NAVIGATING INFORMATION OVERLOAD WITH A JOURNEY BASED COMPASS

A framework to make KLM cabin crew feel up to date

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Navigating Information Overload with a **Journey Based Information Compass**

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Preface

With this thesis, I finish my master's degree in Strategic Product Design at the TU Delft. These challenging 6 months have been a great rollercoaster and I look back at a memorable experience! I got the chance to fly as a cabin attendant and to apply user centred design into an organisation that has existed for over 100 years. I would like to thank KLM for this great opportunity, for guiding me through my thesis and all the fun I had!

Sicco, thank you for the clear tips and help when it was most needed. Your positive way of guiding helped me in becoming more confident. Most importantly, your insights really made this project!

Sacha, thank you for your ideas and your eye for detail. You always provided the interesting outside-in view I needed to get new ideas and to look at the research from a different perspective.

And Barend, your knowledge about KLM and the fun meetings always gave me the clarity I needed when my mind became too fuzzy. Thank you for being to the point, out-of-the-box and always happy to help!

I want to thank Mahender for all the valuable insights and teaching me how to convince the organisation of user centred Design, for the guidance and the great opportunies given during my thesis. And, of course, thank you for taking over the mentorship from Maxim.

I also want to thank Maxim for all the trust you had in me, for the opportunities given next to my thesis and for the hours you spent in challenging my ideas and teaching me all about KLM. Those endless organograms I will not forget. Even if I wanted to.

My KLM X colleagues, you have been great support and an even greater team! Specifically March and Steph, thanks for the endless ideas, the answers to all my questions and your valuable insights.

Mom, Dad, thank you for always being here. For supporting me through the tough moments and laughing about the silly moments. But most of all, thank you for always believing in me! And of course for the good food I needed during the long hours.

Juan, Cris, Yan en Doris, I can't leave you out. Know I am way more proud of all of you than dad pretends to be of this master.

Thanks to all my friends, for listening to my stories, my struggles and for the great laughs.

And lastly, Margot. Thanks for the pep-talk last night. And last week. And all the ideation sessions. I am here if you need me in your coming 6 months.

I am proud to have made my dream come true and graduate at the TU Delft!

Enjoy the read!

Loeke

Executive Summary

KLM, a Dutch airline, is renowned for their high levels of services and customer experiences. With their purpose 'moving your world by creating memorable experiences', maintaining those high levels of services is important.

Cabin crew is for a big part responsible for those high levels of services. Making cabin crew feel the best of them and reaching optimal staff behavior are therefore important goals of their managing department Inflight Services. For that reason, many tools for cabin crew have been developed and KLM has gone through multiple digital transformations.

Although much effort is put into creating the optimal working climate, cabin crew suffers from information overload. This has led to the aim of this graduation project, namely reducing information overload among cabin crew.

The thesis followed the X way of working. Starting with the SHERLOCK phase, a literature review and a channel, organisation and crew analysis has been done. The analyses showed factors playing a role in the occurrence of information overload. Additionally, it showed that channels are used by the organisation as a gate to push information to crew, while cabin crew wishes to pull the information according to their needs.

This has led to the design challenge 'making cabin crew feel up to date'. The intended solution should guide the organisation in becoming more crew centric, understanding the cabin crew needs in regards to information and with that move from a push to a future minded pull strategy.

The following MICKEY phase aimed ideating solutions. The future vision was specified and learnings were drawn from strategies applied by other companies. The phase closed with a set of hypotheses.

In the LEGO phase, the hypotheses were tested with minimum viable products. These tests showed that needs of cabin crew differ per phase of the journey and what the exact needs in each phase of journey were.

The following DUMMY phase aimed at translating all these findings into a framework for the organisation and tangible solutions for crew. In multiple design cycles, the DUMMY phase closes with The Information Compass.

The Information Compass is the final deliverable of this thesis. The tool includes information-needs of crew per phase of the journey and can be used by the organisation to navigate those needs. The tool is written in the same style as the branding strategy and with that aims at creating coherence between the communication and organisation strategies. Ultimately, the tool aims at making cabin crew feel up to date.

The information compass comes with a guide and 10 cheat sheets; one for each action crew undertakes. The cheat sheets give explanation about the needs and a clear, tangible example fulfilling the needs.

The validation phase showed that cabin crew are enthousiastic about the solutions designed. The organisation values the solution and aims at using the tool to become more crew-centric in the way they send information and in the developed apps, and with that make cabin crew feel up to date. The thesis concludes with recommendations for future designs.

Reading Guide

ABBREVIATIONS

KLM	-	Koninklijke Luchtvaart Maatschappij
IFS	-	Inflight Services
CA1	-	Cabin Attendant 1, fifth in rank
CA2	-	Cabin Attendant 2, fourth in rank
AP	-	Assistant purser, third in rank
P	-	Purser, second in rank, leading for CA1
SP	-	Senior Purser, first in rank, leading for all.
IO	-	Information Overload
CO	-	Channel Overload
MVP	-	Minimum Viable Product
BMC	-	Bemannings centrum (= Crew centre)
WBC	-	World Business Class

Colouring

"Example" - All text in this font and color is often a quote or summary of interview insights.

"Example" - This is an important part of the text.

"Example" - These are always insights coming from research.

- Text in an orange box is always a conclusion.

- Text in a blue box is background information or important highlighted information.

KEY TERMS

Cabin Attendant: Can be either a CA1 or CA2, and refers to the general job on board.

Cabin Crew: all of the cabin crew members working on board of KLM airplanes.

Table of Contents

1 Project Introduction

Since its conception a hundred years ago, KLM has become an internationally renowned airline, known for their focus on customer experience and high levels of services. Cabin crew are their front-line staff in flight and with that mainly responsible for those high levels of service. They need to devote their attention to service, safety and passengers.

However, *"the information we process consumes our attention"* (Simon, 1969) and in order for cabin crew to provide the high level of services, they need to be up to date of the latest information and changes made to for example services.

On top of that, worldwide our access to information has grown (Hemp, 2009). Terms such as *'infobesity'* and the *'information diet'* as a solution have been introduced (Johnson, 2015). Cabin crew not only have access to this general information in their daily lives, it adds up to the information needed for their job and has made cabin crew suffer from information overload. This thesis aims at finding out how to reduce the information overload perceived by cabin crew and make them do their job the best they can.

This chapter will briefly explain the context of the project, as well as the main method used in this thesis, followed by a more thorough explanation the goal of the project (in this thesis called 'the ambition').

1.1 PROJECT CONTEXT

The thesis is conducted in assignment by KLM, specifically the department of Inflight Services. A few important contextual factors determine the aim of the project. Before discussing the aim, the context will first be explained.

The Inflight services department

The inflight services (IFS) department manages cabin crew and all that is needed to provide services on board (ranging from Cabin Product & Service Engineering, to business development, see figure 4.1). Together with the office employees they are the largest department within KLM.

Goals of IFS are 'optimal staff behaviour', making the cabin crew feel "I am the best of me" and to create an 'optimal working environment' (see appendix 1.1). Due to the highly competitive economic environment, IFS was forced to work with one crew member less per flight. This has increased the importance of creating the optimal working environment for cabin crew and making them feel the best of them. Therefore, the reduction of information overload is essential.

IFS in 2030

In 2019, the future vision of IFS in 2030 has been created (see appendix 1.2 & 3.1). The future vision shows the role of the cabin attendant, and information overload being history. The solution of this project should fit the future vision. In summary, the future vision is as follows:

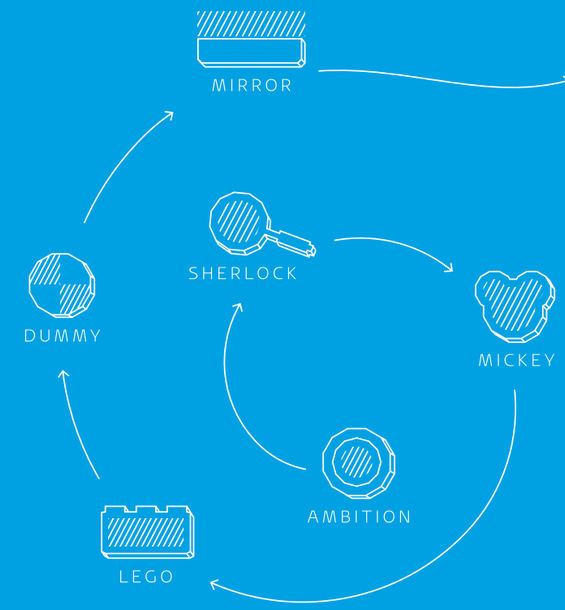
The cabin crew is expected to become an empathic director, being able to use all tools available with the main goal to be there for the passenger. Supported by automated technologies, contextualised systems and personalised content, the cabin crew will become an independent and autonomous employee. No matter the technological advances, personalised cabin crew that is working in tightly knit teams, is there to stay.

How to read this report?

The report will follow the X way of working (see figure 1.3), a well known method within KLM (see figure 1.3) that is developed by the TU Delft. This process is similar to the Double Diamond method (British Design Council, 2005), in which diverging and converging techniques are used with the ultimate goal of designing a fitting solution. The X way of working follows the double diamond phases, but from an agile perspective. This means the cycles are shorter and often consist out of 1-4 week sprints.

In the X way of working, Ambition is the start of what is called the discover phase in the double diamond model, while Sherlock is the actual discover phase. The Sherlock phase ends with formulating the challenge, thus including the Double Diamond Define phase. The phases Develop and Deliver fit the Mickey, Lego, Dummy, Mirror and Scale-up phases, working towards a product in smaller, agile steps. In figure 1.1, each phase is explained more thoroughly.

KLM X WAY OF WORKING



AMBITION

This is where we set our goal: what is it that we want to achieve?

SHERLOCK

This phase is all about research, data and observations to find the challenge.

MICKEY

The first time we start thinking of solutions: dream big!

LEGO

It's time to create *the simplest* version of our product and start testing it in our live operation!

DUMMY

After creating a first version of our product, it's time to test over and over again at a larger scale.

MIRROR

Time to look back at our process and the lessons learned - is the product ready to be released?

SCALE UP

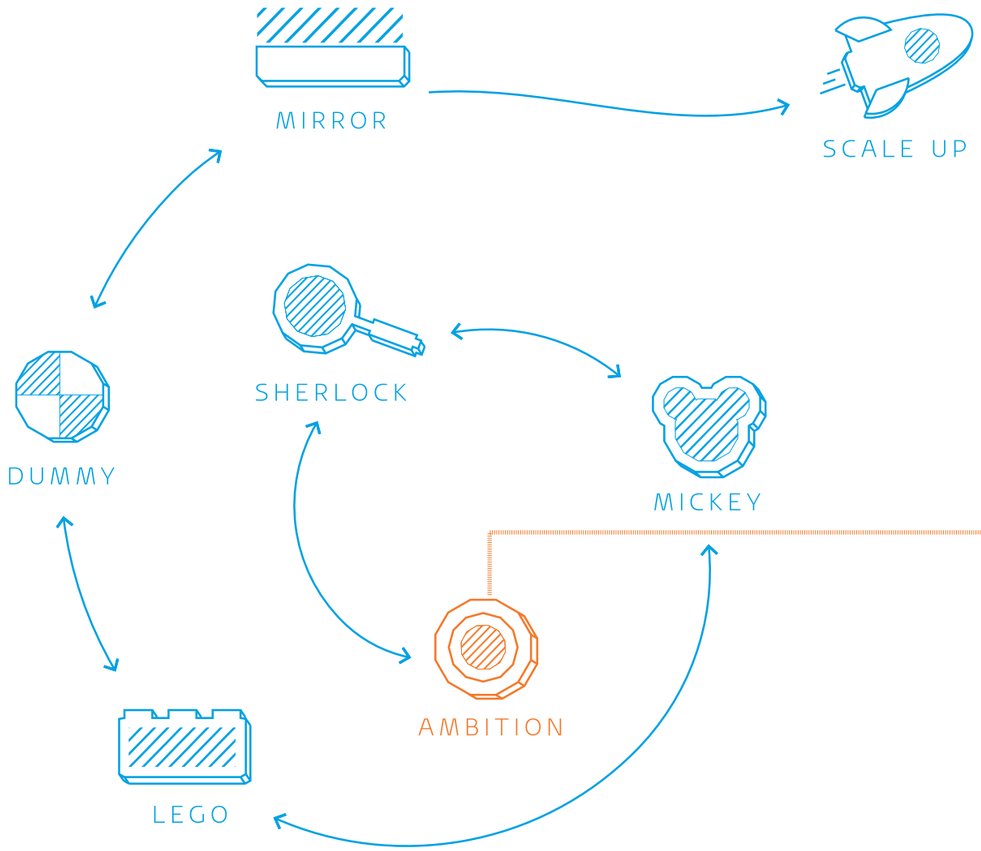
With a tested solution to our challenge, the product is ready to be scaled up within KLM.

Figure 1.1: X way of working explanation, the main way of working used in this thesis (KLM X, n.d).

1.2 THE PROJECT

With IFS' ambition to create the optimal working environment for cabin crew, IFS wants to make sure cabin crew feels enabled to do their job and with that reach optimal staff behaviour. As previously mentioned, this also requires them to be up to date and aware of all changes made to E.g. their work process. IFS has therefore provided all cabin crew members with iPads and has developed many digital tools that can be used in preparation for or during their work. Over the years, the iPad has evolved into their main tool to access all information needed for their daily work.

However, according to IFS, a frustration felt by crew and organization employees is information overload among cabin crew. This is often confirmed when talking to crew and mentioning information overload (see chapter 6). With IFS wanting to create the optimal working environment and making crew feel 'I am the best of me', the feeling of suffering from information overload is holding them back in reaching the goals of IFS and KLM as a brand.



Project Scope

One of the causes of information overload among cabin crew mentioned by IFS is the removal of those physical mailboxes. What was previously distributed on paper and was found in their mailbox in the crew centre, is now sent to all individual crew iPads. Although no secondary effects of information overload are noticed by interviewees from the organisation (see appendix A01), one of the managers is "convinced cabin crew are not informed in an optimal way, nor completely up to date and therefore cannot do their job the way we want them to". He stresses the importance of crew being completely up to date of the new developments or changes to flight related services.

Similarly, other employees of IFS mention that "crew get too much information", and "it's like a tsunami, what has come to them". Employees also mention that the scattered information landscape makes it hard for crew to know what is expected from them. Additionally, topics like 'blurred lines between what information is 'need to know' and what is 'nice to know information' (see chapter 4) could play a role. According to some, it is due to the fact that there is too little governance, according to others it is due to the large amount of applications.

When meeting crew and mentioning the topic, most immediately respond with confirmation and they emphasize the importance of solving the problem. *Therefore, IFS is looking for main factors causing the information overload and solutions that could solve (parts of) the problem. Essential is that the solution takes the future vision into account, while fitting the goals of KLM as a brand (see KLM compass in appendix 1.1).*

THE AMBITION

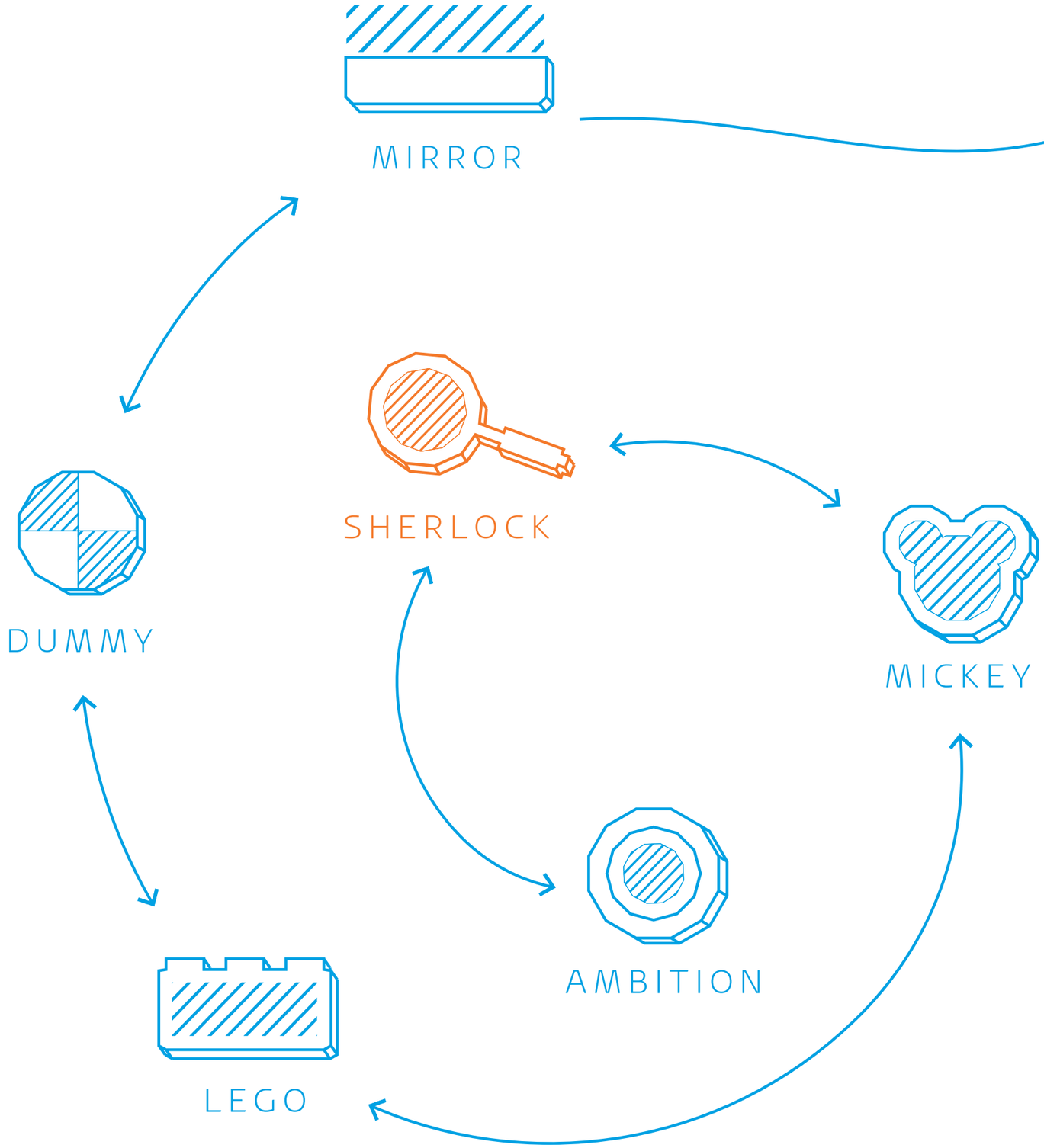
Although the exact problem still has to be defined and qualitative data has to be created or discovered, the IFS development manager wants to find a way to decrease information overload among crew. Therefore, the ambition of this thesis is as follows:

How to reduce the information overload among cabin crew?

To work towards a more specific problem statement, the SHERLOCK-phase of the thesis will focus on defining the problem and answer the follow questions:

1. **Literature review:** What is information overload according to literature and which factors could influence information overload?
2. **Channel analysis:** What is the role of the mediating channels in the process of sending information and which factors of these channels could influence information overload?
3. **Organisational analyis:** How does the organisation create and send information to crew and which factors in this process could play a role in information overload?
4. **User analysis:** How does crew experience information overload and which factors could be identified playing a role in information overload?

The main goal of the SHERLOCK phase is to find out what factors cause IO. The chapter will conclude with main insights, which will be translated in to a design challenge in the 'design challenge' phase.



The SHERLOCK Phase

In the SHERLOCK phase, the problem will be analysed in a 'divergent' way. Important sources will be reviewed and exploratory interviews will be conducted.

It will start with a literature review about Information Overload, followed by a channel analysis. Thirdly, the organisation analysis will be discussed and lastly the crew analysis. The chapter closes with an overall conclusion.

03 Literature review

Over the years, many new innovations and technologies have provided individuals with a wide range of channels. Networks have grown, communications are made easier and access to information sources has become endless. However, the vast amount of information available can increase the perception of information overload (IO) (Persson, 2018). To find out whether other aspects are involved in the occurrence IO, an introduction to literature will firstly be given after which the research question of this chapter will be introduced.

3.1 INTRODUCTION TO LITERATURE

Persson (2018) found that recent technological developments have increased the available data in more channels, causing IO. Specifically e-mail, internet and mobile phones are found to be of influence (Benselin & Ragsdell, 2016; Edmunds & Morris, 2000; Hemp, 2009; Misra & Stokols, 2012). Technology not only provided access to data which lead to IO, it also removed the boundaries of publishing information (Hemp, 2009). Everybody can be a publisher, even a computer (Hemp, 2009). This subsequently led to an increase in the amount of data available (and thus IO). However, although technologies are often mentioned as a cause of IO (Edmunds & Morris, 2000; Eppler & Mengis, 2004; Persson, 2018), the concept is nothing new, nor is it solely related to technological advancements.

Looking back in history, IO has been recognized since 1845 (Edmunds & Morris, 2000). Simon (1969) originally referred to it as "*life in an information-rich world*" (p. 9). According to Simon (1969), information consumes attention and "*a wealth of information creates a poverty of attention*" (p.7). Only a few years later, Jacoby (1977) defined IO as people having too much information and being unable to process all information found.

Compared to 1845, the speed in which we are able to process information (Edmunds & Morris, 2000), the speed in which information can be created and the amount of information we have access to have changed (Hemp, 2009) and influenced IO. Individuals find information through books, friends, social media, Google, and many other channels used during work and in private life. Not only do problems therefore occur on a personal level, also social and organisational environments are affected (Benselin & Ragsdell, 2016). The society has become an information society, causing IO to be present in both daily life and work-related activities.

IO and Cabin Crew

To create an understanding of what causes IO among cabin crew, a unified understanding of what IO is needs to be created first. Additionally, different reasons for IO have already been mentioned, showing the need for specific factors involved in the occurance of IO. For that reason, this literature review will focus on defining IO and reviewing identified factors involved in the process of sending information and causing IO. With that, the aim is to answer the following question: What is information overload according to literature and which factors could influence information overload?

3.2 THE DEFINITION OF INFORMATION OVERLOAD

In literature, many different definitions of IO are used. Feather (2013) describes IO as "the point (...) at which there is so much information that it is no longer possible effectively to use it" (P. 113). Bawden et al. (1999) also refer to the decreased effectiveness by stating that IO occurs when information that is posibly useful becomes hindrance rather than help. Marques & Batista (2017) specify more factors by referring to it as the phenomenon where the volume of the information is bigger than the processing ability in the time available.

Different effects of IO are additionally mentioned. IO decreases performance and, as shown in figure 3.1, influences decision accuracy (Eppler & Mengis, 2003, 2004). Also, information consumes attention and so information overload reduces knowledge and decreases the quality of actions (Persson (2018).

Edmunds & Morris (2000) combine effects with related emotions and state that "(...) there cannot be many people who have not experienced the feeling of having too much information which uses up too much of their time, causing them to feel stressed, which, in turn, affects their decision-making. Concurrent with these phenomena is the anxiety generated by worrying whether an important piece of information has been missed in the volume of material" (p. 19).

Many different definitions and effects have been found. To create consistency throughout this thesis, one definition of IO will be used. Therefore, in concordance with Bawden et al. (1999), Marques & Batista (2017), Eppler & Mengis (2004) and Persson (2018), information overload is defined as the phenomenon whereby the volume of the information provided is bigger than the processing ability of an individual in the time available, therefore becoming a hindrance and typically decreasing performance and attention.

3.3 FACTORS INFLUENCING IO

As discussed, IO can be affected by channels, but also by for example the volume of the information. To understand what causes IO, Jackson & Farzaneh (2012) have translated different researches into a theoretical model of factors influencing individual IO, shown in figure 3.2

This model focuses on IO occurring when the individual is processing the information. Though many factors are mentioned, it is missing factors such as the channels through which information is sent, while the fast developments of technologies have been found to increase the perception of IO. External factors, such as the context, have also not been taken into account, while Jackson & Farzaneh (2012) found these playing a large role in the perception of IO. Furthermore, it has been found that characteristics of the information itself (e.g. quantity, frequency/intensity, quality), the person, the

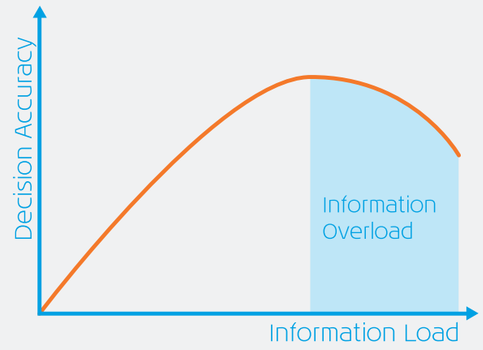


Figure 3.1: information overload as the inverted u-curve (Eppler & Mengis, 2003)

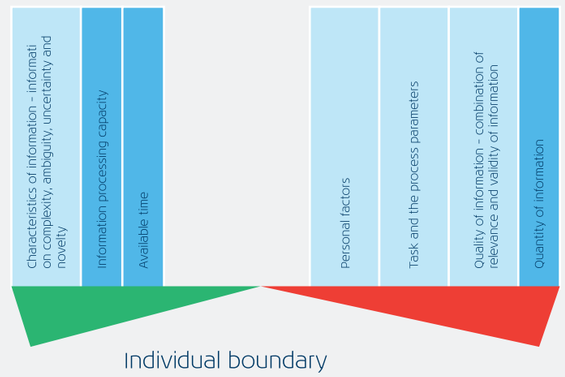


Figure 3.2: the conceptual information overload model (Jackson & Farzaneh, 2012)

The factors on left side (green) of the model work together to decrease the probability of IO occurrence. The factors on the right side work together to increase the probability of individual IO occurrence.

tasks that need to be completed, the organisational design and informational technologies can cause IO (Eppler & Mengis, 2003). IO is usually caused by a combination of those factors and thereby increase the complexity of the problem (Eppler & Mengis, 2003). To make them model more complete, these factors can be added to the total of factors in figure 3.2.

For cabin crew, many of the mentioned factors could play a role. The content is created by the organisation, sent through many possible channels, while the influence of context is highly dependent on when crew receives the information. To understand the cause of IO among cabin crew, the process of sending information in the organisational environment and how factors are of influence need to be understood. Although cabin crew are different from a regular employee, the process of sending information is expected to be similar to organisational processes in general. Therefore, the process of IO in an organisational environment will be discussed.

3.4 THE PROCESS OF IO IN AN ORGANISATIONAL ENVIRONMENT

Wilson (2001) proposes a scheme for the process in which IO occurs, where information starts at the organisational side. Next, it flows to a mediating technology, through which the information becomes available to the individual (see fig. 3.3).

In situations where an organisation sends or facilitates access to information, the individuals within the organisation add information to the amount of information already available (Jackson & Farzaneh, 2012). In this process, individuals or designs of organisational systems could be a first step in which factors influence IO. The layer of mediating technology separates the characteristics of the information from the mediating technology and those of the individual. An individual can experience IO, influenced by personal factors or factors higher up in the process such as the mediating technology or the characteristics of the information itself (Eppler & Mengis, 2003).

Additionally, the overview shows 4 overarching influencers (blue circles in figure 3.3), that need to be taken into account.

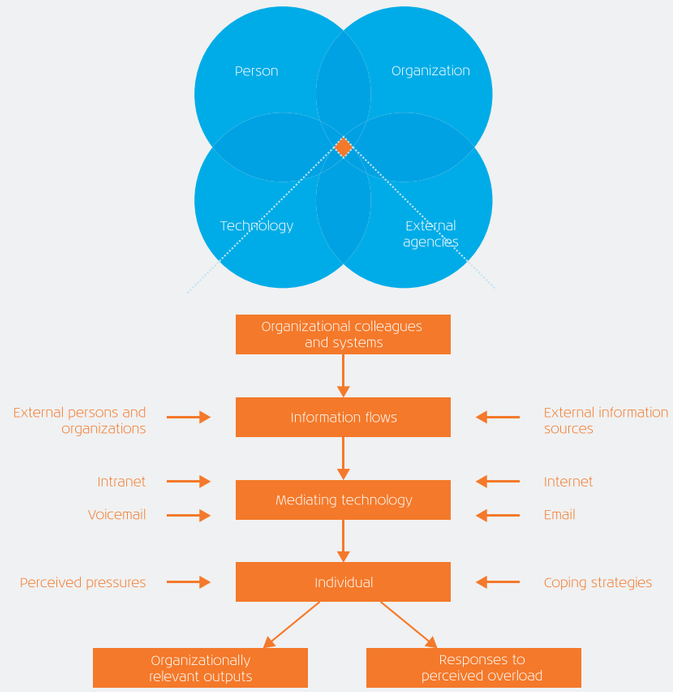


Figure 3.3: The impact an individual has on IO within an organisation and vice versa (Jackson & Farzaneh, 2012)

The process for cabin crew

Firstly, Individuals within the KLM create information and define the content. The individual then sends the information through mediating technology, being the 'channels' for crew. In all phases, factors influence the information overload the crew experiences at an individual level.

Similar to the schematic overview, the overarching influencers for cabin crew are the person (crew), the organization and technology. Different from his overview are the external agencies, which often not part of the problem. More so, it is expected that, in congruence with Jackson & Farzaneh (2012), the context is of influence for crew. For example, although during the flight no new information is received, contextual factors might influence the ease of retrieving information. For this reason, an adjusted overview is created for the KLM cabin crew process of IO (see figure 3.4).

3.5 CHANNEL OVERLOAD

Marques & Batista (2017) connect the process of the generation of IO to communication overload. According to them, IO is the process of an individual digesting information and messages sent, thus taking place at an individual level in figure 3.3. Communication overload is related to the management of the communication process, concerning the amount of daily messages that reach individuals through numerous communication channels (such as groupware or email). Poor management of the communication process leads to communication overload, probably increasing IO. Bawden & Robinson (2009) confirm this by writing that too much information, in multiple formats and sent through multiple communication channels available leads to IO.

Sean Burns & Bossaller (2012) define communication overload more specifically as "the phenomenon or experience of feeling overwhelmed by communication technologies" (p. 598) in response to large amounts of communication, through various channels. This subsequently leads to excessive interception on the job, leading to lower productivity (Karr-Wisniewski & Lu, 2010). Communication overload has also been defined as connection overload (LaRose, Connolly, Lee, Li, & Hales, 2014), showing the importance of technologies and channels involved.

When relating communication overload to the process in to figure 3.3 and 3.4, communication overload occurs before the individual is overloaded by the Information because the individual is unable to manage messages sent through the channels and channels themselves. Defining communication overload as a phenomenon different from IO adds to the idea that the management of channels influences IO. Therefore, it shows the importance of looking at both communication overload and information overload in the process of sending messages to cabin crew.

To make a clear distinction between the information itself and the way the information is sent, this thesis will separate communication overload from IO. However, the term 'communication' implies that a two way stream of information or messages takes place, while the process as shown in figure 3.3 mainly focuses on a one way information stream. Since crew mostly receives information or retrieves information that is sent to them, a one way stream seems more fitting. To avoid the confusion between a two way stream communication process and a one way stream of information sent, communication overload will be called 'channel overload'. In concordance with Karr-Wisniewski & Lu (2010), channel overload will be defined as the phenomena where messages are send through an abundance of channels and the continuous active and passive management of these channels leads to distractions and feeling overwhelmed.

Within the process of the organization sending information to crew, channel overload (CO) happens at the mediating technology level. The schematic overview of the crew IO process is made in figure 3.4

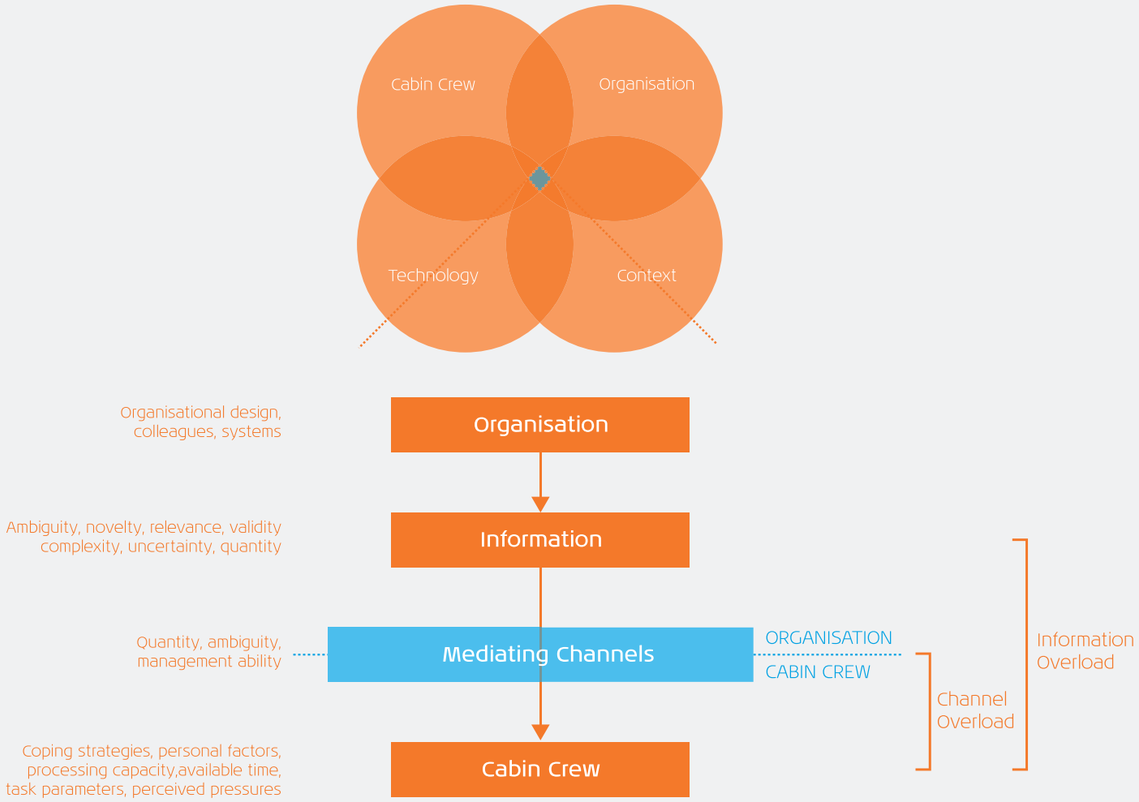


Figure 3.4: Theoretical framework for cabin crew, adjusted from Jackson & Farzaneh (2012), combined with Eppler & Mengis (2003)

3.6 CONCLUSION: A THEORETICAL FRAMEWORK FOR KLM CABIN CREW

The main question of the literature review was to answer the question: What is information overload according to literature and which factors could influence information overload?

Information overload in this thesis is defined as the phenomenon whereby the volume of the information provided is bigger than the processing ability of an individual in the time available, therefore becoming a hindrance and typically decreasing performance and attention.

When analysing the process of an organisation sending messages and the occurrence of IO at an individual level in this process, the literature review has shown that many factors have to be taken into account. Four overarching factors play a role in the entire process; the person and its characteristics (see fig. 3.4), the organisation sending information, the technology used and external factors, in the case of crew being their 'context'.

In the process of sending information, IO happens at an individual level, in case of KLM this is the cabin crew level. In the process of creating and sending information, the individual in the organisation creating the information, as well as organisational systems and structures are the first to influence IO. As identified in figure 3.2, information characteristics can also influence IO, such as the complexity, ambiguity, uncertainty and novelty. Eppler & Mengis (2003) add factors such as the quantity, frequency/intensity and the quality of the information.

The information is sent through mediating technologies, for cabin crew called 'mediating channels', in which factors such as quantity and management of these channels play a role in the occurrence of IO. The literature has also shown that mediating channels can cause channel overload, which ultimately influences IO. Channels overload is defined as the phenomena where messages are send through an abundance of channels and the continuous active and passive management of these channels leads to distractions and feeling overwhelmed.

At KLM, technology operates mostly as a medium through which the organisation is able to reach the cabin crew. Therefore, the model in figure 3.3 is adjusted to information flowing through the channels to cabin crew (see figure 3.5). This also means that the channel is where the information moves from the organisation to cabin crew, visualised as a boundary by the dotted line.

Lastly, the individual receiving the information, cabin crew, not only has to be able to manage the mediating channels to begin with, but also need to have a functional coping strategy (fig. 3.3), have time available, have the information processing capacity and personal and task factors (fig. 3.2) play a role.

The mediating channels have a different role than the other layers in the process and might influence IO and CO differently. Therefore, mediating channels become important to understand from both an organisational perspective and a crew perspective. Thus, in the next chapter, the mediating channels will be analysed firstly. This will be followed by an organisational analysis and a crew analysis.

04 Mediating Channels Analysis

According to literature, different factors within the process of sending information can influence CO and IO. To understand how IO has arisen among cabin crew, this chapter will analyse the mediating channels through which information is sent. Specifically, it will analyse how and through what channels cabin crew receive information. Thus, this analysis aims at answering the following question:

What is the role of the mediating channels in the process of sending information and which factors of these channels could influence information overload?

The chapter will start with discussing the method used. Subsequently, in the channel analysis the initial channel strategies and current channel classifications will be analysed, as well as the top 3 channels used by crew. The chapter will conclude with factors identified.

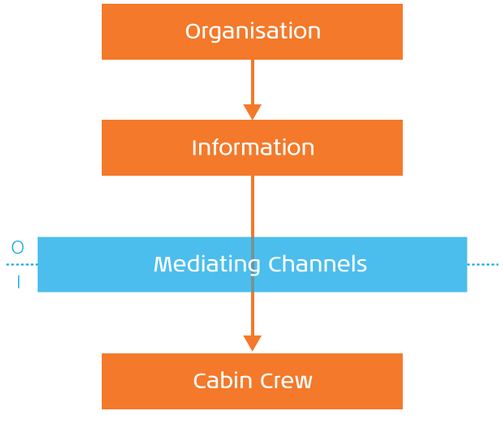


Figure 4.1: Process of sending information to crew, with focus on mediating channels.

4.1 Method

The information in this phase is taken from interviews with employees in the organisation and cabin crew, which has been triangulated with secondary research.

Interviews IFS Employees

The interviews with IFS employees (n=6) were informal conversational interviews (Patton, 2002). The exact tasks and role of each person were hard to know in advance, making a more informal style more appropriate. All employees where aware of the topic of the research before starting the interview. The diversity of the topics touched upon in the interviews was large, with many being unrelated to this specific research. For that reason, the interviews were analysed with the use of research diaries and fieldnotes (Nadin & Cassell, 2006): during every interview fieldnotes were taken and if possible the interviews were recorded. After the interviews, main insights were written down in a diary. Additionally, the same day the tapes were listened to and missing themes were written down. Subsequently, all relevant insights were written down more thoroughly in the diary for reflexivity (Braun & Clarke, 2013; Nadin & Cassell, 2006). Therefore, the diary consists of fieldnotes, insights and partly transcriptions, blurring the lines between all three (Newbury, 2001).

The research diary together with transcriptions can be found in appendix A03. Clusterings of the interviews can be found in appendix A01.

Secondary data

Since field notes and diaries create a form or bias in the research, all topics were triangulated with secondary research data (Ravitch & Carl, 2015).

Between 2017 and 2019, user-research within KLM has been conducted in relation to the crew Ipad, apps and information crew receive. This includes files from Valsplat, a user-centered experience design agency who have conducted user research among the KLM cabin crew. Additionally, companies like IBM, Apple and Mirabeaux have done research that is used for this chapter. Since the companies mentioned are specialized in user research, the secondary research is considered trustworthy and therefore increases the validity of the research (Ravitch & Carl, 2015). The secondary data was analysed and interviews were conducted until repetition of topics started to occur.

All clusterings of secondary data can be found in appendix A01 and original secondary data in appendix C.

Interviews with cabin crew

The interviews with crew, mostly used in chapter 6, were semi-open ended since an interview guide was used. A more 'survey' interview-style was used, in which easy follow-up questions could be asked. This interview guide is iteratively changed after reflecting on the interviews. The main reason to use this interviewing-style was because the research was still exploratory and the time cabin crew had to join the interview in the crew centre was limited. The interview guides and insights are combined in appendix A02. All secondary research can be found in appendix C and clustered information from this research in appendix A01.

Analysis of channels

For the analysis of the channels, 3 main channels were analysed. Firstly, MyFlight was analysed and the updates sent through the channel over a period of 2 months were reviewed. Secondly, the same was done for the Newsapp. The Outlook app is a more personal app, receiving personal, as well as general KLM messages. The topics of these general messages will be discussed and analysed. The analysis can be found in appendix 2.1 & 2.2.

4.2 Channel Strategies

As previously mentioned, all information that was sent to physical mailboxes at the crew centre is now sent to the crew iPad. Additionally, many different applications have been developed, making the iPad now their main tool to access information about their flight, their rostering and for example service information. According to three interviewees (see appendix A03), the removal of these mailboxes are the main reason why crew suffers from IO. To find out whether IO is caused by the removal of mailboxes and with that underlying influencing factors, the old channel strategy is analysed and compared to the new digital channel strategy and classification strategies (see appendix 2.1 and 2.2 for full analysis).

4.2.1 FROM OLD TO NEW STRATEGIES

Before the introduction of iPad, cabin crew received information through 3 main channels (see fig. 4.2). Cabin Ready was a magazine with nice to know information, while the "Cabine Journaal" and cabin & crew bulletins were need to know channels.

The new strategy initially aimed at replacing the three channels by a digital variant (see fig. 4.3). However, over the years many more channels have been added and the amount of channels has grown to close to 36. Instead of switching from the old to the new strategy all at once, the current channels still seem to be in a state of transition. Crew now finds information partly on paper, partly in specific applications, while some information is still sent over the email. This makes it very hard to keep track of what is found where or how to find it. Comparing this to literature, the management of channels is hard in this transitional phase, the quantity is high and channels seem ambiguous.

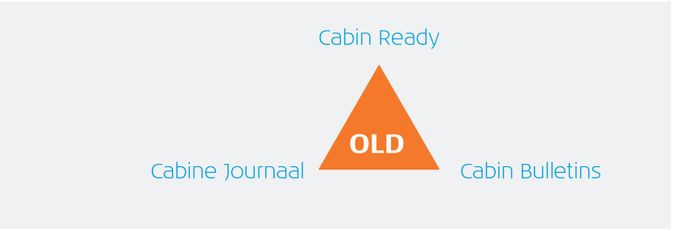


Figure 4.2: The old communication strategy

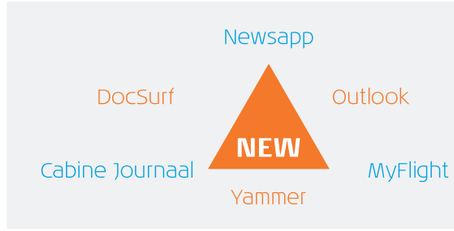


Figure 4.3: The new communication strategy

4.2.2 CHANNEL CLASSIFICATION STRATEGIES

The new strategy kept the old classification of 'need to know' and 'nice to know' information. These classifications are used as a guide for the organisation and show them in which one of the main channels in fig. 4.3 to post different types of information (see appendix 2.1 & 2.2). Additionally, these classifications show cabin crew what is essential to read as opposed to what is nice to know.

However, not all guidelines show crew when to read information and it is unclear what to do with unclassified channels. Additionally, some of the messages sent might need a specific action from crew, making it hard to know whether channels continuously need to be checked (even when not at work) or in a preparation phase moments. Lastly, both channels and information are Classified. All in all, the classifications are making it ambiguous to know the separation between the two types of channels and information.

4.3 Analysis of top 3 channels

Because of the large amount of channels, many cabin crew members have created *"their own way of working"* (Valsplat, appendix C01 & C08) (Coping strategy). Out of the 36 channels currently available, cabin crew now mostly focus on the Newsapp, MyFlight, Verzoekensysteem (flight rostering) and Outlook, as well as Drillster, Yammer and Docsurf (See appendix C01 & C02, appendix A01 & A02). To create a fit with current running IFS projects mainly focusing on MyFlight, NewsApp and Outlook, solely these three apps were analysed (see appendix 2.1 & 2.2). In figure 4.4, a summary of insights drawn from this analysis can be found, showing what aspects of the main channels can influence CO or IO.

Figure 4.4: Analysis if top 3 channels for cabin crew

MYFLIGHT

TIMING
At the end of the month, the amount of updates sent are a higher quantity. If crew have been off for a few days, the updates can pile up.

AMBIGUITY
Within the app, different channels are in place for updates, making it ambiguous and complex where to go to.

CONTENT
Messages are perceived to be lengthy with too much irrelevant information, missing in-app links (see appendix 2.2). This makes it hard to remember and retrieve the messages and with that manage the information.

MANAGEMENT
IFS has the ability to gather data and learn from it, but does not seem to do this. Also, filtering in-app is possible, but not used, thus increasing the irrelevance and decreasing the ability to manage the channel.

NEWSAPP

TIMING
KLM posts messages from 9-17h, while crew work 24/7. This influences the time available for crew to prepare for their flight, since the time-frame in which messages can be received is smaller.

AMBIGUITY
The channel is classified as 'nice to know', but many messages are 'need to know'. This makes it ambiguous and could build the pressure of having to read this channel too.

CONTENT
Information is often also found in other channels, creating duplicity. It adds to the quantity and ambiguity, and decreases ease of management of channels.

MANAGEMENT
Filtering is possible, but not used. Crew want all information to be visible, which can make the information in the app feel overwhelming. It adds to the perceived quantity and decreases relevance and applied management.

EMAIL

TIMING
Similar to the NewsApp, messages through the email are send between 9h and 17h. This influences the time available for crew to read the messages.

AMBIGUITY
Many different topics are touched upon, without specific focus. This creates ambiguity and decreases relevance.

CONTENT
Information is often also found in other channels, making the repetition high.

MANAGEMENT
There is no data gathered about what is send through Outlook. Therefore, it is unclear who sends what and how often. This makes it hard to analyse this channel and know the ease of management.

Concluding Channel Analysis

The main question of this chapter is as follows: **What is the role of the mediating channels in the process of sending information and which factors of these channels could influence information overload?**

In conclusion, the quantity of channels crew have access to and receive information from is high. The mediating channels seems to function as a tool for the **organisation** to send information to crew. This appears to be similar to the mailbox crew used to have, but in this case multiple mailboxes in which information is sent to by the organisation. At the same time, information is sent both digitally and on paper.

Though minor filtering is available for crew, cabin crew have little ability to manage the information and channels combined. Rather: **it is the organisation that manages through which channels information is sent to crew**. Visualised in figure 4.5, **the mediating channels function more as multiple gates through which the organisation can send information to reach Crew. The channels do not necessarily mediate the information, rather, they form multiple one-way-stream gates.**

Due to the quantity of gates/channels being high, CO occurs. Inconsistent classification increases pressure to read all information of all channels without missing any and is expected to subsequently reduce the willingness to filter information yourself. **Organisation-centred timing, ambiguous information and channels, irrelevant and repeated information due to lack of personalisation, as well as little ability and wish to manage the channels separately: many factors are identified that increase the perceived IO and CO.**

All in all, it is safe to state that the information and channels are not crew centred but organisation centred. Additionally, it can be concluded that CO is definitely occurring and channels are influencing IO. Channels are not so much a mediator, rather it they used as no more than a gate to cabin crew.

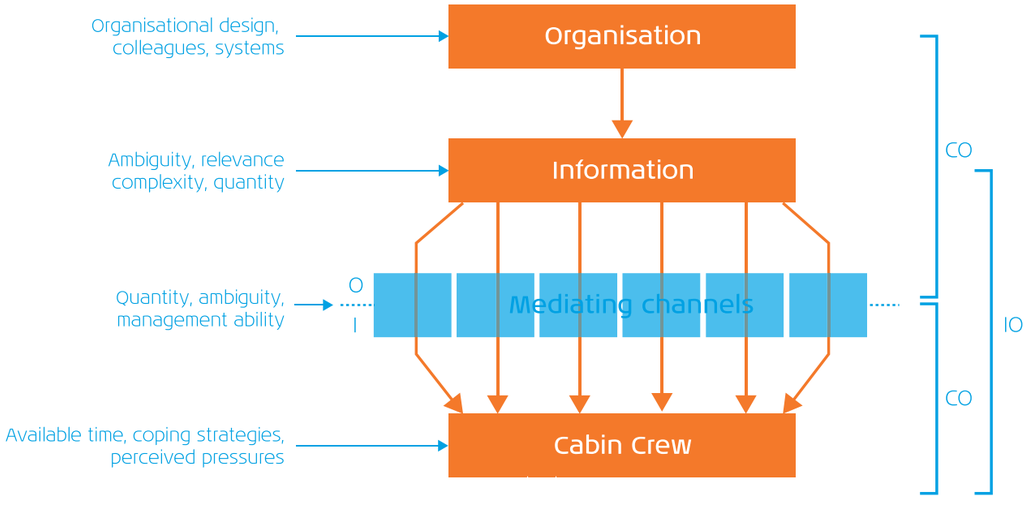


Figure 4.5: Factors playing a role in IO, identified in the mediating channel analysis.

05 Organisation Analysis

The channel analysis has shown that multiple factors within the mediating channels can influence IO. Additionally, the channels are used as no more than a gate to send information, rather than a mediator. To identify reasons why these factors and other factors might influence IO, this chapter will focus on the organisation side of the process. Specifically, it will focus on the organisation and the information sent by it. Therefore, this chapter aims at answering the following question:

How does the organisation create and send information to crew and which factors in this process could play a role in information overload?

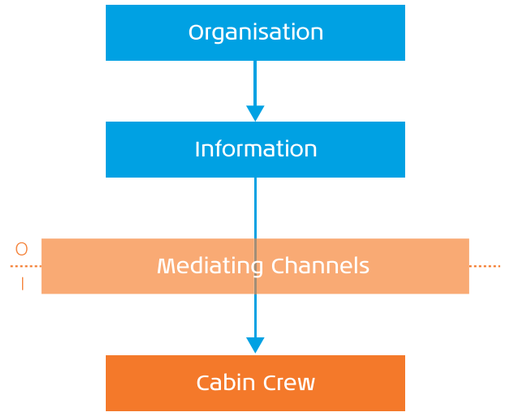


Figure 5.1: Process of sending information to crew, with focus on the organisation and their information

The method will be explained briefly, after which insights from the interviews will be discussed. The chapter will conclude with all factors identified and main insights.

5.1 Method

Interviews with IFS employees from different divisions were conducted to analyse and identify possible factors influencing information overload. Although more departments than only IFS are able to send crew messages through the main channels, the analysis is limited to the messages sent from IFS. This division sends all messages through MyFlight, many messages for crew through NewsApp and emails through Outlook. With that, they are expected to be responsible for the largest part of the messages.

The interviews were conducted with employees from the communication division, multiple employees from the Cabin Products & Services Engineering division (P&S) and multiple employees working for the Business Development division (see figure 5.1). See page 21 for more information, as well as appendices A01 & A03. In appendix 2.3, the insights from the interviews are summarised per division.

5.2 Insights from the interviews

The interviews provided insights on different topics, of which many are interrelated. In figure 5.3, an example of how topics are interrelated is shown. This paragraph will discuss both insights coming from the interviews and challenges of employees shared during the interviews.

Multiple divisions within the IFS department (fig. 5.2) are sending information to crew. Each division can have multiple content editors (trained on tone-of-voice), all using a different process when constructing information. Although not all of the editors have access to all channels, the top 3 channels are often used by multiple editors.

Too many people can post updates in channels available

Though there is a dedicated communication division (shown in fig. 5.2), their focus is solely on 'corporate communication'. Other than that, only Product & Services has a dedicated communication employee who governs messages. According to employees, this lack of governance of the channels and information has led to too many people being able to post messages. Subsequently, it led to e.g. poor timing of messages sent by different divisions. As an example, they state that the lack of governance has led to moments where for example 60 updates were posted in MyFlight in one day.

Where do we post certain information?

Messages written by the content editors are sometimes sent through multiple channels, especially when these editors perceive them to be important. Employees similarly state they do not always know where to post what kind of information, as they feel like the boundaries between 'need to know' and 'nice to know' channels and information are blurred.

It shows that they identify the channel selection as being ambiguous and suffer from CO. Ambiguity of channel selection leads to wrongly selected channels for messages or reptition of messages in different channels (see appendix 2.1 & 2.2 for examples).

Some want a lot of information, others don't. What do I do? I will just post all information

Insecurity about how much crew want to know sometimes leads to employees posting all information available. Since there is no data collected digitally about the use of the information by crew, the opportunity to make their messages more crew-centred is missed.

All in all, many people in different divisions send messages to crew, through various channels. This makes the quantity of information high, the variation in messages large and timing poor. The process of constructing messages varies and content strategies are not in place. This creates irrelevant, repetitive (high quantity) and ambiguous information and increases the ambiguity of channels. In conclusion, the current system, or lack of system (governance), is increasing IO, similar to the design of the organisation. It has made the employees suffer from CO.

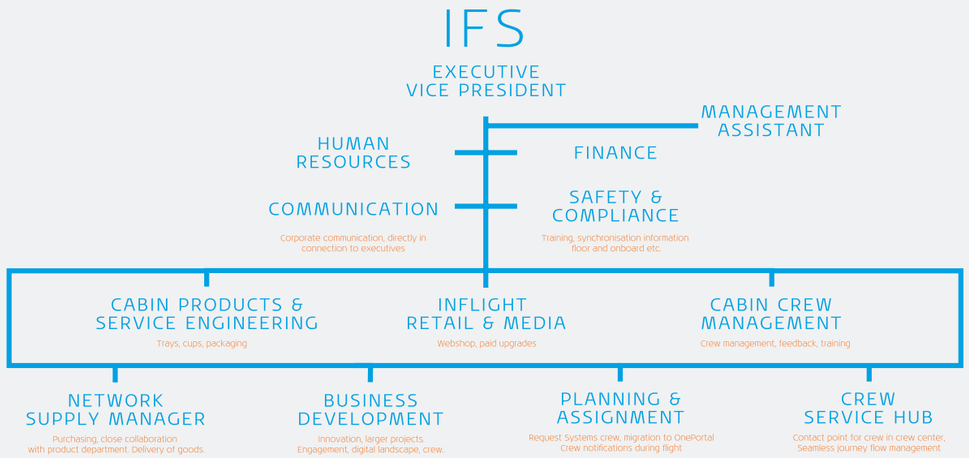


Figure 5.2: Organogram of inflight services

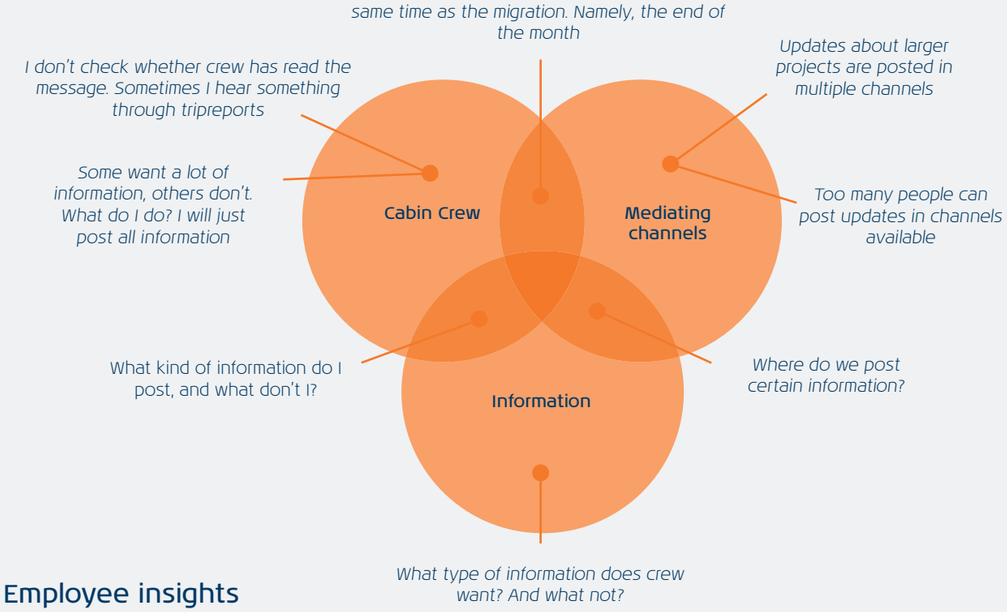


Figure 5.3: Insights from IFS employee interviews, clustered by main theme

5.3 Concluding Organisation Analysis

The main question of this chapter is: **How does the organisation create and send information to crew and which factors in this process could play a role in information overload?**

From the organisation analysis it can be concluded that many of the factors found in the literature research are involved in the process of the organisation constructing and sending information (see figure 5.4). Factors such as ambiguity and quantity play a large role, as well as lack of knowledge about what is relevant for the user. Not only does it create IO among cabin crew, it seems that the individuals within the organisation creating the information do not know where to post what and suffer from CO themselves (see figure 5.4)

However, one other factor that was not apparent in the literature research but does seem to play a role is the '**user-centricity**' of the organisation. Or rather, the lack of user-centricity: The content editors within the organisation mostly wonder where and how to send information, implying that information is purely **pushed to cabin crew**. **Information at all times seems to be a one way stream, in which the organisation pushes information through one channel or multiple channels, hoping crew will see and read it. Thus, the mediating channels serve as a virtual border between the organisation and crew, with the organisation pushing the information across the border. This leaves little space for the cabin crew to manage their own information.**

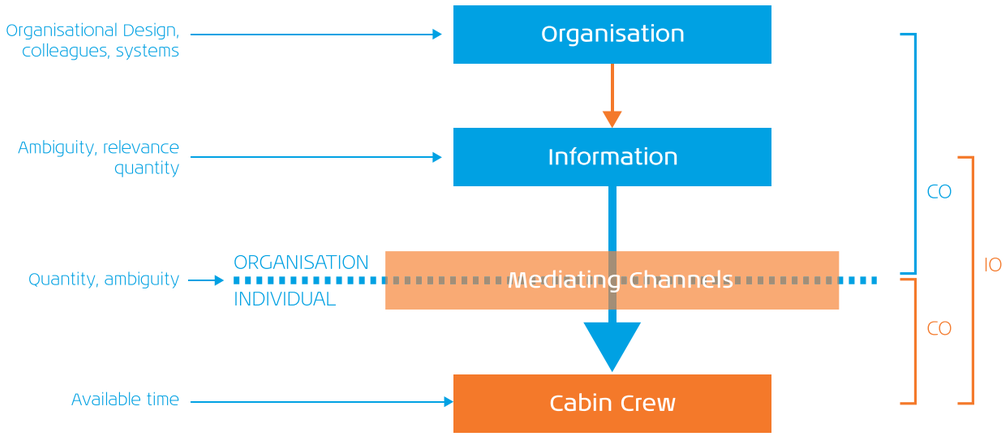


Figure 5.4: Factors playing a role in each phase, identified after the organisation analysis.

06 Crew Analysis

The organisation often recognizes the IO crew perceives. However, when asking the business manager or employees for proof of messages not being read due to OI or other detrimental effects, they seem to not have noticed such specific effects (see appendix A03). To find out whether crew indeed suffers from IO and CO, interviews with crew were conducted and secondary data was analysed. This chapter focuses on the findings coming from the analyses and aims at answering the following question: How does crew experience information overload and which factors could be identified playing a role in information overload?

The chapter starts with explaining the methods Used, after which the insights from secondary data and the interviews will be Discussed. The chapter closes the main conclusion.

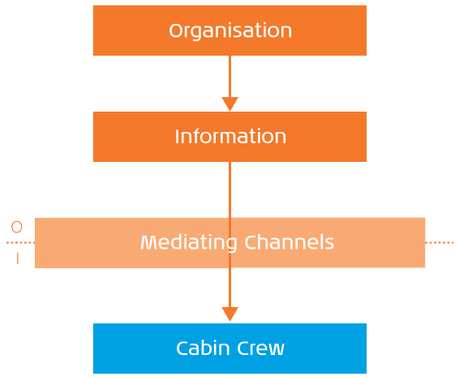


Figure 6.1: Process of sending information to crew, with focus on the cabin crew.

6.1 Method

As mentioned in chapter 4, user-research within KLM has been conducted in relation to the crew iPad, apps and information crew receives. Research stems from 2017 to 2019 and was conducted by either KLM, Valsplat or for example IBM and Apple (see appendix C). A total of 5 different sources were used, of which the research of Valsplat in appendix C05, C08 & C09 are considered to be important (see appendix 3.6 for an explanation about this research. In appendix A01, all secondary information is clustered by topic.

After clustering the information, interviews with cabin crew were conducted at the crew centre. The cabin crew interviewed were chosen randomly (n=14) and the duration of the interviews ranged from 5 minutes to 20 minutes. High variance in time was due to the fact that they were preparing for their flight and had to leave in time for crew briefing. All interviewees agreed to participate in the interview on an anonymous basis.

The interviews focused on finding repetition between what was found in the secondary research data in order to increase validity. Two test interviews were done and two larger groups were interviewed. For each of the two groups, separate guides were used after learnings from the first set were drawn. All interviews and guides can be found in appendix A01 and in appendix A02 the clustered information from the interviews is added.

6.3 Insights from analysis

Information topics found in secondary data (see appendix A01) seem interrelated. E.g. what crew mention as being 'a lot of information' is often mentioned in relation to 'sent through many channels'. Similarly, 'ambiguity about what is nice to know and need to know information' is mentioned in relation to 'not knowing whether I'm up to date'. This is not only comparable to what was found in the organisation analysis, but also what was found in the interviews with crew. All the insights from cabin crew can be categorized by each of the 3 topics shown in fig. 6.1 and therefore the topics will be discussed one by one.

Content

In relation to content, cabin crew mention the quantity of information being too high and that the information is sometimes clustered by organisation instead of by rank or destination (e.g. crew-centered). Additionally, they sometimes find information irrelevant and wish for more personalisation. At the same time, others have a fear of missing out and therefore never actively filter information (management ability).

Mediating channels

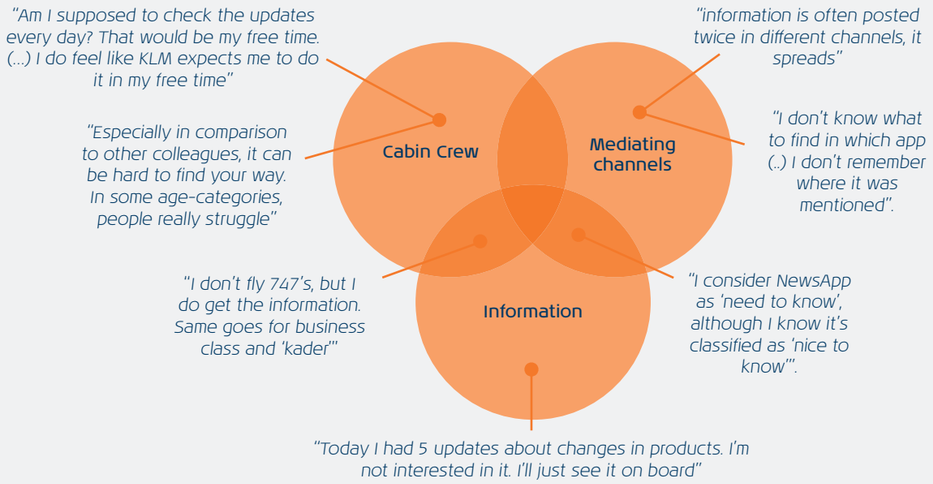
Cabin crew find that the quantity of the channels is too high, with unclear boundaries in content leading to ambiguity. The fact that information can be found in multiple channels decreases relevance and validity. Also, because of the high quantity of channels, they sometimes simply forget to open an app or are unable to recall where information was found (see appendix 4.2). Additionally, they mention channels are not adjusted to their context or tasks. All of the above causes them to feel like they are not optimally prepared for their flight.

Cabin Crew

Cabin crew further mention that information is designed for people who spend days behind their computer. Remarks range from content not being visual enough, to being too high in quantity. Additionally, crew mention the making of screenshots as a coping strategy to deal with IO. Other secondary effects are mentioned, such as 'not knowing whether I'm up to date'', as well as not trusting (uncertainty) sources. Crew sometimes doubt whether rumours heard are true or whether it has actually been posted in one of the channels. The search options in the applications do not work optimally, making it hard to verify their doubts.

All of the factors identified leads to crew feeling pressured to read all information (even at home) and are unable to manage it in the time available.

Figure 6.2: Insights from crew interviews, clustered by main theme



6.4 Concluding Crew Analysis

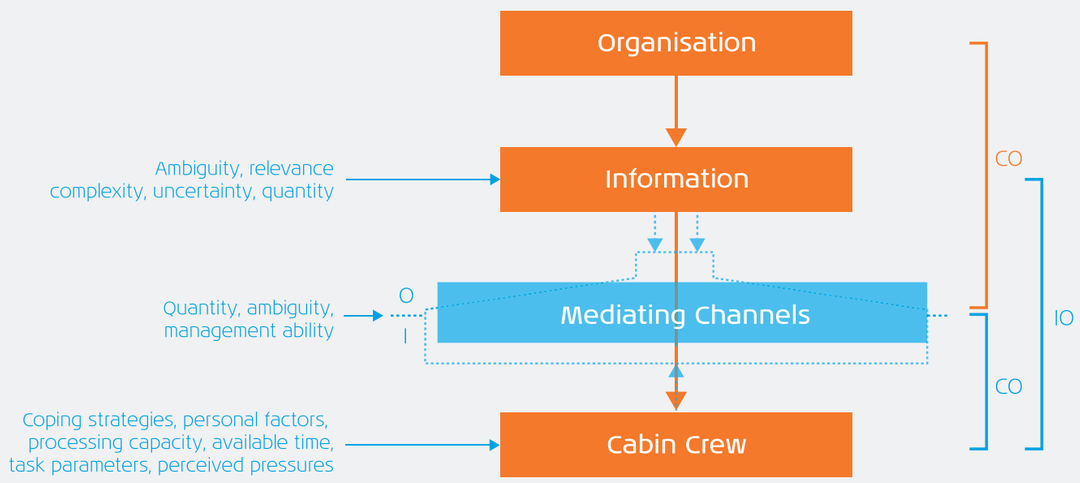
This chapter is aiming at answering the following question: **How does crew experience information overload and which factors could be identified playing a role in information overload?**

Both the interviews and the secondary research show that the number of factors that play a role is large. Factors range from the quantity of channels and information being too high, to feeling pressured to read all information (even in personal time). Many of the identified factors in figure 6.3 show that CO and IO is definitely occurring among cabin crew. Other issues are mentioned as well, making it a complex problem.

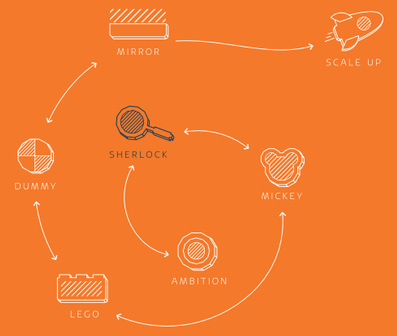
An important issue mentioned by **crew is desire of feeling prepared and the wish for personalisation**. They seem to feel pressured by the amount of **information being pushed by the organisation**, thus are scared to miss information. **Turning this around, the cabin crew seem to wish for the organisation to stop pushing information, and instead let them be in control of the information (which is in concordance with the future vision of IFS). This would mean they wish to "pull" information, in order to manage information and channels themselves**. As visualised by the dotted lines in figure 6.3, they want personalised information and being able to personalise it themselves. Therefore, the mediating channels are shaped in a reversed funnel (blue dotted line), where information only comes in and gets pulled out based on the crew and their wishes.

All in all it can be stated that cabin crew need to be in charge (pull) of more user-centred information and need help in feeling up to date. All aiming at being optimally enabled to do their job with a sense of being in control and up to date.

Figure 6.3: Factors identified in the crew analysis



07 Concluding SHERLOCK



Over the past years, KLM has gone through multiple digital transformations. From physical mailboxes with a channel strategy consisting of 3 main sources of information, to a new digital strategy with the crew iPad as their main source. Although strategies were in place initially, the current transitional phase has caused information to be sent through many digital and conventional channels. What is communicated is perceived as being overwhelming, and navigation through the channels is hard. It has made them suffer from IO and CO (see figure 7.1). The goal of the SHERLOCK phase was to find out what factors influence IO. The main insights of this chapter will be taken to the next phase, in which the design challenge will be defined.

Literature Review
Literature research has shown that within the process of sending information, information is initially created by an individual in the organisation. IO can therefore be influenced at the source by organisational factors (e.g. organisational system design), as well as factors caused by the individual within the organisation. In the case of KLM, information is often sent through mediating channels, e.g. many applications on the iPad or paper forms. CO occurs at the mediating channels level and thereby influences the IO felt on cabin crew level.

Mediating Channel Analysis
The channel analysis shows that many factors on a mediating channel level influence IO and CO. Additionally, the analysis shows that the **mediating channels act as a gate, rather than a mediator,** enabling and causing the organisation to send information through multiple gates at the same time. Little filtering and personalisation functionality decreases the mediating functionality of the channels.

Organisation Analysis
Not only did the organisational analysis show that many factors influence IO and CO, but also the fact that the organisation mostly uses a **'push' strategy**. A lack of user-centricity and governance on the channels has made mediating channels more of a gate that serves as **boundary between the organisation and cabin crew**, rather than a smart communication and information system.

Crew analysis
For crew, factors in the process of sending information, summarized in figure 7.1, cause IO and CO. With complaints about **not feeling up to date** and dealing with ambiguity between different channels and information, the problem is complex. Most importantly, however, is the fact that the **information is pushed to crew in an organisation-centred way, rather than a crew centred way where crew is in control and can manage information themselves**.

MAIN INSIGHTS - THE PROBLEM
While the organisation pushes all information, cabin crew complain about feeling pressured to read all information. At the same time, they perceive information as being irrelevant and sent in high quantities. With a difference in interests and needs, **their wish is for a pull of information based on their needs, while the organisation pushes information it feels is needed.**

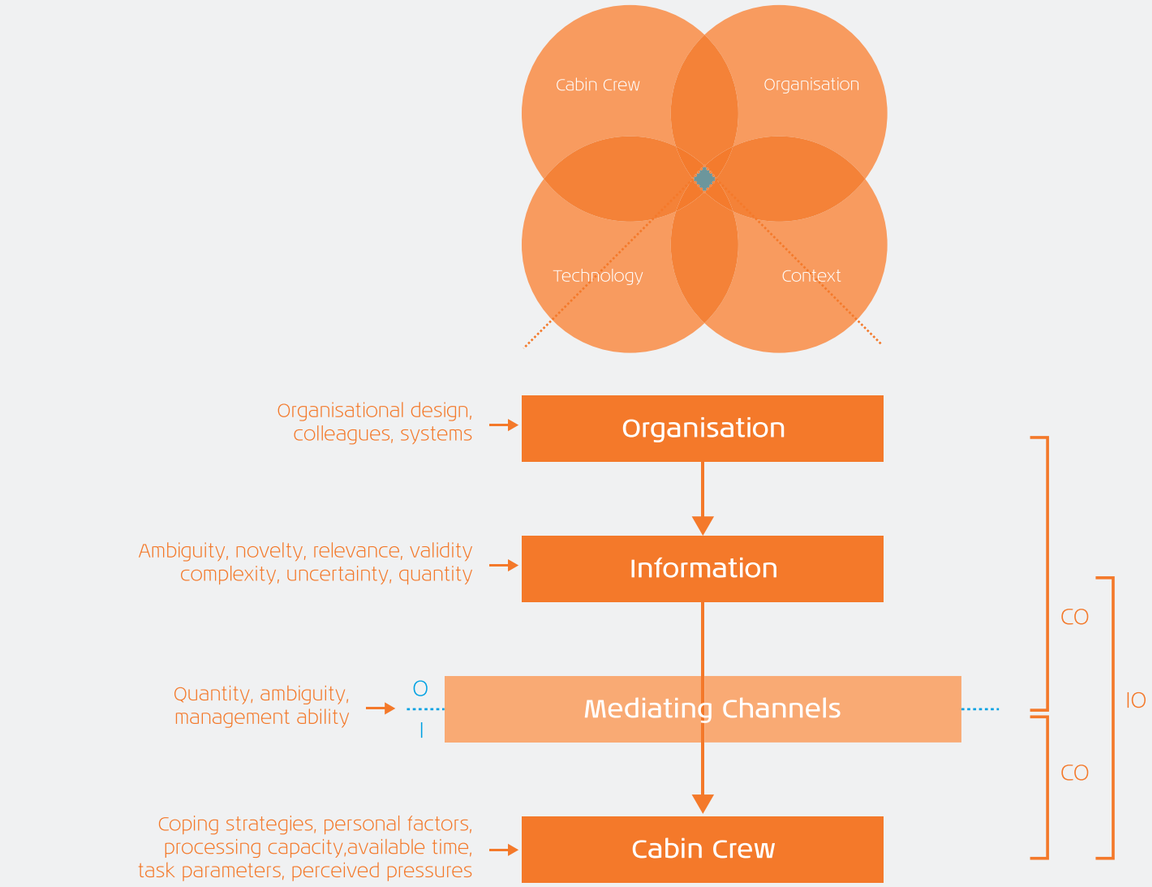
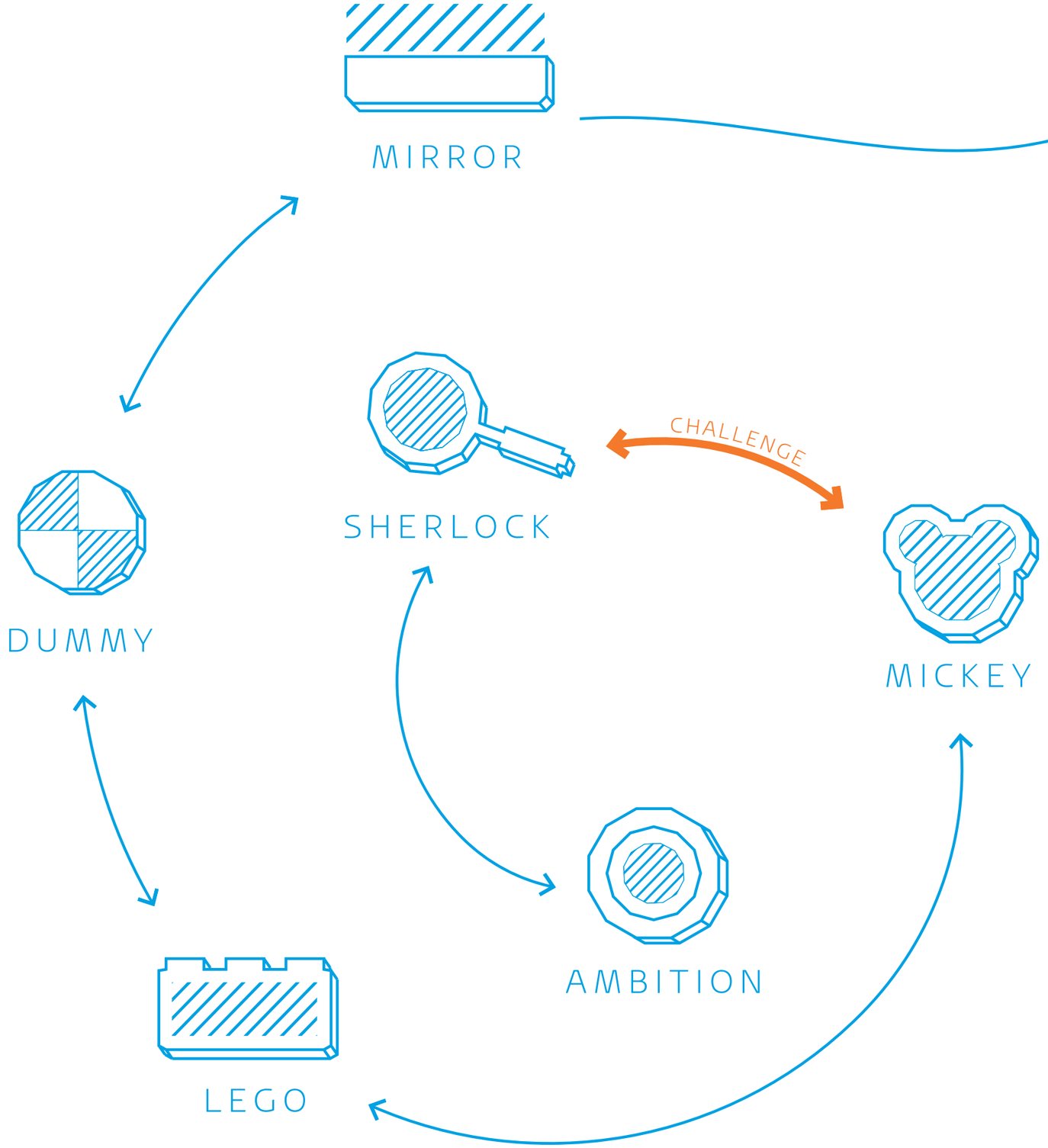


Figure 7.1: Summarisation of factors identified as influencing information overload among crew, adjusted from Jackson & Farzaneh (2012)



Defining The CHALLENGE

In this phase, the problem will be translated into a design challenge. This phase has more convergent characteristics, and uses information and research to focus on a specific challenge.

To define the challenge, the overaching topics in the occurance of 10 will be discussed. This will give more information about the strategic context of the challenge and will help define the challenge. The chapter will close with the design criteria.

08 Overaching topics & Strategic Fit

In the previous phases, factors that can influence the perception of IO and CO in the process of sending information were identified. However, the overaching factors have not yet been discussed.

These factors (cabin crew, organisation, technology, context) will be analysed to define how to strategically fit the solution within the company. According to Quirke (2017), a misfit between the organisational strategy and the communication strategy causes information to be incoherent, which makes it hard for front-line staff to understand the information and thus consume it in a healthy and understandable way. Similarly, Quirke (2017) states that 'medium is the message' does not work in these incoherent environments because it will lead to the medium consuming the message. In case of KLM, cabin crew are their front-line staff and therefore need to devote their attention to service, safety and passengers, rather than the information they need to consume through many channels. Therefore, it is important to design a solution that fits the organisational strategy and avoid incoherence.

For that reason, this chapter will discuss required and desired strategies for cabin crew, the organisational strategies, important contextual requirements and technological needs. The chapter will conclude with a strategic fit for the solution.

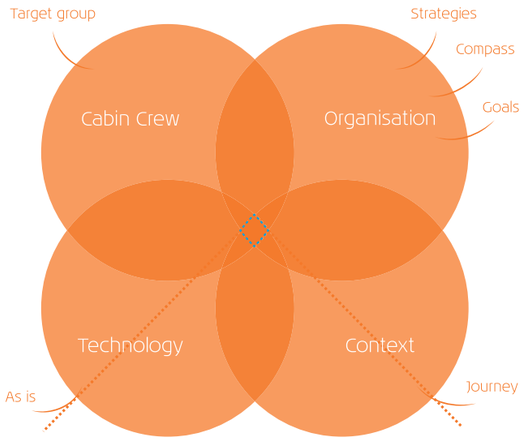
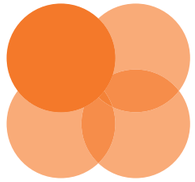


Figure 8.1: The 4 overarching themes that will be analysed and topics related to these themes.



8.1 PERSON: CA1 & CA2

KLM has close to 10.000 cabin crew, varying in age from around 20 to 60 years old and having many different kinds of education levels and interests. To limit the variety, the focus lies on Cabin Attendant 1 (CA1) and Cabin Attendant 2 (CA2) (see appendix 1.3). Their tasks on board are similar, so are their tools used and they represent the largest group. CA1 and CA2 have also had less training than pursers and senior pursers and are therefore considered less trained in dealing with information (see appendix 1.3). Creating a solution for less skilled ensures the fit for more the more skilled.

Over the course of the years, Valsplat has done research into needs of cabin crew (see appendix C04, C05, C08, C09). They have recently defined general design principles and user needs for crew on a wide range of topics. These principles and needs are considered important by IFS, and therefore need to be taken into account in this thesis. All findings can be found in appendix C09, below the principles and needs important for this thesis are shown.

DESIGN PRINCIPLES

1. Be proactive and **personally relevant**
2. Be **consistent & centralise** information
3. Give **guidance, do not dictate**
4. **Involve** crew and be **transparent**
5. **Save time** and **attention**, digitise smartly
6. **Respect free time**, only disturb when necessary.

ELEMENTAL NEEDS

- Work **confidently** & **autonomously**
- Feel **acknowledged** for my work
- **Balance** personal and professional life

8.2 ORGANISATION

Over the years, KLM has become an internationally renowned airline, known for their focus on customer experiences and high levels of service. Fitting that is the brand purpose "Moving your world by creating memorable experiences", with the ambition to become the most customer centric, innovative and efficient European Network carrier. As competition is high, maintaining a strong brand purpose and image is crucial to keep competitive advantage (Wood, 2000).

KLM Compass

To make sure the brand is grounded on all levels of the organisation, it is translated into the KLM Compass (see appendix 1.1). Next to the main purpose and ambitions, the compass shows goals, one of which is 'optimal staff behaviour'. KLM wants to make staff feel 'I am the best of me', and them to 'reach out', 'take ownership, 'be competent' and 'go further'.

To enable staff, KLM aims to provide the optimal working climate and make to think I 'feel appreciated', 'am empowered', 'feel enabled' and 'feel encouraged'.

IFS and their goals

The compass is used by IFS to define part of their quarterly goals in an OGSM (objectives, goals, strategies, measures). With the cabin crew being the main face of KLM, they play a large role in creating those memorable experiences. The importance of actually making them feel "I am the best of me" and creating the optimal working climate are therefore important goals of IFS. This increases the need to make the solution fit the compass.

FITTING THE COMPASS

To make sure the solution strategically fits within the company, it needs to fit the compass' goals.

8.3 TECHNOLOGY

From the 'mediating channel analysis' it has become clear that the current technological tools fail to achieve one of their purposes.

IBM and Apple are currently working on developing a vision on the iPad in general and define recommendations on improving the digital landscape. Their advise ranges from changes in architecture, to improving governance. To not interfere with their research and recommendations, the current technology will be taken 'as is'.

Additionally, the wish of IFS is to take a more future-mindeed approach and to become future proof. For that reason, a more future minded approach will be taken in relation to technologies.

8.4 EXTERNAL FACTORS: CREW CONTEXT

One of the most important themes is the crew context since their operating environment is significantly more variable than for example that of an office worker. For cabin crew, the environment can differ from being at home to flying. All these contextual factors influence the way they receive, retrieve and read information. Similarly, their need for specific types of information differs in each stage of the journey.

For that reason, the journey of crew is mapped. In appendix 3.1 methods used and the full process can be found, in appendix E10 the full crew journey. The journey for this thesis only includes pains and gains related to information and IO.

Cabin crew journey - pain & gains

Looking at pains in the journey in figure 8.2, the amount of pains related to the need to prepare work at home is significant. Starting at home, they are not sure whether they are up to date, while an increasing amount of KLM-related activities take up their personal life (see figure 8.2). Similarly, the number of touchpoints used at home are by far the largest compared to other phases of the journey.

Additionally, those pains that do take place in flight are often related to insufficient preparation beforehand or lack of time. Also, cabin crew notice that colleagues are not up to date. This can make them doubt whether they misread or the colleagues relay just rumours.

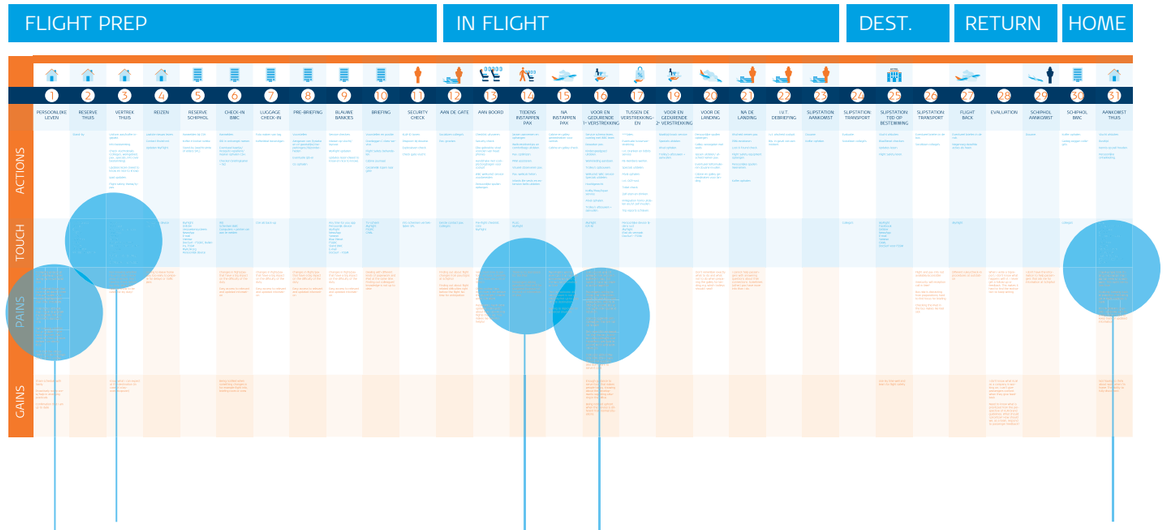


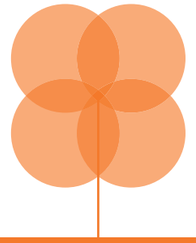
Figure 8.2: Journey map with information-related pains and other insights.

CURRENT TECHNOLOGY

Will be taken as is, and a more future minded approach is taken.

CREW CONTEXT

All in all, a lot of pressure is put on the phases at home and before the flight. Cabin crew do not feel up to date. The solution should not increase the pressure and preferably reduce it.



8.5 Concluding Overaching Factors

The overaching factors were analysed to make sure the solution will strategically fit within the organisation. Additionally, a misfit between the organisational strategy and communication strategy needs to be avoided so findings of each of the factors therefore need to be taken into account when going into the design phase.

Cabin Crew: CA1 & CA2
CA1 & CA2 have a need for a more **autonomous way of working**, with guidance but no dictation. Similarly, in the future vision of IFS (see appendix 3.5 and chapter 1.1) cabin crew work autonomously, get support from IFS and IFS is a 'future proof' division. Looking at the current situation, the push strategy of KLM does not seem to fit this vision. Crew want to pull information, work autonomously and manage their own life. **This again shows the need to change the current push-strategy of KLM into an autonomous, guiding, pull-strategy for the crew information, while taking into account their needs and principles found by Valsplat.**

Organisation: KLM compass
The KLM compass shows clear goals of KLM, and with that goals of IFS. Thus, the solution needs to fit the compass. However, when looking deeper into the compass, on one side 'creating an optimal working climate' is written in first person, while the optimal staff behaviour written in the imperative. This despite Valsplat found that 'give guidance and do not dictate' is crucial for crew. It can be stated that in the current situation, there already is a misfit between the organisational strategy and communication effort.

For that reason, before going into the design phase, it is recommended to adjust the KLM Compass to be less imperative and more supportive of 'optimal staff behaviour' (see appendix 3.7 for the adjusted compass). It should convey the feeling that crew are already the best of them. 'Reach out' is therefore changed to **'I reach out'** and 'take ownership' to **'I have ownership**'. 'Be competent' implies they actively have to be competent, rather than them being competent already. Therefore 'be competent' is changed to **'I am competent**'. Lastly, 'go further' is changed to **'I go further'. This way, the compass aims to them feel: 'I create those memorable experiences'.**

Technology
In the future design, the current technologies and technological capabilities of KLM should be left out of scope. This way, the solution will take a future minded approach and fills the need to fit the future vision of IFS.

Context: Journey
The context of the current problem has shown that the pressure lies, for a big part, on the beginning of the journey. The solution should therefore have the result of reducing this pressure.

09 Design challenge

Due to many factors involved in the process of sending and receiving information, crew suffer from IO and CO. While the organisation uses the mediating channels as a gate to push information to crew, crew feels overloaded, pressured and insecure about whether they have read what they should read according to KLM.

Looking at the findings of chapter 8, pains in the journey, the information-related pains often take place in the first phases of the journey. In order to reduce CO and IO, the focus must therefore lie in the preparation phases before the flight. The proposed solution additionally needs to fit with KLM as a brand (the newly prposed compass), their purpose and their ambition. Therefore, KLM as a brand must follow a crew-centered approach, where crew 'pulls Information', works autonomously and where guidance is key and dictation is history. Fitting the new compass and the aim of creating the optimal working climate is the following challenge:

Making KLM cabin crew **Feel Up To Date.**

The deliverable of this thesis aims to provide a guideline for the organisation to make their information delivery more crew-centered and future minded, leaving current technologies out of scope. The design process will aim at understanding the exact problem and with that the needs of the cabin crew in order to feel up to date. Followed by a DUMMY phase, the focus here lies on combining the criteria with learnings from the prototypes into a framework guiding the organisation.

To design the guidelines and framework, the strategic principcles and previously lessons learned are summarised in the design criteria in chapter 10.

10 Design Criteria

These criteria need to be met in order to make crew feel up to date in a way that fits strategically within the company, within the future vision and the needs of crew. The criteria are derived from the elements identified in chapter 8, the SHERLOCK phase and the old and new compass. Summarising the following criteria are leading:

1 MOVES FROM PUSH TO PULL

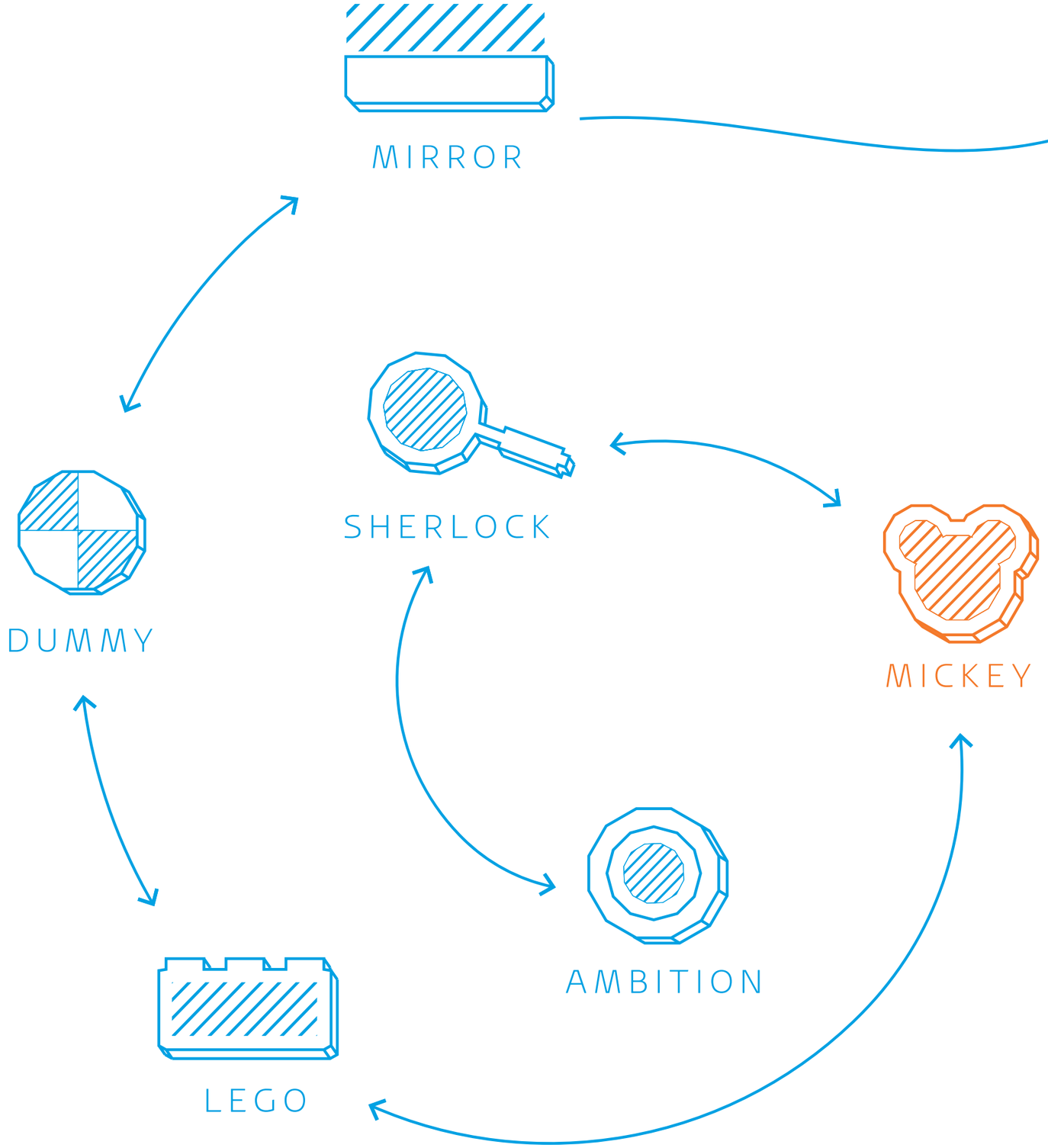
1. **The guidelines need to focus on letting crew be in control.** Instead of the current push strategy, IFS needs to be guided in how to let crew decide what information to pull and with that become crew-centered.
2. **The solution guides the organisation into making information personally and contextually relevant** for crew and takes the journey as a base.
3. **The solution respects private life and therefore does not increase the pressure in private life.**

2 IS FUTURE PROOF

1. **The guide lets go of the status quo.** Current applications and technologies will not be taken into account and focus lies on guiding the organisation into innovative solutions.
2. **The solution fits within the future vision.** Crew is for example considered an empathic director and works autonomously.
3. **Takes an outside in approach by learning from others,** rather than taking solely the airline industry into account.

3 GIVES GUIDANCE AND MOVES IFS AWAY FROM DICTATION

1. **The solution is focused on the new compass and needs to fit the elements 'optimal staff behavior' and 'optimal work environment'.** This way, the solution gets embedded KLM wide and fits strategically.
2. **The solution supports crew but does not tell them what to do.** This means that crew stays in control, but tools help them do their work and be the best of them.
3. **The solution nudges them into using the solution**, rather than pressured them into using the tools. This way, guidance is given without dictation.



The MICKEY Phase

In this MICKEY phase, possible design interventions will be ideated and fitting hypotheses will be defined to find out what possible interventions help crew in feeling up to date.

The phase starts with analysing other industries and their strategies to reduce IO, followed by the future vision. Ideas for the solution are gathered in the concluding chapter 'learnings', where hypotheses for the LEGO-phase are defined.

12 Relative World Analysis

How does an UBER driver stay up to date?'

Blogs describe to how companies can reach overloaded customers (Mulder, 2019) and how to work more efficiently while suffering from IO (Krol, 2019). There is even an Information Overload Research Group dedicated to helping all users reduce IO (Bariff, 2019). Gathering insights into how employees and individuals outside of KLM are kept up to date can help solve problems for crew. For that reason, this chapter will analyse different industries in a relative world.

The first analysis focuses on industries where significant amounts of information are available and strategies are used to reduce IO. The second analysis discuss strategies reducing IO in areas where jobs consist of more or less variable tasks and processes. These strategies are used to ideate interventions for the different contexts within a crew journey (e.g. high amounts of information in the preparation phase and rather linear tasks on board). The analyses will help in designing for criteria 2.3 (see chapter 10). The insights from the realtice world will be translated into hypotheses in chapter 15.

12.1 METHOD

The relative world analysis has an outside-in perspective that uses more 'soft'-sources, stemming from online websites and tools. It analyses current cases and strategies. Additionally, it will mostly look at other fields than the airline sector to provide an out-of-the-box perspective.

12.2 Strategies reducing amounts of information for the user

Figure 12.1: Companies dealing with large amounts of information

Many companies have to work with large amounts of information. Companies dealing with these large amounts of information have strategies in place to reduce IO for the users, of which Slack and Google are examples. In relation to information IFS sends to cabin crew, Slack deals with less information per user, while Google has to deal filtering with larger amounts. Since all information the users encounter add up to their general life, general life is placed highest on the scale. Strategies in place for each of the environments are discussed on the next page.

12.3 strategies reducing IO in variable contexts

Figure 8.2: Users within companies for which strategies are designed to reduce IO.

In more process and task based jobs, there is no time for the user to go through large amounts of information. Specific tasks need to be done in order to reach the goal. When delivering orders, the task is to deliver as many packages as possible on a day. All information needed to fulfil the task needs to be at hand to keep the efficiency high. In some cases, employees are able to complete these tasks without having a teamlead for support. To learn from these strategies and analyse how these can support cabin crew, strategies for Picnic drivers, UBER drivers and military will shortly be discussed and compared (see next page).

Picnic runners have relatively linear tasks, while that of an UBER driver is already slightly less variable. On the other side, military has highly variable tasks and have to deal with large amounts of information at the same time. All users are able to work autonomously and therefore strategies can be of use for future information for cabin crew.

Strategies - amount of information

Slack

Slack is a groupware software, with the goal to *make work life simpler, more pleasant and more productive*. Especially in larger companies, this software can result in a large amounts of information available and with that in IO. Slack has multiple strategies trying to battle IO (Woyke, 2017, 2018) and wants to become the 'chief of staff' for each employee that defines what they need to read.

Use AI for recommendations

With a new department specialised in Ai, Slack wants to reduce the 'information avalanche'. They want to give proactive alerts and recommendations about what a specific employee needs to read or might be interested in. Essentially, their goal is to create a smart filter for each user (Woyke, 2017, 2018).

Use AI to improve search

Slack works on improving search with the use of AI. In collaboration with industry-experts, the system learns jargon and code used within specific companies or industries (Woyke, 2017, 2018).

Google

Over the years, Google has had to deal with growing amounts of information. Google is able to filter the websites to what you are looking for. With different strategies, Google filters the information and reduces IO. Next AI becoming smarter, a main strategy that has become popular in marketing is Google's 'micro-moments'-strategy.

Learn from others

With big data, Google is learning from actions from others. Not only do they learn what to show per search, but also identify many trends, needs, pains and many opportunities to tap into.

Artifical Intelligence learning from AI

Google's artificial intelligence has become sufficiently smart that the AI can almost function on its own (Simonite, 2018). It is used now as a way to smartly filter information and to learn from searches, users and itself.

Micro moments: Show the right content, at the right time and the right place.

Micro-moments stem from search trends in which people search more often in terms like 'restaurants near me'. These are searches done in a context where quick responses are needed. Therefore, their strategy is 'be quick, be relevant, be there' (see appendix 3.4 for more information).

General: Daily Life

The information we receive in general life, coming from for example social media and newpapers, adds up to information retrieved via Google or received during work. Many strategies are proposed by bloggers and articles, teaching us how to reduce the load and advises to take time off when possible.

Don't Multitask

The advice is to do single tasks and avoid multi-tasking. This helps focus on a singular topic, discarding all information that is not needed for the single task (Tunikova, 2018).

Unplug for a few hours

Multiple sources (Roetzel, 2018; Tunikova, 2018) say it is important to unplug for multiple hours. Although the sources are soft and therefore less reliable, the ability to 'check out' and relax seems an effective way to reduce the perceived overload. Linking this to the time pressure identified in literature as a factor increasing overload, 'unplugging' might indeed have an opposite effect.

Strategies - variable contexts

Picnic

Picnic delivers online groceries at your door. The runner needs to deliver the groceries in time with help from runner-app. The appp helps navigating and gives information per task. Picnic has designed the app in co-creation with their runners, having multiple strategies in place to make sure runner can to the job the way Picnic wants them to.

Focus on task at hand, give task based contextualised information

With tasks being, lineair and reptitivem, Picnic focuses on providing the information needed for each task specifically. This reduces the cognitive load and time needed (Viet, 2017).

Use visual representations

Visual representations: Instead of talking code or text, the app works with visual representations. This makes the runner able to immediately recognize information provided (Viet, 2017).

Give feedback

By providing feedback about achievements, Picnic wants to make the job less tedious. Additionally, it makes it more clear when specific tasks are fulfilled (Viet, 2017).

Tailor trip to level of experience

By tailoring the trip to their level of experience and adjusting information needed, the process becomes more efficient (Viet, 2017).

Uber

An UBER driver has no direct teamleader, but is still able to do the job UBER wants him to. The app provides all information for the driver to be up to date, as well as incentives to work as well as possible. Additionally, the app is always used when driving, making it important to consider the context. The user- setting is slightly more variable than a Picnic Runner, but still rather linear. To make sure the UBER driver knows what to do, when to do it and how, many tests have been done to define needs and many strategies are in place.

Help define 'what's next'

Since UBER drivers are a consecutive set of passengers, their main focus lies on 'what's next'. This helps them alleviate stress and makes the drivers feel prepared (Thence, 2018; Wachsman, 2017).

Glanceability & Tappability: 3-foot-1-second

Drivers have a short amount of time to look at the screen and from a distance. Therefore, all information needs to be essential to what they need at that moment, and minimized to be readable in a few seconds. Their strategy is '3-foot-1-second' in all of their designs and the main question during navigation is '"what is the essential information that the user needs right now?" (Wachsman, 2017).

Military

The military is the most complext out of the three. IO has been a problem for years and researches have been done to find out best ways to train them. Similarly, AI is being developed to reduce the large amounts of information. Their main goal is to let military make the decisions, but making it easier for them to make the right ones at the right time, at the right place.

Use AI to process raw info

The army wants to use AI to process raw information. This way, the soldier has more time to make the decisions based on the information provided (Axe, 2018).

Use AI to avoid overload

The US army is also using AI to learn when sensory overload happens. Consequently, AI can help them with providing the right information at the right time (Robitzski, 2018).

Mind fitness training

(Dutch Defence Press, n.d.; Shanker & Richtel, 2011):
Apart from many digital developments, the US army is testing mindfulness based mind-fitness training. It aims at helping the soldiers battling information overload by forcing them into information overload and at the same time training them on multitasking.

13 Future Vision: Information

To make sure the design is 'ready for the future' (criteria 2 in chapter 10) the design needs to fit the future vision. Many of the topics in the vision of IFS are related to making the cabin crew feel up to date (see appendix 3.5). Topics like 'contextualised information', 'real-time information' and 'personalisation' are recurring in the vision. Additional themes were identified in an additional future visioning session that were not specifically mentioned in the IFS vision were added, and all are summarised below. Subsequently, these insights will also be combined into hypotheses in chapter 14.

METHODS FOR FUTURE VISION

The IFS future vision was created in multiple creative & future visioning sessions with cabin crew, office employees and management. The sessions used contextmapping theories (Sanders & Stappers, 2013) and journeymapping theories (Kalbach, 2016). To make sure the themes that are related to 'feeling up to date' found in the IFS future vision are actually what crew wish for, an add additional, validating ideation session focusing on 'feeling up to date' was conducted with 4 cabin crew members (see appendix 3.1 & 3.2). Next to the ideation session, the ideas and themes from a digital workshop are added.

PERSONALISED

Crew want to be treated as a person instead of a number and receive content based on their preferences and behaviour.

AI

AI can be used to gather data and to smartly help crew and the organisation to filter information and learn from others.

REVIEWS

Crew wishes to receive recommendations from KLM and other cabin crew members on what to read.

VOICE, GESTURE, VISION

Crew is looking for ways to use their iPad without having to open it. Voice control is often mentioned, as well as Google-glasses.

OVERVIEW

A clear overview per flight with very limited information is desired. Crew want 1 channel, with the ability to find all background info at all times.

FEEDBACK BASED

Crew is desiring feedback from KLM on whether they have read what they should. However, it should not lead to performance evaluation.

LEARN BY DOING

Crew say their work is very routine-based. In flight and that they do not have time to read information. They need to learn new tasks by routine and short reminders.

CONTEXTUALISED

On of the main themes in the vision of IFS is contextualisation. Crew want their environment to become smarter and taken into account in their tools.

14 Concluding MICKEY

Learnings can be drawn from what is found in the future vision, as well as the relative world analysis. To summarise the insights, the themes are plotted in the journey phases 'home', 'preparation' and 'flight'. This is done to create a separation between processes that need to be managed at home, processes that need to be managed during preparation for a specific flight and processes that take place in flight. Each learning is paired with a hypotheses, which will subsequently be used to design Minimal Viable Products (MVP's, see chapter 15) that need to be tested in the following LEGO-phase.

LEARNINGS & HYPOTHESES

The learnings are summarised in figure 14.1. Each learning additionally shows the origin, e.g. future vision or one of the relative world strategies.

Home	Preparation	Flight
● Give the ability to unplug when not working, by giving a clear overview of what to read when (general life, future vision). **H1: If crew get a personalised overview about what to read when, they feel more up to date.**	● Provide crew with an overview to help them prepare for the flight and know what to read and when to read it. **H1: If crew get a personalised overview about what to read when, they feel more up to date.**	● Provide crew with task based, contextualised reminders of updates in flight, to help them in remembering all changes (Picnic, uber, future vision). **H5: If crew receive task based, contextualised information, they feel more up to date.**
● Give the ability to unplug when not working, by giving the ability to move updates to a later moment (general life, future vision). **H2: If crew have the ability to postpone reading information, they feel more up to date.**	● Provide crew with feedback to help them know their status and progress (Picnic). **H4: If crew receive feedback about their current status, they feel more up to date.**	● Increase the ability to search for information in flight in a micro moment, to let them check facts (Google, future vision, AI). **H6: If crew is able to search in one channel for all information on a micro-moment base, they feel more up to date.**
● Give an overview of what is next to reduce pressure off of home (future vision, Picnic, UBER). **H3: If crew receive contextualised information, they feel more up to date.**	● Provide crew with contextualised and personalised information, rather than general information (future vision, Picnic) **H3: If crew get a personalised overview about what to read when, they feel more up to date.**	● Increase the glanceability and 3-foot-1-second rule by giving more visual support. **H7: If crew receive contextualised visual support, they feel more up to date.**

Figure 14.1: Summary of strategies that could help CA1 and CA2 to being up to date, with additional hypotheses.

ORDER IN WHICH HYPOTHESES NEED TO BE TESTED IN LEGO PHASE:

H1: The first test will solely focus on providing the overview of updates in channels. An overview is often mentioned as being wished for. By testing solely and overview and not yet 'personalisation, the test will validate one element at a time. Personalisation will be tested in a later stage.

H3: Will be tested in flight to clearly separate needs that relate to task based information from needs in relation to an overview.

H4: A simple feedback-bar will be tested to find out whether giving feedback really helps, or whether crew longs for a different kind of feedback.

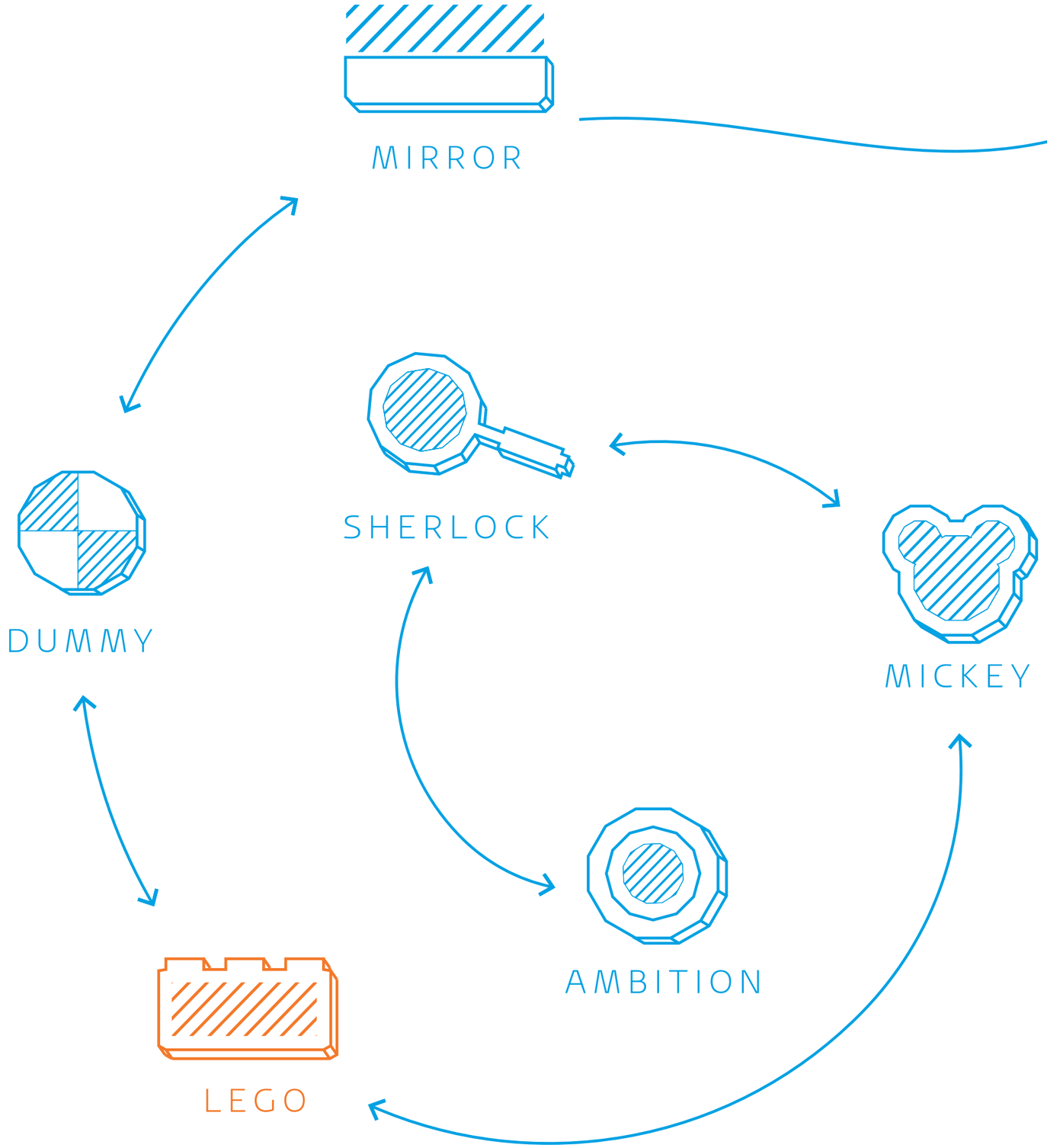
H5: This will be combined with H3 and tested in flight.

H7: This will be tested in flight during their work, to see if this helps crew in feeling up to date.

MOVE TO DUMMY PHASE:

H2: This requires a more complex Dummy design, rather than a LEGO-MVP and will be postponed to testing in the dummy phase.

H6: Searching information currently is very hard to test. It is expected that insights from the other tests will prove this hypothesis.



The LEGO Phase

In the LEGO phase, insights from the MICKEY phase will be used as a guide for the tests. The chapter will start with introducing the LEGO phase. Secondly, each test (MVP) will be discussed. The chapter will close with main findings that will define the first DUMMY in the DUMMY phase.

15 Introduction to MVP-testing

The MICKEY-phase showed that crew desire a wide range of solutions to feel more up to date. Some of the solutions are interrelated, making it hard to know why crew wants specific elements. There might also be an underlying need that is latent because of the complexity of the digital environment. In order to define the (latent) needs and validate the future vision and strategies found, this phase will focus on developing simple interventions. The main goal is to find out what interventions can make cabin crew feel up to date.

15.1 METHOD

To save time, money and materials, a lean approach will be taken in which minimal viable products (MVP's) are used. This process follows a 'built, measure, learn' approach (Ries, n.d.) in which tests are kept as minimal as possible. This way of testing does not look at whether the product can be built, rather whether it should be built (Ries, n.d.). Similarly, for this specific project, it is almost certain that the future-minded product designs cannot be built in the current environment. Rather, we want to know whether they should start building the solutions.

In figure 15.1, an overview of the process and MVP's tested can be found. MVP 1, 2 and 3 were shown to crew, followed by a more qualitative interview with around 10 CA1 and CA2's each Time. This way, the learning-opportunities were maximised (see guide and interview results in appendix A04). MVP 3 and 4 were designed and discussed during an observational and immersive flight and tested with around 4 cabin crew members in flight. This way, the in flight context was considered from the start of the design *(Stappers & Sleeswijk Visser, 2013)*. These MVP's were shown on a screen and adjusted together with cabin crew (see appendix 4.2).

As recommended by Gert Hans Berghuis during a Hypothesis Testing Masterclass, this thesis will follow a similar order to what 'Strategyzer' uses in their learning cards (Strategyzer, 2015) to test hypotheses in a structured way:

We believed that... (followed by a hypothesis).

Recap: What strategies from the MICKEY phase are applied? (Description of the test and strategies or future themes)

We observed/heard that... (followed by main observations or quotes)

From that we learned that... (followed by main learnings and insights).

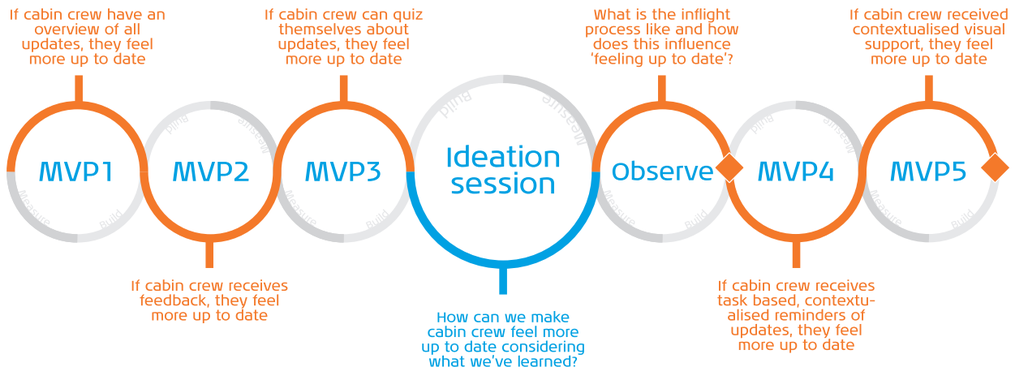
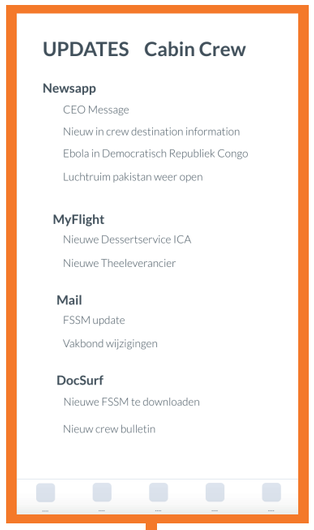


Figure 15.1: The process of the LEGO-phase, showing all hypotheses tested in each step or questions for the ideation session.

15.2 MVP1, Hypothesis 1



WE BELIEVED THAT...

If crew get an overview about what to read when, they feel more up to date.

Since cabin crew often mentions the wish for having 1 channel and more overview, this MVP tries to find out if there is an underlying need or reason, or whether they actually wish for a simple overview. The MVP-design included the current channels to increase the ability for crew to imagine the usefulness of the solution

Recap: What strategies from the MICKEY phase are applied?

Overview
(Future vision)

Unplug
(general life - Relative world)

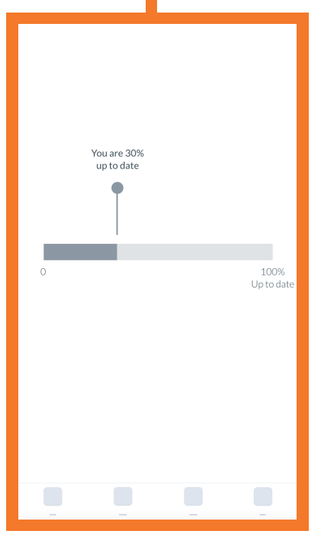
WE HEARD THAT... (N=10)

"Good, but needs navigation to specific channel"
"Makes reading in flight easier"
Often a wish for personalisation and contextualisation to minimise the amount of updates mentioned.
Sometimes, showing the overview also leads to a wish for adding reminders and push-messages if information stays unread when crew are about to fly or just to remind themselves.
Risk of it feeling like 'another' channel.

FROM THAT WE LEARNED THAT...

Cabin crew is very positive about this MVP. However, they always mention secondary needs. Personalisation, contextualisation and push-messages show for a possible **difference in needs per phase in the journey, flight and per cabin crew member.**

15.3 MVP2, Hypothesis 4



WE BELIEVED THAT...

If crew receive feedback about their current status, they feel more up to date.

To find out whether cabin crew feels up to date or not because they cannot check whether they are, this MVP tests if providing them with feedback helps them in feeling up to date. This specific element has been chosen since it is mentioned in the future vision and is a strategy used by Picnic.

Recap: What strategies from the MICKEY phase are applied?

Personalisation
(Future vision)

Feedback
(Future vision & Picnic - Relative world)

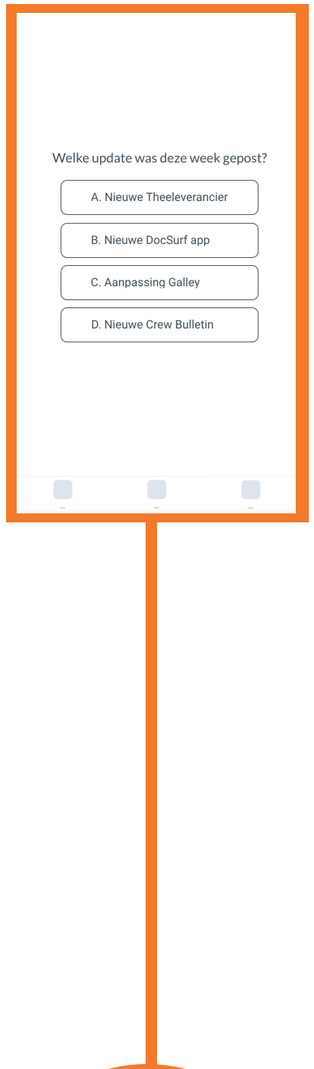
WE HEARD THAT... (N=10)

"Helps knowing my current status".
"Needs to subsequently give overview of what has to be read in order to reach a 100%".
Sometimes leads to need to easily find information back.
Sometimes leads to wish for reminders and push-messages.

FROM THAT WE LEARNED THAT...

Feedback seems to help crew, but always is secondary to the initial problem. Many other solutions are needed first, making this solution less urgent. Noticeable is that they refer back to having overview, as well as wanting to find information back (at a later moment) and receive reminders. Again, this might mean there is a **difference in needs per phase in the journey and per cabin crew member, as well as the need to search for information easily.**

15.4 MVP3: quiz yourself



WE BELIEVED THAT...

This MVP tests whether it helped if crew can quiz themselves as a form of feedback. For this MVP, no specific hypothesis was formulated. More so, the goal is to find out whether crew wants to test their knowledge, rather than receiving feedback about being up to date. This way we can find out whether the problem is not 'knowing' the information, rather than having 'read' the information.

Recap: What strategies from the MICKEY phase are applied?

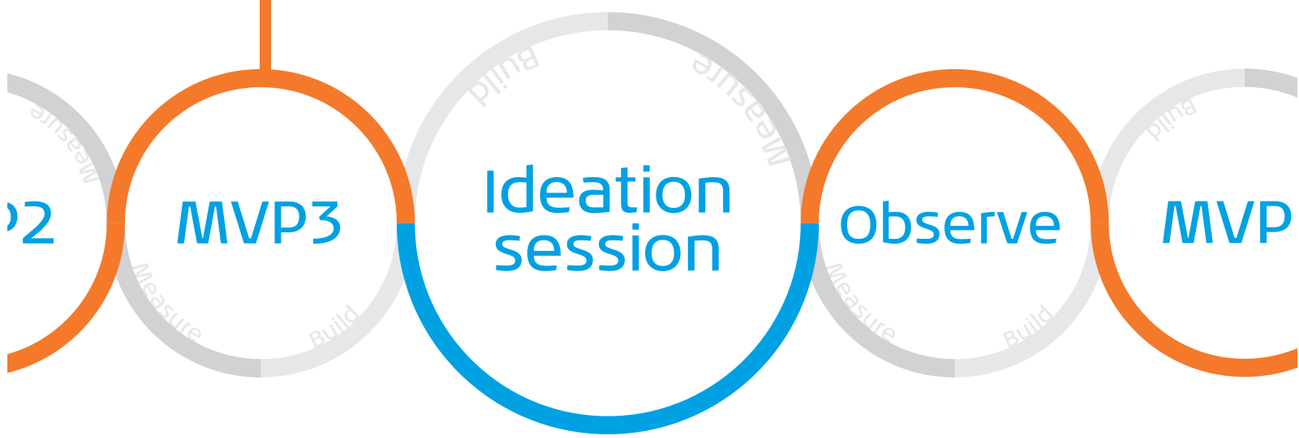
Feedback
(Future vision & Picnic - Relative world)

WE HEARD THAT... (N=10)

Sometimes cabin crew mention they need it because they lost overview over all channels and information.
Multiple times it has been mentioned that it cannot be a performance check, showing they are scared to be evaluated through apps.
Crew find it childish and feel like they don't need a check like this.
It feels like 'another' app.

FROM THAT WE LEARNED THAT...

This MVP does not seem to make them feel better. They see it as another app and are scared for performance checks. Multiple times crew referred back to the need for an overview instead. To many, it felt childish, showing it does not fit the user values Guidance no dictation and the compass element 'I am competent'. Thus, **an overview is more important than this solution**.

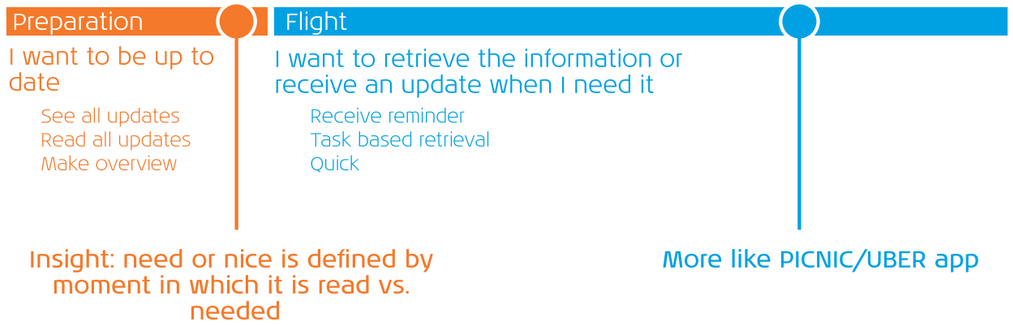


15.5 Ideation Session

WE BELIEVED THAT...

The last few MVP's have shown that there seems to be a journey-related dependency whether or not information is need or nice to know. Cabin crew also seem to have different information-needs in the journey. Therefore, an ideation session with two CA1's focused on finding out what those needs are and took the journey as a base (see appendix 3.3 for more information about the session).

FROM THAT WE LEARNED THAT...



The main learning was that information-needs in the preparation phase are related to reading all updates and creating an overview. In flight, cabin crew want reminders when working on tasks and quick, task-based retrieval of information. Assessing the relative world strategies, the preparation-phase needs more strategies like those of Slack and Google, in which **information is filtered and adjusted to their interests and needs.**

In the flight-phase, information distribution needs UBER and PICNIC related strategies, in which **information is filtered and contextualised and reminders are received based on their task at hand.** Additionally, to increase the ease of retrieval, **crew wish to be able to easily search information in all channels, asking for more Micro-moment related Google strategies.**

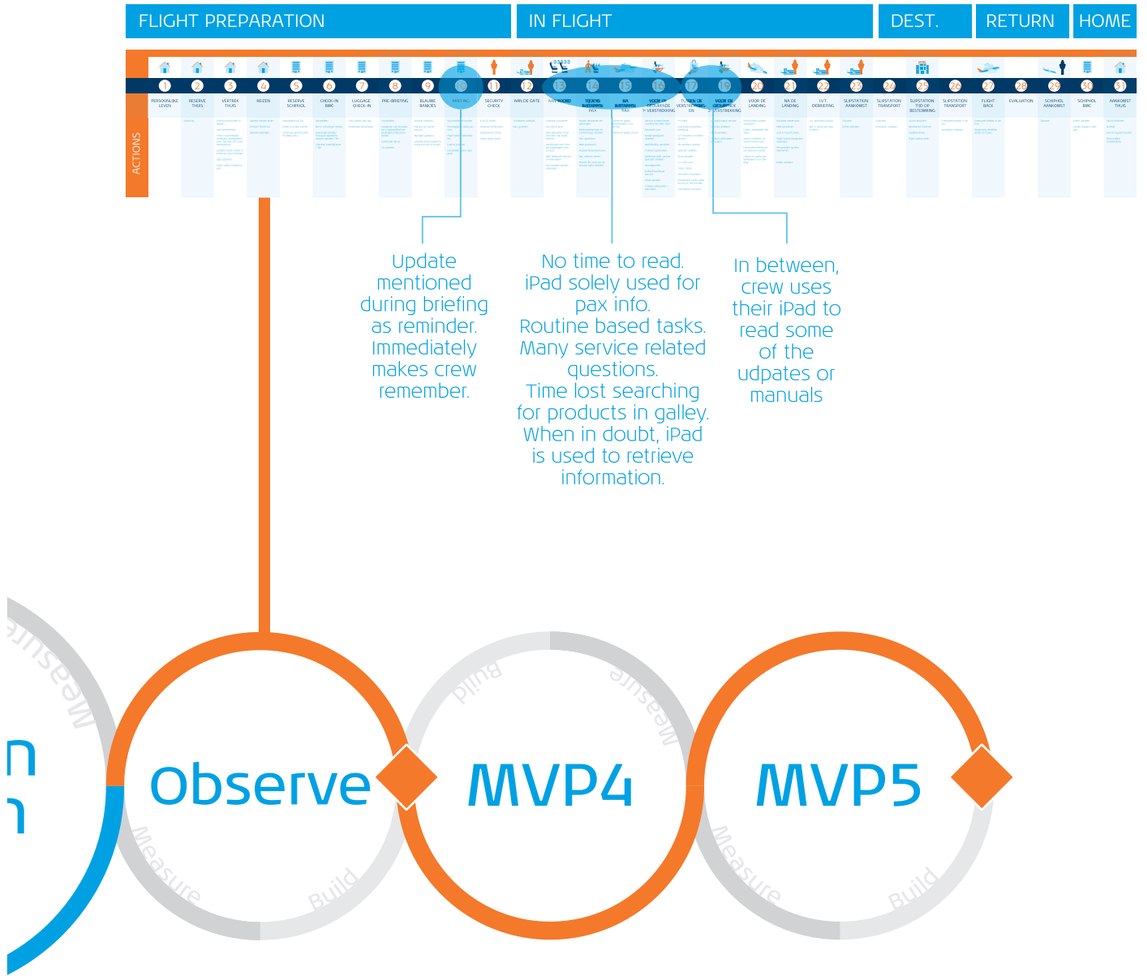
15.6 Observation

WE BELIEVED THAT...

In flight, there are different pains and gains than the preparation phase (see figure 8.2), but often these seem interrelated. To find out how these might be interrelated and how 'feeling up to date' is influenced by the 'in flight' phase, the observation was done. In order to increase understanding and with that validity, the observation was also partly immersion (Kouprie & Sleeswijk Visser, 2009). I joined as cabin crew, helping them in their tasks and with that experiencing what this phase is like. Additionally, during the observation flight, the context of use became more clear, which helps in gaining empathy, making sure the solution fits and avoids fixation on a specific idea *(Stappers & Sleeswijk Visser, 2013).*

FROM THAT WE LEARNED THAT...

In appendix 4.2, a full overview of all learnings can be found. Overall, the main learnings in the journey were as follows:



15.7 Insights so far

Overall

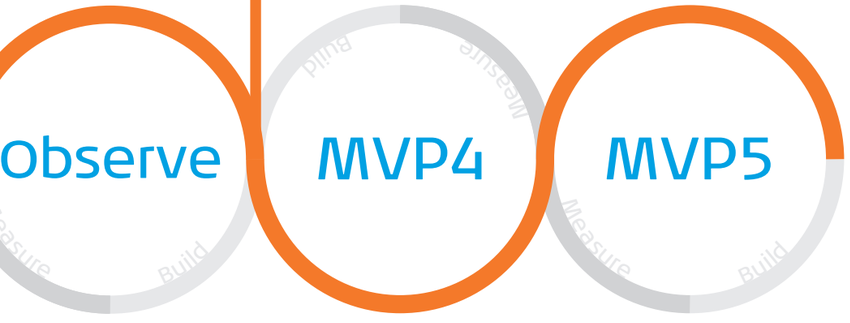
- **Need & Nice is defined by phase in the journey.** When at home, information is received, while this is not the moment they need to 'know' the information. When preparing, they need to make sure they learn information and 'know' it before starting their flight.
- Receiving feedback is a secondary need, **overview and filtering of information** is primary.
- Crew want to work **autonomously,** but in an environment that is tailored to their needs and that creates an overview. **Personalisation, contextualisation and reminders** are repeatedly mentioned as wishes.

Preparation phase

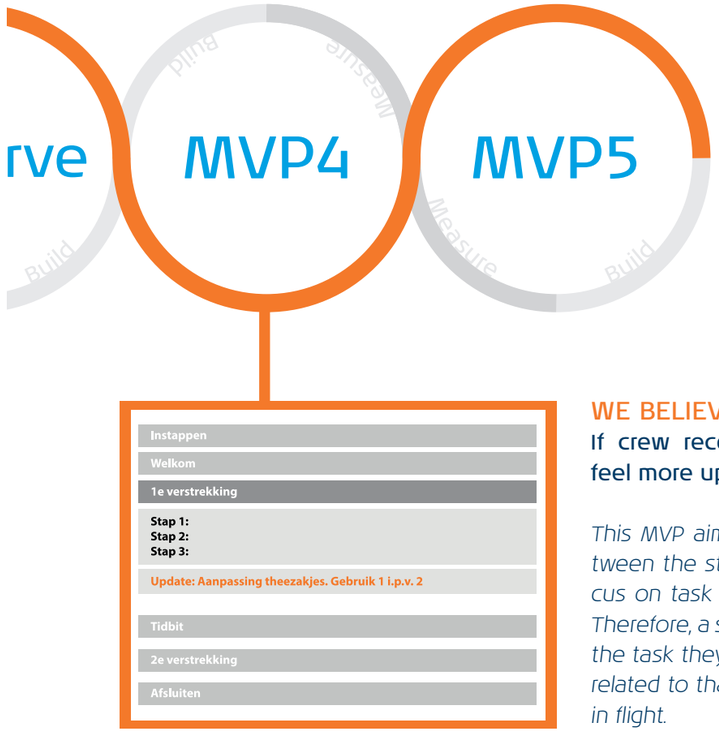
When preparing for the upcoming flight, all essential information needed for the first 3 hours of the flight has to be studied. This puts the pressure on 'feeling up to date'. This is why crew need an overview, to **prepare and learn information used later in the journey** and be sure they have done all that is needed.

In flight

- Retrieval time for information is too short, solely 'glanceable information' can be used This proves the need for visual **3-foot-1-second support,** like UBER (see chapter 12). Additionally, **easy retrieval** is key by improving **the ability to search** and increasing the **micro-moments** like Google (see chapter 12).
- Crew works routine based and needs information for specific tasks at that moment. This makes the Picnic strategy '**Focus on task at hand, give task based contextualised information'** (see chapter 12), fitting.
- The lack of visual support in the galley makes crew search for products often and doubt whether things have changed. By giving more **visual support for task at hand** like Picnic does (see chapter 12), these doubts are taken away and with that increase the feeling of being up to date.
- When crew have time to read in flight, they often read specific information that they either have to learn or crew want to refresh their knowledge. They wish to **select information before the flight, to easily retrieve and access in flight**.



15.8 MVP4, Hypothesis 6



WE BELIEVED THAT...

If crew receive contextualised visual support, they feel more up to date.

This MVP aimed at validating whether a combination between the strategies 'Glanceability & Tappability' and 'Focus on task at hand (...)' help crew in feeling up to date. Therefore, a screen in the galley was designed that showed the task they were working on at that moment. An update related to that task was highlighted, to provide a reminder in flight.

Recap: What strategies from the MICKEY phase are applied?

Learn By Doing *(Future vision)*
Contextualised *(Future vision)*
Task Based *(Picnic - Relative world)*
Glanceability *(UBER - Relative world)*

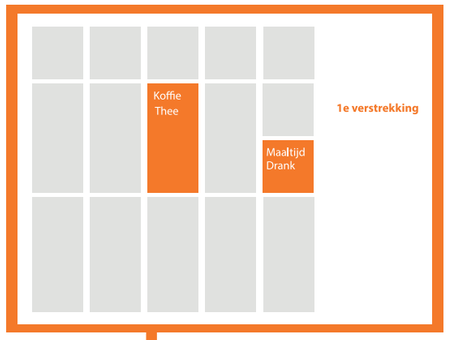
WE HEARD THAT... (N=10)

"Good, but I don't have time to grab my iPad and read it". It therefore needs to be shown on screen connected to wall, or even on glasses in the future.
Crew want to also see a visual of the position of needed products in galley
Crew want instructions per task, without having to select the task they are working on. It needs to show automatically and preferably smart (AI based).
In flight, it's "learn by doing". Short instructions are desired, since crew do not have time to study extensively during work.

FROM THAT WE LEARNED THAT...

In flight, all moments are micro-moments: crew have no time to search extensively or read lengthy messages. Visual support and reminders therefore help. At the same time, information related to the task needs to be a maximum of '1 click away'. I
Important note: system cannot be as supportive in efficiency as Picnic. This would take away the 'challenge' in the job, conflicting with the requirements of Valsplat and the new compass.

15.9 MVP 5, Hypothesis



DESCRIPTION

If crew receive contextualised visual support, they feel more up to date.

This MVP aims to test whether a combination of 'visual support' and 'task based information' helps crew in feeling up to date. This was mainly tested as crew requested ways to reduce search time, allowing them to have more time to focus on their task or retrieving other needed information. Crew feel like these type of changes should be learning by doing, rather than long text explaining them the changes in the galley.

Recap: What strategies from the MICKEY phase are applied?

Overview *(Future vision)*

Learn By Doing *(Future vision)*

Contextualised *(Future vision)*

Glanceability *(UBER - Relative world)*

WE HEARD THAT... (N=10)

Would definitely help, but needs to be no more than 1-2 clicks away.
Moving from visual to actual galley and the correct door needs practice.
"Definitely makes me feel more up to date if I see changes in one glance and in flight. There's no time available to search for this information, so often I just search or guess".

FROM THAT WE LEARNED THAT...

These type of MVP's make them feel more in control, and with that more up to date. It helps crew searching for products can increase the efficiency on board. Additionally, on the observation flight, questions were raised whether snacks had changed and thus where to find them. This would help in reducing doubt by easy retrieval of the required facts.

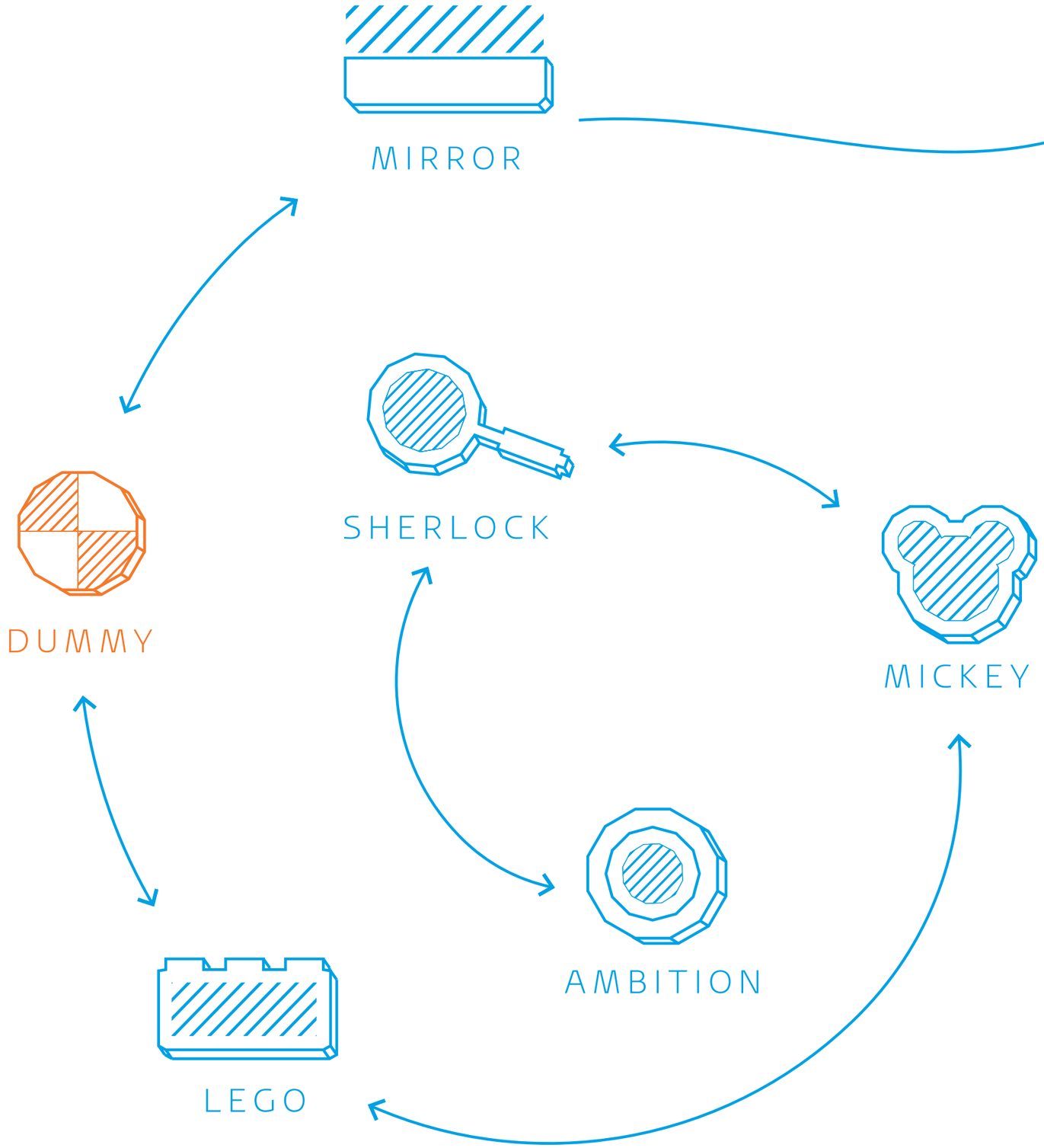
16 Concluding LEGO

After the MVP tests, many learnings can be drawn. The qualitative interviewing method helped gaining insights and finding latent needs. An overview of the validation of the each of the hypotheses can be found in appendix 4.1. The goal of the LEGO phase was to find latend needs of crew through MVP's, ideation sessions and observation sessions. To keep the learnings concise, the following desired actions with fitting desired solutions are mapped in the journey in figure 16.1.

	Manage	Prepare	Do
Desired actions	Unplug: I don't want to feel like I have to work when at home	Learn: I want to know relevant info or know where to find it.	Do: I want to work efficiently and get reminders in flight.
	Browse information: I want to read latest news I am interested in	Manage Info: I want to decide what I need when and where	Search: When insecure, I want to search info quickly
	Manage my schedule: I want to decide when to fly & study info		Navigate: I want to easily find what is needed for task at hand
KLM Desired Solutions	Save for later: I want to save info for later, when I need to know it	Overview of info: I want to know what I specifically need to read	Task-based info: I want to see information needed for task
	1 channel overview: I want to see personalised updates in 1 channel	Agenda: I want to delete, schedule, organise information	Micro-moments: I want to search quickly what I need for task
	Schedule tasks: I want to move and save info to later phase		Visual support: I want to visual info to navigate in galley

Figure 16.1: Needs of cabin crew plotted in their journey.

The main learning of the MICKEY Phase was that information needs clearly differ per phase of the journey. While at home, crew wants to unplug. However, what is classified as 'need to know' they feel pressured to read at home even though this is not the point where they 'need to know the information'. The needs per phase need to specifically be catered to in order to make cabin crew feel up to date. In the following DUMMY phase, these insights will be translated into a framework for the organisations and solutions for crew.



The DUMMY Phase

The DUMMY phase of this thesis combines all insights and learnings from LEGO into more advanced designs for crew and a framework for the organisation.

The chapter starts with explaining how to move from insights to DUMMIES, after which the first DUMMY will be discussed. Followed by tests, the findings will be translated into the second and final DUMMY.

The main goal of the chapter is to find out how the insights of the research can be translated into a framework that is understandable for the organisation.

17 The First Dummy

The previous phases have focused on learning the needs of crew through simple MVP's. This phase takes these learnings and focuses on combining them in a solution for crew and for the organisation.

The aim is to design a solution that helps crew and guides the organisation into making cabin crew feel up to date.

Solution for the organisation

The organisation needs guidance in how to design solutions that make cabin crew feel up to date. Therefore, this thesis aims at designing a framework for the organisation that includes all findings. Additionally, it should help them in designing future solutions.

As previously stated, according to Quirke (2017), a misfit between the organisational strategy and the communication strategy causes information to be incoherent. This incoherence which makes it hard for front-line staff to understand the information (Quirke, 2017).

Since currently there is a disconnect between the organisation's brand strategy, future vision and actual communication efforts, the solution for the organisation should also aim at reconnecting the two. In order to do so, the learnings from crew and outside strategies defined in MICKEY and LEGO will be connected to the future vision and the new compass.

Solution for crew

Each of the needs of crew identified in previous phases is translated into specific screens of future apps. Though these screens show what an app could look like, the aim is not to actually develop an app. These screens are solely guidance to the organisation and provide a tangible example of how to translate the needs into solutions. Basically, they are examples of possible interventions that serve as inspiration, rather than final solutions.

17.1 For the organisation: A Journey Based Compass

The DUMMY is called 'KLM Journey Based Compass' and is a framework for the organisation (see figure 17.1). The journey based compass helps the organisation navigate the needs of the crew.

Why a compass?

A deliberate choice was made to use similar wording as the current KLM Compass. This way, the brand is connected to the needs of crew and coherence between the brand strategy and communication efforts can be created (Quirke, 2017).

What does the compass consist of?

In each phase of the crew journey, optimal staff behaviour is different and so are the needs of crew for their working climate. Therefore, each of the phases of the journey have their own 'optimal working climate' and 'optimal staff behaviour'.

To guide KLM in developing products fitting these needs, every value of the 'optimal working environment' is translated into a more concrete "desire" and "need". Subsequently, each phase has examples of functionalities needed in apps to be able to undertake desired actions. Each direction of the compass will be explained on the following pages and can also be found in larger format in appendix 5.2.

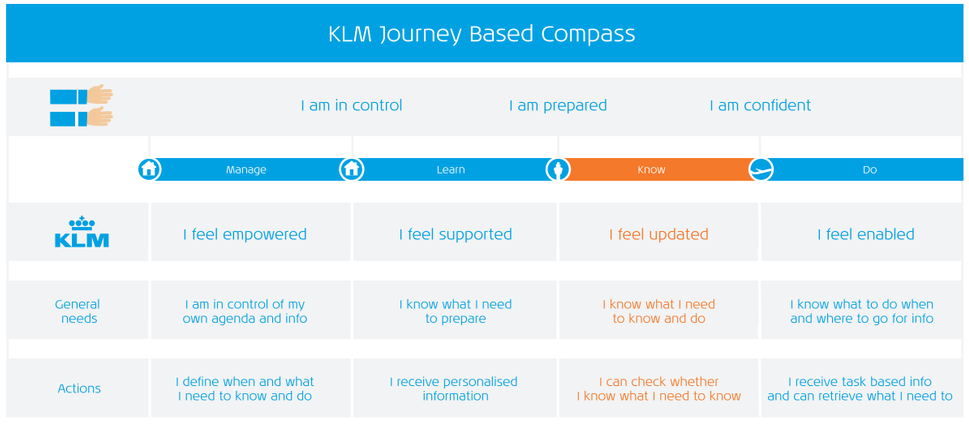


Figure 17.1: Dummy 1 - A journey based compass.

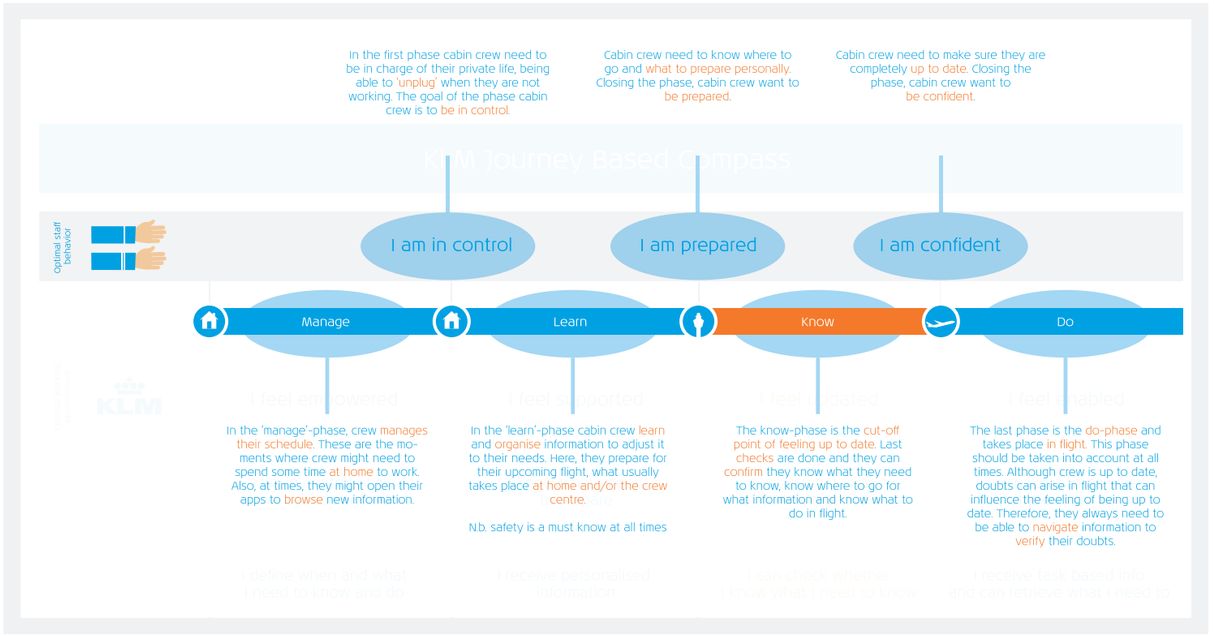
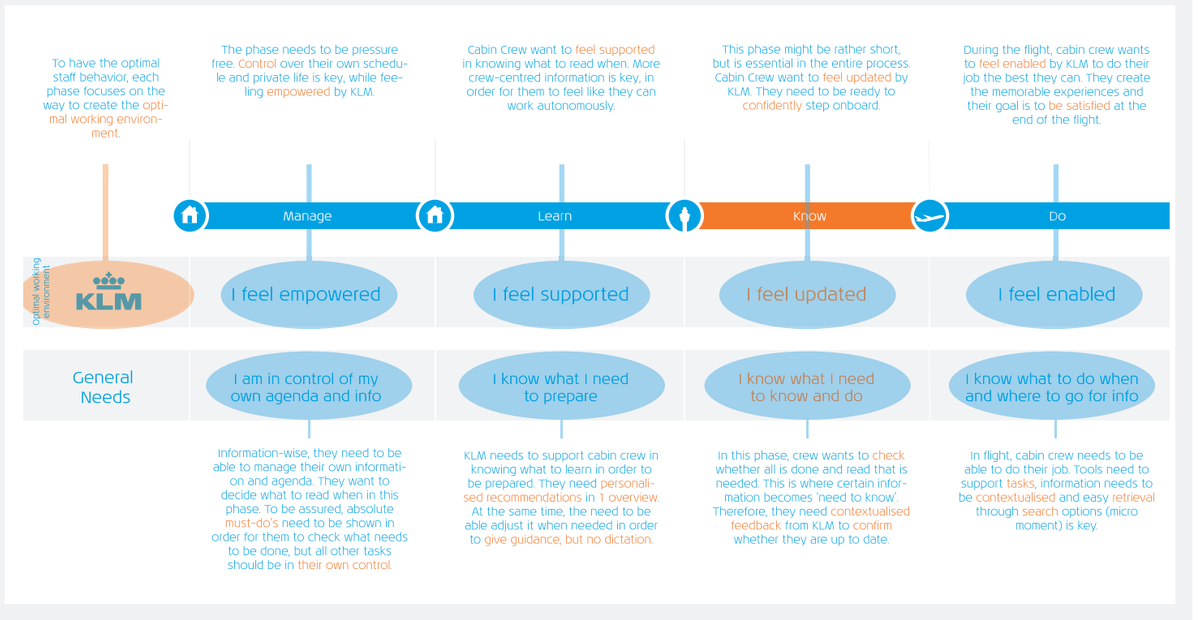


Figure 17.2: Dummy 1 - Explanation of the goals and phases

Figure 17.3: Dummy 1 - Explanation of the optimal working climate and general needs



17.2 For Cabin Crew: Solutions for their needs

Each of the needs of cabin crew are translated into screens. These screens are inspired by apps of companies such as Picnic or Pinterest. This way, the strategies discovered in the ideation phase are applied and intuitive design is chosen.

Why screens?

The screens are made to translate the needs of crew into tangible examples. These screens are deliberately not designed as one app with a clear walk-through architecture, more so, they are examples of what a solution for their needs could look like.

What kind of screens are used?

The screens are translations of the MVP's tested in LEGO. E.g. what was a test for a 1 channel overview in LEGO is now translated into a Pinterest-like app shown in the top left corner of figure 1. Additionally, the strategies of slack are added by showing recommendations for the specific users of the app.

In appendix 5.3, all screens and explanations are shown, as well as strategies used for each screen design. Below, an overview is given.

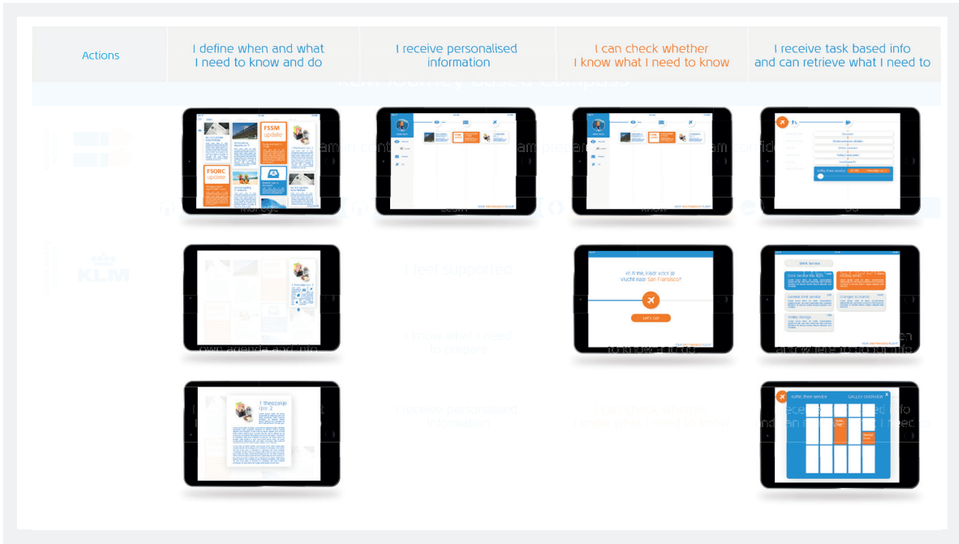


Figure 17.4: Dummy screens designed for each action cabin crew undertakes.

17.3 Validating The First Dummy

The framework was validated with the organisation and the screens were continuously validated with crew. Qualitative valiidation methoeds were used, since all DUMMIES were validated with the use of interviews and life use of the tool. This paragraph will discuss findings from the validation.

Main findings from the organisation

To validate the framework and the screens, meetings of an hour were planned with three employees separately. One employee was a UX designer and two were part of the development of the new digital strategy. All three should be able to use the compass in the future and therefore their opinion is highly valued. The main findings are summarised below.

"I never realised how different the needs are per phase of the journey"

Multiple times it was mentioned that plotting the needs of the cabin crew in a journey brought new insights. E.g. employees did not realise that information needs are different per phase of the journey. Overall, employees were very enthusiastic about the base of the framework.

Why is the flight phase added, if the goal is to make cabin crew feel up to date?

Though the flight phase is crucial in feeling up to date, the employees are tempted to stop reading the compass when reaching the "know"-phase. A change in design of the layout of the compass can possibly counter this.

The screens help in making the needs more tangible

The screens are very useful to know how to translate the needs into solutions. It was mentioned that there is a need for more screens or screens that show what needs have been applied.

I need more explanation.

Employees need more explanation, solely the journey is not enough to really know how to use it. Now, it is more of a very basic journey. Additionally, as mentioned before, explanations on what the screens show and how needs are translated would be useful.

I want it digitzed, on paper and a poster

When asking how to receive all information, they mentioned that Powerpoint or PDF's are used the most within the organisation. This way, the information can easily be sent to colleagues. Additionally, it was requested to print the tool a few times for the team and to make a poster for on the wall.

I would like to have an explanation of how you got here, as well as recommendations of what to do next.

The manager values the process of how I got to this result (refering to the MVP process). User centred design should be applied more in the organisation, of which this wish is an example. Therefore, part of the analysis should be added to a version of the final design and given to the organisation, as well as recommendations for the next phases.

Incorporate the Valsplat research

Though the research by Valsplat was used as a base for the design, the organisation would like to see it clearly incorporated in the final solution.

Fine line between guidance and dictation

Often, it has been recognised by the organisation that the line between guidance and dictation is hard to find. Crew wants to be guided, but easily feel like KLM gives dictation. This struggle has not necessarily been dicussed in this DUMMY test, but was mostlky mentioned when having informal talks with employees. In chapter 18, a bit more context about nudges will be given as an example of how to balance guidane and dictation.

Main findings from crew

During the design process, the screens for crew have been developed in collaboration with two CA1's. Additionally, the screens were continuously validated with crew in the crew centre. When it was expected to have the final design, the screens were shown to multiple crew members (n= +/- 5 per screen) in a very informal setting. Crew members were explained what the background of the research was and were asked whether the provided screens would make them feel more up to date. Additionally, they were asked for imporvements or changes they would recommend.

Since validation with crew has been done continuously and many design cycles have been made, the findings of the validation with crew are summarised in appendix 5.4.

Overall, cabin crew responded very positively when showing the screens. Many value the having the one channel overview, as well as the ability to label or organise the messages. Multiple have stated that it helps in getting confirmation they have done what they should before flight, and with that it has been proven that it makes them feel more up to date. With a few adjustments that still have to be made, it is expected that all screens have been validated.

18 Nudging the cabin crew into the right direction

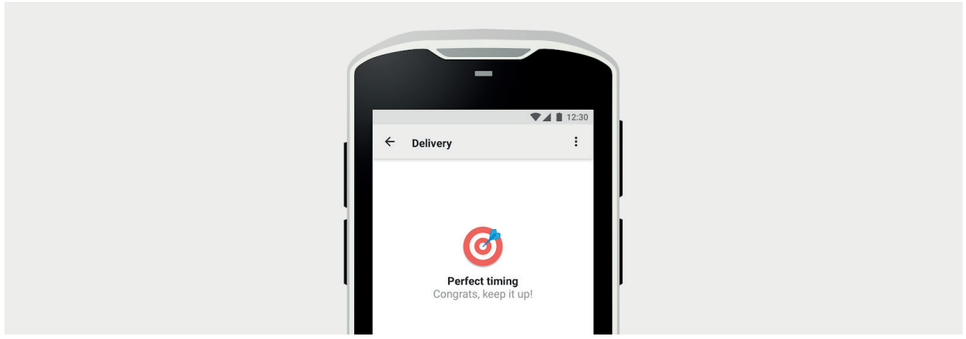


Figure 18.1: an example of 'feedback', or 'visible goals' applied by Picnic in the design of their Runner-app (Viet, 2017).

As discussed in chapter 17.3, giving guidance but no dictation is a hard value to cater to. Some crew want guidance, but it quickly becomes dictation. Without dictation, there are ways in which cabin crew can be steered in the right direction. Digital nudging and persuasive design are two strategies that can steer the user to perform certain behaviour (Weinmann et al., 2016). *Digital nudging wil briefly be discusses, as well as how this strategy can be of value for IFS.*

DIGITAL NUDGING

Digital nudging is a way to influence the behaviour and choice of the user (Weinmann et al., 2016). Multiple strategies are mentioned by Thaler et al. (2010) and summarised by Weinmann et al. (2016). According to them, providing salient incentives, providing feedback, setting options by default and the addition of visible goals, among other, are ways to nudge the user into certain behaviour.

Salient incentives refer to strategies that steer a user by providing them with a reason to behave a certain way. Thaler et al. (2010) give the example of showing the real-time costs of a phonecall in order to guide the user into having lower costs. Another example is UBER, where the driver sees high-demand areas on an app, incetivizing them to staying on the road and complete more trips (KeepingTABS, 2017).

Feedback is an often used nudge that is for example applied by Picnic (see figure 18.1) (Viet, 2017). Whenever a runner has delivered the groceries in time, they get feedback and are congratulated. Additionally, the app shows their highest score, nudging them into being as fast every time. Similarly, UBER-drivers get feedback from the passengers and are that way nudging into behaving as neatly and nicely as possible (see appendix 5.3 for the screens). For crew, this can be applied in for example giving crew feedback about how much they have already read, a strategy already applied and tested in the MVP's.

Visible goals relate to users being able to see their performance at any point in time (Lidwell, Holden & Butler, 2012). This is closely related to providing feedback to the user and incorporating the ability to show realtime performance of the user (Thaler et al., 2010).

Setting options by default is a way to nudge users into using preselected options and not changing the selections (Thaler et al., 2010). This nudge is often applied, of which a well known one is the default selection made for 'cookies' on websites. Almost always 'all cookies' is selected, nudging the user into giving as much data as possible. For cabin crew, default options can be used to select interesting topics in relation to information.

RISKS OF NUDGING

Although nudging is an often used strategy by many companies, it is also a risky strategy that needs thorough research. Gino (2017) recently discussed how important is it to make sure the behavioural strategies are applied well, especially with UBER being critisized for their applied strategies. When applied wrongly, it can have the opposite effect of what was initially intended.

NUDGING CA1 & CA2'S IN THE RIGHT DIRECTION

Nudging can be a way to guide crew in the right direction, while the cabin crew keeps control and works autonomously. However, these strategies have to be applied well in order to not have the opposite effect. It is therefore advised to conduct future research into how to nudge cabin crew in the right direction. It is, however, proposed as a possible way to provide the guidance, but without dictation. Therefore it is shown as a 'tip' in a cheat sheet, but added as a recommendation for further research in chapter 23.

19 THE FINAL DESIGN

AN INFORMATION COMPASS

A tool to navigate the information in the cabin crew journey

This chapter will explain the final solution, namely the Information Compass, the cheatsheets and the guide that helps the organisation use both. It will start with introducing all designs,- followed by an explanation of the context in which the tool can be used. It will close with the poster providing an overview of the final design that will be validated in the MIRROR phase.

NB. Over the course of this thesis, many iterations on the design of the compass have been made. The iterations were done after showing people within the organisation the compass and hearing their suggestions. In appendix 6, an overview of iterations can be found.

Additionally, it was requested by IFS to also give an overview of how the project came to be. This overview was made in a presentation-style format and contains many of the parts shown in the final design (see appendix F03). Due to the large amount of pages included in that design, it has been decided to make a more concise guide as a final deliverable of this thesis. This guide will be discussed in the following chapter.

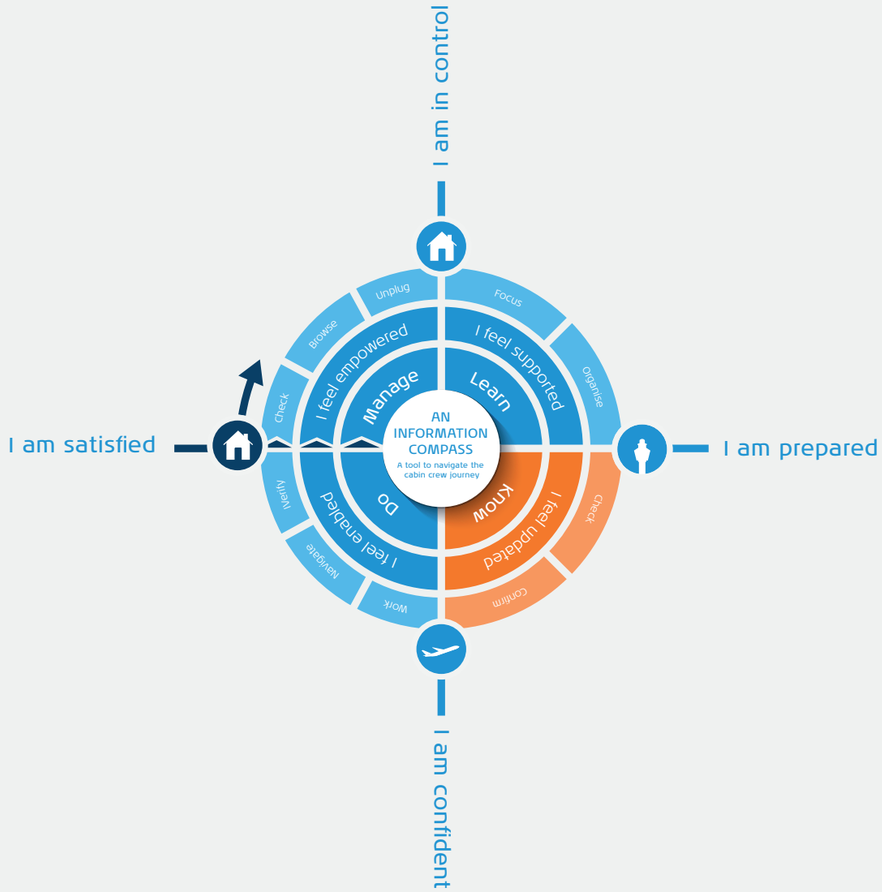


Figure 19.1: The tool - An information compass

The information compass is a tool for the organisation to navigate information in the cabin crew journey. The tool will be explained in chapter 19.2. In short, it contains the following:

Each phase (e.g. 'manage') of the cabin crew journey has its own requirements for an optimal working climate (e.g. 'I feel empowered'), and in each working climate cabin crew undertake actions (e.g. 'check', 'browse', 'unplug').

The cabin crew journey starts at home, where they manage things like their schedule and to do's, but also their private life. While undertaking their actions, their goal is to eventually be in control of managing their personal and Professional life.

Similarly, the learning phase takes place somewhere between home and the gate, often in the crew centre. Their goal is to be prepared, after having learned what is needed.

After having learned and prepared what is needed, they want to know for sure they have done all that is needed. The phase takes place between the crew centre and their flight and even though the phase is short, it is crucial. This is when they want to feel updated by KLM and confidently start the flight.

When on board, cabin crew want to do their job and create memorable experiences. Even though they have checked whether they are up to date, the phase is crucial in maintaining the feeling of being up to date. E.g. when in doubt in flight, they want to feel enabled to retrieve information and with that do their job the best they can. That way, cabin crew can be satisfied and enjoy their time at home.

Figure 19.2: the printable version

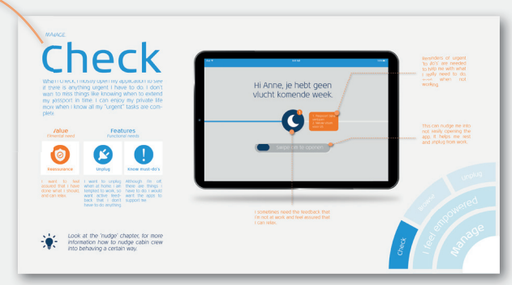


Figure 19.3: Cheatsheat for the 'check' action.

19.1 THE TOOL

In each phase of their journey, cabin crew undertake different actions. And for each action, cabin crew have different needs in relation to information. The Information Compass (in this thesis called 'the tool') is a tool that helps the organisation navigate the information-needs of cabin crew in their journey (see appendix F01). All needs are made more tangible in added cheat sheets (see 19.2).

WHAT'S IN THE INFORMATION COMPASS?

The information compass maps the phases, cabin crew's optimal working climate for each phase and all actions that cabin crew undertake in each phase. Each phase closes when they have reached their desired goal. Basically, it is an abstract version of what was previously visualised as their linear information journey. However, to avoid the organisation from only considering the preparation phase or stop considering needs during and after the flight, the tool is made circular. That way, they are nudged in thinking of the journey as a recurring process, rather than a linear process with an end and a start.

WHY AN INFORMATION COMPASS?

The Information Compass is a quick reference tool for the needs of crew with regards to their information, on an abstract and strategic level and is designed as a tool to hang on the wall, have laying on their desk or digitally available. In a few seconds, the user can reference phases and actions of crew.

Additionally, it is deliberately written in the same language as The KLM Compass. This way, a strategic fit with the company and their brand is created.

19.2 THE GUIDE

To give the organisation more explanation, to clearly show the needs of crew and to give actionable guidance, The Information Compass comes with a guide. The guide consists of an explanation of the project, the tool itself, and cheat sheets showing the needs within each action crew undertake. See figure 19.4 for a brief overview of the guide and appendix F02 for the full guide.

WHAT'S IN THE GUIDE?

In the guide, there is a short explanation of the project, an explanation of the tool and how to use it. Additionally, the guide contains cheat-sheets for each action. These cheat-sheets provide a clear explanation of what the cabin crew needs are and how these can be translated into a digital screen (see next chapter).

WHAT KIND OF FILE IS USED?

Since Powerpoint and PDF are often the preferred over paper, a deliberate choice was made to compile all the designs in a PDF. This way, text can be copied and it is easy to spread throughout the entire organisation digitally. To embed the design in specific divisions, a few prints of the tool will be made, as well as a poster (see page 81).

WHAT'S IN THE GUIDE?

The files contain the following chapters:
1. Project: explaining the aim and context of the project.
2.TOOL: explaining the compass and each phase of the compass
3. GUIDE: contains a personas (explaining the user and their elemental needs) and the cheat-sheets (explaining each action separately).

HOW TO MAKE THE ORGANISATION UNDERSTAND THE NEEDS AND BECOME CREW-CENTRED?

The guide is developed to make sure the compass is used correctly and to understand the context of the project. The guide is something the organisation can always reference when considering the needs of crew in their journey.

With this guide, the organisation should become more crew centred and move from a push to pull strategy where Cabin Crew are in control and work autonomously. In order to really empathise with the user, each cheat-sheet in the guide is written in the first person. This way personification is applied, which can enhance the empathy for the cabin attendant felt by the organisation. This can then again lead to a deeper understanding of the user's need (Sleeswijk Visser, Van der Lugt, & Stappers, 2007). Additionally, personas can help in keeping in mind the users at different stages of the design process (Knight, 2019), which has lead to incorporating personas in the guide.

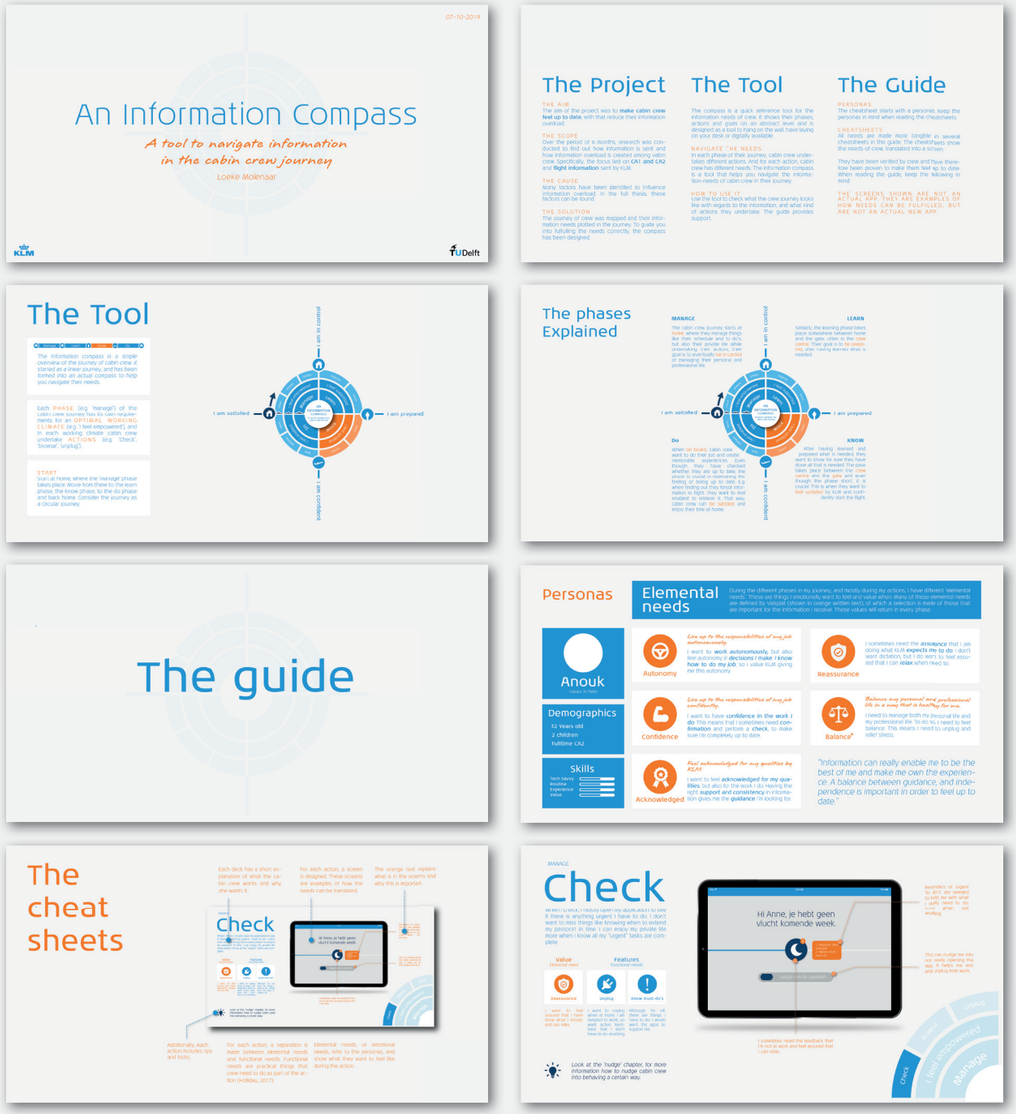


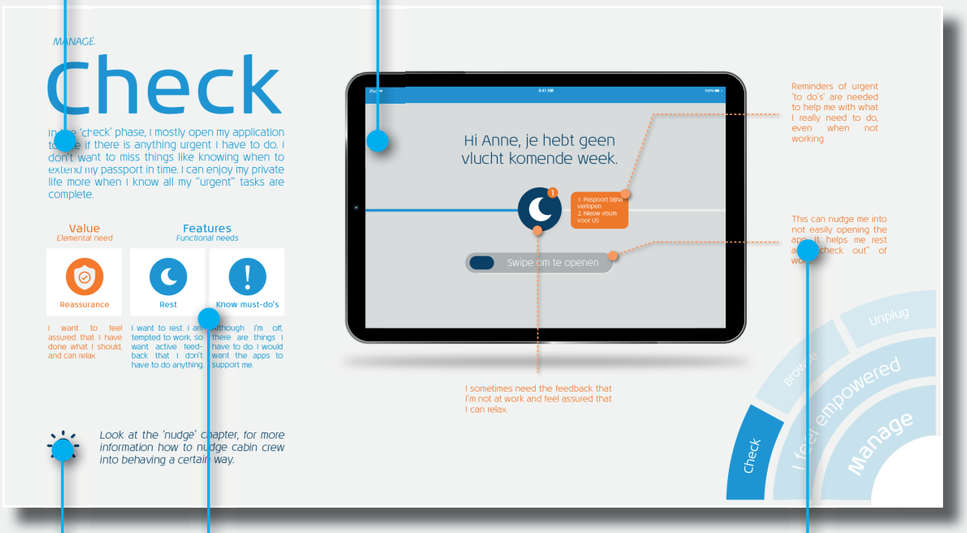
Figure 19.4: an overview of pages in the guide (showing only 1 cheatsheet). See appendix F02 for the entire guide.

19.3 THE CHEAT-SHEETS

The cheat sheets are designed as a quick reference page for each action cabin crew undertakes. Whenever the organisation is referencing the compass, the sheets can be used to find the needs of crew and tips about how to cater to the needs. In the cheat-sheets each action within the compass is discussed separately and each sheet contains the same elements (see below). The final design set also includes a printable version of the guide (F02) and the cheat-sheets separately (F05). This way, the cheat sheets are easily accessible and easy to reference when using the compass. Summarising, the cheat-sheets provide more background information and help the organisation in navigating the needs of cabin crew.

Each sheet has a short explanation of what the cabin crew want and why they want it.

For each action, a screen is designed. These screens are examples of how the needs can be translated. The screens were designed in Dutch to increase validation ability with crew and have been kept the same for the cheat-sheets.

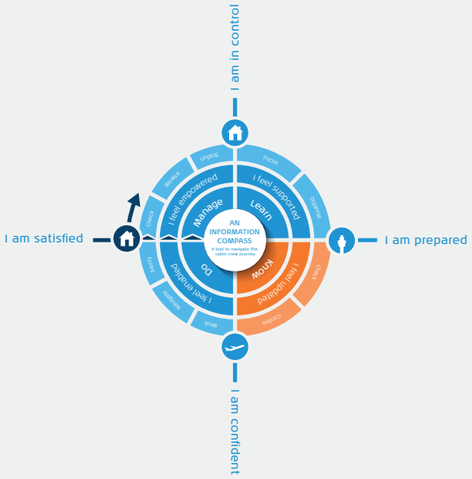


For each action, a separation is made between elemental needs and functional needs. Functional needs are practical things that crew need in order to undertake the action (Holliday, 2017).

Elemental needs, or emotional needs, refer to the personas, and show what they want to feel like during the action. These needs are more open and can be similar for multiple actions (Holliday, 2017). Four out of five of these needs come from the research from Valsplat (see appendix C09). It has been requested by the organisation to add these. However, solely a selection of Valsplat's elemental needs was made to keep it concise and relevant.

The orange text explains what is in the screens and why this is important.

Additionally, each action includes tips and tricks.



19.4 CONTEXT OF USE

The tool and guide are designed to be used in three contexts: evaluating the current situation, start of new designs or validation of solutions.

EVALUATE THE CURRENT SITUATION

Departments within KLM are often reviewing the way they send or design updates about service or products, as well as evaluate current applications for crew. In these processes, the organisation can check where in the journey the information or app fits and whether it fits the needs. It is recommended to use the tool at the start of the sprint to make sure all current situations are evaluated with the needs in mind.

START OF NEW DESIGNS

When developing a new app or creating new information, the tool can be used to define the needs of information in the app. For example, information in an app might be needed for a specific phase of the journey and thus needs to fit the actions they do in that phase and the emotional and functional needs. From the start of the project, the app and information therefore have to be designed with the needs of crew in mind.

OPTIONAL: VALIDATION OF DESIGNS

Lastly, the tool can be used to validate whether a solution fits the needs. However, the use of the tool should never be the sole validation, it is just a quick reference and a start to becoming more crew-centred.

FOR EXAMPLE, HOW COULD IT BE USED IN THE DEVELOPMENT OF THE NEW APP LANDSCAPE?

Currently, the development of the new app landscape is ongoing. The project is still in SHERLOCK phase in which the current situation is evaluated. The tool can help in mirroring whether the current situation fits the needs of crew, or whether for example some apps need redesigns or even need to be deleted.

When deciding to redesign an app, the tool can be used to define where in the phase the app is used. That way, helps in defining what needs it should be catering to from the start of the sprint.

Lastly, when designs are finished, it can be used as a quick check to see whether it fits and how needs are fulfilled. Validation with crew should always be done in addition to that.

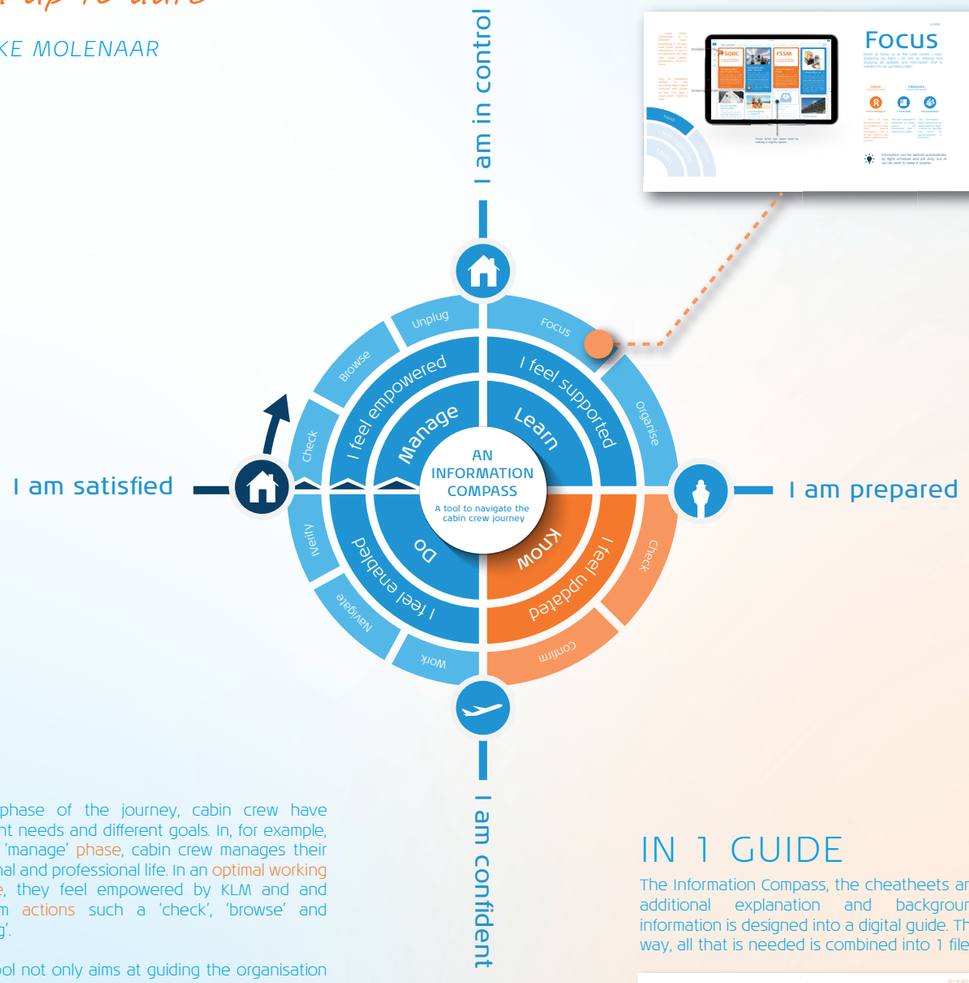
THE INFORMATION COMPASS

A tool to navigate information overload and make KLM cabin crew feel up to date

LOEKE MOLENAAR

10 CHEAT SHEETS

For each action, a cheat sheet is created. This way, the organisation can review what the action is about and what needs are. An example of a screen is shown in which all needs are made tangible.

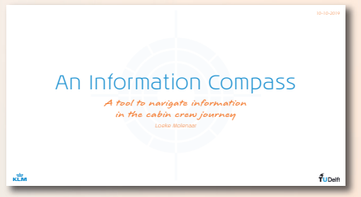


Each phase of the journey, cabin crew have different needs and different goals. In, for example, in the 'manage' phase, cabin crew manages their personal and professional life. In an optimal working climate, they feel empowered by KLM and and perform actions such a 'check', 'browse' and 'unplug'.

The tool not only aims at guiding the organisation to fulfilling the right needs, but also at making the organisation more crew-centric. The Information Compass is additionally designed in way it fits the organisation as a brand an with that aims at creating coherence between their strategy and their communication efforts. The ultimate goal is to make cabin crew feel up to date and to reduce information overload.

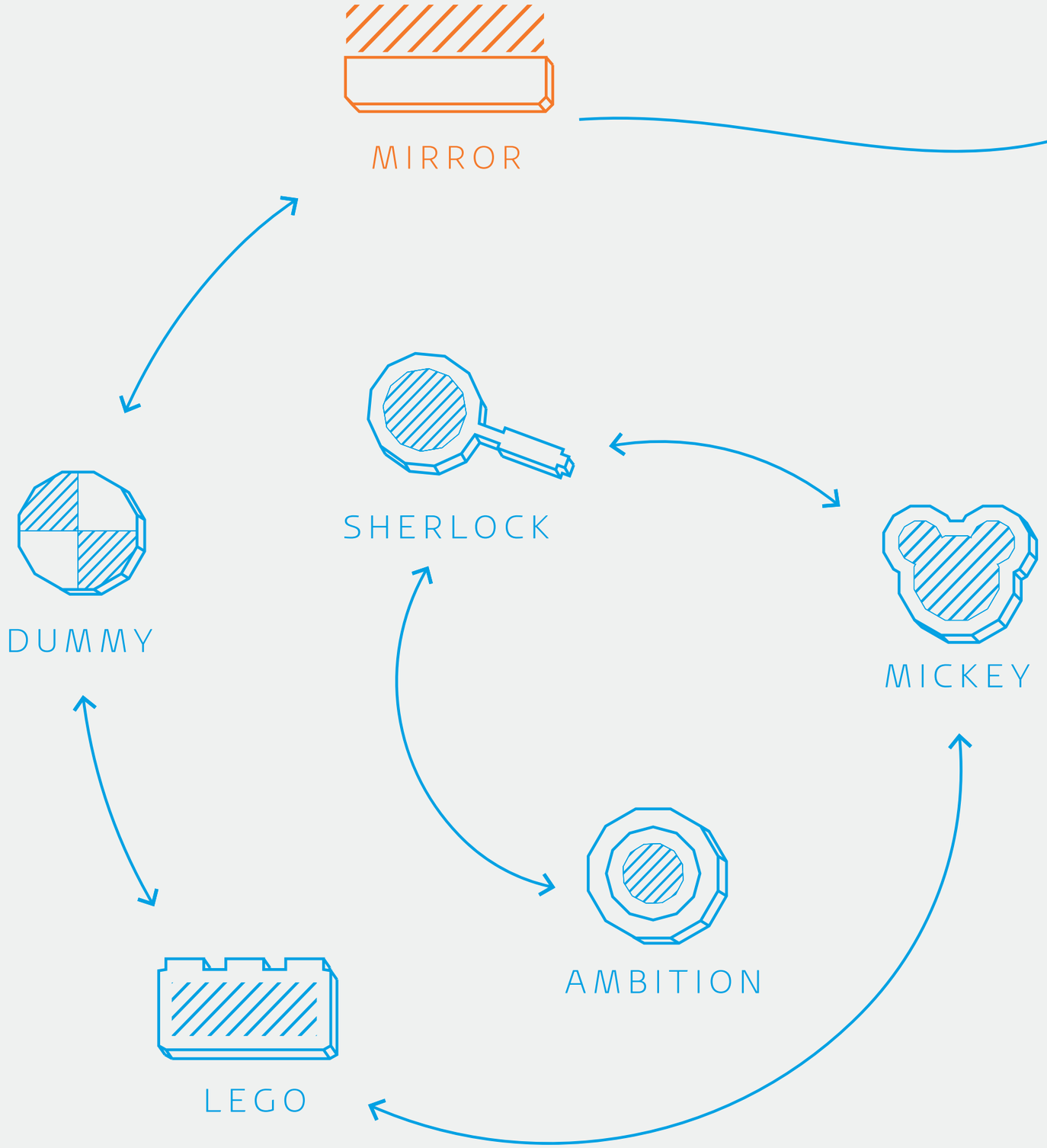
IN 1 GUIDE

The Information Compass, the cheatheets and additional explanation and background information is designed into a digital guide. This way, all that is needed is combined into 1 file.



KLM

TU Delft



The MIRROR Phase

In the MIRROR phase, the tool and guide will be validated and a check will be done to see if the proposed solutions fit the design criteria.

20 VALIDATING THE DESIGN

As previously discussed, the organisation requested a document explaining the process and context of the project, as well as the final solution. This context-document was made in a presentation-style format (see appendix F03). When validating the design with the organisation, both the presentation-style format, as well as the personas, the tool and cheat-sheets separately were discussed.

An important note is that these insights have already been incorporated into the final design shown in chapter 19. Due to time constraints, it has not been possible to validate the final design with the organisation, solely with other design students. However, since the tool, the cheat-sheets and the personas form the core of the deliverable and have remained the same since the validation with the organisation, the validation is expected to be of high value. It is advised, however, to validate the final design once more with the organisation (see recommendations).

The validation was done with two employees from the development department, as well as one Valsplat employee who solely the cheat-sheets have been discussed with. The insights from the validation of the context-document with the organisation, as well as how these lead to changes in the final design, can be found below.

Thorough validation with crew has been done over the course of the project as mentioned before. The screens have been proven to help crew, showing the solution is desirable. The slight changes made in the screens after the first validation are not expected to influence the validation. Therefore, the validation with crew is not repeated.

INSIGHTS FROM VALIDATION THAT LED TO CHANGES IN DESIGN

"I need more explanation of each phase of the journey. Now, 'manage' seems a bit confusing, especially since it takes place at home"

The context-document, compass, personas and cheat-sheets that were validated did not include a clear explanation of each phase of the journey. This made it confusing where each phase took place and how to look at the compass. This has lead to the decision of combining the compass, personas and cheat-sheets into a guide. In the guide, there is now an additional explanation per phase of the compass added.

"The project has a scope, since it solely focuses on flight. I can imagine this is done to make the project doable for the 6 months. However, it would be nice to have a bit more information about the scope added to the document"

Since the decision was made to develop a guide, it was also decided to explain the scope and aim of the project as well. In the guide, this is now page 2. Additionally, the context-document in appendix F03 remains available for all employees to reference.

Explain that the screens are not an app, but solely an example.

When talking to the two employees, they seemed to assume that the screens combined formed an app. An extra note is therefore added to page 2 of the guide, explaining that the screens are solely an example.

Explain that a selection was made from the elemental needs of Valsplat added to the personas

There was also a bit confusion about the incorporation of the valsplat Elemetal needs. They could see the needs originating from Valsplat, but were confused about the fact that it was a selection. In the personas, a bit more explanation has been added.

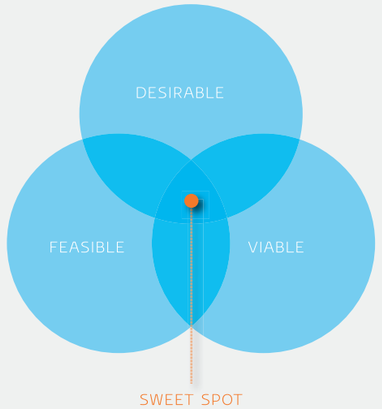


Figure 20.1: The sweetspot for innovation

OVERALL INSIGHTS AND VALIDATION WITH THE ORGANISATION

The insights gathered will be evaluated by The how feasible, viable and desirable they are (see figure 20.1). The project ideally reaches a sweetspot between all three and with that becomes an innovative, fitting solution.

These insights are very valuable...

Overall, the employees are very happy with the insights. How the needs are plotted in the journey has been mentioned before as being an eye-opener. By a Valsplat employee, the cheat-sheets were appointed as being valuable, especially because these make the needs more tangible. This shows the solution is desirable for the organisation.

... but employees wonder whether, except from the development department, the organisation knows how to use these kind of insights

The fear arose that the more operational divisions would not know how to use the insights on a daily base and adjust their way of working to it. However, though the fear is understandable and shows the solution is not feasible for all divisions, the aim of this thesis was on a more strategic level. It is recommended (see chapter X) to conduct another research specifically on this phase of the journey.

This tool enables employees to guide the others in the organisation to embracing this crew-centred way of working, which they think is needed

Though it has been mentioned that it can be challenging for the entire IFS department to understand how to use the compass, the organisation is convinced that they need to become more crew centred. They mentioned that this tool should become their baseline, by which decision can be made. It shows the organisation thinks they should apply the tool, and with that makes it viable.

Because the project has a limited scope (e.g. flight related information), more research is mentioned as being needed to make sure all needs of crew are incorporated.

The employees mentioned that these phases are now simplified into basic needs for information related to their flight information. However, when at home or in other phases, information from more departments is sent to crew. Therefore, they mention more research for each phase is needed, decreasing the feasibility of the tool slightly.

If the organisation applies the insights well, they are convinced it can make cabin crew feel up to date

In the following chapter, a check will be done to find out if the solution fits the design criteria. However, when talking to the organisation, the employee mentioned that they think the solution can help make cabin crew feel up to date if the organisation manages to apply it well.

21 DOES THE SOLUTION FIT THE DESIGN CRITERIA?

Before the start of the design phase, multiple design criteria were discussed. The proposed solution should fit these criteria and therefore, this chapter focuses on validating whether the solution actually fits the criteria. Each criteria will be discussed separately below.

THE CRITERIA

1 MOVES FROM PUSH TO PULL

1. **The guidelines need to focus on letting crew be in control.**
   Both the screens of crew as well as the compass have been designed to let cabin crew be in control. Many values and needs are incorporated that fit the desire of being in control. Though this criteria is hard to validate, the strategies used in the relative world are used and nudge the crew into becoming more in control and the cheat sheets steer the organisation into that direction.

2. **The solution guides the organisation into making information personally and contextually relevant**.
   The screens show clear examples of how to make information personally relevant and contextualised. Though current technologies could not yet enable this, the innovative perspective guides the organisation into applying the needs. When discussing the solution with the employees, it was mentioned that it is needed to make information more contextualised and personalised as shown in the cheat sheets, and therefore this criteria is expected to be met.

3. **The solution respects private life and therefore does not increase the pressure in private life.**
   The information compass makes a clear distinction between what has to be done at home and how to make it easier for crew to balance their private and personal life. Even so, when talking to the employees, they mentioned the need to relieve pressure from home and appreciated the solutions given.

2 IS FUTURE PROOF

1. **The guide lets go of the status quo.**
   In no way, the current situation has been taken into account in the information compass. The new compass is used and the current technologies have been left out of scope. Therefore, this criteria is met. Solely in the implementation advise it is mentioned how to move from the current situation to the new, which might be one of the biggest challenges that IFS faces.

2. **The solution fits within the future vision.**
   The solution aims at making IFS more future proof by becoming more crew centred and give crew a more autonomous way of working with guidance, but no dictation. With crew, it has been validated that the screens fit their needs for guidance, but also their autonomy by being able to organise the information themselves.

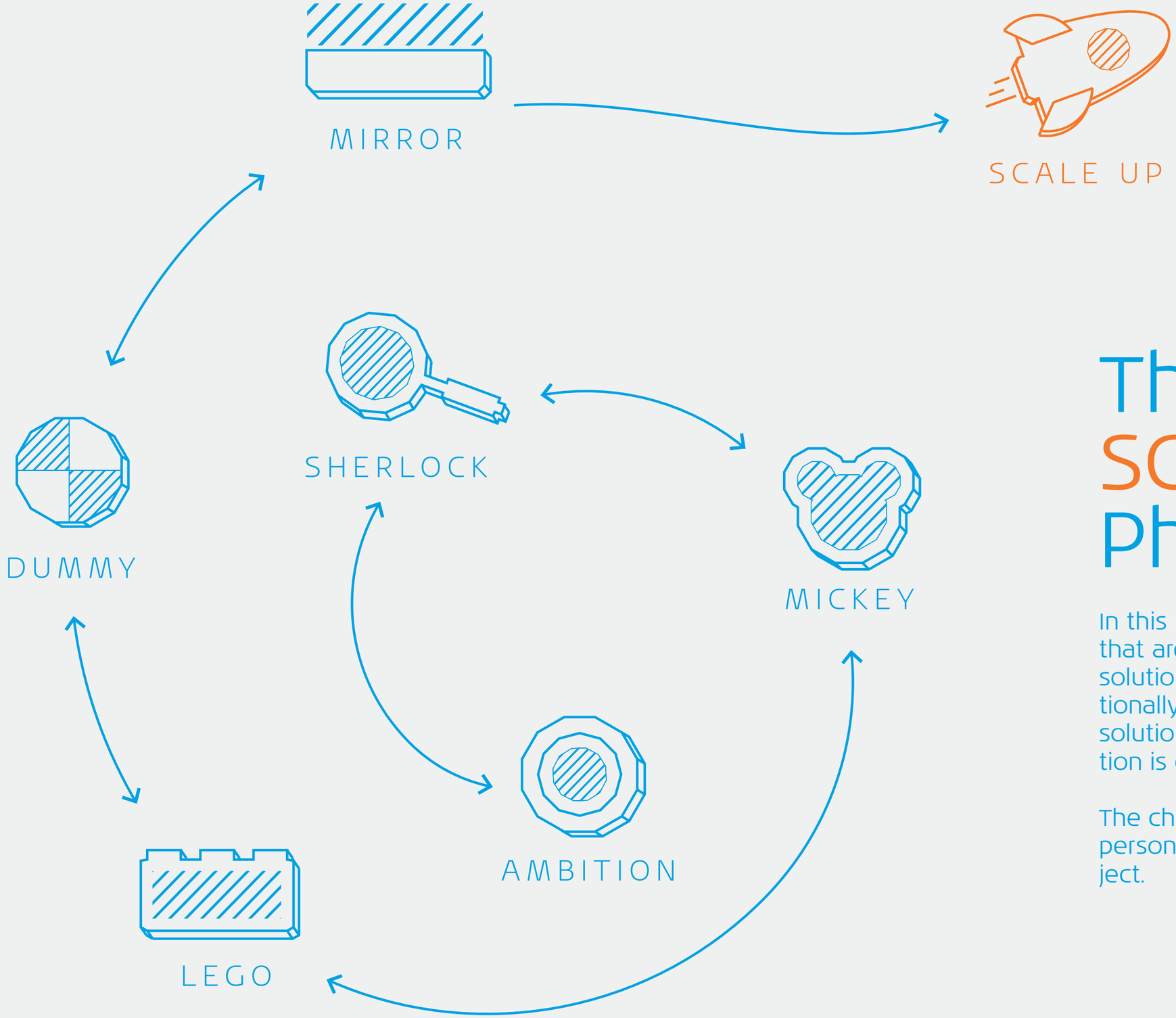
3. **Takes an outside in approach by learning from others.**
   In the MICKEY phase, many strategies from a relative world have been discussed. These have been incorporated in the design and in appendix 5.3 it is discussed how these strategies are used. Additionally, in the cheat-sheets many of these strategies reoccur in the functional needs of crew. Therefore, also this criteria is met.

3 GIVES GUIDANCE AND MOVES IFS AWAY FROM DICTATION

1. **The solution is focused on the new compass and needs to fit the elements 'optimal staff behaviour' and 'optimal work environment'.**
   These two elements have been added to the compass and therefore this criteria has been met.

2. **The solution supports crew but does not tell them what to do.**
   This is one of the hardest criteria to meet. Though it has been tested often with crew and their needs have been applied, is has also been found that there is a fine line between guidance and dictation. While on one side many crew members long for more guidance, too much often becomes dictation. By validating the screens often with crew and through that finding their needs, the criteria has been taken into account. The actual designs in the future should continuously be tested and validate whether the boundary of dictation has been crossed.

3. **The solution nudges them into using the solution**.
   Recommendations have been added on how to nudge the crew into the right direction. However, this needs more testing and thorough research. Nudging has proven to be tricky if not done in the right way. Therefore, this part has solely been added to the recommendations in the next chapter and in the cheat sheet as a tip, but left out of the final design of the screens.



The SCALE UP Phase

In this phase, the implications that are related to the proposed solutions are discussed. Additionally, in order to scale-up the solution, advice for implementation is given.

The chapter will close with a personal reflection on the project.

22 IMPLEMENTATION

The current information landscape for crew is complex. Though KLM has developed many digital tools, it has made cabin crew suffer from IO. Considering the time span of this thesis, current technologies have been left out of scope of the solution and a more innovative approach has been taken. However, this can make it hard for IFS to know how to implement the solution and go from the current situation to making cabin crew feel up to date. Therefore, this chapter will discuss how to implement the solution and move to a future proof IFS.

INCORPORATE ON STRATEGIC LEVEL

It is advised to make sure the new mindset is grounded in the organisation. This can be done by firstly incorporating the goals of the information compass and new KLM compass in the OGSM of IFS. From there on, the more autonomous way of working for cabin crew can be embraced by the management team and ultimately by KLM. The new compass should be the brand of IFS, and the compass the strategy for the information for crew.

SHARE THE INFORMATION COMPASS AND GUIDE WITH CONTENT EDITORS, COMMUNICATION DIVISION AND THE UX DESIGNERS

To start improving the current situation, it is advised to make sure the new compass is shared with the content editors and the communication division. They are currently responsible for the information sent to crew and can use to tool to evaluate where in the journey current information is needed and whether it fits the needs. This will help in improving the first valuable parts.

Especially the UX designers within Digital Studio will know how to use these type of tools considering their design background. Make sure they start incorporating the needs in their designs as well.

Additionally, to get the solution grounded, coming week I will give a presentation to the IFS teams that are working on content and of which some are content editors. By spreading the compass and explaining the tool, I hope to make the first start in implementing the tool.

USE THE TOOL TO ROADMAP THE CHANGES

Next to the above, IFS should use the tool to define what problems need to be tackled first or what needs should be catered to First. It is recommended to evaluate the problems with the stakeholders involved and prioritise what to work on First.

Also, it important to decide whether upcoming developments fit the information needs of cabin crew. If not, they should define how the developments should be adjusted and with that fit the needs.

IN THE DEVELOPMENT OF THE NEW DIGITAL LANDSCAPE, TAKE THE TOOL AS A BASE

The new development of the digital landscape has multiple main themes, that due to confidentiality will not be discussed in detail. Some of these themes are related to the design of the landscape, user centricity and content. Make sure the teams that will be working on projects related to these themes have the tool, the compass, but also this report. That way, a user centric mindset is incorporated from the start.

23 LIMITATIONS & RECOMMENDATIONS

Throughout this thesis, different methods have been used that have lead to the final design and in the solution the complex environment of the organisation has been taken into account. However, the complexity of the environment has for example led to the decision of leaving the current technologies out of scope and focus has been applied to making cabin crew feel up to date. Additionally, this focus has led to a few important factors being left out of scope. This chapter will therefore discuss implications and recommendations related to this research.

LACK OF NEW RESEARCH ON THEORETICAL FRAMEWORKS OF THE CAUSE OF IO IN ORGANISATIONAL ENVIRONMENTS

The literature review has given an overview of how IO occurs and how it has changed over time. From these insights, a theoretic framework with factors influencing IO has been developed that has been used as a base for the SHERLOCK phase. However, literature used for the theoretical framework can be considered outdated. The main reason why I did choose to use the literature was because the newer literature often focuses on more specific topics, such as 'social media', which significantly reduced the usefulness of the Literature. Especially the broadness of the scope of the project made it difficult to find newer, fitting Literature.

I did strive to use newer literature and references for the stages after the SHERLOCK phase to increase validity. I am aware that many of those used sources are 'softer' and with that less valid. However, at the same, the solutions reviewed were often proven to work for the user.

Additionally, the factors identified in the literature have also been identified to be of influence for cabin crew.

All in all I am convinced that the research is still valid. For future research focusing on for example one of the phases of the compass, I do recommend using the newer, more focused research and to keep validating the result.

VALIDATION SAMPLE SIZE

The sample size of the group within the organisation with whom the tool is validated was small. Additionally, the final design has not been validated with the organisation. Though many design loops have been taken and many tests were conducted over the period of the research, it is recommended to validate the tool in real projects within the organisation. That way, the usability is tested and adjustments can always be made.

DIFFICULT TO EMBED WITHIN THE ORGANISATION

Due to the size of the organisation, it will be hard to ground the solution on all levels of the organisation. This will take time and effort. It is therefore recommended to keep working with service designers and Valsplat employees and use the tools in creative sessions. This way, user centred design gets embedded and the tool becomes the base for all processes.

Additionally, after handing in the thesis, I will keep working as a service designer and will give presentations to divisions about the project. Additionally, I am planning on organising more creative sessions that help the organisation with reviewing the current situation and using the tool to improve it. That way, I hope

to increase the use of the tool.

NEED FOR FUTURE RESEARCH

This research has focused on flight-related information, as the scope was information sent by IFS. Future research is needed to make sure all information crew receives is mapped and is included and taken into account. It is therefore recommended to research each phase of the cabin crew more thoroughly and find out what additional information is sent. Additionally, it is recommended to conduct a specific research on the needs related specifically to safety information. This topic needs extra attention and should at all time be validated.

Additionally, it is recommended to conduct more research about how to nudge cabin crew in the right direction. This will help with defining the boundary between 'guidance' and 'dictation' and at the same time nudge cabin crew into doing their job the best they can. Because of the risk related to the implementation of nudges, it is recommended to find a dedicated person to research this specific topic.

RISK OF TAKING THE DESIGNS OF THE APP AND USE THEM TO DESIGN ANOTHER APP

Though it is advised in the guide to not consider the screens in the cheat-sheets as an app, I am worried about the risk related to designing app-screens. The sheer size of the organisation sometimes leads to many quick-fixes made within apps or functionalities added to apps. The complexity of current apps makes it hard to apply all proposed solutions immediately, if any at all.

Therefore, it is recommended that the not only more governance is applied to the iPad of crew. By deciding collaboratively what functionalities will be worked on first, it might be a way to avoid this from happening.

BIAS IN RESEARCH AND TESTS

Lastly, there is expected to be a form of bias in the research and the tests conducted. The many talks I had with crew, as well as the observation flight has biased me and might have influenced the research. At the same time, what created bias also provided many valuable insights.

Similarly, during this thesis I got help from two CA1's. They also helped me with interviewing crew and ideating solutions. With them knowing both the context of the research and their work-context, they can be considered biased as well.

Often, I did attempt to decrease bias by validating insights with secondary research. To decrease the bias in future research, it is recommended to keep validating the insights with crew and to have insights checked by multiple people within the organisation.

CONTRIBUTIONS TO THE RESEARCH DOMAIN

Lastly, I briefly want to discuss the contributions to research domains. This research was specifically conducted in assignment of KLM. This limits the contributions to broader domains, especially since the cabin crew context is different from most employee contexts and other cabin crew. However, I do believe that this thesis makes several valuable contributions to the (service) design and strategic design domain.

Firstly, I believe that the way of working applied in this thesis can be applied to other projects as well. I learned that easy MVP's can provide insights and find latent needs. The simplest design have been proven to help the user envision a certain future solution and define their own needs more clearly. The short MVP cycles combined with observations and creative sessions have given me many insights and I would recommend applying this way of working more often when trying to discover needs of users.

Secondly, I believe that taking the cabin crew journey as a base and using these to strategically map needs can help the organisation in becoming more crew centred. Often, the organisation is able to understand the journey phases of cabin crew. Mapping the needs in a strategic way (e.g. in wording that is linked to the branding strategy) can help the organisation in understanding the needs. This way of applying journey mapping is not limited to this research. It is actually something I plan on using more often in my job at KLM.

24 CONCLUDING THIS THESIS

The design challenge of this thesis was to make cabin crew feel up to date. The aim was to find the needs of crew and with that guide the organisation in reducing IO. This chapter will briefly review findings and will discuss whether the goal of the thesis has been reached.

The SHERLOCK phase has shown that many factors are involved in the occurrence of IO. Mostly the SHERLOCK phase also showed that the organisation pushes information and uses a top-down strategy, while cabin crew wishes to pull information in a bottom up strategy. Cabin crew wants to be more in control and work autonomously. With that, and the goal of making cabin crew feel up to date, in mind the MICKEY phase started.

In order to reduce IO, the relative world has been reviewed. This analysis identified strategies used in different companies that aim at reducing IO and enabling the user to work autonomously. The insights have lead to multiple MVP's that were designed. The goal of these MVP's was to find out what the needs of crew were exactly and to find solutions for the complex problem. All designs, needs and insights have often been validated with CA1 and CA2 and have been mentioned as being valuable and needed.

Often, cabin crew mentioned that the solutions would help. The strategies applied give autonomy and at the same time give crew the ability to manage and organise their information themselves. Many of the solutions are additionally expected to also reduce the factors that influence IO, even though this has not specifically been tested. Therefore, is can be concluded that the proposed screens and fulfilled needs make cabin crew feel up to date.

The challenge was, however, also to guide the organisation into making sure CA1 & CA2 actually feel up to date, more in control, thus has the ability to pull information. The MVP's have lead to many different insights and identified needs of crew.

All the identified needs have been translated into the information compass. The information compass, and the additional guide including the cheat sheets can help the organisation into the right direction. The tool is additionally designed in a way that it fits the company's strategies. This way, coherence between communication strategy and their brand strategy is created.

The tool will need more validation with the organisation and actual application of the tool should proof whether it really guides them in the right direction. The positive reactions of the employees have shown that the research is valued and the tool is therefore expected to be of use for the organisation. It will help them in considering their needs, making crew work more autonomously, make them feel up to date and with that reduce information overload.

25 PERSONAL REFLECTION

I started the project with a few ambitions. Some of these ambitions were actually the reason why I started my SPD master degree. With this internship at KLM and thesis research I have reached many of ambitions and am ready to start with new ambitions in my new job at KLM.

Before starting the master degree, I worked at many sustainable companies. Although I was passionate working in the sustainable environment, I always struggled with getting the investors convinced of innovative solution. For some reason, it seemed like they were speaking a different language. This was when I decided I wanted to study Strategic Product Design. What has always been a dream, I had now gathered the courage to actually do it.

Many skills I developed during SPD to design for companies and for a strategic fit. I decided that it was then time to learn how to apply thee in a corporate environment. I applied for an internship at KLM.

MY KLM EXPERIENCE

The internship at KLM has been memorable. I got the chance to apply my knowledge, to learn from the political environment and even to fly as a cabin attendant!

My goal was to learn how to find latent needs and do user research. Over the course of the entire thesis, I tried to always talk to users and apply methods to learn how to do this. I found it challenging at the start, especially not knowing whether my results were valid enough. The many MVP cycles taught me it can be simple, but still valuable.

Additionally, I decided to apply creative facilitation and learn more about this method. I actually learned that it is not only a method that helps ideating, but is also helps in getting stakeholders on board. And I actually believe that this was my most valuable learning: including important stakeholders of the project in creative sessions, or even do specific creative sessions with stakeholders helps in implementing the solution. It's a way to get them on board!

Lastly, I wanted to work at a large company. This way, I could learn communicate correctly and learn the politic-strategies. Especially during this project, this was a challenging ambition. The environment can be unpredictable and the amount of stakeholders is large. Conducting a 6 months project on your own, but keeping stakeholders on par at the same time was hard. I tried to do it the best way I could, and at the same time enjoyed the challenge.

It is actually still something I am developing and I am happy that I can keep developing this skill in my job at KLM as a Strategic Service Designer. This way, I can also work on implementing the solution of this thesis and help the organisation in becoming more crew centred.

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