Future travellers

CREATING FUTURE PERSONAS

An innovative design approach based on design foresight and persona creation

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ABSTRACT

This thesis explores the potential of use of service design in the airport setting, specifically focusing on designing flexible and resilient customer journeys. Because of their complexity and size, long term vision and forward-thinking attitude are essential when designing services within an airport setting. The presented research focused on creating a new methodology for a future persona tool – a user centric futuring tool, which was developed through adaptation of established foresight methodology.

Proposed methodology relies on identified magatrends and value-based trends, but rather than identification of possible future scenarios, its aim is to create future personas. Future personas could be useful to foster user-centric thinking when designing future solutions. Realized workshops suggest viability of the proposed methodology as an ideation tool and a potential for further research. Future research and development of valuetrends is necessary to assess its usability outside of the scope of an ideation tool.

KEYWORDS

design foresight, persona, scenario planning, future persona, airport services, megatrends, value-base trends

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INTRODUCTION

Airports have evolved from simple transportation hubs into complex commercial spaces dependent on integrated service chains. This transformation reflects their expanded role as logistical nodes, vibrant centres of commerce and social interaction, and in the case of larger airports, as independent airport cities. Airports now face increasing pressures related to sustainability, balancing the needs of numerous stakeholders, and accommodating a growing number of passengers who spend extended periods within these spaces. Understanding how they can maximise their commercial potential while providing a pleasant and sustainable experience for travellers is crucial for their future development.

As service ecosystems, airports serve as the physical entry and exit points for cities, countries and regions. Consequently, they are often emotional spaces where passengers navigate complex journeys. Creating a positive experience is essential to mitigate potential stress and ensure a seamless journey for the passenger, and efficient operation for the airport itself. Service design therefore plays a crucial role in airports environments and it involves numerous departments. They employ experience designers, passenger journey managers, tech innovation managers, wayfinding designers, customer service managers, service quality managers, passenger flow analysts and sustainability coordinators, among others. People involved in designing these services for the airports face several challenges. First and foremost implementing services that address these factors is a complex undertaking and requires a forward-thinking approach. The main reason being that these services need to be resilient, as they will be in place for many years. They are also costly and cannot be frequently replaced. They have to be resilient and robust, yet adhere to ever growing sustainable demands, and moreover be able to turn a profit in order to finance their sustainability and development initiatives.

This thesis will explore how a future oriented mindset could help with this monumental task. The thesis will examine if foresight can be applied in the context of airports. Additionally, it will explore the concurrent implementation of personas as a tool to consider the passengers and their potential role in shaping the future of airports. It will discuss to what extent could understanding future travellers assist designers in creating a better airport experience.

LEARNING GOALS

Official learning objectives (Master's Thesis (2023/2024), n.d.)

KNOWLEDGE
Students who complete the module will obtain:

- knowledge about the appropriate methodological approaches to specific study areas
- knowledge about design theories and methods that focus on the design of advanced and complex product-service systems
- knowledge about the relevant literature in the Service Design field

With respect to Problem-Based Learning students will be able to:

- account for the scientific foundation, and scientific problem areas
- describe the state of the art of relevant research

SKILLS
Students who complete the module will be able to:

- work independently, to identify major problem areas and adequately address problems and opportunities
- analyse, design and represent innovative solutions
- evaluate and address major organisational and business issues emerging in the design of a product-service system

With respect to Problem-Based Learning students will be able to:

- master the scientific methods and general skills associated with the problem area
- produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project's problem area in a relevant scientific context
- evaluate and discuss the project's potential for further development

COMPETENCES
Students who complete the module will be able to:

- master design and development work in situations that are complex, unpredictable and require new solutions
- independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility

With respect to Problem-Based Learning students will be able to:

- participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems
- plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- independently assume responsibility for own scientific development

Additionally I have set the following personal learning objectives:

- learn to effectively facilitate workshops by managing group dynamics, using adaptive communication techniques and creating collaborative environments that foster productive interactions and innovative outcomes.
- master the ability to identify patterns and trends, using observational skills and analytical tools to derive meaningful insights for informed design decisions.
- the ability to develop custom methodologies by thoughtfully selecting and combining elements from established methods, tactics and practices, allowing for original, agile and effective solutions tailored to specific challenges.
- dedicate ample time to acquiring deeper knowledge and expertise in the services related to commercial aviation, including mapping services and developing service blueprints, user journeys and other relevant tools.

PROJECT CONTEXT

For nearly a century, commercial aviation has evolved from its early days of precarious flights departing from makeshift tent setups to a cornerstone of global transportation. Commercial aviation airports have become intricate service ecosystems that are emblematic of a country's economic prowess, international standing and innovation capacity. They are hubs of interactions among airlines, passengers, regulatory bodies, and service providers. The complexity stems from the simultaneous coordination of flights, passenger processing, safety regulations and amenities aimed at enhancing traveller experiences to name just a few factors. Balancing the diverse needs of these stakeholders is a testament to the challenges and opportunities in service design application in an airport setting.

As microcosms of wider service networks, airports are constantly challenged and pressed to seize opportunities for innovation in service design. The rapid pace of technological change in aviation offers fertile ground for service design to play a pivotal role in integrating new technologies (e.g., biometrics, AI, IoT) to enhance service delivery and passenger engagement. This readiness to adopt new solutions positions them as perfect laboratories for pioneering service design concepts and technologies. Furthermore, airports exhibit a wide range of service design applications, from optimising passenger flow and implementing digital boarding procedures to enhancing retail experiences within airports. These efforts streamline operations and elevate the passenger experience, showcasing the industry's dedication to employing service design for both operational efficiency and customer satisfaction.

On the other hand, the aviation industry faces challenges like negative perception of the industry and public concerns over safety of flying and its impact on the environment. Service design within airports could have the potential to go beyond improving passenger experiences and tech integration. It could be a strategic tool for addressing critical issues such as enhancing sustainability through greener processes, improving accessibility for all travellers and boosting operational resilience to disruptions. Essentially, service design can be an important asset not just for optimising day-to-day airport operations but also for tackling the sector's broader, systemic challenges. Consequently, airports stand out as complex entities ready for in-depth exploration of their service components, making them perfectly suited for comprehensive research into service design's impact and potential within this context.

The choice of the world of airports and airlines as a context for my thesis stems from a personal interest as well. From a young age, civil air transportation has captivated me. This fascination stems from not only the complex systems that keep this global network running but also from a unique sense of excitement and possibility that travel and airports inherently possess. This complexity also aligns with my wide-ranging interests across disciplines like history, geography, and international relations. I am captivated by the history and evolution of civil air transportation, especially its role in pioneering technological advancements and reflecting the geopolitical dynamics of our world. Additionally, the branding and design aspects of airlines and airports—serving as symbols of national, regional, or city identity—resonate with my passion for design and branding. Choosing to focus my master thesis on service design practices in commercial aviation aligns also with my future career aspirations.

Copenhagen Airport

Copenhagen Airport is Denmark's main international airport and functions as a significant transfer hub within Northern Europe. In 2023, it processed 26.8 million passengers ("Copenhagen Airports Annual Report 2023," 2024) and by airport traffic volumes it ranks as the 16th busiest airport in Europe. (Plot-apt-ranking-table.knit, n.d.) It serves as the base for Scandinavian Airlines, Norwegian, Ryanair and Easyjet. This diversity in airline offerings, meaning the presence of legacy, charter and low cost airlines, enables the airport to provide services to premium travellers, holiday travellers and budget-conscious passengers, enhancing its appeal across different market segments. In addition to its extensive European network, with London, Oslo, and Stockholm being the most frequented destinations in descending order of passenger numbers ("Copenhagen Airports Annual Report 2023," 2024), the airport also facilitates direct long-haul connections to North America, the Middle East and Asia. The diversity and breadth of both long-haul and short-haul networks render Copenhagen Airport an ideal transfer point, especially for travellers from the Nordics, Baltics and Poland. According to the Copenhagen Airport Annual Report 2023 (2024), the number of transferring passengers reached 4.8 million, highlighting its strategic role as a transfer hub. The seamless integration of Copenhagen Airport with rail, metro, and highway networks serves as another significant competitive advantage, ensuring direct and efficient access to both Copenhagen and the broader Capital city region. Additionally, the airport offers convenient motorway and rail connections to Malmö, Sweden, via the Øresund Bridge. Consequently, it is the preferred airport also for travellers from Malmö and the Southern Sweden region, underscoring its strategic position as a vital hub in the Scandinavian transport infrastructure. (Copenhagen Airports Annual Report 2023, 2024)

When it comes to future development the airport set out five main goals in their 2023 annual report:

1. Take the passenger journey and retail experience to the next level
In 2023, the airport set out to elevate the passenger journey and retail experience, focusing on creating a seamless, end-to-end journey enhanced by personalised communication, digital services, and a unique shopping experience tailored to all passenger segments. Significant strides were made in digitising various parts of the passenger journey, notably increasing check-in capacity by 14 % through the expanded use of common-use check-in counters, thereby reducing wait times and enhancing overall passenger satisfaction. With four out of five passengers leveraging digital self-service solutions and a notable uptick in the use of the online Travel Planner, the airport observed not just a smoother journey planning process but also increased digital sales in food and beverage units, marking a successful year in achieving its ambition to take the passenger experience to the next level. (Copenhagen Airports Annual Report 2023, 2024)

2. Expand our positive role in society and contribution to sustainable travel
The second future goal is to advance its ambition to be a leader in sustainability and social responsibility, focusing on achieving its climate goals for 2030 and 2050. Efforts include electrifying the airport's ground vehicle and equipment fleet and expanding electric charging infrastructure. All these goals are part of the ALIGHT project that the airport is leading. (Copenhagen Airports Annual Report 2023, 2024) ALIGHT is an EU funded project with a goal to use Copenhagen airport as an exemplary airport to facilitate a significant shift in airport operations towards zero-emission aviation, providing the essential solutions, knowledge, and best practices needed for this transition. It encompasses a wide array of innovations, including IT platforms, a unique Sustainable Aviation Fuel (SAF) database, smart sensors, and energy management strategies, all aimed at supporting airports in reducing their climate impact. (ALIGHT Concept | ALIGHT, n.d.)

3. Build CPH for the next generation
Copenhagen Airport has an ambition to exemplify sustainable infrastructure and maintain its status as one of the world's most efficient airports. Key initiatives included conducting a carbon benchmark analysis for its building and construction typologies to set specific carbon reduction goals. A significant legislative milestone was reached when the Danish parliament approved a new framework for the airport's land use, paving the way for future development within its current land boundaries, respecting noise and climate strategy constraints. Additionally, the adjustment of charges for 2024 to 2027 will bolster the airport's financial capacity to invest in future sustainability and efficiency initiatives, aligning with its vision for technological advancement, infrastructure upgrade, and preparation for future transport modes. (Copenhagen Airports Annual Report 2023, 2024)

4. Create a digital and data-driven airport
The airport is committed to enhancing its data foundation and digital capabilities as essential steps towards achieving its strategic objectives. This included improving data quality, increasing digital awareness and maturity, leveraging existing tools for value creation, and pioneering innovation with new technologies. A significant advancement was the launch of the AIRHART Total Airport Management platform, which supports the efficient planning and execution of daily air traffic operations for CPH and its partners. CPH initiated a major project focused on master data management and governance to prepare for future digital opportunities. Additionally, CPH is exploring artificial intelligence applications, such as the introduction of Airport Genie, a customised version of ChatGPT, to foster a data-driven airport environment. (Copenhagen Airports Annual Report 2023, 2024)

5. Develop people and culture for the future
The airport wants to focus on cultivating a performance and efficiency-oriented culture, emphasising safety, health, well-being, and compliance, while also prioritising the development and well-being of its workforce and enhancing its value proposition to both current and potential employees. The airport’s commitment to diversity and inclusion was recognized at the Confederation of Danish Industry’s Diversity Awards, where it received accolades for Employee of the Year and Diversity & Inclusion Initiative of the Year. (Copenhagen Airports Annual Report 2023, 2024)

The five main goals set out by Copenhagen Airport for its future development reveal several key trends that underscore the evolving landscape of airport operations and passenger experiences. These trends not only highlight a commitment to enhancing the efficiency and sustainability of airport services but also reflect broader shifts within the aviation industry towards digitization, sustainability, personalization, and inclusivity. Examining these objectives allows us to identify and organise key trends that hint at future directions in airport experiences:

1. Digitalisation and data-driven initiatives
2. Sustainability and environmental responsibility
3. Personalisation and digitalisation of the passenger experience
4. Social responsibility
5. Future-proofing infrastructure and operations
6. Organisational responsibility

Airport of the future
In addition to the concrete initiatives and strategies currently implemented by the airports like the Copenhagen one, the thesis navigates towards the conceptual realm of the "airport of the future." This concept serves as a backdrop against which we will explore and anticipate the evolving needs and desires of future travellers. The airport of the future is envisioned as a space that transcends today's operational challenges and passenger expectations, embodying innovation, sustainability, and heightened passenger-centricity.

In this context, the previously mentioned ALIGHT project spearheaded by Copenhagen airport, with its commitment to zero-emission aviation and a suite of technological innovations, exemplifies the kind of forward-thinking initiatives that pave the way for future airport operations. Yet, as this thesis ventures beyond specific projects like ALIGHT, the aim is to paint a broader picture of potential futures. We will explore how various trends, such as technological advancements, sustainability efforts, changes in global mobility patterns and passenger behaviours might converge to redefine the airport experience.

The concept of the airport of the future invites the reader to imagine a space where advanced digital technologies enhance efficiency and personalization, where sustainable practices are not just adopted but are integral to airport operations and where the very architecture of airport spaces evolves to meet the changing needs of travellers. In this envisioned future, airports become more than mere points of departure and arrival, rather they transform into vibrant, sustainable, and inclusive communities in their own right.

Many of the presented future challenges require technological advancement and scientific progress, which is outside of the scope of this thesis. We will focus on the passenger experience and passenger journey, i.e. areas suitable for service design application. As illustrated by ALIGHT initiative, future oriented thinking is essential within the airport design context. Provided services are a part of an ecosystem, whose vastness, complexity, number of stakeholders, level of oversight and other factors mean that introduction of new elements and changes has to be considered significantly in advance. In other words, we see initiatives that are working on solutions which will be implemented quite a few years in the future. In an ever changing dynamic global environment, how do we ensure that the solutions created now will remain relevant in the world of tomorrow? And more specifically to the topic of this thesis, how can we design services that will both address the needs of present travellers and also be flexible enough to be adaptable for the future?

To understand and cater to the future traveller within this conceptual context, our thesis will employ design foresight to anticipate long-term trends, challenges, and opportunities. This will involve exploring scenarios that consider varying degrees of technological adoption, environmental sustainability, and shifts in societal values. Concurrently, the development of personas—fictional yet data-informed characters representing future travellers—will allow us to humanise these trends and scenarios, providing a grounded perspective on the diverse needs, expectations, and desires of individuals navigating the airport of the future.

By integrating design foresight with persona development, the thesis aims to offer a nuanced and multi-faceted understanding of future traveller experiences. This approach not only highlights potential areas for innovation and improvement within airport services but also aligns with the broader goal of ensuring that future airports are designed with empathy, user-centricity and foresight at their core. This leads to the following problem statement:

How can service design methods help us design a flexible and resilient array of services fulfilling future travellers' needs?

Problem statement

HOW CAN SERVICE DESIGN METHODS HELP US DESIGN A FLEXIBLE AND RESILIENT ARRAY OF SERVICES FULFILLING FUTURE TRAVELLERS' NEEDS?

THEORY

This chapter critically examines and synthesises the theoretical foundations of design foresight and persona development within the realm of service design. The connection between the problem statement and the theoretical research is direct and intentional. The problem statement - How can service design methods help us design a flexible and resilient array of services fulfilling future travellers' needs? - explicitly calls for an investigation into how advanced design techniques can be leveraged to cater to evolving service requirements in airport environments. This inquiry naturally leads to an examination of how personas, as tools of human-centred design, can effectively represent future travellers. By delving into the usage of personas in foresight activities, the study assesses their current applications and potential to address future-oriented design challenges.

DESIGN FORESIGHT

Foresight is a multidisciplinary approach focused on understanding and preparing for the future, which encompasses a wide range of practices aimed at envisioning and shaping potential outcomes. While acknowledging that future thinking was evolving concurrently across various locations and among different authors, the establishment of the RAND (Research and Development unit of the US Air Force) think tank in 1945 could reasonably be considered the stepping stone of futures studies. (Hines, 2019) It then evolved from its military origins to social uses, embracing qualitative methodologies in the 1970s and achieving prominence within governmental and academic realms in the 1980s. (Journal of Futures Studies, 2023b). As the world continues to grow more complex (technological development being one of the main drivers), it is both more difficult and more important to anticipate and deal with possible futures in order to remain competitive and innovative. (Anselmi et al., 2021; Buehring & Bishop, 2020; Canina et al., 2021) Ever increasing global complexity also poses a challenge for design thinking, which usually focuses on "a single, linear, and probable future" and "design solutions that are desirable, feasible, and viable". (Canina et al., p. 26, 2021) Integrating foresight and design methodologies (critical and creative thinking) could prove to be an effective approach for professionals when making decisions in an increasingly unpredictable and interconnected world. (Buehring & Bishop, 2020) "Foresight provides the future context for design and design embodies ideas and concepts by visualising alternative and desirable futures for foresight, thus complementing each other to envision, inspire, experiment and communicate the direction of where to go." (Buehring & Bishop, p. 410, 2020)

Reflecting the diverse origins and applications of future thinking, there is not one agreed definition of design foresight. The practice's methods have been used in and adjusted to several different fields such as product and service design, policymaking, corporate business and so on. The foundational principle is that design foresight deals with the future and the tools that help us envision it. According to Journal of Futures Studies, design foresight is a forward-looking approach that leverages the framework of futures thinking to explore and shape future creations, focusing on the vast array of possibilities rather than predicting specific outcomes. It enables designers to visualise and choose preferable futures from infinite possibilities, thereby addressing complex problems and crafting future solutions through design. (Journal of Futures Studies, 2023a)

In policymaking, foresight adopts a strategic approach to future planning. For example, The European Commission utilises strategic foresight to systematically harness collective intelligence, integrating future insights into EU policy-making, strategic planning, and preparedness. This approach enables the EU to proactively anticipate and prepare for potential challenges and opportunities, ultimately

guiding efforts to shape a desired future. (Strategic Foresight, n.d.) For example, foresight scenarios for 2040 were used to shape the European Commission's Communication on the Long Term Vision for Rural Areas. (Strategic Foresight, n.d.)

Dutch engineer and academic in the field of innovation management Guus Berkhout defines foresight as "is the ability, the skill and art of describing, explaining, exploring, predicting and/or interpreting future developments, as well as assessing their consequences for decisions and other actions in the present'' (Berkhout et al., 2007, p. 74). This definition implies that a core aim of foresight is to contemplate various potential futures, thereby enabling individuals and organisations to consider a range of decisions in the present. This approach not only enhances strategic thinking but also promotes adaptability by preparing for multiple possible outcomes, ensuring that decisions made today are informed by a comprehensive understanding of what the future could hold. This emphasis on contemplating diverse futures begs the question of how one can systematically approach such a vast array of possibilities.

Foresight and service design

As was already mentioned, foresight is not a toolkit belonging to a specific discipline, rather it shapes how we think about and approach the future, which is certainly applicable across many fields, service design being no exception. Service design by itself is also a future oriented field, but, in comparison to foresight, its focus leans towards being narrower and specific to potential services created in the somewhat near future. (Løgager et al., 2021) While service design focuses on the user and their needs, foresight deals with broader selection of indicators (sociol, economic, technological etc.) and how they could potentially shape the future. (Ojasalo et al. in Løgager et al., 2021) However, a user (be it present or future one) does not exist in vacuum, and all these indicators will shape their needs as well.

Therefore service design might greatly benefit from integrating foresight into its practices. After all, many of the issues that service design concerns itself with (sustainability being perhaps the most obvious one) call for a structured approach

	Standart use	Used with foresight method
User Journey	A structured visualisation of the user experience to identify the touchpoints, which the user interacts with.	Facilitates long-term thinking through a focus on where and how to change the service offering according to the possible or preferred future.
Persona	Fictional representation of the user types who will use the service.	Focusing on the future personas forces service designers in considering the long-term wants and needs of the service stakeholders and, thus, in better assessing the impact of design projects in relation to social and environmental sustainability.
Stakeholder map	A visual representation of the stakeholders involved in the service.	Facilitates the process of transforming the knowledge of the future, into identifying new strategic stakeholders and evaluating the value of the current stakeholders.

Figure 1: Sketch based on table of comparison of standard and foresight enriched service design methodology Cited from Løgager et al. (2021) p. 9

to thinking about the future. Løgager et al. (2021) examined the possibility of integrating foresight methodology into service design tools and concluded that combining foresight and service design methodology results in possible futures being more tangible, and also that it fosters critical thinking and setting robust goals, especially when it comes to long term strategic decisions. (Figure 1)

Peruccon & Simeone (2023) emphasise the importance of including social and cultural aspects when thinking about complex systemic issues. They also point out how service design's more localised approach and foresight's broad perspective that includes a wide range of externalities complement each other. (Peruccon & Simeone, 2023)

The common characteristics that emerge across various definitions are that foresight is a multidisciplinary, forward-looking tool that facilitates envisioning a range of future possibilities. These characteristics define also how foresight is understood and used in this thesis - an effective and adaptable approach for visualising potential futures, allowing for a strategic consideration of diverse scenarios and outcomes.

How to grasp and frame the future

As expressed previously, Berkhout's definition of foresight demands a methodical strategy to fully appreciate the breadth of these scenarios. One way of looking at this challenge is addressed in the book Foresight in Organizations (2016), where the Dutch academic Patrick van der Duin works with the same definition of foresight as the above mentioned Berkhout and outlines several methods used to anticipate future developments, categorised under three approaches: predictive, explorative, and normative. Explorative methods, such as scenarios, focus on mapping out various potential futures to provide organisations with insights into unforeseen developments. Predictive methods, which include tools such as technology forecasting and the Delphi method, aim to predict technological advancements. Normative methods, including backcasting and roadmapping, seek to identify and achieve desirable futures. Each method serves different objectives and their application depends on the specific context, including the goals of the study, available data, and the type of organisation. (Van Der Duin, 2016)

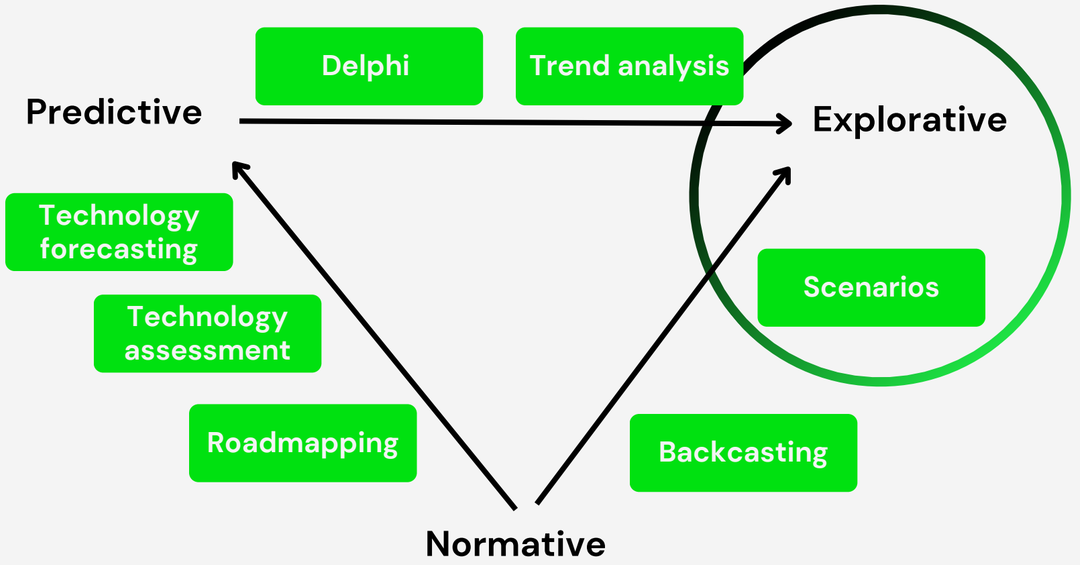


Figure 2: Sketch based on Foresight methods on the continuum from exploring to predicting. Van Der Duin (2016) p. 6
The circle indicates my area of focus.

When it comes to potential weak points of Van der Duin's approach, recent studies point out that it is not sufficiently participatory and that involving a wider net of actors would make futures more engaging and actionable, and as a response they advocate for integration of design methodology into futuring. (Neuhoff et al., 2022)

Upon reflecting on the foresight methodologies delineated by Patrick van der Duin, my inclination naturally gravitates towards the explorative approach. This preference is primarily informed by my decision to focus on a future time frame extending 25 years ahead, targeting the year 2049. The exploratory method, emphasising broad visioning and conceptual thinking, aligns so far the most with the thesis as it leaves space for possibilities, acknowledging that at this point, the specific outcomes remain undefined. While the normative approach, with its strategic focus could serve as a secondary method, it is less appealing due to the thesis's emphasis on creativity over concrete strategizing for such a distant future. The inherent uncertainty over 25 years makes detailed planning less practical and more subject to change. Given the long timeframe, the predictive method emerges as my least favoured option, because even forecasts based on extensive data research are more likely than not to be met with a degree of scepticism, raising concerns regarding the credibility and persuasiveness of such predictions.

A very different perspective on framing the future that one works with is suggested by Smith and Ashby in the book How to Future (2020), where they present a novel framing of the future through the dimensions of length, breadth, and depth. They introduce the concept of length as the time dimension of futures, prompting readers to consider the appropriate time horizon for their foresight activities. They suggest short-term (five years) for immediate planning, mid-term (twenty years) for capturing potential political and climate changes, or long-term (fifty years or more) for national or institutional macro-planning. Breadth emphasises the importance of the exploratory frame's width. This means that the interconnection of various domains such as technology, politics, and economics should be considered. Depth focuses on the level of detail necessary for a futuring exercise, balancing between the need for a deep, variable-sensitive exploration for strategic planning and a broader, illustrative approach for exposing possibilities and shaping strategic awareness. (Smith & Ashby, 2020) This methodology allows for a systematic study of possible future development, however it is criticised for neglecting to adequately consider “the importance of user involvement to detect patterns of coming disruption”. (Peruccon & Simeone, p. 7, 2023)

Employing the three-dimensional framework of length, breadth, and depth, as outlined by Smith and Ashby could potentially be an effective way of thinking about framing the future that I plan to work with. The 25 years that I set myself for the thesis aligns with a mid-term perspective and has the potential to consider significant political and climate change that might impact the project. From the breadth perspective, this investigation acknowledges the necessity of considering a wide array of interconnected domains in my case including political, technological, economic, logistical, and passenger mobility factors to construct a holistic view of future airport experiences. Regarding depth, in the thesis I plan to opt for a more generalist approach, aiming to provide illustrative scenarios that highlight potential futures. This approach is deliberately chosen to balance the broad temporal scope and the goal of surfacing key trends and possibilities, rather than engaging in an exhaustive, detail-oriented analysis.

Despite the differing perspectives of Van der Duin and Smith and Ashby on framing the future, both share an underlying commonality in their recognition of the multifaceted nature of foresight. Van der Duin emphasises the diversity of methods - predictive, explorative, and normative - and highlights the necessity to tailor the foresight approach to the specific context and objectives of the organisation or project. Similarly, Smith and Ashby's dimensional framework of length, breadth, and depth underscores the importance of considering various aspects of future thinking, from the time horizon to the scope and level of detail of the exploration. Both approaches advocate for a flexible, nuanced understanding of foresight that acknowledges the complexity of predicting and preparing for future developments. The critical comparison lies in their methodological focus: Van der Duin provides a categorization of foresight methods, while Smith and Ashby offer a structural lens to view the future.

This thesis adopts Van der Duin's framework, giving precedence to explorative foresight techniques for their effectiveness in delineating diverse future possibilities, with normative methods as a second and predictive as third in order of priority to examine. From Smith and Ashby's perspective, the thesis deliberately selects a slightly extended mid-term period of 25 years for the investigation of

future airport experiences, indicating that this duration strikes an ideal balance between foreseeability and strategic foresight. Additionally, it adopts Smith and Ashby's recommendation for a broader examination of future scenarios, prioritising the identification of key trends and strategic directions over in-depth, detailed analysis.

Foresight methods

Now that the future is set, how does one work with it? There is an existing list of tools and strategic approaches used within the field of design to envision and work with future trends, future needs and technologies, helping designers and organisations develop relevant and sustainable innovations. Here's an overview of some commonly used design foresight methods integrated with their applications: (Van Der Duin, 2016)

1.Scenario planning involves creating detailed narratives about alternative future contexts based on current trends, uncertainties, and driving forces. Designers use these scenarios to explore how different futures could impact user needs and the usability of products or services, aiding in the design of adaptable products. Scenarios are not a goal in themselves, but a tool to think about the future. (Van Der Duin, 2016) Scenario planning involves six interrelated steps that guide organisations through crafting plausible futures to enhance preparedness and strategic decision-making. Initially, the scope and timeframe of the project are defined to align with the desired outcomes. This is followed by an exploration of the market environment to uncover underlying forces that impact the organisation. Recognizing both predictable elements and unpredictable uncertainties is crucial, as is the acknowledgment that not all forces can be fully identified, preventing perfect future prediction. The scenarios are then vividly visualised and narrated to effectively convey their implications, combining both qualitative and quantitative elements, including financial metrics and models. (Mortlock, 2021)

2.Trend analysis is used for identifying and analysing current trends in technology, culture, economics, and environmental concerns, thus allowing designers to ensure that new designs will be relevant and desirable in the future marketplace. There are several ways of approaching trends analysis depending on the focus of the project, but common approaches include analysis based on trend levels, which distinguishes among:

Micro-level trends: Emerging, scalable business models ready for the mass market, reflecting recent innovations in products and services that are influenced by developments in the market. An example of this is Direct to consumer selling (D2C) - with the advancement in technology and social media, brands can sell to consumers directly, skipping traditional retail channels.

Macro-level trends: These trends stem from changes in consumer values, influencing shifts in needs that are beyond individual control. Technological advancements made it possible to emphasise work-life balance as a critical societal value, reshaping norms around productivity and personal well-being.

Mega-level trends: Long-term, interconnected trends that span ten to thirty years, focusing on fundamental societal changes and the future technological demands, often encapsulating broad concepts like sustainability and individualization. (Van Der Duin, 2016)

Another way of classifying different trends is by using the trend pentagram which highlights five criteria: possibility, probability, desirability, impact, and manageability. Each criterion assesses different aspects of a trend, from its feasibility and likelihood of occurring to its potential benefits, drawbacks, and the extent to which it can be controlled. While probable trends are always possible, not all possible trends will materialise, and those that do may not always be manageable, particularly by smaller entities which lack significant influence. Larger organisations and governments, however, might be able to steer certain trends through strategic interventions, such as economic policies, though with varying degrees of success and unintended consequences. (Van Der Duin, 2016)

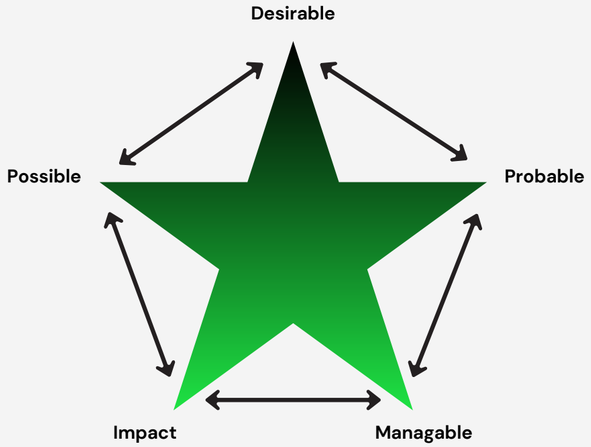


Figure 3: Sketch based on the Trend pentagram
cited from Van Der Duin (2016) p. 51

3.The Delphi method is a structured forecasting technique that utilises multiple rounds of questionnaires to solicit expert opinions and achieve consensus on future developments. Although it is considered a predictive method of design foresight, it has evolved to explore diverse viewpoints on policy issues through a structured, anonymous, and iterative process. This method is especially useful when the complexity of the problem precludes analytical approaches, requiring the subjective insights of experts from various fields who do not usually interact. Critics argue that the Delphi method's reliance on expert opinion assumes a predictability that may not account for unforeseen future surprises and that it does not sufficiently reflect ever growing global complexity and uncertainty. (Gardner in Buehring & Bishop, 2020; Van Der Duin, 2016) Another critique is that the process can be biassed by how organisers handle the data. (Van Der Duin, 2016) Despite its limitations, including potential "false consensus" and varying expert commitment, the Delphi method remains a valuable tool for structured, independent, and objective exploration of complex issues. (Van Der Duin, 2016)

4.Backcasting is a normative futures approach that starts by envisioning a desirable future and then works backward to identify the steps necessary to achieve it. This method contrasts with forecasting, which projects forward from the present, and is particularly effective for addressing complex, long-term challenges like sustainability. Backcasting involves setting long-term goals and strategizing the necessary changes and actions to realise these goals, making it well-suited for tackling problems where traditional methods fall short. It is often used when dominant current trends are part of the problem, requiring significant shifts to reach sustainable outcomes. (Van Der Duin, 2016)

5.Roadmapping is a strategic planning method first developed by Motorola in the 1970s to align future technological capabilities with business goals. It involves creating visual roadmaps that outline detailed pathways and actions required to reach specific organisational objectives, often depicted through diagrams like the multiple layer diagram and action program. This participatory process ensures stakeholder commitment and is used across various sectors to tackle complex challenges. Roadmapping integrates scenarios to test pathway robustness and guide effective implementation.

It has evolved to include non-technical elements and is used across various sectors, including non-tech industries and government, to address complex challenges such as sustainability and social issues, leveraging scenarios to explore future markets and test the robustness of pathways. (Van Der Duin, 2016)

In conclusion, I have selected scenario planning as the central method for my research. This method allows for the exploration of multiple potential futures without committing to a single outcome, fitting the uncertainties over such an extended period. Other methods like the Delphi method, which relies heavily on expert consensus, and backcasting, which assumes a predetermined desirable future, might appear less adaptable to the wide range of explorations needed for effective future persona building. Although roadmapping could be valuable for strategic alignment, it might be overly structured to accommodate the broad societal changes influencing persona development. In relation to trend analysis, it is

inherently included in scenario planning as an integral part of its process, especially in the initial steps where a significant amount of trend identification, research, and analysis is required.

As demonstrated above, foresight has the potential to be an incredibly useful tool when trying to inject possible future developments into present solutions. This would be especially advantageous in case of complex projects, products and services with long life cycles, where adjustments to future changes are both costly and complicated. From the above mentioned we can also summarise that foresight mostly centres around scenarios of some kind, i.e. potential futures which the company or product might have to exist in. While foresight is not devoid of user perspective (for example, consumer behaviour and values might be one of the trends shaping future scenarios), it is not a user-centred approach as such. “Foresight acknowledges the importance of the context and the signals and drivers in the external environment and their influence on the direction and speed of innovation and change, without sufficiently focusing on people’s desires and needs.” (Bruno, 2023)

When it comes to bringing the human aspect to the design process, especially useful are user-centred design tools. In general, user-centred design (UCD) is an iterative process in which the needs, wants and limitations of end users of a product, service, or process are given extensive attention. (What Is User Centred Design (UCD)?, 2024) The focus is on crafting products and services around the needs and preferences of end-users, rather than forcing users to adapt to the design. UCD tools function by gathering insights into user behaviours and motivations, which guide the development and refinement of design solutions to ensure they are accessible, usable and satisfying. An example of user-centred design tools are empathy maps, which help teams understand and visualise user emotions and thoughts, fostering a deeper connection to user needs. (Gibbons, 2024) Another example is a user journey. They map out on a timeline the steps a user takes in interacting with a product, the users’ thoughts and emotions, highlighting friction points and opportunities for enhancement. (Gibbons, 2024a)

User-centred design tools are integral in reflecting the human aspects of users, focusing on their needs and experiences to create more engaging and effective products. The next section will delve further into this topic by exploring personas in detail.

PERSONAS

“A persona is a fictional, detailed user model that represents archetypical users.” (Blomkvist, 2002) This concept was developed in the late 90s in the context of software design to help designers to address users’ needs. (Cooper, 1999) Cooper (1999) pointed out that software engineers hardly think like average users, which results in their products being not user friendly - in other words, while their solutions might solve a presented problem, it does not necessarily mean that final consumers will know how to fully utilise them and their needs will remain unfulfilled. In order to ensure that software engineers keep in mind that they are developing products not for themselves, but rather for “regular” people, the concept of personas was introduced. (Cooper, 1999)

Personas are fictional profiles of the users, group of customers or market segment. They express the needs, wants and common behaviour patterns of potential customers or product users. Their main purpose is to share insights about the users, align team members or stakeholders’ understandings of the users, build empathy towards them and are generally used as a shared reference throughout the design process. (Stickdorn et al., 2018) In other words, personas put a human face on the rather vague term of “user”.

Although it may vary according to needs of the designer, persona profiles usually include an image of the persona, name, demographic information, descriptions, quotes. (Stickdorn et al., 2018) The data in the profile should be based on research, however, benefits of assumption based personas have been pointed out by some authors. “Ad hoc personas can be the eye-opening catalyst that gets your team interested in some real user research. When your assumptions are exposed, so are gaps in your knowledge of your users.” (Adlin & Pruitt, 2010c) While a persona is not a description of an actual real user, it allows the designer to imagine a specific potential person using their product or service. In addition to demographic information, such as gender, age, marital status, occupation, etc., it also includes a person's goals and motivations, their skills and attitudes, what they value and what they struggle with. (Blomkvist, 2002)

Over the years, four main perspectives on personas emerged: (Nielsen, 2014)

- Goal-directed perspective - emphasis is on the question: What is the user’s goal when using the product/service? This is the primary perspective presented by Cooper (1999).
- Role-based perspective - elaborates on the goal-directed perspective and broadens the “persona” by incorporating behaviour - answers the question: What is the role of the user in the organisation? This perspective stresses the importance of both quantitative and qualitative data. Among others, this approach was advocated for by Adlin and Pruitt.
- Engaging perspective - emphasises the importance of perceiving the persona as a whole person, as focus on only goals and behaviours might be reductive. It proposes that data should also cover the psychology and emotional background of the users. This perspective promoted the ability to empathise with the persona and make it more realistic - to make personas more personable. One of the main researchers behind this perspective is Lene Nielsen.
- Fiction-based perspective - generally used in explorative context. This approach heavily relies on brainstorming, assumptions and designers’ intuition and can be useful especially in the beginning phases of the design process. The main criticism of this approach questions the validity of created personas considering lack of data.

One could make an argument that the first three perspectives utilise the same approach - personas being predominantly based on data gained through research - and the main difference is which aspects of the persona are studied through data and then included in the created persona. In general, the following iteration of the persona perspective stems from the criticism that the preceding version omits to include relevant facets of a persona and then proceeds to build on and add to it. This is not the case of the fourth, fiction-based, perspective. While the first three perspectives work with data generated through research, fiction-based perspective works with the designer’s already existing knowledge and experience. The high degree of assumptions incorporated into fiction-based personas means that their ability to guide a design process is very limited.

Similarly as was the case of foresight methodology, there is not one set approach to creating personas. In general, the process might be summarised and simplified into following steps: gathering data about the users (be it through field studies, surveys, statistical research, etc.), which form the basis for identifying behavioural patterns, goals and motives. These are subsequently used to create personas. When it comes to the “form” of the persona - the detail if descriptions, information included, etc. - that depends on the needs of the specific design process and the approach taken, however it is important that we can identify the specific needs of the persona that should be met. Created personas are then placed into scenarios and validated. (Blomkvist, 2002)

Adlin and Pruitt (2006) outline five stages in the persona lifecycle:

1. Family Planning: This stage involves assembling a diverse team across departments to plan and gather data for creating personas. The team identifies data sources, prioritising primary data but willing to use any available resources.
2. Conception and Gestation: During this phase, the team evaluates the data, transforming it into categorised information to craft and validate personas. Validation can involve comparing personas against data sources, expert reviews, or feedback from representative users.
3. Birth and Maturation: The focus here is on introducing the crafted personas and the process of their creation to the wider team, encouraging their integration into design and development activities.
4. Adulthood: At this stage, personas are actively used by different departments for various purposes, such as guiding product vision, addressing usability, or aiding in implementation. This ongoing use is crucial for integrating personas throughout the development process.

Lifetime Achievement, Reuse and Retirement: Reflection on the effectiveness and future of the personas occurs here, deciding whether to reuse or retire them. Evaluating the return on investment from the personas helps determine their value and informs decisions for future projects.

Nielsen (2012) defines persona as a specific detailed type of character (including characteristics like motivation, lifestyle, and needs), which is used in scenarios to represent a user or customer. In other words, persona’s function is to embody the user in the scenario. Personas are integral to scenarios, they are used to explore and evaluate design ideas and help focus on user needs and contexts. They are used throughout different stages of the development process, from initial idea exploration to detailed interaction scenarios. "The scenarios can be different regarding the level of detail and be anything from descriptive scenarios to requirement scenarios that can be used in the entire development process." (Nielsen, 2012) Nielsen points out how intertwined (potentially to the point of replaceability) scenarios and personas are - “...personas and scenarios are often seen as separate methods, and some of those who have criticised scenarios for lacking focus on the users see the persona method as the replacement of the scenario method.” (Nielsen, 2012)

To summarise, personas can be used in the design process as a tool providing an insight into potential users needs that could be met through proposed product or service, and to improve the communication within the design team by serving as a point of reference. However, what happens when we move past the context of satisfying present users’ needs into the mid- and long-term future? Could personas be useful in answering if a service or product (or its future iteration) will remain relevant for the future users? Could “present” personas created through discussed methodology be simply used in the future context? Since an important part of that methodology relied on user data (be it interviews, surveys or statistics), the final persona is bound to a specific timeframe. While it might provide insights into behavioural patterns, it is not necessarily concerned with future trends. In other words, personas might help us understand how users generally predictably behave, but it does not answer how their motives, goals and behaviours change and respond to future variables such as environmental, economic or societal shifts.

While personas as such are widely used, the concept of “future personas” has started to emerge as a research topic only relatively recently. Alessandro Fergnani's 2019 paper, "The future persona: a futures method to let your scenarios come to life," introduces the concept of the future persona as an innovative method for animating scenario planning. This approach draws from user-centred design to

create detailed, scenario-specific fictional characters that embody future scenarios, thereby enhancing the communication and memorability of these scenarios. The methodology involves defining the scope of these personas, creating and refining fact sheets that capture essential data and characteristics, writing engaging narratives, and illustrating the personas for visual impact. Once developed, these personas are distributed within organisations to aid in strategic insights and guide planning outcomes. This method serves as an add-on to traditional scenario planning, aimed at increasing clarity and engagement through a vivid depiction of potential futures. Future persona is a tool that communicates the scenario and brings it to life. “The futures persona method is not a scenario planning method. Rather, it is an add-on to enrich scenarios by communicating them more vividly.” (Fergnani, 2019)

Definition of Future persona: “A future persona is a scenario-specific fictional individual living in the future scenario (s)he depicts. It is useful to think of future personas as living scenarios.” (Fergnani, 2019)

Fergnani (2019) does not explicitly mention a time horizon for which future personas should be created (from the context it might be surmised that the time scope is mid to far future, cca 40 years and more in the future). Time setting is also not part of the methodology. Due to the persona being created from the pre-existent scenario, the future of the persona depends on the future that the scenario is set in.

Fergnani (2019) outlines following methodology when creating future personas:

1. Defining the Scope of Future Personas: The initial step involves determining the key aspects future personas should highlight, tailored to the needs of the audience within an organisation. This aims to reveal strategic insights pertinent to anticipated environmental changes.
2. Creating Scenario Fact Sheets: These fact sheets compile essential data to inform the development of each persona's key characteristics.
3. Developing Future Persona Fact Sheets: Building on the scenario fact sheets, these documents are crafted to outline the personas.
4. Refining Persona Fact Sheets: This involves a detailed review and adjustment of the persona fact sheets, ensuring they align with key scenario elements through graphical links that emphasise relevant information.
5. Writing Future Persona Narratives: To enhance memorability and emotional engagement, personas are depicted through concise narratives rather than lists.
6. Illustrating Future Personas: This critical step involves creating visual representations of personas, either digitally or through hand drawings, to bring them to life.
7. Distributing Personas within the Organization: With the personas developed, they are shared across the organisation to inform and guide the scenario planning outcomes.

Vallet et al. (2020) introduce the Scenario Personarrative method, a novel approach that integrates scenario planning with personas to provide a differentiated understanding of the impacts of future urban mobility scenarios on diverse social groups. This method involves creating detailed, persona-based narratives within predefined scenarios to highlight potential social effects and aid in responsible decision-making (even though their persona is set in the future, the authors do not use the term “future persona”). They use a typology of user profiles and for each user profile (which they call traveller profile) a specific persona is created that should be the ideal embodiment of the user profile.

The pilot study, conducted in a workshop setting with experts, demonstrated the method's feasibility by using existing mobility scenarios to generate narratives for 2030. The authors explained that “a medium timescale (2030) was chosen to frame the narratives, which is reasonably challenging, but still makes it possible for participants to rely on social trends and evolutions.” (Vallet et al., 2020)

This approach not only makes the consequences of future changes more tangible for decision-makers but also supports broader engagement and debate on urban planning and mobility futures. In this report, personas function more like representative profiles that help in systematically exploring and understanding the specific impacts of various scenarios on different types of individuals.

A five-step methodology is employed to explore future urban mobility scenarios through a workshop format:

1. Objectives and Time Horizon: The project aimed to explore potential futures for urban mobility and their societal impacts by 2030, assuming the context of a French urban area.
2. Defining Scenarios: Due to time constraints, the study used existing forecast studies on electric, automated, shared, and digital mobility to cluster and distil three main scenarios: continuity, high-tech acceleration, and societal deceleration of travel.
3. Defining Traveller Profiles: The study synthesised existing theories from various disciplines to define four distinct traveller profiles based on behavioural, geographic, demographic, and attitudinal data.
4. Elaboration of Personas: In a structured workshop, twelve experts, divided into groups, each developed a persona from the predefined profiles within 30 minutes, with flexibility in choosing the persona's gender.
5. Mapping Personas to Scenarios: Each group created short narratives for their personas across the three scenarios, followed by a collective debrief to ensure the integration of scenario elements into the personas' stories and to address any potential overlaps in character traits.

From the conducted research, it is possible to conclude that foresight methodologies offer structured ways to explore potential futures, while personas provide a user-focused perspective to explore needs and experiences. Combining these methods could have the potential to create an effective tool for designing future-oriented services. This leads to the final research question:

Research question

HOW CAN SCENARIO PLANNING BE INTEGRATED WITH PERSONA BUILDING TO DEVELOP FUTURE-ORIENTED PERSONAS FOR EXAMINING FUTURE AIRPORT SERVICES IN COMMERCIAL AVIATION?

METHODOLOGY

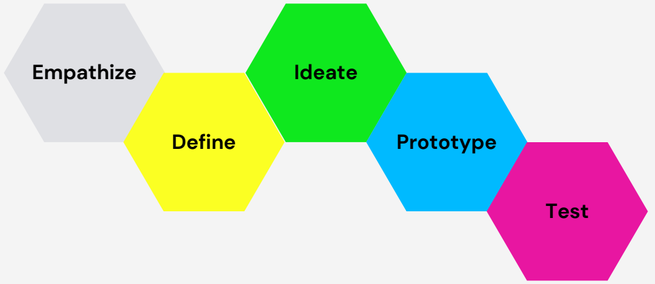


Figure 4: Sketch based on design thinking process of Stanford d.school. Cited from ME 113 (n.d.)

DESIGN THINKING

Design thinking is a problem-solving approach that emphasises understanding the user's needs, creative ideation and iterative testing. (Moran & Brown, 2024) Several leading design institutions have developed their own slight variations of the design thinking methodology. For the purposes of this thesis, I am planning to use a methodology that combines aspects of two well known models - The Stanford University d.school model and the Double Diamond developed by the Design Council.

The Stanford University d.school model for Design Thinking (ME 113, n.d.) consists of five stages. The first stage, "Empathize," involves engaging with a partner to understand their experiences and needs, using follow-up questions to delve into their emotions and challenges. In the "Define" stage, the insights gathered are synthesised to identify key needs and define the main problem. The "Ideate" stage focuses on brainstorming diverse solutions and refining them. In the "Prototype" stage, a tangible but simple model of the solution is created, helping to visualise how the solution works. The final stage, "Test," involves presenting this prototype to an audience, observing their reactions and listening to their feedback and suggestions to further refine the solution. (ME 113, n.d.)

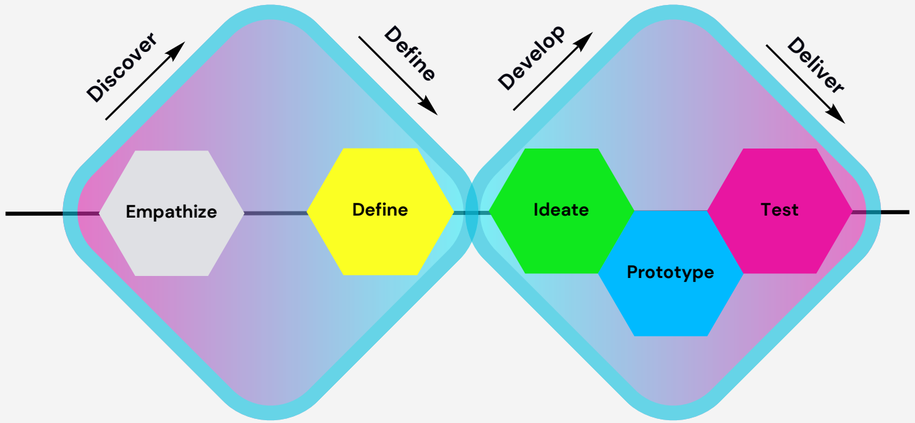


Figure 5: Custom integration of elements from Stanford d.school and the Double diamond. Based on concepts from (ME 113, n.d.), (Design Council, n.d.).

The reason I chose to work with this method is because it provides clearly defined stages, each with specific tasks, presenting a structured approach that is particularly useful at the beginning of a process. Moreover, iteration, which is essential for design, is also advocated by the Stanford's d.school model. “Iteration is a fundamental of good design. Iterate both by cycling through the process multiple times, and also by iterating within a step—for example by creating multiple prototypes or trying variations of a brainstorming topics with multiple groups.” (Plattner, n.d.)

The model also acknowledges that while it is presented linearly, it is expected that designers will adapt it over time to better fit their personal work processes and styles. This aspect of the method aligns well with my approach to work; I appreciate having a structured framework initially, especially when the problem area is still undefined. This structure supports the beginning of my project, but as the work progresses, I anticipate needing to modify and iterate on the design of the service or product to suit evolving needs. The Stanford d.school design thinking model encourages exactly this kind of flexible approach to a design process.

While I am inclined to use the Stanford d.school method, I am also interested in complementing it with the Double Diamond method to enhance the overall approach. The Double Diamond method is a design process framework that features two main phases: discovery and delivery. Each phase consists of two stages —Discover and Define in the first diamond, and Develop and Deliver in the second. This method emphasises expansive exploration and focused refinement, encouraging divergent thinking to explore problems and convergent thinking to define and solve them. It is not strictly linear, allowing for iterative cycles and adaptations based on feedback and new insights, making it particularly effective in the dynamic context of digital innovation. (Design Council, n.d.)

What stands out in the Double Diamond in comparison to the Stanford d.school method is how it structures the design process into two distinct phases represented by diamonds. The first diamond focuses on divergent thinking, encouraging a broad or deep exploration of the issue to fully understand the problem without presumptions. The second diamond then employs convergent thinking, where the insights gained are used to take focused and deliberate action. Integrating the principles of divergent and convergent thinking from the Double Diamond method into the Stanford d.school model could potentially enhance the design thinking process by adding a clear framework for expanding and focusing ideas at specific stages. For instance, during the Ideate stage, the emphasis would be on generating a wide variety of ideas (divergent), and in the Define stage, the focus would shift to selecting the most compelling ideas to develop further (convergent).

However, despite their structural differences, both the Double Diamond method and the Stanford d.school model share some critical features. Both models recognize that real-world design challenges often require teams to revisit and revise their understanding of the problem and their proposed solutions multiple times throughout the project. Moreover, both models advocate for iterating not only across the entire process but also within individual stages. “Iterate, iterate, iterate. Do this to spot errors early, avoid risk and build confidence in your ideas.” (Design Council, n.d.)

LIST OF TOOLS AND METHODS

Desk research
This method will be employed to collect existing data and insights specifically on future developments in airport service design and operations, with a focus on Copenhagen Airport.

Stakeholder maps
A stakeholder map will be developed to identify and categorise all relevant parties involved in or affected by Copenhagen Airport's operations and future developments.

User journey mapping
User journey maps will be created to depict the current state of the airport experience, and also construct comparative maps of the experience 25 years in the past and projections for 25 years into the future.

Interviews
Interviews will be conducted with travellers to collect qualitative data and personal stories about their airport experience and attitude towards air travel.

PESTLE method
This analytical approach will be discussed and considered to horizon scan, identifying and evaluating the Political, Economic, Social, Technological, Legal, and Environmental factors that might impact airports in the future.

Scenario cross method
This method will be utilised to structure and analyse the data collected, organising it within a framework that explores various future personas.

Workshop
Workshops will be held to test initial findings and concepts and to gather feedback from participants to refine the project's direction and focus.

Lofi prototype
This approach involves creating a low-fidelity prototype of proposed solutions or services to test their viability and gather preliminary user feedback.

Empathy maps
Empathy maps will be used to delve deeper into understanding the persona details, exploring the emotions, thoughts, and behaviors of different airport users to inform design decisions.

Toolkit
The development of a toolkit will serve as the final product of the thesis, providing comprehensive instructions and support for creating the future personas.

PROJECT PROCESS

FIRST DIAMOND

This chapter follows the sequence of my thesis project, detailing the methods and design process used. It highlights in a chronological order how each research component is linked, showing how findings from one phase influence the next and contribute to the overall objectives of the thesis.

The ever evolving airport experience

This work process began with focus on the aviation sector, particularly examining airports and airlines. I started by delving into annual reports from institutions such as Copenhagen Airport, which emphasised its ambition to be at the forefront of technological and sustainable advancements. This future-oriented perspective influenced the initial approach, continuously leading me to contemplate the future evolution of airport services. While trying to find the best angle to tackle the topic of the future of airports, I conducted a brief research on airport architecture design. It made sense to look at the physical architecture perspective because the architecture of an airport is inherently part of the overall airport experience and could either limit or offer opportunities for airport services, which is my primary area of interest. Modern airports have undergone a significant transformation from being mere transportation hubs to becoming multifaceted commercial centres.

Today, passengers entering a terminal are more likely to encounter bars, newspaper stalls and gift shops before even reaching the check-in desks. This pattern continues throughout the terminal, with duty free and retail outlets strategically placed to capitalise on 'dwell time' - the period passengers spend in the terminal before boarding their flights. “The design of the terminal building is as much shaped by the needs of duty-free and tax-paid shopping, refreshment and leisure as by the logistical path from taxi to plane.” (Edwards, 2004)

This shift is driven by the increasing importance of revenue generation from retail and leisure activities within airports. Non-aeronautical revenue (revenue generated from commercial deals) is as important as aeronautical revenue (revenue generated from airline fees and passenger taxes). The airport non-aeronautical revenue market is projected to grow by USD 35.04 billion at a CAGR of 7.88% from 2022 to 2027, driven by advancements in terminal technology, increased transit and transfer passenger traffic, and the implementation of loyalty programs. (Technavio, n.d.) Additionally, airport cities are emerging, expanding commercial activities within and around airport boundaries.

Looking at another aspect of modern airports - sustainability - modern airports increasingly reflect this priority in their architecture and management practices. According to Edwards (2004) the new environmental consciousness that has emerged as a feature of the twenty-first-century airport finds expression in five distinct ways:

- Airports are designed to respond to, rather than resist, climate, ecology and nature.
- Terminals are designed to reduce the use of energy.
- Terminals employ materials of low toxicity, and maximize natural sources of light and ventilation.
- Planting forms an important air purification and spiritual function in and around terminals.
- The airport authorities and local communities cooperate on environmental action.

“The twenty-first-century airport is a microcosm of the twenty-first-century city where work, leisure, travel and ecological systems melt into one.” (Edwards, 2004) In summary, the modern airport is no longer just a transportation hub but a dynamic, multifunctional entity that mirrors the cultural richness and economic activity of modern life. This evolution points to a future where airports continue to expand their roles as significant commercial and social centres.

The two main insights that I found relevant were:

- The growing commercial importance of non-aeronautical revenue. Providing premium services could significantly contribute to the airports‘ revenue stream and become a point of competitive advantage. Therefore design of future services could prove to be crucial contributor to the future profits.
- Changing approach to the future as something to be worked with rather than against reframes thinking about future “problems“ as potential staring points of future innovation.

Stakeholder map

The evolving nature of airports naturally leads to considering the various stakeholders involved in the airport ecosystem. Understanding the interests and priorities of these stakeholders is crucial for designing airport experiences that are not only commercially viable but also socially and environmentally responsible. Therefore, let’s explore a stakeholder map to gain deeper insights into the key players shaping the future of airports.

The airport ecosystem displayed on the Stakeholder map on the right consists of interconnected actors forming an inner and outer circle. Inner circle stakeholders, including passengers, airport operators, airlines, etc. directly influence and are essential to the airport's daily operations and revenue generation. Outer circle stakeholders, such as local residents or government bodies indirectly affect and support the airport's broader economic and social roles. It is the synergy between these actors that ensures smooth operations and an enhanced passenger experience.

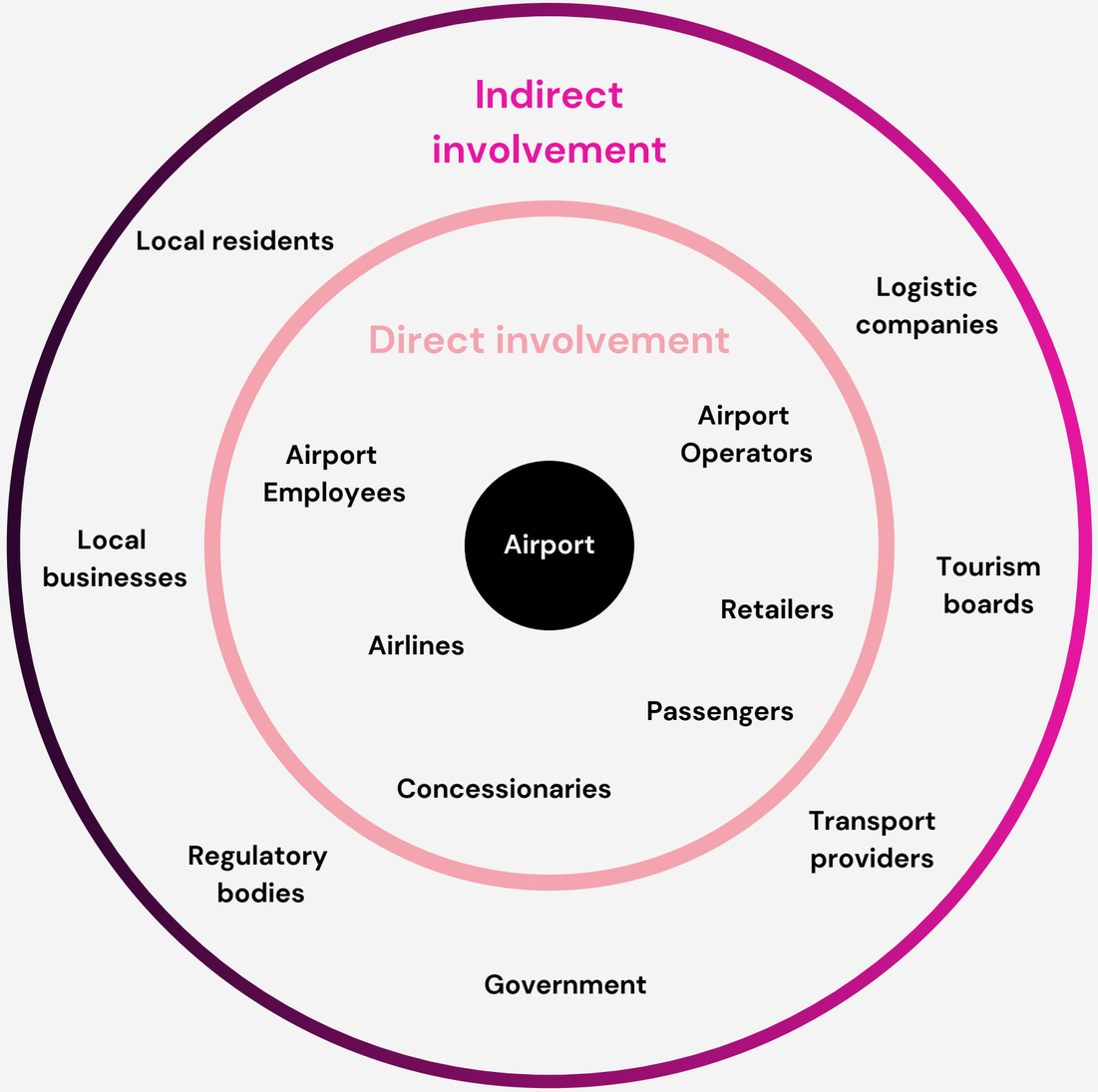


Figure 6: The stakeholders map indicating the level of involvement of actors in the airport ecosystem

Airport passenger journey - Mapping the airport services

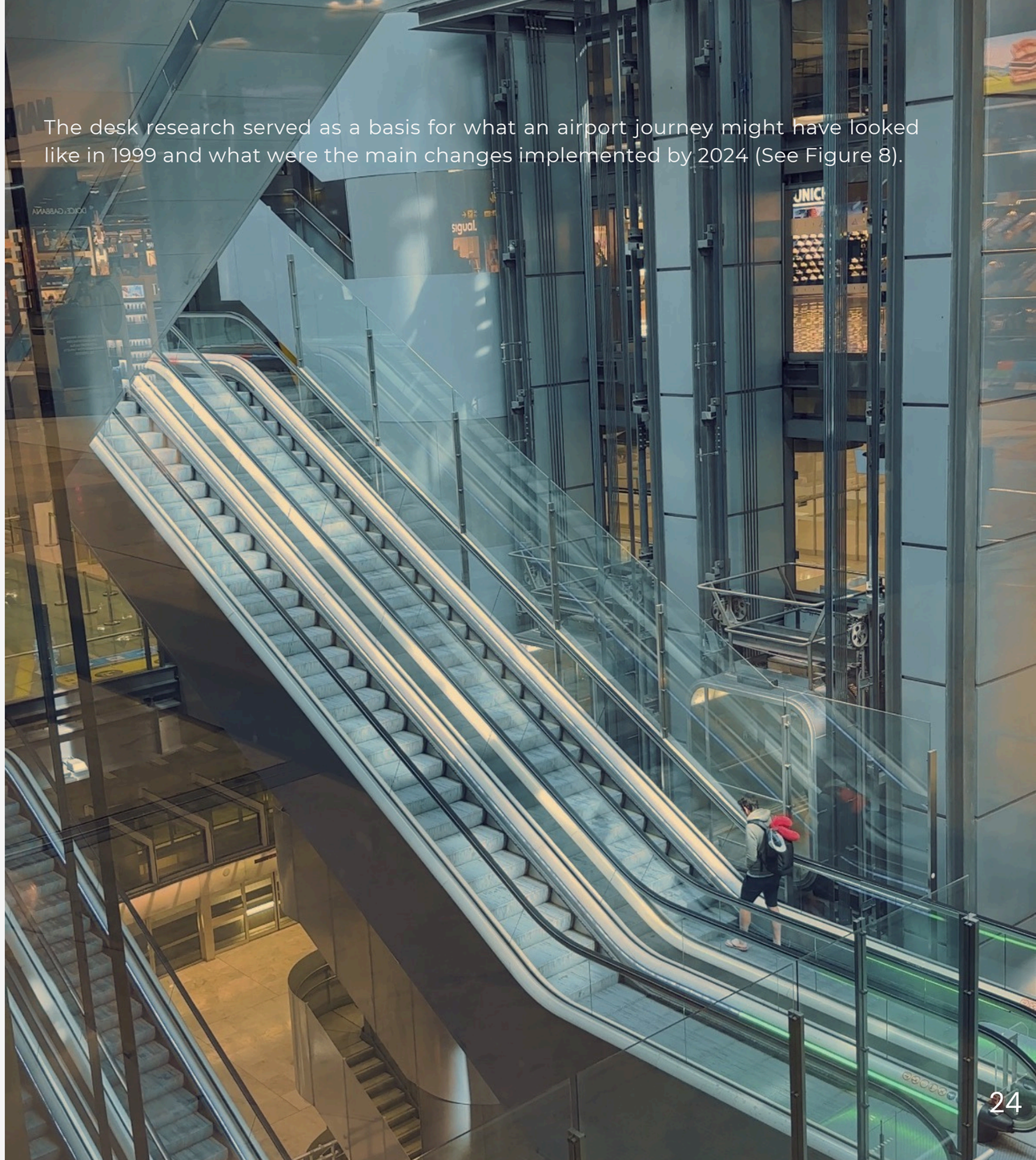
In order to understand the current state of airport experiences, I created a user journey table, capturing the key moments and touchpoints of the airport journey. By "airport journey," I am referring to the experience from the time of arrival at the airport until the moment of boarding the aircraft. The data for 2024 airport journey was collected through observation of my own experiences when departing from Copenhagen airport on multiple occasions (specifically on dates 29.02.2024, 03.04.2024) to EU destinations. I carefully observed my experiences, services that were available and the time duration of individual steps along the airport journey (See Figure 7).

In order to get a better understanding of the scope and pace of changes within the airport journey and the offered services, I decided to also create a past airport journey and compare the two. When it comes to the time frame, I have decided to work with 25 years for two main reasons:

- As already mentioned multiple times, multiple initiatives within Copenhagen airport are structured in the way to support and try to reach the goals of EU Green Deal which sets 2050 as the year by which EU should become carbon neutral bloc. (The European Green Deal, 2021) This makes 25 years as a natural horizon to aim for.
- Subjective choice to explore long-term development as short- and medium-term are more commonly studied and I wanted to explore possibilities of foresight application.

As I wanted to work with a future horizon of 25 years, it made sense to research how much airport journey has changed over the past 25 years. This of course meant that I could not rely on my own experiences, and thus the data for the 1999 airport journey was gained through the desk research, which included:

- press releases (ADS Group, 2023)
- newspaper articles (Hospitality Net BV, 1999); (Cnn, 2023); (Morris, 2021); (Marketing Week & By Marketing Week, 2014); (Faull, 2014); (May, 2010)
- academic reports (Martín et al.,2019; Budd&Vorley, 2013)



The desk research served as a basis for what an airport journey might have looked like in 1999 and what were the main changes implemented by 2024 (See Figure 8).

AIRPORT PAX JOURNEY IN 2024

New table

PAX JOURNEY/ ACTIVITY	ACTIVITY SUB CAT	SERVICE TYPE	TIME ALLOCATION	DIGITAL - NON DIGITAL SERVICE/ACTIVITY	SELF-SERVICE/ FULL SERVICE
CHECK IN	PERSON	AIRPORT LOGISTICS SERVICES	5MIN	DIGITAL AND NON DIGITAL In app check-in Kiosk check-in Online check-in	Mostly self Full available, not prefered
	LUGGAGE	AIRPORT LOGISTICS SERVICES	10MIN	Digital	Self service - bagtag printing kiosks and baggage drop off scanners Full service still available
SECURITY CONTROLL		AIRPORT SECURITY SERVICES	15MIN	Digital and non digital elements.	Full service
PASSPORT CONTROLL		AIRPORT SECURITY SERVICES	15MIN	Digital and non digital Introduction of face recognition Introduction of eGates Introduction of biometric passports	MOSTLY FULL SERVICE SELF-SERVICE AVAILABLE at some airports
INFORMATION/WAY FINDING		AIRPORT LOGISTICS SERVICES		DIGITAL push notification in-app travel assistants information monitors	SELF-SERVICE
DUTY FREE		RETAIL SERVICES		DIGITAL AND NON-DIGITAL introduction of e-commerce digital personalisation self-checkout machines	MOSTLY SELF FULL AVAILABLE
RESTAURANT AND CAFES		FOOD AND HOSPITALITY SERVICES	30MIN	NON DIGITAL	SELF-SERVICE AVAILABLE MOSTLY FULL SERVICE
AIRPORT LOUNGES		FOOD AND HOSPITALITY SERVICES	1HOUR	Digital and non digital elements digital vouchers digital check-in to lounges	SERVICE CONTAINS SELF SERVICE AND FULL SERVICE COMPONENTS
GO TO GATE		AIRPORT LOGISTICS SERVICES	10MIN	NON DIGITAL push notification in-app travel assistants information monitors digital maps	SELF-SERVICE
BOARDING PROCESS		AIRPORT LOGISTICS SERVICES	30MIN	Digital and non digital components self scanning boarding gates	SELF-SERVICE FULL SERVICE AVAILABLE

The format of the user journey table, although unconventional for user journey mapping, was selected to provide clarity on the chronological sequence of events without highlighting emotional or pain point aspects. Instead, new categories were incorporated such as digital versus non-digital services, self-service versus full-service, estimated time allocations, and types of services. These categories were added in anticipation of their likely evolution over the next 25 years.

To find an appropriate frame for future projections, I decided to first map out the airport journey from 25 years ago, in 1999, using similar criteria. After mapping the user journey table of 1999 in the exact same format as the journey table of 2024, two supplementary columns were added to the 1999 journey table:

1. Column indicating identified service changes
2. Column indicating identified trends driving these changes.

The “service design change” column helped highlight the exact details of change, the “Trends - category of change” column greatly highlighted the factors of change and it came to light that the drivers of change can be categorised in a structured way. These drivers of change started to suggest that there are certain trends in place that are ongoing, have been ongoing and are probably going to be ongoing in the future as well. The main question remained, to what extent was it possible to predict them and was it even the way to approach the construction of the future user journey.

Figure 7: The 2024 airport journey, completed using author’s own observations

Airport passenger journey 1999 1/4

PAX JOURNEY/ ACTIVITY	ACTIVITY SUB CAT	SERVICE TYPE	TIME ALLOCATION	DIGITAL - NON DIGITAL SERVICE/ACTIVITY	SELF-SERVICE/ FULL SERVICE	TRENDS - CATEGORY OF CHANGE	SERVICE DESIGN CHANGE
CHECK IN	PERSON	AIRPORT LOGISTICS SERVICES	15MIN CHECK-IN DONE BY CHECK-IN AGENT. FIRST CHECK-IN KIOSKS IN LATE 90s US, EARLY 2000s in EU	NON DIGITAL VERY FIRST ATTEMPTS OF DIGITAL SELF SERVICE	Full service Some airports already have check in kiosks. Limited.	**TECHNOLOGICAL FACTOR:** **Technological innovation** • adaptation of the internet • adaptation of the smartphones	**Change in touchpoints:** • adoption of online check-in • self-service kiosks at airports • self-service information gathering • self-service handling of ID documents **Move to BEFORE AIRPORT JOURNEY** This section of the airport journey has moved to the PRE-AIRPORT JOURNEY. Most passengers check-in online before they arrive at the airport.
	LUGGAGE	AIRPORT LOGISTICS SERVICES	20MIN	NON DIGITAL	Full service	**ECONOMIC FACTOR:** **New business model - Behavioural change** • Low-cost model formed the "smart travellers": tech savvy, efficient packer, well-informed decision maker. • Highly customised airfare services • Choice of luggage and ancillary air transport services	**Service unbundling** Rise of the smart traveller: • Preference of digital services • Preference of Hand luggage only travel (depends on geographies) • Preference of choice of air travel services. Luggage, seating, meal.
SECURITY CONTROLL		AIRPORT SECURITY SERVICES	15MIN Present but not stringent until 2001	NON DIGITAL	Full service	**TECHNOLOGICAL FACTOR:** **Technological innovation** Introduction of biometrics for pax scanning Information on security measure and security screening process. **Procedural change** introduction of procedure programs like pre-screenings **SOCIOPOLITICAL FACTOR:** **Regulatory change** Post 9/11 stringent security measures	**Adaptability to evolving security needs** Shift to design services that handle dynamic changes in security. Restriction on specific items, for ex. after 9/11 liquids, later certain chargers, smartphones. **Queue management** Automated information monitors for queue management at cph airport waiting time display at cph.dk website and app
PASSPORT CONTROLL		AIRPORT SECURITY SERVICES	15-45MIN Depending on destination. Pre-EU expansion of 2004.	NON DIGITAL	Full service	**TECHNOLOGICAL FACTOR:** **Technological innovation** introduction of ePassports and eGates **Procedural change** Introduction of pre-screening ESTA for US **PUBLIC HEALTH FACTOR:** **Procedural change** Covid-19 pandemic - introduction of obligatory vaccination passports	**Move towards self-service** The introduction of self-service kiosks and biometric recognition gates has reduced wait times and manual checks. **Flexibility and adaptability** The COVID-19 pandemic underlined the need for adaptable and flexible services. Preference for modular technology solutions and processes that can be adjusted as needed without overhauling the entire system.

Figure 8: Reconstruction of possible 1999 airport journey

Airport passenger journey 1999 2/4

PAX JOURNEY/ ACTIVITY	ACTIVITY SUB CAT	SERVICE TYPE	TIME ALLOCATION	DIGITAL - NON DIGITAL SERVICE/ACTIVITY	SELF-SERVICE/ FULL SERVICE	TRENDS - CATEGORY OF CHANGE	SERVICE DESIGN CHANGE
INFORMATION/WAY FINDING		AIRPORT INFORMATION SERVICES		Digital and non digital Information monitors, Information desks staffed by information agents telecommunication services - phoneboots transfer desks for transfering pax	Self-service and full service	**TECHNOLOGICAL FACTOR:** **Technological innovation** • Airport displays moved from static to dynamic • Emergence of interactive kiosks	**Move towards self-service** Airports and airlines provide in-app travel assistants, where travel information is displayed in real time. Push notifications are also used. **Move towards user-centric design, personalisation and real-time responsiveness** Info displayed in several languages and focus on accessibility
DUTY FREE		RETAIL SERVICES	Duty frees are a popular conceept. They are regarded as a retail though, not part of an overall airport experience	NON-DIGITAL	Full service	**TECHNOLOGICAL FACTOR:** **Technological innovation** • E-commerce • Pre-order Services **ECONOMIC FACTOR:** **Business and Retail change** Broader selection - beyond traditional duty-free items (liquor, tobacco, perfume), airports have expanded their retail offerings to include luxury brands, electronics, local specialties etc. **Focus on Non-Aeronautical Revenue** With tight margins on aeronautical operations, airports have increasingly looked to retail as a critical source of revenue.	**Move towards self-service** Streamlining shopping experience with self-checkout and other self-service practices known from retail like concept stores, pop-ups **Experience Beyond Commerce** There is a trend to focus on an overall experience where retail and duty free shopping is part of a bigger entertainment and experience. The service is more complex in its offering.
RESTAURANT AND CAFES		FOOD AND HOSPITALITY SERVICES	30MIN	NON DIGITAL	Full service	**TECHNOLOGICAL FACTOR:** **Technological innovation** • Pre-order Services • Mobile ordering • Digital menus • Digital payment solutions. **ECONOMIC FACTOR:** **Focus on Non-Aeronautical Revenue** With tight margins on aeronautical operations, airports have increasingly looked to retail as a critical source of revenue.	**Move towards self-service** Streamlining dining experience with self-checkout and other self-service practices known from dining like pre-orders, digital payment etc. **Move towards healthy food choices** The global trend towards healthier food choices and nutrition has significantly influenced the airport dining experience, reflecting a shift in passenger preferences and societal attitudes towards health and wellness. **Elevated Culinary Expectations**: With a greater public interest in culinary arts and healthier living, passengers now expect higher quality and more diverse dining options at airports. **Atmosphere and Experience**: Beyond the food itself, the focus has shifted towards creating enjoyable, relaxing dining environments where passengers can unwind before their flights, with thoughtful design that contributes to the overall ambiance of the airport. **Sustainability and Community**: Reflecting broader societal trends, airport dining has incorporated sustainable practices and local sourcing, contributing to environmental goals and offering passengers a taste of local cultures.

Airport passenger journey 1999 3/4

PAX JOURNEY/ ACTIVITY	ACTIVITY SUB CAT	SERVICE TYPE	TIME ALLOCATION	DIGITAL - NON DIGITAL SERVICE/ACTIVITY	SELF-SERVICE/ FULL SERVICE	TRENDS - CATEGORY OF CHANGE	SERVICE DESIGN CHANGE
AIRPORT LOUNGES		FOOD AND HOSPITALITY SERVICES	1HOUR	NON DIGITAL	Full service	**TECHNOLOGICAL FACTOR:** **Technological innovation** • Self check-in • Mobile vouchers **ECONOMIC FACTOR:** **Focus on Non-Aeronautical Revenue** With tight margins on aeronautical operations, airports have increasingly looked to retail as a critical source of revenue. **Changing passenger needs and expectation** Beyond Basic Comforts: Modern lounges have evolved from offering merely a quiet space with comfortable seating and complimentary beverages to providing gourmet dining, spa services, private nap rooms, showers, and even gyms and cinemas in some cases. Work and Connectivity: With the rise of remote work, lounges have adapted to serve as productivity hubs, offering high-speed Wi-Fi, ample power outlets, and workspaces. **Expansion of Access**: Previously, lounge access was almost exclusively reserved for first and business-class passengers or those with elite status in airline loyalty programs. Over the years, access has expanded to include passengers willing to purchase day passes, holders of certain credit cards, or subscribers to independent lounge access programs. **Third-Party Lounges**: The emergence of third-party operators like Priority Pass, LoungeBuddy, and independent airport lounges has democratized access further, making lounge amenities available to a broader audience beyond airline-specific clientele.	**Brand Differentiation**: Lounges serve as physical embodiments of brand values and service promises, differentiating airlines and airports in a competitive market. **Ecosystem Connectivity**: The relationship between lounges, credit card benefits, airline alliances, and third-party operators illustrates the importance of an interconnected ecosystem in delivering value to passengers.

Airport passenger journey 1999 4/4

PAX JOURNEY/ ACTIVITY	ACTIVITY SUB CAT	SERVICE TYPE	TIME ALLOCATION	DIGITAL - NON DIGITAL SERVICE/ACTIVITY	SELF-SERVICE/ FULL SERVICE	TRENDS - CATEGORY OF CHANGE	SERVICE DESIGN CHANGE
GO TO GATE		AIRPORT INFORMATION SERVICES	10MIN	Digital and non digital Information monitors, Information desks staffed by information agents	Self-service	**TECHNOLOGICAL FACTOR:** **Technological innovation** • Airport displays moved from static to dynamic • Emergence of interactive kiosks **ECONOMIC FACTOR:** **New passenger flow model - Delaying the gate announcements** Using this model the airport can encourage pax to maximise time spent in retail and dining areas. Airports may delay gate announcements to manage gate assignments dynamically based on real-time operational needs and to encourage passengers to explore airport amenities, potentially increasing revenue.	**Move towards user-centric design, personalisation and real-time responsiveness** Info displayed in several languages and focus on accessibility
BOARDING PROCESS		AIRPORT LOGISTICS SERVICES	30MIN	NON DIGITAL	Full service done by boarding agents	**TECHNOLOGICAL FACTOR:** **Technological innovation** • Mobile Boarding Passes • Self-Boarding Gates • Biometric Verification **Procedural change** Zone-Based Boarding: Adoption of structured boarding methods, organizing passengers into zones to minimize congestion and improve the flow. Adopted at some airlines and airports only.	**Move towards self-service** Streamlining boarding experience with automated boarding gates. Airports and airlines are continuously testing different priorities and sequences for boarding zones, groups, classes, and traveler types.

From the analysis and comparison of the two airport journeys, several key trends prompting change from 1999 to 2024 were identified:

- Global security threats leading to enhanced airport security measures post-September 11, incorporating advanced technology and data sharing.
- Technological innovation, such as biometrics and analytics, improving threat detection and operational efficiency.
- Evolving passenger expectations towards more contactless, personalised, and technology-driven services.
- Public health concerns, particularly following COVID-19, prioritising health screenings at borders.
- Increased health consciousness among passengers, demanding healthier food options.
- Commercial efficiency, focusing on maximising non-aeronautical revenue sources.
- A stronger focus on sustainability in airport operations and construction.
- Passenger-centric design, emphasising comfort, convenience, and accessibility.

Additionally, this examination suggested a potential typology for categorising airport services into logistics, security, information, retail, and food and hospitality services.

- Airport logistics services - includes check-in, luggage check-in, luggage reclaim
- Airport security services - passenger screening, security and passport control
- Airport information services - airport wifi systems, pax information services
- Retail services - duty free, retailers and shops
- Food and hospitality services - bars, restaurants, lounges, in-airport hotels

The key takeaway is that employing a systematic approach to analyzing the airport experience and services can promote more structured and effective thinking. By categorizing and structuring the analysis, comparisons of the airport experience become clearer and more precise, which can facilitate better evaluations for various purposes.

Interviews

To further the empathise phase and gather additional data, I have decided to conduct interviews aimed at collecting personal experiences related to the airport experience. Previously, I developed two user journeys—one depicting the airport experience in 2024 and another in 1999. These user journeys are thoroughly documented, detailed, and organised. Now, obtaining more information to identify and map pain points and emotions could generate new ideas and help pinpoint the specific problem areas I need to address.

I conducted interviews with people, who could be characterised as digital nomads - people who utilise technology to earn a living while living nomadically and travelling to various locations for their work. Given their frequent use of airports, their varied global experiences, and their reliance on digital and efficient services, digital nomads are well-positioned to provide pertinent insights into both current airport services and potential future developments in this area. Their tech-savviness and sensitivity to emerging trends enable them to offer detailed feedback on effective practices and necessary improvements within airport services. The interviews involved four individuals and took place in a co-working space in Fuerteventura, Spain. The participants were working adults, ranging in age from 18 to 54. Detailed transcripts of these discussions are included in the appendix.

To synthesise the data from the interviews, clustering was performed based on the previously developed service categorisation which compared user journeys from 1999 to 2024. (see Figure 9) The findings reveal a general optimism among the interviewees regarding technological advancements, which they believe can enhance comfort and expedite airport experiences. However, concerns were raised about data usage and facial recognition technologies. Regarding time management, the respondents frequently mentioned workstations as a beneficial aspect of the airport experience, both in public areas and within lounges. Opinions on duty-free shopping and dining varied according to individual preferences.

The respondents appreciated the efficiency of mobile check-in applications, yet they highlighted the stress associated with security screenings as a significant area of dissatisfaction. Looking towards future airport experiences, there was a clear desire for quicker procedures and an expectation of increased automation.

Preliminary discussion

In concluding the first diamond of the double diamond design process, it's evident that although gathering data from a relevant demographic has provided some understanding, pinpointing a specific direction for problem areas still remains challenging. This phase highlighted the need for a more targeted approach to define future airport services more precisely. During the empathise phase, it became clear that thinking in terms of drivers of change and trends is useful and suitable for describing and examining airport services. These factors, including economic shifts, sociopolitical changes, technological advancements, and public health considerations, have provided a useful framework for understanding the evolution of airport experiences from 1999 to 2024. However, the findings from the interviews were generally broad, reflecting current opinions more than offering insights into future passenger needs.

As I transition from synthesising the gathered data to defining the problem area, it becomes apparent that while current trends offer some guidance and suggest multiple potential future directions, they can be rather broad and generalised and lack emphasis on the users/customers. The theoretical framework around personas emphasises the necessity of specificity in goals, desires, and characteristics to effectively shape future customer journeys. The general nature of the interview responses, therefore, presents a limitation in forming a detailed vision for future airport services. In moving forward, there is a need to refine the focus, perhaps by employing scenario planning to explore various future possibilities based on the identified trends.

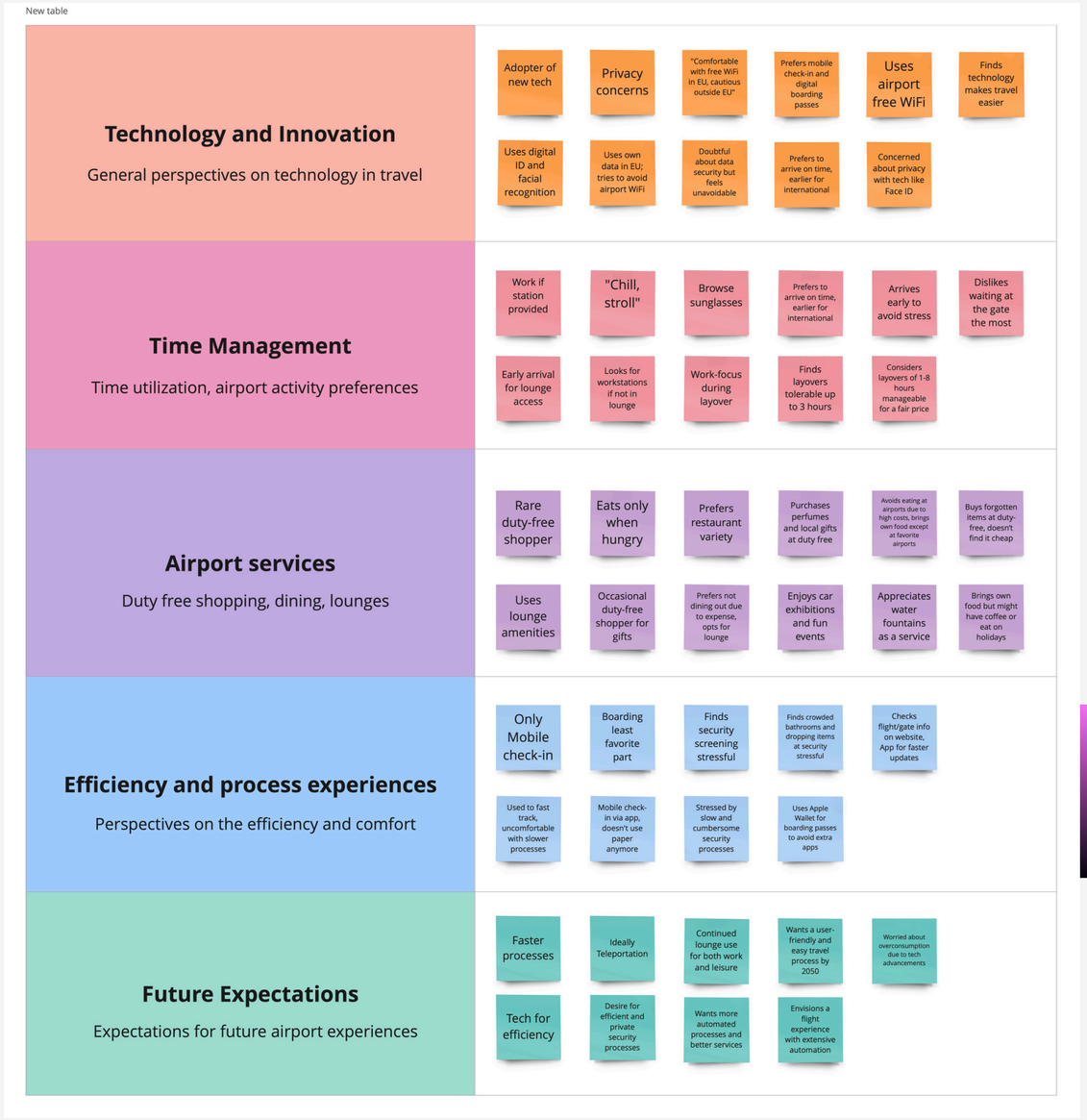


Figure 9: Clustering of data from interviews in Miro

SECOND DIAMOND

This chapter marks the start of the second diamond, which is dedicated to ideating potential solutions. I draw on insights gained from earlier phases of design thinking to focus on exploring megatrends and trends that point towards future directions. The primary question for this ideation phase is how could it be possible to employ these trends to envisage future airport journeys. However, considering the broad scope of future airport journeys, I recognize the need for a more user-centric targeted approach. To address this, I plan to ideate a specific tool—a future persona.

This proposed tool would combine foresight's understanding and preparing for the future and persona's focus on the user and their needs. This persona will navigate through projected airport services, helping to identify future needs and wants. Having reviewed literature on scenario planning and persona development, it became clear that integrating these two methodologies could potentially be effective. Thus, my ideation phase will involve theoretically constructing a framework that merges these practices.

Designing the Framework

Following a review of foresight methodologies and persona creation techniques, I started to investigate the potential possibility of integration of these two design practices. I ended the foresight section of the literature review by identifying scenario planning as a suitable tool for my needs, because of its explorative and open nature. In order to use scenario planning to create future personas instead of future scenarios, elements of persona creation need to be added to it. The logical first step was to do a detailed research into the scenario planning steps and determine in what way could persona creation be added to any of these steps. In order to do so, I have researched in detail three separate approaches to scenario planning.

Scenario planning step	Key activities	Helpful tools	Key questions
1.Scoping	Understanding the context Framing the future Understanding stakeholders Assembling the right team	-	What's in a future? Who's future is it?
2.Sensing and scanning	Active noticing Horizon scanning Identify signals, trend, drivers Managing the scan	Trend worksheet creating databases	What does one scan for? How does one choose scanning sources?
3.Sense-making and mapping	Creating a trend inventory Considering impact reflecting on analysis	STEEP analysis PESTLE+V analysis	How do we make sense of the data we gathered?
4.Scenario development	Building a roadmap exploring, unpacking impacts	Scenario sketch worksheet	How do we connect the signals, trends and driver?
5.Storytelling and prototyping	Choose a way to prototype your idea Decide if personas should be included Add objects or artefacts	Speculative future newspapers Scenario to artefact canvas	How do we effectively present the product or service of the future How do we ask for feedback
6.Assessiing effectiveness	Evaluate the scenario readiness Decide which KPIs could be used	Scenario readiness canvas	How are we going to measure how ready we are for the future?
7.Building a futuring culture	Aim for future literacy in an organisation Ask 'What if' questions Discuss long term futures	-	How do we adopt a common language about the future in our organisation?

Smith and Ashby's "How to Future" (2020) offers a comprehensive seven-step scenario planning guide for organisations to effectively anticipate and shape their futures. It begins with scoping—understanding the context and assembling the right team—followed by sensing and scanning, where tools like horizon scanning identify key trends and drivers. The process continues with sense-making, using analyses like STEEP and PESTLE+V to organise data into trend inventories. Scenario development then connects these trends into coherent stories, which are brought to life in the storytelling phase through methods like speculative future newspapers. The approach concludes with assessing scenario effectiveness and fostering a futuring culture, emphasising future literacy and continuous strategic engagement.

Figure 10: Table showcasing in detail the scenario planning steps according to Smith and Ashby (2020)

New table

Scenario planning step	Key activities	Helpful tools	Key questions
1.Define the scope and stakeholders	Identify core problem Define focal questions Confirm time horizon Formulate boundaries Confirm stakeholders	Problem statement	Does the organisation have the right stakeholders involved? Are the most focal questions assembled for discussion? Are the boundaries understood?
2.Explore internal and external environment	Scan macro and micro business environment Consider in-depth interviews Identify forces of change (Porter's Five forces framework) SWOT analysis for assessing internal org environment	PESTEL analysis Porter's Five Forces Competitive positioning De Bono's Thinking Hats	Have major external driving forces been identified? Have enough trends been identified? Does the organisation understand its competitive positioning?
3.Analyse trends, risks and uncertainties	Identify key uncertainties and forces Remove forces with low impact Cluster forces and trends Perform cross-impact analysis	Brainstorming tools Cross-impact matrix	What are the most important certainties and uncertainties? Have the trends been grouped and clustered? Have low impact forces been removed?
4.Build scenarios and signposts	Build scenario frame Translate trends to scenario frame and identify signposts Develop detailed stories Illustrate scenarios Check for relevance, plausibility and consistency Identify additional research needs	Deductive scenario matrix	Do the scenarios challenge and stretch the thinking and mental models? Can organisational learning occur because of the scenarios? What issues emerge from each scenarios?
5.Confirm scenarios and stress-test	Discuss and confirm trends and scenarios Confirm current strategy Stress-test the strategic plans Develop strategy for each scenario	Options funnel Business resilience model Strategic options matrix	Have the scenarios been understood and discussed? Is there a right leadership capability for each scenario? What future does the organisation want?
6.Monitor signposts and execute strategies	Examine monitoring needs and requirements Identify the key change indicators Identify an expert panel Execute strategies	Balanced scorecard Implementation process map	Which signposts need to monitor? Do the signposts allow for anticipation of external factors? Does the organisation understand what strategic action to take?

Figure 11:
Table showcasing in detail the scenario planning steps according to Mortlock (2021)

Lance Mortlock's book "Disaster Proof" (2021) outlines a structured six-step process for scenario planning. The process begins by clearly defining the project scope and timeframe to align with the objectives. It emphasises the importance of understanding the market environment to identify driving forces and predetermined elements, while recognizing the unpredictability of certain risks and uncertainties. Critical analysis of these factors is essential for documenting potential impacts on the organisation. Although not all forces can be identified, the act of visualising scenarios as engaging narratives helps bring them to life, illustrating their implications effectively. These scenarios should include both qualitative narratives and quantitative data, such as financial models, to explore plausible futures and prepare the organisation to respond adaptively. Finally, it is crucial to periodically review the organisation's strategy against these scenarios to ensure its relevance in a dynamic environment, updating them regularly to maintain their effectiveness.

Scenario planning step	Key activities	Helpful tools	Key questions
1.Preparation	Get to know the client Form the scenario team	Go/No-Go Checklist	Why a scenario project?
2.Orientation	Determine scenario question Determine time horizon	-	What is the question that has to be answered with the scenarios? What is the time horizon of the scenarios?
3.Exploring the environment	Analysing the baseline Identify trends and discontinuities	DESTEP analysis	What trends or developments are important for the future?
4.Determining scenario structure	Analyse qualitative models Analyse quantitative models Create Scenario cross method Create a morphological field	Quantitative visual Qualitative visuals Scenario cross + Impact ranking = Impact and uncertainty matrix	How do you create a framework on the basis of which you can build different scenarios?
5.Building scenarios	Filling the scenario structures Connecting chains of events into a story Writing the scenarios	Implication tree	What are the most important elements of the scenarios? How can the scenarios be made radical and future-oriented? What are the titles of the scenarios?
6.Using scenarios	Taking place at scenario meetings Stress-testing the scenarios	Wind-tunneling	What are conclusions from the scenarios? What do the scenarios teach us about the future?
7.Monitoring scenarios	Scanning the environment for signals Selecting signals that indicate trend development Scanning should happen also for discontinuities	Scenario cross as monitoring mechanism	• What scenario(s) are the actual developments in line with? • What are the early warning signs?

In "Foresight in Organisations" (2016) by Patrick van der Duin, the scenario planning process is structured into seven steps that emphasise the narrative power of strategic foresight, similar to the approach of Lance Mortlock. The method begins with aligning client needs and forming a scenario team, using a Go/No-Go Checklist to set clear objectives. DESTEP analysis helps identify key trends and disruptions, guiding the development of robust scenario structures through qualitative and quantitative models. Scenarios are crafted into engaging narratives with characters that enhance relatability and emotional impact. These scenarios are then used in strategic meetings and continually monitored for relevance, serving as "memories of the future" that combine rational analysis with emotional resonance to influence strategic decision-making effectively.

Figure 12:
Table showcasing in detail the scenario planning steps according to Van Der Duin (2016)

All three discussed approaches showcase a strikingly consistent methodology for scenario planning. All are around 6-7 steps long processes consisting of:

1. Scoping of the future and determining the objectives
2. Analysing the environment and landscape
3. Data is gathered and clustered
4. This is followed by determining a scenario structure, which is then executed
5. The scenarios are then presented discussed and used
6. The scenarios are maintained and monitored

The first commonality among the authors is that they all advocate a structured process for scenario planning, emphasising the use of step-by-step methodologies. The second commonality is that for the first three steps - Scoping, analysis of landscape and data gathering - the three authors have a similar way of working. Although they employ different terminologies - Mortlock mentions PESTLE, van der Duin uses DESTEP, and Smith and Ashby refer to STEEP and PESTLE+V - all these tools essentially serve to analyse environmental factors and trends, highlighting a common approach to data organisation and prioritisation in scenario planning.

Where the authors' approach to scenario planning differs is step 4 - determining the scenario structure. The point of this step is determining how the gathered data will be structured further in order to create the future scenarios - how should the individual pieces of information that were collected be arranged so that they can form the basis of scenarios? While Mortlock (2021) and Van Der Duin (2016) propose a so-called deductive method, Scott and Ashby (2020) propose the inductive way of structuring the scenarios. "With the deductive way of developing a scenario, a structure is determined in advance that is the framework within which the scenarios are developed." (Van Der Duin, 2016, p.22) The most commonly used is the scenario cross method. In the inductive approach used by Scott and Ashby, trends and developments are grouped into coherent units to identify chains of events, create storylines, and uncover an underlying structure. (Van Der Duin, 2016) These approaches will be further discussed in the sense-making phase of designing the framework. Lastly, each approach underscores the importance of engaging narratives to make scenarios more relatable and memorable, thereby enhancing strategic thinking.

After having analysed the three scenario planning methodologies, it was time to decide how I would use them for my purpose of creating the future persona methodology. The guiding logic was still to use the scenario planning steps and see where and how I could inject persona building elements. I decided to go step by step and simply try an experiment.

As a first step, however, I made a new categorisation of the scenario planning steps. Because several of the steps across these approaches were remarkably similar, it seemed reasonable to simplify the process by consolidating these steps into broader categories. It might be worth simplifying the process also for practical reasons, because it is easier to navigate fewer steps, especially in the early stages when the framework is still being tested and evaluated for effectiveness. It is simpler to introduce additional stages later, if required at all. The first few steps were concerned with defining the scope of the future and the main question of the exploration, gathering data and exploring the environment. They could be therefore grouped into a common scoping and exploration phase where the main question of the research is set and data gathering is done. The second would be the data synthesis and building the structure of the framework. The last would be the presentation of the framework and its use. This is visually presented in Figure 13.

	Scoping & Scanning Establishing the goal, doing the research	**Sense-making & Structuring** Sense-making with the data and building a structure	**Storytelling** Presenting, using and maintaining Future Personas
Actions What actions will take place in this phase?	Desk research identify signals, trends, drivers indentify megatrends	Synthesize data Identify uncertainties Identify the impact Identify the 2 core uncertainties	Fill out the FP profiles Narrate the FP through an airport Add images Conduct expert interview
Specific tools What tool and methods are to be used?	PESTEL Can be modified PESTEL Could include a list of edges List of edges List of megatrends	Impact/ uncertainty matrix Impact ranking	Persona Profile midjourney image generation Expert interview
The persona aspect?	How to scope and scan with a focus on personas? Focus on personality traits when exploring Work with data that focuses on personality traits, psychology	Should you identify uncertainties related to personality traits?	

Figure 13:
Table showcasing the proposed consolidation and simplification of the scenario planning steps.

PHASE I: SCOPING & SCANNING

This phase consists of two main points:
1.Establishing the goal
2.Gathering the data

Establishing the goal

Establishing the goal means defining the central question that the future personas aim to answer. In the case of this thesis the question is: “What might the travellers of 2049 at Copenhagen Airport be like? What might their airport journey look like?” By envisioning these future personas, we could ideate and plan for the potential experiences and expectations of travellers as they navigate the airport environment decades from now.

Gathering the data

Each step of the scenario planning offered certain tools that the authors were using and presenting in their books for exploring the environment and collecting data. The one that was common across all three books was the so-called PESTLE method. Mortlock (2021) suggests the PESTLE analysis, Van der Duin (2016) suggests DESTEP, which is a version of PESTLE and so do Smith and Ashby (2020). Essentially, all these methods are the same, just presented in different orders and with slight variations. PESTEL, also interchangeably known as PESTLE, is a strategic management tool used to analyse external trends that impact an organisation (Mortlock, 2021). The reason I chose this method for scanning the environment is because it has a characteristic of centricity which is similar to the way designers think of user-centric mindset when working with personas. In the PESTLE analysis the organisation is at the centre and six external factors that influence its existence are analysed.

PESTLE is an acronym that stands for political, economic, social, technological, legal and environmental categories of factors that are to be examined for trends.

- Political include political factors such as political systems, interventions in societies and economies and also geopolitics.
- Economic include issues of money, financial tools, values or business models.
- Social issues include issues relating to demography, culture, education and work.
- Technological includes networks, systems, devices and infrastructure.
- Legal includes the regulatory frameworks and often includes data protection issues or CO2 regulations as examples.
- Environmental includes issues of environmental and ecological aspects, such as biodiversity issues and energy sources.

This method is also used among practising futurists. According to Scott and Ashby (2020), PESTLE is a “very helpful way to get a first level of insight into the trend environment that affects a particular set of futures.” (p. 94) This approach enables a thorough horizon scanning necessary for understanding the broader context in which future personas will operate in.

The PESTLE method is flexible and allows for various customizations to better suit specific needs. Smith and Ashby (2020) introduce an iteration known as PESTLE+V, which includes an additional 'Values' category to the standard framework. This extension incorporates trends related to spirituality, ideology, and ethics, enriching the analysis with deeper societal insights. As my goal is to adjust the PESTLE tool to develop future personas I consider this an important and potentially useful iteration of the method that could add value to the future persona description. Understanding these values is instrumental in comprehensively depicting the context in which a persona operates, providing a fuller picture of their motivations and potential behaviours.

In preparation for utilising the PESTLE+V model, it is necessary to compile a list of current and emerging trends across all the categories. Figure 14 on the next page showcases the table with the basic structure of the PESTLE+V analysis tailored to the context of future passenger at Copenhagen airport:

Figure 14 : PESTLE+V analysis tailored to Copenhagen airport

POLITICAL	**Future Policy Changes:** Analyse potential changes in Danish and EU aviation policies, security measures and government investments in transportation infrastructure. **International Relations:** Consider how Denmark's relations with other countries might affect international air travel regulations and agreements.	**LEGAL**	**Regulatory Changes**: Look into potential changes in aviation law, data protection regulations, and passenger rights laws that could affect airport operations and passenger experiences. **Safety and Security Laws**: Consider the evolution of safety and security standards at airports, including legal requirements for new technologies.
ECONOMIC	**Economic landscape:** Project Denmark's economic environment, focusing on growth rates, investment in infrastructure, and funding for technological advancements in aviation. **Future of Aviation Industry**: Consider global economic trends in the aviation industry, including the economic sustainability of airlines and airports.	**ENVIRONMENTAL**	**Climate Change Impact:** Examine how climate change might affect airport operations, including the construction of resilient infrastructure to cope with extreme weather events. **Environmental Policies:** Analyze Denmark's commitments to reducing carbon emissions and how these could influence operations and technologies deployed at airports.
SOCIAL	**Demographic Changes**: Assess future demographic trends in Denmark and globally, including age distributions and population growth, which might influence travel needs and behaviours. **Changing Passenger Expectations**: Evaluate how societal trends and values, like increased environmental consciousness or demand for personalised experiences, will shape passenger expectations.	**VALUES**	**Ethical Considerations in Aviation**: Investigate how values concerning sustainability, privacy, and consumer rights are expected to evolve and how these shifts will impact airport operations and policies. Consider ethical debates around topics like biometric data usage, facial recognition technology, and the environmental impact of air travel. Explore the cultural and spiritual beliefs that might influence passenger expectations and behaviours. **Ideological Shifts in Society**: Examine broader ideological shifts that could affect the airport experience, such as increasing demands for transparency, corporate responsibility, and ethical business practices. **Public Sentiment and Activism**: Assess how public sentiment and activism, particularly regarding environmental and social issues, could influence airport planning and development. For instance, movements against airport expansions due to noise and air pollution or demands for improved labour conditions for airport staff.
TECH	**Advancements in Technology**: Explore expected technological innovations such as automation, robotics, virtual reality, and enhanced security technologies that could transform the airport experience. **Sustainability Technologies**: Investigate emerging sustainable technologies that might be implemented to reduce the environmental impact of air travel.		

The analysis highlights the importance of understanding future policy changes, economic conditions, demographic trends, technological progress, regulatory updates, and environmental impacts. While this structured approach is helpful, it can also be very detailed and might be too time-consuming. It is essential to explore specific trends and their categories in depth to fully grasp their effects. This means identifying and analysing current and emerging trends across all categories to understand how to use them most effectively.

Signals, weak signals, trends and megatrends

To effectively utilise the PESTLE+V method for developing future personas and analysing trends, it is important to clearly understand the terminology associated with future thinking and the way of thinking about data. These terms include weak signals, signals, trends, megatrends, and drivers, each playing a role in the environment scanning process.

Smith and Ashby (2020) define signals as the basic particle of information. They can have tangible forms like datapoints, a message, a new product, or intangible forms like behaviour or a sentiment. Weak signals are the very first signals that catch our attention and seem notable or surprising even to a degree that they might mean a new possible development. (Smith & Ashby, 2020) In order to make the PESTLE+V method, we need a list of trends. It is therefore also time to define what we mean by trends. Trends are developments that have a major implication for the future. They present an emerging pattern of change, a future direction in a certain field that is typically based on extending current patterns or behaviours into the future. (Van Der Duin, 2016) Trends are distinguished by their sustained nature and directional growth or decline in impact, lasting typically for a year or more, unlike fleeting fashion trends or ephemeral social media phenomena. Megatrends are large-scale, sustained forces of development that affect countries, societies, economies, and organisations globally over extended periods, typically decades. Drivers are long term dynamics that shape trends. “They are the forces that underlie the characteristics of society, politics, economics, technology and the environment.” (Smith & Ashby, 2020)

To illustrate how signals, weak signals, trends, megatrends and drivers interact within the context of future passenger experiences at Copenhagen airport, let’s consider the following example:

Signal: Introduction of Advanced Scanning Machines
While waiting in line for the security scanning, I was asked if I wanted to participate in the testing of the new high-tech scanner that allows passengers to keep liquids and laptops in their bags.

Weak Signal: Shift in Security Protocols
Early experiments in a few airports with even more advanced scanners that can quickly detect hazardous materials without any bag checks.

Trend: Streamlining Airport Security Processes
Widespread adoption of these new scanners leads to a significant reduction in wait times and improves passenger flow through security.

Megatrend: Advancements in Intelligent Transportation Systems
This megatrend reflects a global push towards incorporating intelligent technologies in transportation infrastructure, aiming to significantly enhance security measures and operational efficiency.

Driver: Technological Innovations in Security Equipment
Ongoing innovations in the field of security technology, especially in imaging techniques and artificial intelligence, are the driving forces behind these enhancements.

All in all, advanced scanning machines that allow passengers to keep liquids and laptops in their bags are being tested, signalling a move towards more efficient security processes at airports. These innovations are part of a global megatrend focused on integrating intelligent technologies into transportation infrastructure, driven by continuous advancements in security technology, particularly in imaging and artificial intelligence.

This type of granular understanding of data might be helpful for analysing trends, which are in then used to analyse potential future developments. However, during my research I found a way of categorising information that I believe could be better suited for my case, considering that the focus is on persona building. The creative and advertising company TBWA's intelligence and global insights unit called Backlash releases a yearly Edge glossary, where they look at global dynamics in culture, tech, social and environmental innovation and summarise them in their own unit of disruption - edges. They define edges as significant cultural shifts that are deeply rooted in human values, discernible through consumer behaviours, and have clear business implications. Defined by their sustained relevance (lasting over a year before recognition and continuing to impact the foreseeable future) and their global relevance, edges are robust enough to drive brands toward a greater share of the future. ("Edges 2024," 2024) This approach positions edges as strategic tools that blend aspects of trends and drivers. These characteristics highlight many aspects critical to understanding personas - value driven, expressing wants, wishes and motivations.

I have therefore scanned through their 2024 Edge glossary and found that they are very fitting in thinking about future personas. The focus of Edges on human values and their insightful perspective on how disruptions might influence human behaviour are key strengths. Moreover, Edges describe concrete situations and events which makes it easy to imagine personas operating in these contexts. These characteristics allow for an efficient understanding of how such changes could instigate new trends or even contra trends.

This alignment with human-centric analysis might make Edges a valuable tool for developing a nuanced view of future societal shifts and their potential impacts on consumer behaviour and trends. The challenge, however, is that Edges are proprietary data defined and structured by TBWA. The way they define it is very fitting for my thesis, so I need to develop a similar framework tailored to my own research needs.

Takeaways for my future persona framework

I have established the question of the analysis. For the purposes of scanning the landscape, I have decided to use the PESTLE+V analysis. When it comes to the type of data, since I am discussing the future environment, I decided to use megatrends because they indicate potential long-term future developments. However, as my focus is on building future personas rather than scenarios, I also need data that suggest or describe more personal characteristics. Megatrends suggest looking at the landscape in a vast, global and long term perspective, which is useful for a future oriented design, but it might lack a certain zoomed-in consideration of the individual.

Therefore, in addition to megatrends, I also need data that would highlight a more user-centric perspective. I found that the concept of Edges would seem to be suitable, but they are proprietary. Therefore, an equivalent providing similar user-centric perspective is necessary, however this would require its separate line of research and development. For now, I will use the list of Edges (2024) in the provisional capacity in the prototyping phase to provide more clarity and ideas to be able to define my own data type at a later stage.

PHASE II: SENSE-MAKING AND STRUCTURING

In this phase, the collected data need to be organised and structured to facilitate the creation of future personas. I am following the deductive method as suggested by Mortlock (2021) and Van Der Duin (2016). It involves determining a framework in advance, within which scenarios are developed using identified elements such as developments and trends from the environmental analysis. This method is useful for my research because it provides a structured approach. (Van Der Duin, 2016) A prominent tool of the deductive method is Scenario Cross method.

Scenario Cross Method

The scenario cross method involves creating a 2×2 matrix by combining two core uncertainties, resulting in four quadrants. Each quadrant, distinguished by the dimensions of the core uncertainties, forms the basis for a scenario. This method simplifies complex futures into two main dimensions, providing a manageable number of scenarios. The process includes ranking trends based on impact and uncertainty, with the highest impact and most unpredictable trends forming the core uncertainties. (Van Der Duin, 2016)

In the adapted framework I am developing, the traditional scenario planning method is altered to focus on creating future personas rather than scenarios. This involves using a modified scenario cross method, where the intersections are formed between a core uncertainty from megatrends - long-term global trends - and another from the so-called Edges - trends driven by human values.

By aligning one uncertainty from megatrends with one from Edges, each quadrant of the cross specifically delineates a future persona, integrating both a broad, long-term trend and a more zoomed-in, value-driven trend. This approach shifts the emphasis from generic scenarios to more nuanced, future persona-based outcomes, reflecting both global dynamics and individual values. The thinking behind this structuring is that the dual-focus on megatrends and Edges not only enriches the development of each persona but also ensures that each is grounded in a combination of expansive and personal trend analysis.

In the following step-by-step instructions and images, the developed framework is showcased while also comparing it to Van Der Duin' approach (2016):

1. **Ranking Trends:** The trends identified in the previous phase should be ranked vertically according to impact and horizontally according to uncertainty. Since we are working with both Megatrends and Edges, there will be two parallel sets of data.
2. **Identifying Core Uncertainties:** Identify one megatrend with the highest impact and highest uncertainty, and do the same for the Edge category. These core uncertainties will form the axes of the scenario cross.
3. **Defining Polarities**: For the chosen megatrend, define the polarities from the most extreme to the least extreme version of the topic. Do the same for the Edges.
4. **Creating Quadrants**: Each quadrant of the scenario cross will represent a future persona.
5. **Filling Out Persona Templates**: Use a persona template with an empathy map to detail each quadrant.

In summary, the structured scenario cross is created by ranking the identified trends according to impact and uncertainty, and then selecting the core uncertainties from both Megatrends and Edges. This cross is used to develop distinct future personas, each represented in one of the four quadrants. Each persona should have a persona template with an empathy map that is filled out.

Step 1. Impact ranking - Vertically

Visualisation of Impact ranking according to Van Der Duin (2016)

This issue will have a significant impact/ fundamentally alter the topic in scope.

This issue will have insignificant impact/ will not alter the topic in scope.

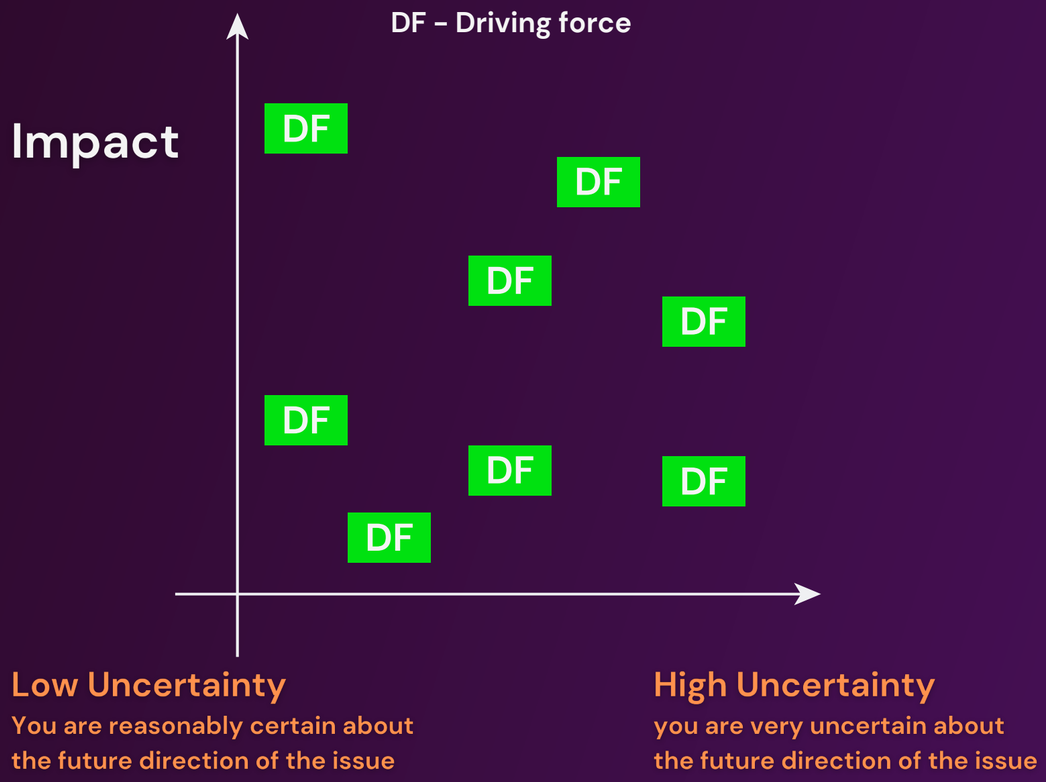
DF – Driving force

My altered version of the impact ranking detailing the use of two distinct data types.

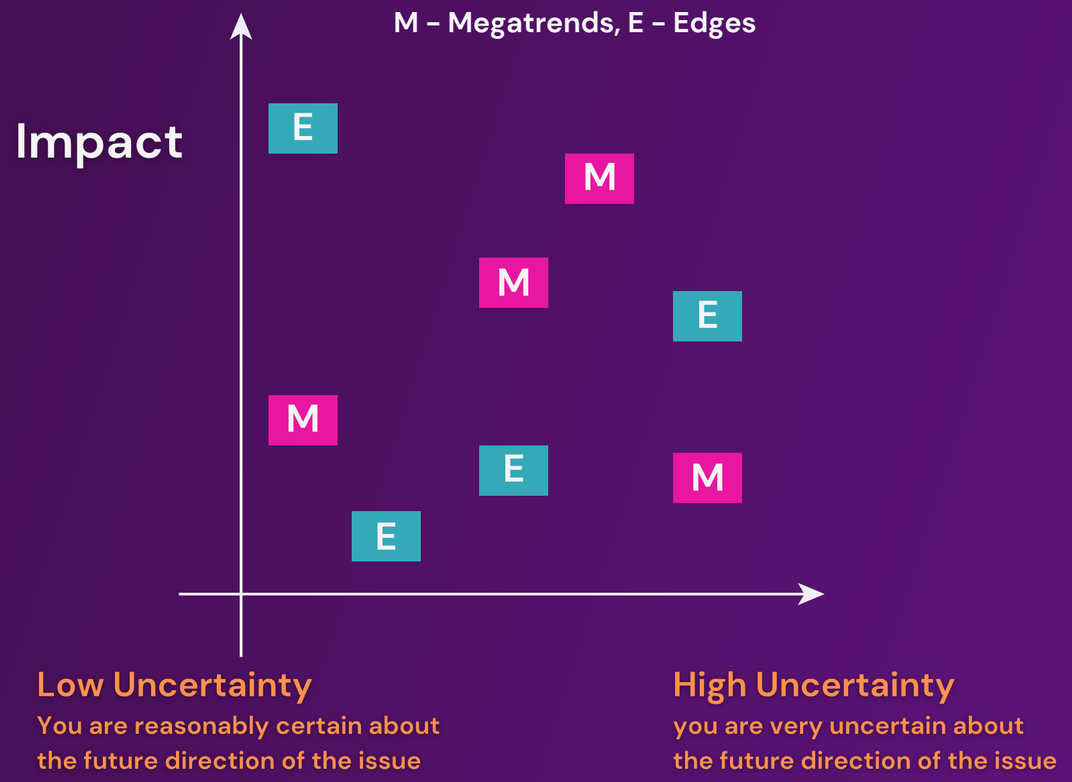
M – Megatrends, E – Edges

Step 2. Uncertainty ranking - Horizontally

Visualisation of uncertainty ranking according to Van Der Duin (2016)

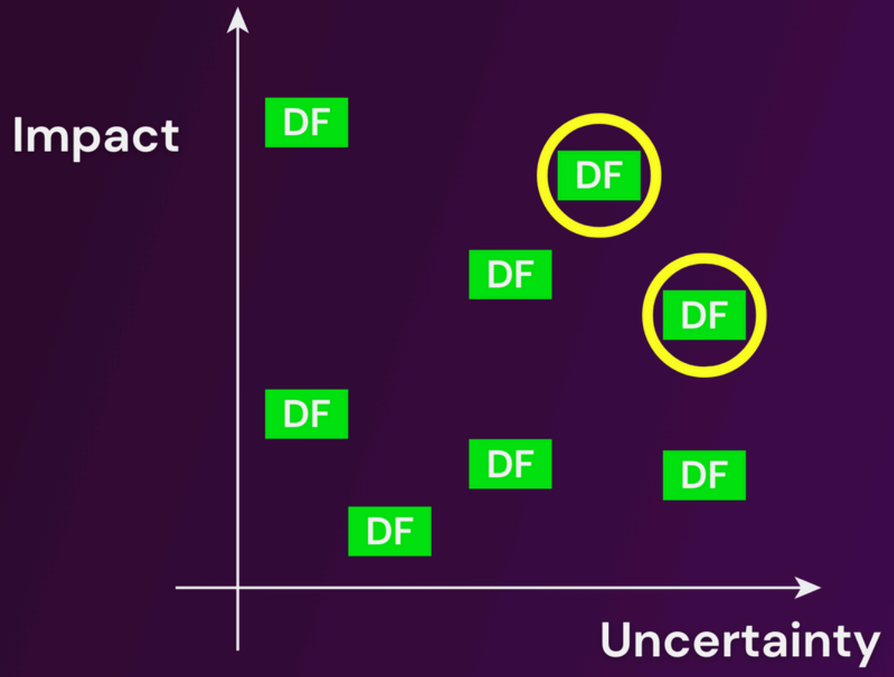


My altered version of uncertainty ranking detailing the use of two distinct data types.



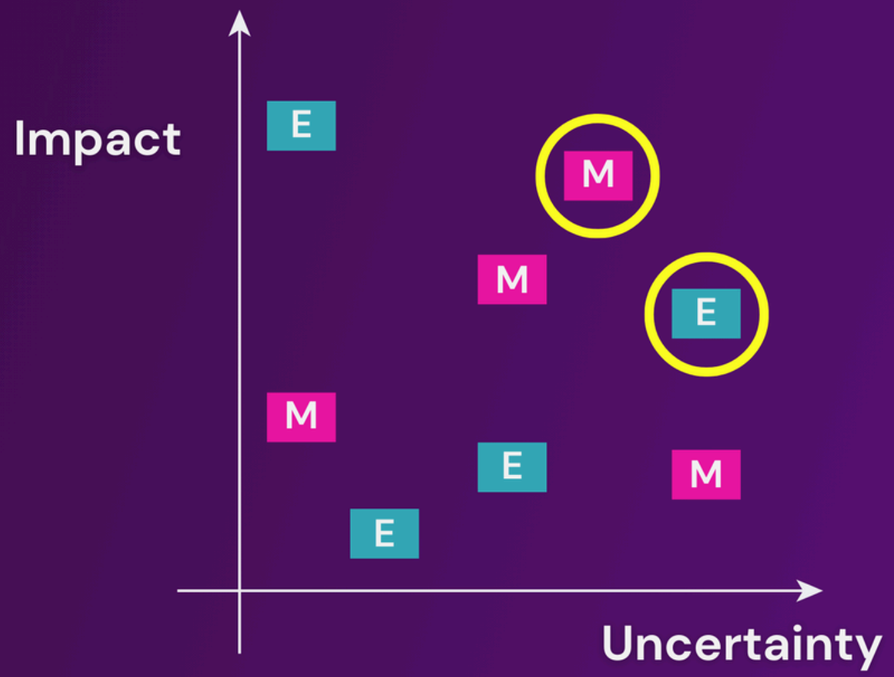
Step 3. Identify core uncertainties

Visualisation of identifying the core uncertainties according to Van Der Duin (2016)



DF - Driving force

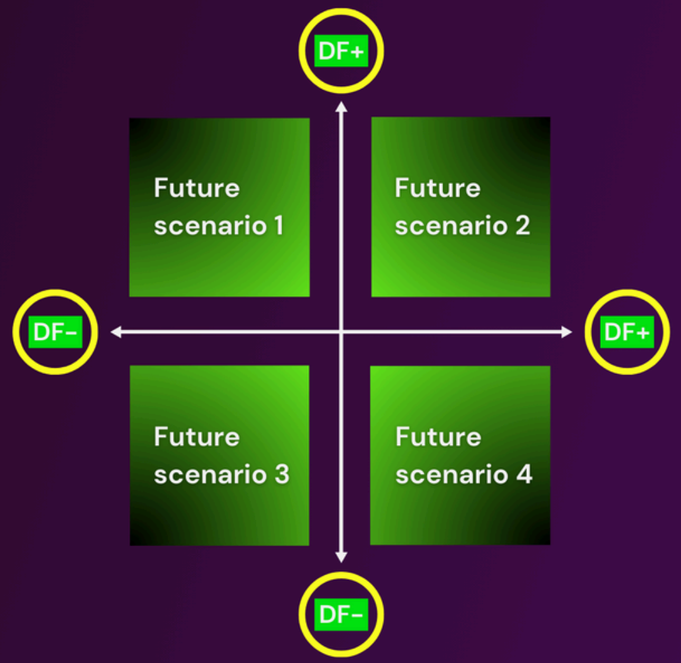
My altered version of identifying the core uncertainties detailing the use of two distinct data types.



M - Megatrends, E - Edges

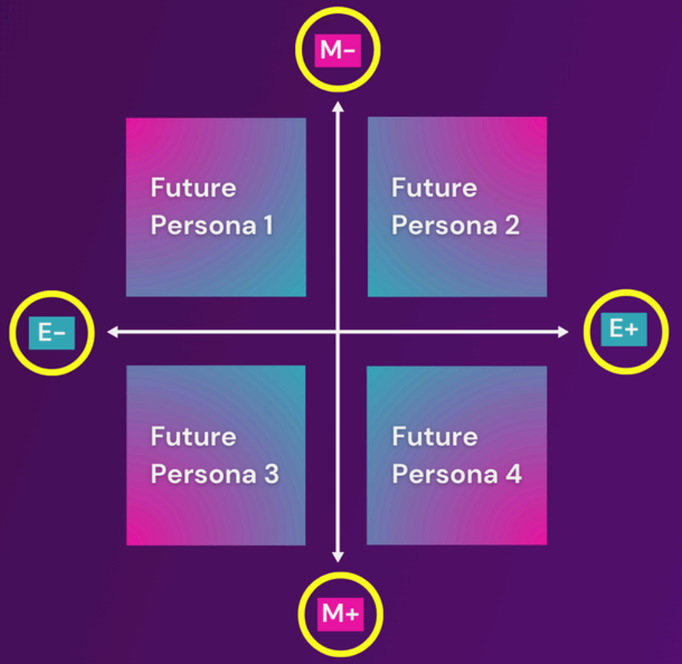
Step 4. Define the four quadrants

Visualisation of identifying the core uncertainties according to Van Der Duin (2016)



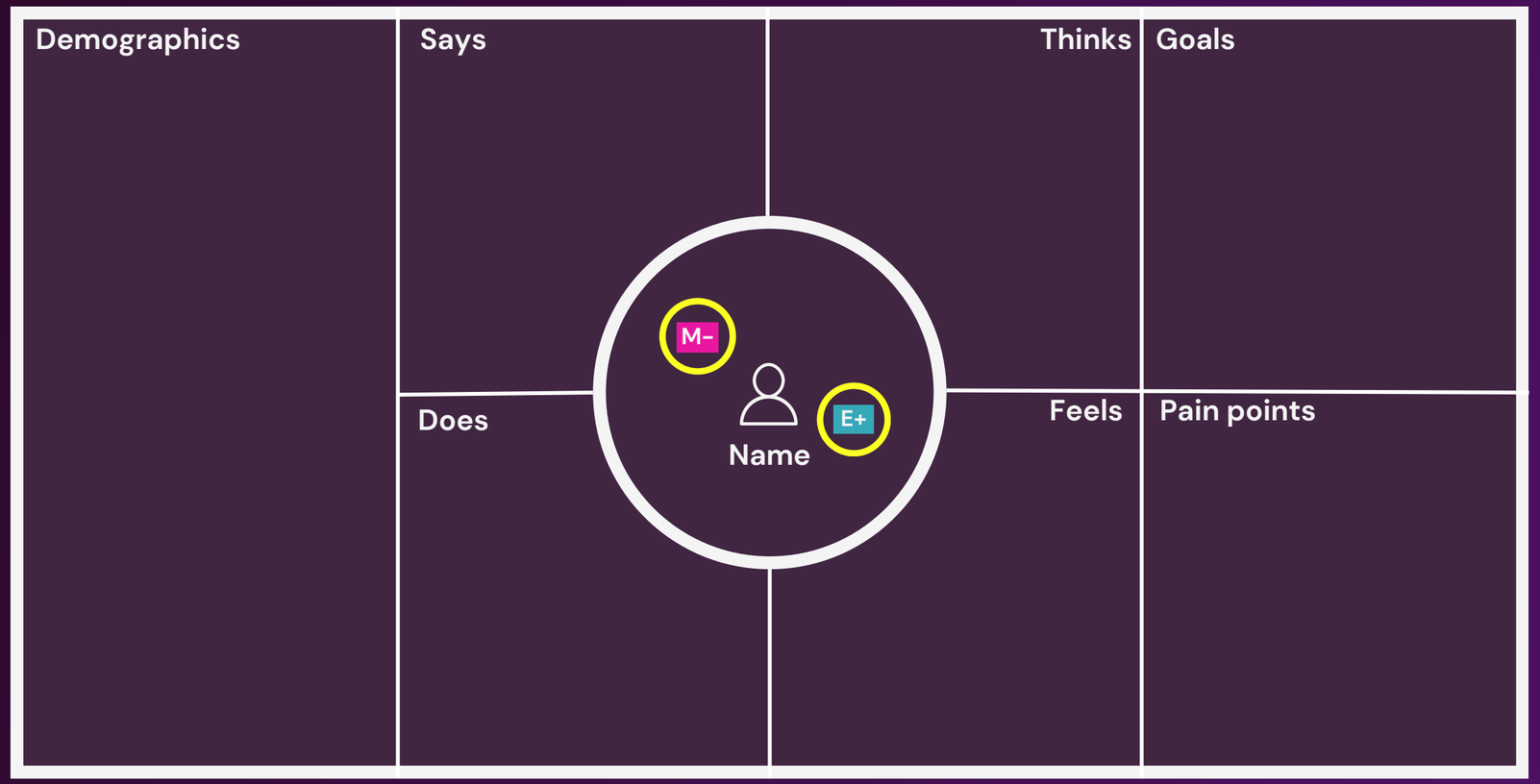
DF - Driving force

My altered version of identifying the core uncertainties detailing the use of two distinct data types



M - Megatrends, E - Edges

Step 5. Future persona template



Empathy map to be completed to create the basic profile of the future persona.

The future persona's character is influenced by the Edge and megatrend of the specific quadrant.

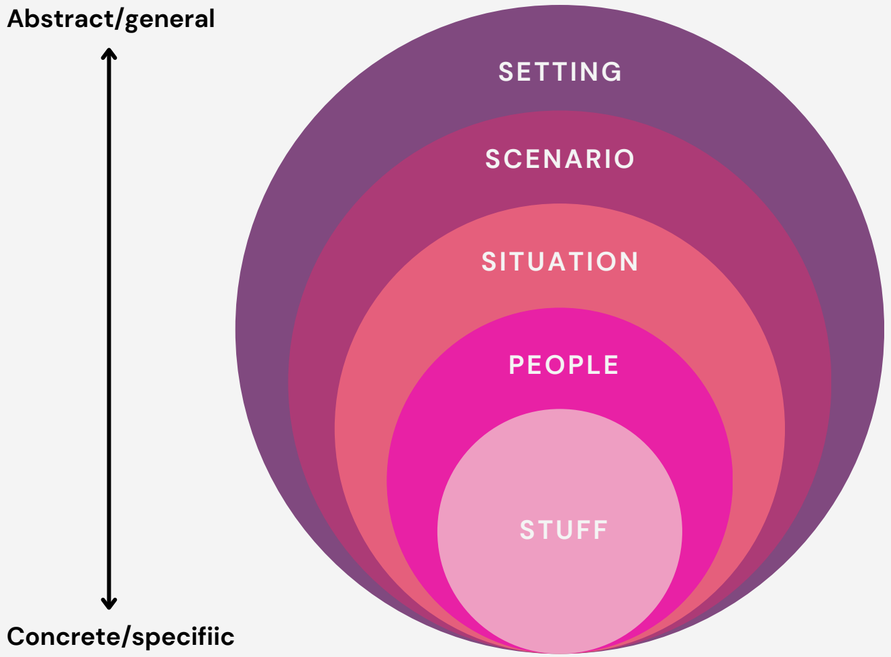
PHASE III: STORYTELLING

In this phase future personas are presented, discussed, and used. While maintaining and monitoring the personas is an important and valid part of this thesis, in the scope of this thesis the focus will be on utilising the future persona as a tool. In case of this thesis, the future persona was created to help us answer the questions from phase one: “What might the travellers of 2049 at Copenhagen Airport be like? What might their airport journey look like?” The created future persona template is designed to assist users in creating a narrative about the future airport journey at Copenhagen Airport.

In their book “How to Future,” Scott and Ashby (2020) propose using the Experiential Futures Ladder by Jake Dunagan, a conceptual framework used in futures studies, to create immersive and impactful experiences that help people understand and engage with future scenarios. The framework involves several layers: "stuff" includes physical artefacts from the future, "people" involve roles and characters that bring the scenario to life, "situation" sets up interactions and events within the scenario, "scenario" provides the narrative and context, and "setting" creates the immersive environment where the experience unfolds.

Using the Experiential Futures Ladder to portray the airport journey in Copenhagen in 2049 can be a valuable storytelling tool. By incorporating tangible elements such as futuristic travel documents and smart luggage, and engaging roles like travellers and airport staff interacting with advanced technologies, this method creates a realistic and immersive scenario. The layered approach helps participants experience the future firsthand, making complex technological and procedural advancements more comprehensible. This experiential storytelling not only enhances engagement but also fosters a deeper understanding of potential future developments in airport travel.

For a workshop, I prepared specific questions with clear instructions, making it easier and faster for participants to engage. Their replies collectively form an example of the customer journey for future personas:



Setting - What’s the macro-future we’re in?
Scenario - What scenario represents a piece of this?
Situation - What situation are we focusing on in this scenario?
People - Whose needs are we consdering in this future?
Stuff - What things bring this situation to life for us?

Figure 15: Sketch based on the model from Candy, S. and Dunagan, J. (2017).

Answering the following questions with clear instructions will make it easier and faster for participants to engage. Their replies collectively form an example of the customer journey for future personas:

1. **Is your persona traveling alone?**
   - [Persona name] travels...
2. **What is the purpose of the trip?**
   - [Persona name] is going on a trip because...
3. **What is the check-in process like and how does your persona feel about it? Envision a feature of check-in that does not exist today yet.**
   - [Persona name] has to ..... first, then they have to ..... and throughout this process they feel .....
4. **What is the ID check process like? Envision a feature of ID check that does not exist today yet.**
   - [Persona name] has to ..... first, then they have to ..... and throughout this process they feel .....
5. **What is the security screening like? Envision a feature of security screening that does not exist today yet.**
   - [Persona name] has to ..... first, then they have to ..... and throughout this process they feel .....
6. **How does your persona spend the time at the airport?**
   - [Persona name] likes to .... and their general mood is ....
7. **What are the pain points that your persona comes across during the airport experience? When describing pain points, think of the persona's values, goals, and motivations. FYI: There are no more lines to stand in at Copenhagen Airport in 2049.**

[Persona name] was especially nervous about... felt guilty about.... felt relaxed about...

This structured approach simplifies participation, accelerates the process, and effectively captures a comprehensive future airport experience. By guiding participants through these detailed questions, the workshop facilitates the creation of vivid, relatable future personas. These personas, grounded in realistic and immersive experiences, provide valuable insights into the potential future developments at Copenhagen Airport, enabling better planning and preparation for the challenges and opportunities that lie ahead.

LO-FI PROTOTYPE

The lo-fi prototype created in Miro marks the first practical application of the future persona framework I developed. This prototype includes a table with data and graphs to visualise the scenario cross. It is important to make sure that the data is gathered from reliable sources. For this prototype, I selected:

- Megatrends from the Megatrend Hub website of the European commission (Foresight, n.d.)
  - This website can be considered a reliable source because it is built to “foster a future oriented and anticipatory culture in the EU policy making process.” (Foresight, n.d.) Its limitation is that it is most suitable for topics related or situated in the EU.
  - Available at: https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en

- The edges were sourced from the list of Edges 2024 as completed by TWBA agency. (“Edges 2024,” 2024)
  - This up to date and well-structured report has turned out to be an invaluable source for short term, human-value driven trends.
  - Available at: https://backslash.com/edges/

The primary objective was to test for the first time the difficulty level of working with the trend cards when it comes to ranking them by their impact and uncertainty.

Insights from designing lo-fi prototype:

- Ranking the trends by impact and uncertainty was manageable, though it took longer than expected (cca. 30 min)
- During the identification of core uncertainties, trends tended to get mixed, which is a crucial point to watch for in future iterations.
- The persona templates were not completed due to time constraints.
- For facilitation with participants, it will be essential to clearly differentiate between megatrends and Edges in future explanations.

WORKSHOP 0

Before starting the primary workshop with multiple participants, I conducted a preliminary trial session called Workshop 0. During this session, I focused on creating the final workshop outline using Miro software, dividing the allocated time into three sections corresponding to the three phases of the workshop. For the Phase I, I prepared the trend cards, drawing inspiration from similar cards used in previous ideation activities.

I conducted the workshop with one participant without service design background. The main purpose was not to test out and reflect on the viability of proposed methodology, but rather to verify if the used terminology is understandable for a non-involved party, ensure that the instructions are clear and easy to follow, and that it is possible to complete the workshop within the given time frame. In general, this trial session provided an opportunity to refine the instructions for the participants.

Given the limited time available during the actual workshop, I decided to further simplify the PESTLE+V data analysis by shortening it to PESTE. This involved merging the values (+V) with Social and the legal (L) with Political (P) categories, which seemed a reasonable approach to streamline the process for the actual workshop with multiple participants.

WORKSHOP 1

Since I started to develop the future persona (FP) methodology, I considered conducting a workshop as the most suitable way of testing and evaluating the lo-fi prototype. The setting of the proposed workshop was very similar to scenario planning workshops. In these workshops, a facilitator delineates the methodology and tasks, while participants - acting as client representatives - engage in ideation. Crucially, they provide feedback not only on the concept but also on the workshop's style and execution.

Among the most significant differences between scenario planning workshops presented by Van Der Duin (2016), Mortlock (2021) and Smith and Ashby (2020) and the proposed FP workshop was that the FP workshop had to be drastically scaled down. All three authors describe how all steps of scenario planning, consisting of several workshops, can take months to conduct, depending on the project. In this case a timeframe had to be set, which would be acceptable for participants in relation to time and level of engagement. I have therefore decided to build a workshop that does not run longer than 2 hours in total.

The workshop started with a short presentation (15-20 min) that served as a welcome for the participants and introduced the concept and the terminology of future persona. The main part of the workshop was divided into three main segments:

1. Scanning (15 min)
2. Sense-making (15 min)
3. Storytelling (30 min)

The workshop ended with a feedback session (15 min).

In order to shorten the process, I needed to simplify it. For the scanning phase, I (as the facilitator of the workshop) have in advance prepared the megatrends and edges cards. This means that I have researched both the megatrends and the value driven, shorter trends and put them on cards with a description and image, as this was something that would be impossible to be completed by the participants within the given timeframe.

The megatrends and edges cards were prepared using the data from European commission and TWBA agency (see lo-fi prototype section on previous page). Considering the overall topic, the data related to the Copenhagen airport in the year 2049.

The second, sense-making phase was planned to take the same amount of time (15 minutes) as the scanning phase, thus leaving most of the time for the persona building and storytelling phases. The reason for saving most time for the last part is that I anticipated to gain most valuable feedback on the concept from this part. In this phase the actual future persona is constructed for the first time and the participants have the opportunity to engage with it in full form.

The workshop took place on April 28th 2024 at the premises of AAU in Copenhagen. There were 4 participants and their expertise included digital innovation consultancy, service design and information technology. The workshop was divided into three segments: presentation, collaborative tasks and individual work.

Figure 16: Photo depicting the presentation of the concept.

Workshop process

The session started with a welcome to the participants and was followed by an introduction to the FP methodology, which was presented using slides. Participants were briefed on the workshop's format and schedule. This included seating arrangements at a table equipped with blank papers and colour markers for note-taking. The digital assets of the workshop were prepared in advance in the digital collaborative program Miro, which was displayed on an HD monitor for the participants. The digital part of the workshop included precise instructions, tables and digital assets that helped the participants follow an intuitive flow of the tasks. However, the participants did not log into the Miro board, it was operated by the facilitator (the author) in real time.

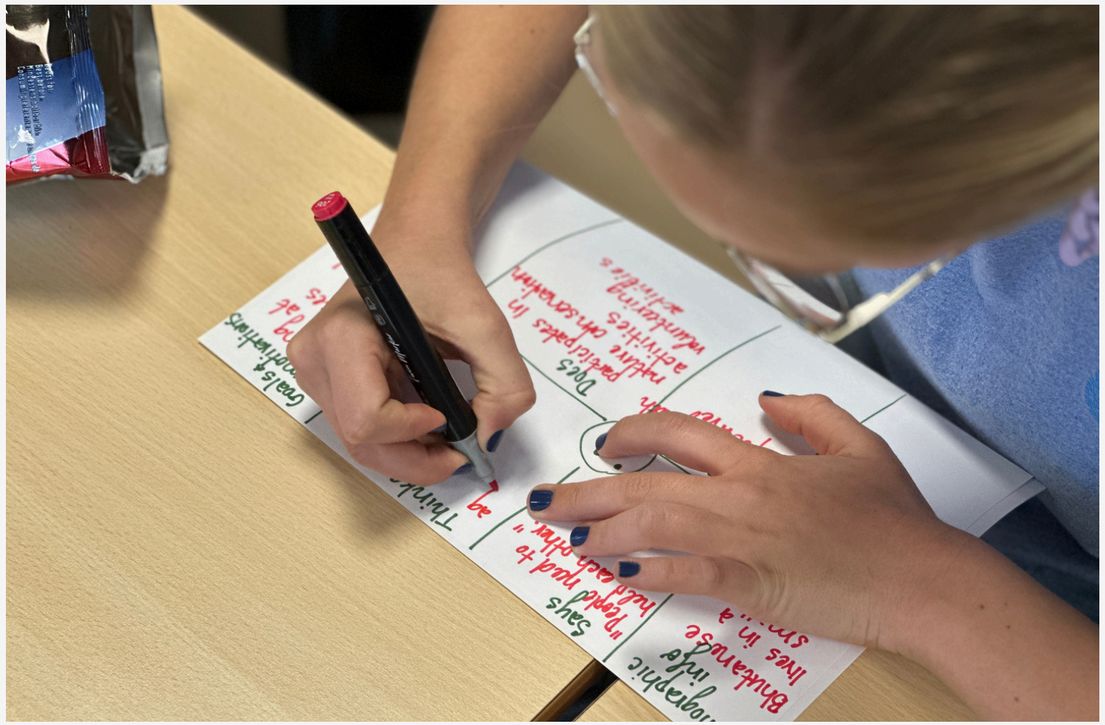


Figure 17: Photo depicting the workshop.

Following the 20-minute introductory presentation, the workshop transitioned to the collaborative segment, where the megatrend and edge cards were introduced. After a 10 minute discussion the participants selected a card from each category, leading to another discussion where cards were ranked on a vertical scale based on the impact of the issues they presented. Subsequently, a 15-minute session allowed for horizontal ranking by the level of uncertainty associated with each issue, culminating in the selection of two core uncertainties. The final collaborative task involved defining the polarities of the core uncertainties. With four participants present, each was assigned one of the four potential variations of these uncertainties by picking a number to ensure fairness. The workshop then shifted to the individual segment, where each participant developed a future persona. They then completed a persona profile and an empathy map on paper, followed by a series of questions about their persona. The collective responses from these activities outlined the airport journey taken by each persona.

Figure 18: Photo depicting the workshop.

Workshop Reflections - My personal reflections

- In general, participants were interested in and curious about the future persona concept from the beginning.
- During the first two phases that were collaborative in nature, all four participants contributed equally to the discussions and kept up with the pace of the tasks.
- I have noticed that while the participants were engaging in conversations about the topics on the megatrend and edge cards, they were confused whether they should read the full text on the cards, or whether keywords and association would be enough to refer to. They seemed unsure if the card had any other function than presenting a certain topic and to what extent they should engage with each topic.
- In the second phase, while ranking the cards according to impact and uncertainty it was necessary to remind them of the time because they were falling into deeper discussion about the topics.
- From a facilitator's perspective, it turned out to be challenging to be the presenter, facilitator, operator of the miroboard and moderator of the discussions at the same time.
- Another challenging aspect was to remind myself and the participants the time horizon they should work with and think about (25 years in the future), even though this was continuously noted in the miroboards.
- I assumed that the most challenging part would be the third phase, where the trends need to be imagined in polarities and variations of trends need to be imagined and briefly described. This, however, turned out to be a task that the participants tackled with ease.
- The participants seemed to enjoy working individually on their own personas and at the end sharing short parts of their persona stories. It was also noted that using paper and colour markers to sketch the empathy map and writing the persona stories was a good idea. The participants noted that it felt refreshing to use their hands and write after a long session of physical inactivity.
- I expected the storytelling part to be the most engaging as the participants have the opportunity to see the fully constructed persona for the first time. This did not turn out to be true. They were too focused on completing the persona story.
- In comparison to the last phase where we discussed the created personas, discussions were much livelier and more engaging during the first two phases - the identification and examination of megatrends and value based trends.

Workshop Reflections - Feedback from participants

Feedback evaluation from the participants. Data gathered through anonymous feedback and survey software called Menti.

Potential use of FP for strategic planning	• In general participants see the potential, however some of them mentioned FP for prediction (which is not the main goal of the FP) • Potential in exploring uncertainty, uncertain fields (AI) • Too fictional, more inclined to use for near future, not long term future • Potential to be a guided brainstorming exercise
The most relevant aspect of FP	• The process of building FP • The four quadrants combining megatrends and edges • Exploring potential future scenarios • Predict potential disruption to the business case
On the potential of FP for designing services with long life cycles	• Most participants saw potential in the use of FP as tool for longterm designs • Some raised concern again about the the use for too long term, would prefer near future

Instructions	• Has to clarify the granularity • Some were insecure because of lack of knowledge about the topics • Cards should be more keywords rather than full text
Time	• Would prefer to spend more time on personas, discussing them and empathising with them • Would prefer to spend more time on getting to understand the megatrend and edge card topics
Engagement	• Participants found the process to be fun, engaging, creative and entertaining • Some had problem understanding how this could be used IRL
Explanation	• All four participants found that the FP concept was explained well

Workshop 1 conclusion and next steps

The workshop provided valuable insights into the practical application and participant engagement with the FP methodology. It is important to keep in mind that this workshop represented a shortened and simplified version of the process. There is no specific timeframe for how long a future persona building process should take. It depends on the goal, scale, amount of participants, etc. However, the first conclusion of the workshop is that for future iteration and design of the methodology, I will need to start to distinguish between short duration and long duration workshops/processes. While there is no exact amount of hours set what would constitute to be short or long duration, it depends on the ability of the participants to fully perform the set tasks. The duration greatly influences some parts of the process, for example sourcing the data for megatrends and edges. For a two hour workshop, there is no time for the participants to do these tasks themselves, therefore it falls upon the facilitator to source and prepare them in advance. The advantages are mostly time saving and more space for discussion. The disadvantage is that participants may not delve deeply into topics and rushed decisions might result in inaccurate or unreliable data.

The feedback also highlighted the need to rethink the way that the megatrends and edges are presented to the participants. There is a need for clearer instructions and simplification of the megatrend and edge cards. There is also a need to iterate the design of both cards. Participants expressed a desire for a better understanding of these elements. However, due to lack of time, they didn't manage to read the text description on each card. For short duration workshops it would therefore be more beneficial to have keywords on the cards. As a compromise, if the design of the cards allows, both a text description and keywords would be ideal. Text could still be useful for participants during workshops where there is time to consult the cards and read more about the topics. The focus should be on refining the content to be more accessible and less overwhelming, enabling participants to grasp the topics more quickly and engage more deeply. But most importantly, there is a need to create a more structured way of sourcing, choosing and presenting the edges cards, possibly in the form of a guideline.

Iteration - Rethinking the megatrends and edges

As concluded from the feedback on the workshop, the list of Edges needs to get a more understandable framework that participants could work with. While it is clearly defined that Edges in contrast to megatrends represent the human value based factors and trends pointing towards the future, for the purpose of the workshop they were secondary sourced from a trendspotting agency. Both secondary and primary sourcing of data for value-driven trends could be acceptable. However, when feasible, engaging in primary sourcing can offer more direct and nuanced insights. To improve the workshop's effectiveness, it is crucial to develop a new framework that clearly instructs participants on how to approach and handle edges. This iteration will be a key focus for preparing the upcoming workshop.

List of possible suggested changes for the future development of FP methodology:

- Re-conceptualize 'Edges' to 'ValueTrends': Given that 'Edges' are specifically associated with insights from the company Backlash, a development of a new concept, 'ValueTrends,' is proposed. This term better reflects the focus on dynamic shifts in consumer values and behaviours, capturing the current societal moods. 'ValueTrends' would serve a very similar purpose to 'Edges,' they represent data for understanding and analysing the evolving landscape of consumer sentiment and societal trends. However, the development and research of this new concept unfortunately cannot be achieved within the scope of this thesis.
- Define the objectives and purpose of megatrends and ValueTrends in more detail.
- Guidelines for identifying megatrends and ValueTrends is needed: Develop a detailed guideline to help users identify ValueTrends and megatrends. According to allocated time, this could involve steps for monitoring trends, analysing data to uncover emerging patterns.

The workshop resulted 4 future personas presented on the following page:

SAYS
"I want to provide for my family!"

THINKS
there has to be some changes
the world has never been worse

FEELS
feels disconnected
does not see hope for the future

DOES
drive her taxi 24/7 due to
hyper tourism

DEMOGRAPHICS
- lives in the US
- small family
- midlle aged
- low education
- works as a taxi driver

GOALS & MOTIVATIONS
- wants to make money for the fam

PERSONA1 JOURNEY THROUGH COPENHAGEN AIRPORT IN 2049

Is your persona traveling alone?
Mirtil travels with her two kids and partner.

What is the purpose of the trip?
Mirtil is going on a trip because she lives in a society where travelling on a regular basis is part of everyday life.

What is the check-in process like and how does your persona feel about it? Envision a feature of check-in that does not exist today yet.
When arriving to the airport Mirtil and her family sees robot personnel that perform the check-in processes. The robots simply by scanning Mirtil and her family's faces knew exactly who they are and which flight they are taking. Mirtil feels they have no privacy anymore but she feels like she can't do anything about it.

What is the ID check process like? Envision a feature of ID check that does not exist today yet.
The robots simply by scanning Mirtil and her family's faces knew exactly who they are and which flight they are taking. Mirtil feels they have no privacy anymore but she feels like she can't do anything about it. Since capitalism has failed, Mirtil and her family only travel with the absolute necessities, each with backpacks.

What is the security screening like? Envision a feature of security screening that does not exist today yet.
At the security screening robots scan every passenger from head to toe. This is a strange experience yet it feels faster than the old ways back in 2024.

How does your persona spend the time at the airport?
At the airport, Mirtil and her fam spend time by watching movies in VR. (VR at this point is very old school)

What are the pain points that your persona comes across during the airport experience? When describing pain points, think of the persona's values, goals, and motivations. FYI: There are no more lines to stand in at Copenhagen Airport in 2049.
Mirtil feels super disconnected at the airport. Even though the check-in process was smooth and fast, she misses the human touch.

Figure 19: AI generated image depicting the described persona. Created using MidJourney software.

PERSONA2 JOURNEY THROUGH COPENHAGEN AIRPORT IN 2049

Is your persona traveling alone?
Yes, it is the 1st time he travels by plane. It is only bc of urgent need.

What is the purpose of the trip?
His sister, living in DK passed away. He needs to take care of her belongings.

What is the check-in process like and how does your persona feel about it? Envision a feature of check-in that does not exist today yet.
The check-in is done thru the camera. He feels comfy about it.

What is the ID check process like? Envision a feature of ID check that does not exist today yet.
The ID check can be done also thru phone after arrival to CPH, but as it is Steve’s 1st time flying, he feels lost and he needs some assistance.

What is the security screening like? Envision a feature of security screening that does not exist today yet.
-

How does your persona spend the time at the airport?
After arrival to CPH, Steve uses the “arrival lounge” for resting after the long flight, charge his phone and see how he can buy the ticket for public transport.

What are the pain points that your persona comes across during the airport experience? When describing pain points, think of the persona's values, goals, and motivations. FYI: There are no more lines to stand in at Copenhagen Airport in 2049.
For Steve, who is flying for the 1st time, the experience feels overwhelming and a bit scary. He does need some human assistance to help him explain how things work.

Figure 20: AI generated image depicting the described persona. Created using MidJourney software.

PERSONA3 JOURNEY THROUGH COPENHAGEN AIRPORT IN 2049

Is your persona traveling alone?
Eco Almond mom travels with her husband and kids.

What is the purpose of the trip?
She is going on a trip to check the rainforest plot she owns, to brag about it on neural link media.

What is the check-in process like and how does your persona feel about it? Envision a feature of check-in that does not exist today yet.
Eco Almond mom has to get food of the most sustainable cafés in the airport, she has to know exactly where to go, she feels frustrated because her kids want junk food and husband and husband wants the kombucha.

What is the ID check process like? Envision a feature of ID check that does not exist today yet.
The ID check happens through scanning her neural link as they pass through the control gate.

What is the security screening like? Envision a feature of security screening that does not exist today yet.
They barely register it. Seamless. They are not allowed liquids or food, and recently … drinks have been cancelled to. She has to argue with the security about produced baby food. They let her through after checking the baby formula. SHe is feeling offended. They didnt even ask her about her CO2 score.

How does your persona spend the time at the airport?
Eco Almond mom has all the latest wellness gadgets she tries to relax on the infrared massage pod, but her kids keep interrupting her.

What are the pain points that your persona comes across during the airport experience? When describing pain points, think of the persona's values, goals, and motivations. FYI: There are no more lines to stand in at Copenhagen Airport in 2049.
She has too many CO2 trackers that are not compatible, not enough areas to distract her kinds while she relaxes.

Figure 21: AI generated image depicting the described persona. Created using MidJourney software.

SAYS

-

THINKS

- Get most from life
- Maximise comfort

FEELS

- Entitled
- Restless
- Empowered, better than others

DOES

- travels in luxury

DEMOGRAPHICS

- **wealthy**
- **young**
- **shattered**
- **male**
- **out of shape**

GOALS & MOTIVATIONS

- **see all the cool things**
- **be unique**
- **seem interesting**
- **status**
- **entertainment**

PERSONA4 JOURNEY THROUGH COPENHAGEN AIRPORT IN 2049

Is your persona traveling alone?
John is travelling alone, so he is not limited by anyone elses needs or opinions.

What is the purpose of the trip?
John is travelling to an uninhabited island to hike a mountain nobody has explored.

What is the check-in process like and how does your persona feel about it? Envision a feature of check-in that does not exist today yet.
John has been checked-in automatically upon arrival at the airport with the help of global Citizen ID.

What is the ID check process like? Envision a feature of ID check that does not exist today yet.
His luggage is automatically cleared by hidden scanners in the airport and stored luggage is picked up by robots/drones. He is annoyed that he has to wait over a minute for a bot to service him.

What is the security screening like? Envision a feature of security screening that does not exist today yet.
John has customised his airport look with some of the 1st class themes of the airport, with several personalisations managed by his digital assistant, that knows what he likes better than he does.

How does your persona spend the time at the airport?
John does not get his preferred drink because the airport rans out, but actually its because he has a record of being drunk and disorderly. He is not informed of this.

What are the pain points that your persona comes across during the airport experience? When describing pain points, think of the persona's values, goals, and motivations. FYI: There are no more lines to stand in at Copenhagen Airport in 2049.
John is annoyed of the smallest delays and annoyances.

Figure 22: AI generated image depicting the described persona. Created using MidJourney software.

Workshop 2

On May 8th, a second workshop was held with two participants, both of whom were professionals in compliance and medicine. The goals for this workshop were:

1. Clarify Concepts: Develop a clearer understanding of megatrends and ValueTrends.
2. Scale Comparison: Assess how the workshop dynamics change with only 2 participants compared to the first workshop, which had 4 participants. Specifically, determine if there is more room for discussion and more time to create personas.
3. Framework Evaluation: Evaluate how the scanning phase proceeds without using the PESTE framework.

Personal reflections

Scanning process

- There is a confirmed need to redesign the cards, in order to grasp the topics quickly, keywords need to be highlighted. Text can stay, but as a secondary source or a positioning tool.
- Megatrend cards are good use and a good way to introduce the topics, people are interested in the future topics.
- ValueTrend cards seem also to be still very useful, questions remain about how they could be primarily sourced and/or not prepared in advance.
- Smaller number of participants made for a more informal atmosphere
- The choice of megatrend cards fits into the PESTLE categorization even without explicit instructions to pick according to these categories

Sense-making process

- impact ranking and uncertainty ranking are time consuming, because discussion get lively
- there is a need to remind participants that the scope got smaller here, from global perspective they should zoom in and consider the field (aviation in 2049)
- Text boxes with tips, full questions next to the axes help with grasing how to rank the trends

Storytelling process

- participants seem to understand well the process of creating polarities
- In this phase, participants in general were more curious and interested in discussing their personas compared to the first workshop. However, due to time constraints the participants did not create the airport journey story, only the persona templates.

Feedback from the participants:

Instructions, time and engagement	• Enough time in general for tasks, but participants interested in working more on the persona template • well-thought through, well designed, fun and engaging thinking about future • FP concept well explained and understood based on presentation and workshop
The most relevant aspect of FP	• Creating personas that participant can identify with • People can project what they would like to have in the personas
Potential use of FP for strategic planning	• Yes, but short time horizon
On the potential of FP for designing services with long life cycles	• Probably yes

Conclusion of the workshops

The workshop tested the concept of future persona as developed within the context of this thesis. It provided valuable experience, and the feedback gathered will be incorporated into the final product. The workshops, along with the final product, will culminate in the creation of a toolkit. While the data collected from the workshops will be essential in developing the toolkit, a significant challenge remains unresolved: sourcing and structuring ValueTrends.

The workshop processes can also be viewed in the Miro board, the link can be found on the appendix main page.

The challenge with ValueTrends

Establishing a method to source and evaluate data, particularly trends, is crucial. It became clear early on that a well-structured approach is needed to source both megatrends and ValueTrends. Sourcing megatrends is relatively straightforward since they are well-established concepts that governmental and policymaking bodies recognize and promote, making reliable sources readily available. However, sourcing ValueTrends is more complex. For the purposes of prototyping and testing future persona methodology, the concept of edges developed by TBWA agency was used. There are two main drawbacks to using this secondary sourcing for the value driven trends:

1. They are proprietary, meaning that a new independent approach would have to be developed for sourcing and evaluating data regarding value development, in case of considering real life commercial application of the proposed future persona methodology.
2. Although Edges are not entirely temporary, they change more rapidly than megatrends. Therefore their inventory must be frequently updated, making it harder to maintain and time-consuming to create new entries continually.

A development of a new concept “ValueTrends” was proposed. Sourcing data for identifying ValueTrends and creating a ValueTrend inventory would involve a constant gathering of current information. This could include multiple methods of data gathering: interviewing people, conducting surveys, observing and analysing what is trending in the news and on social media platforms, sociological research and many other. There is no pre-made method for this; it requires active noticing and sensing the social mood.

This gathered information should be documented, structured and turned into a ValueTrend inventory, which would then be translated into ValueTrend cards. Consulting trend-spotting companies and advertising agencies is recommended, which necessitates a tool for constant horizon scanning. The feasibility of this depends on the time and format allocated to the future persona process. For long-term analyses (more than three weeks), there might be sufficient time to create individual targeted ValueTrend inventory for the purposes of that specific workshop series/project. For shorter workshops, the facilitator would have to prepare a more general ValueTrend inventory in advance, similarly as it was done during the conducted workshop with presented Edges.

Megatrends	
Definition	Megatrends are large-scale, sustained shifts that broadly influence global markets, societies, and environments over a long time period. They are external forces that impact a wide range of areas.
Examples	Technological Advancement - The rise of artificial intelligence and machine learning, impacting multiple sectors from healthcare to finance.
Sourcing	Find reliable sources of governmental entities or international agencies (UN, European commission) or management consulting or market research companies (PwC, Deloitte, etc.)
Categorising	PESTLE+V can be used if considered useful. For short term ideation, no categorisation might be needed.
Cataloguing	Document and save the findings on megatrend cards. No strict layout, but use of image, clear title, short description and visible keywords, source link recommended

ValueTrends (concept proposal)	
Definition	ValueTrends are culturally and value-driven trends that arise as responses or adaptations to broader megatrends. They reflect the currently ongoing values, attitudes, and behaviours within specific communities or demographics and are often driven by human reactions to external shifts.
Examples	Health and Wellness - growing focus on personal well-being and preventive healthcare in response to an Aging Population.
Sourcing	Actively gather current information by engaging with people, monitoring news, and analysing social media trends, then document and update this data frequently. If limited in time, consult trend-spotting companies and advertising agencies for additional insights to maintain a comprehensive and updated ValueTrend inventory.
Categorising	PESTLE+V can be used if considered useful. For short term ideation, no categorisation might be needed.
Cataloguing	Document and save the findings on ValueTrends cards. No strict layout, but use an image, clear title, short description and visible keywords, source link. Extra step: With ValueTrends, highlight the underlying value.

CONCLUSION OF THE DESIGN PROCESS AND KEY TAKEAWAYS

In developing future personas, the traditional steps of scenario planning were adapted to focus on human-oriented factors rather than broad scenarios. This is achieved by considering two types of variables in the future persona building process. Megatrends that relate to environments and scenarios, and ValueTrends that relate to the principles and values, resulting in future personas that reflect potential future consumers. The primary purpose of creating future personas aligns with the need to understand the values, wishes and motivations of prospective users. Traditional scenario planning allows companies to explore plausible future environments and assess their current systems' resilience and adaptability that derive from these environments. This method, however, may overlook the evolving values, preferences and behaviours of future consumers. Considering the values that customers adhere to could enhance a company's ability to remain relevant and responsive in changing markets. Therefore, by generating future personas instead of scenarios, organisations can gain insights into the personal attributes and expectations of potential users, allowing them to tailor strategies that are both resilient and deeply aligned with future consumer values.

Regarding the importance of integrating consumer values into strategic planning, according to recent research (SS&C Blue Prism, 2023), companies' involvement and support of social and environmental issues has become an important aspect of business operations. While only 46 % of the Baby boomers generation think that companies should in some form be involved in social and political issues, 75 % of Gen Z respondents claim it is important for them. This indicates a huge shift and that it is important to consider value-driven consumers and their needs because they represent an ever-increasing portion of users. Studies also indicate that a substantial portion of consumers in Europe and the USA actively choose products based on their social and environmental impact, often rejecting brands that fail to be transparent or make false claims. (SS&C Blue Prism, 2023) This shift demands that companies not only adjust their own corporate behaviours but also align closely with similarly principled suppliers and partners.

Application in commercial aviation

How does this translate into the context of commercial aviation? According to the Airports Council International Europe (ACI Europe) - the European department of trade association promoting excellence in airport management and operations - the collapse of travel during COVID-19, coupled with decarbonization pressures and structural changes in the aviation market require a radical transformation of Europe's airports' business model. Key to this shift is decoupling financial viability from traffic and passenger volume growth. (Airport Industry Manifesto, 2024)

This means that for airports it is increasingly important to make money from activities not related directly to air traffic. At present, airports' revenues comprise aeronautical revenue (revenue from airline charges and passenger fees) and non-aeronautical revenues (revenue from concession, rental and parking charges, etc.). In the case of Copenhagen airport, aeronautical revenue represented 54 % of total revenues and non-aeronautical revenue was 48 % of total revenues in 2023. ("Copenhagen Airports Annual Report 2023," 2024)

By relying on non-aeronautical revenue, airports recognize the commercial value of passengers not just as travellers but also as consumers. This shift in perspective acknowledges that passengers contribute not only to airline traffic but also to the airport's overall revenue generation. Consequently, airports must consider passengers as a crucial demographic whose values and preferences can influence their consumption behaviour within airport premises.

Product delivery

Future Persona

A design toolkit for creating future personas

Welcome!

This toolkit is for you - the designer, who would like to create future personas. You will find all the information you need about what future personas are and why to use them on the following pages. In order to use them, you have to create them. In order to create them, you have to follow the process.

The future persona building process is divided into 3 phases:

I. Scoping and scanning the landscape
You will set the question you want to answer.
You will collect data about trends that will shape your persona.
You will learn what megatrends and ValueTrends are.

II. Sense-making and structuring the data
You will rank the collected trends according to impact.
You will rank the collected trends according to uncertainty.
You will define the 2 core uncertainties.
You will use the cross method that will get you 4 future personas.

III. Storytelling
You will fill out your future persona template.
You will tell stories about your future persona.

Future Persona:

Envisioning Tomorrow's Users.

Personas are tools used in design, marketing and business to understand the needs and wants of users as they interact with services and products. They are based on research.

Future Personas extend this traditional use to anticipate the future wants, needs and journey of clients as they interact with future services or products. They are also based on research. While it is not possible to predict the future, it is possible to suggest plausible future personas based on trends that we see today shaping our world. Future personas could enable organizations to proactively prepare for changing consumer behaviors and emerging market needs, despite the uncertainty about the future.

The customers of the future:

Why should we use future personas?

This ideation exercise merges scenario planning with persona development to explore the evolving needs and desires of future users, essential for envisioning innovative, resilient services and ensuring excellent user experiences and future-readiness.

How are future personas developed?

Future personas are created by analysing global megatrends and drivers of change. They are combined with emerging trends and shifts in consumer behaviour and values, allowing stakeholders to create several plausible future persona profiles and ideate how their expectations and preferences will shape the future of services.

I. Scoping and Scanning

What happened until now?

Nothing. You just started.

What will happen now?

You will set the question you want to answer.
You will collect data about trends that will shape your persona.
You will create a list of megatrends and ValueTrends.

Scoping

How to set the question you want to have answered?

- **State the question clearly:**

Example: What will air passengers be like in 2049?

- **Identify the field of exploration:**

Example: Aviation

Scanning

How to collect data and what data do you need to collect?
There are two types of data about the future you need to collect in order to create a future persona:

Megatrends and ValueTrends.
What are they?
What is an example of each?
Where do you get them from?
How do you analyse them?
How do you catalogue, store and present them?

All the answers are on the next page.

Understanding megatrends and ValueTrends

Megatrends	
Definition	Megatrends are large-scale, sustained shifts that broadly influence global markets, societies, and environments over a long period. They are external forces that impact a wide range of areas.
Examples	Technological Advancement - The rise of artificial intelligence and machine learning, impacting multiple sectors from healthcare to finance.
Sourcing	Find reliable sources from governmental entities or international agencies (UN, European commission) or management consulting or market research companies (PwC, Deloitte, etc.)
Categorising	PESTLE+V can be used if considered useful. For short term ideation, no categorisation might be needed.
Cataloguing	Document and save the findings on megatrend cards. No strict layout, but use of image, clear title, short description and visible keywords, source link recommended. Store the cards in a trend inventory.

ValueTrends	
Definition	ValueTrends are culturally and value-driven trends that arise as responses or adaptations to broader megatrends. They reflect the currently ongoing values, attitudes, and behaviours within specific communities or demographics and are often driven by human reactions to external shifts.
Examples	Health and Wellness - growing focus on personal well-being and preventive healthcare in response to an Aging Population.
Sourcing	Actively gather current information by engaging with people, monitoring news, and analysing social media trends, then document and update this data frequently. If limited in time, consult trend-spotting companies and advertising agencies for additional insights to maintain a comprehensive and updated ValueTrend inventory.
Categorising	PESTLE+V can be used if considered useful. For short term ideation, no categorisation might be needed.
Cataloguing	Document and save the findings on ValueTrends cards. No strict layout, but use an image, clear title, short description and visible keywords, source link. Sore the cards in a trend inventory.

Scanning the landscape

Instructions for choosing the trends. There are two options:

1.Based on your personal and professional experiences pick the ones you find most relevant in relation to the scope of the issue/field.

Example: What will passengers be like in 2049? field: aviation.
The megatrend card - Growing consumption can be discussed in relation to this issue. The card indicates shifting consumer behaviour towards sustainability and wellbeing. This will influence consumer behaviour at airports. Designing sustainable and wellbeing services will be in demand.

2.You can also use the PESTLE+V analysis.
This model is suitable for detailed analyses, that take long time. P-political, E-economic, S-social, T-technological, L-legal, E-environmental, V-values. Identify trends under each factor that is relevant for your issue/field.

Example: What will passengers be like in 2049? field: aviation.
A person who in their field focuses on economic and environmental factors would choose: Economic - growing consumption card and Environmental - aviation restriction card

The megatrends and ValueTrends depicted in the image are for illustrative purposes.

Guiding question:

What's happening around the planet?

How do we feel about it? How does it shape our reaction? It is guided by the base value.

Megatrends
Longterm global impact

X

ValueTrends
Values-driven consumer trends

Trend cards are an example of how to document and catalogue your trends:

Growing consumption

- SUSTAINABLE CONSUMPTION
- CONSUMER-CENTRICITY
- OUR DIGITAL LIVES

The expected growth of the global middle class to 4.8 billion by 2030 will significantly impact global production systems and resource demands, while shifting consumer behaviors towards sustainability and wellbeing, despite slowdowns from the COVID-19 pandemic.

Aviation restriction

- SIGHTSEEIING TOURS
- NATIONAL PARK PROTECTION
- AIR TOURS REGULATION

To protect the peace and serenity of nature, the US has passed new regulations that will limit the flying of planes and helicopters around nearly two dozen national parks and monuments. Mount Rushmore National Memorial and Badlands National Park will have some of the strictest rules, banning commercial air tours within one-half mile of the site boundaries by April 2024. Meanwhile, Glacier National Park is phasing out all sightseeing flights by the end of 2029.

Scanning the landscape

Suggested template for the trend cards

Image.

Clear title.

Keywords.
Useful for quick overview during ideation workshops.

Detailed description.
Useful for deailed analyses.

Megatrends
Longterm global impact

Growing consumption

- **SUSTAINABLE CONSUMPTION**
- **CONSUMER-CENTRICITY**
- **OUR DIGITAL LIVES**

The expected growth of the global middle class to 4.8 billion by 2030 will significantly impact global production systems and resource demands, while shifting consumer behaviors towards sustainability and wellbeing, despite slowdowns from the COVID-19 pandemic.

ValueTrends
Values-driven consumer trends

Aviation restriction

- **SIGHTSEEIING TOURS**
- **NATIONAL PARK PROTECTION**
- **AIR TOURS REGULATION**

To protect the peace and serenity of nature, the US has passed new regulations that will limit the flying of planes and helicopters around nearly two dozen national parks and monuments. Mount Rushmore National Memorial and Badlands National Park will have some of the strictest rules, banning commercial air tours within one-half mile of the site boundaries by April 2024. Meanwhile, Glacier National Park is phasing out all sightseeing flights by the end of 2029.

Scanning the landscape

Instructions

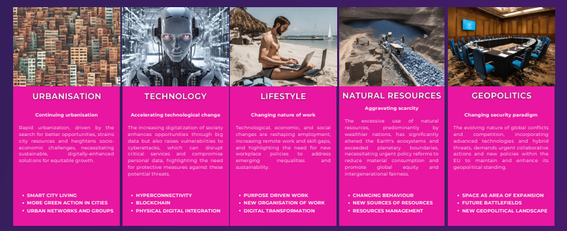
1.Create a trend inventory.

What is a trend inventory?
It is a form of storing the megatrends and ValueTrends you found. It can take a form of lists, tables, miro boards, sticky notes on a paper. Choose the form that suits your purposes best.

The megatrends and ValueTrends cards depicted in the image are for illustrative purposes. Remember, the topics of trends depends on what you found in relation to your question/field. The amount of cards should be determined based on the available time you have for the research/ideation and the scope of the analysis being conducted.

My trend inventory

Megatrends



ValueTrends

II. Sense-making and Structuring

What happened until now?

You created a list of megatrends.
You created a list of ValueTrends.

What will happen now?

You will rank the collected trends according to impact.
You will rank the collected trends according to uncertainty.
You will define the 2 core uncertainties.
You will use the scenario cross method to get 4 future personas.

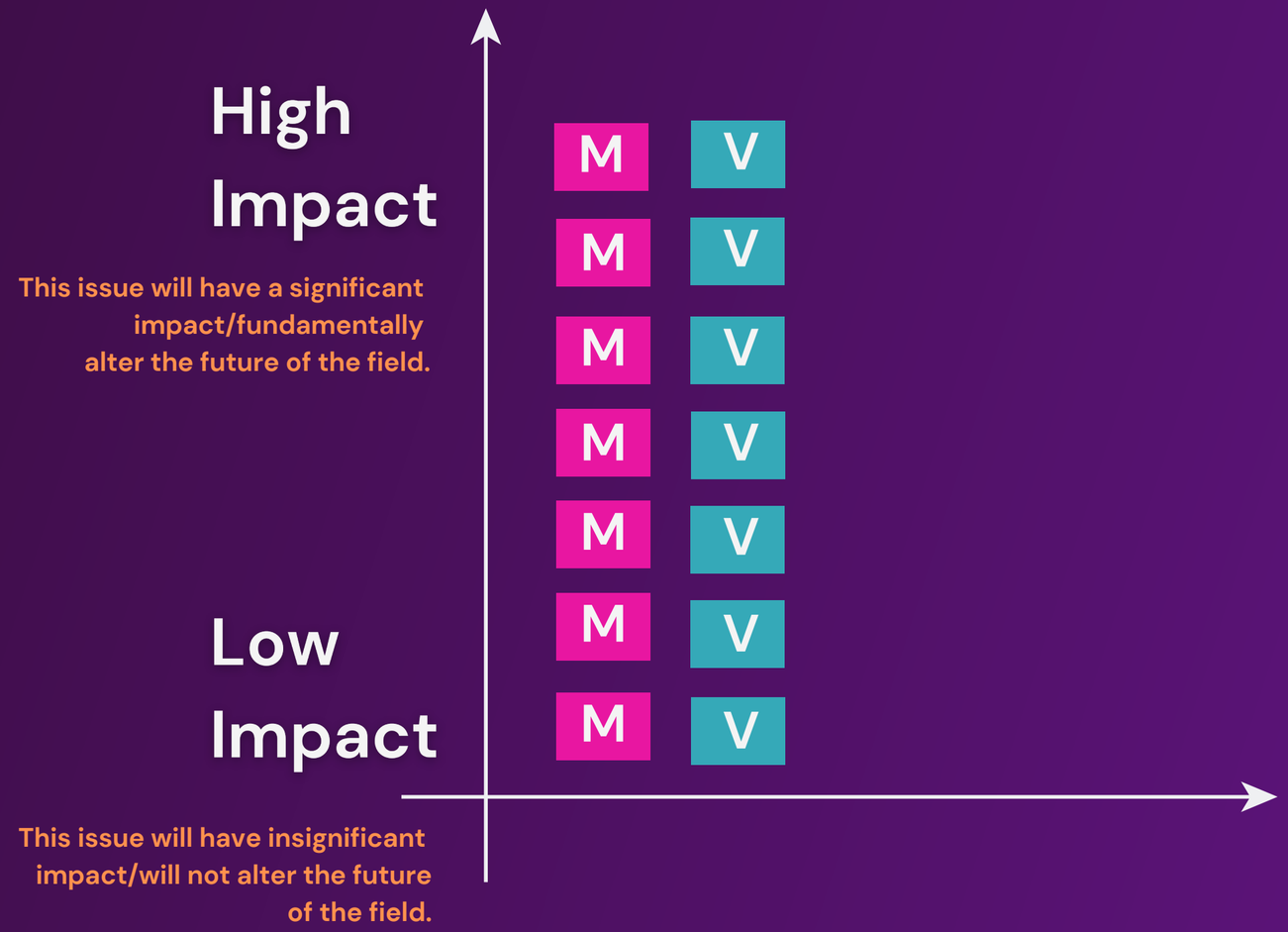
Step 1. Impact ranking - Vertically

Instructions

1.Rank the megatrends from your list vertically according to impact.

2.Rank the ValueTrends from your list vertically according to impact.

The number of megatrends and ValueTrends depicted in the image is for illustrative purposes. Remember, the actual number used should be determined based on the available time and the scope of the analysis being conducted.



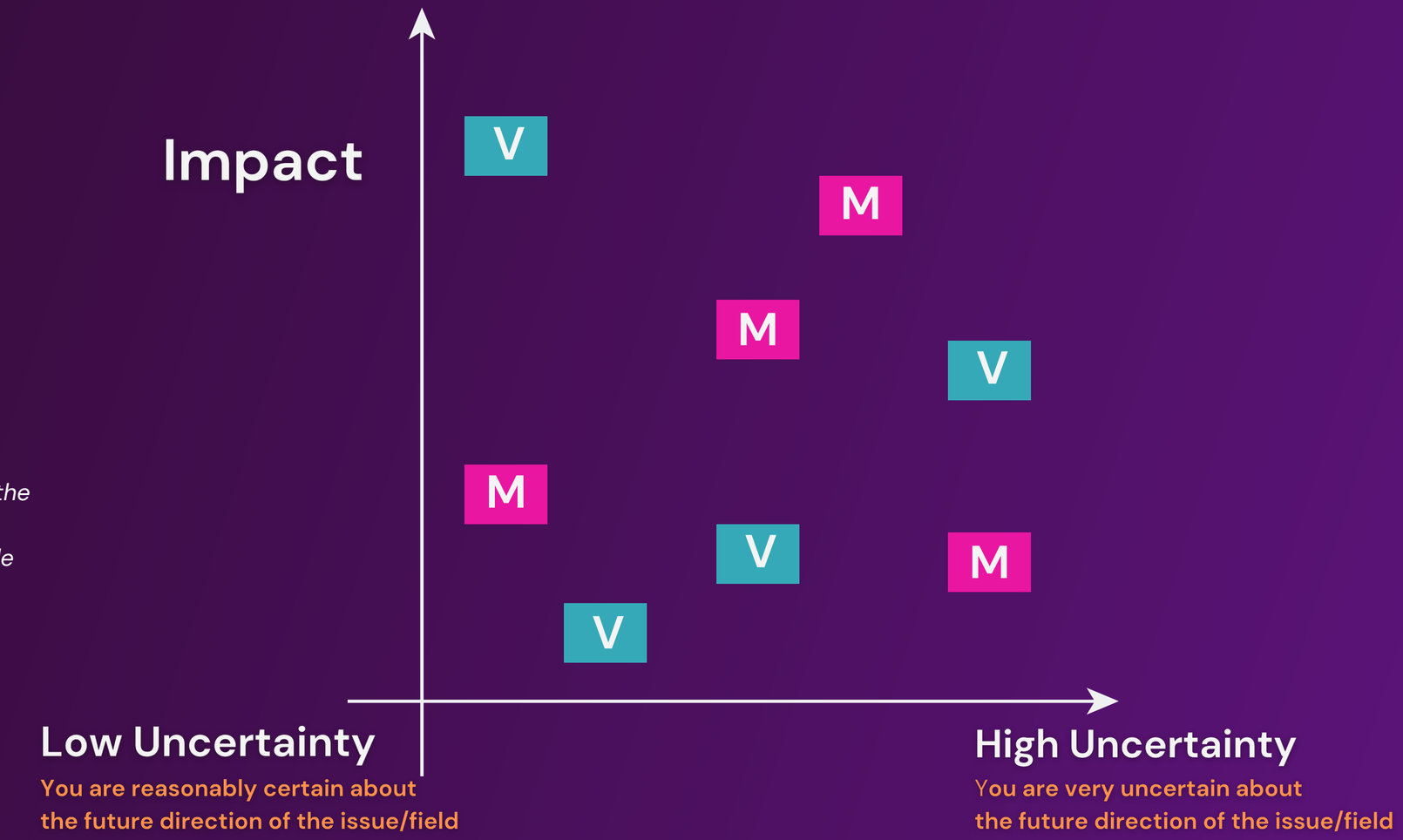
Step 2. Uncertainty ranking - Horizontally

Instructions

1.Rank the megatrends horizontally according to uncertainty.

2.Rank the ValueTrends horizontally according to uncertainty.

The number of megatrends and ValueTrends depicted in the image is for illustrative purposes. Remember, the actual number used should be determined based on the available time and the scope of the analysis being conducted.



Step 3. Identify core uncertainty

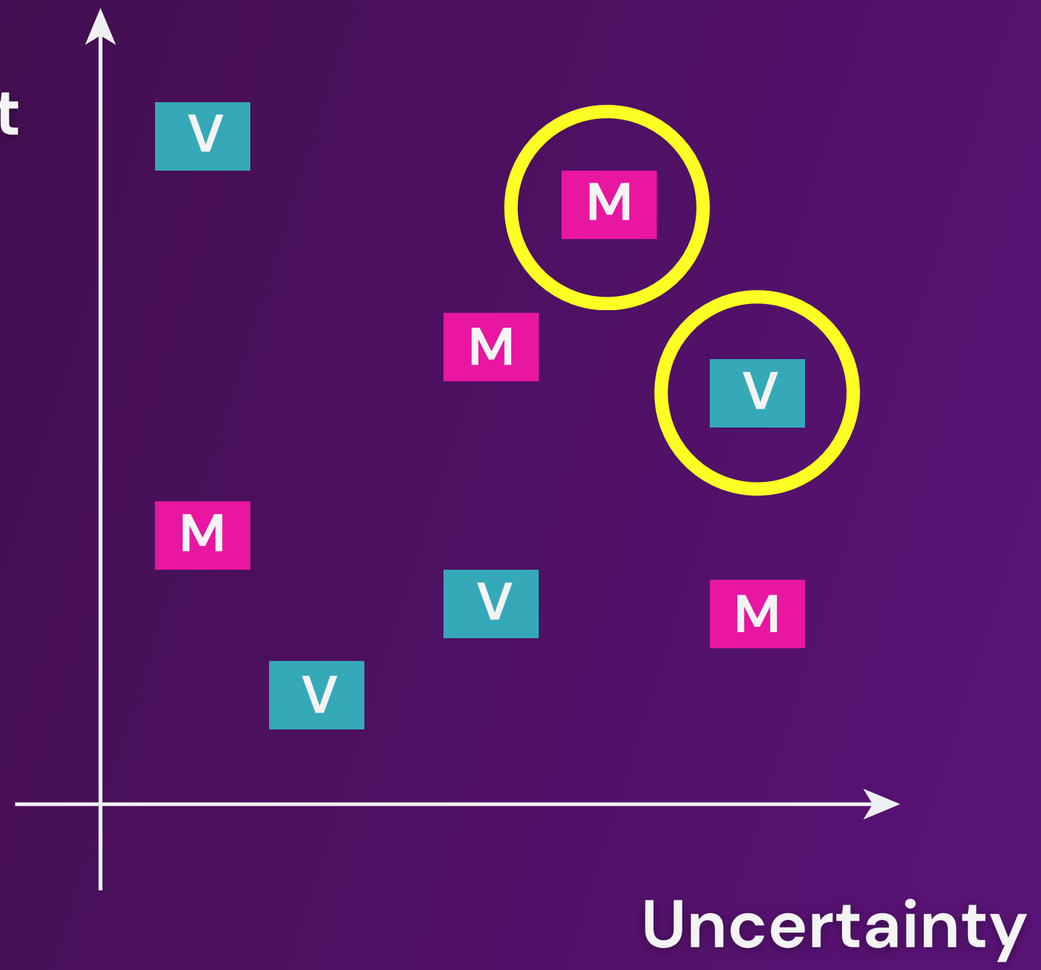
Instructions

1.Identify one core uncertainty from megatrends.

2.Identify one core uncertainty from ValueTrends.

What is a core uncertainty?

Core uncertainty is the trend with the highest uncertain outcome yet highest impact if it happened.



Step 4. Define the four quadrants

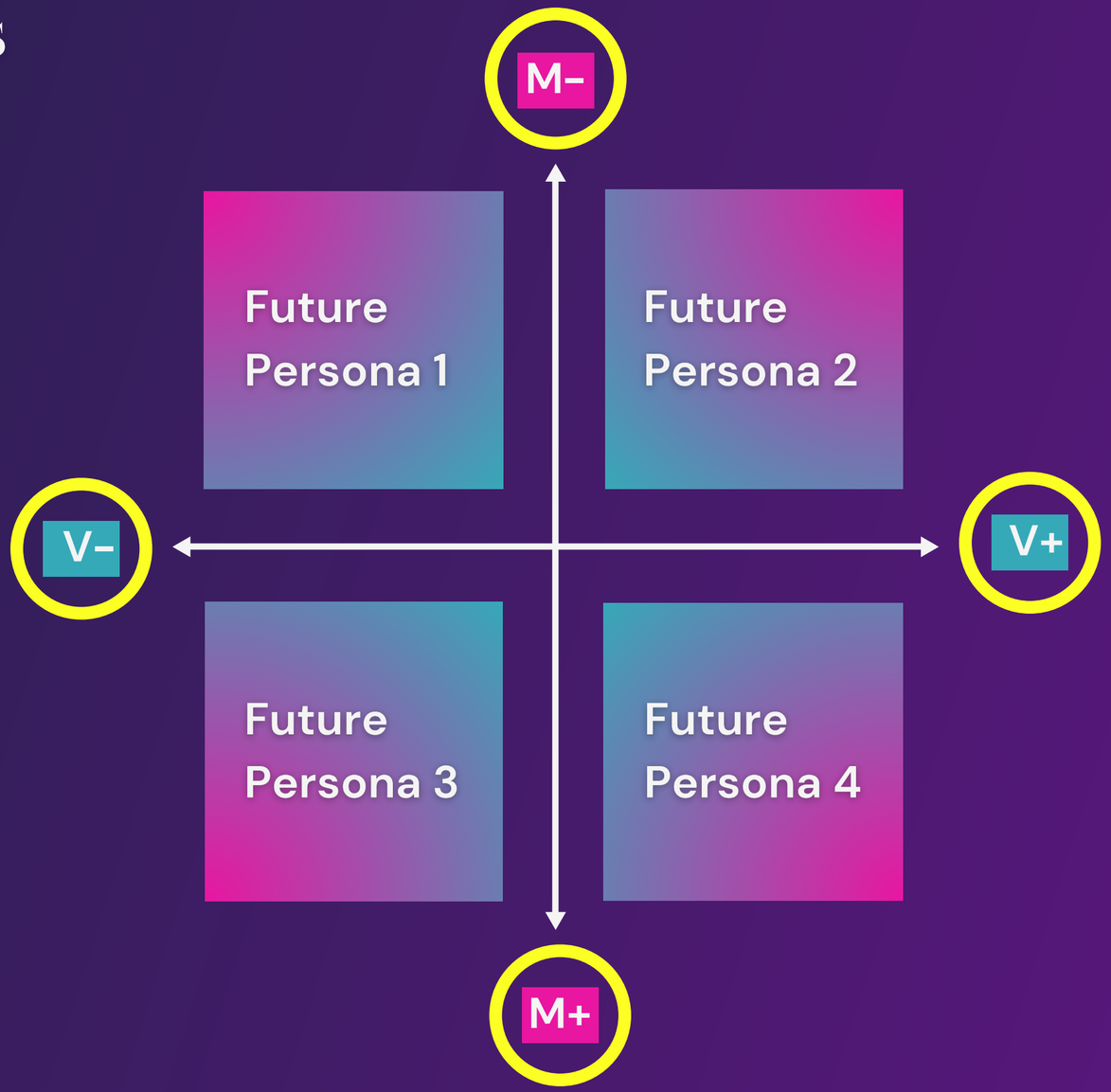
Instructions

1.Megatrend core uncertainty goes on the y axis. Create its two polarities.

2.ValueTrends core uncertainty goes on the x axis. Create its two polarities.

What are polarities?

Polarities represent the nature of the extreme scenarios. They should be extremes of the core uncertainties.
for ex.: centralised vs decentralised.



III. Storytelling

What happened until now?

You structured the data and got 4 variations of megatrend and Valuetrend polarities.

What will happen now?

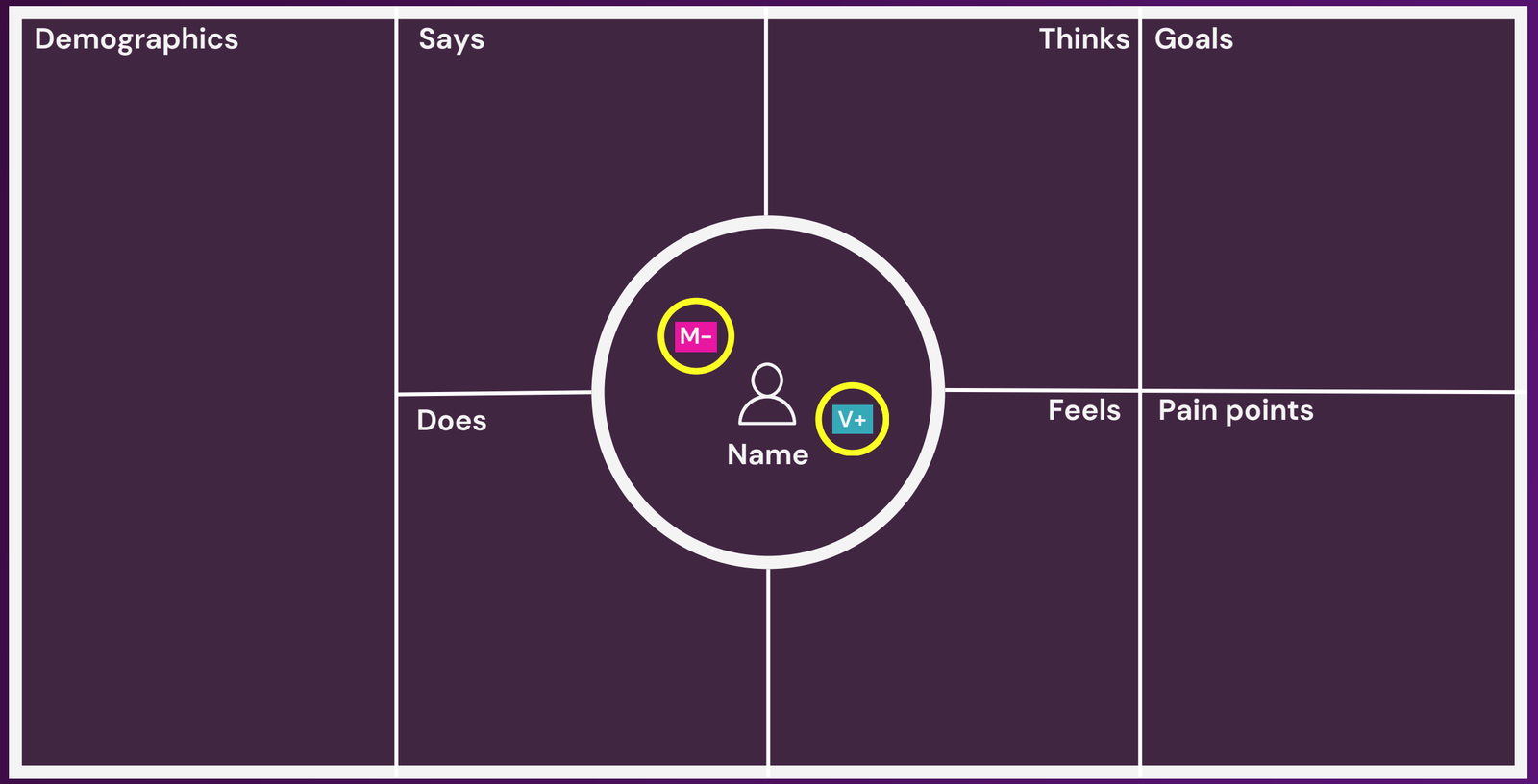
You will fill out your future persona template.
You will tell stories about your persona.

Step 5. Future persona template

Instructions

1.Complete the empathy map to to create the basic profile of the future persona. The future persona's character is influenced by the ValueTrend and megatrend of the specific quadrant.

The polarity signs on this template are an illustration of 1 of the 4 versions.



SAYS

"I need everything to go smoothly so I can focus on my presentation and meetings."

THINKS

She thinks about maximizing productivity during her trip and the importance of making a good impression.

FEELS

She feels confident and organized, yet slightly stressed about the tight schedule.

DOES

Maria meticulously plans her trip, uses digital tools to streamline her travel experience, and prioritizes efficiency.

DEMOGRAPHICS

Maria is a 29-year-old female, a business consultant from Berlin. She travels frequently for work.

GOALS & MOTIVATIONS

Her motivation is driven by career advancement and professional growth.

Example of future persona profile and storytelling

ILLUSTRATION OF PERSONA JOURNEY THROUGH FUTURE AIRPORT

Is your persona traveling alone?
Yes, Maria travels alone, which is common for her due to her frequent business trips.

What is the purpose of the trip?
She is attending a crucial business meeting in Copenhagen to network with potential clients and advance her career.

What is the check-in process like and how does your persona feel about it? Envision a feature of check-in that does not exist today yet.
The check-in is performed through a seamless biometric scan integrated with her personal AI assistant. Maria feels confident and appreciates the efficiency.

What is the ID check process like? Envision a feature of ID check that does not exist today yet.
The ID check is done through her phone using a secure blockchain verification process. Maria, being tech-savvy, finds it convenient and reliable.

What is the security screening like? Envision a feature of security screening that does not exist today yet.
The security screening involves an advanced passive scanning system that checks for threats without requiring Maria to remove her belongings. She finds this process smooth and time-saving.

How does your persona spend the time at the airport?
Maria uses the airport's business lounge to prepare for her meeting, utilising high-speed internet and conference rooms for a final rehearsal of her presentation.

What are the pain points that your persona comes across during the airport experience? When describing pain points, think of the persona's values, goals, and motivations. FYI: There are no more lines to stand in at Copenhagen Airport in 2049.
Despite the efficient systems, Maria's pain points include occasional technical glitches with the digital tools and a slight anxiety about maintaining her tight schedule. She values reliability and any disruptions can cause stress.

Your future persona is now created!

Tell stories about your personas. How would the persona describe generally the future they live in, think about specifics to know better what it is like out there in the future. Answer how the persona's life is, what they like, how they feel about it and why it is important for them.

(just as the example on the previous page)

Let's recap what you did to create the future persona:

I. Scoping and scanning the landscape

You set the question you wanted to answer.
You collected data about trends that shaped your persona.
You learned what megatrends and ValueTrends are.

II. Sense-making and structuring the data

You ranked the collected trends according to impact.
You ranked the collected trends according to uncertainty.
You defined the 2 core uncertainties.
You used the cross method that got you 4 future personas.

III. Storytelling

You filled out your future persona template.
You told stories about your future persona.

I hope you learned something valuable.
Now go and update your Linkedin profile with future literacy skills.

DISCUSSION

BRIEF OVERVIEW OF THE CREATED METHODOLOGY

Future Personas in the context of this thesis extend the traditional use of personas to anticipate the future wants, needs and journeys of customers as they interact with future services or products. While it is not possible to predict the future, it is possible to suggest plausible future personas based on trends that we see today shaping our world. Future personas could enable organisations to proactively prepare for changing consumer behaviours and emerging market needs, despite the uncertainty about the future. The future persona method merges scenario planning with persona development in order to explore the evolving needs and desires of future users, which is essential for envisioning innovative, resilient services and ensuring excellent customer experiences and future-readiness. Future personas are created by analysing global megatrends and large scale drivers of change. They are combined with shorter term, emerging trends and shifts in consumer behaviour. Considering variations of these trends will allow stakeholders to imagine and create several plausible future persona profiles and ideate how their expectations and preferences will shape the future of services.

REFLECTIONS ON THE METHODOLOGY IN REAL LIFE SETTING

In general, I was satisfied to see that in a real life setting - the workshop - the methodology worked and all participants were able to follow the process through to create their own future personas. The methodology proved effective during the workshop, engaging participants and fostering insightful discussions, particularly in the collaborative segments. The use of megatrend and edge cards added a gamification element that made the process engaging, enjoyable and interactive. Additionally, the simplified, shortened format of the workshop helped to maintain participant engagement within the two-hour timeframe.

The aspects of the methodology that performed well were:

- **Working with Trends as Variables:** Trends are engaging because they represent real-world factors shaping our future, making them feel tangible and easy to envision their impact on daily life. They also hint at future possibilities, sparking curiosity about their effects on participants' lives. When presented as facts on cards, trends become bite-sized pieces of information that resemble elements of a quiz game.
- **General Feedback on Future Personas:** The feedback on using future personas to ideate or analyze futures was positive. Participants enjoyed creating future personas, which involved character-building elements similar to games.
- **Interest in Professional Use:** Participants expressed interest in using this tool in a professional setting. Although the exact application is still unclear, they found it valuable for fostering a future-oriented mindset.

The aspects of the methodology that were not effective:

- **Presentation of the trends.** As a designer, it is very easy to fall into the trap of being too focused on the details and missing the big picture. This happened at several stages of the work process. First, when developing the trend cards, while the content was interesting and always evoked discussions, they needed to be presented better. Users of the methodology needed exact instructions. They should all have the same template - an image, exact name of the trend keywords and a description. This way, they would be universally useful. They

could be used for a short workshop, where participants can work with their keywords, but also for analyses that last weeks, where the users have time to come back to the cards and read in detail about the topics.

- **Limited Exploration of Airport Services:** The workshop never really got to the point where the actual airport experience would be discussed in detail. This is supposed to happen in phase III: Storytelling. While the participants did present the Future Persona Stories, that is where it ended. The details and possible proposals, ideas about future airport services were not explored, mostly due to time constraints, but also because the FP building process is mentally challenging. There are many instructions to follow, a lot of considerations and discussions to be had even before the tool is created.
- **Difficulty in Gathering ValueTrends:** A notable challenge in the work process is the difficulty in creating a specific tool for gathering ValueTrends. Unlike megatrends, which have established sources and are relatively stable, ValueTrends change rapidly and require constant updating. This necessitates continuous monitoring and active sensing of social moods across various platforms such as news and social media. The lack of a pre-made method for sourcing ValueTrends adds to the complexity, making the documentation and maintenance of a ValueTrend inventory both complex and time-consuming. Consulting trend-spotting companies and advertising agencies is recommended, but even then, it demands a dedicated tool for constant horizon scanning. Consequently, the process can be particularly challenging and resource-intensive, especially for shorter workshops where facilitators must prepare in advance.
- **PESTLE+V categorisation:** One unresolved issue with the FP building process is the use of the PESTLE+V categorization. Initially, this framework seemed ideal for gathering and filtering data, as the categories represent elements that shape the environment in which organisations operate. However, already during the pre-workshop phase it was shortened to PESTE because considering, discussing, and ranking seven categories was deemed too time-consuming for the workshop. During the workshop these categories were largely ignored. This likely occurred because the categories overlap significantly, with each megatrend and ValueTrend potentially fitting into several PESTLE+V categories.

Consequently, the usefulness of this framework is now questionable, as its primary purpose - to distinguish trends affecting an organisation - was not achieved. It might be more suitable for long term, deep analyses.

THE FUNCTION OF THE FUTURE PERSONA IN THE CONTEXT OF THIS THESIS

The function of the future persona depends on several factors:

Allocated time for the process of creating future personas

The method's function is very much reliant on the form it takes and the form it is executed in - two hours long Workshop vs long-term analysis that can take weeks. It is challenging to present it in a universal way, not only because the details of the instructions change, but also the function of the whole method changes. In a short-term workshop setting, where the process may only last a few hours, future personas primarily serve as an ideation tool. They help participants quickly grasp future conditions and create persona templates, focusing on originality, empathy and engagement through gamification. This workshop format is particularly effective for sparking creativity and fostering a deeper understanding of potential future users. In contrast, if more time were allocated, such as multiple meetings and workshops during several weeks, it would allow for a significantly more detailed and thorough analysis targeted to the client's needs. This extended period might enable a comprehensive exploration of trends, demographic shifts and technological advancements, resulting in more specific, robust and nuanced future personas. These detailed personas can then be integrated into the design process, providing guidance for long-term strategic planning and decision-making.

Defined time horizon

The defined time horizon also significantly influences the function of the future persona tool. Short-term (3-5 years), mid-term (5-10 years), and long-term (>10 years) horizons each have distinct impacts. Most workshop participants were skeptical about a 25-year horizon, finding it too speculative and difficult to relate to. Consequently, long-term horizons are more suitable for ideation, while short to

mid-term horizons might be more acceptable because value-driven trends and megatrends are easier to understand and their effects on the persona and their environment are more tangible. This is supported by the personarrative method referenced in the theory chapter (Vallet et al., 2020), where a medium timescale of 2030 (10 years in the future) was chosen for its balance of challenge and reliance on social trends and evolutions. It also agrees with the claims of Anselmi et al. (2021), who distinguish between a medium term horizon (5-10 years) suitable for developing design solutions, and a long term time horizon (10-20 years), which is more speculative and stimulates critical thinking. Using future personas for short-term horizons could present and work with specific data, as short-term forecasts are more feasible. However, integrating future personas into forecasting is a new area of study. While forecasting relies heavily on data, future personas consider several plausible outcomes, making them fundamentally different. Exploring a way to merge these approaches could be a topic for future research.

Goal

- **Strategizing:** If the goal is to create a strategy for targeting a wide audience, organisations might want to create many plausible persona types. Future personas can help with this by allowing them to evaluate these personas and make decisions now that will resonate with as many future persona types as possible.

- **Design and Marketing:** In marketing, future personas can help evaluate evolving customer needs and preferences, guiding more effective campaigns and product positioning.

- **Business:** In a business context, future personas might be used to test resilience, applying wind-tunnelling to assess how current approaches to clients might perform against future client profiles.

HOW FUTURE PERSONAS COMPARE TO DESIGN FORESIGHT

This section highlights what future personas bring to the table by comparing them with scenario planning:

DEFINITION

- Future Scenarios: Plausible visions of what might happen in the future, based on current trends, potential innovations, and hypothetical events.
- Future Personas: These are hypothetical character profiles that represent different types of people who might exist in these future scenarios.

IF FUTURE SCENARIOS REPRESENT PLAUSIBLE FUTURES,
THEN FUTURE PERSONAS REPRESENT PLAUSIBLE FUTURE USERS.

PURPOSE

- Future Scenarios: To anticipate potential developments and challenges, allowing organisations or individuals to strategize effectively for the future. They help in testing the robustness of current plans against different possible futures.
- Future Personas: These personas help in understanding the human element of future scenarios. They are used to empathise with and describe the needs, preferences, and behaviours of future consumers or citizens.

DEVELOPMENT

- Future Scenarios: Creating scenarios involves research: trend analysis, expert workshops and scenario planning techniques that consider various driving forces like technology, politics, environment, and social trends.
- Future Personas: Developing these personas typically starts with the scenarios as a backdrop. Designers and strategists consider how demographic shifts, technological advancements, and cultural changes might shape different types of individuals. They might create detailed narratives about these personas' daily lives, including their challenges, goals, and how they interact with technology and society. In this thesis a methodology was developed where established scenario planning techniques were modified to create future personas.

APPLICATION

- Future Scenarios: These are used by strategists and decision-makers to prepare for future risks and opportunities. They can serve as a stress-testing tool measuring if long-term plans are flexible and robust against a variety of future states.
- Future Personas: These are particularly useful in human-centred design, where products, services, or policies are being developed. By anticipating the needs and behaviours of future users, designers can create solutions that are more likely to succeed in the changing contexts of future markets or environments.

THE PLACE OF PROPOSED FUTURE PERSONA TOOL IN SERVICE DESIGN

In current literature, the concept of future personas is an emerging topic and there are examples of both approaches. For Fergnani (2019) it is merely an add-on tool and its purpose is to enrich the traditional scenario planning. The Scenario Personarrative method introduced by Vallet et al. (2020) is a standalone tool designed to integrate scenario planning with personas to understand the impacts of future urban mobility scenarios on diverse social groups. However, it also complements existing methods by enhancing traditional scenario planning with persona-based narratives.

In its current form, the proposed future persona tool can be seen as complementary. It complements scenario planning by shifting the focus on users within these scenarios, creating detailed personas that embody future conditions. Additionally, it integrates future personas as a central element, emphasising their importance in the process.

I consider the Future Persona tool to be complementary because, thus far, I have only tested it in workshop settings, where it functions as an ideation tool. To transform it into a standalone tool, it would need to be implemented and tested in longer workshops with a more tailored approach, focusing on megatrends and ValueTrends specifically designed and tailored for clients and their objectives concerning the future persona.

Moreover, future personas can bring the element of future visioning and readiness to the field of persona development. By incorporating trends, demographic shifts, and technological advancements, future personas enable designers to anticipate and plan for evolving user needs. They not only enhance the depth and user-focus of future scenarios but also enrich traditional persona development with foresight and strategic planning capabilities.

Integrating future personas into service design practices could have a positive impact for the following purposes:

- **Future literacy:** Future personas might encourage and foster a general future oriented mindset in the team or company.
- **Educating Stakeholders:** They serve as educational tools that illustrate potential future user needs, behaviours, and values, helping stakeholders understand and plan for future market conditions.
- **Long time span design:** Future personas can be useful when designing services with a longer time span, especially where there will be a generational shift among users. Scenario-Based Training: Future personas can be used in training programs to simulate future scenarios, improving the ability of teams to think critically and creatively about future challenges and opportunities.
- **Anticipating Trends:** By integrating insights from demographic shifts, technological advancements, and social changes, future personas help organisations envision trends and design services that are prepared for future demands.
- **Proactive Adaptation:** Future personas encourage a proactive rather than reactive approach to service design, ensuring that services can adapt more swiftly to changing user needs and environmental conditions.
- **Long-Term Planning:** Embedding future personas in service design could promote long-term strategic planning, encouraging long-term thinking about services and product development.

FUTURE PERSONA'S CONTRIBUTION TO THE EXISTING METHODOLOGY

Generally speaking, future personas have the potential to bring the user to the centre of future thinking and I see this as the main contribution of the proposed methodology to the field of foresight. As one of the criticisms of traditional foresight is that it often lacks a user-centric approach, by integrating future personas, foresight can become more focused and user-oriented, thus addressing this gap.

The proposed concept of ValueTrends is another significant part of its contribution. It is noticeable that the focus on values is often missing in foresight, yet it is crucial, especially in business-driven fields. With value-driven consumer behaviour on the rise, businesses can use this approach to target audiences more effectively or respond to value-driven user demands. This shift in perspective can provide businesses with new ways to engage with their customers. On a broader scale, considering values in the design process can likely have positive effects across various fields. By reflecting on and incorporating these values, we can potentially create more meaningful and impactful designs that resonate with users on a deeper level.

ANSWERING THE RESEARCH QUESTION

Final research question as defined in the theory section of this thesis: How can scenario planning be integrated with persona building to develop future-oriented personas as a tool to examine future airport services in the context of commercial aviation?

Reflecting on the final research question, scenario planning can be integrated with persona building by ensuring that each of the steps for creating future variations include a user-centric perspective. Instead of solely generating future scenarios, the process can also result in developing future personas. Future scenarios typically result from a formulaic process that considers various impactful factors leading to plausible future landscapes. In contrast, the future personas method shifts the focus to users who may exist in these future worlds, therefore creating plausible personas. By incorporating user-centric values and behavioural features, these future personas can help explore and envision future users and could furthermore serve as a tool for evaluating and refining future services.

CONCLUSION

Reflecting on the thesis process reveals an overall valuable learning experience. After the initial research into airport services, the identified problem statement became the following: "How can service design methods help in designing a flexible and resilient array of services to meet future travellers' needs?" While looking for the right service design approach and tools to tackle this, it became evident that in the case of airports, it is important to have a long term vision and forward thinking attitude. Ideally, this should not have to be in dispute with designing effective, seamless and enjoyable airport journeys. However, while applying foresight methodologies might be helpful because they enable designers to envision future environments, airport services are designed for and used by passengers, not environments. After further research it became evident that there was a certain lack of user-centred futuring tools.

The Future Persona method was developed in response to this specific criticism of foresight methodology. The scenario planning steps currently in use are recognized in both practice and academia, with a general consensus on their form and use. This inspired me to take the existing scenario planning structure and explore whether the process could produce future personas instead of future scenarios. It appeared that creating a specific future persona was possible.

This tool could be particularly useful for practitioners who need to consider personas in future settings and prioritise user-centricity in their designs. It is still debatable at which stages of the design process it is most effective. Currently, it has been tested in workshops and has shown potential for ideation purposes. With further development, it could potentially become a tool for deeper and more granular analyses. Regardless, it undoubtedly encourages a future-thinking mindset and an anticipatory rather than reactive approach.

During the conducted workshops, the created personas were utilised to map out future user journeys within the Copenhagen airport context. Although the dataset is limited, certain patterns have emerged. A common theme among all personas is the encounter with advanced technology throughout airport processes. What stood out were the diverse emotions towards certain aspects of the airport journey. One of the personas expressed significant concern about data protection, which could present challenges in the world that always more and more relies on data collection. Another persona felt scared to fall prey to greenwashing, which calls for a very clear communication strategy.

While the workshop results did not disprove the viability of the proposed methodology, they are insufficient to make definitive conclusions about its real-world usability. Further testing and development of workshops in different conditions (time horizon, length of workshops, number of meetings, number of people present, etc.) are necessary to fully assess its effectiveness and full scope of potential applications in practical settings. Moreover, future research and development of especially ValueTrends dataset is needed before we could consider the applicability of the proposed methodology as a standalone tool useful outside of the ideation phase.

Reflecting on the learning goals I set at the start of the process, I have gained invaluable experience in facilitating workshops and honing my ability to create collaborative environments. I've also deepened my understanding of identifying trends and spotting patterns, which I am excited to apply in future design projects. Additionally, I have become more confident in developing custom methodologies, allowing me to craft innovative solutions tailored to specific challenges.

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APPENDIX

Link to Miro board for viewing of the workshop process

password: futurepersona

https://miro.com/app/board/uXjVNlwaDGE=/?share_link_id=442079397132

Interview 1

Age range: 18-24years

Interviewer: Okay, so do I have your consent to work with this data for my master's thesis?

Interviewee: Yes, you do.

Interviewer: Okay. I have 12 questions, and it's all about your experience. How do you like to travel? And also, the reason I'm doing this is to understand how the whole airport experience might look in the future. Okay? Of course, I'm working with assumptions because we don't know for sure, but we can already see trends. For example, digitization has changed a lot already if you look back 10 years, right?

Interviewee: Right.

Interviewer: Okay, so let's start with some basic questions. How would you describe yourself? Are you a holiday traveler, business traveler, or maybe both? Do you fly often, or just when you have to?

Interviewee: Right now, it's mainly... I live in the Canary Islands, in Gran Canaria. So the main flight I do is Canaria to Madrid. I do that once every two or three months, or maybe more frequently. I've been here for two months without going because I'm in Fuerteventura working, but usually every one or two months.

Interviewer: Alright, cool. And the second one is to understand you as an air traveler. Do you use air travel like a bus or train, just to get to your destination? Or do you see the airport as an experience, maybe working a bit if you can?

Interviewee: I love the airport. For me, it's an experience itself. Every time I go to a new place, I try to find free places because I don't have the budget for things like the spa. I like to find cool working areas, even if I don't have work to do, because I enjoy the environment.

Interviewer: Okay, so in general, it's an experience for you. Awesome. I'll ask a bit more about that. When you arrive at the airport, I'm mapping out the experience from arrival to boarding. First is check-in, which has changed a lot. Do you use an app for check-in, or do you prefer paper tickets?

Interviewee: I prefer the app. I use the iPhone wallet pass.

Interviewer: And what about luggage? Do you try to travel with just hand luggage, or do you check in larger bags?

Interviewee: I prefer hand luggage if possible. For trips to Madrid, I don’t carry a lot. If I have something with wheels and nothing special or fragile, I prefer to check it in so I can travel through the airport without carrying anything.

Interviewer: Cool. The next step is usually security screening. What would a good security screening look like for you? Something efficient?

Interviewee: The airport in Helsinki has the best system I've seen. You don't need to take anything out. It's super nice and efficient. I get nervous with regular security because I take the rules seriously, so it's stressful for me.

Interviewer: What’s the most stressful part about the screening for you?

Interviewee: Dropping items into the boxes. Big tables are good for me, but being in a queue and having to go fast stresses me out. I prefer to take my time, so I usually go to the end of the queue where there’s no one.

Interviewer: I see. So after security, what about wayfinding information? Do you check the monitors or use app notifications for your flight details?

Interviewee: I use the apps. I receive notifications for changes, and I double-check on the monitors as well.

Interviewer: Do you look around in the duty-free shop area? Do you buy anything there?

Interviewee: I love it, but I don't usually buy things unless I know the destination is expensive, like alcohol in Korea. I might buy something for my parents or try new perfumes.

Interviewer: What about food and drinks at the airport? Do you eat there, or do you find it too expensive?

Interviewee: It's super expensive, so I usually avoid it. But in Gran Canaria, there's a place with good prices where I might relax with a coffee or beer.

Interviewer: Alright, a few more general questions about your airport and flying habits. How much time do you spend at airports? Do you arrive early or just in time?

Interviewee: I prefer to arrive a bit late, like an hour and a half before a flight. For international flights, I follow the recommended time.

Interviewer: If you have a layover, what's your limit for waiting at an airport?

Interviewee: Two hours is fine. More than that only if there's a significant discount. Less than 30 minutes is too risky.

Interviewer: What part of the airport experience do you like the least?

Interviewee: Crowded and noisy restrooms. I prefer places with loud music so no one can hear anything.

Interviewer: Is there a service at airports that you were surprised by or really liked?

Interviewee: Any type of exhibitions or unique features. I love spas and showers, though I usually can't afford them. The best airport I've been to is Doha, better than Dubai.

Interviewer: Do you care about secure internet connection at airports? Do you use airport Wi-Fi or your own data?

Interviewee: In the EU, I use my own data. Otherwise, I try to connect to Wi-Fi but find it difficult sometimes.

Interviewer: Do you use airport lounges? For work or relaxation?

Interviewee: I've never used a lounge, but if I did, it would be for work. I usually find workstations elsewhere in the airport. I'd pay for a lounge if it had a spa.

Interviewer: And about future travel, do you embrace tech innovations at airports? Any concerns about them?

Interviewee: I have some concerns, especially with facial recognition. But I've signed up for it because it's efficient. I'd like to see more use of it.

Interviewer: What's your ideal air travel experience in 2050? Feel free to be imaginative.

Interviewee: I think there should be drones to take you from home to the airport, automatic baggage handling, and fast planes. It should be a seamless experience from home to the final destination.

Interviewer: Thank you.

Interview 2

Age range: 45-54 years

Interviewer: Can you give me your consent to use this for data collection?

Interviewee: No problem. That's important. Yes, I consent.

Interviewer: Okay, great. So just to start, could you tell me a bit about your travel habits? Would you say you are a holiday traveler, a business traveler, or maybe both? How much do you fly on average?

Interviewee: This year, I'm going to make about 70 to 80 flights.

Interviewer: For 2024?

Interviewee: Yep, because I have a gold membership with Iberia. To get the gold membership, you need more than 50 flights a year. I've had more than 50 flights every year for the past three years.

Interviewer: Okay, well, you're kind of a perfect candidate for this interview. Do you use your membership card to access airport lounges?

Interviewee: Yes, I always use the lounge with my membership card.

Interviewer: So that's with Iberia, part of the Oneworld alliance, right?

Interviewee: Yes, that's correct.

Interviewer: Great. Is the airport experience just a means to an end for you, like a bus or a train, or do you use the airport as a space to work and observe the experience?

Interviewee: I use the airport as a space to work. I often arrive early to the airport, about an hour before my flight, so I can go to the lounge, eat, and work.

Interviewer: Okay, so let's talk about the airport experience from the moment you arrive until you board the plane. In the past 15 years, check-in has changed a lot due to digitization. Do you prefer digital and mobile boarding passes, or do you still like to have a paper one just in case?

Interviewee: I don't use paper anymore. I use the Iberia app for everything.

Interviewer: So you check in before you get to the airport?

Interviewee: Yes, I usually check in at home 24 hours before the flight.

Interviewer: Let's move on to security screening. What would a good security screening look like for you? Is it about efficiency, privacy, or something else? Some people find it quite stressful with all the instructions and checks.

Interviewee: It can be stressful, but I'm used to it. I use the fast track because of my membership, which makes it quicker and less stressful. For example, in Berlin, they have a digital queue system that's very efficient.

Interviewer: How do you find your way around the airport? Do you rely on digital monitors, app notifications, or something else?

Interviewee: I usually rely on the screens at the airport, but I also get notifications from the Iberia app. In familiar airports like Barcelona, Berlin, and Madrid, I know my way around, but I still check the screens for updates.

Interviewer: Do you buy anything at the duty-free shops? If yes, do you have any tips on what to buy?

Interviewee: I only shop at duty-free occasionally, maybe two or three times a year. I don't like having to walk through all the shops, especially when I'm in a hurry. I prefer to take shortcuts when possible.

Interviewer: It seems like they design the layout so everyone has to pass through the duty-free area. What about bars and restaurants outside the lounge? Do you eat there, and what's your experience with the selection and prices?

Interviewee: I usually don't eat outside the lounge because it's expensive. If I do, I go for something quick and simple like a sandwich.

Interviewer: Now, focusing a bit on the future and productivity, how do you spend your time at airports? Do you arrive early, or just in time for check-in and security?

Interviewee: Three years ago, before I had the VIP card, I used to arrive just in time. Now, I arrive early to use the lounge, which is a good place to work and relax.

Interviewer: What's your limit for layovers? Would you be willing to spend more time at an airport if there were good workstations provided?

Interviewee: I don't mind layovers if there are good places to work. Most airports now have workstations, so it's not a big issue for me.

Interviewer: What's the part of the airport experience you like the least?

Interviewee: Passing through security is the part I like the least.

Interviewer: What's an example of a service at airports that you were surprised by or really liked?

IInterviewee: I was surprised by the facial recognition technology in Spain. It's impressive, but I don't use it much. I love the lounges, especially when they offer good food and places to rest or work.

Interviewer: Is secure internet connection at airports important for you? Would you be willing to pay extra for a secure and reliable connection?

Interviewee: Yes, it's important. In Europe, I use my mobile data, but outside Europe, I prefer secure Wi-Fi. I would be willing to pay for a good connection if necessary.

Interviewer: Do you use airport lounges mainly for work or leisure?

Interviewee: Mostly for work, about 65% of the time.

Interviewer: Do you find the lounges to have a good working environment?

Interviewee: It depends on the lounge. Some, like those in Madrid and Barcelona, have good facilities for working. Others are not as well equipped.

Interviewer: Last question, what would be the ideal air travel experience in 2050 for you? Feel free to imagine anything.

Interviewee: I think there should be drones to take you from home to the airport, automatic baggage handling, and fast, efficient planes. The whole experience should be seamless from home to the destination.

Interviewer: Thank's Diego.

Interview 3

Age range: 25-34 years

Interviewer: Is it okay if I record this interview?

Interviewee: Yes.

Interviewer: Great. Then we'll put this here. Do I have your consent to use the data for my master's thesis?

Interviewee: Yeah.

Interviewer: Okay, thanks. Well, I am writing about airports and the future of airports. So, I'm writing about the future of airports with a focus on services. When you're at an airport, it's like a series of services you use one after the other, or sometimes simultaneously. I would like to know your opinion on that. Since we're both travelers, your perspective will be valuable.

Interviewee: Sure.

Interviewer: To start, are you a holiday traveler, business traveler, or maybe both? How much do you fly approximately per year or per month?

Interviewee: I'm mainly a holiday traveler. Over the year, I'd say I take about two vacations where I fly, so probably around four flights in total, maybe more if there's a stopover.

Interviewer: Alright, cool. When you're at an airport, do you see it as just a means to an end, like a bus or train station, or do you use the services fully, like workstations, bars, etc.?

Interviewee: I'm usually at the airport about two hours before the flight, so I have plenty of time. I stroll around, maybe get a sandwich or something to eat, charge my phone, but mainly, it's just a transportation system for me.

Interviewer: Got it. Now let's talk about the airport experience step-by-step. The check-in process has changed a lot with digitization. Do you use digital and mobile boarding passes, or do you prefer paper and talking to an agent?

Interviewee: I check in before arriving at the airport. It's easy and saves time. I get an email or SMS to check in and print the baggage label myself. It's quick and convenient.

Interviewer: How do you feel about security screening? What would be an ideal process for you?

Interviewee: I'm prepared for it, so it's not stressful. I make sure my electronics and liquids are easy to access. I've experienced different security checks in different countries. Germany is very detailed, while other countries are more relaxed. The process in Germany is fine for me.

Interviewer: Once you're past security, how do you navigate the airport? Do you rely on the monitors, app notifications, or something else?

Interviewee: I prefer to use the airport signs. I don't like having too many apps on my phone because different airlines have different apps. I find the signs within the airport more reliable.

Interviewer: What about duty-free shopping? Do you buy things there, and if so, what?

Interviewee: I don't buy much at duty-free, maybe food or drinks if I'm hungry. I'm not into buying electronics, chocolates, or tobacco there. Sometimes I buy presents at the last minute, but I try to buy them in the country I'm visiting.

Interviewer: How about restaurants and bars? Do you usually eat at the airport, and do you find the selection satisfactory?

Interviewee: If I'm hungry, I'll buy something, usually a sandwich. I know it's expensive, but it's necessary. I don't look at prices much in that case.

Interviewer: Moving to more general questions, how much time do you usually spend at airports? Do you arrive early or just in time?

Interviewee: I try to be on time. Sometimes I might be a bit early, but I generally aim to arrive just in time for check-in and security.

Interviewer: What about layovers? How long are you willing to wait, and does it depend on the price difference?

Interviewee: I would say six to seven hours is the maximum. It depends on the price difference. If it's significant, I might choose the layover.

Interviewer: How do you usually spend your time during layovers? Are you productive or do you relax?

Interviewee: I'm more relaxed. I stroll around the airport, look at shops, maybe grab a sandwich. It's hard to convince me to buy anything because I already spend a lot on vacations.

Interviewer: What is your least favorite part of the airport experience?

Interviewee: The boarding process. Everyone stands up and rushes to the line, even though there are assigned numbers. I prefer to wait until the line is shorter.

Interviewer: On the other hand, is there a part of the airport experience that you like or that has positively surprised you?

Interviewee: The automatic luggage check-in machines surprised me. They work well and are very convenient.

Interviewer: Do you have a home airport you fly out of more often?

Interviewee: Hamburg Airport is my home airport. It's a big one, and I fly out of there most often.

Interviewer: How important is a secure internet connection at airports for you?

Interviewee: I try to be less connected during holidays, so it's not vital for me. If there's no connection, it's fine.

Interviewer: Do you use airport lounges? If so, do you use them for work or leisure?

Interviewee: I don't use airport lounges.

Interviewer: Can you imagine any service that would make you want to use them?

Interviewee: Maybe a stretching or yoga class before the flight would be nice since I'm tall and need more legroom. I might consider paying for that.

Interviewer: How do you see the future of airports, given the advancements in digitization and technology?

Interviewee: Some processes, like security checks, might be enhanced by technology, like cameras. But data privacy concerns are a big issue. If it improves efficiency, I'm for it, but it needs to be secure.

Interviewer: Lastly, what would be the ideal air travel experience in 2050 for you? Feel free to imagine anything.

Interviewee: The craziest scenario would be teleportation. You'd still need to go to a teleportation port, but it would be incredibly efficient.

Interviewer: Thank you so much for your time.

Interview 4

Age range: 25-34 years

Interviewer: Are we working? And do I have your consent to use this data in my master's thesis?

Interviewee: Yes, yes.

Interviewer: Okay, great. Thank you. There are just two questions in the beginning, if you can... So, hello.

Interviewee: Hello.

Interviewer: Can you tell me where you belong? And for the rest, we're just going to talk. I will take some notes. I will probably use the data from here, from the transcript. So, to sum up what the show is all about: I am writing about the airport experience. Here, I'm only concerned with the moment you arrive at the airport until you board. Not really the flight or before. I'm focusing on the airport journey, which consists of several steps we all know and go through. I'm interested in future personas, which is probably where I'm heading with this thesis. I look back 25 years to 1999, how the travelers were then, how they are now, and how they might be 25 years from now. To do that, I try to understand people's current wants and needs regarding the airport experience. So, would you consider yourself more of a holiday traveler, business traveler, or maybe both, or something in between?

Interviewee: I think more of a family traveler. I need to travel a lot to see my family.

Interviewer: Okay. Can you estimate how much you fly per year? Just an approximate average—do you fly about once a month?

Interviewee: Not even that much now. Let's say at least once a month.

IInterviewer: Uh-huh, okay, cool. Another question before we really start: I'm trying to understand how you perceive airports. For some, it’s like a bus station or a train station—they go, do their thing, and everything is about getting somewhere. Or are you more of an observant traveler? Maybe you like airports and use the services they provide?

Interviewee: I think of it like a train station. I like to be there pretty early because I want to be in front of my gate two hours before. If I have time and I know the gate, I will go through every shop at the airport and just look around. It's pretty difficult for me to buy something, though. Also, I've realized that many airports are under construction and very uncomfortable because you don’t have any seats. You either have to book a lounge or just keep walking or sit in a cafe. They're made for you to keep moving, which bothers me because I really want to sit around and maybe just read a book.

Interviewer: Do you sense that there’s a lot of construction at airports now?

Interviewee: Yes, I would say so.

Interviewer: Do you mean Spanish airports or just in general?

Interviewee: In general.

Interviewer: Okay, so let’s go through the steps that happen when you arrive at the airport. There's the check-in area and so on. Are you someone who uses digital mobile check-ins, or do you come to the airport to check in, maybe using the kiosk or wanting a paper boarding pass from the agent?

Interviewee: I usually use the wallet on my phone. I get very annoyed when I have to download a specific app like Ryanair or Norwegian. I prefer using the wallet app instead of going to a kiosk and waiting in line. If I don’t have luggage, it’s much easier.

Interviewer: And just out of curiosity, where do you like buying the tickets? On websites? Because, for example, I already buy the ticket in the app, and I fly Ryanair a lot, so I use their app frequently.

Interviewee: I think we do so many airlines that having all those apps doesn’t make sense. I just book online.

Interviewer: Have you ever tried self-checking for luggage?

Interviewee: Yes, I do that all the time. It’s pretty easy unless my luggage exceeds the weight limit.

Interviewer: What about the security screening? What would your ideal security screening look like?

Interviewee: In Helsinki, you don’t have to take out tablets, liquids, or phones. You just put your stuff through and walk through. That’s the best. But once they stopped me because my power bank was mixed with other stuff, and I had to wait a long time.

Interviewer: Is it a big difference for you that you don’t have to take out your computer or liquids?

Interviewee: Yes, I see how people get stressed. It helps a lot, especially with people not used to traveling.

Interviewer: Great. Once you are past security, how do you find flight and gate information? Do you use the monitors at the airport or an app?

Interviewee: In Spain, I use the airport's website because it updates before the monitors. The app has bugs, so I usually go to the monitor first.

Interviewer: Do you make purchases at duty-free shops?

Interviewee: Mostly, I buy things I've forgotten, like gifts for family. I try to avoid it otherwise.

Interviewer: What about bars and restaurants at the airport? Do you eat there?

Interviewee: I usually bring my own food, but if it's a holiday trip, I might eat at the airport. If I've been away for a long time, I might get a coffee or a drink before my flight.

Interviewer: How much time do you spend at airports? Are you someone who arrives early or just in time?

Interviewee: I try to be early because I've been the last-minute passenger too many times. I hate feeling stressed at the airport.

Interviewer: How do you feel about layovers? Would you choose a longer layover to save money?

Interviewee: It depends. If I have to stay overnight, it doesn't make sense. But for a layover of one to eight hours, it's fine if it's cheaper.

Interviewer: What is the part of time spent at the airport that you like the least?

Interviewee: Waiting at the gate when they say boarding will start, but it doesn't until much later.

Interviewer: What is an example of a service at the airport that you like or were positively surprised by?

Interviewee: I love water fountains. They save me so much.

Interviewer: Is secure internet important for you at the airport?

Interviewee: Yes, especially on international flights. It should be free. In some places like Istanbul, they give you an hour free, but then you have to pay.

Interviewer: Do you use airport lounges?

Interviewee: No, I don't use lounges. I always thought they were for important people, like VIPs.

Interviewer: Would you consider using them if they offered services like spas or showers?

Interviewee: Definitely. I would go for a spa or even just a shower if I had a long international flight.

Interviewer: Do you consider yourself tech-savvy when it comes to air travel?

Interviewee: Yes, I appreciate new technologies that make travel easier. But I'm concerned about privacy with things like face ID.

Interviewer: How do you feel about using face ID at airports?

Interviewee: It scares me because I don't like having my face data stored, but I also appreciate the convenience.

Interviewer: Lastly, how do you envision air travel and airport experiences in 2050?

Interviewee: I hope it gets easier and more user-friendly, but I'm worried it might turn into more of a consumer-driven experience. I imagine the process will be streamlined, with security and information being more efficient.

Interviewer: That was it. Thanks a lot.

Interviewee: You're welcome.

List of megatrend cards

Sourced from:
https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en

IMMIGRATION

Increasing significance of migration

The global migrant population, which includes refugees and asylum-seekers, has nearly doubled since 1990, reaching 281 million in 2020, or 3.6% of the world population, highlighting migration's increasing demographic, social, and political significance on the global stage.

- **MILITARISATION OF BORDERS**
- **EU'S LABOUR NEEDS**
- **COMPLEX MIGRATION PROCESS**

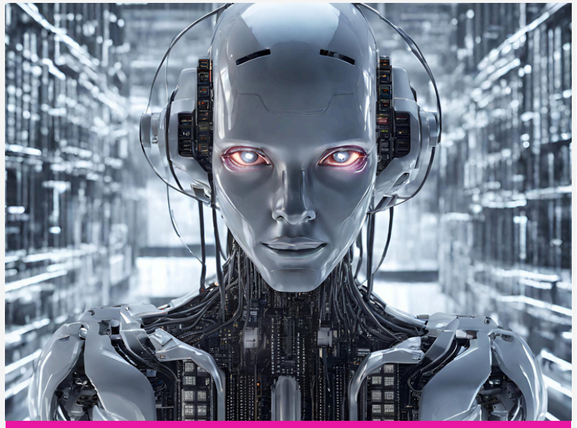
HEALTHCARE

Shifting health challenges

Despite longer life spans and reduced infectious diseases, global health faces challenges from non-communicable diseases, obesity, mental health issues, and zoonotic threats, yet advancements in technology and personalized medicine offer new healthcare opportunities.

- **DIGITIZATION OF HEALTHCARE**
- **LESSONS FROM COVID-19**
- **MENTAL HEALTH CHALLENGES**

List of megatrend cards sourced from https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en



TECHNOLOGY

Accelerating technological change

The increasing digitalization of society enhances opportunities through big data but also raises vulnerabilities to cyberattacks, which can disrupt critical services and compromise personal data, highlighting the need for protective measures against these potential threats.

- **HYPERCONNECTIVITY**
- **BLOCKCHAIN**
- **PHYSICAL DIGITAL INTEGRATION**

LIFESTYLE

Changing nature of work

Technological, economic, and social changes are reshaping employment, increasing remote work and skill gaps, and highlighting the need for new workplace policies to address emerging inequalities and sustainability.

- **PURPOSE DRIVEN WORK**
- **NEW ORGANISATION OF WORK**
- **DIGITAL TRANSFORMATION**

NATURAL RESOURCES

Aggravating scarcity

The excessive use of natural resources, predominantly by wealthier nations, has significantly altered the Earth's ecosystems and exceeded planetary boundaries, necessitating urgent policy reforms to reduce material consumption and promote global equity and intergenerational fairness.

- **CHANGING BEHAVIOUR**
- **NEW SOURCES OF RESOURCES**
- **RESOURCES MANAGEMENT**

GEOPOLITICS

Changing security paradigm

The evolving nature of global conflicts and competition, incorporating advanced technologies and hybrid threats, demands urgent collaborative actions and new policies within the EU to maintain and enhance its geopolitical standing.

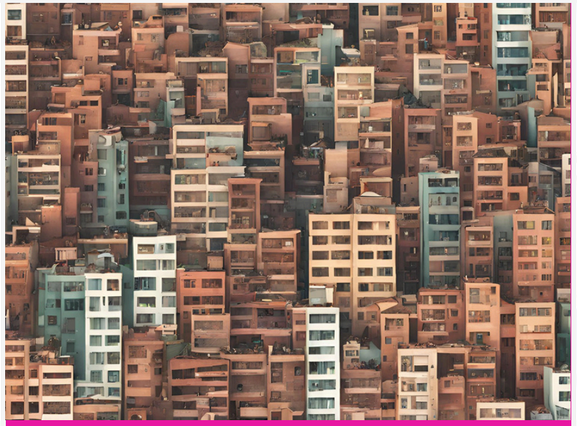
- **SPACE AS AREA OF EXPANSION**
- **FUTURE BATTLEFIELDS**
- **NEW GEOPOLITICAL LANDSCAPE**

CLIMATE

Environmental degradation

Urgent environmental action and adaptation are necessary to mitigate severe impacts of climate change and ensure humanity operates within safe planetary boundaries, while also driving changes in societal beliefs and behaviours.

- **QUESTION CURRENT PRACTICES**
- **NEGATIVE IMPACTS INCREASE**
- **UNITED NATIONS - SDG**



URBANISATION

Continuing urbanisation

Rapid urbanization, driven by the search for better opportunities, strains city resources and heightens socio-economic challenges, necessitating sustainable, digitally-enhanced solutions for equitable growth.

- **SMART CITY LIVING**
- **MORE GREEN ACTION IN CITIES**
- **URBAN NETWORKS AND GROUPS**

EDUCATION

Diversification of education and learning

Rapid advancements in technology and cognitive sciences are reshaping education, moving from traditional school-based methods to diverse, informal, lifelong learning, essential for preparing new generations for future challenges.

- **NEW LEARNING AGENTS**
- **MIXED REALITIES**
- **SCHOOLS IN TRANSFORMATION**

SOCIAL CHANGE

Widening inequalities

Despite progress, inequalities in education, health, labor, and wealth are widening, exacerbated by COVID-19, threatening growth, democracy, and cohesion, underscoring the urgency for policymakers to address these disparities.

- **HEALTH-RELATED INEQUALITIES**
- **GEOGRAPHICAL INEQUALITIES**
- **SOCIAL COHESION EROSION**

INFLUENCE SHIFT

Rise of the global south and east

The global economic power shift from established economies to emerging ones in Asia, notably China and India, and regions like Africa and Brazil, is reshaping the world economy, influenced by strategic autonomy, populist nationalism, and disruptions from the pandemic and geopolitical conflicts.

- **UNCERTAIN CHINESE ECONOMY**
- **AFRICA'S GROWTH POTENTIAL**
- **FRAGMENTED GLOBALISATION**

ECONOMIC CHANGE

Growing consumption

The expected growth of the global middle class to 4.8 billion by 2030 will significantly impact global production systems and resource demands, while shifting consumer behaviors towards sustainability and wellbeing, despite slowdowns from the COVID-19 pandemic.

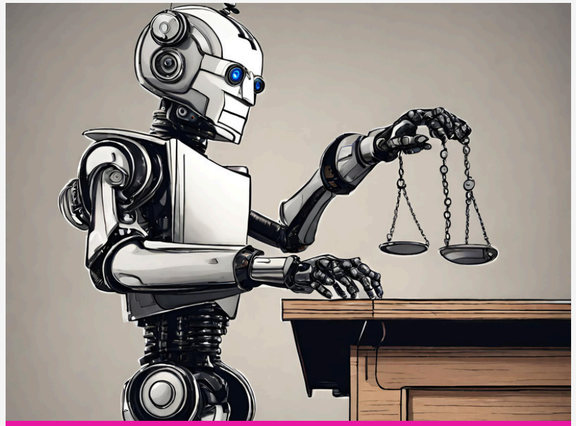
- **SUSTAINABLE CONSUMPTION**
- **CONSUMER-CENTRICITY**
- **OUR DIGITAL LIVES**

DEMOGRAPHICS

Increasing demographic imbalances

By 2050, the world's population is expected to reach 9.7 billion, with aging populations in high-income countries affecting economic growth and public finances, and rapid growth in regions like Sub-Saharan Africa posing challenges in human capital, poverty, and unemployment.

- **GLOBAL POPULATION GROWING**
- **INCREASING IMPACT OF AGEING**
- **AGE STRUCTURES MORE UNEVEN**



POLITICAL CHANGE

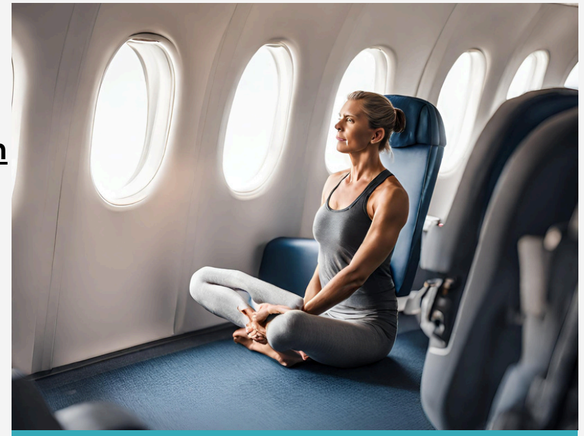
Increasing influence of new governing systems

Globally, governance is evolving with digital technologies and non-state actors influencing participatory governance, coinciding with a decline in democracy, increased societal polarisation, and decision-making shifting towards emotion and personal belief over objective facts.

- **AUTOMATED DECISION-MAKING**
- **DECOUPLING TRUST FROM TRUTH**
- **COLLECTIVE INTELLIGENCE**

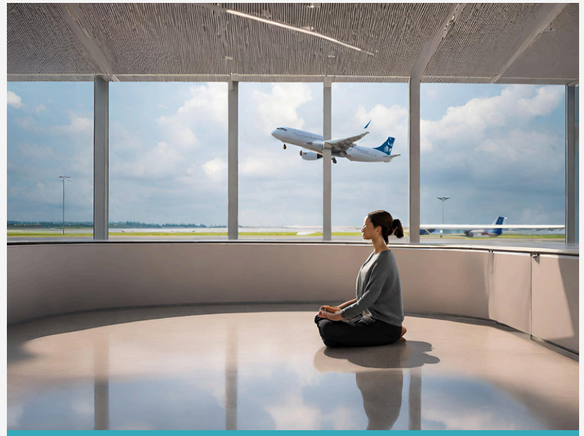
List of Edge cards

Sourced from:
https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en



Inflight wellness

In late 2025, Australian airline Qantas will launch the world's first in-flight Wellness Zone, providing spaces for passengers to stretch, hydrate, and engage in guided exercises. Taking wellness even further, private aviation firm VistaJet will introduce its Wellness 360 Program, offering personalized pre-flight consultations with nutritionists for customized in-flight meals. Once aboard, passengers can enjoy ergonomic seating, daylight simulation technology to adjust their body clocks to new time zones, and access to meditation and breathing apps.



Sensory-friendly spaces

Public spaces can be overwhelming for those with sensory sensitivities, but businesses are beginning to accommodate these needs. Walmart has reintroduced sensory-friendly shopping hours with quieter, dimmer environments. Every U.S. Legoland Resort has become a Certified Autism Center, offering sensory guides, quiet rooms, and planning resources. AMC Theatres hosts sensory-friendly film screenings with brighter lights and lower volume. In the tourism sector, Phillip Island Nature Parks is leading the way to make the entire location Australia's first sensory-inclusive tourist town.

Grassroot anti-tourism efforts

In Europe, local residents are increasingly taking action against the impacts of mass tourism. In Athens, locals are misleading tourists by placing fake bedbug warning posters on short-term rentals. In Vallcarca, Spain, directions to Park Güell are being tampered with, sending tourists astray. Meanwhile, in Amsterdam, the group "Stop de Gekte" is actively monitoring and documenting disruptive tourist behaviors in the red light district to press for changes. These grassroots movements underscore the growing frustration of locals who feel overwhelmed by tourists, highlighting the urgent need for cities to balance the interests of residents with the economic benefits of tourism.

Coolcation

Rising temperatures are already altering travel habits, driving tourists to avoid the hottest summer months or skip once-popular destinations altogether. This is being confirmed by Intrepid Travel, which saw the most bookings in September and October last year. Those are traditionally part of the “shoulder seasons,” which may now be turning into peak seasons in their own right. Beyond offering travel insurance for extreme heat—a solution being explored by US startup Sensible Weather—companies should use this shift as an opportunity to combat overtourism by driving people to less-crowded destinations.

Bad tourist crackdown

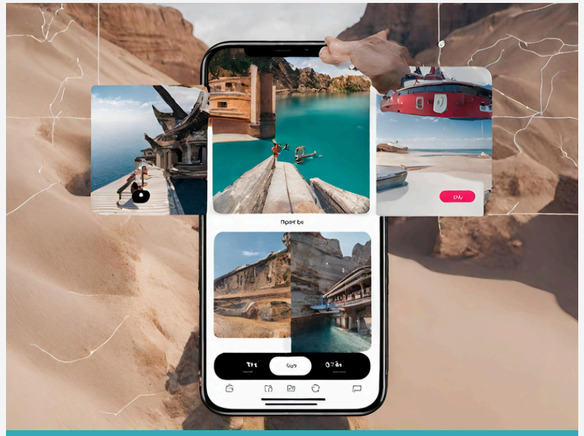
Destinations worldwide are pushing back against unruly tourist behavior by imposing new restrictions. In Bali, disrespectful acts have led to proposed bans on climbing sacred mountains and other disrespectful behaviors. Amsterdam has initiated a "stay away" campaign to deter young tourists attracted by nightlife and vice, while Spain’s Balearic Islands, including Ibiza, Mallorca, and Menorca, have threatened to ban drunken vacationers to maintain order. These measures reflect a growing trend of destinations prioritizing respect and decorum.

Aviation restriction

To protect the peace and serenity of nature, the US has passed new regulations that will limit the flying of planes and helicopters around nearly two dozen national parks and monuments. Mount Rushmore National Memorial and Badlands National Park will have some of the strictest rules, banning commercial air tours within one-half mile of the site boundaries by April 2024. Meanwhile, Glacier National Park is phasing out all sightseeing flights by the end of 2029.

Extreme tourism

The tragic incident with the Titan submersible highlighted the dangers of adventure tourism, yet the industry continues to boom, now worth over $282 billion. This surge is driven by more affordable travel and the ubiquity of travel experiences on social media, which has made once-remote destinations more mainstream. For example, Antarctica saw a record 105,331 visitors in the 2022-23 season, and companies like World View are selling out trips that offer near-space experiences via weather balloon. This trend underscores a growing desire for unique and extreme travel adventures.



Destination unknown

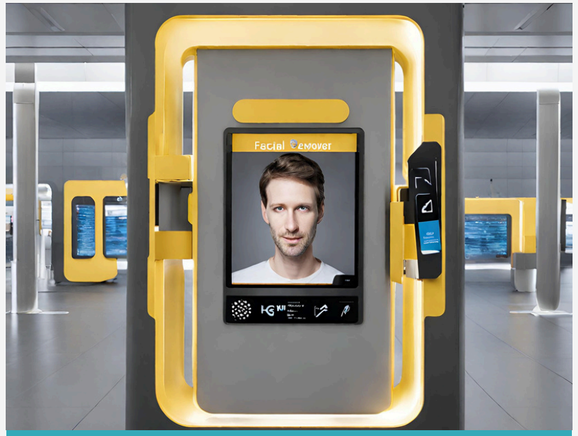
Destination Unknown, part of Seattle's Explorer X, capitalizes on the trend of surprise travel with three tiers of unpredictability: Level 1 reveals only the general destination, Level 2 conceals specific locations, and Level 3 keeps even the continent a secret until departure. This concept reflects a broader movement toward spontaneous travel, exemplified by West Japan Railway's random destination tickets and TikTok videos of impromptu flights, appealing to those craving unexpected adventures.

Flextirement

By 2030, an additional 150 million jobs globally are expected to be filled by workers aged 55 and above, driven by longer lifespans and the need for greater financial security. A proposed solution, termed "flextirement" by Niel Costa in Fast Company, suggests a semi-retirement model where older employees work part-time, possibly on specific projects or in mentorship roles. This arrangement benefits both employees, who can ease into retirement while utilizing their expertise, and employers, who can retain valuable, experienced workers in a cost-effective manner.

Carbon passport

Amid growing concerns about the travel industry's environmental toll, Intrepid Travel, a certified B-Corp, proposes "carbon passports" as a solution. These would assign travelers a yearly carbon limit based on their travel frequency and distance. Intrepid predicts the implementation of carbon passports by 2040 and is currently promoting eco-friendly travel by adding carbon labels to 500 of its top itineraries.



Facial recognition entry point

Facial recognition technology is becoming a standard for accessing a variety of services, from flights to theme parks. The TSA plans to deploy this technology across 430 airports in the coming years following a successful pilot, while Disneyland, Carnival Cruise ships, and Yas Island theme parks in Abu Dhabi already utilize it for entry verification and tracking purposes. This shift promises quicker access and reduced need for physical or digital IDs, but raises concerns about privacy and data security.

Meta smart glasses

Meta's latest Smart Glasses are sleeker and more covert than before, resembling typical Ray-Ban Wayfarers. They're equipped with cameras and a speaker, enabling users to discreetly capture and share photos and videos, or even livestream directly to Instagram and Facebook using voice commands. Privacy concerns are rising, as these glasses make it difficult to discern if someone is recording in public. So, if you spot someone in Ray-Bans, they might be more than just a fashion statement.

Apple vision Pro

Apple’s highly anticipated mixed reality headset is marking a new era of integration between the real world and the digital one. “It’s the first Apple product you look through, and not at,” said CEO Tim Cook. The Vision Pro will overlay digital elements over your physical environment, which users can control with their eyes, voice and hands. In other words, no controller is required. Users can also “relive” past memories with 180-degree video - a feature some have described as an emotional experience.

Human’s AI smart pin

An array of new wearables, including Meta's Ray-Ban Smart Glasses and Humane’s AI Smart Pin, are providing users with constant access to AI companions. The Humane AI Smart Pin, which attaches magnetically to clothing, can be controlled by voice or touch. Users can perform tasks like making calls, checking emails, getting nutritional details, or translating signs without using their hands or a screen. These devices are bringing us closer to a future envisioned in the movie "Her," where personal AI is integrated into everyday life.

PODS- Personal online data stores

Sir Tim Berners-Lee, inventor of the World Wide Web, is dissatisfied with its current state and has founded Inrupt to address this issue. Inrupt's main concept is to centralize users' personal data into a single location called a Pod ("personal online data store"), giving individuals control over who accesses their information. Users can selectively grant companies access to their data for specific purposes, like personalized advertising or online transactions. While some view Berners-Lee's vision as overly ambitious, many supporters believe he could once again transform internet usage.

Carbon credit catastrophe

Verra, a top carbon credit certifier for companies like Disney, Gucci, and Shell, is under scrutiny after a nine-month investigation revealed that over 90% of its rainforest offset credits fail to deliver real carbon reductions. Many projects reportedly had no impact, and some even contributed to deforestation. While Verra disputes these findings, it plans to shift to a new model. This scandal highlights the urgent need for regulators to establish clear, measurable standards for the loosely regulated carbon credit and carbon label markets.

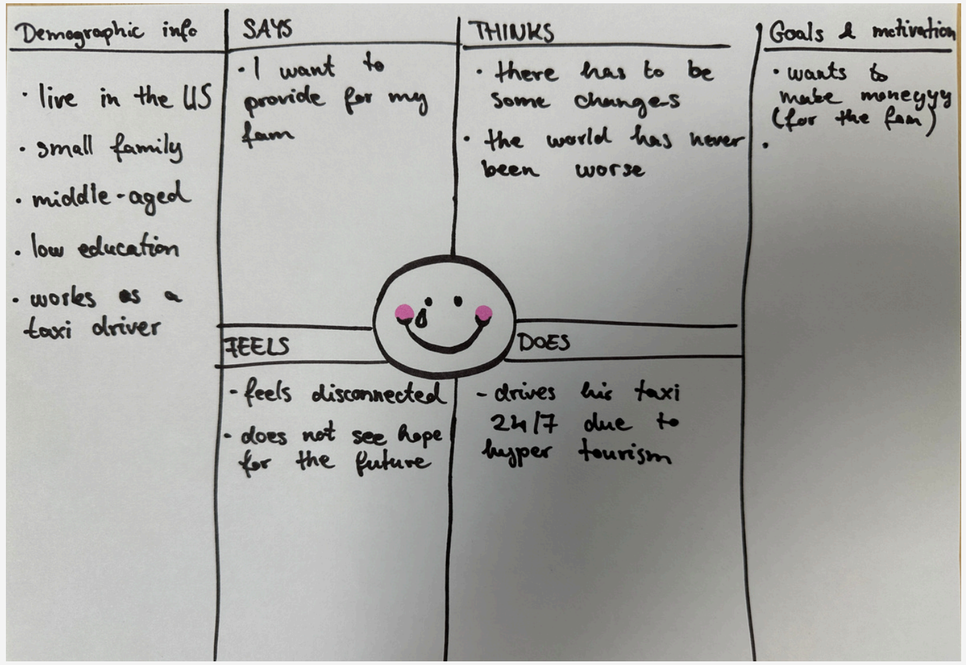
Climate card

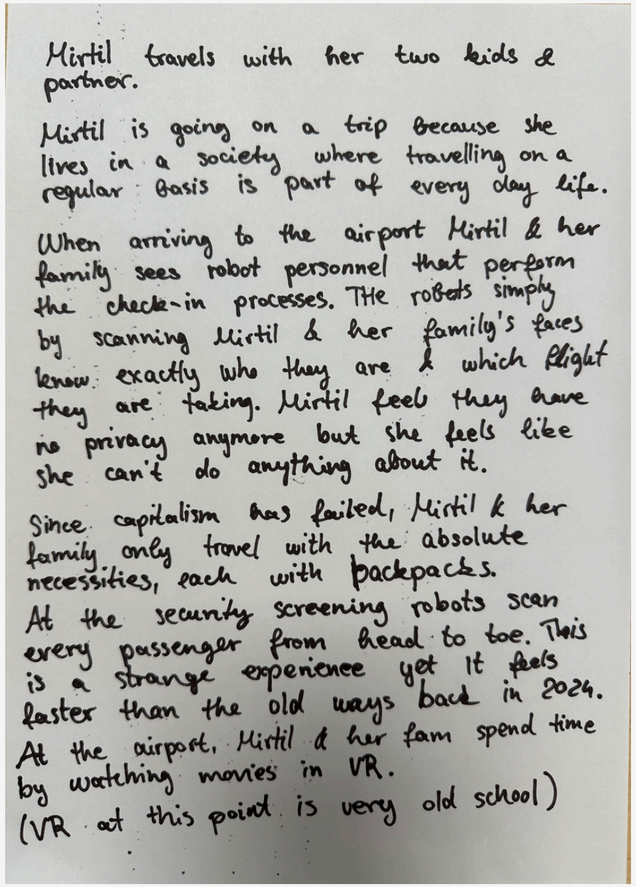
Seoul is reinvigorating its public transport system with the new Climate Card, offering unlimited access to buses, subways, and Seoul Bike for just 3,000 won (USD $2.28) a month. This initiative, the first significant transportation innovation in Seoul since 2004, aims to reduce emissions by promoting public transport use. Similarly, Germany's introduction of the Deutschland ticket in May 2023 for 49 euros led to 1 million car users switching to public transport, with 11 million tickets sold in three months, emphasizing a global trend towards sustainable travel.

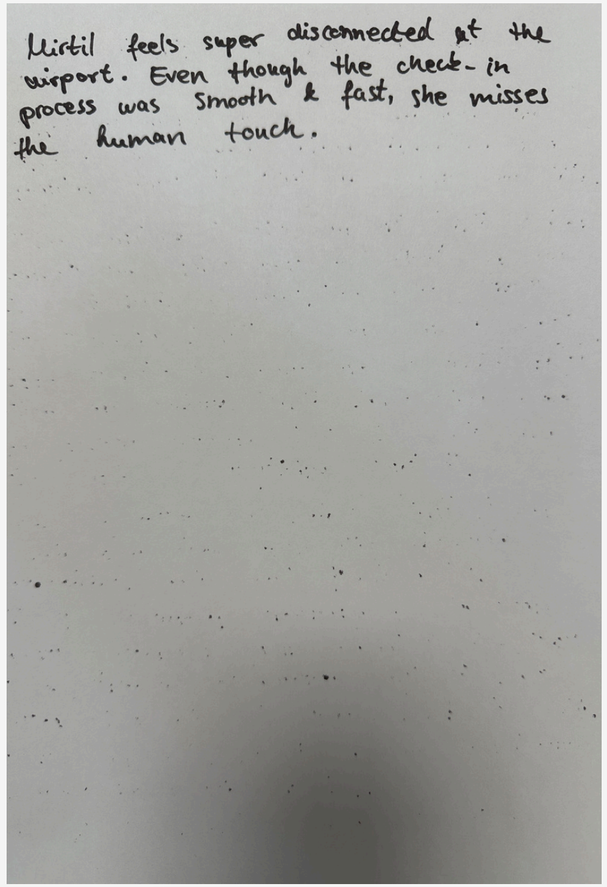
Good night, night flights

Last year, Amsterdam's Schiphol Airport announced plans to stop late night flights and ban private jets in a bid to reduce noise and lower CO2 emissions. Aircraft will no longer take off between midnight and 6 a.m. once the changes go into effect no later than 2025-2026. There will also be no more landings between midnight and 5 a.m. The moves are being made in line with the Paris climate accord, and will result in 10,000 fewer night flights annually.

Assets from the participants of workshop 1







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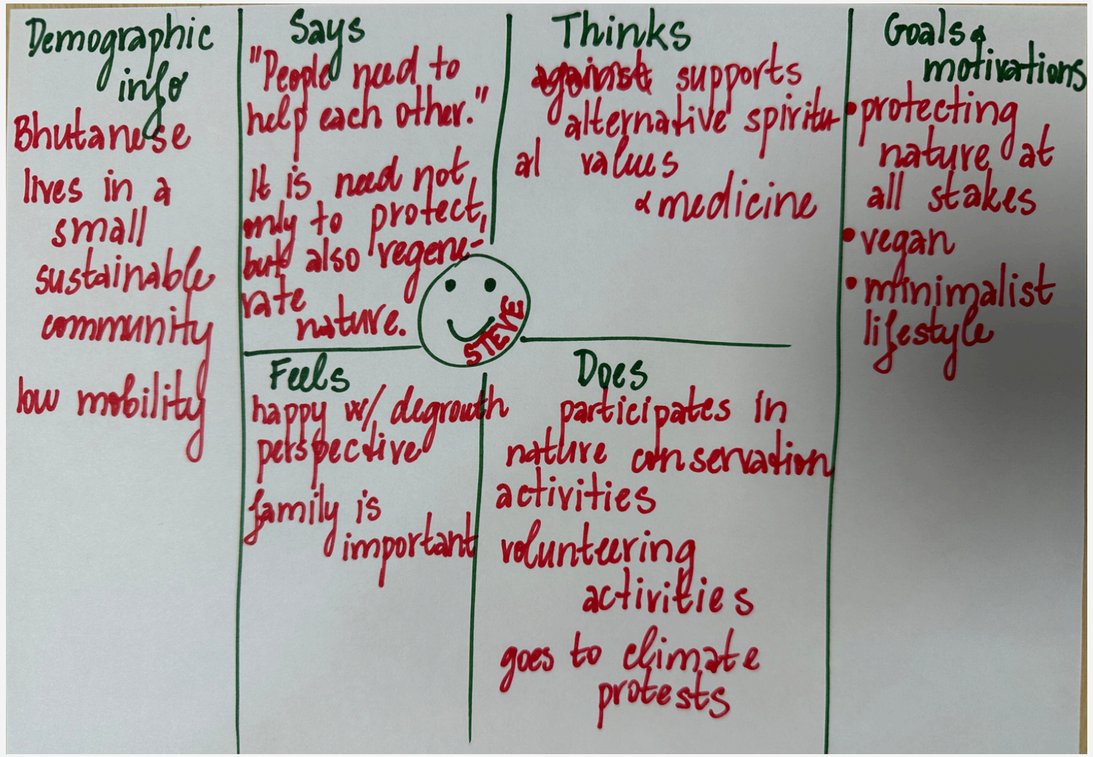

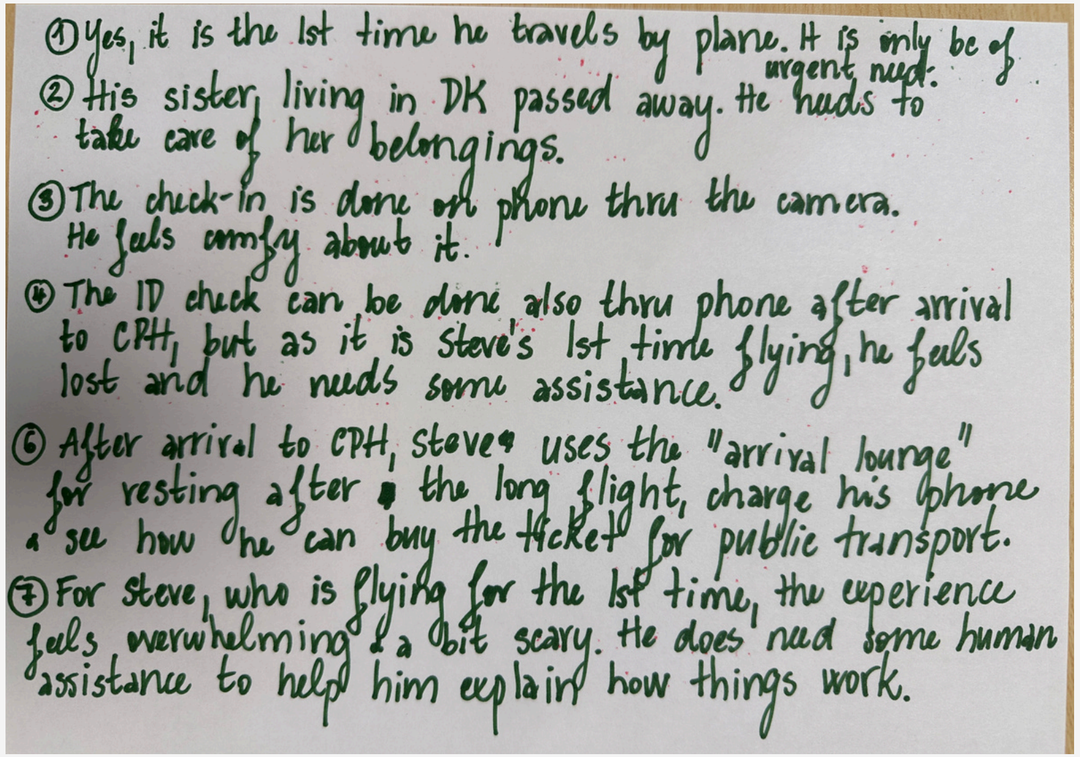

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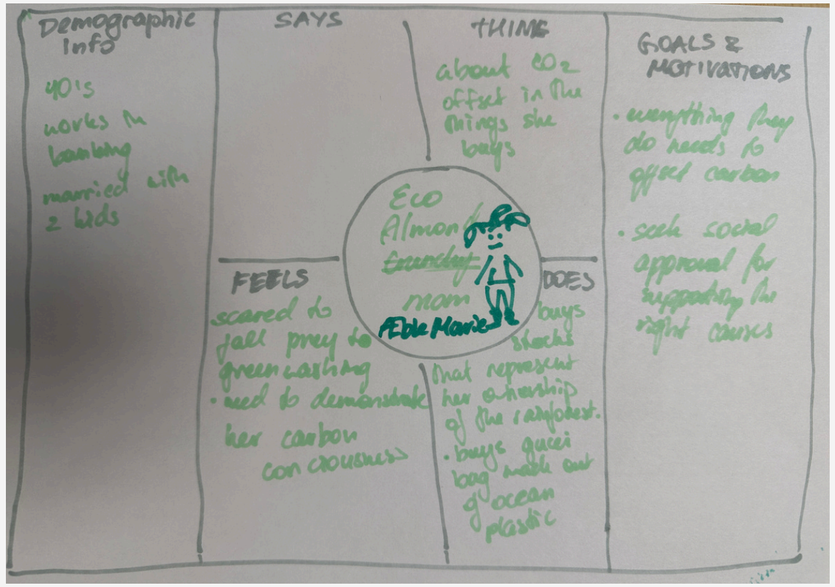

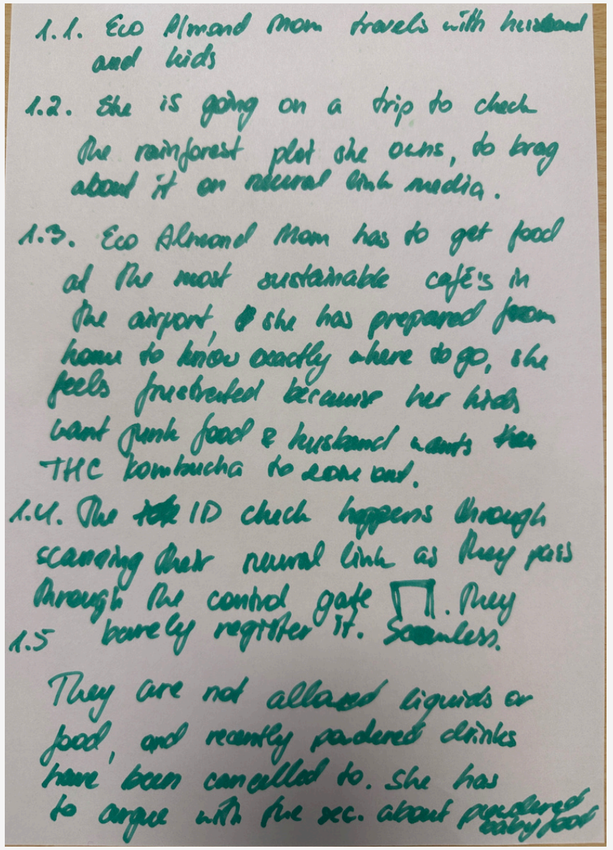

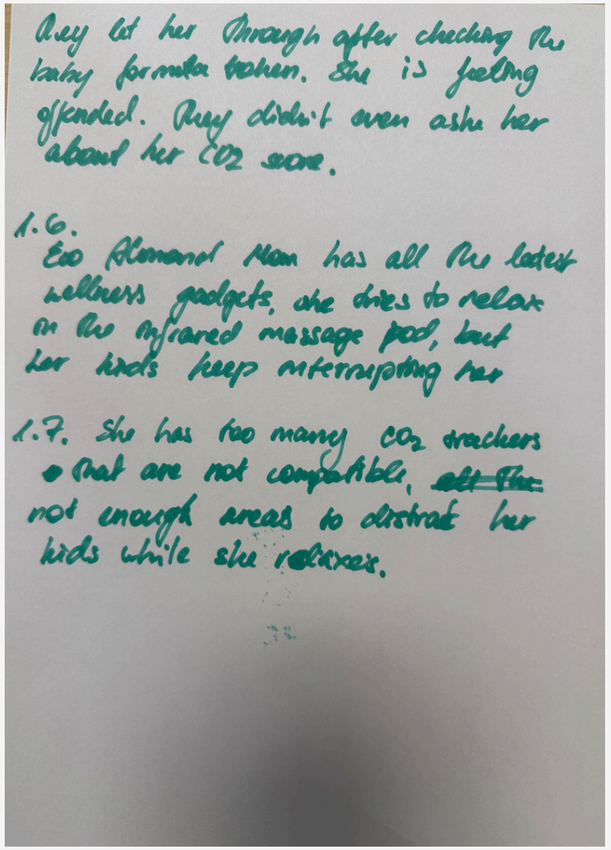

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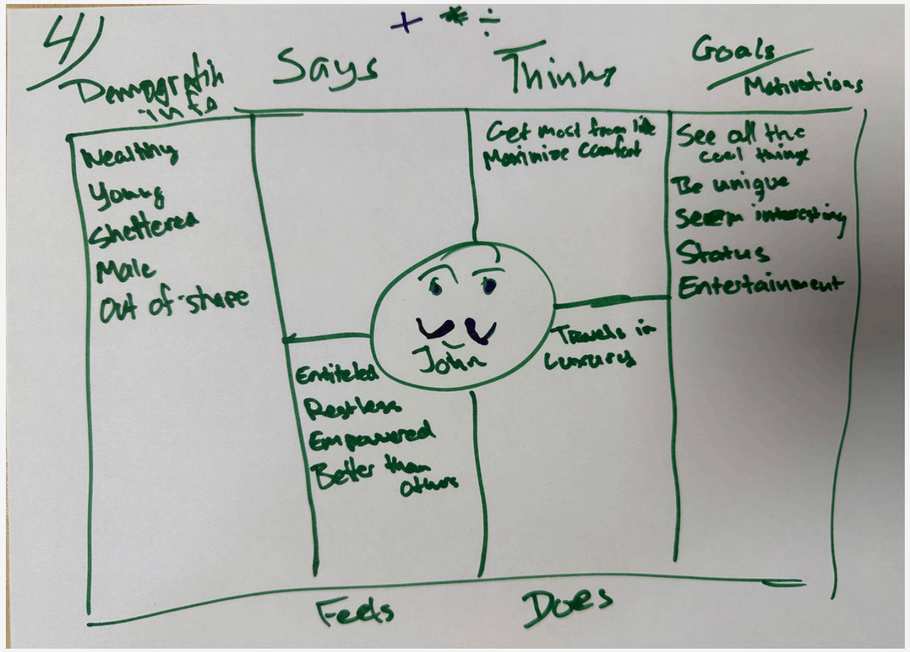

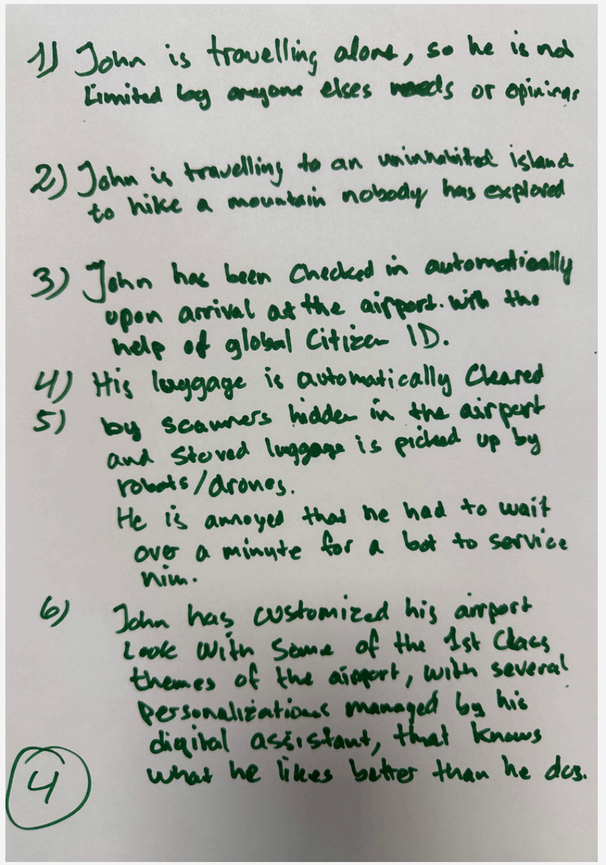

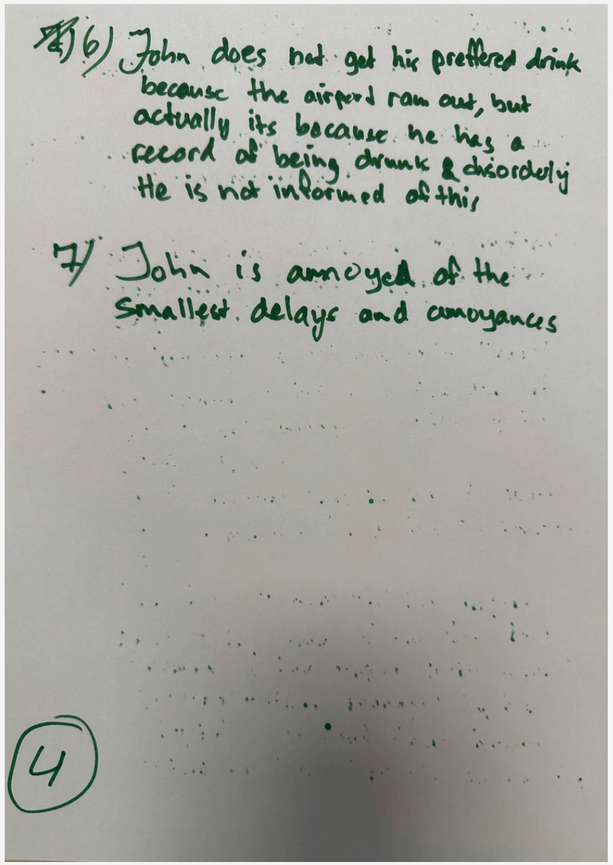

Assets from the participants of workshop 2