





DEEP PERSONALIZATION



PERSONALITY DRIVEN DESIGN FOR
INCREASING CUSTOMER INTIMACY
IN THE AIR TRAVEL CONTEXT



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**PERSONALITY DRIVEN DESIGN FOR
INCREASING CUSTOMER INTIMACY
IN THE AIR TRAVEL CONTEXT**

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data-driven...
even perceived to be
dogmatic and
closed-minded

CONSCIOUSNESS

A tendency to be organized and
self-discipline, act dutifully, aim
prefer planned rather than spontane

EFFICIENT/ORGANIZED

High
conscientiousness
is often perceived
as **stubbornness**
and **obsessive**

PREFACE

This graduation thesis is the final deliverable of the master degree program Design For Interaction at Delft University of Technology. It communicates the result of a six months research and design project, deep personalization. This project was initially proposed by the digital department of AirFrance-KLM(AF/KL).

I would like to thank my supervisor team for supporting and guiding in this six months. Jeroen, Rebecca and Jorge, working on this project with you three has been a great experience. Thanks for always giving me new inspirations and insightful suggestions with patience and enthusiasm. Special thanks Jeroen and Rebecca for always replying my endless and long questions quickly in email. Special thanks Jorge for putting me into

contact with relevant people efficiently, providing knowledgeable advices and the aviation resources generously, giving detailed and structured guidance in every little steps. I always be motivated after had conversations with you three, and I have learnt so much throughout the project from you.

Additionally, I would like to thank After sales team, thanks for your warm welcome at After sales. And also other colleagues who gave me help during the process.

Lastly, I would like to thank my family and my friends for listening all my graduation stories, cheering me up, giving great inspirations. All your support guide me to the destination of this journey.

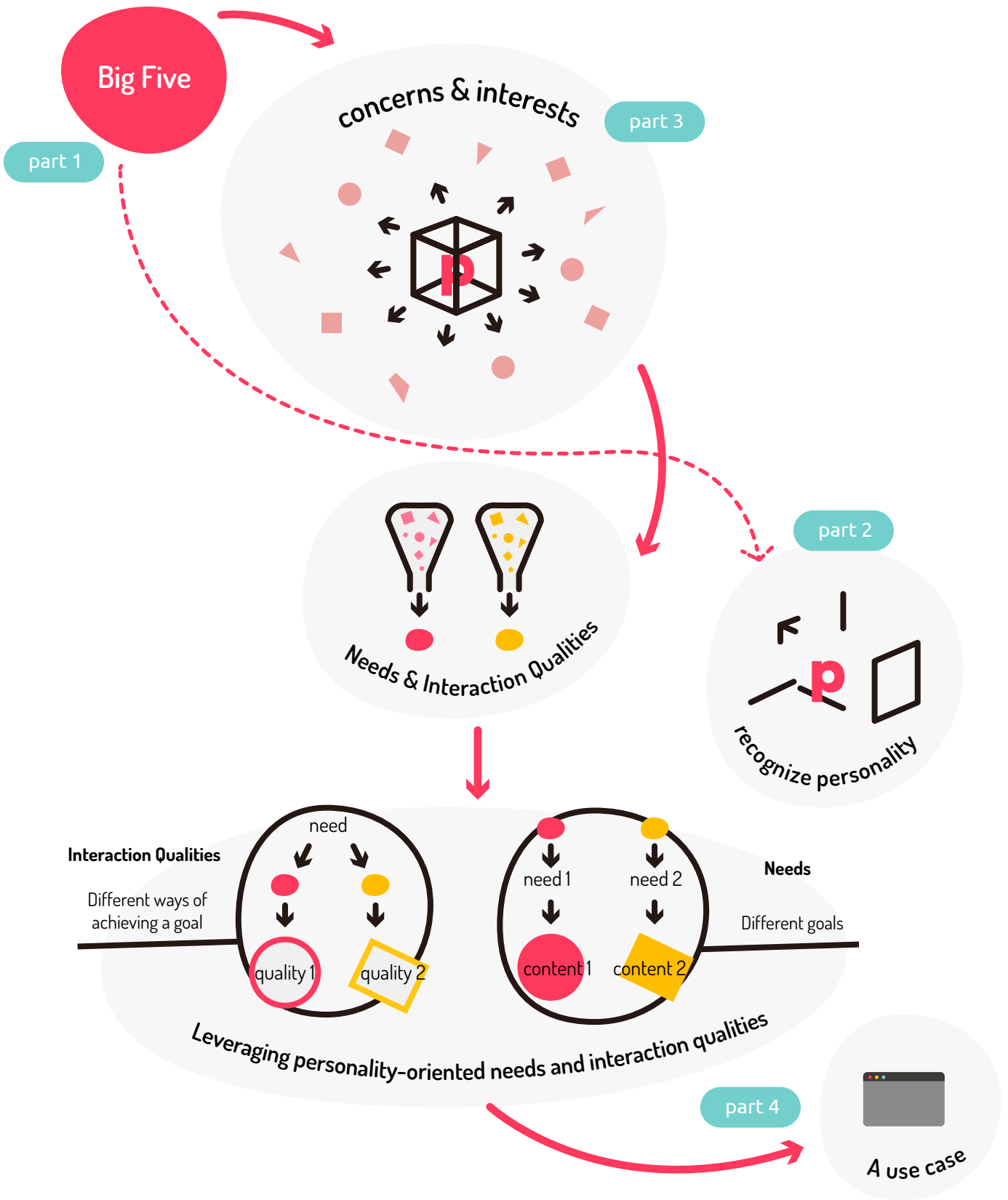


Figure. 1 The project phases

EXECUTIVE SUMMARY

Understanding someone's personality gives us a clue about how the person is likely to act and feel in a certain situation. Understanding a passenger's personality enables an airline to know the passenger's consistent concerns and interests. As an airline, AirFrance-KLM wants to compete on customer intimacy by providing greater adaption of service to needs and preferences. Therefore, this project was conducted with the goal: to increase the customer intimacy by considering customer's personality for personalization.

The main outcome of this project is a personality-driven design principle based on the big five (Goldberg, 1990). This principle can be used as the

guideline for personality-based product and service innovation. Furthermore, by applying this principle, a website tailored to customer's personality was formulated as a use case. According to the concept evaluation results, services taking personality into account by applying the proposed principle can positively influence customer experience.

As a first exploration of collecting personality related information and leverage personality in the aviation context, the project results proposed a new way of doing personalization, linked the design practice with the user data, gave guidance for related further research.

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This project has four main phases(figure.1). Which are: understanding personality, recognizing personality , introducing personality-driven design principle, and leverage personality.

In the first phase, the definition of personality and personality structure were studied. The Big Five model(Goldberg, 1990) is currently the most commonly used personality model. It describes five main dimensions of personality, namely, openness, extraversion, conscientiousness, agreeableness and neuroticism. Big five as the most validated model, has been chosen as the starting point as well as the foundation of this project. Furthermore, a review of the current usage of personality in various contexts has been done. It is surprising to see there are currently no successful use cases that have used personality to improve customer experience in a service context. According to recent research result, attitudinal data is most important to use to build a long-term consumer-brand

relationship (Myrthe, 2017). Personality reflects what a person is "really like", which will provide great value towards the building of intimate relationship between company and customers. As a company aiming at competing on customer intimacy, stepping into the personality related concerns enables AF/KL to bring personalized services towards a higher level. Therefore, it is worthwhile for AF/KL to research on passengers personality.

The second phase is recognizing personality. The current approaches of measuring personality were studied. Behavioural and attitudinal differences reflect personality, to get a comprehensive idea of what are the typical behaviour and attitude of a passenger with particular personality in his/her journey, a generative session with relevant experts involved has been done.

The results of the session has been used as the foundation of cues that are used to identify personality. Lastly, ten contextual questions, which are used to identify Big Five were formulated. After testing at Schiphol, several iterations of the questions have been done. As a suggestion, further research can investigate on how to use the digital trace to get the answers of current personality related questions.

The third phase is stepping into the personality related concerns and interests. To investigate on what being differentiated by personality, a literature study has been done mainly based on the original description of personality(Goldberg, 1990). What is more, with the belief that personality encompasses a person's relatively stable feelings, thoughts, and behavioural patterns(The principle of management, 2013), personality-based concerns in other contexts should also be able to reflect the concerns in the aviation context. Consequently, the other Big Five based research in various context also being used as references in the concerns study. The outcome of the study is a set of personality cards, which described each trait with concerns, needs and interaction qualities. This personality cards functioned as a principle of personality-driven design, which were used to define problems and opportunities

The fourth phase is to apply the principle to generate concepts. The Flight guide, an existing product in AF/KL that shows people important flight information and possible relevant recommendations after booking a ticket, was seen

as a good platform to present the principle. By applying the principle, the overall interaction and the content of Flight guide were tailored. New cards were added to fulfil the personality related needs. The full concept starts from recognizing personality. Customers will get an email after booking a ticket from AF/KL, leading them to the Flight guide website. With their permission, 10 personality related questions will be asked. This data will be stored in customer profile and reused by AF/KL in other touch points in the customer journey. Lastly, based on who they are, a personalized flight guide will be shown.

This concept was evaluated with 20 AF/KL customers as a way to evaluate the proposed principle. **Results show that there is a strong correlation between personality and customer's preferences. People are more likely to choose a design better match with their personality. This results suggests services taking personality into consideration by applying the proposed principle can positively influence customer experience in the aviation context.**

More steps should be taken to refine the personality related questions and the quality of the design. Further research can investigate on the smarter ways of recognizing personality, for instance, using online and offline trace, or learning on the job(see recommendation chapter). Furthermore, looking into other possible applications of the personality driven design principle in other touch points is also worth exploring.

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"Each of us has a unique personality that differentiates us from other people, and understanding someone's personality gives us clues about how that person is likely to act and feel in a variety of situations."

--The principle of management, 2013

ABOUT THE PROJECT

This is a TU Delft Master graduation project, in cooperation with AF/KL. In this project, AF/KL wants to increase its customer intimacy by considering customer's personality for personalization.

A RESEARCH GAP

Personality has been studied for many years in other industries. However, in the aviation context, research on how to recognize passengers personality, and how to use personality to improve service/products have not been done before. Consequently, this project will be the first exploration in this field.

ABOUT AF/KL

The leading group in terms of intercontinental traffic on departure from Europe, Air France-KLM is a major global air transport player.

AF/KL WANTS TO COMPETE ON CUSTOMER INTIMACY

Today, air travel has become a commodity, much like sugar, gold and coffee beans (Gottdiener, 2001). The competitive environment in the aviation industry is getting more and more intense. AF/KL is doing its best to provide the best service on which they can compete with other airlines. Therefore, AF/KL have decided to compete on customer intimacy by providing the best customer experience with a greater adaptation of service to customer needs. However, most of the needs and preferences AF/KL took into account are still on a factual level. Studying passengers personality may unlock the needs and preferences on a psychological level. Recent research also shows service systems taking the personality of the consumers into account could build a brand consumer relationship on a personal level. (Myrthe, 2017)

PERSONALIZATION BASED ON ATTITUDINAL DATA

AF/KL has lots of customers every day, who come back over time. Each of them is unique, but there are also similarities. Recent research shows personalization enhances customers' lives and increases engagement and loyalty by delivering messages that are tuned to and even anticipate what customers really want (McKinsey, 2016). AF/KL is making use of user data to personalize the services, but largely based on descriptive data and behavioural data. Personality related data is more close to attitudinal data, which goes deeper than the who (descriptive data) and the what (behavioural data). Therefore, the attitudinal data enables AF/KL to understand their customers more deeply and lively.

AN OPPORTUNITY FOR AF/KL

In conclusion, taking personality into consideration in personalization is an opportunity for AF/KL to get more meaningful data. By using this data, AF/KL has the opportunity to be the first airline to bring personalization to a next level, which in the end, will positively influence customer intimacy.

CHAPTER 1

UNDERSTANDING THE CONTEXT

Introduction

This chapter will focus on understanding the context. The aim of this chapter is to get a comprehensive understanding about the aviation context and how the project goal matches with the strategy and the objective of AF/KL.

1.1/ Air travel context

1.2/ Trends in current aviation industry

1.3/ Company analysis

1.4/ Make data meaningful

1.1/ AIR TRAVEL CONTEXT

THE GROWTH OF GLOBAL AIRLINE INDUSTRY

According to the International Air Transport Association (IATA), the global airline industry has doubled over the past decade, from US\$369 billion in 2004 to \$746 billion in 2014. Within this growth, low-cost carriers (LCCs) take up 25 percent of the worldwide market and keep expanding rapidly in emerging markets (IATA).

“Today, air travel has become a commodity, much like sugar, gold and coffee beans.”

---Gottdiener, 2001

Flying, along with facing still spaces for improvements and risks, has become a necessity for many of us (Gottdiener, 2001).

1.2/ TRENDS IN CURRENT AVIATION INDUSTRY

THE IMPORTANCE OF PASSENGER EXPERIENCE

IATA's ANNUAL REVIEW 2015 reports that in a given situation with same time efficiency and cost, a previous good experience was a key driver for passengers to choose their next airline.

THE IMPORTANCE OF INTERPERSONAL COMMUNICATION

According to the result of the KLM Customer Experience Drivers in 2016, Interpersonal communication is the most important aspect which have the highest effectiveness on passenger experience in the whole journey.

PERSONALISE IT

The capacity of gathering client information is keep growing, consumer have more open mind towards the data collection (Top 10 Global Consumer Trends, 2017). Brands are also looking to strengthen the brand / client relationship through the emotions they can arouse by making things “personal”. (Top 10 Global Consumer Trends, 2017)

Personalization can reduce acquisition costs by as much as 50 percent, lift revenues by 5 to 15 percent, and increase the efficiency of marketing spend by 10 to 30 percent. (Harvard business review, 2015). What is more, personalization also enhances customers' lives and increases engagement and loyalty by delivering messages that are tuned to and even anticipate what customers really want. (Mckinsey & Company, 2016)

TRAVEL IS TURNING DIGITAL

Travel is a digital industry. The smartphone is the traveler's ultimate tool. We have seen 50% growth in worldwide travel app downloads in the last two years (App Annie, 2017). This major shift in the industry is clear and many travel companies have already committed to the app economy. This trend reflects the importance of online experience, for instance, website, application in the whole flying experience.

1.3/COMPANY ANALYSIS

AF/KL WANTS TO COMPETE ON CUSTOMER INTIMACY

There three generic competitive strategies, or value disciplines: operational excellence, customer intimacy and product leadership(The Discipline of Market Leaders,1997). KLM aiming to win the hearts of targeted customers by excelling in customer intimacy(figure.3) This strategy is in line with the long-term objective of KLM-Moving your world by creating memorable experience.

The customer intimacy strategy focuses on offering a unique range of customer services that allows for the personalization of service and the customization of products to meet differing customer needs. The successful design of solutions requires vendors to possess deep customer knowledge as well as insights into their customers' business processes. Excellent in personalization will make the way to customer intimacy. The strategy of AF/KL is in line with the goal of this project.

CUSTOMER SATISFACTION AND BRAND LOYAL ARE THE EFFECTS OF CUSTOMER INTIMACY

The way of measuring customer intimacy can be seen as the effects of customer intimacy. In AF/KL, Net Promoter Score(NPS) is the main criteria of measuring customer intimacy. Net Promoter Score (NPS) measures the loyalty that exists between a provider and a consumer(Wikipedia, 2017). It is an alternative of traditional customer satisfaction research(Wikipedia, 2017). According to the explanation from experts in AF/KL, the increase of customer satisfaction and brand loyal are positively relevant with the increase of customer intimacy.

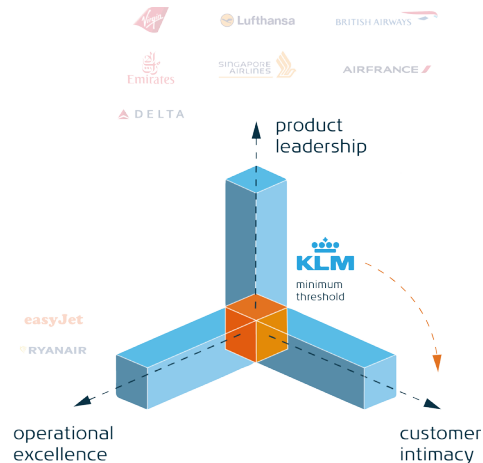


Figure.3. KLM strategy

"MOVING YOUR WORLD WITH MEMORABLE EXPERIENCE"

The objective of KLM is *moving your world with memorable experience*(KLM Brand identity, 2016).

FROM THE PSYCHOLOGICAL PERSPECTIVE

Memorable experience is strongly related to the emotion of touch. People who have different background, personality, and previous experiences can be touched by different triggers. Understanding passengers deep concerns enable AF/KL creating personal triggers that better match with their concerns and interests, which may in the end create memorable experience.

FROM THE BRANDING PERSPECTIVE

A brand is explained as a network of associations in our head. Company want the customers are brand loyal, that means as a brand, one have to continuously maintain the relationship with the customers. Company do this by talking to them, having a dialogue. One can also use it as a little encounter of passengers they know. This dialogue may create great opportunities to creating memorable experience, and at the same time, enhancing the brand bonding.

1.4 / MAKE DATA MEANINGFUL

DIGITAL PERSONALIZATION

Information is being generated at increasing speed, according to the digital personalization report from Mckinsey in 2016, personalized triggers have been shown to be three to four times more effective than blast messages.

In the current market, the most commonly used data for creating the personalized triggers are the descriptive data, for instance, name, address. The behavioural data, for instance, visits to the company website, purchases at a shore.

MORE ATTITUDINAL DATA IS NEEDED

Small data can be defined as meaningful data in a volume and format that makes it accessible, informative and actionable (Datafloq, 2016). Recent research show balancing attitudinal data with descriptive data, evaluating attitudinal data can gives insight to build a long lasting relationship(Myrthe, 2017). Descriptive data tells who he/she is, behavioural data tells you what he/she did, attitudinal data tells you why(figure.4). The why is crucial for a company because it helps with getting richer insights, enable to describe

the customers lively. A research done by Michal, David and Thore in 2012 shown the relevance of marketing and product recommendations could be improved by adding psychological dimensions to current user models. What is more, according to the research Myrthe did, product-service systems taking the personality of the consumers into account could build a brand consumer relationship on a personal level.

Consequently, we can foresee that taking personality related information into consideration will be an opportunity to bring personalization to a next level.

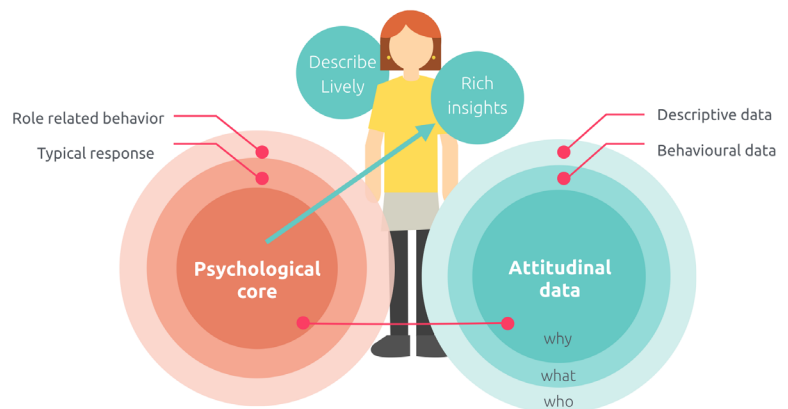


Figure.4 The relation between personality and attitudinal data

ETHICS

Privacy concerns exist wherever personally identifiable information or other sensitive information is collected, stored, used, and, finally destroyed or deleted – in digital form or otherwise. According to the users concerns(see evaluation chapter) as well as the EU regulation review, there are four main requirements should be taken into account while collecting and making use of the personal data.

THE REQUIREMENTS

1. Inform the usage of the data. People wants to know what they can benefit from giving the data.
2. Ask for a permission before collecting the data.
- 3.Enable users to withdraw the usage permission. People should have the initiative to control.
4. Company should use this data to provide better services, should not has any bias. This is especially relevant for an airline. Every passenger should be treated equally.

CHAPTER 2

UNDERSTANDING PERSONALITY

Introduction

This chapter focuses on literature study of personality. The aim of this chapter is to have a comprehensive understanding about personality and how it is being used, in order to define a starting point and a research methodology for the following research.

2.1/Personality definition & structure

2.2/Passengers personality

2.3/Big Five Model

2.4/Current applications

2.5/Research methodology

2.1/ PERSONALITY DEFINITION & STRUCTURE

DEFINITION

Ryckman (2004) defines personality as a “dynamic and organized set of characteristics possessed by a person that uniquely influences his or her cognitions, motivations, and behaviours in various situations”. Individuals do react fairly consistently in a variety of environmental situation, these generalized patterns of response or modes of coping with the world can be called personality. (Kassarjian, 1971). There are various ways of presenting the definition of personality. While the common belief is, personality is patterns of respond.

Lewin(1936) formulated the Equation interactionist theory(figure 5), where he explains behaviour is the function of personality and environment. That means knowing someone's personality gives clue about how that person is likely to feel and act in a certain situation.

$$B = F [P \cdot E]$$

**BEHAVIOR IS THE FUNCTION OF
PERSONALITY AND ENVIRONMENT**

Figure.5 The Equation interactionist thory

PERSONALITY STRUCTURE

Hollander(1971) defined personality as the sum of an individual’s characteristic which make him/her unique. There are three layers in the personality structure: psychological core, typical response and role-relation response. Role related behaviour is the behaviour in actual situation, depends on how people feel at that moment and also who they are with. The typical respond represents the respond to a situation, which is hardly changed, and can be used to identify the psychological core. The psychological core is the centrepiece of the personality and is the indicative of what the person is “really like”. The psychological core is the most

stable factor. A sum of the psychological core is called a trait(figure 6).

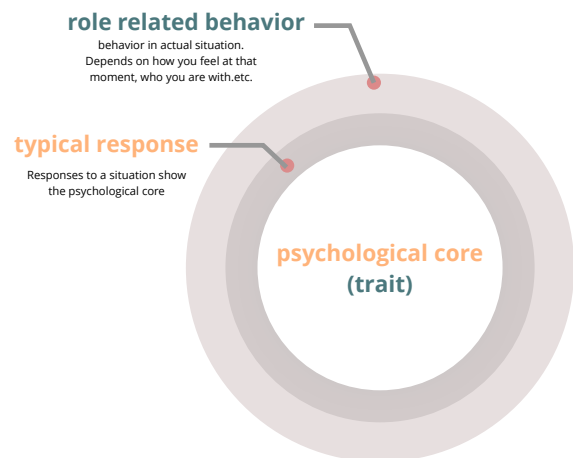


Figure.6 Hollander personality model in 1977

HIERARCHY OF NEEDS

Maslow(1943) states there are 6 layers of needs, which can be clustered into two big clusters, physiological needs and psychological needs. In the aviation context, most of the physiological needs were fulfilled. Safety needs also being fulfilled except for people who fear of flying. While the psychological needs which viewed as individual differences are only partly fulfilled. Combined the hierarchy of needs with the personality structure Hollander proposed(figure 7). We can see the great opportunity in service and product innovation focusing on fulfilling the psychological needs.

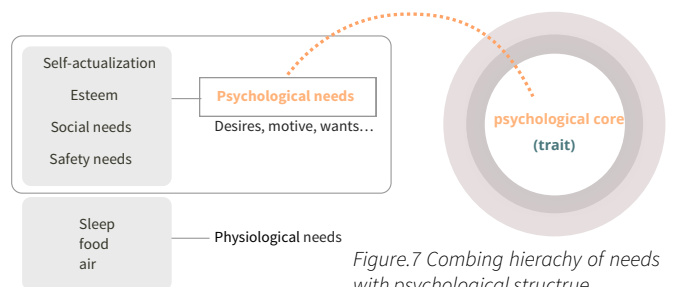


Figure.7 Combing hierachy of needs with psychological structrue

2.2/ PASSENGERS PERSONALITY

In many industries, the notion of personality is nothing new. However, taking passengers personality in to account in personalization in the aviation context is a brand new field. As mentioned in 2.1, personality is patterns of responds. That

2.3/ BIG FIVE MODEL

In the English language, more than 15,000 words describing personality have been identified(Principle of management, 2013) . Research found many different words were actually pointing to a single dimension of personality. Goldberg(1990) grouped those words, and formulated five dimensions(Big Five), namely Openness, Conscientiousness, Extroversion, and Agreeableness, and these dimensions can explain much of the variation in our personalities. Goldberg also gave a basic description for each dimension(figure 8).

Currently, Big Five is the most validated and commonly used personality model. Much research have done to investigate the Big Five in the different disciplines of psychology. For example, in economics (Borghans, Duckworth, Heckman, & ter Weel, 2008; Heineck & Anger, 2010), education (Marsh, Trautwein, Lüdtke, K.ller, & Baumert, 2006; Swanberg & Martinsen, 2010), health (Smith & Williams, 1992), and social resources (Headey, Muffels, & Wagner, 2010). **However, there no research focus on the manifestation of Big Five in the aviation context**, and how to use Big Five to tailor services/products.

means, understanding passengers personality gives clue about how that passenger is likely to act and feel in a certain situation. Passengers with particular personality should have consistent concerns and interests.

In this project, Big Five will be used as the starting point as well as the foundation. However, this does not means other personality dimensions are not relevant. Further research can investigate on how other dimensions can effect the flying experience.

Trait	Description
Openness	Curious, original, intellectual, creative, and open to new ideas.
Conscientiousness	Organized, systematic, punctual, achievement oriented, and dependable.
Extroversion	Outgoing, talktive, sociable, and enjoys being in social situations.
Agreeableness	Affable, tolerant, sensitive, trusting, kind, and warm.
Neuroticism	Anxious, irritable, temperamental, and moody.

Figure.8 Goldberg, L. R. (1990). An alternative “description of personality”

2.4/ CURRENT APPLICATIONS OF PERSONALITY

MARKETING MESSAGES COULD BE TAILORED TO AUDIENCE'S PERSONALITIES

Research shows consumers tend to buy not only products that they need, but those they see as being consistent with their "self-concept." In other words, people generally want their products to match, or to blend in, with who they think they are.

What is more, personality traits were studied to increase sales. According to a research done by Komarraju, Meera, Karau, Schmeck and Avdic in 2011. Advertisements were evaluated more positively the more they cohered with participants' dispositional motives. These results suggest that adapting persuasive messages to the personality traits of the target audience can be an effective way of increasing the messages' impact, and highlight the potential value of personality-based communication strategies.

INNOVATIVE POLITICAL MARKETING—MEASURING PEOPLE'S PERSONALITY FROM THEIR DIGITAL FOOTPRINTS, BASED ON THE OCEAN MODEL.

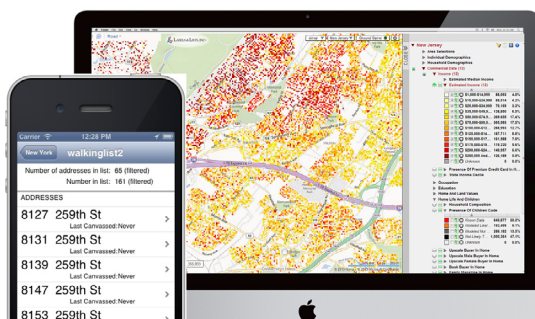


Figure. 9 An app with which Cambridge Analytica could identify the political views and personality types of the inhabitants of a house

Research shows positive correlation between personality characteristics and persuasibility. This finding has been used to increase the voter turnout in the political context. For example, those who for a closed and agreeable audience are people who care about tradition, and habits, and family. Marketing company like SCL and Cambridge Analytica are using it on influencing election. Cambridge Analytica's marketing is based on a combination of three elements: behavioural science using the OCEAN Model, Big Data analysis, and ad targeting. Ad targeting is personalized advertising, aligned as accurately as possible to the personality of an individual consumer. The messages differed for the most part only in microscopic details, in order to target the recipients in the optimal psychological way: different headings, colours, captions, with a photo or video.

In the most recent US political campaign, Cambridge Analytica has played an integral part in President elect Trump's win.

"Pretty much every message that Trump put out was data-driven."

---Cambridge Analytica CEO Alexander Nix

PREDICTING LEARNING STYLES IN ADDITION TO ACADEMIC SUCCESS

A recent study of Israeli high-school students found that GPA and exam performance are both predicted by conscientiousness. Neuroticism is negatively related to academic success. Openness predicts utilizing synthesis-analysis and elaborative-processing learning styles neuroticism negatively correlates with learning styles in general. Openness and extroversion both predict all four learning styles. Conscientiousness has consistently emerged as a stable predictor of success in exam performance, largely because conscientious students experiences fewer study delays.

RECRUITERS COULD BETTER MATCH CANDIDATES WITH JOBS BASED ON THEIR PERSONALITY.

Research found that work behaviour tends to strongly influenced by personality. Especially in jobs that involve a lot of autonomy, or freedom(Barrick & Mount, 1993). Consequently, various personality tests have been developed and used in recruiting process. What is more, personality test, for instance, the well known 16 personality types often being used by employees to see what are the jobs that well matched with their personality.

MAIN INSIGHTS

- 1) Personality related information can be seen as attitudinal data.
- 2) Attitudinal data is important for building long-term relationship with customers. AF/KL needs more attitudinal data.
- 3) As mentioned above, there are successful use cases of the Big Five personality traits, as well as many validated experiments of the effectiveness of personality, which reflect the value of knowing personality of the target audience.
- 4) However, there are less use cases of leveraging the information of what we know about customers personality to improve their current experience. More specific, there are no use case in the aviation context. This is an opportunity for AF/KL.
- 5) Big Five(Goldberg, 1990) model has been chosen as the starting point of this project, which does not mean other personality dimensions are less relevant.

2.5/ RESEARCH METHODOLOGY

CHAPTER 3

RECOGNIZE PERSONALITY



Personality are recognizable by behavioural and attitudinal patterns



A session with AF/KL relevant experts for exploring the manifestation of personality(Big Five) in air traveling.



A contextual expression of personality

CHAPTER 4, 5

EXPLORING PERSONALITY DRIVEN DESIGN PRINCIPLE

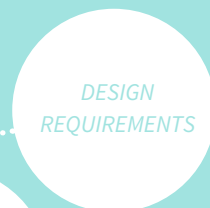
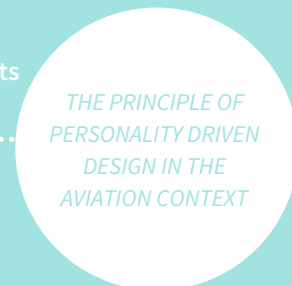


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Discuss with experts

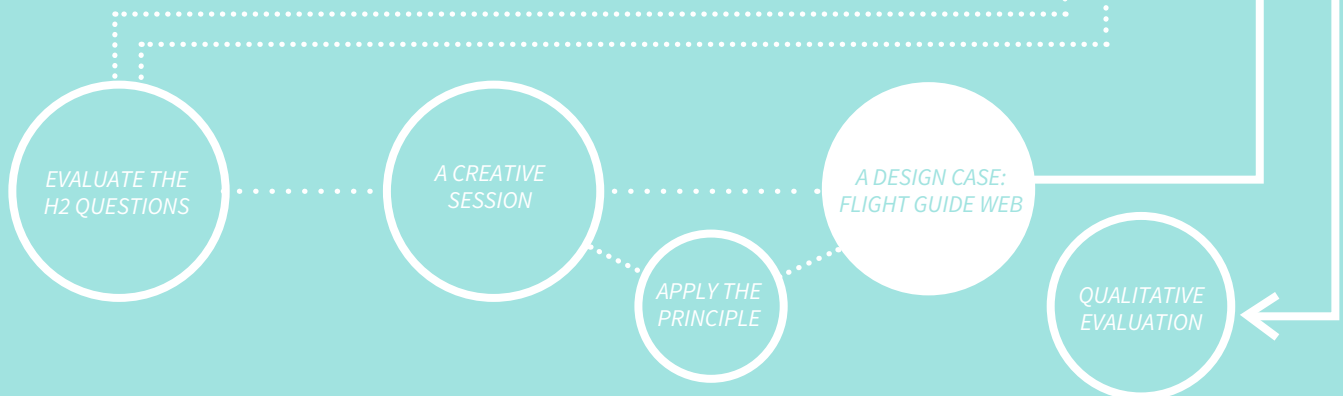
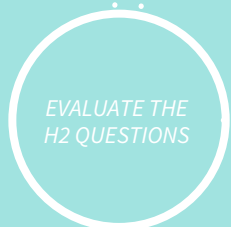
Personality encompasses a person's relatively stable feelings, thoughts, and behavioural patterns(The principle of management, 2013), personality-based concerns in other contexts should also be able to reflect the concerns in the aviation context.



THE CONCEPT

CHAPTER 6, 7

LEVERAGE THE PRINCIPLE



CHAPTER 3

RECOGNIZING PERSONALITY

Introduction

This chapter will focus on how to recognize personality. The aim of this chapter is to formulate a concept of collecting personality related data in the customer journey and translate this data into personality judgements.

3.1/Personality measurement

3.2/Manifestation of Big Five in air traveling

3.3/The concept of recognizing personality in air traveling

3.1/ PERSONALITY MEASUREMENT

STANDARDIZED PERSONALITY INSTRUMENTS

In 1992 Costa and McCrae published a Revised NEO named NEO PI-R, which is one of the most significant measures of the Five Factor Model (FFM). In the most recent publication, there are two forms for the NEO PI-R, self-report (form S) and observer-report (form R) versions. Both forms consist of 240 items answered on a five-point Likert scale. In the literature, the NEO FFI (the 60 item) is used more often. But for a long time, the problem with this approach was data collection, because it involved filling out a complicated, highly personal questionnaire.

SHORT INSTRUMENTS ARE NEEDED

When time is limited, researchers and practitioners may be faced with the choice of using an extremely brief measure of the Big-Five personality dimensions or using no measure at all. (Samuel D. Gosling, Peter J. Rentfrow, William B. Swann Jr. 2003). For example, one Internet-based study used a single-item measure to obtain ratings of self-esteem from participants who would be unlikely to dwell at the website long enough to complete a multi-item questionnaire (Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). What is more, the BFI-10 (Beatrice, 2007) assesses the 5 dimensions of BFI using only two items each to cut down on length of BFI (John, Donahue, and Kentle, 1991), to provide a personality inventory under time constraints. In a service context, answering questions is a part of the whole experience. Consequently, short and fun instruments are needed.

DIGITAL RECORDS BASED PERSONALITY JUDGEMENT IS A TREND. HOWEVER, THE ACCURACY IS RATHER LOW AT THE MOMENT.

Most recent research indicates that it is possible to identify personality based on digital records of human behaviour.

Kosinski, the founder of Cambridge Analytica, in 2017 states he is able to evaluate a person better than the average work colleague, merely on the basis of ten Facebook "likes." According to Kosinski's model, seventy "likes" were enough to outdo what a person's friends knew, 150 what their parents knew, and 300 "likes" what their partner knew. More "likes" could even surpass what a person thought they knew about themselves.

Followers of Lady Gaga were most probably extroverts, while those who "liked" philosophy tended to be introverts.

Not only "likes". Kosinski and his team could now ascribe Big Five values based purely on how many profile pictures a person has on Facebook, or how many contacts they have (a good indicator of extroversion). However, there is no open API that can be found for this model, as well as use cases. This may be due to the model is still not mature enough.

One experimental study found private traits and attributes are predictable from digital records of human behaviour (Michal, David, & Thore, 2012). According to the results, the observation of the Facebook user's Likes for the Openness trait is as informative as using their personality test score itself, while for the remaining traits, prediction accuracies correspond to about 50% of the questionnaire's test-retest reliabilities. (figure 10)

As shown in the chart below, the method of recognizing personality by digital records of human behaviour, for instance, Facebook "Likes", is not mature enough to be used in a commercial environment at the moment because of the accuracy. But we can foresee the development

of the machine learning and the increase of the amount of the digital records. Digital records of behaviour may provide a convenient and reliable way to measure psychological traits in the near future.

Trait ID	Description	Prediction Accuracy (correlation)
<ul style="list-style-type: none"> • BIG5 • BIG5_Openness • BIG5_Conscientiousness • BIG5_Extraversion • BIG5_Agreeableness • BIG5_Neuroticism 	<p>Original scores estimated using 100-item long International Personality Item Pool Five Factor Model questionnaire or 336-item IPIP proxies for Costa and McCrae's NEO-PI-R domains.</p> <p>The model was built (and the accuracy validated) using a sample of 14 million status updates from 69,000 Facebook users.</p>	<ul style="list-style-type: none"> • Openness = .41 • Conscientiousness = .4 • Extraversion = .3 • Agreeableness = .23 • Neuroticism = .31

Figure. 10 The correlation between Big Five and Prediction Accuracy

UNDERSTAND PERSONALITY IN WRITTEN TEXT HAS RATHER HIGH ACCURACY, BUT THE AMOUNT OF WORDS IS A LIMITATION.

Personality Insights is an open source API developed by IBM (figure 11). It extracts the Big Five Personality traits based on how a person writes. According to the online feedback, this API has rather high accuracy.

What is more, a study done by Park and colleagues (Journal of Personality and Social Psychology, 2016) also shown that language-based assessments are a valid measure personality.

However, Waston API requires more than 1200 words from social media. This can be seen as a limitation because it may arise private concerns.

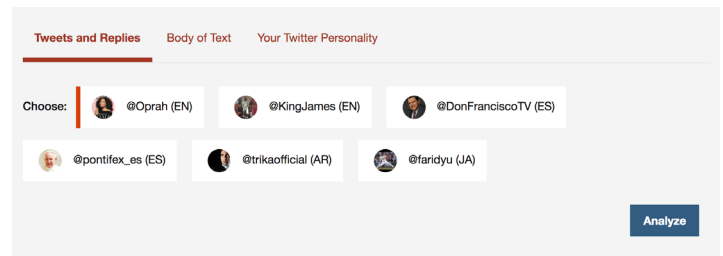


Figure. 11 Personality insight API interface

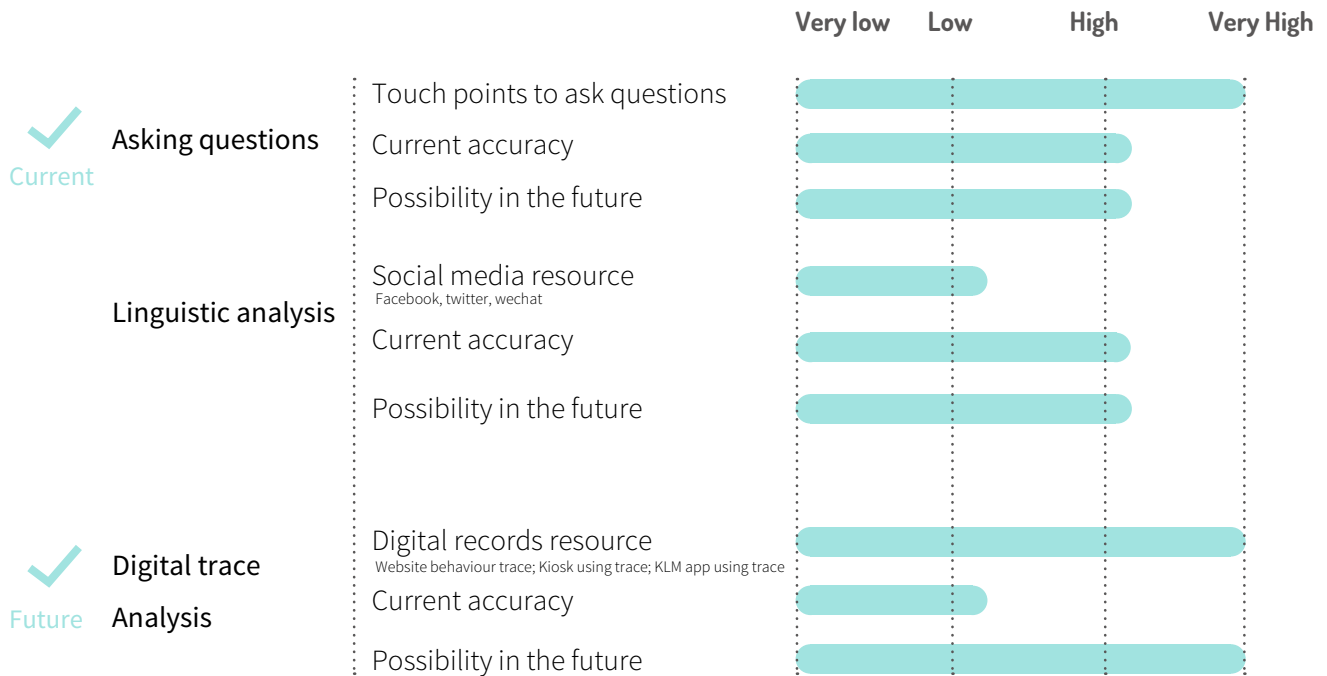


Figure. 12 Comparing the three personality recognition approaches

CONCLUSION

Taking all the possible ways of measuring personality (figure 12), and the discussion with AF/KL digital product owner into consideration, conclusion has been drawn. Asking questions can be used as the starting point for this research. But the direction for the future should be to collect user traces.

Collecting online and offline trace as the cue for recognizing personality, or using the response of personality-oriented design test as the cue for recognizing personality will be the future directions. These two directions will be discussed in the recommendation chapter.

3.2/ MANIFESTATION OF BIG FIVE IN AIR TRAVELING

INTRODUCTION

Most recent work on the external manifestations of personality has examined the accuracy of personality judgment (cf. Funder, 1987, 1995). Personality is recognized by behaviour and attitude patterns. The typical response represents the response to a situation, which is hardly changed and can be used to identify the psychological core (Hollander 1971). To understand the personality of passengers in the aviation context, we need to know the typical behaviour and attitude of passengers in air traveling. As mentioned in chapter two, Big Five model has chosen as the foundation of this project. The goal of this study is to investigate the manifestation of Big Five in air traveling.

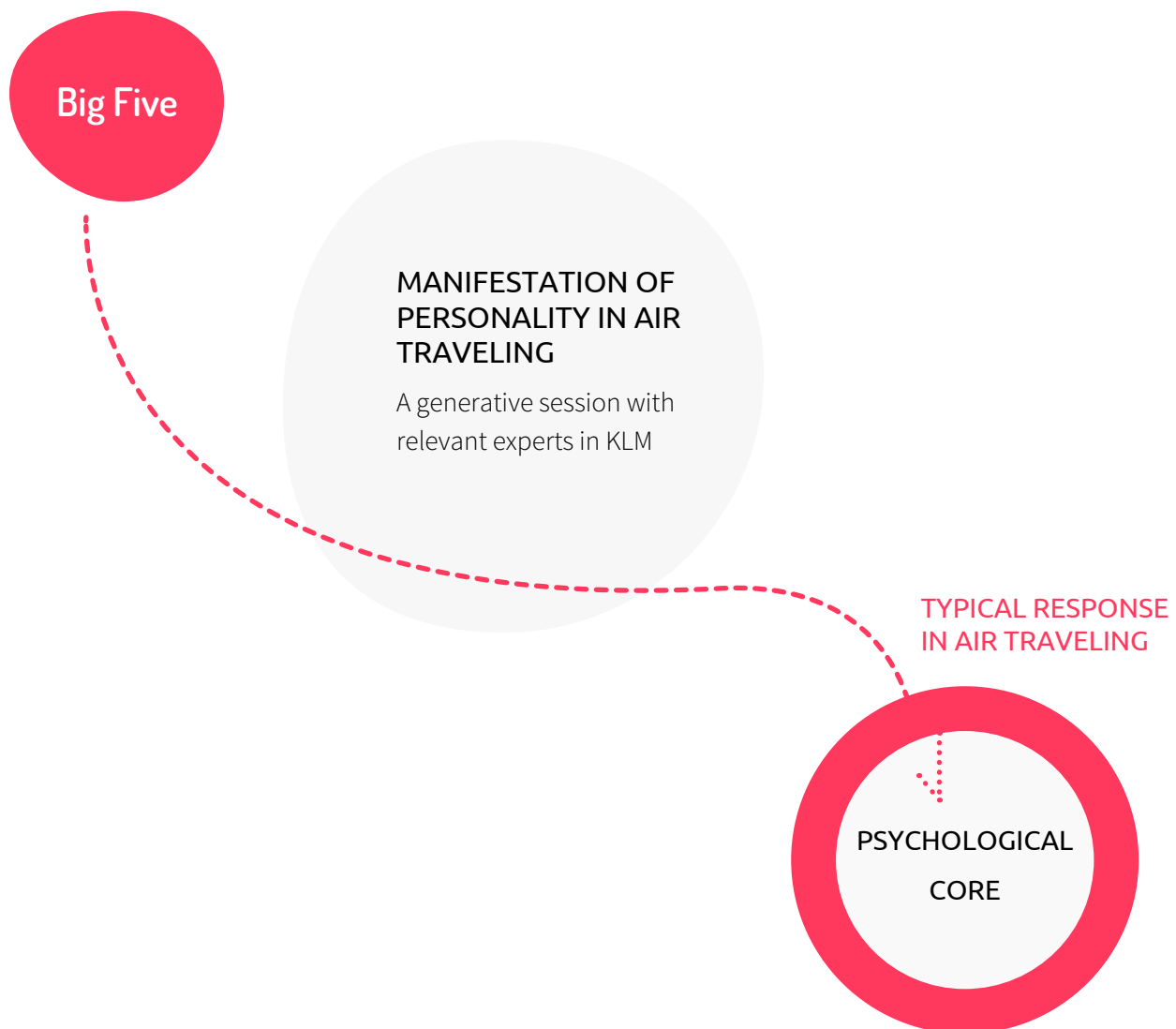
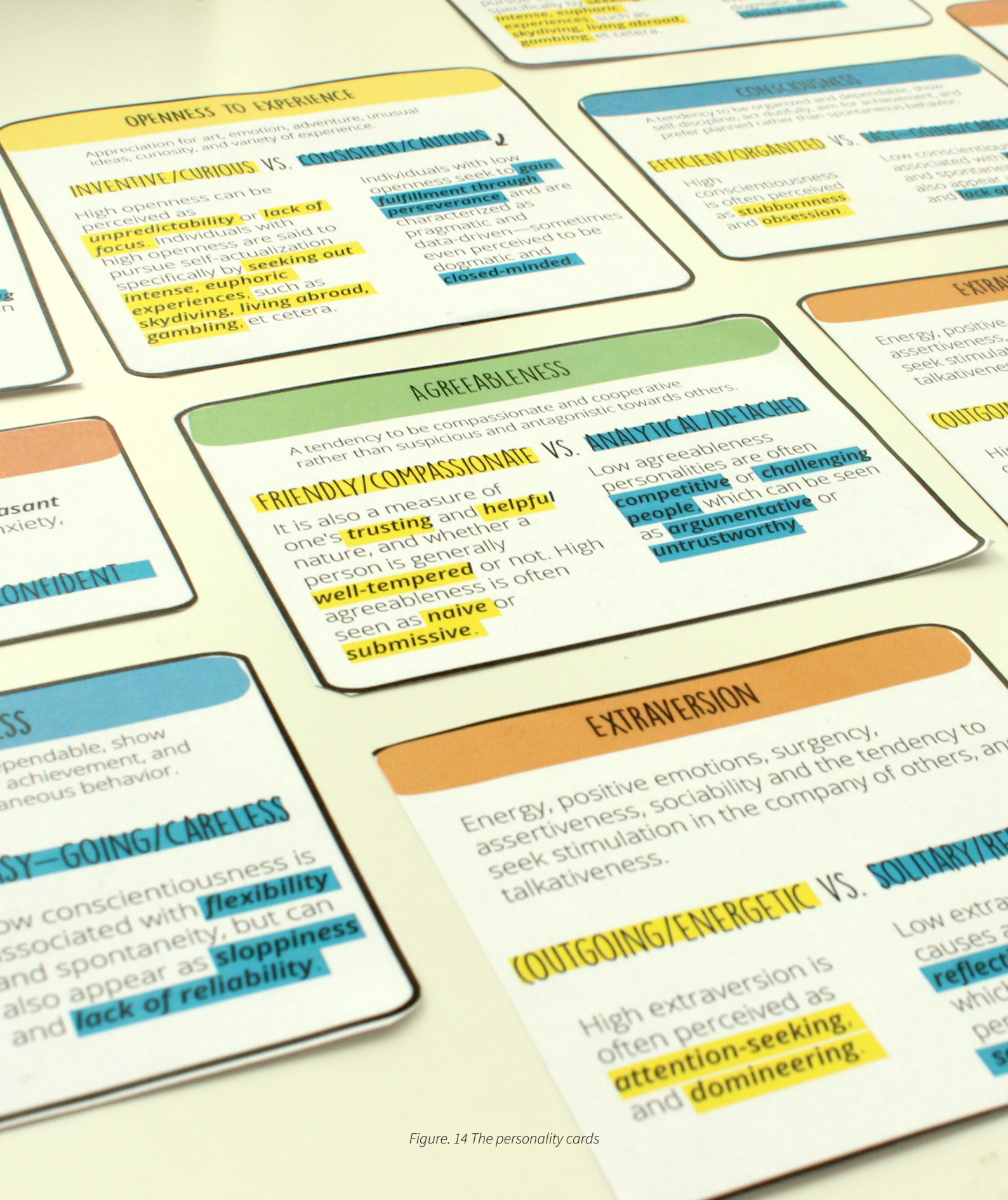


Figure. 13 The approach of exploring what are the right questions to ask.



OPENNESS TO EXPERIENCE

Appreciation for art, emotion, adventure, unusual ideas, curiosity, and variety of experience.

INVENTIVE/CURIOUS VS. **CONSISTENT/CAUTIOUS**

High openness can be perceived as **unpredictability** or **lack of focus**. Individuals are said to pursue self-actualization specifically by **seeking out intense, euphoric experiences**, such as **skydiving, living abroad, gambling**, et cetera.

Individuals with low openness seek to **gain fulfillment through perseverance** and are characterized as pragmatic and data-driven—sometimes even perceived to be **dogmatic and closed-minded**.

CONSCIENTIOUSNESS

A tendency to be organized and dependable, show self-discipline, act dutifully, aim for achievement, and prefer planned rather than spontaneous behavior.

EFFICIENT/ORGANIZED VS. **LACK OF ORGANIZATION**

High conscientiousness is often perceived as **stubbornness** and **obsession**.

Low conscientiousness associated with **impulsivity** and **spontaneity** also appear as **lack of focus** and **lack of organization**.

AGREEABLENESS

A tendency to be compassionate and cooperative rather than suspicious and antagonistic towards others.

FRIENDLY/COMPASSIONATE VS. **ANALYTICAL/DETACHED**

It is also a measure of one's **trusting** and **helpful** nature, and whether a person is generally **well-tempered** or not. High agreeableness is often seen as **naive** or **submissive**.

Low agreeableness personalities are often **competitive** or **challenging people**, which can be seen as **argumentative** or **untrustworthy**.

EXTRAVERSION

Energy, positive emotions, surgency, assertiveness, sociability and the tendency to seek stimulation in the company of others, and talkativeness.

OUTGOING/ENERGETIC VS. **SOLITARY/REFLECTIVE**

High extraversion is often perceived as **attention-seeking** and **domineering**.

Low extraversion causes a **reflective** personality which **perceives** social interaction as **stressful**.

Figure. 14 The personality cards

PERSONALITY JUDGMENT

While interacting with someone, we are consciously and unconsciously observing and collecting observable cues, for instance, cloth, gesture, tone of voice. We use this cues to make personality judgement (figure 15). To recognize personality in air traveling, the first step would be investigating on what are the cues that we can use to make personality judgement.

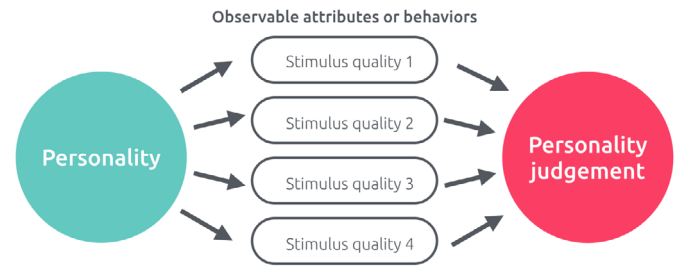


Figure.15 Brunswick's(1955) diagram of judgment lens model of social perception

INVESTIGATING THE CUES OF PERSONALITY JUDGMENT IN AIR TRAVELING

Personality questionnaires, which specifically related to personality in air travel, do not exist yet. To get a comprehensive idea of the manifestation of personality in air traveling, **four relevant experts in KLM** were invited to a generative session. In the session, each expert got a set of personality cards (figure 14), which gave a basic description of Big Five. Based on the basic description, they were asked to fill in the cards (figure 16), which contains three main questions:

- 1) What he/she with a particular personality always tends to do in his/her flight journey.
- 2) What he/she with a particular personality is looking for in his/her flight journey.
- 3) Based on the answers of the questions above, think about what AF/KL can do in order to create added value to his/her journey.



Figure.16 A generative session with relevant experts

RESULTS

The outcome of the session was summarized in a chart (figure.17) including the typical behaviour and attitude of a passenger who has a particular personality and what he/she is looking for in the

flight journey. This results will be used as the resource for formulating personality judgment questions. Check complete results in appendix A.



Figure.17 A generative session with relevant experts

3.3/ THE CONCEPT OF RECOGNIZING PERSONALITY IN AIR TRAVELING

Personality related questions were framed based on the typical behavioural and attitudinal differences from the session. In this project, to ground Big Five into the aviation context, a contextual expression of personality with a modified personality scale has been formulated, instead of using the original instrument.

TRANSLATING BEHAVIOURAL DATA

As mentioned before, personality is recognizable by behavioural and attitudinal patterns. Consequently, the typical behavioural and attitudinal differences in the air traveling extracted from the session can be used to as the cues to recognize personality in the aviation context. For instance, a neat suitcase can be an indicator for high conscientiousness, while a mess suitcase can reflect low conscientiousness (figure 18).

Furthermore, the recognized trait can be used to predict what this person is looking for in his/her journey. Take conscientiousness as an example, a passenger high in conscientiousness may prefer a detailed and well-organized trip plan, a nice meal setting, etc. Things he/she is looking for can be used as the insights to tailor the current services/products or creating new services/products.

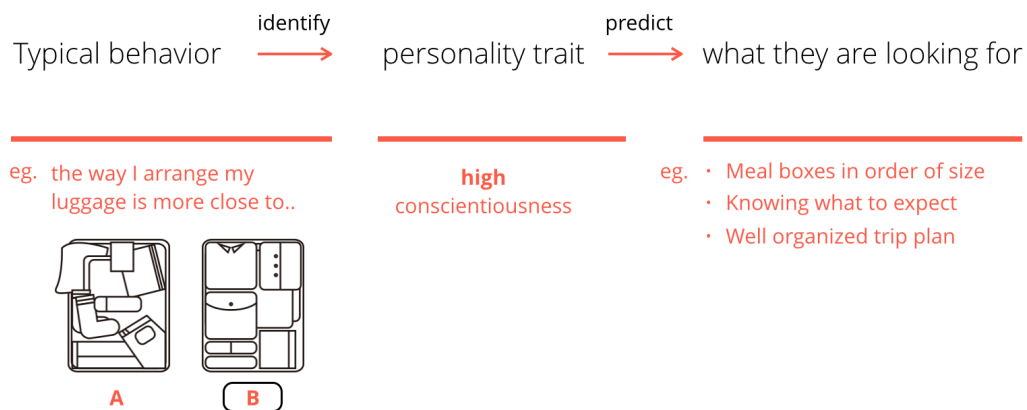


Figure.18 An example of translating behavioural data into a trait

REDUCED NUMBER OF QUESTIONS FOR EACH TRAIT

The process of asking questions is also a part of the whole experience, to minimize the time consumption, to keep the simpleness of this research, the number of questions for identifying one trait reduced to two. This change may result

a less accurate recognition of the original big five dimensions. However, the main objective of this questions is to get insightful attitudinal data of passengers, rather than the accuracy of the Big Five recognition. Consequently, the accuracy will not be the main consideration in this instrument.

A CONTEXTUAL EXPRESSION OF PERSONALITY

EXTROVERSION

TYPICAL BEHAVIOUR/ATTITUDE:

-Tends to start conversation with people he/she met in his/her journey.

-Tends to seek attention from others while traveling.

CONTEXTUAL QUESTION:

I am open to making friends with people I meet in my flight journey.

A. Sure

B. Not really

In my flight journey, I would rather...

A. Put on the earphone and get less attention.

B. Involve in an active atmosphere with people around.

People who choose "Sure" and "Involve in an active atmosphere" will be recognized as high in extraversion. People who choose "Not really" and "Put on the earphone" will be recognized as low in extraversion. People who did not give a consistent answers will be identified as a semi-extraverted person.

CONSCIENTIOUSNESS

TYPICAL BEHAVIOUR/ATTITUDE:

-Having an organized suitcase

-Always make a detailed plan before a trip

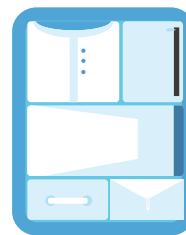
CONTEXTUAL QUESTION:

I feel good to start my trip when I have...

A. A detailed plan about the trip

B. A rough structure about the trip

The way I arrange my luggage is more close to...



A



B

People who choose "A detailed plan about the trip" and "Organize" will be recognized as high in conscientiousness. People who choose "A rough structure about the trip" and "Mess" will be recognized as low in conscientiousness. People who did not give a consistent answers will be identified as a semi-conscientiousness person.

AGREEABLENESS

TYPICAL BEHAVIOUR/ATTITUDE:

- Tend to avoid conflict
- Tolerant noisy on the flight

CONTEXTUAL QUESTION:

In air traveling, I think I am more close to...

- A. A not that strict person
- B. A strict person

3. Some people sitting around are talking loudly on the flight, I would:

- A. Let it be.
- B. Try to stop them.

People who choose "A not that strict person" and "Let it be" will be recognized as high in agreeableness. People who choose "A strict person" and "Try to stop them" will be recognized as low in agreeableness. People who did not give a consistent answers will be identified as a semi-agreeableness person.

OPENNESS

TYPICAL BEHAVIOUR/ATTITUDE:

- Curious, willing to try new products
- Always observing and analysing; Can always find something new.
- Being inspired by abstract things.

CONTEXTUAL QUESTION:

If we offer a meal you haven't tried before, you would:

- A. Try out the new meal.
- B. choose rather "safe" option.

I prefer a peaceful life, but if I have to choose, I would rather

- A. Have challenges every single day.
- B. repeat my daily routine.

People who choose "Try out the new meal" and "having challenges every single day" will be recognized as high in openness. People who choose "Choose a rather safe option" and "repeating my daily routine" will be recognized as low in agreeableness. People who did not give a consistent answers will be identified as a semi-openness person.

NEUROTICISM

TYPICAL BEHAVIOUR/ATTITUDE:

- Worried about many things
- More nervous than others when unexpected things happen.

CONTEXTUAL QUESTION:

In my flight journey, I tend to...

- A. Worry about small stuff.
- B. Feel confident.

7. When the flight is in a turbulent, your mindset is more close to...

- A. I am afraid of crashing.
- B. I wonder how the pilot flies.

People who choose "Worried about things" and "I am afraid of crashing" will be recognized as high in neuroticism. People who choose "Feel confident" and "Wonder how the pilot flies" will be recognized as low in neuroticism. People who did not give a consistent answers will be identified as a semi-neuroticism person.

WHERE TO ASK THE QUESTIONS

Questions should be asked before the flight experience started. The moment when people just booked a ticket from KLM website might be a good moment to ask questions (figure 25). However, not everyone book ticket from KLM website, consequently, the confirmation email might be an efficient touch point to lead customers to the questions interface.

To know to what extent are the customers willing to answer this questions, and if the questions are easy to answer, a test has been done at the X-gate in Schiphol. The results will be communicated in Chapter 4.

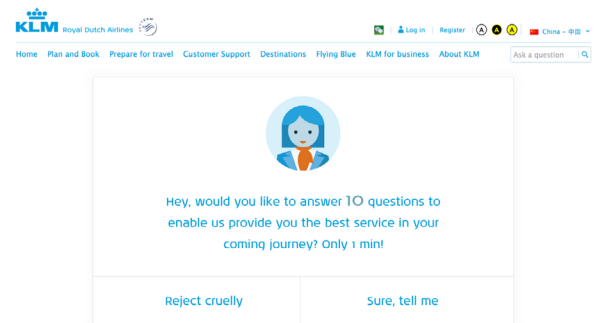


Figure.25. Ask for permission

MAIN INSIGHTS

1) Recognize personality by the digital trace is the trend, but the current models are not mature enough. Currently, the most efficient way of recognizing personality is still asking questions. Further steps will be discussed in recommendation chapter.

2) To keep the simpleness of the first try in this research area, the number of personality related questions for a trait reduced to two. To ground the Big Five into the aviation context, the personality questions were formulated with a contextual expression.

CHAPTER 4

EXPLORING PERSONALITY RELATED CONCERNS AND INTERESTS BY DESIGN PRACTICES

Introduction

This chapter will focus on investigating what AF/KL can do with knowing someone's personality. Using the personality measurement concept developed in the chapter3, the outcome of the personality was compared with the appreciation of some design interventions. An important insight gotten from this test is, a systematic guideline is needed for personality(Big Five) driven design in the aviation context.

4.1/Intervention tests at the X-gate

4.2/Assumptions & results

4.1/ INTERVENTION TESTS

In the behavioural and attitudinal differences session (in chapter3), some ideas about what a passenger with particular personality is looking for appeared. Personality is a subjective and abstract definition, testing in the real context will be helpful to make it more concrete. Consequently, some assumptions were formulated and tested at the X-gate in Schiphol.

GOAL

There are two main goals of this intervention test:

- 1)Get some ideas about if the personality related questions are easy to answer, and if people are willing to answer questions after booked a ticket.
- 2)If the correlation between the results of personality related questions and intervention feedback have certain patterns as the assumption.

PARTICIPANTS

11 KLM Passengers who are waiting for their flights at the X Gates were chosen as participants. . They are male and female From Denmark, US, Canada, Scotland, NL, Turkey. Ages vary from 20 to 50.

CONTEXT

X Gate is a normal boarding gate where Schiphol allow KLM to run tests. Some of the participants still need to wait more than an hour, others just arrived less than 20mins before boarding.

PROCESS



Figure.19 X-gates

4.2/ ASSUMPTIONS AND RESULTS

ASSUMPTION 1

AN ASSUMPTION

Preparation

People with low conscientiousness often tend to delay the process, forgetting to check detail, for instance put more than 100 ml liquids in their cabin luggage and being forced to throw it away.

INTERVENTION

How about gamify the preparation process to help low conscientiousness people make preparation properly (figure 20).

RESULTS

“I wouldn’t spend time for low price reward.” --A participant with high conscientiousness

“I would only complete the first task. I probably wouldn’t do the second one because I never arrive at the airport that early.”

--A participant with high conscientiousness

“I would do that, sounds like fun”

The night before their trip, push this message.

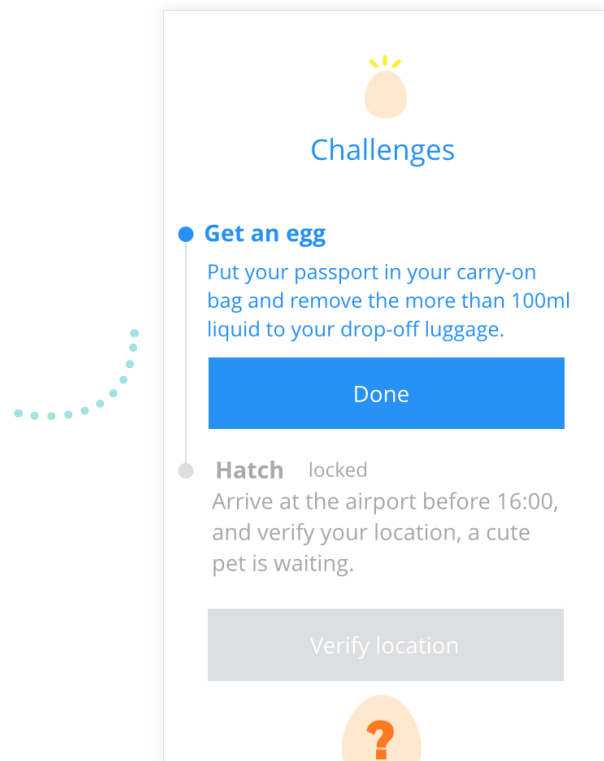


Figure.20. The interface of intervention 1

1) High conscientiousness people don’t appreciate this offer, this result fit with the assumption.

2) People low in conscientiousness may forget to check detail, or procrastinate the process, **but they don't want to be forced to change.**

3) People did not realize the effectiveness of the game. That is why they do not want to spend time on it.

ASSUMPTION 2

AN ASSUMPTION

Preparation

People low in conscientiousness may easily forget to bring something for their trip. They would appreciate a last minute shopping chance.

INTERVENTION

How about give low conscientiousness people the option to buy things they forgot before boarding and delivery on the flight?(figure 21).

Just in case you forget something. You can buy it here and we will delivery to you on the flight.

Check it out

Figure.21. The interface of intervention 2

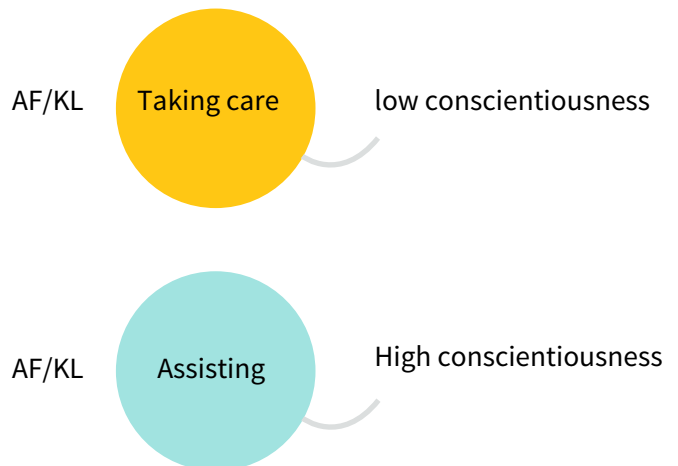
RESULTS

“I just realized I forgot to bring adaptor, this would help.”

“I just realized I forget my battery and charger of my phone, this offer is quite handy”

1)Most of people do forget to bring some small stuffs, for instance adaptor and charger, and they usually realized that when they are at the airport. This behaviour have no direct relation with personality.

2)Having the chance to buy things they forgot is a common need. But the way to opening the dialogue can be different. AF/KL should chance the roles when helping people with different traits making preparation.



ASSUMPTION 3

AN ASSUMPTION

Spending time at the airport

People who have high conscientiousness might not be able to fully relax because they feel the risk of missing the boarding time or some important information.



RESULTS

“It could be easier, now you have to keep look at the board.”

—A participant low on conscientiousness

“I know it, I don’t need this reminder.”

—A participant high on conscientiousness

INTERVENTION

How about send them a confirmation message after they passed the security check, and give them the option to set boarding time reminder. The confirmation and reminder may make people high on conscientiousness feel more free to focus on things they would like to do while waiting. (figure 22)

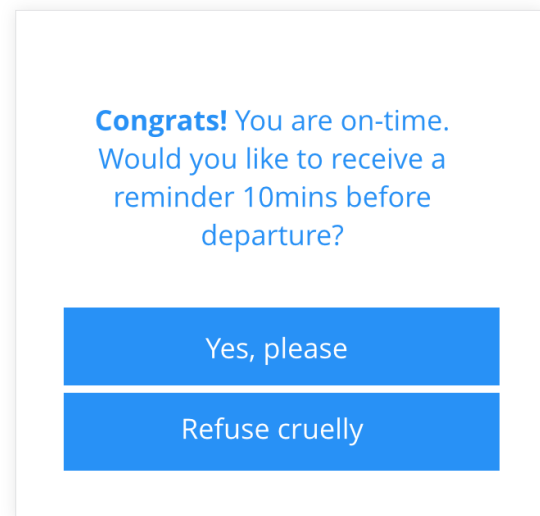


Figure.22. The interface of intervention 3

1)Most of high conscientiousness passengers consider this offer is not relevant with them because they can manage their time very well.

2)Low conscientiousness people may need the reminder because they are less strict about time management.

ASSUMPTION 4

AN ASSUMPTION

Spending time at the airport

Extroverts appreciate social activities while spending time at the airport, while introverts prefer to do something alone, for instance, read a book or watch a movie. People high on openness would like to explore the airport while waiting.

INTERVENTION

How about enable people who have different level of extroversion and openness to have different activities while waiting?

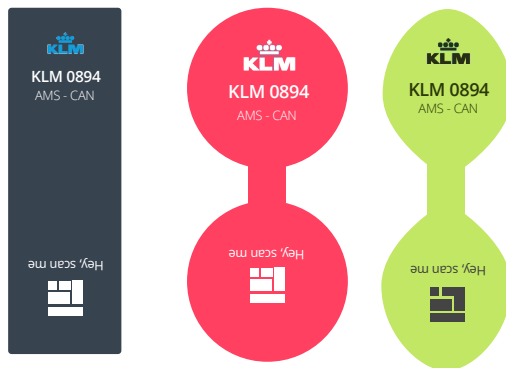


Figure.23. The corresponded luggage tickets

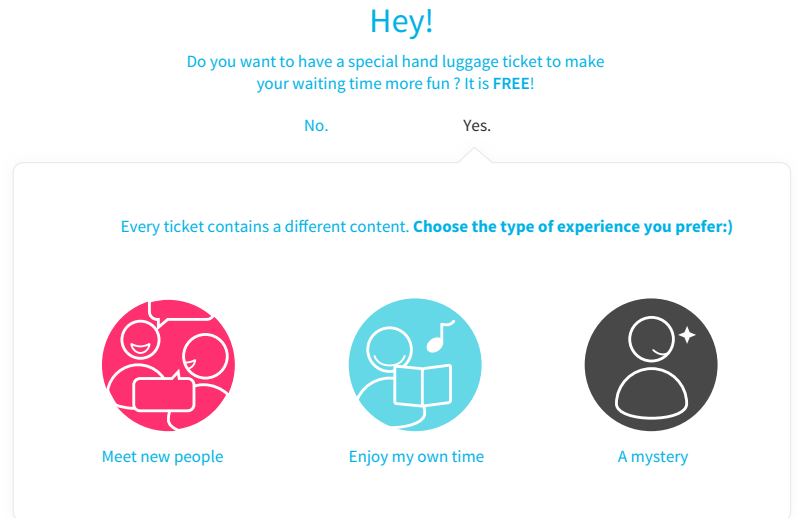


Figure.22. The interface of intervention 4

After people booked a flight ticket, a page about the special luggage ticket will be shown. There waiting experiences for people to choose (figure 22). People who choose "Meet new people" might be more extroverted. People who choose "Enjoy me time" might have rather low extroversion. While people who choose "A mystery" might have high level of openness and they probably expecting different activities every time they fly. People will get this ticket after checked in. The tags have different shapes and colour (see figure.23) people can access to different content by scanning the QR code on the tag. "Meet new people" will access to an anonymous chatting room, where they can chat with people traveling to the same destination. "Enjoy my own time" will get some recommendation of music, magazine or a free e-book. A mystery tag contains a game, people need to explore the airport to find elements for this game. What is more, this tags also bring an identity, which may trigger conversations between people who got the same type of tag.



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RESULT

“I want to choose both "meet new people" and "enjoy my own time." I am curious about people wear the same tag with me.

—Semi extroversion

“This sounds nice, especially those content I have access to that the content that I normally wouldn't access to.”

—Semi extroversion

“I want to choose "meet new people", it is nice to know what others are preparing.”

—Semi extroversion

1)Most of participants would like to try this service. But the type of experience they choose is not necessarily related to their personality. For instance, one extroverted participant chose "enjoy my own time", because he doesn't mind to have social activities.

2)The content in the enjoy me time tag should be things people normally could not access to.

3)Travel purposes should also be taken into account while thinking about the content in the tags.

ASSUMPTION 5

AN ASSUMPTION

On the flight

Introverts may feel hesitate to express themselves on the flight. For instance, ask for an extra meal.

The study of Stritzke et al. (2009) who found a lower expression of shyness online. **Introverts may feel more free to express their request on the flight if they are just write their thoughts on a screen**(figure 5).

INTERVENTION

Would you rather pressing the ring to call the crew members or ordering via a digital channel?

Press the service ring

Order via a digital channel

Figure.24. The interface of intervention 5

RESULTS

"It takes away the process of talking to a person, I guess I will be more attempted, so I prefer the digital platform."

"I am not hesitate when I want to have something, but I feel a digital channel would be easier"

—A participant with high extraversion

"A digital platform will be feel welcome to express"

—A participant with high extraversion and high agreeableness

1)10 out of 11 participants prefer to order via a digital channel. But the reason behind are various.

2)A digital channel will make introverts feel more free to express themselves.

3)Not only introverts will be benefit from the digital channel, also agreeable people. There two reasons make extraverts choose the digital channel. One is they think digital channel is easier than press the service button. The other one is they have high agreeableness, according to the results, agreeable passengers also feel hesitate to express themselves because they don't want to bother others. Consequently, agreeable passengers also prefer the digital channel.

PERSONALITY QUESTIONS

Participants were asked to imagine they just booked a ticket in KLM website, and they saw a screen(see figure.25) pops out, then they were asked to express how would they react.

According to the results. 10 out of 11 participants expressed their willingness to answering the personality related questions.

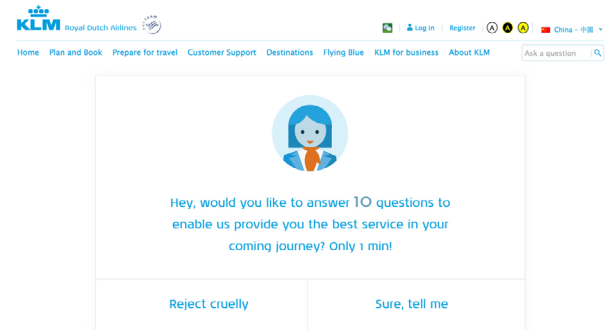


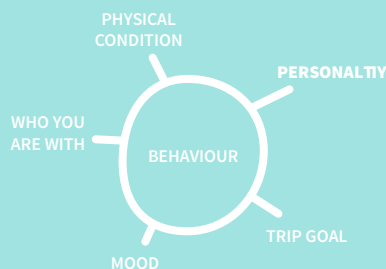
Figure.25. Asking for permission

MAIN INSIGHTS

1.ASKING THE SHORT QUESTIONS IS A FEASIBLE AND EFFECTIVE WAY OF RECOGNIZING PERSONALITY.

People are willing to answer questions to enable AF/KL provide them better services after booked a ticket

2.PERSONALITY IS ONE BUT NOT THE ONLY FACTOR THAT WILL INFLUENCE BEHAVIOUR. OTHER FACTORS, FOR INSTANCE, THE MOOD, SHOULD ALSO BE TAKEN INTO ACCOUNT WHILE DESIGNING FOR A SPECIFIC SITUATION.



When the needs with higher hierarchy have not been fulfilled, the personality related needs will not be seen as an important need. For instance, a passenger with high extraversion may look forward to meeting new people in his waiting time. But if

he is traveling for a business purpose, the most important need while waiting would be a good place to work. Consequently, a trip goal should be taken into consideration while tailoring the service and product based on personality. What is more, mood is also an important aspect that may influence one's decision.

3.THE CURRENT PERSONALITY RELATED CONCERNS ARE NOT SHARP ENOUGH.

Some of the appreciation of the interventions are not necessarily related to personality as the assumptions. The reasons might be the concerns are not sharp enough. Consequently, a more in-depth concerns study is needed.

4. A SYSTEMATIC GUIDELINE IS NEEDED FOR THE PERSONALITY-DRIVEN DESIGN.

While coming up with interventions, the ideas are distributed in different touch points with different formats. A systematic guideline is needed for the personality-driven design.

CHAPTER 5

EXPLORING THE PERSONALITY RELATED CONCERNS AND INTERESTS BY LITERATURE REVIEWING

Introduction

This chapter will focus on investigating the concerns and interests of a passenger with a particular personality in air traveling based on literature reviewing. Established Big Five based research findings have been used as the references for the concerns study. A principle of personality-driven design is extracted from the concerns study. Furthermore, the opportunities coming from the principle were discussed.

5.1/Stepping into the concerns & interests

5.2/Differentiating by personality

5.3/Introducing personality-driven design principle

5.1/ STEPPING INTO THE CONCERNS & INTERESTS

GOAL

The objective of this study is to find out the personality-based concerns in air traveling. By researching on the concerns, it is possible to answer two further questions. One is customers hidden pain points resulting by their personality. The other one is the opportunities of creating added value to their current journey (figure 26).

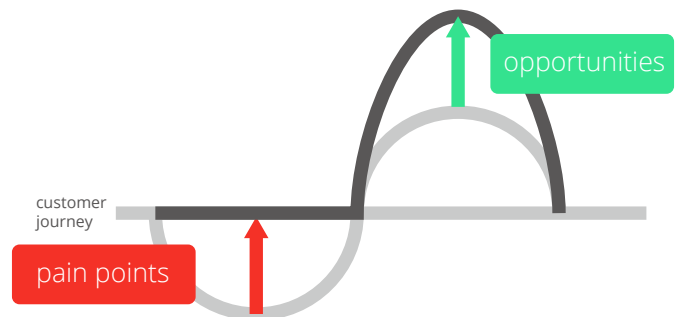


Figure.26. The objective of stepping into the concerns & interests

APPROACH

Big Five (Goldberg, 1990) currently constitute the most common and widely accepted model of trait psychology. In this model, each trait has been given a basic description. Based on this basic description, some other research has been done to investigate the possible correlation between behaviour in a certain context and a trait in Big Five. Currently, there no research focus on the manifestation of personality in air traveling. However, with the belief that personality encompasses a person's relatively stable feelings, thoughts, and behavioural patterns, personality-based concerns in other contexts should also be able to reflect the concerns in the aviation context.

In this study, personality-based concerns in other context were collected from previous Big Five based research(see appendix B), possible relevant findings have been selected and reframed into the concerns of passengers in air traveling. Results were being discussed and modified together with experts in KLM.

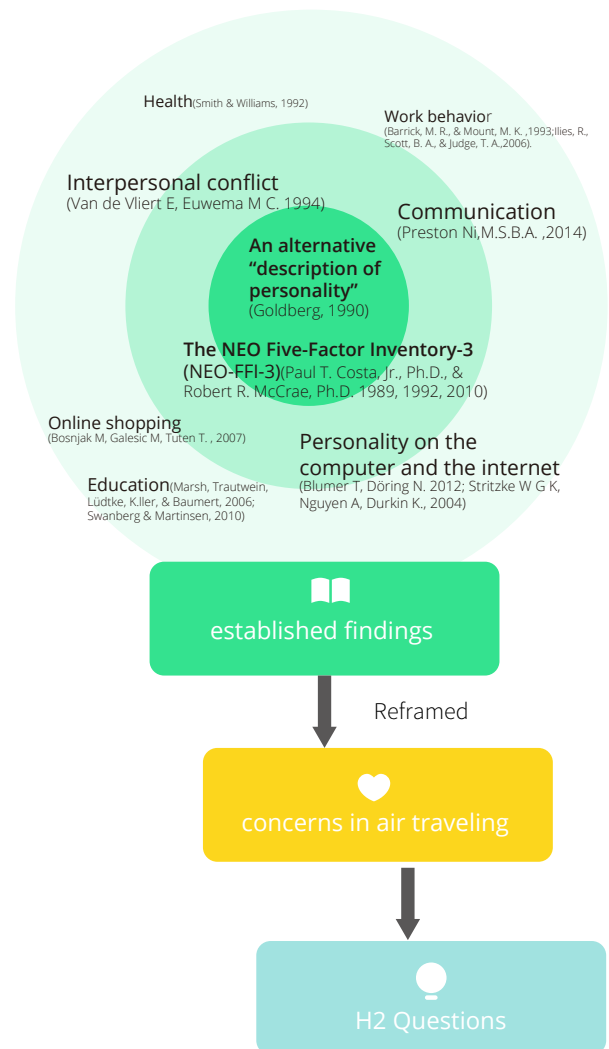


Figure.27. The approach of stepping into the concerns & interests


LITERATURE RESEARCH


 Established findings


 *concerns & interests in air traveling*


High Extraversion


“I enjoy the feeling of being the center of attention”


 ● Interactionist theories (Buss, 1987; Snyder & Ickes, 1985; Swann, 1987) suggest that extraverts choose friends, colleagues, and relationship partners who enable them to express their extraverted nature.

 ● People high in extraversion don't mind being the center of attention.(The IPIP-NEO, 2000)

 ● *Extraverted passengers tend to seek attention in their flight journey.*


 ● Extraverts enjoy interacting with people, and are often perceived as full of energy. They tend to be enthusiastic, action-oriented individuals.(Canadian Research & Development Center of Sciences and Cultures, 2012)


 ● *Extraverted passengers are expecting more lively way of interacting.*


 ● *Extraverted passengers want to meet new people in air traveling.*


Low Extraversion


“I want to get things done without too much interpersonal communication”


 ● Individuals who scored low on extroversion tend to be quiet and private, and may feel too timid to engage in a problem-solving conversation with people (Kilmann & Thomas, 1975).


 ● *Introvert passengers prefer more private and calm ways of interacting.*

 ● *When dealing with conflicts, introvert passengers may feel too timid to stand up for their demands.*

 ● Introverts are reserved, highly deliberate, and enjoy spending time alone.(Goldberg,1990).

 ● *Introvert passengers need more self space in their flight journey.*

 ● People low in extraversion tend to be quiet around strangers and have less intention of talking in large group(IPIP home)

 ● *Introverted passengers may too timid to express their request on the flight. For instance, ask for an extra meal.*

High Agreeableness

“Some sacrifices make me feel a bit uncomfortable, but I should help people who are in need.”

- Appreciation, smile, friendliness from others are important for high agreeableness people. (Preston, 2014)
- Agreeable people help others at work consistently; this helping behavior does not depend on their good mood. (Ilies, Scott & Judge, 2006)
- Individuals who score high on agreeableness tend to be tolerant, trusting, accepting, and easily moved (McCrae & John, 1992); these qualities make it difficult for them to stand up for their interests in conflict situations.
- *While traveling, agreeable passengers anticipate the needs of others. They may give other people helps and may even sacrifice for others at expense of self. For instance, agree to change seat with others on the flight, even they feel uncomfortable with this request. In this situations, let them know KLM noticed their kindness, show appreciation towards their effort is important for them.*
- Agreeableness reflects friendly and cooperative behavior. People with high scores seek for social harmony. (Goldberg, 1990)
- *While flying, agreeable passengers see themselves as a member of a group. Harmony is important for them.*

Low Agreeableness

“I don't want to be bothered by other people's problem.”

- Low agreeableness means being egocentric, hardheaded, tough, persistent, and aggressive. (Goldberg, 1990)
- Disagreeable individuals place self-interest above getting along with others. They are generally unconcerned with others' well-being, and are less likely to extend themselves for other people. (Bartneck, Hoek & Mubin, Mahmud, 2013)
- *Passengers Low in agreeableness emphasis on the self-value in their flight journey. Stand up for their own interests is important for them. They don't want to be bothered by other people's problem. Their trip is the center of their focus.*

High Conscientiousness

“I should do things RIGHT!”

- Conscientious individuals tend to focus on attaining goals in a determined and disciplined manner (McCrae & John, 1992)
- Conscientiousness implies a desire to do a task well. (IPIP home)
- Gosling, S. (2008) indicates people who score high on the trait of conscientiousness tend to be more organized and less cluttered in their homes and offices.
- *Passengers high in conscientiousness prefer more structured way of interacting. Do every single task well is important for them.*
- High scores on conscientiousness indicate a preference for planned rather than spontaneous behavior. (Costa, & McCrae, 1992).
- *Passengers high in conscientiousness tend to plan things ahead.*
- Complimenting high conscientiousness people's accuracy, completeness, adherence to procedures, and attention to detail can positively contribute to their well-being. (Preston, 2014)
- *Passengers high in conscientiousness expect appreciation for their ways of doing things.*

Low Conscientiousness

“It is not necessary to follow the standard process strictly.”

- Low conscientiousness people does not always conform to norms and regulations. Inconsistent. Easily distracted. Change direction and focus frequently. Can be unrealistic. Lack follow through. (Preston, 2014)
- Low conscientiousness people like doing things their own way. (Preston, 2014)
- *Passengers low in conscientiousness have their own ways of catching the whole process, and don't want to be forced to change.*
- People who score low on conscientiousness tend to be laid back, less goal-oriented, and less driven by success. (Costa, & McCrae, 1992).
- Low levels of conscientiousness are strongly associated with procrastination. (Dewitt, 2002)
- *Passengers low in conscientiousness have less struggles of doing tasks well, which makes them feel unnecessary to follow the standard process, and may procrastinate the process.*
- Low conscientiousness is associated with flexibility and spontaneity. (Toegel & Barsoux, 2012).
- *Passengers low in conscientiousness prefer spontaneous way of interacting.*

High Neuroticism

“I feel anxiety when unexpected situations happen.”

- Individuals who score low on emotional stability usually report anxiety in stressful situations. (Costa & McCrae, 1992)
- Showing empathy is important while a problem or a disruption happens, and it will be even more crucial for passengers high on neuroticism. (KLM customer insight expert, 2017)
- Passengers high on neuroticism may worry about many things while traveling. Having quick access to get doubts solved is important for them. (KLM customer insight expert, 2017)
- Passengers high in neuroticism would feel more insecure about a delay or other problems happening in their flight journey. Being reassured quickly is important for this group of people.*

Low Neuroticism

“Everything gonna be alright”

- People scoring low on neuroticism are described as emotionally stable. (Goldberg, 1990)
- Although people low in neuroticism are low in negative emotion, they are not necessarily high on positive emotion. (The IPIP-NEO, 2000)
- Passengers low in neuroticism will be more calm when dealing with unexpected situations, both problems and surprises.*

High Openness

“Creative stimulations bring me inspirations”

- Openness has moderate positive relationships with creativity, intelligence and knowledge. (Goldberg, 1992)
- People high in openness are more interested in abstractions compare to people low in openness (The IPIP-NEO, 2000)
- People high in openness are motivated to seek new experiences and to engage in self-examination.(McRae, Tobert, 2004).
- *Passengers high on openness are open to try out new interactions and products, even they are frequent flyers.*
- *Passengers high on openness want to be inspired in their flight journey. Consequently, they prefer more explorative way of interacting.*

Low Openness

“Following previous steps makes me feel at ease.”

- Low openness people rather avoid being exposed to controvert or ambiguous content and ideas.(Blumer & Döring, 2012)
- *They don't like abstract things. When communicating with them, they prefer to get answers like “Yes” or “No”, rather than things in between.*

5.2/ DIFFERENTIATING BY PERSONALITY

EXTRACT NEEDS AND INTERACTION QUALITIES FROM THE CONCERNS STUDY

According to the results of stepping into the concerns study, we can see there two main aspects differentiating by personality. One is the needs, for instance, most of the extroverts tend to seek attentions in their flight journey, while introverts prefer staying in their private spaces. This differentiation can be fulfilled by different products or services. The other aspect, interaction quality, mainly differentiates the way of fulfilling the same need. For instance, everyone wants to feel being welcomed. However, extroverts expecting a lively way of welcoming, while this way of welcoming may make introverts feel being disturbed. Opposite to extroverts, introverts would rather be welcomed in a calm and private way.

PERSONALITY RELATED NEEDS AND INTERACTION QUALITIES ARE RELATIVELY CONSISTENT ACROSS SITUATIONS

In most of the design and research project, needs and interaction qualities usually being extracted from a specific scenario and context. However, the needs and preference oriented by personality are as rather consistent across situations. According to the personality definition, personality is patterns of response or modes of coping with the world. Consequently, in this project, personality related concerns and manifested needs, and interaction qualities were seen as relatively consistent characteristics across situations.

The form on the next page describes the differentiated needs and interaction qualities for each personality traits.

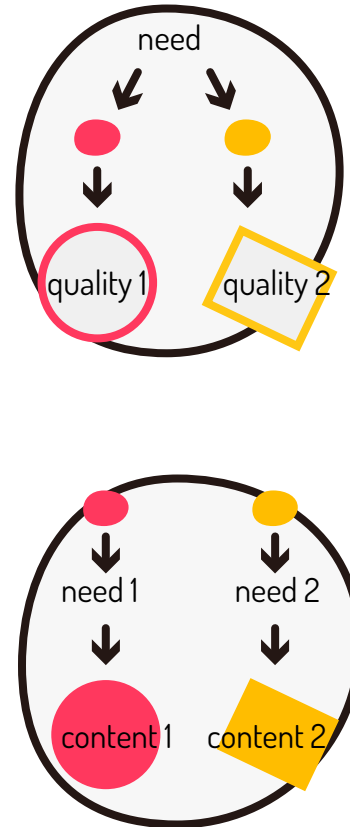


Figure.28. Factors being differentiated by personality

A SUMMARY OF DIFFERENTIATIONS OF NEEDS AND INTERACTION QUALITIES PER EACH TRAIT

Traits	Needs	Interaction qualities
High Extraversion	Meet new people Attention seeking	Passionated Animated
Low Extraversion	Self space	Private Calm
High Conscientiousness	Acknowledged Predictable	transparent structured
Low Conscientiousness	Less but to the point information Not being forced to change	on demand spontaneous respectful
Low Agreeableness	Less disturbed by other people	
High Agreeableness	Acknowledged Enable to help others	warm
High Neuroticism	Comforting Reassure Accompany	reliable
Low Neuroticism	Acknowledged	
High Openness	New options Creativity Surprise	explorative Inspired
Low Openness	Routine	concrete

Pattern: “how to enable ‘Needs’ in a ‘Interaction quality’ way for people who has a particular trait.”

5.3/ A PROPOSAL OF PERSONALITY-DRIVEN DESIGN PRINCIPLE IN THE AVIATION CONTEXT

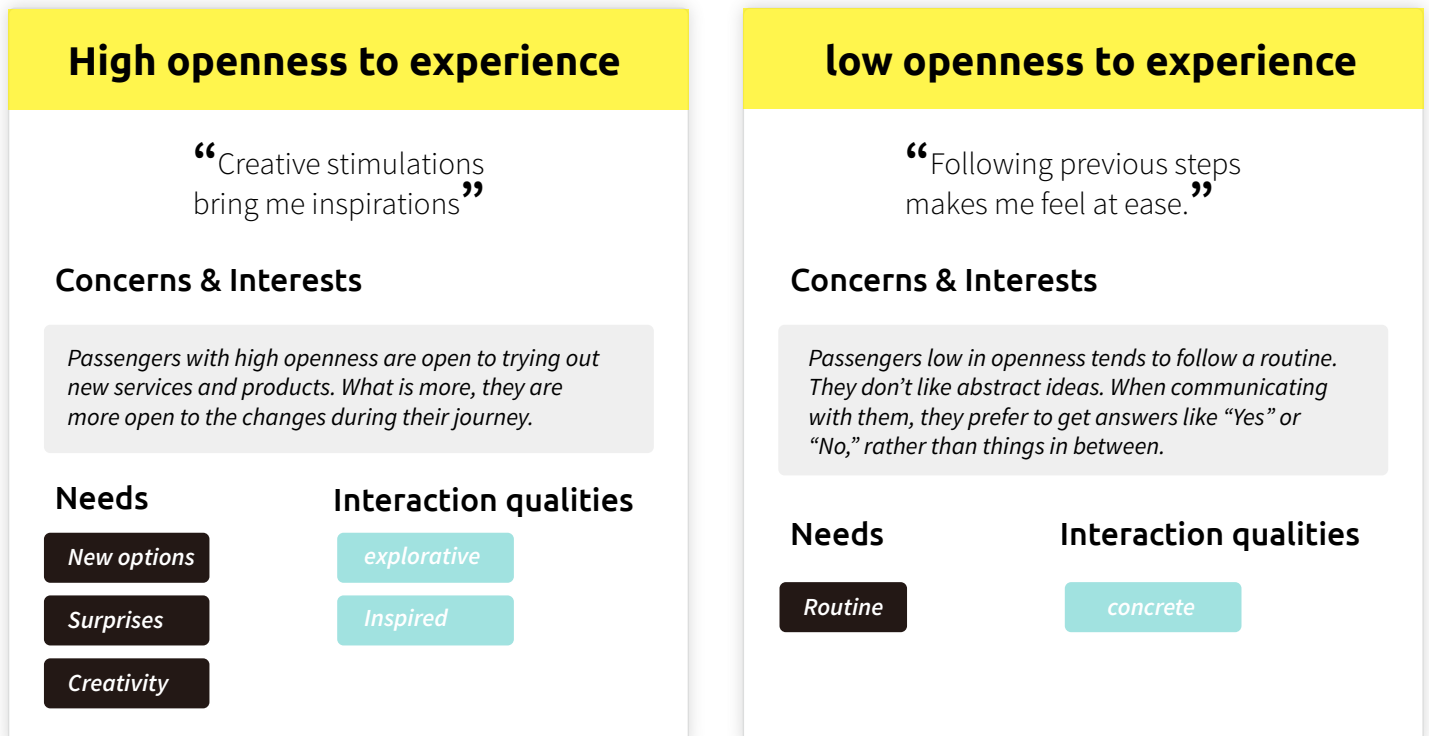
INTRODUCING PERSONALITY-DRIVEN DESIGN PRINCIPLE

To have a systematic way of understanding how to approach passenger with different personalities, to give inspirations for personality-driven product and service innovation. Based on the insights gotten from the concerns and interests study in design practices and literature reviewing. A personality driven design principle was formulated(see figure. 30). The main concerns of people with particular personality, the needs, and the interaction qualities extracted from the concerns were

summarized on the cards(see figure.29). This cards together with a set of design requirements were used as the personality driven design principle(see figure. 30). Furthermore, to evoke more empathy, every trait starts with a symbolic statement.

However, one should notice that this principle should be iterated over applications.

Figure.30. Personality-driven design principle



High extraversion

“ I enjoy the feeling of being the center of attention ”

Concerns & Interests

Extraverted passengers enjoy the feeling of being the center of attention. They are looking forward to meet new people in their flight journey.

Needs

Meet new people

Attention seeking

Interaction qualities

Lively

Passionate

Low extraversion

“ I want to get things done without too much interpersonal communication ”

Concerns & Interests

Introverted passengers may too timid to express their request on the flight. For instance, ask for an extra meal.

Introvert passengers prefer more private ways of interacting, too much interpersonal communication makes them feel uncomfortable.

Needs

Self space

Interaction qualities

Private

Calm

High conscientiousness

“ I should do things RIGHT ! ”

Concerns & Interests

High conscientiousness passengers tend to plan things ahead and strictly stick to their plan.

They want to do every step well. Doing things well is so important for them. Consequently, they tend to take every possible situation into account, spend time on details. What is more, they are expecting appreciation for their organizing, punctuality, and accuracy. They expect people around as diligent as they are while traveling.

Needs

Acknowledged

Predictable

Interaction qualities

structured

diligent

transparent

Low conscientiousness

“ Whatever, as long as I can catch up my flight. ”

Concerns & Interests

Low conscientiousness passengers have the fewer struggle of doing every task perfectly. They prefer a more spontaneous way of interacting, don't want to be limited in a frame. Consequently, they took less time on making preparation. While flying, they are confident, but have a higher risk of running a bit late.

Needs

Less but to the point information

not being forced to change

Interaction qualities

spontaneous

respectful

on demand

High agreeableness

“Some sacrifices make me feel a bit uncomfortable, but I should help people who are in need. ”

Concerns & Interests

While traveling, agreeable passengers anticipate the needs of others. They may give other people helps and may even sacrifice for others at the expense of self. For instance, agree to change seat with others on the flight, even they feel uncomfortable with this request. In this situations, being acknowledged is important for them.

While flying, agreeable passengers see themselves as a member of a group. They want to be kind to staffs and other travelers.

Needs

Acknowledged

Enable to help others

Interaction qualities

Warm

Low agreeableness

“I don't want to be bothered by other people's problem/requests in my flight trip.”

Concerns & Interests

Low agreeableness passengers emphasis on the self-value in their flight journey. Stand up for their own interests is important for them. They don't want to be bothered by other people's problem. Their trip is the center of their focus.

Needs

Less disturbed by other people

Low neuroticism

“Everything gonna be alright”

Concerns & Interests

Passengers low in neuroticism are calmer compare to others when dealing with unexpected situations, both in problems and surprises.

Needs

Acknowledged

High neuroticism

“I feel more anxiety than others when unexpect situations happen.”

Concerns & Interests

Passengers with high neuroticism are more pessimistic about a delay or problems in their flight journey. Comforting is important for them while experiencing an unexpected situation.

Needs

Comforting

Accompany

Reassure

Interaction qualities

empathetic

CHAPTER 6

LEVERAGE THE PRINCIPLE

Introduction

This chapter will focus on how to use the principle to create added value for customers and company. Two ways of using the principle were formulated. Furthermore, a creative session has been done to come up ideas by applying the principle.

6.1/Define problems and opportunities

6.2/ Criteria of applying the principle

6.3/ Ideating

6.1/ DEFINE PROBLEMS AND OPPORTUNITIES

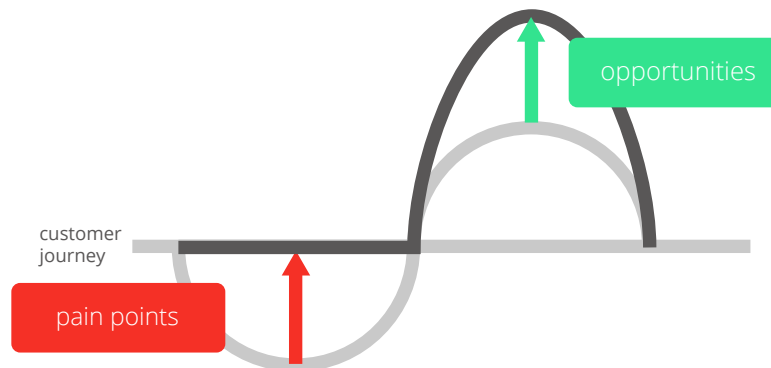


Figure.26. The objective of stepping into the concerns & interests

1. NEW PROPOSITIONS

2. IMPROVE EXISTING SERVICE & PRODUCTS

INTRODUCTION

Problems and opportunities usually being defined by formulating H2 questions. The first step to use the principle is to formulate H2 questions, mainly in two ways:

1) QUESTIONING TO THE NEEDS

The first way of formulating H2 question is using needs in the principle. For instance, people score high in conscientiousness wants to be appreciated for their organizing, accuracy, punctual. A H2 question can be formulated as:

"How to show appreciation to people high in conscientiousness while they are making preparation?"

2) QUESTIONING TO INTERACTION QUALITY

The second way of formulating H2 question is using the Interaction qualities in the principle. We can see in air traveling, there are lots of common needs. In AF/KL, many teams are working on improving services in various touch points. The

interaction quality can be used as inspirations while designing for a need. For instance, every passenger needs to check destination related information. According to the principle, people high in conscientiousness prefer a structured way of interacting, while people low in conscientiousness prefer a spontaneous way of interacting. The personality-based interaction qualities can be taken into considerations while designing for a common need. H2 questions can be formulated as:

"How to show the destination information in a structured way for people high in conscientiousness?"

"How to show the destination information in a spontaneous way for people low in conscientiousness to make this process more attractive for them without affect the information efficiency?"

More H2 questions can be found in appendix.C

6.2/ CRITERIA FOR APPLYING THE PRINCIPLE

INTRODUCTION

Opportunities and problems in different touch points in the customer journey can be defined by applying the proposed principle. However, criteria are needed to evaluate the propositions. Here I found six main requirements. This requirements can be used to evaluate the How to(H2) questions as well as the new propositions.

REQUIREMENT 1



The personality-based interaction should not influence the satisfaction of the basic needs.

The fulfillment of the personality-oriented needs and preferences should not influence the fulfillment of the basic needs. For instance, people high in openness may prefer a more explorative way of viewing information. However, the fulfillment of this preference should not influence the information clarity, which is a basic need.

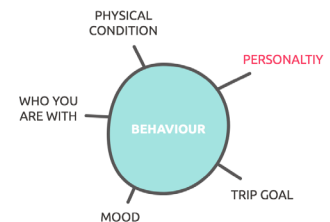
REQUIREMENT 2



The personality-based interaction for one customer should not influence the experience of other customers.

People high in extraversion may tend to express their extraverted nature. Services for this group of people should not influence the experience of others.

REQUIREMENT 3



Other factors should also be taken into account in some situations.

A passenger with high extraversion may look forward to meeting new people in his waiting time. But if he is traveling for a business purpose, the most important need while waiting would be a good place to work. Consequently, the trip goal should be taken into consideration while tailoring the service and product based on personality in this situation. Other factors, for instance, mood, who you are traveling with may also influence the need in a specific moment.

REQUIREMENT 4



Apply the principle in the scenarios when personality can affect most

Theoretically speaking, personality related interaction quality can be used to tailor all existing

interaction in the customer journey. However, not every tailoring creates a big difference as personality might not be the most important factor that influences the overall experience in many situations. Consequently, efforts and effectiveness should be used as the criteria while evaluating a newly formulated personality-oriented interaction.

REQUIREMENT 5



New interactions should also be able to reflect the brand image of AF/KL

The personalized design should not lose the brand identity of AF/KL.

REQUIREMENT 6



Support, rather than change.

People low in conscientiousness may pay less attention to making preparation. What we should do is not force them to make preparation properly, but support them, take care the risk of not preparing ahead. Since people tend to oppose change to their self-concept.

MAKE USE OF THE CRITERIA

This criterion is also a part of the personality driven design principle. It can be used to evaluate the formulated problems and opportunities(H2 questions) and to evaluate the newly proposed services and products. This criterion has been used as the guideline for the use case in this project.

6.3 / IDEATION

H2 questions were formulated by applying the principle, some H2 questions which were seen as high value and great space for designing have been chosen to generate ideas.(see appendix C)

Five IDE design students participated in this creative session.

GOAL:

- 1)Generating ideas using the personality(Big Five) driven design principle in chapter 5.
- 2)Is the principle something helpful for service and product innovation?

FOUR MAIN TASKS:

- 1)Designing the IFE(In-flight Entertainment) system interface to for introverts and extraverts.
- 2)Answering the question of "How to make introverts feel free to express themselves during their flight journey?"
- 3)Answering the question of "How to make agreeable passengers feel being acknowledged?"
- 4) One person acts as a high conscientiousness passenger goes through his flight journey, others think about what AF/KL can do to appreciate his conscientiousness and enhance the feeling of "in-control." After that, Another person acts as a low conscientiousness passenger goes through his journey, others think about what AF/KL can do to support him.



Welcome
and 😊
*shake hands
with the
character
by touch
screen

ard

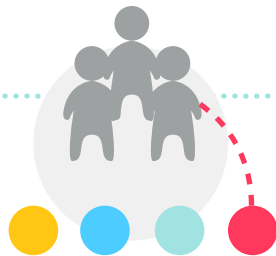
INSIGHTS FROM THE SESSION

THE PRINCIPLE GIVES GUIDE AND INSPIRATIONS FOR INNOVATION.

Many ideas were generated in the session(appendix D). This shows that the principle can bring inspirations for new business propositions. Some of the ideas have been used in the afterwards concepts.

FOR PEOPLE TO CHOOSE VS ONE OPTION

While generating ideas, we found some of the h2 questions are hard to think about solutions, because the solutions can only works when certain behaviour happened and being detected. For instance, the question about how to make agreeable people feel being acknowledged. All the ideas are based on we know this person helped others or sacrificed for others. If this behaviour are detectable, then we do not need to know their



FOR PEOPLE TO CHOOSE

DIRECTION 1

Knowing there is group of people have a certain need because of their personality. Then provides them an extra option.

PROS

Don't need to recognize his/her personality. People who need it can choose it.

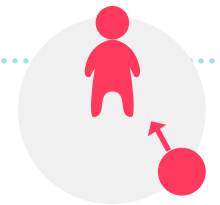
CONS:

- Less feeling of special and personal.
- Easily being copied by other competitors.

personality in advance. This direction is not in line with the initial concept that recognize personality and then interact with them in new ways.

This insight brings a discussion about which direction is more valuable for AF/KL. Give people options to choose, or firstly recognize someone's personality and then give him an only option. After discussion with experts in AF/KL. The conclusion has been drawn.

Both directions has strengths and weakness, but the direction 2 is more interesting for AF/ KL because the understanding process creates extensive value, not only the value for one scenario, but also other touch points. Consequently, the idea of recognizing personality stays.



GIVE ONLY ONE OPTION

DIRECTION 2

Recognize his/her personality, and approach them in new ways.

PROS:

- Creates the personal touch
- The attitudinal data can be stored and used in other touch points.

RISK:

Personality measurement will never be 100% correct. Therefore, there will be a risk of approaching them in wrong ways due to the effect of other factors, for instance, mood.

CHAPTER 7

CONCEPT INTRODUCTION

Introduction

This chapter introduces a concept of applying the personality-driven design principle in the Flight guide. This concept consists of four steps, recognize personality, store the data, tailor the product, and show the personalized interfaces.

7.1/Choose the Flight Guide as a use case

7.2/Apply the principle on the Flight Guide

7.3/The concept flow

7.1/ CHOOSE THE FLIGHT GUIDE AS A USE CASE

Ideas in the creative session are in different forms and also located in different touch points. To translate the ideas into a concept, these ideas have been communicated in cards (figure 31). The outcome looks very relevant with an existing product in AF/KL entitled Flight guide.

FLIGHT GUIDE

The Flight guide is an existing product in AF/KL that gives important flight information and possible relevant recommendations after booked a ticket from AF/KL, for instance, information about a destination, services that enable passengers to have better flight journey, etc. Customers will get a confirmation email after booked a ticket in AF/KL.

REDESIGN THE FLIGHT GUIDE BASED ON PERSONALITY

Currently, the Flight guide is using cards to convey information (figure 32), which makes it a great platform to show the value of the principle formulated in chapter 5. Therefore, the Flight Guide has been chosen as a use case to apply the principle. Interaction qualities in the principle can be used to tailor the current way of presenting information. New cards can be added to fulfilled personality related needs.

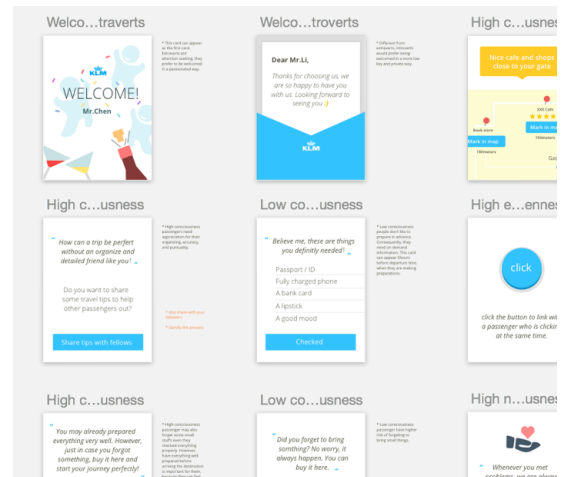


Figure. 31. Communicate the ideas

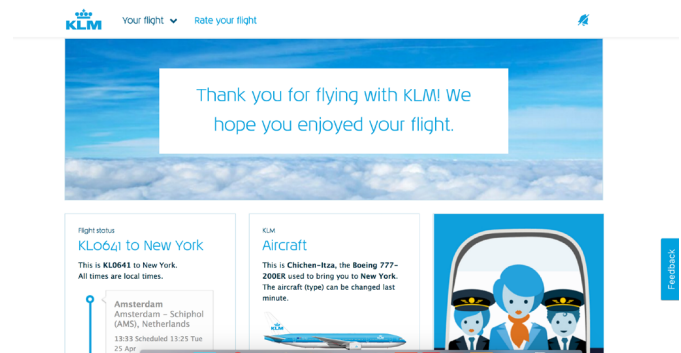


Figure.32. Current Flightguide

DESIGN GOAL:

— DESIGN GOAL —

I want to make the content and the interaction of the Flight Guide better match with the concerns and interests of customers with different personalities (Big Five).

7.2 / APPLY THE PRINCIPLE ON THE FLIGHT GUIDE

By applying the personality-driven design principle, the Flight Guide has been personalized in three main dimensions.

A. USE THE PRINCIPLE TO TAILOR THE COPY

The first dimension is to tailor the copy of the exiting content.

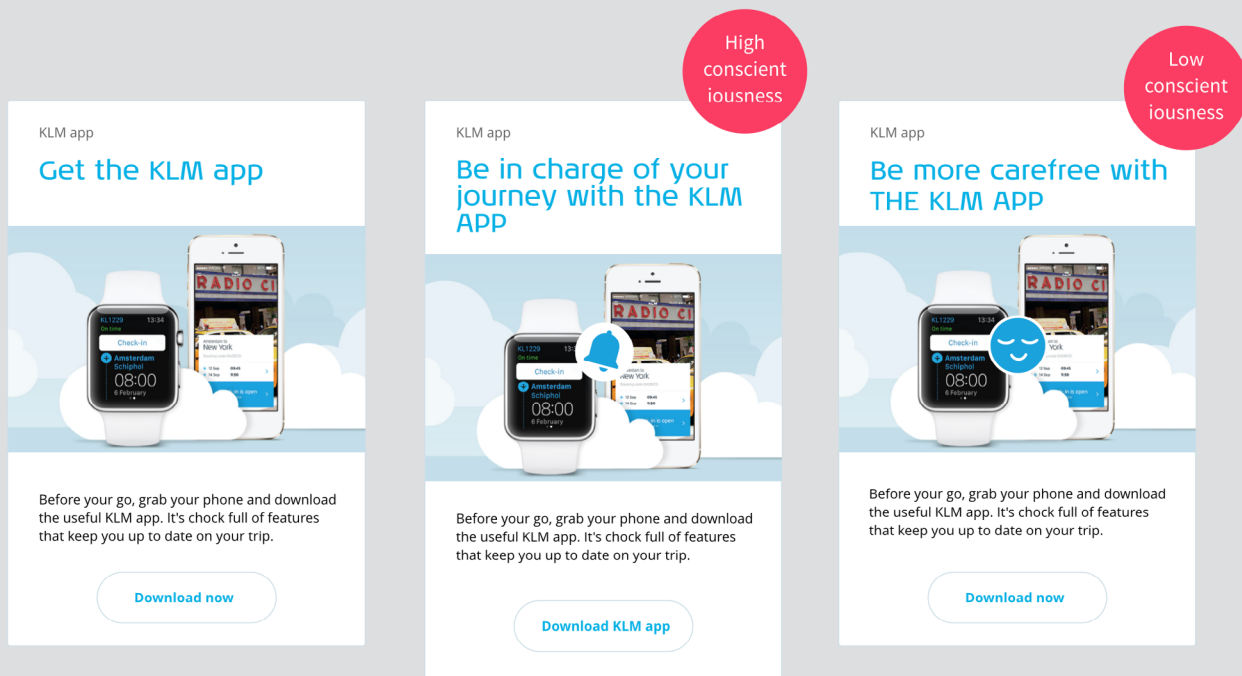


Figure.33. Change the copy based on conscientiousness

For example:

The original copy to promote the KLM main app is "Get the KLM app". To make it better match with the personality related concerns, the copy for high conscientiousness passengers can be "in charge of your journey". The copy for people low in conscientiousness can be tailored as "be more carefree"(figure 33). A tailored copy made it easier to start the interaction with customers .

B. USE THE PRINCIPLE TO TAILOR THE ILLUSTRATION

The second dimension is built on the first dimension, except for tailoring the copy, the illustration can also be tailored based on the personality-driven design principle.

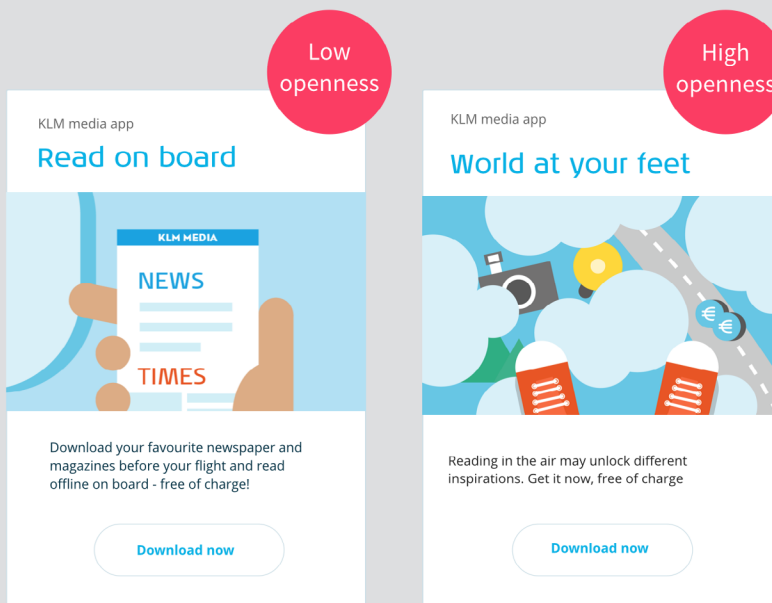


Figure.34. Change the illustration based on openness



Figure.35. Change the illustration based on extraversion

For example:

The card of introducing KLM media app for people low in openness can be more straightforward, let people know what to expect in the app, since they don't like abstract ideas. While for people high in openness, the card can be more abstract to spark their curiosity and attract their attention (figure 34).

Another example is the welcoming banner. Everyone wants to feel being welcomed, but the welcoming atmosphere can be different. According to the principle, the welcoming banner for extraverts can be more lively and passionate, while welcoming banner for introverts can be calm and private (figure 35).

C. USE THE PRINCIPLE TO CHANGE/CREATE NEW INTERACTION

The third dimension of tailoring is change the interaction or create new interaction using the personality-driven design principle.

Figure.36. Change the interaction based on conscientiousness

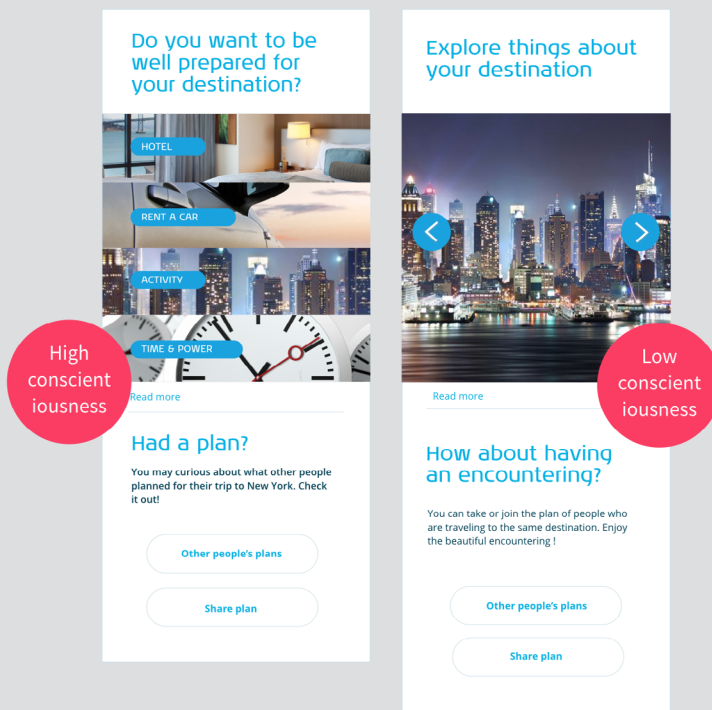


Figure.37. Change the interaction based on openness

For example:

People high in conscientiousness prefer to have everything well-prepared before leaving home, they take time for making preparations. Consequently, the preparation card for them can be more structured and detailed. While for people low in conscientiousness, they often don't make preparation seriously. Consequently, preparation card for them can be more like finding inspirations (figure 36).

Another example is tailoring the whole interaction based on openness level. According to the personality-driven design principle, people high in openness prefer a more explorative way of interaction, so the primary interaction added some game elements to make the experience more unique and explorative. While for people low in openness, the website can be rather neutral and standard. (figure 37)

7.3 / CONCEPT DESIGN

The building of the new Flight guide concept followed the concept flow (figure.38). Starting from collecting personality related information, followed by tailoring the content, and storing the data.

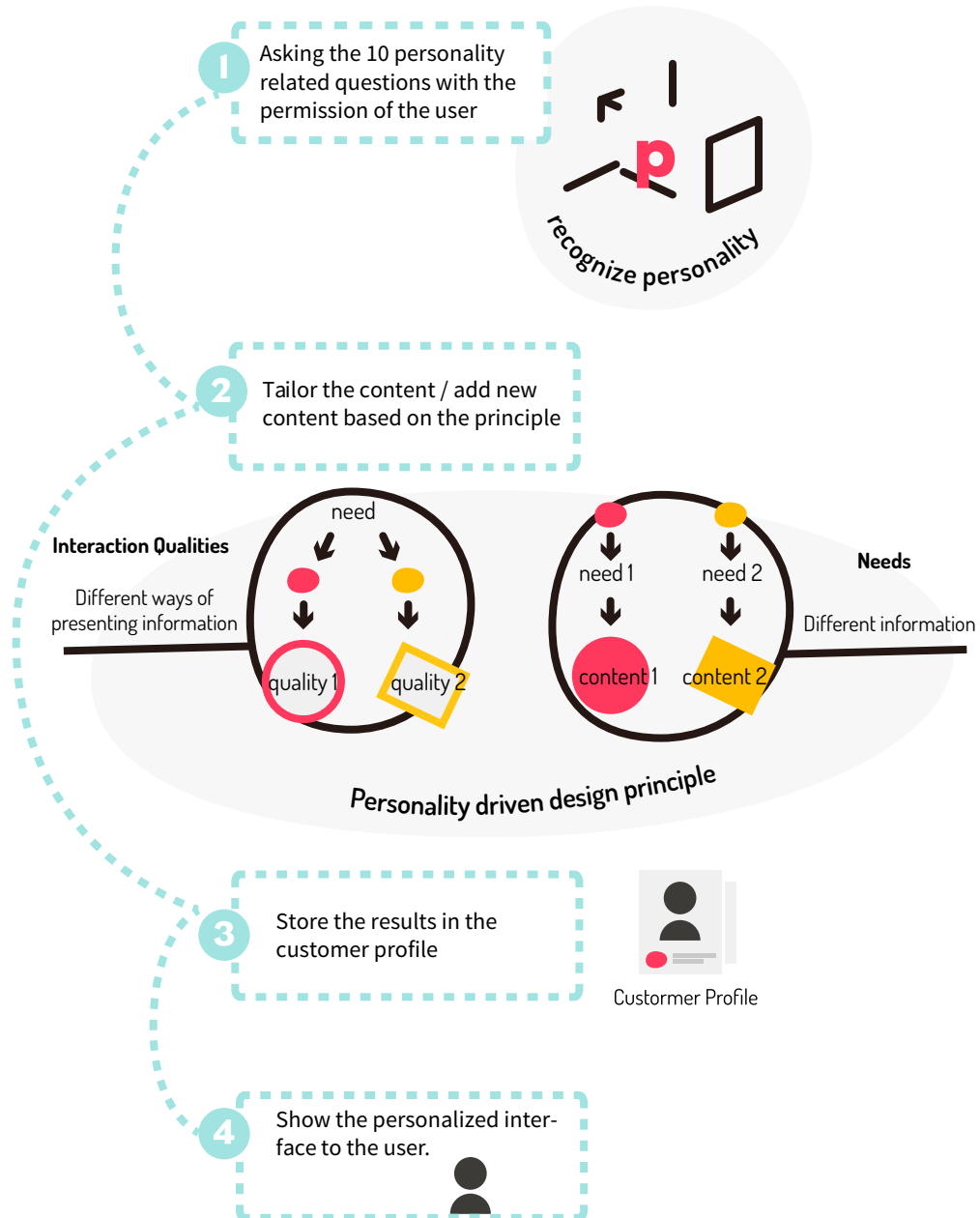


Figure.38. The concept flow

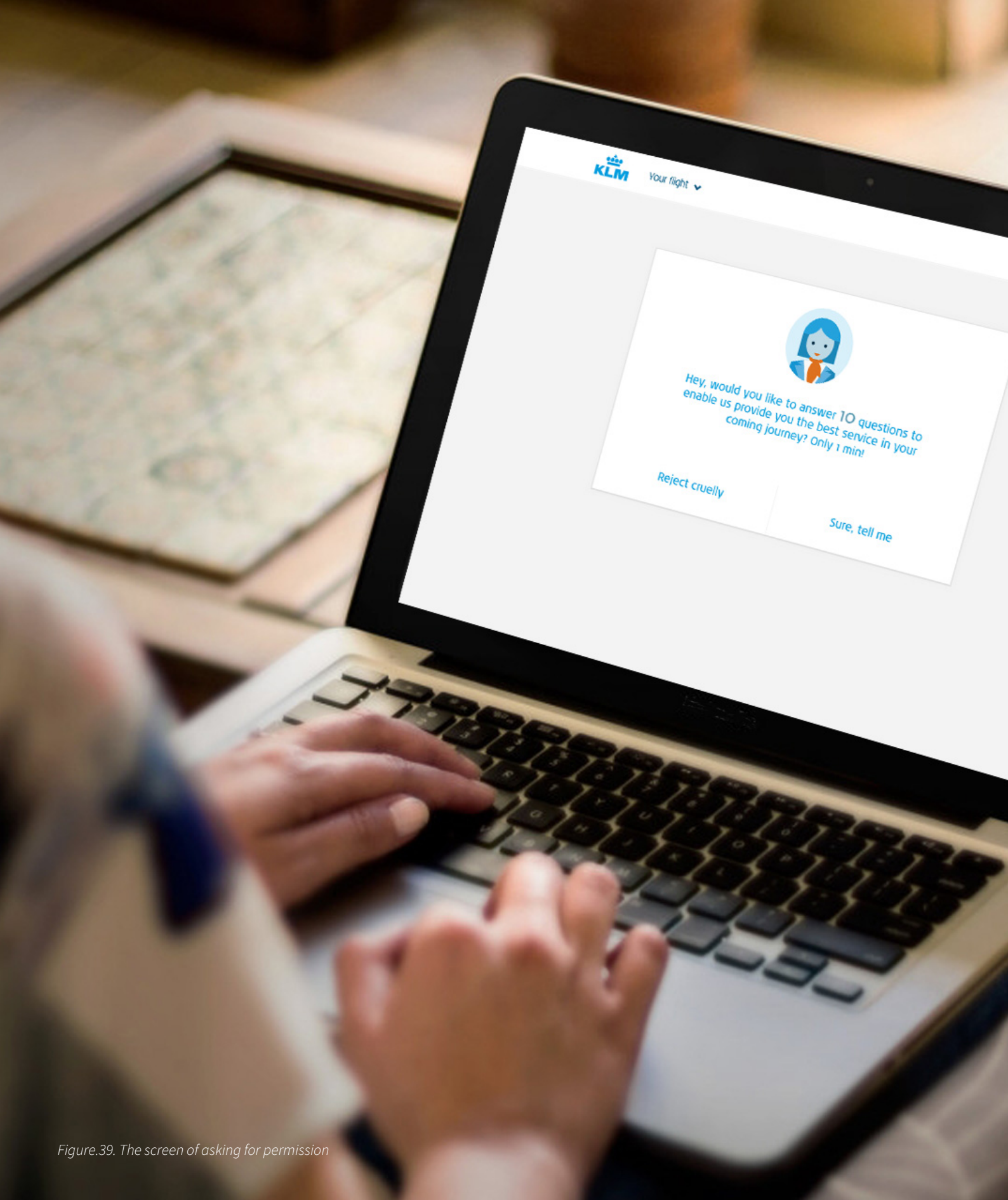


Figure.39. The screen of asking for permission

ASKING FOR PERMISSION

It is important to ask for permission before collecting information. Customers should be informed about the usage of the collected data. This interface functions as inviting people to answer questions by a friendly visual design, a clear indication of the data usage and a humour tone of voice.

After booked a ticket successfully from AF/KL website. A confirmation email will be sent.

The confirmation email contains the link to Flight guide.

People who choose to reject cruelly will directly go in, and get an ordinary version.

10 questions with progress bar will be shown to people who are willing to answer the questions

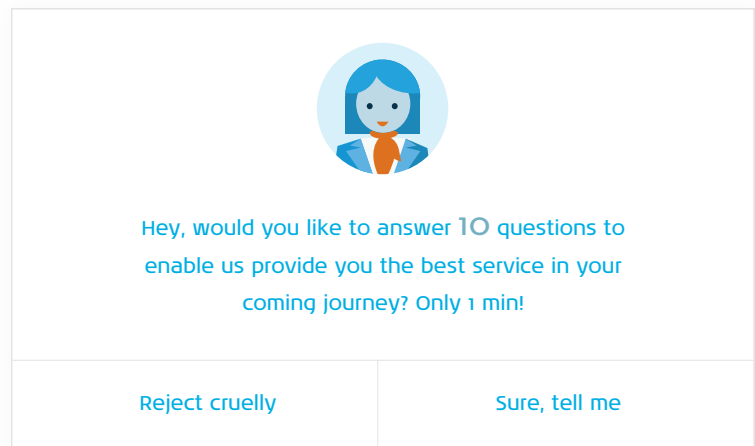
BOOKED A TICKET FROM AF/KL

GET A CONFIRMATION EMAIL WITH FLIGHT GUIDE

CLICK IN

LEAD TO FLIGHT GUIDE WEBSITE

ASKING FOR PERMISSION (figure 39)



Hey, would you like to answer 10 questions to enable us provide you the best service in your coming journey? Only 1 min!

Reject cruelly Sure, tell me

ANSWER 10 QUESTIONS

GET THE PERSONALITY TYPE



Figure.40. The screen of asking personality related questions

ASKING QUESTIONS

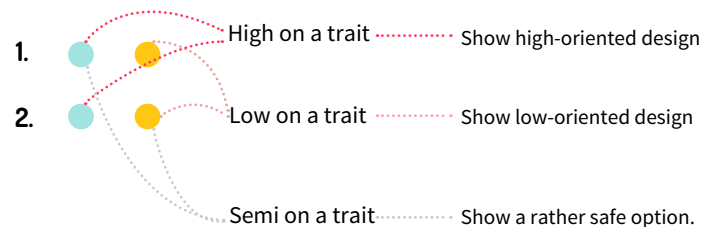
Asking questions has been used as the way to identify personality in this concept. Answering questions is also a part of the whole experience. Therefore, the questions should be short and easy to answer. Furthermore, to make the process more fun, some visual and casual tone of voice were added in the questions.

There are two questions for each trait. Ten questions in total. People who have consistent answers will be recognized as high/low in a trait.

After confirmed the answers, the users will see the pages that specially designed for them.

ANSWER 10 QUESTIONS

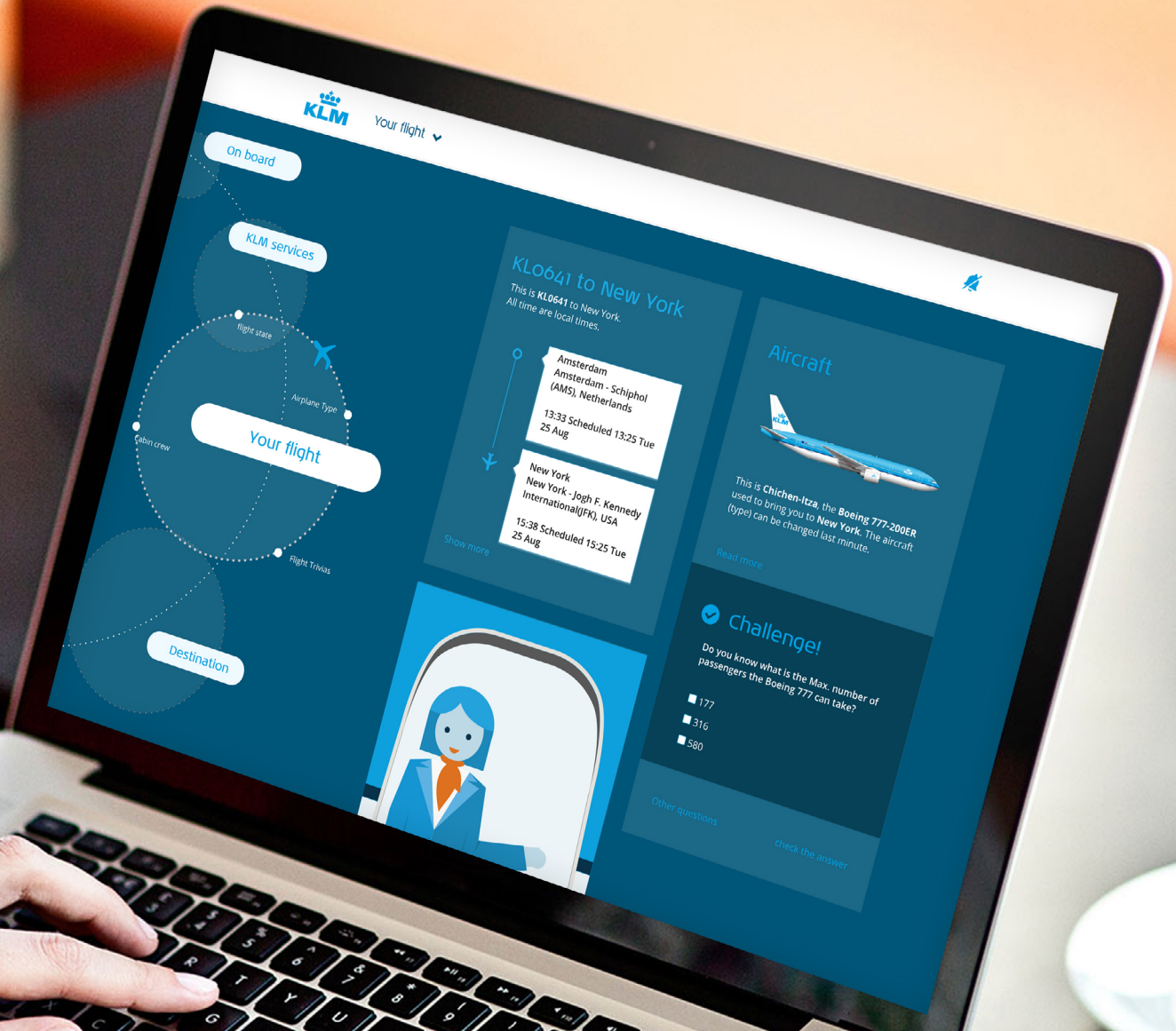
GET THE PERSONALITY TYPE

1.  High on a trait Show high-oriented design
 2. Low on a trait Show low-oriented design
- Semi on a trait Show a rather safe option.

PREPARING YOUR PAGE

"Your flight guide is on the way."

A PERSONALIZED FLIGHT GUIDE BASED ON "WHO THEY ARE"



FINAL PERSONALITY-ORIENTED DESIGN

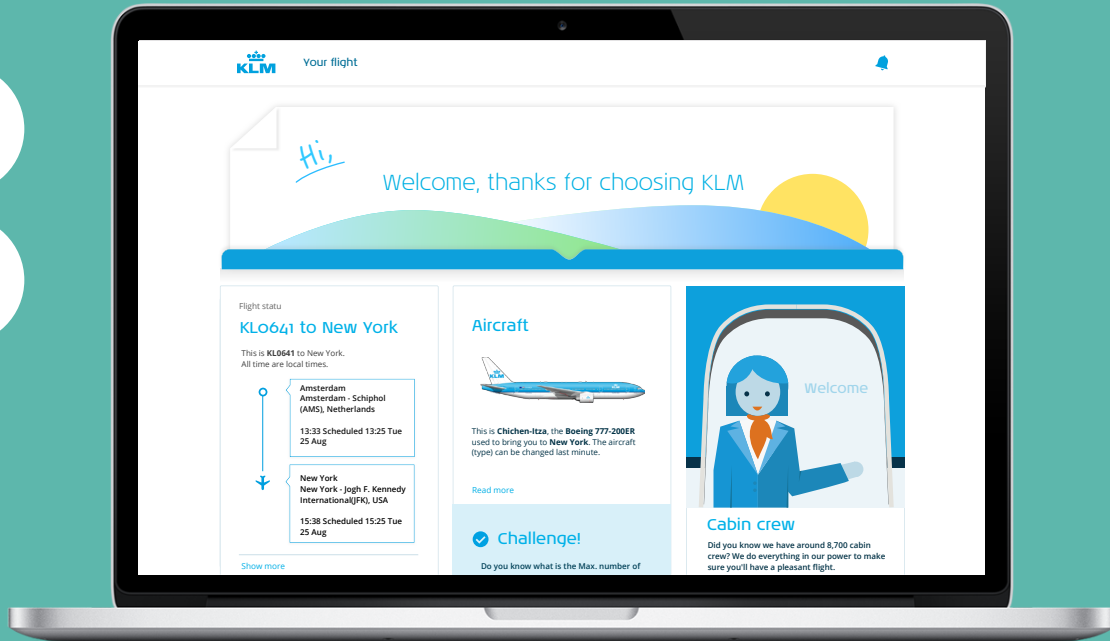
In this concept, the personality-driven design principle for extraversion, openness and conscientiousness were used, because these three traits were seen more effective in this touch point. The design for this personalities will be presented on following pages.

Before getting to this final design, a design quality test has been done to identify if people have similar perceptions towards the quality of the design. Furthermore, if the design has reached the design intention. Improvements have been made after this test(see appendix. F).

LOW EXTRAVERSION-ORIENTED DESIGN

CALM

PRIVATE



check appendix E-A for more detailed introducing of extraversion-oriented design.

HIGH EXTRAVERSION-ORIENTED DESIGN

LIVELY

PASSIONATED



HIGH CONSCIENTIOUSNESS-ORIENTED DESIGN



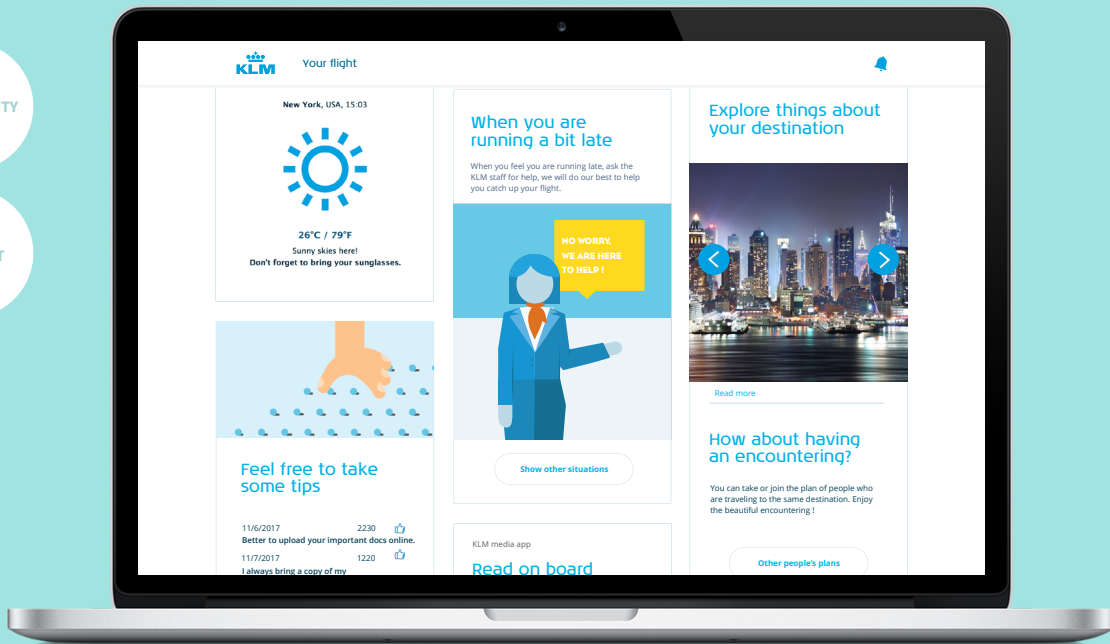
ORGANIZED

PREPARE AHEAD

Figure. 44. High conscientiousness-oriented design

check appendix E-B for more detailed introducing of conscientiousness-oriented design

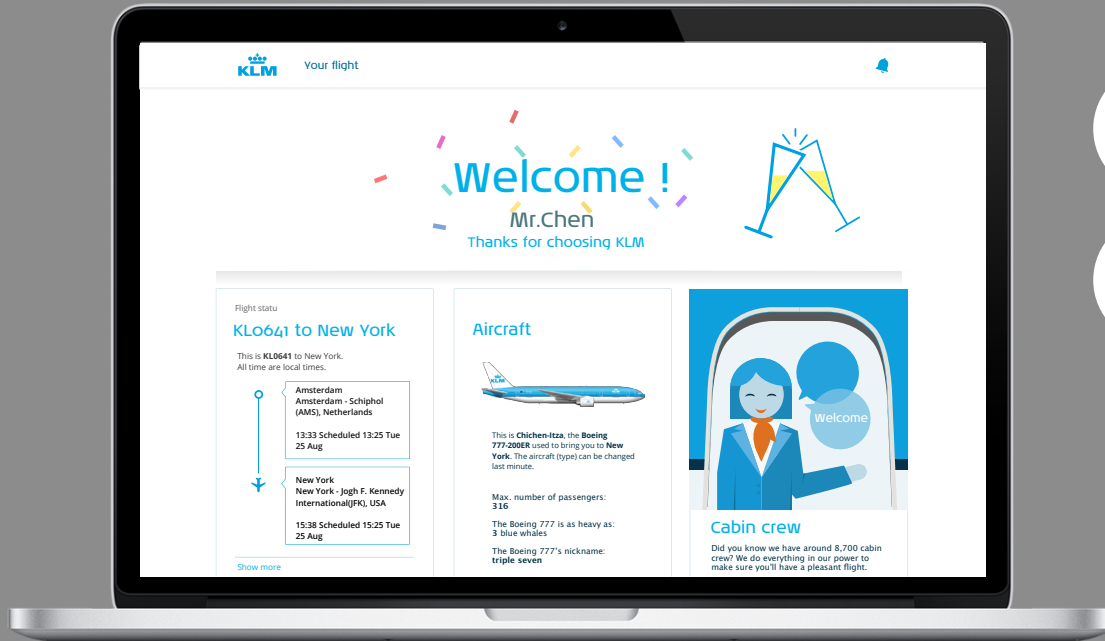
LOW CONSCIENTIOUSNESS-ORIENTED DESIGN



SPONTANEITY

SUPPORT

LOW OPENNESS-ORIENTED DESIGN



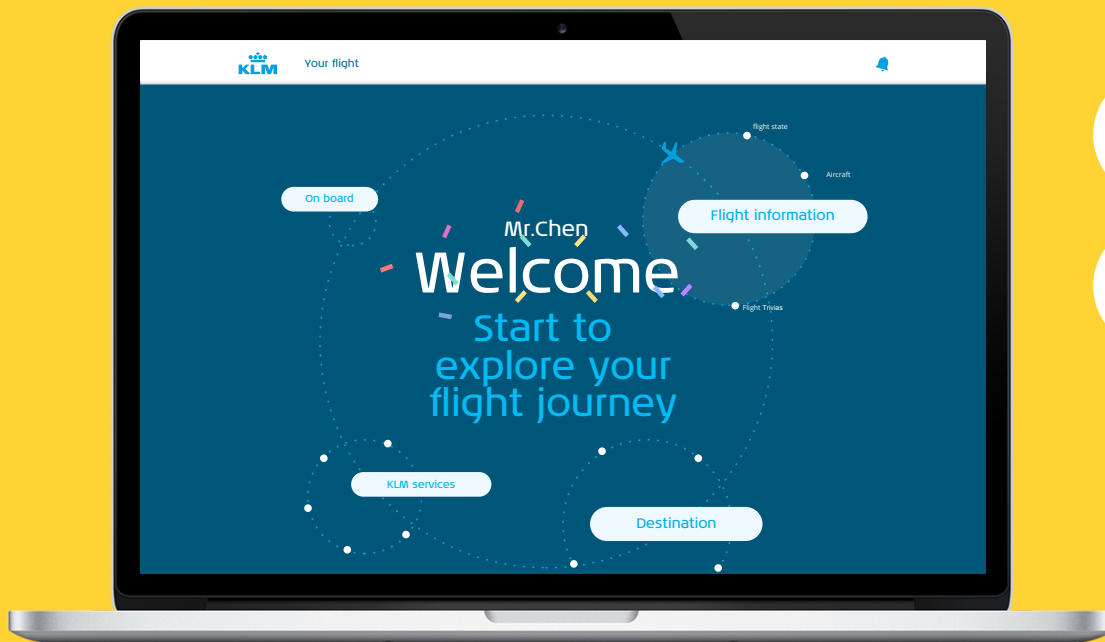
AS USUAL

STRAIGHT-FORWARD

Figure. 46. Low openness-oriented design

check appendix E-C for more detailed introducing of openness-oriented design

HIGH OPENNESS-ORIENTED DESIGN



EXPLORATIVE

UNIQUE

Figure. 47. High openness-oriented design

CHAPTER 8

EVALUATION

Introduction

This chapter will focus on the evaluation of the principle from the lead users perspective and the company's perspective. Furthermore, according to the evaluation results, implications, limitations and recommendations will be presented.

8.1/Principle evaluation set-up

8.2/ From the customer's perspective
8.3/ From the company's perspective

8.4/Implications 8.5/ limitations
8.6/ recommendations

8.7/ Reflection on the role of designer
in AI(Artificial Intelligence)

8.8/Personal reflection

8.1 / PRINCIPLE EVALUATION SET-UP

Qualitative research has been chosen as the approach to evaluate the Flight guide concept proposed in chapter 7, which the principle of personality driven design presented in chapter 5 was applied on. Evaluating the concept can be seen as a way to evaluate the principle. Opinions both from lead the user's perspective and the company's perspective were collected and taken into account for the final evaluation conclusion. The main research questions are as following:

MAIN RESEARCH QUESTIONS:

From the lead users perspective







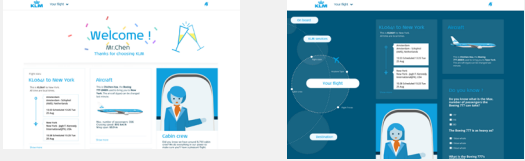
- 1) Do all people with a particular personality have consistent preferences towards design for that specific personality?
- 2) Is the concept something the customers would feel excited about of the business goes in this way?

From the company's perspective

- 1) Is this way of doing personalization an interesting future direction for AF/KL?
- 2) Is the outcome of this project something valuable for AF/KL?

8.2 / FROM THE CUSTOMER'S PERSPECTIVE

To evaluate the principle in the lead user's perspective, three traits, two ideas per each traits, have been chosen to test with 20 AF/KL customers at Schiphol. The test starts from the personality-related questions. After that, old design and personality-oriented design were shown for them to choose. By comparing the personality of participants with their preferences, it would be possible to see if there is a correlation between personality and customer's preferences. If a correlation is found, then it would mean that applying the principle in a service could positively influence customer experience. Results will be presented on the following pages.

PERSONALITY	QUESTIONS	PERSONALITY-ORIENTED DESIGN IDEAS
Extraversion	Which way of welcoming you feel more comfortable with?	
	Which card do you appreciate more?	
Conscientiousness	The information on which card is more relevant to you?	
	Which title is more attractive to you? The information on which card is more relevant to you?	
Openness	Which card would you click on it?	
	Which way do you feel more comfortable with?	
	Which way do you appreciate more? (* two operable mock-up)	

RESULTS

The results of the principle valuation from the lead users perspective will be presented in three main aspects. Firstly, the general experience regarding answering questions and get a personal website. Secondly, the overall appreciation towards the new design and the original design. Lastly, the correlation between the participant's personality and their preferences of the variants.

A. ABOUT THE IDEA OF COLLECTING PERSONAL INFORMATION

Users said:

"It says you gonna give me the best service, so why not answer."

"I don't mind as long as I know how you gonna use it"

"It is ok, but I want a switch, that I can switch off when I don't want it."



ABOUT MAKING USE OF THE INFORMATION TO PROVIDE PERSONALIZED SERVICES:

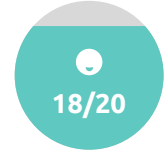
Users said:

"I am glad if everything is special for me!"

"Nice touch, leaves good impression!"

"It is cool to have this, some people prefer one way, some people prefer other ways."

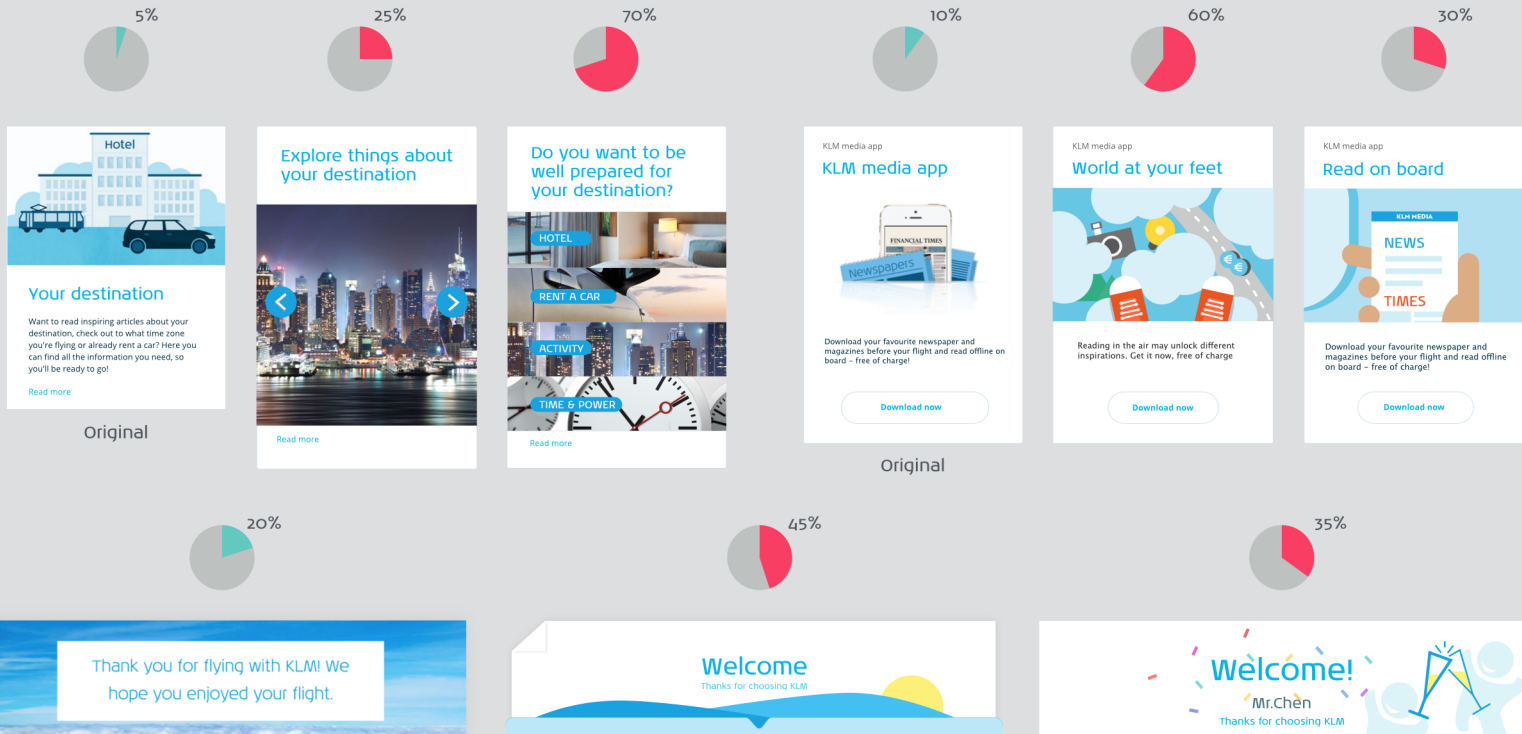
"I like this personal touch."



B. THE OVERALL APPRECIATION RATE

Comparing the overall appreciation rate of original design and new design (figure 48), we can see the appreciation for new design are higher than

the original design, which reflects the customer satisfaction for the personality-oriented design is higher than the original design.



Original

Figure. 48. Compare the appreciation rate between the original design and the new design

C. THE CORRELATION BETWEEN PERSONALITY AND PREFERENCES

The effectiveness of the proposed personality driven design principle can be reflected from the correlation between the personality of the participant and his/her preferences of the design. If participants more likely to choose the design matches with their personality, it suggest that services taking personality into consideration by applying the principle could positively contribute to the customer experience. In the following pages, the correlation between identified personality by questions and the preferences of the design will be communicated.

For conscientiousness, according to the results, (9/12)75% of people high in conscientiousness have consistent preferences to the high conscientiousness-oriented design (figure 49). If conscientiousness didn't play a role in passengers preference, the percentage should be around 25%. So this figure suggests conscientiousness is a relevant trait. However, due to less sample size of low conscientiousness participants, conclusion can not be drawn from that.



FINDING:

9/12 people high in conscientiousness show consistent appreciation towards “be well prepared” destination card and “solutions for possible situations”.

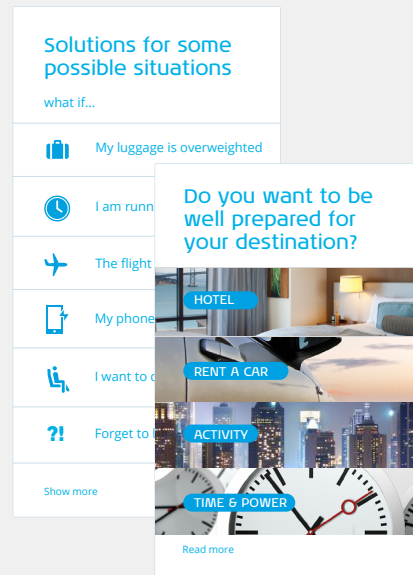
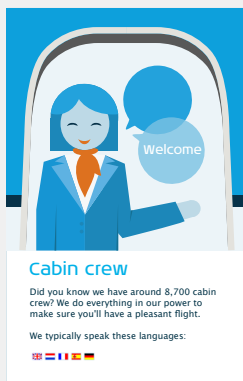


Figure. 49. Two high conscientiousness-oriented design

For extraversion, (5/6) 83% of people high in extraversion appreciated the high extraversion-oriented welcoming banner, this is quite high compare to 50%(figure 50). (5/8) 62.5% of low extraverted people appreciated the low extraversion-oriented welcoming banner(figure 51), also higher than 50%. This shows **extraversion plays a role in passenger preferences**. However, the percentage of people who have consistent preferences only slightly higher than 50%, this may due to the second extraversion-oriented design is not distinctive enough.



FINDING:
11/20 people have consistent preferences



FINDING:
5/6 extraverted people like the "lively welcoming banner"

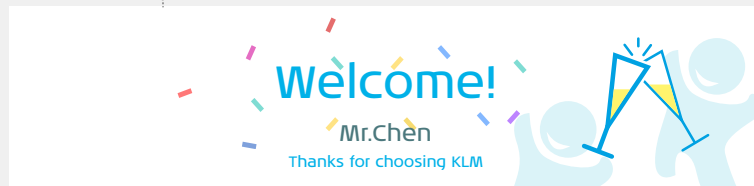
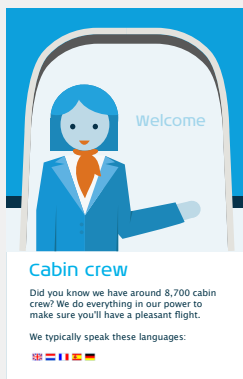


Figure 50. Welcoming banner for extraverts



FINDING:
5/8 low extraverted people like the "calm banner"

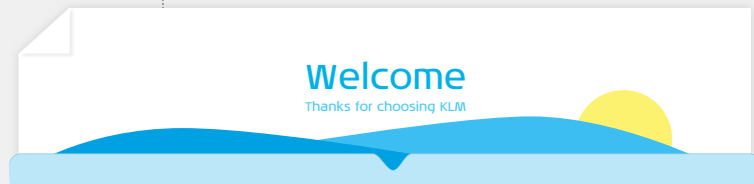


Figure 51. Welcoming banner for introverts



However, there is no direct correlation between personality and the appreciation towards crew cards. The reason is people perceive the "passionated" card as more friendly compare to the "calm" card. Consequently, the design should be improved.

For Openness, (13/20)70% of people have consistently responded for the two variants (figure 52, 53), 50% of people have consistent respond for the three variants (figure 54,55). If openness was not a relevant variable, only 25% (= 50%*50%*50%*2) people would have chosen the 3 variants consistently. However it was chosen consistently by 50% of the population. So we can see **openness also plays a role in passengers preferences**. However, there no direct correlation between the questions used to measure openness and the openness-related design variants . This result may due to the questions are not correct or sharp enough. Consequently, the questions for recognizing openness should be refined.



FINDING:

13/20 people have consistent preference towards the “the way of getting airplane information” and “the klm media app card”.

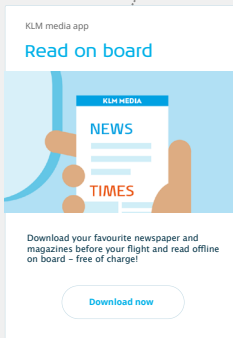


Figure 52. Two low openness-oriented design

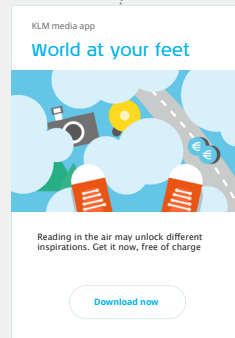
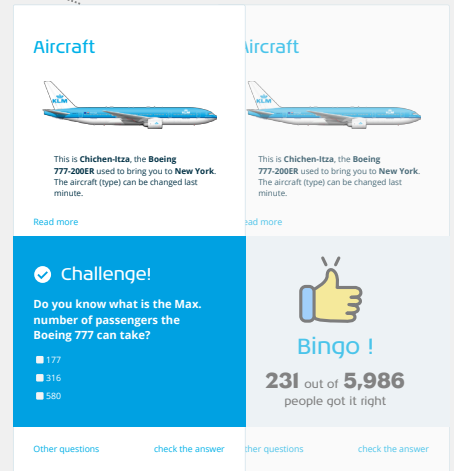


Figure 53. Two high openness-oriented design



FINDING:
10/20 people have consistent preference towards this three variants.

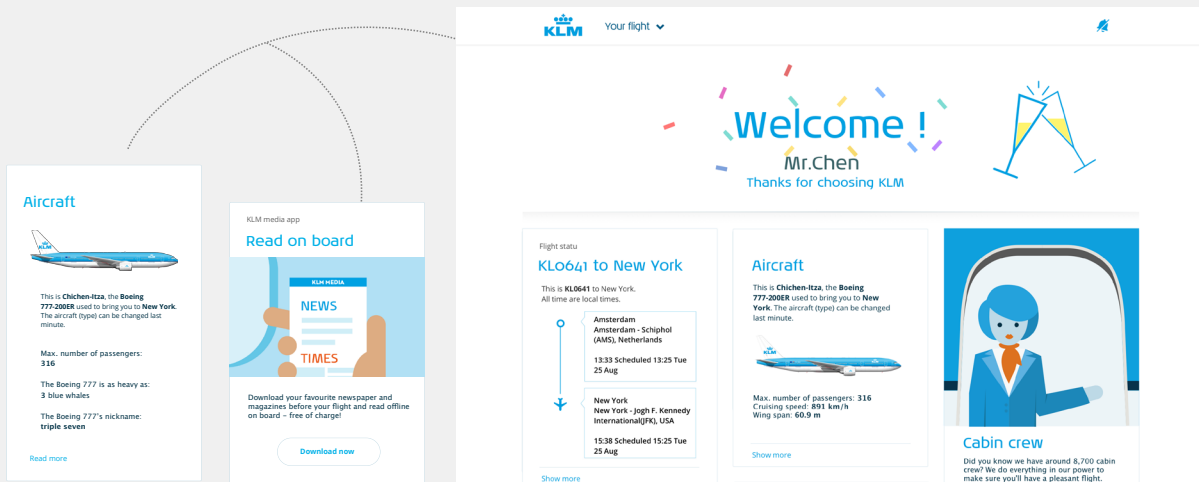


Figure 53. The three low openness-oriented design

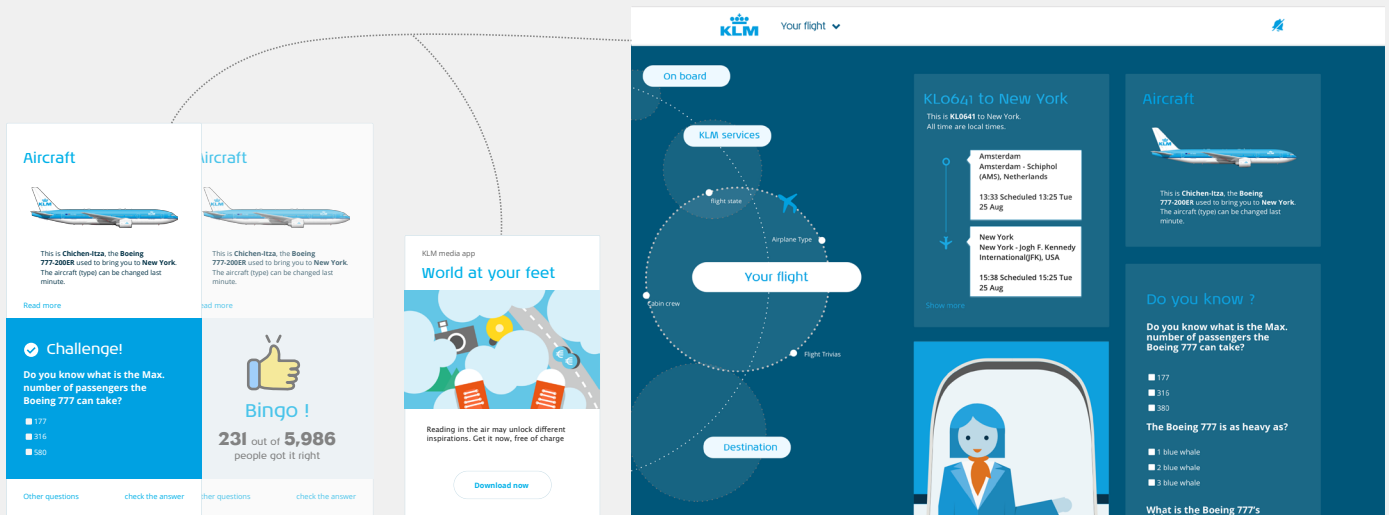


Figure 54. The three low openness-oriented design

There is direct link between the answer of questions and the appreciation of the variants.

8.3 / FROM THE COMPANY'S PERSPECTIVE

The findings of this project, including the personality-driven design principle and the use case, as well as the evaluation results have been

communicated in AF/KL with relevant experts. Here is some feedback they gave:

This is definitely interesting findings

—Mobile team

This is interesting for the copy team, we should run A/B test to have more results.

—Copy team

We can use the principle to tailor the whole blue web, for example the booking flow. We can start from small steps.

—Product owner of blueweb

I think the end result looks very promising and can be of real value to our customers as it feels more natural to them. It won't be easy to get it done but it has a lot of potential!

—UX design team leader in KLM

Really interesting, this direction have not been thought before.

—Product owner in digital department

This is the essence of the vision of the whole company, but we are from the digital perspective. If we won't doing anything on this, we will miss out.

—Product owner in digital department

We need more resource to put in this project. Once you start, you will get more insights, to make sure we can stay ahead, we should start with this.

—Product owner in digital department

CONCLUSION

In conclusion, even though 20 participants is not a big group, but the amount of participants who has consistent preferences could still show some tendencies. According to the results, there is a strong correlation between personality and customer's preferences. People are more likely to choose a design that better matches with their personality. This results suggests that services taking personality into consideration by applying the personality driven design principle could positively influence customer experience.

What is more, the evaluation results show the value of the personality driven design principle by showing the correlation between customer's personality and the design with applied principle. However, since only three personality dimensions applied in this use case, other dimensions need to be evaluated by use cases in other touch points.

Furthermore, the opposing findings gave suggestion for improving the concept, especially what questions to ask to identify personality.

In the company's perspective, the personality-driven design principle proposed in chapter 5 is insightful and inspiring in a sense that it gives a new direction and provides an opportunity to be a new way to achieve customer intimacy. Furthermore, this direction of doing personalization is in line with the company objective. However, to validate the effectiveness of the principle, more use cases with larger test samples need to be taken. Consequently, company has decided to use these findings as the starting point, and put more resource to continually research on it.

Building on the evaluation results, limitations and further research directions will be communicated on the next page.

8.4 / IMPLICATIONS

THEORETICAL IMPLICATIONS

With this thesis, the original Big Five description (Goldberg, 1990) and personality related research was extended to the aviation context. A correlation was found between customer's personality and their preferences in their flight journey, which suggests the value of taking personality into account for personalization. The final personality-driven design principle functions as guidance for personality-based personalization design practices, which can be applied for personality-based product and service innovation for increasing customer intimacy. By providing this principle, this thesis is bridging design practices with the use of user data.

MANAGERIAL IMPLICATIONS

A correlation was found between customer's personality and their preferences in their flight

journey. This finding is a strong starting point for AF/KL to take customer's personality into account for personalization to compete on customer intimacy. What is more, collecting personality related information by asking questions suggests a new way of getting meaningful data for AF/KL. What is more, AF/KL can also apply the personality driven design principle in other touch points in the customer journey, just like the proposed concept. For instance, tailor the tone of voice in social media, or create brand new products and services for passenger with particular personality. The application of this principle can be in digital product but also in physical product, for instance, provide a surprise meal for high openness passengers. AF/KL can use this principle to tailor every little touch points to move the world of customers with memorable experience.

8.5 / LIMITATIONS

DOUBLED WORKLOAD

If every little touch points were tailored by personality, that means the workload for the company will be doubled or even more. Not only in developing, but also in testing and maintaining. All this works will be heavier than before. As a suggestion, a system which can automatically learn and update the content in the website should be developed. A correlated suggestion will be presented on the next page.

A REMEDIATION LEARNING SYSTEM IS NEEDED

As mentioned in the design requirements chapter, a person's behaviour at a certain moment is not only be influenced by personality, many other factors also playing roles, for instance the mood. Consequently, there is a risk that the personality-oriented design doesn't match with the person's

actual preferences. In this case, the personality-oriented design can not show the intended influence. Same situation also happens when we recognize a person's personality wrongly. Consequently, a remediation learning system, which is able to measure user reaction and modify the service agilely is needed. For instance, a learning on the job system.

QUANTITATIVE RESEARCH IS NEEDED

Only 20 AF/KL customers were involved in the principle evaluation. 20 participants indeed tells some tendency, but also can not be used as a validated result. Consequently, to validate the effectiveness of the personality driven design principle, more in-depth quantitative research with larger participants group is needed.

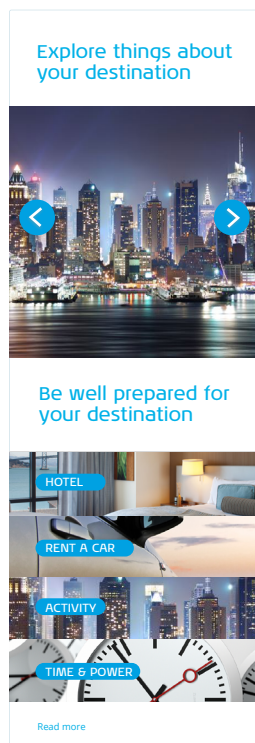
8.6 / FURTHER RESEARCH SUGGESTIONS

RESEARCH ON OTHER PERSONALITY DIMENSIONS

This project focus on the big five personality model, but it does not mean other personality dimensions are less relevant. Consequently, further research can investigate the effectiveness of other personality dimensions in improving customer experience.

A SYSTEM OF UNDERSTANDING A PERSON BY LEARNING ON THE JOB

Personality-oriented design can also be used to identify personality. By collecting the behaviour trace of interacting with the personality-oriented design, it is possible to identify personality. This process is called learning on the job process. This way of measuring personality is less disturbing, and also more accurate in a sense that the results is based on what they do rather than what they say.

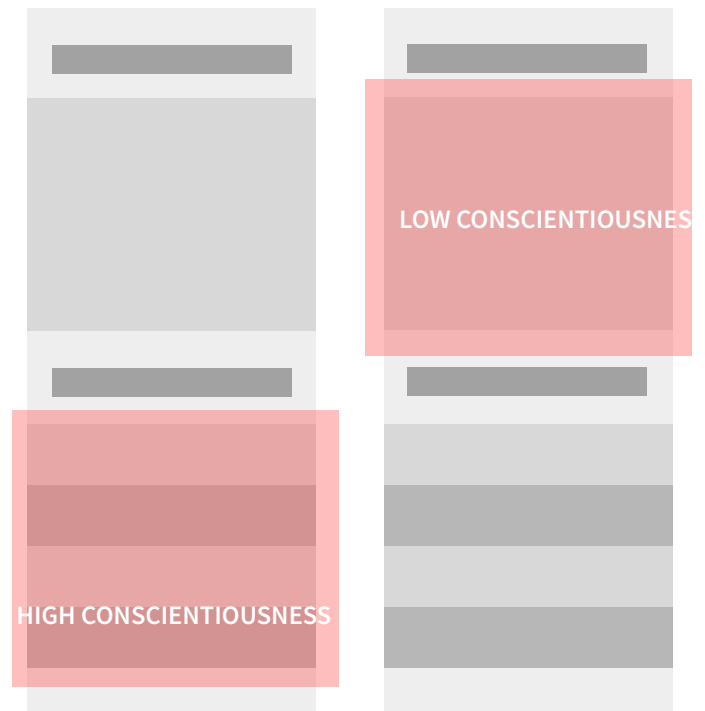


step 1: combine variants in one design.

Based on the principle, design two variants and mix them in one design.

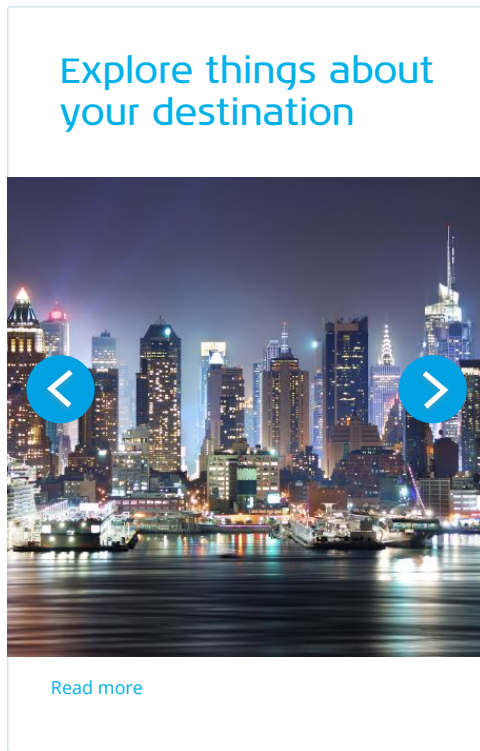
step 2: check the click flow and times.

Based on the click flow and click times, we can judge which way of interaction this user likes most. Furthermore, we can also use the outcome as a cue for recognizing personality.



step 3: tailor the next content based on the clicking rate

The structure and content should be tailored based on the clicking times and flow. For instance, if “explore things about your destination” has higher clicking than “be well prepared”, then the next time this two content are combined, but the content of be well prepared will be integrated in “explore things” part.



step 4: continued learning

The newly proposed card will be released. The clicking result should be compared with the previous results and continually iterated on.

step 5: store in customer api and use in other touch points

The outcome can be stored in customer API and used in other similar touch points.

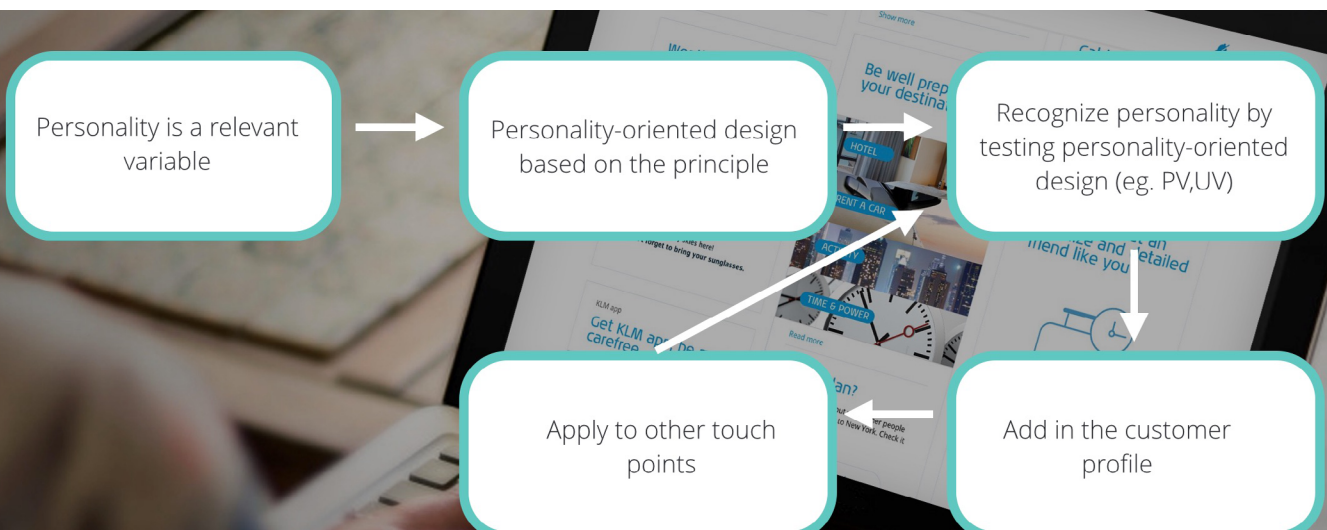
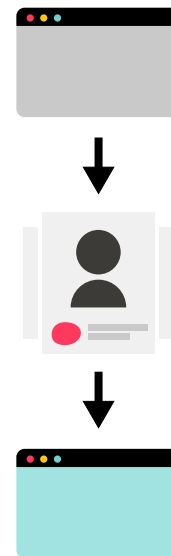


Figure. 55. The learning on the job process

USE CASES IN OTHER TOUCH POINTS IN THE CUSTOMER JOURNEY

To come up with the concepts, the personality-driven design principle as described in chapter 2 is applied. Except for the chosen concept, other use cases in different touch points in the customer journey also worth to research further.

 Solve a problem  Unlock an opportunity

CONSCIENTIOUSNESS

Passengers high in conscientiousness prefer more structured way of interacting. Do every single task well is important for them.

Passengers high in conscientiousness tend to plan things ahead.

Passengers high in conscientiousness expecting appreciation for their ways of doing things.

OPENNESS

Passengers high in openness are open to try out new interactions and products, even they are frequent flyers.

Passengers high in openness want to be inspired in their flight journey. Consequently, they prefer more explorative way of interacting.

CUSTOMER JOURNEY

EXTROVERSION

Extraverted passengers are expecting more lively way of interacting.

Introvert passengers prefer more private and calm ways of interacting.

NEUROTICISM

Passengers high in neuroticism would feel more insecure about a delay or other problems happen in their flight journey. Being reassured quickly is important for this group of people.

People low in agreeableness don't like abstract things. When communicating with them, they prefer to get answers like "Yes" or "No", rather than things in between.

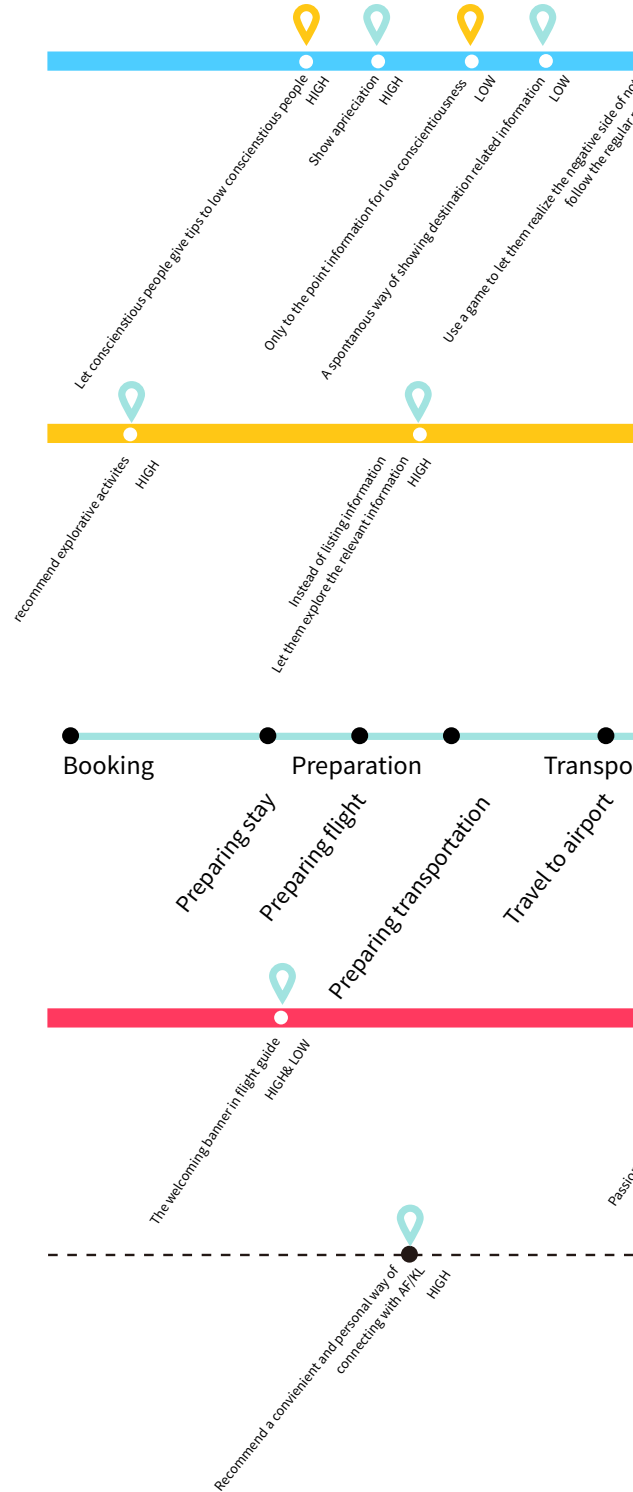
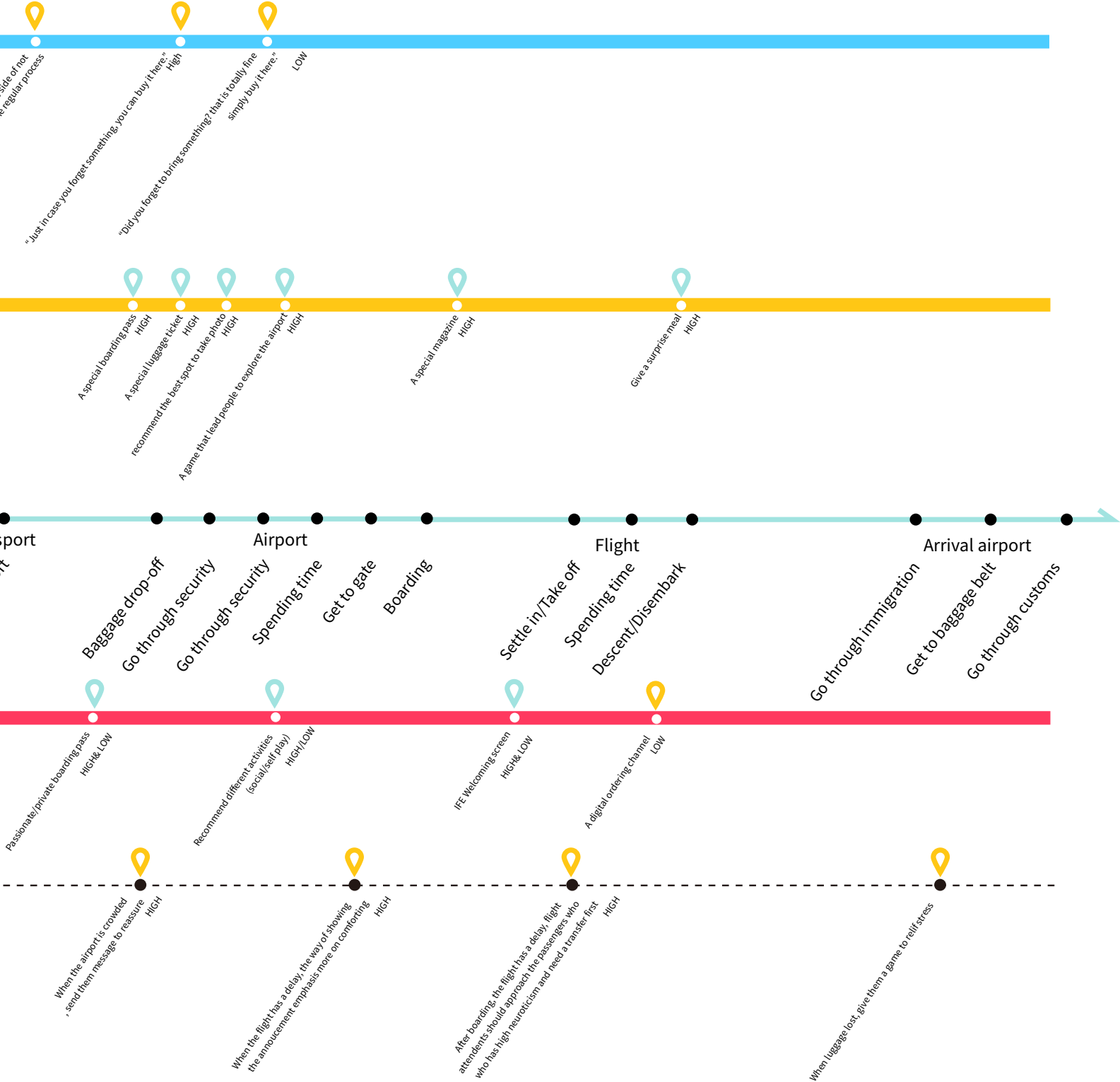


Figure. 56. Leverage personality in other touch points in the customer journey



RECOGNIZING PERSONALITY USING ONLINE/OFFLINE DATA TRACE

The various approaches of recognizing personality are sharing a same principle, that is finding cues. The findings of the typical behaviour of passenger with particular personality can also be translated into online and offline trace. Combining with some existing findings. Here with some suggestions of some collectable online and offline cues that can be used to identify personality.

EXTRAVERSION

The online behaviour trace

- The amount of comments in social media
- Activities they participated in social media
- The activities they click more in AF/KL web
- The amount of times they used in Meet and seat product.

CONSCIENTIOUSNESS

The offline behaviour trace:

- The amount of time left after passing the security check
- The amount of times that can not boarding because of forgetting important documents.

The online behaviour trace:

- The frequency of checking flight information

NEUROTICISM

The online behaviour trace:

- The amount of negative comments in Rate your flight.
- When the network is not stable, the frequency of clicking the fresh button.

AGREEABLENESS

The offline behaviour trace:

- The amount of times they agree to change to another flight when being asked to(overbook).

The online behaviour trace:

- The amount of positive comments in Rate your flight.

OPENNESS

The offline behaviour trace:

- The “Likes” they gave in the social media.
- The activities they participated in social media.

8.7/ THE ROLE OF DESIGNER IN AI

FINDING DYNAMIC PATTERNS

Machine learning experts are developing arithmetic to teach machine what data to collect and how to translate this data into something meaningful for. This process is very like the process of finding cues to identify personality, and make use of this judgement to provide new interactions in this project. Machine learning is about finding dynamic patterns. Using personality related information to improve customer experience is also about finding dynamic patterns. Since both of this two process are learning process (figure 57). Recognize personality, and making use of the personality can be seen as a machine learning process, designer gives the machine a starting point (the principle), the machine keep testing and learning from the tests, and gradually modify the principle.

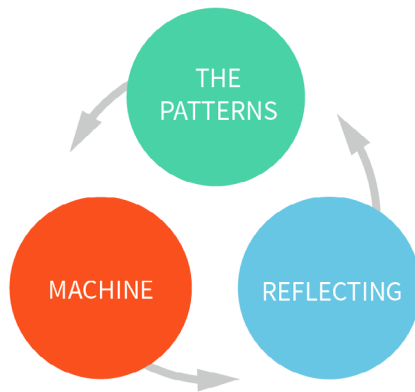


Figure.57 finding dynamic patterns

THE ROLE OF DESIGNER IN AI (artificial intelligence) ERA

From SIRI to self-driving cars, artificial intelligence (AI) is progressing rapidly. Data is generating everyday massively, while to leverage the power of the data, AI is the most important technology behind. In this area, engineer are developing multiple arithmetic to teach the machine, seems teach machine what to learn and how to learn is only the engineers business.

What is the role of designer in AI? In this project, I feel designer can also be the one who teach the machine what data to collect, and how to translate the data to something meaningful.

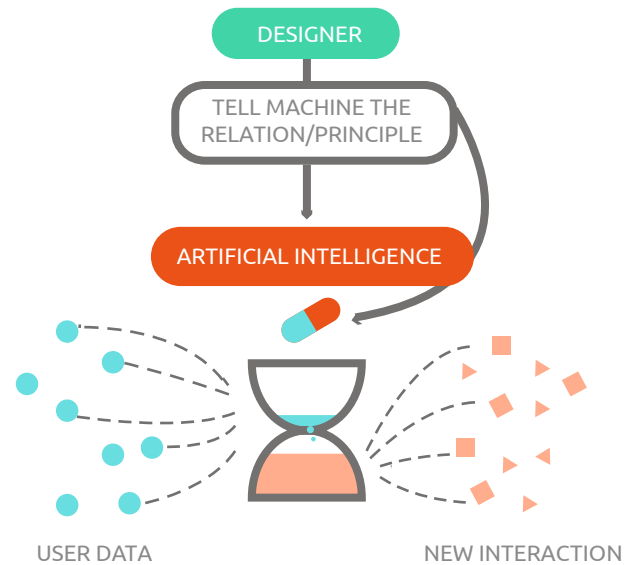


Figure.58 the role of designer in AI

In this project, the personality-driven design principle can be a guideline for company to formulate multiple equation for machine to learn. For instance, we teach machine the amount of activities people interested on the Facebook is a cue for openness. While when machine captured this cue, we teach the machine to give the person an openness oriented design. By measuring the correlation thousand times, the machine gives feedback and improvements to the original assumption that designer formulated, and the principle will become more and more accurate. Designer usually get insight from data, which we called data driven design, but in the case, designer can also teach machine what data to collect.

8.8/ PERSONAL REFLECTION

This project process was a great learning experience. I did not follow a standard design flow, but tried to explore an approach fits this project best along the way. This process was quite challenging, but this challenges pushed me to go out of my comfort zones and try out thing I have not tried before. I have learnt so much from all of this exploring experiences. Arranging session with experts to think about personality judgement cues, reading psychological articles, having interviews with crew members, designers, and customer researchers, having intervention tests at Schiphol with real customers, many findings from this activities were actually contributed to the final results.

At the beginning, the assignment is really board. The air travel customer journey is quite long and detailed. But this project doesn't has a focused touch points or a concrete problem to solve. What is more, there are more than 5000 personality related words in English language, which dimension is more relevant? Where should I start? I was completely lost at the beginning.

Finding problems and opportunities is much harder than solve a concrete problem. Because when there so many directions to go, you do not know where to go. That was the hardest part in this project. Jeroen reminded me several times that I should have a systematic way to explore. My role in this project should be a director, instead of a purely functional role. With more than seven years design learning and practicing experience, I was used to be a pure designer, always try to start by designing things. But when you are a director, a systematic guideline is needed. This pointed me to start building a theoretical structure. Focus on one personality model, explore the personality related concerns and interest from design practices and

literature, and finally got the personality-driven design principle. With the principle as a guideline, suddenly the whole story became much more clear and strong. This is what I learnt from this project, design is not only about solutions, but also the exploring guideline and principle.

Personality is such a subjective and abstract term, it has been researched for so many years but there almost no successful use case in the aviation context , is this an opportunity or a blind alley? Does personality really something useful for improving customer experience? I was constantly asking myself these questions.

But you will never know until you made this abstract theory into something tangible. When all this abstract and complex story turns into a concrete personality-based web design, people starts to feel the value of the outcome. I also realized the value of exploring in fuzzy. Because you will never know what will you get in the end, you have to be open and brave.

The personality-driven design principle and the Flight Guide use case have been communicated in many different teams in AF/KL, the tone of voice team, e-development team, digital design team. etc. Along the communications, people started to think about the value of personality, this new way of getting meaningful data, a new possibilities of doing personalization, discussions also arose on many other possibilities and directions by applying this principle. In the end AF/KL has decided to put more resource in this project and have more people to research on it. I think this is already the contribution of this project, sparked imagination, curiosities and discussions in audience. Made a small step further on the way to bring personalization to a next level in the aviation context.

REFERENCES

- Antonioni, D. (1998). Relationship between the big five personality factors and conflict management styles. *International journal of conflict management*, 9(4), 336-355.
- Blumer, T., & Döring, N. (2012). Are we the same online? The expression of the five factor personality traits on the computer and the Internet. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 6(3).
- Barrick, M. R., & Mount, M. K. (1993). Autonomy as a moderator of the relationships between the big five personality dimensions and job performance. *Journal of Applied Psychology*, 78, 111–118.
- Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1–26.
- Bosnjak, M., Galesic, M., & Tuten, T. (2007). Personality determinants of online shopping: Explaining online purchase intentions using a hierarchical approach. *Journal of Business Research*, 60(6), 597-605.
- Bartneck C, van der Hoek M, Mubin O, Al Mahmud A (2007) Daisy, daisy, give me your answer do! - switching off a robot. In: 2nd ACM/IEEE international conference on human-robot interaction (HRI), 2007, 9–11 March 2007, pp. 217–222
- Costa, P. T., & McCrae, R. R. (1992). *Neo PI-R professional manual*. Odessa, FL: Psychological.
- Canadian Research & Development Center of Sciences and Cultures.(2012) “An Examination of the Impact of Selected Personality Traits on the Innovative Behaviour of Entrepreneurs in Nigeria”.
- Carver, C S and Scheier, M F (1996) *Perspectives on personality* (3rd edn) Allyn & Bacon, Needham Heights, USA
- Desmet, P. M., Nicolás, J. C. O., & Schoormans, J. P. (2008). Product personality in physical interaction. *Design Studies*, 29(5), 458-477.
- Datafloq (2016). Small Data vs. Big Data : Back to the basics. Retrieved from <https://datafloq.com/read/small-data-vsbig-data-back-to-the-basic/706>
- Dewitt, S.; Schouwenburg, H. C. (2002). “Procrastination, temptations, and incentives: The struggle between the present and the future in procrastinators and the punctual”. *European Journal of Personality*. 16 (6): 469–489. doi:10.1002/per.461.
- Goldberg, L. R. (1990). An alternative “description of personality”: The big-five factor structure. *Journal of Personality & Social Psychology*, 59, 1216–1229.
- Gosling, S. D., Sandy, C. J., & Potter, J. (2010). Personalities of self-identified “dog people” and “cat people”. *Anthrozoös*, 23(3), 213-222.
- Gosling, S. (2008). *Snoop: What your stuff says about you?*. New York: Basic Books.
- Hollander, E. P. (1967). *Principles and methods of social psychology*. New York: Holt, Rinehart & Winston.
- The IPIP-NEO (2000). International Personality Item Pool. Retrieved from: <http://www.personal.psu.edu/cgi-bin/users/j/5/j5j/IPIP/shortipipneo1.cgi>
- Ilies, R., Scott, B. A., & Judge, T. A. (2006). The interactive effects of personal traits and experienced states on intraindividual patterns of citizenship behaviour. *Academy of Management Journal*, 49, 561–575.
- Kilmann, R. H., & Thomas, K. W. (1975). Interpersonal conflict-handling behaviour as reflections of Jungian personality dimensions. *Psychological reports*, 37(3), 971-980.

- Kassarjian, H. H. (1971). Personality and consumer behavior: A review. *Journal of marketing Research*, 409-418.
- McRae R. R., Tobert R. (2004). "Openness to Experience". *Encyclopedia of Applied Psychology*. 2. Elsevier.
- Mckincy & Company.(2016). Marketing's Holy Grail: Digital personalization at scale. Retrieved from <http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/marketing-holy-grail-digital-personalization-at-scale>
- McCrae R. R., John O. P.; John (1992). "An introduction to the Five-Factor Model and its applications". *Journal of Personality*. 60 (2): 175–215. doi:10.1111/j.1467-6494.1992.tb00970.x. PMID 1635039.
- Matt Ariker., Jason Heller., Alejandro Diaz., and Jesko Perrey.(2015). "How marketers can personalize at scale,". *Harvard Business Review*.
- Montijn, M.(2017). *Data-Driven Design for Emotional Engagement: Designing a digital interaction for the Nike store*.
- Van de Vliert, E., & Euwema, M. C. (1994). Agreeableness and activeness as components of conflict behaviors. *Journal of Personality and Social Psychology*, 66(4), 674.
- Preston Ni, M.S.B.A. (2014). *Communication Success with four personality types*, 1-16.
- Principle of management(2013). *Personality and values*. Retrieved from <https://open.lib.umn.edu/principlesmanagement/chapter/2-3-personality-and-values-3/>
- Ryckman, R (2004) *Theories of personality* Thomson/Wadsworth, Belmont, USA
- Rothmann, S; Coetzer, E. P. (2003). "The big five personality dimensions and job performance". *SA Journal of Industrial Psychology*. 29. doi:10.4102/sajip.v29i1.88. Retrieved 27 June 2013.
- Stritzke, W. G., Nguyen, A., & Durkin, K. (2004). Shyness and computer-mediated communication: A self-presentational theory perspective. *Media Psychology*, 6(1), 1-22.
- Toegel, G.; Barsoux, J. L. (2012). "How to become a better leader". *MIT Sloan Management Review*. 53 (3): 51–60.
- Wikipedia(2017). *Net Promoter*. Retrieved from: https://en.wikipedia.org/wiki/Net_Promoter.