, a fun and goofy visioning exercise (newspaper 2035: see Appendix I) required the group to imagine KLM products in 2035, which created a forward-thinking group ideation mindset in preparation of the afternoon exercise.

After a break, a warm-up sketching exercise started the second part of the focus meeting. Envisioning the perfect future departure journey, the Do's and Dont's of departure were discussed. Interestingly, it was a lot easier to take the inverse of horrible solutions to departure service and touchpoint availability, to get to value creation for customers. A final Crazy 8 individual idea sprint wrapped up the idea generation.

5.2.2 Group clustering

The individual ideation by means of Crazy 8 yielded many different idea sketches. The group clustered the individual ideas. As expected, there was some overlap between the results following the dialogue of the afternoon session. Also, ideas for both short-term, and long-term departure innovations were drafted. Session output were ideas clustered to: customer needs (stress and concern relief), staff needs (empowerment), KLM departure lay-out, KLM back-end processes, and brand message throughout the journey.

5.2.3 Roadmapping reflection

As the second group activity in roadmapping, idea mapping exercises built upon the research of Part 1 and user value mapping and visioning outlook of Part 2. It appears that diving into the ideation space can be highly inspirational for stakeholders (figure 5.7), when the usefulness and expected outcome of creative sessions are explained well and facilitated in an entertaining way. Structural planning of idea mapping exercises could be a way of having more effective meetings (or rather: sessions!) in visioning.

It was clear there was some discomfort in ideation by guest agents; this is okay. KLM X design managers participating helped to slowly but steadily discover the value of ideas by engaging in creative dialogue. Continued fuzzy conversations help in disentangling front-end visioning challenges with the aim of discussing and selecting ideas of Tomorrow.

5.3 Design ideas

This paragraph will uncover the ideas of Tomorrow. Starting with a statement about old solutions to departure challenges, this paragraph will introduce short-term fixes for Departure of Tomorrow and long-term solutions for departure visioning challenges.

5.3.1 Departure of Yesterday

If there is a Departure of Tomorrow, surely there must be a Departure of Yesterday which links to Today's Departure. The taskforce realizes that some current ideas and that today's standards of departure infrastructure and innovations in place (creating departure value) have become outdated or are being surpassed by competition.

The vision does no longer include a full desk infrastructure which involves waiting and utilizes traditional desk PC tooling for check-in processes. As SkyPrio's journey target of 0 minutes will hold for any departure guest, reactive banklining will also be a thing of the past. Current unfacilitated fastlane solutions for NOBAGs can be improved, as well as slow kiosk processes and other long hardware menus. We have seen that staff interaction changes, which means a stressed and demoralized staff cannot remain.

On-airport exclusive customer actions will not relieve flow stress in departure. The same holds for in-sight technology or construction and maintenance. Finally, an unwillingness to retire obsolete process solutions and hardware in the graveyard, or the inability to overcome internal political mechanisms, sustain Departure of Yesterday.

Figure 5.7: stakeholder ownership of ideation

5.3.2 Departure of Today

Some of the ideation output and prior ideas of the taskforce are not necessarily prepared for another ten years in use, but can be effective in solving flow in coming years (short-term). Additionally, these ideas can be useful in learning about new design directions and preparing for the long-term. This concerns process transformation but could also be lessons in (external) dealmaking. An example of short-term quick fixes is illustrated in the CAD-rendering below (figure 5.8). The QuickLabel print column concept aims to in the short-term make labeling a 1-minute customer action (at remote locations - in order to alleviate flow stresses in SSDOP queueing).

Figure 5.8: short-term solution for QuickLabel

5.3.3 Departure of Tomorrow

Value mapping shaped the drivers of future satisfaction for users. Idea mapping delivered idea concepts from these values for construction of the roadmap. The next eight search fields emerged: faster authorization for travel than current document upload and check-in, passage with a digital identity, better guidance in self-preparation off-airport, changed moments of ancillary offering, quicker verification of identity than kiosk menu, fast and more innovative labeling, new services in the departure hall by means of proactive agent assistance, and a solution for bag drop. The next pages explain eight solutions.

1) Automated Doc Check
Shortened touchtime
The idea of Departure of Tomorrow is built upon the assumption that future hall-monitoring sensoric systems will respond to the presence of recognizable passengers who carry a virtual live check-in request as they enter departure hall terminals.

Similarly to digital grocery shopping environments as explained in Chapter 3, systems are automatically matching customer documentation uploads with immigration and visa checking requirements. ADC rollout is a first step towards quick passage.

Check-in requests sent by KLM could become check-in confirmation messages: the passenger is proactively checked-in and expected to visit.

Becoming even more hassle-free, third horizon solutions are presence check-ins by use of e-dentity. In the future, virtual IDs stored on devices will become mainstream in precise ID verification. For many different kinds of transactions, such as banking, door locks, and SSO, identity is used.

2) Biometric path for Seamless Schiphol
Shortened touchtime
A need for quick passage at landside exists. A large portion of users will want to self-serve in the near future. KLM has to decide on the tech with Schiphol. Implementation of biometrics speeds up departure, lounge access, and additional gate passport checks, as well as opens up new products and services opportunity. Home preparation to fastlaning offers customer a choice to go through departure quicker.

These preparatory steps of users would be: providing biometric data which can be compared to identity information stored in passports and uploads. Acquisition of kiosks and smartgates suitable for walking pace facial recognition needs to be discussed between stakeholders.

Third horizon solutions to biometrics offer customers a walk-in ready-for-travel experience, with automated check-in requests of virtual ID.

3) Wayfinding process push
Journey guidance
Process communications for requirements in the near future are conveyed better through inviting, visual, appealing pop-ups and animations sent to customer devices. This way, stressed customers are assured in their journey planning. Prior to or during transportation to the airport, departure customers can be reminded of what's in store for them and actions that remain.

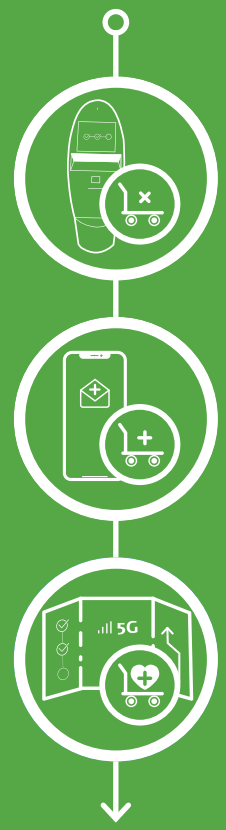
Building on increased understanding in self-preparation, kiosk actions are finding its way to consumer devices at own convenience. Interactive instructions let customers prepare themselves at a more convenient time in the journey than during a stressy on-airport departure. This way, additional product sales can find its way to devices as well, branded as available ancillaries.

Personalized departure ancillaries are third horizon departure solutions which fit the end-to-end personalization ambition inside KLM. Combined with AR/VR personalized (wayfinding) departure instructions in horizon 3 gives way found.

4) Ancillary channel changed
Departure certainty and purchasing
Self-prepared, walking pace departure journeys will no longer send as many customers through the kiosk KLM shop as is the case now. Initial departure speeds costs will be decreasing kiosk sales if KLM wishes to manage good flow.

The point of sale at kiosks are good for KLM as people traveling are generally in spending-mode. However at this moment, any passenger will see the entire menu at kiosks, which is perceived as a hassle. Happy customers spend more at airports (Collinson, 2019). Relocating the ancillary channel to devices offers the opportunity of being able to reaching people in their lives whether off-airport, during transportation, or even on-airport to sell an additional (personalized) offer which enhances their journey.

Personalized ancillaries on next-gen customer devices are third horizon solutions. Smartphones will go through major changes as bezelless OLED designs have become possible already. Leveraging these changes in time creates value.

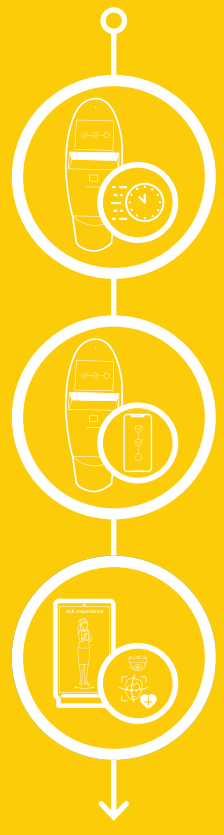


5) QuickSkip kiosk interaction
Shortened touchtime

Kiosks as a result (4) will no longer send passengers who are in a hurry through the entire menu. QuickSkip functionalities will show the required menu screens for departure actions if not requested otherwise.

Second horizon solutions: device kiosk environments (4). This way, the sales channel can also be brought to on-device environments, better matching comparable retail sales interactions (one-touch mobile payment). Kiosk or application software is prepared for customers performing their identification tasks, such as bio-selfies, as remaining tasks are presented and prioritized. Clear visual instructions make them self-explanatory.

Full screen next-gen interactive kiosks will be installed. The departure hall intelligence (1) creates an overview of customers arriving, walking around, and leaving the hall. It can activate a virtual service host at the customer's location. Virtual agents recognize customer's remaining departure service requirement, on- and off-airport (8).

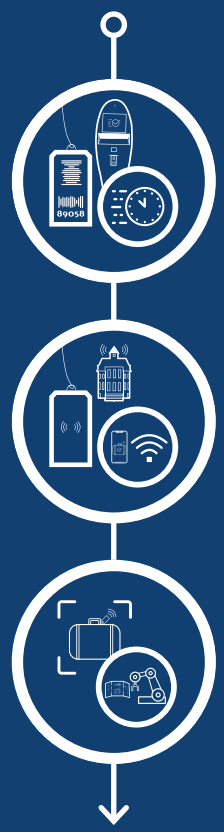


6) QuickLabeling
Simplified touchpoint

Label&Go testing suggests that labeling at the kiosk rather than in a busy and stressy SSDOP queue can improve departure. Labeling innovations may improve throughput and customer satifaction to a great extent.

Labels are important as barcodes provide recognition in airport baggage systems. In an even more self-prepared journey, customers in departure arrive labeled and ready. Electronic bag tag projects have been tried before (2014 Flying Blue eTag and eTrack or Samsonite's Track and Trace suitcase), including in-case transmitters. Hole in Ground drop interactions on anywhere locations (8 - next page) rely on RFID input. Drop confirmation is key at self-service touchpoints.

Automated labeling in next-gen SSDOP service points on anywhere locations could make luggage drop truly quick, as well as offer complete track-and-trace. Recognition technology links customer to luggage item and labels automatically, and could even use biometrics for luggage.

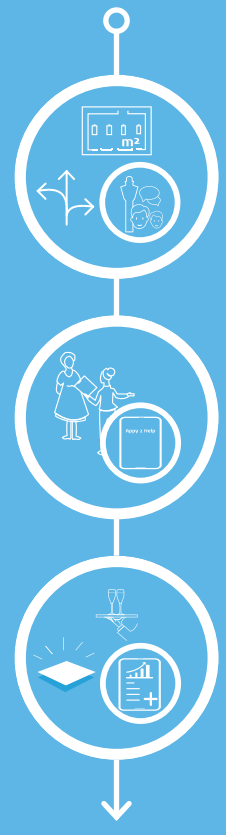


7) Mobile agent hospitality
True care and recognition

Intermediate desk lay-out is defined, as an overnight switch to a deskless departure hall poses many challenges for flow. Because of the many stakeholders, an integral dialogue is in order with KLM managers, the airport and external experts.

Access to passenger information systems (1) needs to be made mobile as desks will be removed over time. Appy2Help is an internal digital platform which can facilitate remote check-ins on iPads. Empowerment of departure hosts needs to be realized by means of training, new tools and gear, and befitting mandate for decision-making. Hospitality hosts welcome customers using customer profiles as a starting point for true care.

Ultimately, an open space for departure enables customers to perceive waiting time in departure differently: third-gen interactive kiosks (5), personalized virtual agent experiences, appealing interior designs, Hole in Ground Quick-Drops (8) and assurance from welcoming hosts, who recognize guests through data collection.



8) Remote quick bag drop
Simplified touchpoint

Capacity of departure hall baggage handling throughput will soon be reached. Solutions for drop remotes have been researched in KLM: remote drope at the airport's parking spaces and full service home pick-up (Door 2 Arrival Airport). 2020 will be a year of creating partnerships for remote locations offering drop diversity.

Further diversity of drop locations on journey touchpoints could create stress relief value for customers and a logistic relief for departure infra. Customers without luggage have a lower service demand in the departure hall. Drop confirmation would at first come from agents at drop locations, before shifting to personal device pop-ups.

Luggage-as-cargo (or AnywhereDrop) is a third horizon solution to bag drop. Self-tagged and (ahead of time) connected luggage offer certainty of readiness for self-managed drops at home, in supermarkets, or at stations. Smart sensors and interactive screens at drop locations respond to users and provide confirmation support.

Introducing horizons
The observant reader has recognized a clear pattern of three generations per concept idea. Ideating towards a future vision of a recognizing and self-managing departure intelligence, it became clear some intermediate versions of this automated yet facilitated departure hall exist.

A first horizon explains all preparatory conversations and projects that managers have to kick-off in 2020. As KLM is not the only decision-making party, the creative dialogue will need to continue with external partners such as the airport and new business partners who will be able to produce the technology and new process solutions. Horizon 1 is referred to as: destressing departure infrastructure.

All idea circles on the second level (visualized on previous pages) demonstrate a second horizon design value creation: shaping a free-flowing passenger experience environment. This horizon focuses on next-gen self-service interactions at the airport and at journey-based locations.

For the future vision to be realized, new technology for automated processes needs to be installed. A seamless experience with a self-managed flow needs eyes, ears, and a brain. Horizon 3 aims to create an interactive and sensing departure hub using beacons and sensors for intel. Figure 5.9 demonstrates how the horizons facilitate a path towards a future vision. Departure of Today solutions are value enhancements. SLC 2 shows DoT's user-centred solutions for flow. Leading up to the future vision, SLC 3 shapes the Departure of Tomorrow technology value and long-term business model.

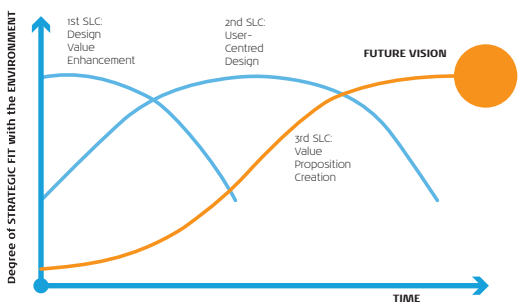


Figure 5.9: strategic life cycles of horizons

5.3.4 Time pacing
In comparison to start-ups, early adopters, and the most progressive and innovative actors in aviation (paragraph 2.4), KLM displays an innovation lag because of uncertainty, operational constraints and internal politics. This is not changed overnight, nor has to be. KLM can continue to purchase proven technologies at a moment in when company vision is clear and in which customer adoption probability can be better anticipated.

However to "be the most innovative", innovation programs have to take shape soon. Some of the future ideas of Departure of Tomorrow are already explored by competitors (paragraph 5.1). For this reason, timeframe of DoT is reduced from fifteen years to ten years. Also, roadmapping timing for all 24 ideas has been estimated based on this current availability, current R&D news coverage, expert opinions, and horizon fit.

5.3.5 Roadmapping reflection
A forward-thinking mindset came with the creative dialogue of idea mapping. This mindset is important to capture in the roadmap deliverable. Departure solutions that used to work, but cannot create new value for customers anymore need to be sent to the graveyard. These involve traditional desk lay-out, reactive banklining, and old process among others. Short-term quick fixes have the potential to speed up departure in coming years. Figure 5.7 demonstrates that these initial ideas would also need to be reviewed for continued added value after some time.

Departure of Tomorrow is built on eight new concept ideas. The eight ideas offer 24 horizon solutions for three different time periods before the future vision is made reality. Over time, these will transform the existing space into a corrected and destressed departure infrastructure (SLC 1 - decision making), a free-flowing passenger experience hub (SLC 2 - self-service flow), and an interactive & sensing departure environment (SLC 3 - beacon and sensor installment for live data collection). These intermediate vision horizons lead to the future vision end state established in Chapter 3: a recognizing and self-managing departure intelligence.

5.4 Staff of Tomorrow

This paragraph adresses the changing responsibilities for staff in the future. By removing traditional desk infrastructure, many more consequences need to be considered.

5.4.1 Proactive service
Changing departure touchpoints by means of developing the concept ideas of the previous paragraph means changing agent-customer interaction greatly. Therefore, the job description of agents cannot stay the same.

KLM has an opportunity for staff to increase welcoming standards in departure. The KLM product of air travel for most customers becomes human for the first time in the departure hall. A correcting staff welcomes passengers at desks and solves their check-in problems for them. The airline wishes for customers to "be touched", and experience a warm and personal journey. A future mobile agent will act as a coordinating self-service assistant, before becoming a true proactive welcoming host in horizon 3. What differentiates a good host from a bad one? By examining areas of business known for hospitality (in literature) we find these qualities.

A look into social science research helps to understand the psychology and social constructs of hospitality (Lashley, 2008) and not unimportantly: the usefulness of technology as a tool for improved host interactions (Kimes, 2008). Authentic hospitality would need open, empathic, personal, confident, authoritative yet approachable, and energized agents at departure touchpoints.


Figure 5.10: happy staff; a happy production

5.4.2 Link to company strategy
As the literal face of the company (figure 5.10), the state of mind of an agent should be important in KLM. KLM is proud to have taken responsibility for the vitality of staff. What KLM needs from the staff, and wishes for the person behind the employee, is an energetic, optimistic, worry-free, belonging, and work-life balanced frame of mind. Recently, health analytics for rest, reflection, and mindfulness were introduced.

What a future departure workforce needs are investments in a youthful, efficient yet human-centred, inclusive, and modern staff which communicates brand characteristics; empowering to succeed and to go beyond. And to possible include some Asics shoewear (paragraph 2.1.4).

5.4.3 Roadmapping reflection
To be a floorwalking agent; it is not any easy job. However, it is a very important job with a very important objective. Welcoming customers at the first physical human touchpoint is the first experience passenger have in their traveling journey.

A lot will change for agents at Schiphol because of Departure of Tomorrow. Instead of negative implications, these changes can be approached as opportunities for staff and for the KLM product in departure. Staff will become mobile, hospitable in engaging with customers, freed from (the safety of) the desk, be standing and walking all day, as well as assisting at self-service at Hole in Ground bag drops. An increased demand for staff capabilities may lead to different future hiring strategies, new training programs, work flow, gear and wardrobe, needed relaxation spaces, as well as a new attractiveness of the job.

After the research, the roadmap may be used to approach staff conversations with stakeholders. Therefore it is wise to include the changing function and ambition for staff, and meaning of the job, which means visualizing the correcting, coordinating, and proactive servicing outlook for staff responsibility in the roadmap design.

5.5 Operations of Tomorrow

This paragraph addresses the effects that a transformed departure infrastructure poses for operational workers: flow managers, baggage handlers, API regulation officers, and others.

5.5.1 Innovative solutions, out of sight

Reconfiguring touchpoints changes operational requirements. This means that, in order to come up with convincing future innovation programs, the effect on operational back-end processes has to be considered.

The two main operational (behind-the-scenes) responsibilities in departure are check-in security and baggage handling facilitation. Changing variables such as departure welcoming spaces, check-in channels and ways of processing APIs, monitoring technologies, special service welcoming, and for example bag drop entry point, affects managers and many workers on-airport.

A challenge towards the end of the Departure of Tomorrow reconnaissance phase is to convince internal employees that the future vision is the promised land; and that the roadmap approach is thé way forward. For this, managers need to be able to explain the vision, to pitch the unique customer benefits of the vision, and to believe that this should hold higher priority over all the other projects that exist inside the company. There is an opportunity for preaching efficiency, linking Departure of Tomorrow to the company-wide desire to operate more efficiently.

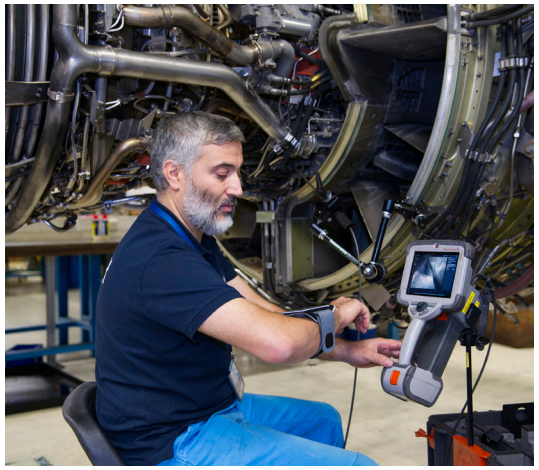


Figure 5.11: a need for work process innovation

5.5.2 Link to company strategy

To do this, it can be wise to focus on the efficiency-adding value of remote and quick processes in the roadmap approach. There is a need for smarter technologies which solve operational or logistical challenges (figure 5.11) and result in a lowered physical strain and better work hours for workers in operations. An ambition is to build the innovative solutions of tomorrow with modern tech hardware. Generally, operational workers are intrigued with new tech solutions or improved information sharing capabilities. There is an opportunity to tailor and renew internal hardware in co-creation (fixing problems at the root rather than fighting the symptoms). When going into the second horizon, it will be time to introduce inspirational money-saving operational concepts.

5.5.3 Roadmapping reflection

As there were Departure of Tomorrow implications for staff, there are implications for operations as well.

Moving forward it will become important to showcase the ambition of Departure of Tomorrow more openly and concretely. We have learned that stakeholder support (paragraph 2.1.4) is crucial to the success of transforming departure. Some internal friction regarding prioritization of projects is to be expected. A clear and inspirational artifact (supported by presentation slides and background research evidence) can take away doubts in continued creative dialogue with non-taskforce colleagues and new external airport partners.

Moreover, a major shared benefit should be captured in the roadmap design work; to streamline processes, to improve logistics and information sharing capabilities, and to put operational innovations in place.

5.6 Ideas for roadmapping

We now have learned what will be on the roadmap. Tech scouting and idea mapping yielded eight idea concepts, which over three horizons represent 24 Departure of Tomorrow design activities.

1) A need for faster authorization for travel than current document upload and check-in, suggests that the pace of ADC development has to be picked up. Automation of Document Check is vital to quick departure. Second horizon evolution offers customers a proactive check-in acknowledgement, taking away a departure action and providing certainty via devices. Ultimately, ADC sets the stage for PRECISE-id; a PREsence Check-In Supported by E-dentity. Customers need only walk in. Seamlessness of departure depends on API processing in back-end processes. Customers will only hear the confirming voice of KLM telling them that all passenger information and authorization are in order, in a comforting way. Passengers with additional required actions are directed to a third-gen kiosk for virtual assistance (5), and are able to connect with an empathic mobile staff at the departure hall (7).

2) For passage with a digital identity, KLM will meet with airport stakeholders to decide on the time-pacing and technology of fastlane passage. Using biometric recognition technology, waiting times at departure, but also in the lounge areas and gates are eliminated. How to deal with readiness of hardware and software, as well as customer acceptance needs to be discussed. Implementations of biometric capturing will be brought to next-gen kiosk interactions, and bio-selfies on personal devices will become mainstream. In the long-term, camera vision, sensor fusion, and artificial intelligence will create a live digital image of anyone present in departure spaces. Data capturing allows for a self-managed improved wayfinding (3), personalizable product offerings (4), and QuickDrops (6 & 8).

3) Confirmation (or assurance) is a powerful value driver. Journey guidance is needed by customers in self-preparation off-airport, and in wayfinding throughout departure. Shifting to a device channel allows for action prep, self-service during departure and ancillary purchase, as well as personalization.

4) Changing the timing of these kiosk ancillary offerings allows for menus to become quicker. At the moment, all kiosk customers will see the entire menu which creates a slow experience. Better moments for ancillary purchase exist in the self-preparation period via devices, and at least an offering of personalized ancillaries has to be created in the long run on interactive screens.

5) In the same way, a quicker verification of identity is needed. Currently, customers potentially swipe three times: for identification, verification and authentication, and possible a third time for additional checks. Departure passengers will arrive at the airport a lot cleaner in the near future (1). Quick kiosk menus which show only remaining actions to speed up flow and aid in stress relief, while the virtual KLM shop stays available on-devices. Third-horizon solutions are personalized 3GK-offerings.

6) Labeling is a hassle. There is a need for fast, more innovative labeling, in the form of QuickLabeling at kiosks or (remote) printing columns. In time, electronic bag tags make labeling a machine-processed task rather than a customer-performed chore. Customers receive notification of success instantly.

7) Desk assistance will be a thing of the past. A KLM agent is an open, approachable, and energized expert who is happy to help. Proactive agent assistance leads to new departure services such as a journey preparation chat, personalized additional product offers, or a facilitated Hole in Ground QuickDrop (8).

8) Finally, bag drop solutions are presented on- and off-airport. Bag drop testing continues with stakeholders. Predecessor tech to true Hole in Ground interactions are branded next-gen self-service DOPs at journey touchpoints. Ultimately, AnyWhere drops (Luggage-as-Cargo) become available.

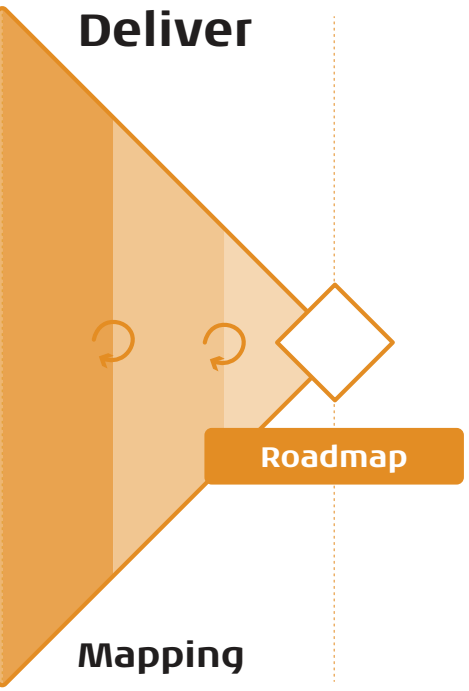
06 Pathway mapping

The third and final activity before constructing the roadmap is pathway mapping in which the themes of the design research and solutions of ideation efforts as an integral group are concluded and plotted.

Understanding design direction in innovation programs is crucial for convincing stakeholders to direct their actions towards achieving the ambition. By mapping ideas along pathways of innovation, communication becomes possible and the relationships between idea concepts reveal themselves.

Before becoming able to construct a roadmap, a final reflection of the creative idea generation is in order.

Part 4
Deliver



6.1 Themes in idea mapping

This paragraph explains important final steps that are taken before shaping the Departure of Tomorrow roadmap. These steps involve choice of artifact, a team extraction of strategic themes to learn what strategic drivers of Departure of Tomorrow are, an explanation of these pathways, and final decision-making for roadmapping based on pathway insights.

6.1.1 Choosing an artifact

According to Simonse (2017), many different manifestations of roadmapping and innovation program design can exist. In visualizing roadmaps, 2D poster designs are most common (hardcopy/digital) as they are recognizable, easily sharable, and can be made using most computers and design softwares. 3D manifestations in roadmapping are sometimes referred to as tangible strategies: or physical representations of abstract strategic plans. Inside KLM, LEGO blocks and analogies are at times used for tangible strategic dialogue. Other examples are architectural models or concept cars. Going even further, you could argue there are also 4D artifact manifestations: prototypes with a textured surface, strategies in fashion, or the positioning of an upcoming rockband envisioned over time.

The right choice of roadmap design is important as you must consider the stakeholders (Chapter 2), the information within the artifact, and the channel of communication. Preferably you would match these to the stakeholders'. This means that the usefulness of an artifact depends on the working environment of the user. In KLM, most meetings are supported by Office slides or Trello boards. For this reason, the roadmap design will be 2D for print and digital, compatible with PowerPoint and digital work environments.

Roadmaps can serve as boundary objects (Star & Griesemer, 1989; Carlile, 2002), helping members of different object worlds, thought worlds, or disciplines to bridge the gap (or boundary) between their respective fields, to come to a common understanding and be able to work together on a new project (Bucciarelli, 1989; Dougherty, 1992; Homburg & Jensen, 2007). Using both a strategic roadmap design for stakeholders who need quick understanding of vision outlook and strategic themes, and a tactical roadmap for full background information and R&D planning purposes, offers flexibility in sharing DoT in KLM.

6.1.2 Discovering themes

Strategic themes exist in the ideation output of idea mapping (Chapter 5). The ideas can be plotted into five strategic paths to innovation solutions.

1) Simplified touchpoints
KLM has to shape hassle-free, quick, and lean departure touchpoints. Unneeded additional departure actions of the past need to be removed from processes. Simplification involves reducing mandatory departure actions to a minimum.

2) Journey guidance
Customers are stressed. Customers are multitasking. Customers have a lot on their plate. KLM should take responsibility in preparing passengers for departure actions, offer instructions, and anticipate wayfinding uncertainty.

3) Shortened touchtimes
Connects with agents will need to be shortened for departure flow to be seamless and quick. Luckily, departure customers increasingly expect swift and worry-free processes. Automated back-end processes and quick, biometric passage allow for lowered service requirements in passage, and in short but meaningful connects (5).

4) Departure certainty and purchasing
Departure journeys are stressful and create uncertainty. Preparation and confirmation in wayfinding, process actions, and service activities reassure customers. Personalized branded additional sales make journeys more satisfying.

5) True care and recognition
Mobility of agent assistance opens up a path to new service experiences. Empowered agents will facilitate departure actions at quick one-touch touchpoints, provide stress relief and positive departure preparation, and in the long run offer virtual assistance experiences.

Simplified touchpoints

Key user value driver
Convenience

Rationale
Quick fixes for quick processes exist. The Label&Go pilot at KLM X showed that simplification of touchpoints (labeling at the kiosk rather than at a busy SSDOP touchpoint) was indeed faster and less stressful in multi-tasking environments such as the departure hall.

More lean user-convenient alternatives to existing interactions have the potential of improving nps, shortening time needed for actions, as well as lower staff requirement.

Ideas
QuickLabeling
Electronic labeling
Automated labeling

Remote drop
Journey touchp. drop
Luggage-as-Cargo
(AnywhereDrop)

Journey guidance

Key user value driver
Comprehension

Rationale
We have learned that customers during departure have a lot on their plate and are propelled by stress and todos. Although customers are in need of extensive guidance throughout the journey, it is of course not the customer's fault.

KLM has an opportunity to improve customer journey guidance with new tech on the rise.

Ideas
Process action push
Interactive self-service
AR/VR personalization

Shortened touchtimes

Key user value driver
Choice

Rationale
Offering swift passage routing for QuickSkip customers, self-service lanes can be made faster. This in turn will create the space to be able to offer care (5). Because speed was the name of the game, pathway 3 has more concept ideas than the other paths.

Ideas
Automated Doc Check
Proactive check-in
Check-in by presence

Biometric lane creation
NGK kiosk enrolment
Just Walk In passage

QuickSkip kiosk menus
On-device kiosk access
Virtual agents @3GK

Departure purchasing

Key user value driver
Confirmation

Rationale
"Sending passengers through the KLM shop before boarding" was an argument that popped up many times during group ideation. From a commercial standpoint, ancillaries are highly important in improving customer revenue. For customers on the other hand, departure certainty is what is important here.

However, currently a choice must be made to go for speed or for an extra sale at the kiosk. Preparing for a seamless flow and experience with renewed kiosks, this suggests a shift to device ancillary offerings. This device will also increasingly serve as a confirmation channel.

Ideas
Ancillaries removed from kiosk
Intuitive device ancillary sales
Personalized ancillaries

True care and recognition

Key user value driver
Care

Rationale
Last, but certainly not least. The human touch of KLM and the way customers are treated during their stay at the airport are one of KLM's most important resources.

True care is what KLM could offer in the departure hall by giving agents the tools to welcome customers in the best way. Empowered by passenger data recognition, departure servicing becomes proactive and swift, while remaining personal.

In contrast to the primarily process-minded solutions on the left page, departure certainty and departure care are best picked up by Customer Experience while remaining under the Departure of Tomorrow banner. Service propositions regarding the experience with staff require CX expertise.

Ideas
Departure of Tomorrow desk lay-out
Mobile agents servicing proactively
Hole-in-Ground (virtual) assistance

6.2 Decisions for roadmapping

This paragraph is a reflection point for translating pathways to roadmapping efforts in Chapter 7. How can a roadmap carry the research of Departure of Tomorrow? Who views the roadmaps? What do they value in operations? Below, choices for roadmapping are given.

6.2.1 Swimming lanes in an artifact

Visual roadmaps in 2D are typically built up out of swimming lanes, or visual parameters of strategy, in which ideas for new value are plotted over time. This way, viewers can easily imagine the idea evolution the roadmapping team had envisioned during the research and creative dialogue. This means that the choice of swimming lanes is important, and needs to address the viewing needs of managers and stakeholders. In the previous paragraph, the choice was made to construct two roadmaps in order to offer both a general overview of the ambition strategy as well as a thorough plan for achieving the three component vision. Two roadmaps need to be constructed in Chapter 7.

A strategic roadmap will emphasize the why (why is the taskforce working on an innovation program for improved departure?) and what (what ideas exist for optimizing the journey touchpoints?). To do this, the future vision needs to be accentuated and clarified in the artifact. Also, a focus on pathways (strategic routes to optimizing touchpoints in departure and achieving the vision) can demonstrate how the taskforce means to work towards the goals in coming years. Since it ought to be a quick, comprehensible viewing experience, the 3-30-300 rule for visual communication holds for the strategic mapping deliverable. Building on the reflections paragraphs throughout the research and summing up its swimming lanes, the roadmap will feature: three horizons, years, an accentuated future vision, user value drivers satisfied over time, pathways, and the evolution of concept ideas that fit the pathways.

A tactical roadmap explains the how: how do you link concrete design activities or operational planning actions to pathway progression in the roadmap? This means ideas need to be not only presented, but their value and links to one another clarified. In a way, the tactical roadmap will pick up where the strategic roadmap will end. To this end, a tactical roadmap for departure will explain additional swimming lane insights from the past couple of chapters: Staff of Tomorrow, operational concepts ideas of Tomorrow, new data that is generated and can be leveraged, and required technology and resources. Viewing for the tactical roadmap would follow a 30-300-3000 rule, which means it requires some attention and dedication in understanding the tactics.

6.2.2 Specific audience

As the departure customers were users of the hall infrastructure whose journey was key to the search for value drivers, managers and stakeholders will be users of the roadmaps. Some observations of a half-year in-house experience are now given in relation to audiences of a Departure of Tomorrow roadmap.

As stated in paragraph 2.1, almost any manager in KLM is concerned with the way departure is organized on both service-minded and operational levels. Strategic roadmap communication can take place at bimonthly sprint meetings, GS demos, integral meetings (sessions!), external stakeholder collaborative dialogue, planning events, and be used as an available overview of strategy in daily design dialogue. A key function of roadmaps is to offer clarity in fuzzy meeting conversations. Viewers of the strategic map will value understandability (speed in understanding) as they do not have much time, a scoped topic (so they can have a focused conversation about the strategy in meetings), and recognizability (evolutions of existing projects, coherent wording and visual language). What they need most is an actionable dialogue upon discussing departure, utilizing the map. R&D viewers are members of the taskforce and builders or developers who are brought on board and can play a role in building the vision. What they value most is a full understanding of design ideas - in concrete terms - and communication of conclusive design decisions in the research, visualized in a full overview which can convey the details.

6.3 Pathways towards BLUEdeparture

By mapping pathways, we now know that there are five strategic routes towards a future vision in which user touchpoints are optimized.

Interestingly, the topics and value benefits were previously continuously discussed at all times, in meetings and informal work conversations. Even the prior undetermined value drivers of convenience, comprehension, choice, confirmation, and care in heinsight have been daily conversation topics. Here we see that mapping exercises in strategy are crucial and provide the clarity and actionable focus to move forward in visioning. Visual maps and storytelling help in moving fuzzy conversations towards scoped creative dialogue.

Pathway mapping allows for ideas to fit together along strategic routes towards the future. For convincing communication of future plans these strategies need to be confidently concluded before moving on to next stages in building the vision. Shaping innovation ambitions along strategic routes, stressing unique future user value, ultimately allows for a convincing and pitchable gameplan.

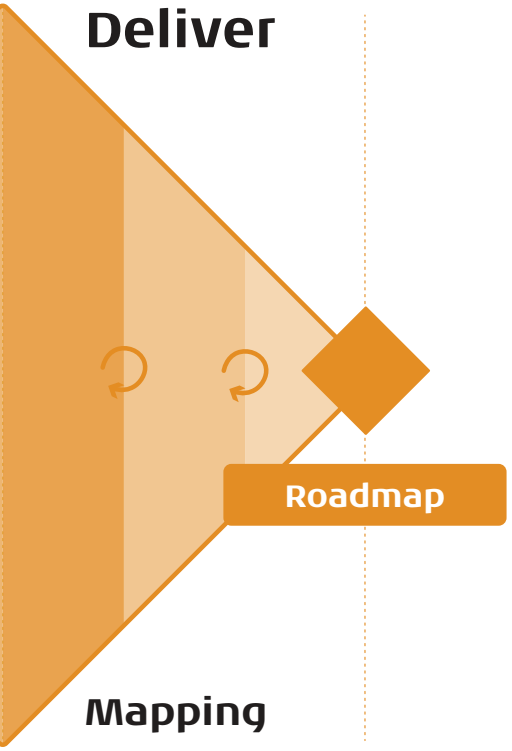
Paragraph 6.2 introduced the need for two different roadmaps. There is an inherent risk in making separate communications towards the same goal as a uniform storyline is crucial for clarity in visioning (Simonse, 2017). The need for two artifacts however has become clear. Moving forward, coherence in storytelling and well-defined choices in visual design are important.

07 Roadmapping

Chapter 6 has concluded the research, ideation, and mapping work required for design roadmapping. As described in Chapter 1, the goal of the research is to understand new needs of future customers, to scout for fitting technology modules and to design a program combining different value-adding technologies. All this was required to come to understand the implications of committing to a transformed departure process, and to develop a gameplan overview for future years at KLM.

The final mapping activity of this research is to construct two roadmaps that visualize and summarize the ideation efforts of Departure of Tomorrow.

Part 4
Deliver



7.1 Roadmap requirements

This paragraph explains the approach to designing the roadmaps. The roadmap viewers are the users of the visual strategy. Differences in stakeholder needs require some decision-making regarding the content and build-up of visual roadmaps.

7.1.1 Roadmap intent

Let's start with a quick summary. The design research and ideation mapping activities have been performed and a future vision was distilled from the context insights and existing V35 outlook. Five user value drivers became apparent and an idea mapping session yielded eight concept directions for optimized touchpoint interaction in a future on- and off-airport departure experience. These ideas can be mapped on five main pathways towards the desired future vision. Finally, we have learned that viewers of roadmap artifacts can be divided into two categories: strategic viewers who are in need of quick understanding of project ambitions, and tactical viewers who need to understand the strategic design choices, and concept rationale.

For KLM Business Development, the main intent of roadmaps is to communicate research and to persuade stakeholders to join the mission. After all, we have learned that KLM cannot achieve the vision alone. In intimite business settings, the roadmap(s) should bring colleagues and potential external partners together. In order to persuade KLM managers, idea branding and confident pitching of the vision is important, as there are many different projects running and (time) budgeting is an issue. For persuading co-workers, you have to give something in order to ask something. A visual roadmap can help to do that. Also, the roadmap should help focus the fuzzy conversation to scoped parts of it. This should improve actionability in innovation programs. At the same time, a visual roadmap can demonstrate what is possible over time and what concepts ideas for the future are. The interlinkages of ideas can illustrate how value is created in departure. The ultimate goal is to inspire stakeholders to engage in continued creative dialogue. For a strategic plan, this can mean managers join in on focused ambitions and take on a project under the DoT-banner. For tactical development, stakeholders will be able to help in building the value propositions.

7.1.2 Roadmap communication

We now know the audience and roadmap intent. Since we are constructing two artifacts, some rules have to be established regarding the introduction of content (the research findings and vision), uniformity (telling the same story in a lite and full version), and visual coherence between the two (recognizing the same design elements as a viewer).

As discussed in paragraph 6.2, the tactical roadmap will explain the full innovation gameplan in contrast to the strategic's general overview. The reading order will have to be strategic first (3-30-300), before diving into the full tactics of achieving the vision (30-300-3000). However, because of the vast amount of information, it is probably wise to make each roadmap stand on its own. This will require the tactical (extensive) roadmap to carry the insights of pathways in itself. This should be possible by making use of the similar elements of future vision, horizon evolutions, timelines, and five pathways in a lite overview. What will help tell the same story, is to make use of recognizable company language and visual elements. For this reason, similar KLM colors, fonts, and figure designs representing ideas are used. A visual coherence of two maps will allow stakeholders to engage in creative, yet concrete dialogue (strategic viewing), and creative and complete dialogue (tactical viewing).

7.1.3 Requirements

Before the diverging design work of Part 3, paragraph 4.1 introduced thirteen roadmap requirements for delivery. These context-specific, visioning, and methodology needs for the end deliverable were used as a starting points for roadmapping and adressed the needs of viewers, the introduction and communication of visioning work of Departure of Tomorrow, and the design roadmapping methodology requirements.

This chapter's discussion (paragraph 7.4) will address the requirements a last time in reflection.

7.2 Strategic roadmap

This paragraph introduces the first of two roadmaps for Departure of Tomorrow. A roadmap approach for strategic viewing is presented and explained.

7.2.1 Pathways becoming value streams

Mapping exercises in Chapter 5 transformed the five value drivers of convenience, comprehension, choice, confirmation and care into 24 ideas for three horizons of tomorrow's departure. The ideas are evolutions to a five-pathway future innovation program. Appendix J contains different versions of roadmap visual lay-outs that were considered before designing the strategic roadmap. The final strategic design (Appendix J) is an A0-printable and digitally viewable visual in landscape, displaying a horizon timeline, a future vision, user value driver satisfaction, strategic drivers and pathways, ideas of tomorrow, and hall interaction projected over time.

3

The first recognizable element in the visual should communicate that the roadmap, is a roadmap. At the top of the map, the timeline explains that the visual concerns a progression over time and changing departure processes. Three horizons are given. Secondly, a roadmap needs to have a destination, which in the case of Departure of Tomorrow is the future vision. Use of a large orange circle and smaller colorful elements to the left should accentuate.

30

Recognizable color use should highlight the five lines originating from the five strategic drivers flowing towards the future vision, which has three elements. The three vision components are linked to the recognizable company ambitions. Mapping showed that five strategic drivers flow organically into these three ambitions.

This way, the visual needs to communicate that simplification of touchpoints (in dark blue) meets journey guidance (red) to realize in the long-term an experience of efficient routing and departure processes. Shortened touchtimes combined with departure certainty results in the experience of innovative solutions. Finally, true care and recognition in departure would lead to customer-centricity achieved in the long-term. At the start of the pathways, recognizable Departure of Today projects of KLM are placed (paragraph 2.4 and 3.4). The pathways are filled with smaller circles which are projected over time.

300

There are five clusters of ideas, two of which are on the crossroads of the first four pathways. The ideas shape the new value of the cluster. As they grow in importance and maturity over time, clusters get bigger. Generations of ideas in different horizons demonstrate what projects can be taken on in the near future and in what way they support the ambition.

The research provided five value drivers (five C's). User value drivers of future customers satisfied are visualized at the top. Below the pathways and vision, five horizon visualizations are provided to demonstrate the customer experience reward of building Departure of Tomorrow.

7.2.2 Realization of ideas over time

The ideas that are plotted on the pathways are the 24 design ideas from paragraph 5.3. The roadmap should add that many of the ideas correlate and build towards a shared goal with one another. In this way five key clusters ánd the blue line are most important in achieving the vision.

An intuitive "Hole in Ground" drop interaction is realized by investing in quick fixes for (remote) labeling, resurrecting electronic bag tags, simplifying remote drop at journey locations and improving device information systems for guidance.

Walk-in ready, an automated check-in departure hall experience, relies on stakeholder dialogue to implement journey recognition technologies which allow for single-token passage. For this to work, kiosk and device interactions have to be made leaner, more intuitive, and assuring.

Memorable entry experiences come within reach when KLM invests in a new desk lay-out, mobile desk capabilities, and staff empowerment.

7.2.3 Timeframes of horizons

Paragraph 5.3 introduced strategic life cycles (reintroduced in figure 7.1) from the theory (Simonse, 2017). We now see in the strategic map that the first horizon focuses on current user value enhancement for two years. The map shows existing projects in white. Offering new QuickLabeling products and convenient remote solutions, builds on pilots and design projects of recent times (the first three existing projects). Secondly, continued in-company conversations concerning doc-check automation, the purpose of kiosks, and future desk-free departure spaces will be important. Ultimately, discussing and deciding on biometrics with the airport and external partners becomes important to offer a choice in fastlaning.

New user value segmentation is achieved in horizon 2, by means of implementing single-token and offering QuickPassage choices to users. Consumer devices will become the main channel of communication and departure preparation. A shift towards full self-preparation for swift passage (actions, labeling, drop, and ancillaries) creates a controllable free flow, leaving room for better agent service in departure spaces.

In the third (four-year) horizon, value is created for bag drop, check-in, and departure services. QuickDrops at convenient locations, an automated, instant, and at walking pace travel authorization including digital 3GK confimation, and proactive servicing create a seamless journey.

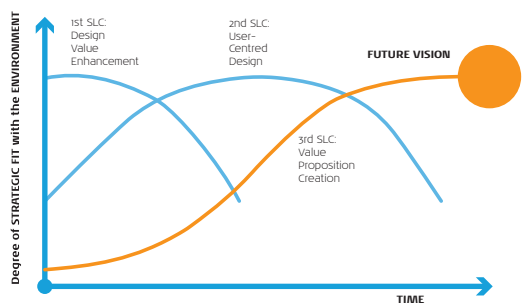


Figure 7.1: strategic life cycles of horizons

7.3 Tactical roadmap

This paragraph introduces the second of two roadmaps for Departure of Tomorrow. A roadmap approach for tactical viewing is presented and explained.

7.3.1 Swimming lanes of R&D

R&D viewers need a more grounded understanding of the work behind the strategic pathway visualizations. For this reason, the second roadmap is aimed at communicating the tactics of achieving the vision and developing projects that allow for building Departure of Tomorrow. Because of its additional components and more detailed story, the map takes longer to study.

30

The roadmap is included in the appendix. For making the roadmap become stand-alone, the strategic map is incorporated into the design and made to look the same visually: horizon timeline, a future vision, user value driver satisfaction, strategic drivers and pathways, ideas of tomorrow are all included in similar visual KLM colors.

What should stand out in the first half-minute, are again the horizon progression into a future vision and colorful pathways that lead to the three strategic routes. For recognizability and to again demonstrate what the horizons entail, similar departure imagery is included in the three large boxes. At the top of the figure, the unique value propositions and user group characteristics should be noticable in the half-minute. This way, the gist of the innovation ambition (for a three component vision) should become clear.

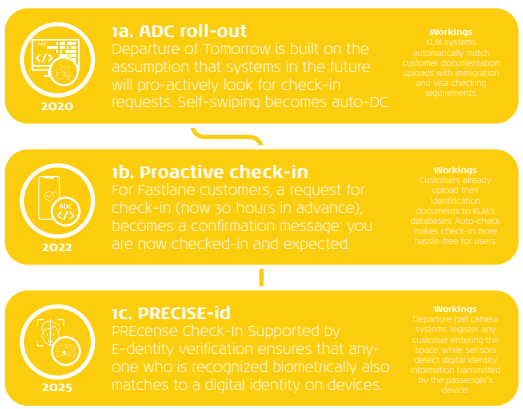


Figure 7.2: idea generations of tactical map

300

Next, coming to understand the horizons and new value ought to take some more time. The information strategy for this tactical map is to communicate the topics above the concept ideas, of course including the future vision. In five minutes, this offers nearly all of the information of the strategic communication. The value proposition swimming lane summarizes ten major design ideas for the different horizons in a quick overview. User group characteristics over time match these propositions, and should communicate that the user is transforming as well.

Five minutes of viewing should provide the necessary information to be able to link the many concept ideas in sight, to the key learnings of the research: changing hall infrastructure, different user group needs, strategic pathways towards a three component future vision including a Staff of Tomorrow and ideas for improving the operation.

3000

These ideas however are not only presented but also explained in the tactical roadmap. Concept ideas boxes match the colors of the strategic pathway they belong to. Within each horizon it should be clear that they contribute to a strategic goal within each horizon.

Figure 7.2 shows a close-up of the tactical roadmap, in which we see there is a horizon title of the concept idea, a visual and year, a short description of the strategy and value, and workings of the individual ideas. The ideas also move around a bit and are connected by lines. This way, we see that some actions are changing in customer journey sequence for an improved departure, such as shifts to off-airport locations.

The remainder of the roadmap provides input for KLM X's future research: data-driven experimental design ideas. Finally, the needed technologies and resources, that can very well be from other departments, are provided at the bottom.

7.3.2 Integral conversations

Whereas the strategic map was designed as a five-minute conversation piece, discussion of the tactical map on the right (according to the assumed 30-300-3000) would need a longer conversation. Let's call it an hour, including some good coffee. These conversations pinpoint the exact value that roadmaps can create in corporate business development. In order to implement a controllable, plannable, and actionable conversational communication, you need a manifestation of ideas about innovation at the center. Roadmaps can be of aid, as well as detailed idea sketches, renderings, or prototype mock-ups. In the roadmap design, the 24 drawings were introduced to try to approach this.

Figure 7.3: having a strategic conversation

Traditionally ánd currently, sharing of ideas at KLM happens in speech or by use of highly verbal presentation slides. However, in communicating a vision, it is more effective to shów what your team wishes to create and what value drivers of customers are satisfied (figure 7.3). For this reason, it would be wise to develop concept ideas into visual renderings and context interactions showing what they would look like (such as page 63's CAD-rendering of a QuickPrint column solution). Three things can help here in corporates: arranging sessions rather than meetings, having meetings áfter these creative sessions, and reflecting on findings and materializing visual artifacts that magnetize; persuade stakeholders to direct their actions towards a powerful ambition.

7.4 Road mapped

Two roadmaps were made for Departure of Tomorrow. Requirements for the roadmap were set up in collaboration with the case-owner and mentor. First, a viewer need exists for context-specific understandability, brevity, and actionability. Secondly, a future visioning orientation, clear approach, defined timeframe, current recognizable projects, future user groups, and practical implications for operations need to be addressed. Finally, respecting the four key objectives in design roadmapping methodology: roadmaps need to be clear, incorporate user value drivers, draw stakeholders in (magnetism), and have a fitting artifact for communication and physical embodiment.

Context-specific requirements
A design decision for maintaining understandability in rather complicated strategic pathway mapping was choosing KLM colors and in-company terminology. These create a recognizable imagery that fits everyday communication in print or mail. The strategic roadmap was deliberately designed to be quite open and not too cluttered. As the tactical map follows 30-300-3000 reasoning and communicates 24 concept ideas shifting to better fitting journey sequences, it naturally is harder to read. Here, use of color is matched between elements belonging to the same topics.

Especially the strategic roadmap is quite brief, and could easily be presented in a visual slideshow in a couple of minutes. Because the ideas become rather small in digital (but not in print), the choice was made to clarify them with texts accentuating value. A simplistic visual style, especially in the future vision, helps keep things light. An analogous idea of an eye opening over time (Appendix 1) was terminated in the end. For the tactical map, the top half was designed to be brief and to-the-point, while the bottom half contains extensive data about concept ideas and resources.

Actionability of idea information in the roadmaps was tailored to the viewing requirement of the two; group clusters demonstrate strategic synergies, while elaborate idea descriptions offer tactics.

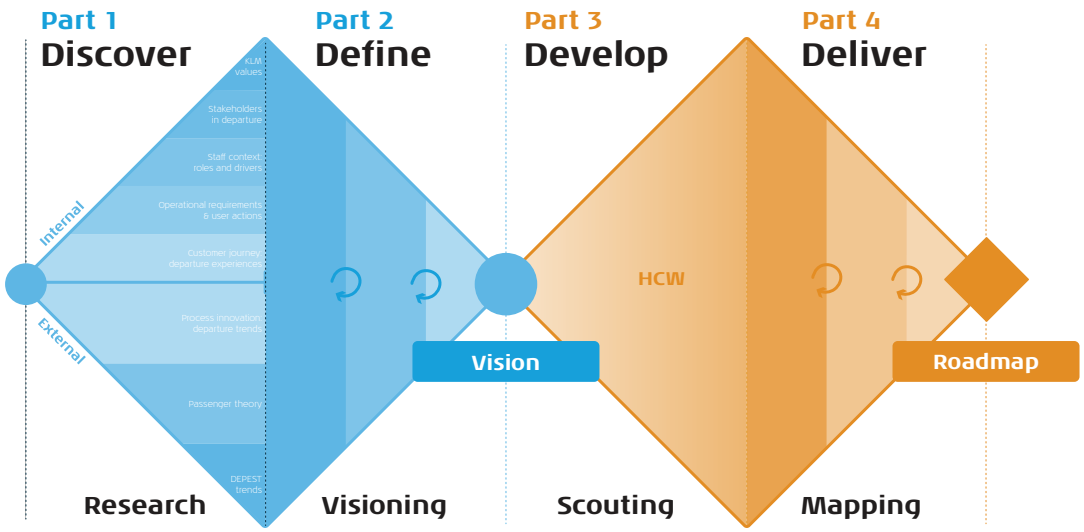
Visioning requirements
The first thing viewers should realize is that the maps concern innovation programs over time. By use of the years and horizon headers, this was the strategy. Especially the tactical roadmaps offers full insight into the approach to reaching the future vision as it contains descriptions of concepts, and workings. On a strategic level, it was more important to demonstrate how ambitions emerge, and how they meet along the way into the future (the three final value stream pathways). Departure of Today projects for this reason were included in only the strategic roadmap. The Passenger of Tomorrow is included via visuals of horizon departure interactions, as well as via value drivers satisfied (strategic) and user group clarified (tactical roadmap). Implications for operations are clearly a tactical topic.

Methodology requirements
Simonse (2017) laid the ground rules of roadmapping: apparent clarity, researched value drivers, strong magnetism, and well-chosen artifacts. Clarity was pursued by separating the storytelling information as much as possible, which becomes apparent by the different routes explaining the five different strategies in the future (simplifying touchpoints, guiding in journeys, ...). Extraction of value drivers from journey mapping exercises in Part 2 (Define) started off the value-focused idea and pathway mapping. Drivers satisfied over time are highlighted in the strategic roadmap in colors ending in future vision orange. Drivers find their way in the tactical map via user group descriptions. The pathways of Departure of Tomorrow are phrased as strategic goals, so they may draw co-workers and potential partners into the project. In-house ultimate wishes such as "Hole in Ground" were included as well. Concluding, the information vehicles chosen (artifacts), make it possible to have both a short, ánd long creative conversation about Departure of Tomorow.

08 Discussion

Delivering (Part 4) on the roadmap objective ends the double diamond approach. Internal and external research during Discover (Part 1) were needed for understanding departure processes, user experiences, and emerging trends that can lead to new value for users. Define (Part 2) provided the visioning activities needed to extract a future vision from the established V35 design input and research insights, including user value drivers from Passengers of Tomorrow. Develop (Part 3) finally, provided the strategic pathways towards innovative concept ideas of Tomorrow.

Chapter 8 describes what this all means for KLM and for Departure of Tomorrow. Short- and long-term implications are presented, and limitations of the study are discussed. Suggestions for follow-up research challenges for Departure of Tomorrow are made in conclusion.



8.1 Implications of research

This paragraph addresses the starting objective of the research, and states the implications of the design roadmapping research's insights. First, a quick word by the author:

At the time of writing, a global corona virus outbreak made its impact on the world and changed aviation forever. Because of worldwide lockdowns, closing down of industry in quarantine zones, and fear of contagion including hoarding and hysteria, Air France-KLM made the decision to ground nearly all aircraft as of March 2020. Aviation is one of the sectors hit the hardest as consumers are not flying anymore on a global scale, operations are closed down, workers are sent home, and the bottom line gets hurt in an unforeseen way.

Undoubtedly, the outbreak will have long-lasting implications for the way the business will be run in coming years; and for the way innovation programs can be managed in the near future. It is safe to say that any internal budget will be deployed towards COVID-19 recovery.

Such global crises in the past (political crises, financial and oil crises, and wars) have always forced companies to pivot. Concerning the future of KLM, this offers opportunities as well. Innovation managers can leverage the current situation to move forward in realizing innovative new ideas. By stressing the selling points of Departure of Tomorrow (efficiency gains, capacity gains, and improved customer experiences), a case can be made for making a difference to the future bottom line; operating the margin better, implementing promising trends in automation, growing customer commitment, and celebrating brand identity.

It appears that KLM employees, as well as the general Dutch population, are more united than ever in battling the pandemic. National pride, social togetherness, and announced governmental support ought to make KLM much stronger on the other side, when this challenging time period is bridged. It is clear that transformation strategies need to be put in place.

8.1.1 An extensive research

The research offered insight into customer experience, passenger journey theories, emerging trends, and upcoming new technologies through integral design dialogue, ideation with trends and technologies, and strategic mapping.

The original ambition was to translate a future vision into actionable current design activities (paragraph 1.2), by answering a main research question: how can KLM improve the customer journey? Context research showed that passengers in departure are stressed and uncertain of airline processes such as doc check and bag drop. From a customer-centric design view, the journey is not as smooth and seamless as it should be. Also, passage is slow (or inefficient) because touchpoints and routing have become inefficient for the rising passenger numbers. Finally, the departure infrastructure in place such as SSDOP and kiosks are ageing and do not match KLM's ambition to be highly innovative.

A three component future vision was devised for improved convenience, comprehension, choice, confirmation, and care in departure experiences. Improved journeys will need availability of facilitated, one-touch self-service touchpoints, extraordinary staff-customer moments of interactions in departure, and a hall intelligence proactively cleaning passengers and recognizing live e-dentities.

In mapping the strategic pathways which lead to achieving the vision, the research demanded two roadmaps. Strategically, business design research and development drivers were determined which imply the direction for future Departure design activities. Concept ideas mapped over time in an elaborate overview imply the value of individual ideas, their place in horizon developments and the relations to each other. The next paragraph provides general implications of the research for business developers, X-testers, and stakeholders in the future.

8.1.2 Implications of research
Four implications result from the design roadmapping research.

Call to action
In the short-term, there is a real call to action. At competing airlines and airports, business units are working around the clock, backed by huge investments, to develop new and proprietary touchpoint hardware and software to offer unique customer experiences in departure. As passengers are developing a comparing mindset and industry is moving at an unprecedented pace, technologies in place become obsolete quicker and efficiency standards are growing by the day. In-company consensus of commitment to new products and services will be crucial to build Departure. This will require a willingness to work together, to look further out during ideation than in the past, and to become able to reach out to external experts and partner up in future innovation programs.

Managing happy flows
Queueing and other negative travel experiences in departure should become a thing of the past. Technological developments will continue to digitize and automate many journeys in people's lives. The technology is ready. Consumers are happy to self-service when it offers them time gains or control over easy processes. Better designed hardware options and digital services become available or can be built to order. The key requirement of business developers here is to fully understand the journey and customer touchpoints. This way, managers can purchase next-gen machinery or design new service channels that create long-lasting customer value. Potentially, recent outbreak developments will call for touchless interactions in aviation and speed up acceptance of biometrics and self-service touchless interactions.

Creating memorable experiences
KLM can really achieve something great in departure when it comes to service and customer-bonding. By focusing on strong interpersonal physical connects, and designing a voice of comfort, care, and, confirmation in digital home actions and self-service screen interactions, KLM can truly touch customers in departure, and other micro-journeys. Data hospitality of staff will be explained some more on the next page.

Laying out innovative visions
The future needs to become high-tech and exciting for KLM to be considered as most innovative. The research provided an innovative vision of automated check-in procedures using biometrics. A co-creative adventure lies ahead, moving forward in finding the right partners to commit to selected technologies. A growing internal innovation mindset needs to spread in KLM and continued journey-based research can shed light on new service opportunities, customer adoption, and new combinations of technology modules put in place. This also means: investing where it is due. In the long-term, investments in customer data intelligence, people, and business development teams are crucial. As of 2020, short-term departure capacity relief could improve flow as an expense on the balance sheet (making up for ancillary losses at kiosks). Future talent is needed in the form of: privacy assessment officers, automation architects, innovation strategists (departure, lounge, customer communication, or other), or e.g. hospitality shiftleader.

An integral gameplan (projects under the banner of Departure of Tomorrow) has to be supported and funded. Periodic planning reviews of technology are needed and constant discussion of innovation program ambitions - and matching roadmaps - in an integral setting, should be maintained.

8.1.3 Limitations of research
Within the research, disruptive flow was left out-of-scope. Disruption affects operational processes and customer experiences in a big way, which means a dedicated disruption journey research is in order. However, some technologies found in the research could be of benefit in disruption: virtual queueing at sit-down locations, proactive on-device information support, additional digital products and services. During research, a predominantly qualitative approach to journey mapping was used, using local samples for interviewing. Finally, the visioning work and mapping activities could benefit greatly from stronger graphic design representations by an expert. The following paragraphs provide four interesting research fields which could not be included fully in the design roadmapping project.

Building Departure of Tomorrow
A roadmap has been laid out. But KLM is not alone in the endeavor of transforming the departure spaces. While Business Development can go into action in speeding up ADC, developing QuickLabeling, introducing remote bag drop options for customers, and developing better customer departure instructions via device, conversations with the airport concerning open spaces and recognition technologies are also in order. Strong mutual gains are for the taking regarding seamless and quick flows through a shared ambition towards clean, open and calming spaces (figure 8.1). Co-creation can mean succeeding together, pooling resources, finding synergies (modeling flows, sharing designs, or introducing International Stations at the table), and strengthening a life-long relationship.

In determining an altered architecture, new routing segmentation as well as wayfinding solutions of Tomorrow can be discussed. Also, researching the perception of waiting can further improve customer journeys and eliminate waiting: calmness and cleanliness of the environment, choice of light materials and flora, designing for emotion by experimenting with ambient lighting and sound design. Finally, stress treatment in unusual forms can be designed: displaying art, Dutch design, or celebrating the company's and nation's culture, for passenger entertainment.

Figure 8.1: creative dialogue with the airport

Staff-customer interaction
A floorwalking agent is the face of the organization. A Staff of Tomorrow plays a major role in creating a seamless flow at departure during which people still feel touched and cared for. A personal touch and inherent staff devotion to memorable entry experiences at the airport needs to be designed into daily operations (8.2).

As the first recognizable touchpoint in the journey, it is important that staff is feeling energized, certain, and confident. A happy and vital staff will lead to a happy and smooth production, which in turn leads to happy and proactively serviced customers. A challenge will be to make the job more appealing for a strong and dedicating workforce, who will be happy to take on the new responsibilities and liberties of being mobile agents extraordinair. Beside being hospitality fanatics, these agents should also be given the authority and mandate to make executive process decisions. Giving power to those who deserve it, digital tools and training will become important. A wardrobe for long days on their feet and digital gear that fit future vision walking pace servicing are manifestations of the staff ambition. Further research of an innovation program for diverse, operable, and vital people in departure could be performed in an interaction design project as a Customer Experience-led initiative, under the Departure of Tomorrow-banner.

Figure 8.2: Staff of Tomorrow

Customer information systems
The research provided an understanding of the drivers of customers and what they mean for the customer journey. The second C (comprehension) and concept ideas are closely linked to customer technologies and the information channels passengers use for consuming information.

A modernized self-service at Schiphol can improve customer action self-management, better flow, and process understanding on the side of the customers. Consumer technologies are changing rapidly, and roadmapping these developments is a research on its own. From a Commercial point of view, it would be interesting to shape a communications ambition in which changing standards or processes of customer messaging, app service integrations (for departure and other micro-journeys), and form language and uniformity of customer approach are determined. Of course, this would concern evolving consumer devices such as foldable smartphones (figure 8.3), smart wearables and Quantified Self, and new AR/VR technologies which can be leveraged for self-preparation (including virtual confirmation, wayfinding, and new services). Roadmapping and learning to understand this digital information highway is a project on its own, but could meet other initiatives that Commercial and CX manage with the aim of company-wide personalization of digital services.

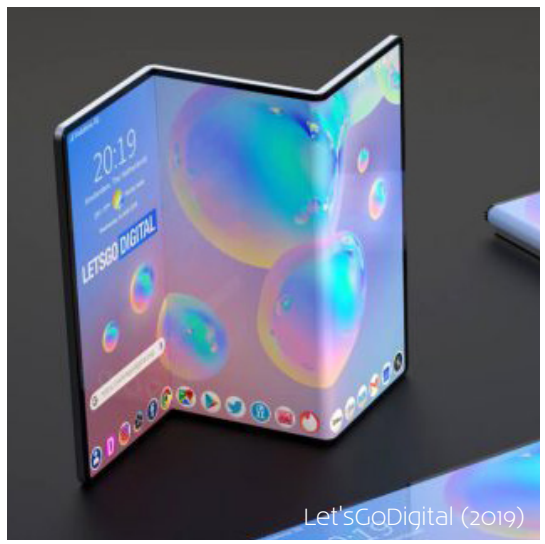


Figure 8.3: prepared for the future

Special segments
Always deemed one of the most important service products in KLM, however often postponed in development conversations: special segments service must be picked up as an ambition at a certain moment in time. Full service customers in departure are only 1.5%. However, these are the passenger with the highest service requirement. Most service-intensive customers are UMs (figure 8.4), and passengers with physical handicaps (e.g. the blind) and special gear such as wheelchairs, crutches or guide dogs. New experiences that create a remarkable value for special segment customers could be new services such as AVIH animal welcoming and facilitation at an off-terminal touchpoint (Dierenhotel). PRMs could be welcomed as luxury guests at a dedicated welcoming service space such as the current Ticket Center and a facilitated passage access point to security and lounges to bypass a seamless economy flow at Departure.

SkyPriority (out-of-scope) needs attention also. When economy is seamless; what is left for SkyPrio departure? Priority passengers at Schiphol account for only 13.7% of all customers in departure but they pay for the lot. Ideas can be: additional welcoming services, enhanced personal commitment, and offers for unique departure preparation (choice of transportation, personal departure confirmation, or time spending in lounge).


Figure 8.4: truly extraordinary care (specials)

8.2 Future design sprints

This paragraph provides suggestions for future design sprints programs in KLM. Paragraph 1.2 showed us the initial challenge for business development managers: translating the V35 future vision into actionable design activities. Based on the research, visioning, and idea mapping efforts, these future design challenges have become clear.

8.2.1 Future research for KLM X
The purpose of the research was to provide design guidance regarding the Departure of Tomorrow challenge, so that managers who had a mental picture of a future vision for departure, become able to take control of the design process and shape actionable current design activities. Design roadmapping research proved to be useful in unraveling the design challenge, and in forming a strategy for future-proofing departure at the airport. Future roadmapping exercises in different contexts at the airline, as well as updating of departure roadmaps, can spread a forward-thinking innovation mindset at KLM.

8.2.2 Future HCWs
Finally, the following future "How Can We's" for Departure of Tomorrow testing and new business development (new ideas) for the five journey sequences of departure can be concluded.

Customer preparation of Tomorrow
- How Could We offer convenient self-preparation departure actions in an improved journey?
- How Could We design a uniform, persuasive, and comprehensible device communication?
- How Could We offer choice of (new) ancillaries and departure services on device channels?
- How Could We offer the experience of human care in an off-airport device interaction?
- How Could We design new preparatory departure services, or ease mental departure stress?

Transportation of Tomorrow
- How Could We offer new choices for remote actions (with new business partners)?
- How Could We leverage geo-fencing technology; offer live service at an on-the-go location?
- How Could We design a uniform, persuasive, and comprehensible app communication?
- How Could We offer additional departure services on-the-go?
- How Could We minimize physical customer presence time in departure (shorten touchtime)?

Airport entry of Tomorrow
- How Could We optimize the point of entry for speed (P3 parking, Kiss & Ride, Plaza public transport)?
- How Could We offer an understandible wayfinding support using new (AR/VR) technologies, and improve departure hall nudging?
- How Could We leverage the perception of waiting in the built environment?
- How Could We leverage the perception of waiting through entertainment and services?
- How Could We incorporate brand messages or new technology in an open departure space?

Doc check of Tomorrow
- How Could We incorporate biometrics in the journey and How Could We manage customer willingness and technology readiness?
- How Could We prepare for implementation of virtual ID and anticipate outbreak measures?
- How Could We incorporate an automated walking pace check-in mechanism in the journey?
- How Could We incorporate the confirming voice of agents; at walking pace, and virtually at (remote) new self-service touchpoint interfaces?
- How Could We grow business intelligence for departure; monitor average ready-for-travel time, read live passenger count, and anticipate high passenger numbers or departure service requirements?

Bag drop of Tomorrow
- How Could We facilitate a uniform, inviting, and comprehensible off-airport QuickDrop?
- How Could We introduce timeslots and prepare for expected service interaction in an open space at the airport?
- How Could We decide on new technology for a "Hole in Ground" interaction, utilizing electronic bag tag and QuickDrop self-service touchpoints?
- How Could We design a (confirming) virtually facilitated bag drop screen interaction?
- How Could We redesign the (SkyPriority) departure experience and touchpoints for specials?

8.3 Final discussion

Many ways to move Departure of Tomorrow forward have been found in the research and have been highlighted in this second to last chapter. Including the roadmap tactics, a strategy for future-proofing departure has been presented which should be helpful in bridging the gap between the visioning outlook and currect design activities (paragraph 1.2). However, outbreak developments have changed the playing field. It is up to business development managers to appropriately handle uncertainties, but still recognize opportunity in these troubling new business landscapes.

During the first month in lockdown, we have seen governments urging people to work from home via digital channels, restricting social gatherings and team sport events, and preparing the population for a "one-and-a-half meter society" for at least the next year. This will have major consequences for service-based businesses. At the same time, this "one-and-a-half meter society" cannot return to overcrowded departure halls of the past, when things start going back to normal. Savvy business developers could leverage outbreak measures - and this "new normal" - to move ahead with new technology in journey interactions such as interactive on-device self-service, implementation of journey recognition technologies: such as biometrics or virtual identification, a shift towards many off-airport passenger actions such as electronic labeling and bag drop, and new physical hall infrastructure creating a open space in which people can in fact socially distance. And at the same time experience proactive service, of course.

This last paragraph concludes the reconnaisance phase of Departure of Tomorrow. This does not mean there is not a lot of follow-up work still to be done. Whereas this research provided a more concrete future vision, and explained the processes involved in following pathways to achieve an ambition, decision-making for simplified touchpoints, journey guidance, shortened touchtimes, passenger certainty, and caring throughout the journey are in order. The roadmapping ideas and insights need to be put into action.

Some final thoughts in conclusion: the research demonstrated the importance of constant creative dialogue in a corporate when a shared ambition is set. Common objectives and priorities, an open communication, and routine integral sessions in particular are key in driving change. From a design standpoint, continued customer research is vital in being able to take advantage from an apparent shift towards seamlessness of journeys. The value of design roadmapping was proven in shaping future visions, in developing processes that are needed for designing the future, and in overcoming the uncertainties in ideation dialogue and complexities in business negotiations. Finally, what is needed for improved process and service innovation in aviation is a belief that products and services can always be improved, a willingness to come together and do design, and a motivation to become transparent and grow together.

09 Personal reflection

It has been a long and bumpy journey with many highs, and some lows.

This final chapter provides a personal reflection of my time at KLM, of the roadmapping work and design activities with KLM managers, the highlights of the experience, and the challenges in graduating. The thesis concludes with a reflection on my behavior as a designer, on skills in design, and on the aspects in which I can continue to grow, and looks forward to better future approaches in future challenges.

We have reached the end of the research; and a long personal journey it has been. Exactly nine months after kick-off I am writing this reflection. For the duration of the project, I have been working hard on discovering the design and graduation challenge that is Departure of Tomorrow, on developing new skills in design roadmapping, contextual research, facilitation, mapping techniques, and strategic design, and on writing and visualizing this thesis before you.

Appendix A states the four learning objectives I had before starting the project. Primarily, I wanted to gain an in-depth knowledge on aviation and transportation hubs. I had already done a project at KLM which focused on HR workflows and not so much on the operational side of airport management. Thís project gave me the opportunity to become part of a business development team for airport innovation, in which I could bring my design insights to the table. I spoke with managers and ground workers in the live environment, and engaged with passengers and included their voice and needs in the work (figure 9.1). In my role as a graduate intern, I joined business meetings, studied the airport processes, went behind the scenes and actually saw with my own eyes how products and services are created and how strategy is put into practice.

Secondly, I wanted to learn to better design roadmaps that help to translate future visions to actionable steps in operational businesses. Gameplans for the future and timepacing of design concepts are extremely important in strategy and in tech innovation. I feel my work at KLM - a strategic roadmapping effort of service journeys - helped the case-owner to become able to plot ambitions, and more imporantly: to develop a visioning mindset for coming years. Personally, I learned that it is easy to become lost in all the details and dependencies in a multi-stakeholder challenge, and that roadmapping strategies require a lot of finesse, strong and well-informed decision-making, and persuasive tactics.

What helped was to learn to effectively use visual inspirational designs for internal ideation exercises (figure 9.2). It really showed that you get what you need a lot quicker when you have something to give to a stakeholder; a process overview, a user need visualization, or analogous experience in ideation. At the same time, these materials do not have to be perfect at all, when brainstorming and working with non-designers.

Finally, I came to KLM to understand the business value of design better. In the project group, I was the one responsible for doing the design research, for introducing relevant context developments, and for defending the user research insights in dialogue. It can be inviting in businesses to jump on opportunity quick and without further thinking of what could be possible. In my opinion, design methodology and mapping techniques show business managers all components of a challenge, and allow them to make an informed and creative decision that is aimed at becoming more innovative integrally. At IDE, multi-X development is a hot buzzword but at the end of the day you are working with, albeit from different disciplines, fellow designers. During past months I have experienced the nuances and flexibilities you need when having creative dialogue with non-designers. These also involve the politics in a corporate, time investments of teams in projects, and challenges in persuading workers and partners into joining a session.

Figure 9.1: diving in deep during research


Figure 9.2: turning meetings into (fun!) ideation

During IDE team projects I had been in charge mostly of the process (mission, direction and design justifications), keeping the overview, and managing the work. Traditionally, this worked for me, as I like to focus on the main objective and aim high for end deliverables, enjoy helping out my colleagues and having good conversations that keep the process moving, and observing the moving parts while pitching in during design work - with a keen eye on all the little details.

In this project however, all design tasks, session prep work, and visual chores naturally came on my plate. At times, the size of the challenge and my personal ambition got away from me, as I moved down-and-up between strategic and operational levels. Most important in doing my personal tasks are keeping track of my objective, making decisions and excluding irrelevant information, and managing my to-do list. I had my mind set on doing the entire challenge, taking on everything, and "doing things right" (up to par with design team work) during roadmapping, visualizing, and eventual report writing. However, my responsibility was to focus on designing a roadmap and writing a report. My project became scattered as I had no place to park ideas, and no decisiveness in finalizing what would much later become the chapters and paragraphs. I learned how much I normally rely on my team to bounce ideas off of, and how to keep a good project atmosphere when the work becomes demanding. I need to at times let go of doing things "right" - method, visual work, report design - and just test my ideas. What ought to help here is keeping my stakeholders in the loop and asking help when I need it. I am not the best in asking help.

By being more transparent in this way, it may become easier to not say yes to all that comes on my path, and to rather focus on what is good for me and finding a middleground in pleasing all stakeholders in my work, including myself. Moving forward, it will become impossible to keep doing things myself, to aim for the highest goal, and to be stubborn in knowing when I reach my limit. Upon reading into this behavior, this Franklin-effect might even help me reach my goals; the best way to bond with someone is to ásk something, rather than to do a service for someone.

It is important to bite off as much as - and preferably less than - you can chew. Stopping to operate as a one-man army, gives me a truer recognition of feasibility in projects, and leaves room for better complexity management. Leaner tasks, clearer timeboxing, and planning for reflection in the future can help me to justify my choices better when zooming in-and-out in complex fuzzy strategic problems. Discussing my ideas, testing my logic, and challenging my bias repeatedly throughout the process with people I trust, should help in channeling my thought process and managing the output. Also, this would serve as a personal strategy for giving my mind to a challenge, design concept, or development team, and not being swallowed by the work. I need to know my workflow, and know how to solve problems in an efficient way. Stronger discipline in safeguarding insights, logging ideas, and recording observations throughout the process here is important as well, as is attention to planning, prioritizing in decision-making, and being as clear as I can be in communication at all times. Themes throughout the research have been: "Less is more", "It goes away", and "Done is better than perfect". My job as a strategist is not to write the book on a topic, but to take a conclusion (from research, taxonomies, observations) and transform it into value; and a next step. In finishing this roadmapping research and thesis, I hope to have spread a forward-looking mindset at the company and have provided the tools to take on the visioning challenge. The adventure has been highly engaging (figure 9.3), profoundly educational, and overall great fun.


Figure 9.3: doing design and celebrating success

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- Figure 8.3

Appendix

An appendix completes this research. A separate confidential document accompanies this report in which the following materials are provided: project design brief, KLM vision document, staff context mapping results, customer information overviews, journey mapping process and results, a pilot with the people from Vision-Box, marketspace examples of self-service propositions, value mapping results, idea mapping materials, process and results, and the roadmapping process and materials.

Notes

Design doing 2020