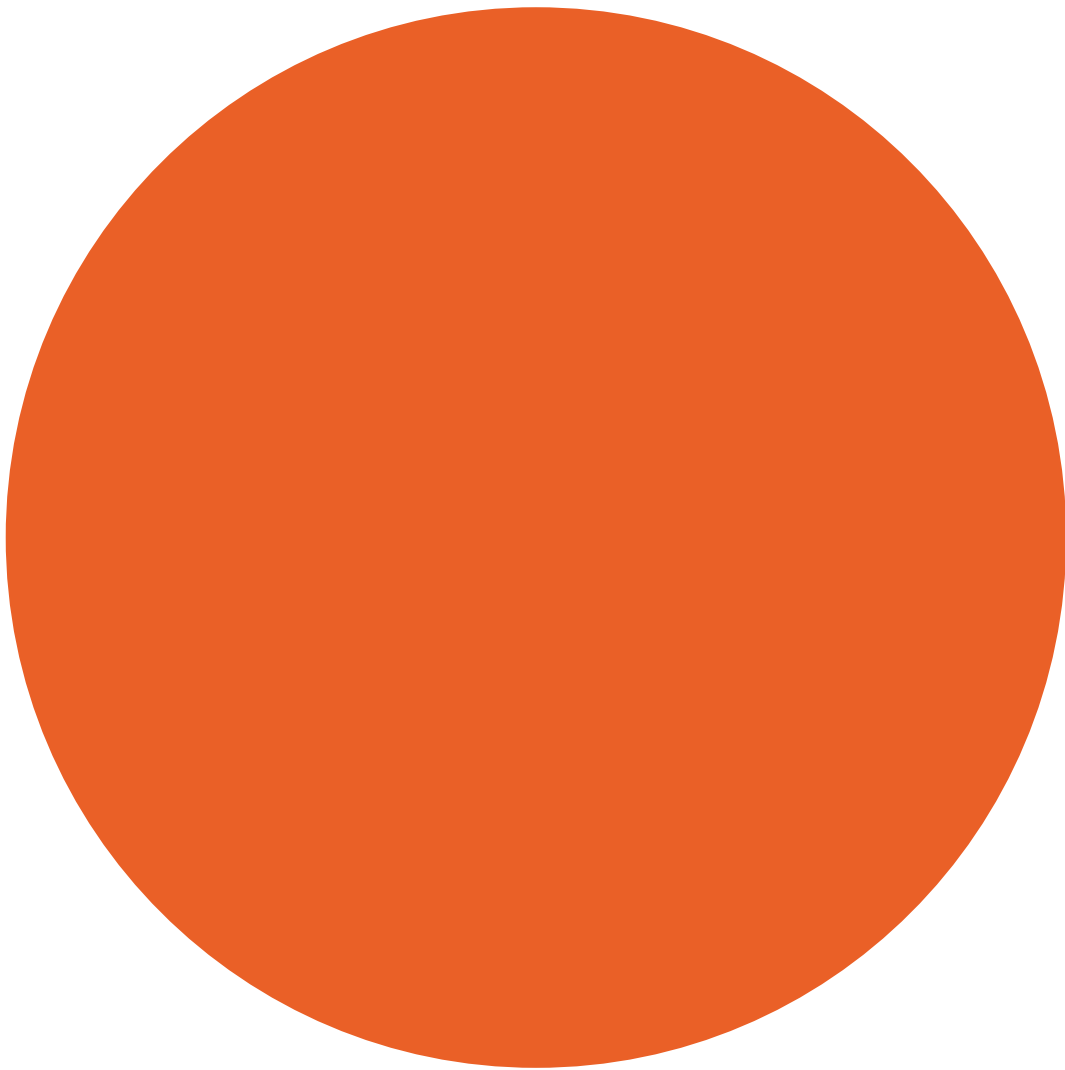# From experimenting with AI to a new way of working

– Josephine Baán

PREFACE

In front of you lies the final work of my master's degree in Strategic Product Design at the Technical University of Delft. This thesis is made possible by the opportunities provided by the Ministry of Justice and Security (JenV). It describes the research I conducted at JenV with the aim of increasing the chance that Artificial Intelligence (AI) experiments will be implemented and lead to a new way of working. When I started the research (March 2021), the COVID-19 pandemic was in full swing, yet I had pinned my hopes that this pandemic would be resolved over the course of the project (August 2021). Unfortunately, this was not the case; I completed this thesis in a different setting than I expected when I started my student days.

With this thesis, I want to encourage designers to use their skills within governments and social environments. But, on the other hand, I want to encourage governments to explore and master the wonderful world of design.

I would like to use this section to express my gratitude to all the people that have provided me with a helping hand. From the start, my environment has been supportive and has brought me to where I am today. As a result, I can deliver a thesis that I am proud of and fully support.

I could not have done this without Olof's help. Thank you for putting so much time into me and the project. You asked the question 'why' in everything I did to challenge me. In addition, you were always up for enjoyable moments that took the pressure off the project.

I would like to express my appreciation to my supervisors from the TU Delft. Jeroen and Deborah have played a significant role. They urged me to think about elements that I had not yet included in my own thinking process during the coach meetings. Jeroen, you made me think about new possibilities and options to explore. Deborah, you looked critically at the decisions I had already made. This combination ensured that I was continuously reflecting and looking ahead during the entire project.

I would like to thank my parents and friends for their time reading parts of the thesis and providing insights beyond the designer's perspective.

Lastly, I want to express my gratitude to all the people of JenV who helped me make the project possible. Many people have made time to participate in interviews, brainstorming sessions, validation moments, etc. and even to get to know me personally.

Enjoy reading!

Josephine Baán

EXECUTIVE SUMMARY

This thesis is conducted in collaboration with Directie X of the Ministry of Justice and Security (JenV), who aims to strengthen the innovation capacity within JenV to keep up with societal needs. One way they do this is by supporting AI experiments. These experiments are procedures undertaken to improve the current way of working, not just to validate hypotheses.

The experiments are driven by two drivers: innovation and AI, which bring along some challenges: currently, JenV learns from the AI experiments, but the result is not an innovation. In addition, JenV is reluctant to implement innovative improvements as they are closely watched by society. Besides, the magnitude of these challenges increases when AI is involved. Hence, most of these AI experiments end after the proof of concept and experience a silent death.

A strategy supported by a tool is desired to prevent the experiments' results from being left unharnessed. Therefore, this graduation project will implement these takeaways by solving the following research question:

"Why does experimenting with AI rarely lead to a new way of working at JenV?"

The research has provided insights into the many challenges behind this question; the challenges can be subdivided into five perspectives: strategy, ecosystem, results, process & governance and culture.

During the research, it became clear that the technology (AI) was not a limiting factor of significant importance for implementing the outcome. However, the scope of this master thesis does not reach all experiments conducted at JenV but is specifically focused on AI experiments. The research has resulted in the following problem statement:

"Initiators experience uncertainty prior to AI experiments because they have no clarity about the trajectory of the AI experiment and mainly lack clarity about who the stakeholders are and how they should approach them. This unclarity about the stakeholders, in turn, results in more uncertainty about the AI experiment."

Directie X should support the initiators to bring about implementation without being part of the whole process. Therefore, three principles have been developed. Directie X hands over to the initiators by translating the principles into a tool. The tool, therefore, only serves as a means of communication of the principles and acts as a hands-on concept that the initiators can get started with.

The three principles:
1. It's all clear! (Clarity)
2. Doing it with! (Engagement)
3. It's clear to all! (Transparency)

Ultimately, based on several design requirements, a toolkit has been developed that complies with the three principles: The CET toolkit. The CET toolkit helps to reduce the uncertainties of the initiators prior to an AI experiment by focusing on clarity about the stakeholders, engaging the stakeholders and transparency.

The CET toolkit consists of an introductory page, Experience stories, six Stakeholder canvases and eight Reflection canvases.

The purposes of the different parts of the CET toolkit are the following:
• The purpose of The Experience stories is that the initiators learn from others without there being consequences.
• The purpose of the Stakeholder canvases is to clarify the stakeholders to the initiator to reduce the uncertainty prior to the experiment. In addition, it entails engagement by providing insights about the roles' wants & needs, and concerns, which can function as guidelines for involving the roles.
• The purpose of the Reflection canvases is to help the next initiator gain insights that can be incorporated in the Experience stories and learn by letting the initiator become aware of the actions taken during the AI experiment.

An evaluation of the concept answers whether the CET toolkit is viable, desirable and feasible and meets the design requirements. The assessment is done through an online collaborative validation session and an online survey. The review has led to a few adjustments. Therefore, the thesis finishes with recommendations in the field of exploring, designing and sharing.

The CET toolkit is a validated first step to reduce the initiators' uncertainties through clarity, engagement and transparency.

This thesis aims to contribute to the way of working of JenV. The result is a strategy supported by a tool. This thesis helps Directie X increase the chance AI experiments go into practice and lead to innovation.
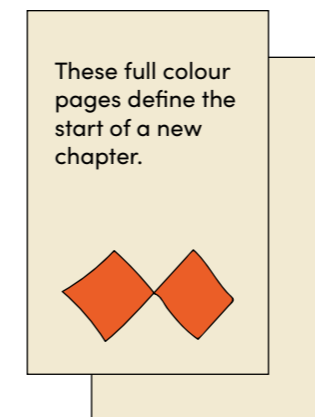
GLOSSARY

Definitions

Bulk cases — Lots of data, not complex, social impact, technical possibilities. (Rechstpraak, 2021)

Mulder cases — An offense or a crime. Derived from 'Lex Mulder': the Traffic Regulations Administrative Enforcement Act. (Ensie, 2021)

Metadata — Data describing the characteristics of certain data. So, it is actually data about data. (Ensie, 2021)

Framework — A basic structure underlying a system, concept, or text. (Oxford Languages, 2020)

Jurisprudence — A source of law that cannot be found in the law and is one of the unwritten sources of law. Based on examples. (Rechtpraak, 2021)

DISCS-matcher — System that can automatically detect, match, and validate source documents (Ministerie van Algemene zaken, 2021)

AB-test — A quantitative research method for comparing two variants.

Abbreviations

AI	Artificial Intelligence	**JDS**	Judicial Documentation System
BDOC	Source Documents	**JenV**	Justice and Security
BERT	Bidirectional Encoder Representations from Transformers	**JUSTID**	The Judicial Information Service
		KIF	Knowledge Interchange Format
CDD	Central Digital Depot	**KPI**	Key Performance Indicator
CES	Central Unit Strategy	**ML**	Machine Learning
CJIB	Central Judicial Collection Agency	**MVP**	Minimal Viable Product
Dcom	Distributed component object model	**NFI**	Netherlands Forensic Institute
DGRR	Directorate-General for Administration of Justice and Law Enforcement	**O&F**	Organisation & Formation
		OM	Public Prosecution service
DI&I	Purchasing and Information Directorate	**PoC**	Proof of Concept
DPG&V	Directorate-General for Police and Security Regions	**RWT**	Legal person with legal duties
		SG	Secretary General
DSS	Decision Support System	**VRF**	Security Region Friesland
FIRE	Forensic Image Recognition Engine	**WBOM**	Scientific Bureau of the Public Prosecution Service
GDPR	General Data Protection Act		
IKS	Innovation Knowledge Strategy	**ZBO**	Independent Administrative Body
IND	Immigration and Naturalization Service		

READING GUIDE

A couple of basic design principles guide the reader through the report.

Start & End

Start of a chapter

These full colour pages define the start of a new chapter.

Chapters finish with key takeaways

End of a chapter

Key insights

Key insights of paragraphs can be found in the orange blocks.
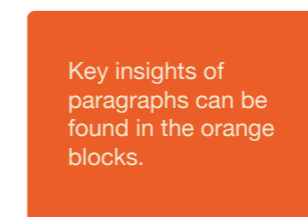
Typography

PARAGRAPH

Subsection

Subsection

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In the body text, orange words and sentences are highlighted to emphasize these parts.

Subsection

The orange titles are used to indicate subsections of the approach of the case study approach in the Discover and Define chapter.

Figure 1: Reading guide

> # "The best way to predict the future is to create it."
>
> – Peter Drucker

TABLE OF CONTENT

1. INTRODUCTION

This chapter provides the basis of this graduation project. It introduces the stakeholders and dives into the context resulting in the aim of this research. The chapter ends by presenting an overview of the project approach.
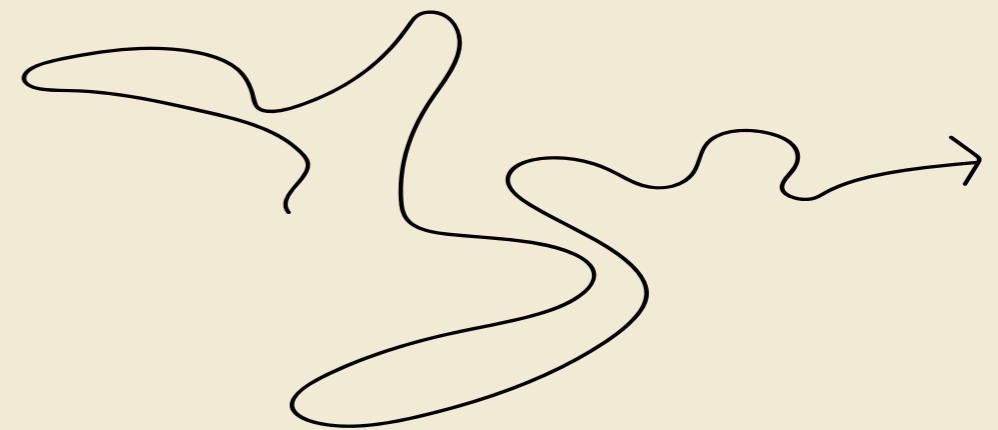
STAKEHOLDERS

For whom is this project?

This thesis is conducted in collaboration with Directie X of the Ministry of Justice and Security (JenV), who is the client and will be introduced more in-depth in the next paragraph.

In addition to the client of this project, multiple stakeholders are involved in order to complete this graduation project. Figure 2 delineates an overview of the involved parties.
The primary stakeholders in this project are the client, the supervisory team and me.
I am a Strategic (Product) Design student at the faculty of Industrial Design Engineering of Delft University of Technology (TU Delft). During this graduation project, I operated as a connecting actor between the client and the university. The innovation program manager from Directie X is Olof Schuring; he is the owner of the challenge of this graduation project. The supervisory team from the TU Delft consists of Jeroen van Erp and Deborah Nas, who acted as mentor and coach.
The secondary stakeholders are other organisations of JenV that have contributed to this project; these organisations will be further introduced throughout the report.

The client

Directie X is an independent team within JenV that aims to improve innovation, strategy and knowledge capacities throughout the whole organisation. Directie X focuses on five main programs: knowledge, innovation, strategy, technologies, and public-private collaboration. In addition to the five programs, there is also a theme on which Directie X focuses, called 'international' because this theme is about acquiring knowledge internationally. The theme is new and therefore not big enough to be a program yet.

The goal of Directie X is to achieve the following objectives (Werkboek Directie X, 2021):
• Strengthen the innovation capacity throughout the whole organisation by combining the different programs into one team.
• Gain expertise in the field of innovation and have an overview of the innovation activities and needs throughout the whole organisation.
• Create a strong relationship between innovation, knowledge, and strategy. Strategy is needed to identify (future) social challenges for JenV. Knowledge is the fuel for strategy and innovation. Innovation is required to equip the JenV organisation to tackle social challenges adequately.
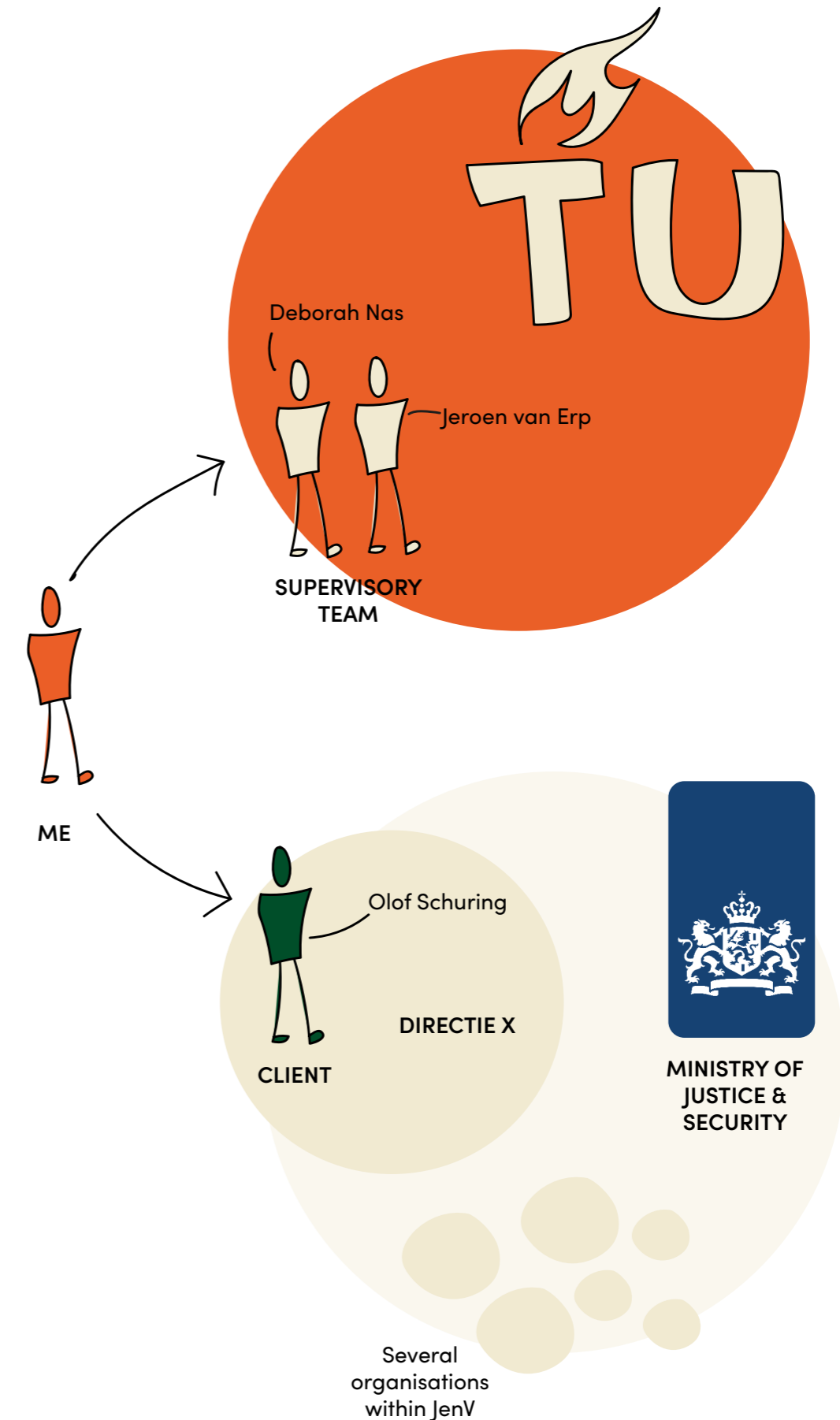

Figure 2: Involved parties

CONTEXT   CONTEXT

Introduction to the project context

This paragraph provides a deeper understanding of the context that will eventually lead to the assignment of this project.

Directie X aims to strengthen the innovation capacity throughout the whole organisation. Since they believe that the organisation needs to become more innovative to fit the needs of society. One way they work on their aim is by supporting AI experiments JenV is working on (Directie X does not conduct the AI experiments itself). The desired outcome of these AI experiments is a tool that improves employee actions to create a more efficient and effective working method. These experiments JenV conducts are related to AI since this technology can serve to support the decision-making process. Under certain circumstances, it can even lead to fully automated decision-making. **The AI experiments are procedures undertaken to improve the current way of working, not just to validate hypotheses.** The AI experiments have the aim to improve internal processes by means of tools based on AI. When reference is made to an experiment, this refers to the entire process, from the moment of start to implementation (Figure 3). The AI experiments are based on two drivers: innovation and AI.
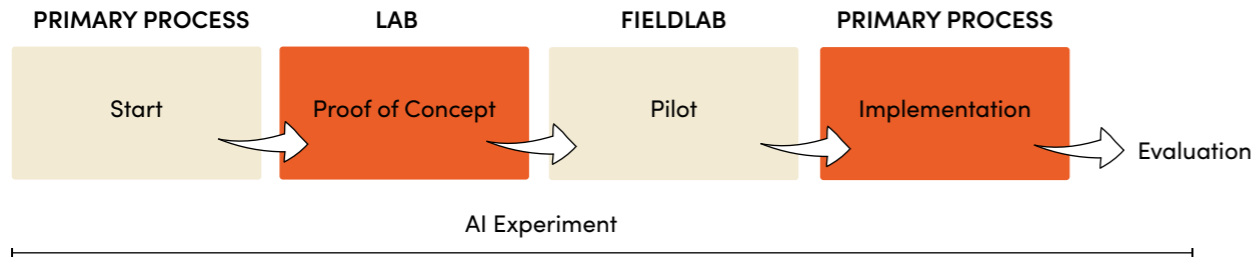

Figure 3: proces of an AI experiment

Driver: Innovation

INNOVATION AS A DRIVER

The public sector is seen as a sector with an inhospitable attitude to innovation (Borins, 2001). Still, JenV is trying to innovate since this is desirable for organisations to remain efficient and effective (Moore, 2005). Literature demonstrates that the question is not when to innovate, but how (Von Hippel, 1986; Vega-Jurado, Gutiérrez-Gracia, Fernández-de-Lucio & Manjarrés-Henríquez; 2008). JenV is working on innovation by conducting AI experiments to create a more efficient and effective working method. Thus, the focus is on improving internal processes, which means the innovation JenV is working on is internal (Oke, Prajogo, Jayaram; 2013).

To innovate, Directie X relies on the Innovation Maturity Model of KPMG. This model consists of five perspectives: strategy, ecosystem, process and governance (P&G), results, and culture (Design and innovation quotient maturity model, 2020). 'Chapter 2: Discover' will further explore these perspectives.

Figure 4: Levels of value (Hartley, 2005)

CHALLENGES OF INNOVATION

The innovation at JenV comes with two challenges:

1. Improvement vs innovation
Not all innovations lead to improvement, and not all improvements can be defined as innovation. The AI experiments JenV is conducting aim to provide a new way of working and, therefore, generate improvement and innovation. Figure 4 outlines innovation and improvement on two axes which results in four levels of value (Hartley, 2005).
1. No improvement and no innovation: the organisation is in a stable environment.
2. Improvement but no innovation: this arises when the organisation's processes are well organised. This establishes optimisation of the processes but no innovation (De Ruiter, 2019).
3. Innovation but no improvement: when this happens, the organisation learns from the actions taken, but the result is not an innovation, even though the name of this level says so.
4. Innovation and improvement: an innovation that entails a new way of working.

The AI experiments are currently located on level three, which defines innovation without improvement. This makes the innovation unsuccessful in achieving the goal since the innovation was useful for the organisation's learning but did not enable a new way of working. According to the client of this project, a successful AI experiment enables a new way of working and is therefore located at level 4. This becomes even more clear when one looks at the process of the AI experiment in Figure 3. After the proof of concept (PoC), the experiment is currently drawing to an end, while the experiment's aim is to be implemented.

2. Magnifying glass of the media
Another challenge JenV is dealing with regarding innovation JenV is dealing with is that society is constantly watching them and therefore they cannot make mistakes. The constant magnifying glass by society on the ministry's actions can be seen in headlines and the news, where every little mistake is highlighted. Therefore, even small substantive failures are punished in an exaggerated way (Moore, 2005). The program manager of Directie X states that due to this magnifying glass, JenV is afraid to fail and therefore holds back on innovation. This can be seen in the AI experiments that do not get implemented. As have been said: "There is no innovation without an implementation." This fear of making mistakes seems even more significant when it comes to innovations in the use of new technologies, including AI.
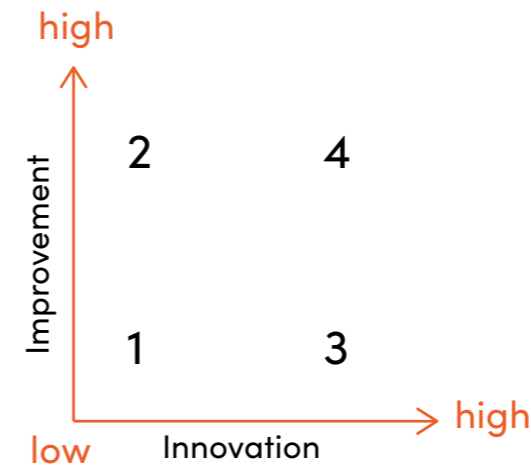
CONTEXT

Driver: Artificial Intelligence

The purpose of this paragraph is to provide a general understanding of AI. The section is divided into AI as a driver of the experiments and the challenges it brings.

A GENERAL UNDERSTANDING OF AI

AI is not something new; it exists for several decades. However, the extensiveness of various applications has been increased since the eighties (Goedegebure, 2019). As a result, AI is increasingly becoming more and more popular. The rapid advances entail innovations that influence products and services (Cockburn, Henderson, Stern, 2018).

AI is defined in multiple ways. However, for this research, the definition of Copeland has been adopted: **"AI is the ability of a computer or a robot controlled by a computer to do tasks that are usually done by humans because they require human intelligence and discernment" (Copeland, 2015).**

AI consists of two subsets: Machine Learning (ML) and Deep Learning (DL) (Zhang, 2020). Figure 5 shows the difference between AI, ML and DL. The AI experiments conducted at JenV, which are referred to as AI, are in fact all ML. Throughout this report, the terms 'AI' and 'ML' will be used interchangeably.

Although the precise application of AI (and ML and DL) is outside the scope of this research, its opportunities and risks are relevant. In the public debate, two extreme visions of AI are often contrasted. One of these visions is seen as a driver of the AI experiments, whereas the other vision is translated into challenges. (Van Belkom, 2020)

AI AS A DRIVER

AI has a utopian vision that ensures more efficient decisions than humans can make (Van Belkom, 2020). This utopian vision knows tremendous opportunities (Dafoe, 2018) and is illustrated through the desired outcome of the AI experiments; improve the working method by means of an AI tool.

CHALLENGES OF AI

The dystopian view emphasises the adverse effects of AI (Van Belkom, 2020), of which the risks are substantial (Dafoe, 2018). Moreover, AI brings a particular uncertainty, which entails growing concerns about ethics (Mittelstadt, 2019). These growing concerns live among society. Therefore, JenV needs to carefully and cautiously explore the possibilities as they cannot afford to make mistakes since society is constantly watching them.

Artificial Intelligence
Software that can respond, reason and adapt.

Machine Learning
Algorithms whose performance improves as they are exposed to the data.

Deep Learning
A subset of machine learning in which layered neural networks learn from large amounts of data.
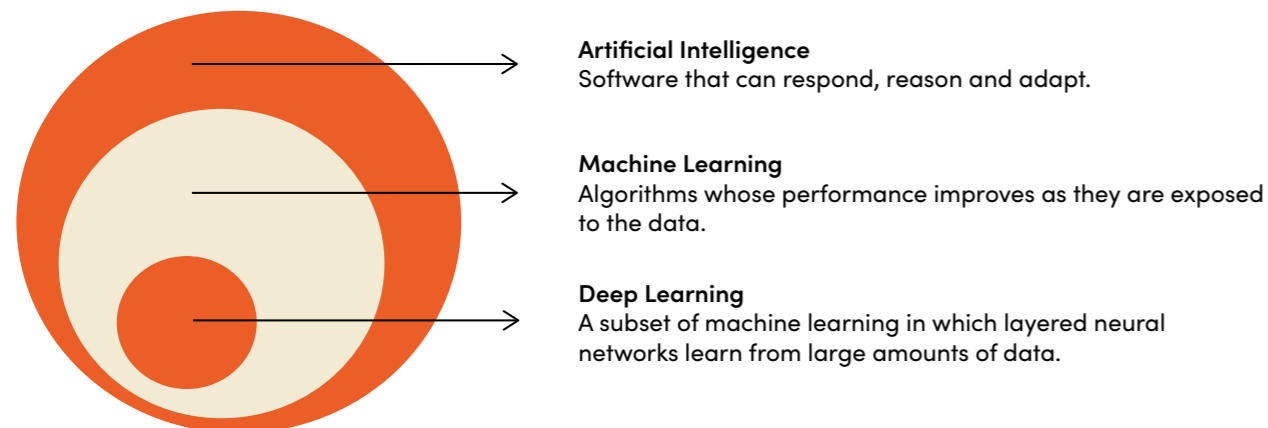
Figure 5: AI, ML, DL

ASSIGNMENT

Initial scope, problem definition and research question

The previous chapter has given an overview of the context of this graduation project. Within this context lies the (initial) assignment.

INITIAL SCOPE: THE AI EXPERIMENTS

The scope of this project includes AI experiments conducted at JenV. The AI experiments are initiated by someone who directly benefits from the new way of working they aim to generate. This initiator is located at the bottom of the organisation's hierarchical structure, which results in the AI experiments being initiated bottom-up. The AI experiments offer long-term possibilities by enabling a more efficient and effective way of working in the future. The AI experiments are low costs (5.000 -70.000 euros). Most of the financial support of the AI experiments does not come from the executing organisation itself but from an external party, which is Directie X.

INITIAL PROBLEM DEFINITION

JenV is conducting several AI experiments, which are procedures undertaken to improve the current way of working, not just to validate hypotheses. The AI experiments are currently located on level three of the four levels of value (Hartley, 2005) (Figure 6), which defines innovation without improvement. This makes the innovation unsuccessful in the sense of achieving the goal since the innovation was useful for the learning of the organisation but did not enable a new way of working. However, according to the client of this project, a successful AI experiment enables a new way of working and is therefore located at level 4.

So, currently, the AI experiments draw to an end after the PoC and experience a silent death. At the same time, it is desirable to achieve an implementation (Figure 7).

INITIAL RESEARCH QUESTION

For this purpose, this project is intended to answer the following research question:

> **RQ: Why do AI experiments rarely lead to a new way of working at JenV?**

A new way of working equals the implementation of AI experiments. Therefore, examining the following five sub-questions will answer the research question. The sub-questions are based on the five perspectives of the Innovation Maturity Model:

> **Sub-questions**
>
> •   How does the strategy influence implementation*?
> •   How does the ecosystem influence implementation*?
> •   How do process and governance influence implementation*?
> •   How do the results influence implementation*?
> •   How does culture influence implementation*?
>
> * By implementation is meant the implementation of AI experiments.

Initial design objective

INITIAL DESIGN OBJECTIVE

This research aims to increase the chance of AI experiments go into practice. This goal will be pursued by carrying out the following assignment:

Design a strategy supported by a tool that increases the chance that AI experiments - that promise a more effective and efficient way of working- go into practice and lead to innovation.
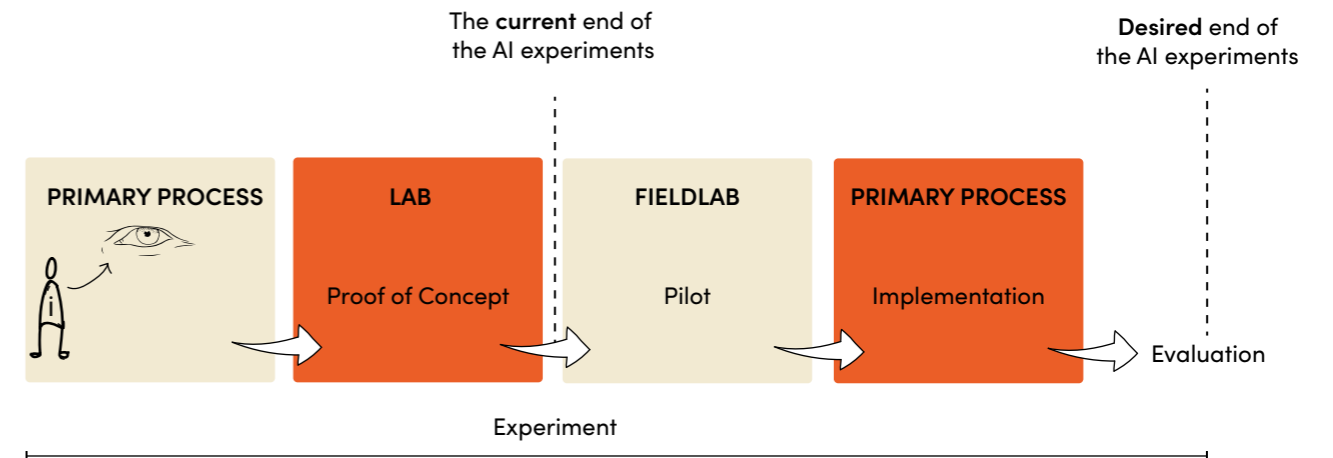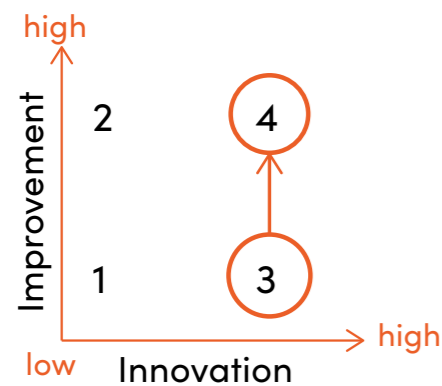

Figure 7: End of AI experiments

Figure 6: Levels of value (Hartley, 2005)

PROJECT APPROACH

A variety of design methods guides the journey from the first problem statement to the final design challenge to the project's final deliverable.

The design process method is based on design thinking, which is the creative and systematic approach to problem-solving. This approach is applied in a model consisting of four phases: discover, define, develop, and deliver. The model owes its name to the shape that illustrates the double diamond approach (see Figure 8). Each diamond signifies a diverging and subsequently a converging process. The report's chapters are based on the process and can also be seen in Figure 8 (Wardt, 2021).

Discover (Chapter 2)

The Discover phase starts with research to get a thick understanding of the underlying challenges. A qualitative research approach is used, which consists of two parts: (1) five case studies have been conducted, in combination with (2) interviews about the context. The case studies are conducted through:

1. Literature research
Literature research has been conducted to get an understanding of the theoretical background.

2. Analysing documents
Documents have been analysed in order to get a first understanding of each of the AI experiments.

3. Introductory interviews
The introductory interviews were held to empathise with the initiators of the AI experiments in order to entail a good understanding of them and their motives.

4. Semi-structured interviews
The semi-structured interview method was chosen because it enables researchers to step into the shoes of the stakeholders and their experience with the AI experiments. Furthermore, a semi-structured interview has the advantage for interviewers to remain free to elaborate within an interesting subject area while also staying focused on the research topic and using the available time efficiently (Patton, 2002).

Define (Chapter 3)

Define basically means converging. The define phase describes the prioritisation of challenges found in the Discover phase, resulting in several main challenges. Next, these main challenges are translated into opportunity areas. Finally, the opportunity areas are denounced through validation to ultimately deliver a final design challenge with an appropriate design focus. The methods are:

1. Argument map
The argument map provides a visual presentation of the pros and cons of each of the found challenges.

2. Systematic review
The systematic review means that the challenges received scores that indicate the influence of the challenge on the initial problem.

3. Validation through case studies
Validation is done by means of more case studies, which were conducted using the same approach as in the discover phase.

Develop (Chapter 5 & 6)

Develop is about conceptualisation. The phase starts with focusing on the strategy, followed by exploring solutions. Whereafter the idea moved from an abstract stage into a first concept.
The methods used in this phase are:

1. Brainstorming
Brainstorm sessions have been held in order to explore different solutions; some of them involved the client.

2. Prototyping
Different prototypes have been made to iterate on in order to create the concept.

Deliver (Chapter 7)

In the Deliver phase, it is all about validating and improving. Hence, the following methods are used:

1. Collaborative validation session
An (online) collaborative validation session ensures that the different perspectives are highlighted because different stakeholders are present.

2. Survey
A survey ensures that people can complete it anonymously and do not feel burdened, to be honest. In addition, everyone can do it in their own time.

Figure 8: Double diamond apporach

Key takeaways of the Introduction chapter

The client of this graduation project is Directie X, who aims to strengthen the innovation capacity within JenV to keep up with societal needs. Among other things, they pursue their aim by supporting AI experiments to find suitable solutions that improve employee productivity.

The experiments are based on two drivers: innovation and AI, which bring along some challenges: currently, JenV learns from the AI experiments, but the result is not an innovation. In addition, JenV is reluctant to implement innovative improvements as they are closely watched by society. Besides, the magnitude of these challenges increases when AI is involved. Hence, most of these AI experiments draw to an end after the PoC and experience a silent death.

To prevent the results of the experiments from being left unharnessed, a strategy supported by a tool is desired; this graduation project aims to solve the following assignment:

Design a strategy supported by a tool that increases the chance that AI experiments - that promise a more effective and efficient way of working - go into practice and lead to innovation.

22

2. DISCOVER

This chapter focuses on researching the limiting and supporting factors of the implementation of AI experiments conducted at JenV to analyse why experimenting with AI rarely leads to a new way of working.

The research starts with examining the literature in the first section. The following section presents the result of qualitative research, which includes five case studies. Finally, in the third section, the data is analysed, and cross-case conclusions are drawn.

RESEARCH APPROACH

SECTION 1

DEFINE	DESIGN	COLLECT	ANALYSE	ANALYSE & CONCLUDE
Literature review /theoretical background	Case selection Data sources Collection protocol	Collection of the case studies	Individual case study reports	Cross-case conclusions

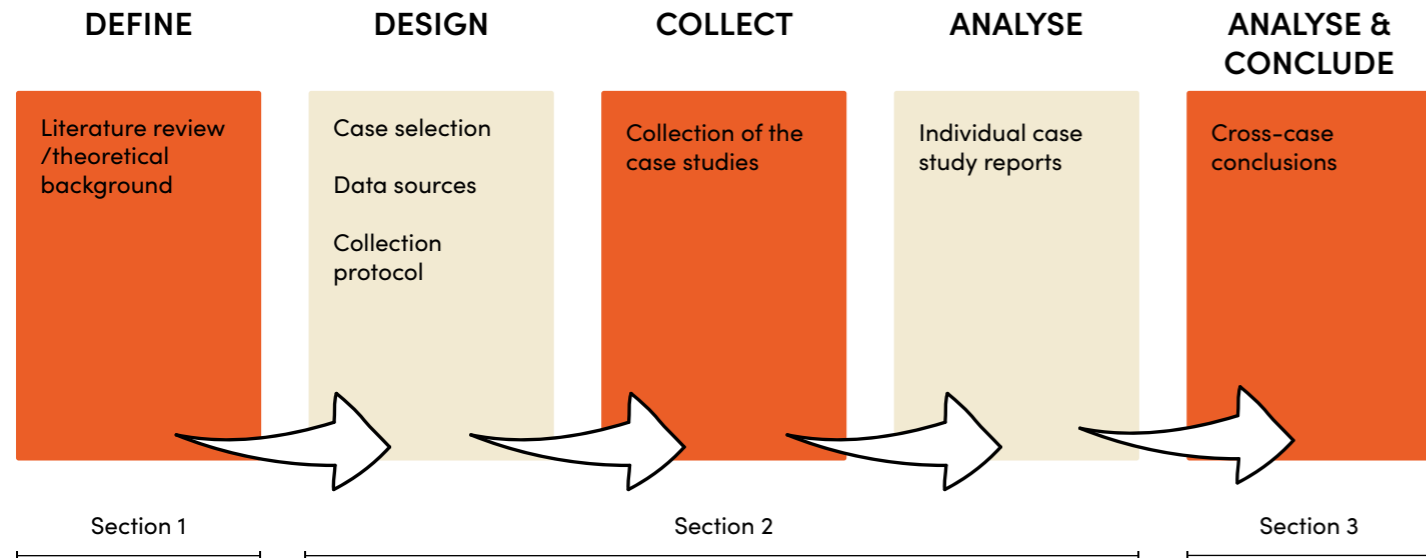Section 1 | Section 2 | Section 3
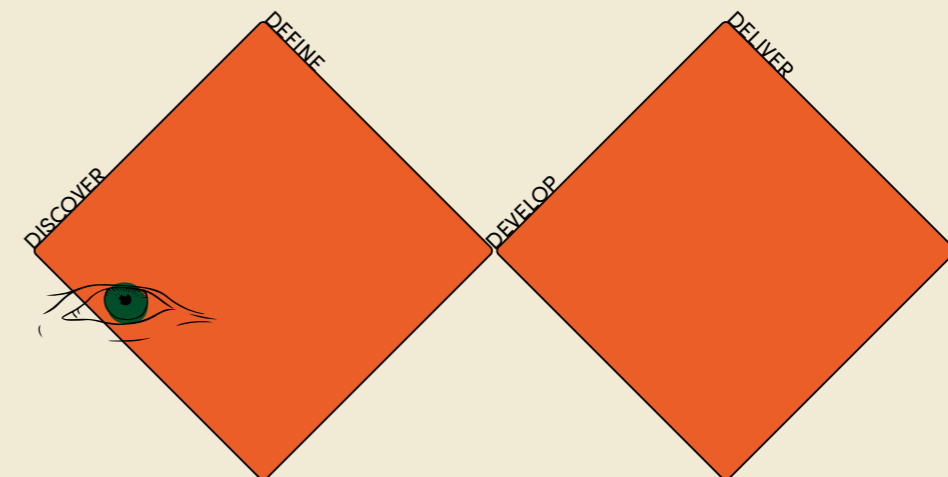
Figure 9: Approach of the research

The research starts with examining the literature. The following section presents the results of qualitative research, which includes five case studies and contextual interviews. In the third section, the data is analysed, and cross-case conclusions are drawn. A visualisation of the research approach is shown in Figure 9.

- Section 1: define
- Section 2: design, collect, analyse
- Section 3: analyse and conclude

Define: Theoretical background

The theoretical background explains the model used to find limiting and supporting factors that influence the implementation of an AI experiment.

JenV states that they want to innovate in a more accessible and agile way. In order to do so, they rely on the Innovation Maturity Model of KPMG. This model consists of five perspectives: strategy, ecosystem, process & governance (P&G), results, and culture (the complete model can be found in Appendix C). Nieminen (2019) states that "an Innovation Maturity Model is a tool and a framework that can help a company identify where they currently are in terms of their innovation capabilities." For this research, the perspectives from the Innovation Maturity Model have been translated into limiting and supporting factors of the implementation of AI experiments since this implementation equals a new way of working, and a new way of working equals innovation. Furthermore, this model serves as a basis for the research because this model is familiar ground for the client. Therefore it is expected this will lead to a pleasant adoption of the research results to them.

All these perspectives consist of several elements. However, not all elements of each perspective could be explored within the scope of this study. Therefore, a couple of elements from each perspective are selected (Figure 10) and will be discussed in section 3: analyse & conclude.
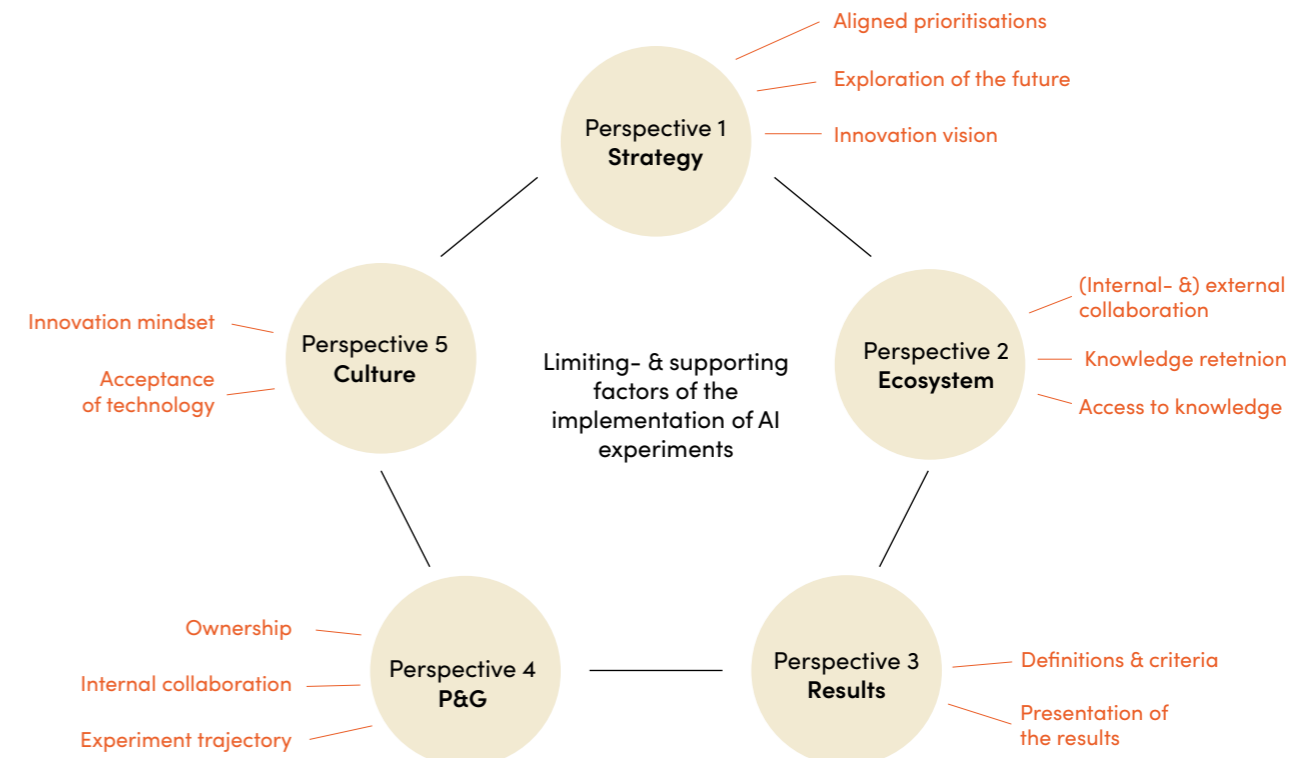
Figure 10: The selected elements of the 5 perspectives of The Innovation Maturity Model (KPMG)

Key takeaways section 1

JenV states that they want to innovate in a more accessible and agile way. In order to do so, they rely on the Innovation Maturity Model of KPMG. This model consists of five perspectives: strategy, ecosystem, process and governance (P&G), results, and culture. These perspectives have been translated into limiting and supporting factors of the implementation of AI experiments.

SECTION 2

In order to research how the elements found in the previous section have influenced the implementation of the AI experiments, a qualitative research has been conducted. The research approach consists of two parts: (1) five case studies have been conducted, combined with (2) interviews about the context. The context must be considered since every case is unique (Clarke & Braun, 2013). The insights of these case studies are combined with the insights of the contextual interviews to draw conclusions and define the challenges of the initial problem.

Design

CASE SELECTION

Five case studies are conducted, these are subdivided into:
- Four case studies on AI experiments that are not implemented
- One study on an AI experiment that is implemented

THE DATA SOURCES THAT ARE USED FOR THESE CASE STUDIES ARE:
- Documents containing project plans, outcomes, results, etc.
- Introductory interviews with stakeholders of the projects, mainly the initiators
- Semi-structured interviews with stakeholders of the projects, mainly the initiators

Documents containing project plans, outcomes, results, etc.

The documents have been analysed in order to get a first understanding of each of the AI experiments.

Empathising introductory interviews

The empathising introductory interviews were held to entail a thick understanding of the initiators of the AI experiment and their motives.

Semi-structured interviews

The semi-structured interview method was chosen because it enables researchers to step into the shoes of the stakeholders and their experience with the AI experiments. Furthermore, a semi-structured interview allows interviewers to remain free to elaborate within an interesting subject area while also staying focused on the research topic and using the available time efficiently (Patton, 2002).

COLLECTION PROTOCOL

Reliability and validity must be taken into account for a good study. Validity is the extent to which what needs to be measured, and reliability concerns the accuracy and precision of the (measurement) procedure. Triangulation was used to ensure validity and reliability. Triangulation is a strategy that combines different data sources, methods, and theories to provide sufficient corroborative evidence (Roberts & Priest, 2006). As mentioned earlier, various documents, literature, and interviews were used to obtain information during this research.

Collect

A summary of the five selected AI experiments will provide a general understanding of the researched AI experiments and can be found in the next paragraph.

Analyse

A detailed overview of the case study reports can be found in Appendix C. The cross-case drawn analysis and conclusions will be discussed in section 3.
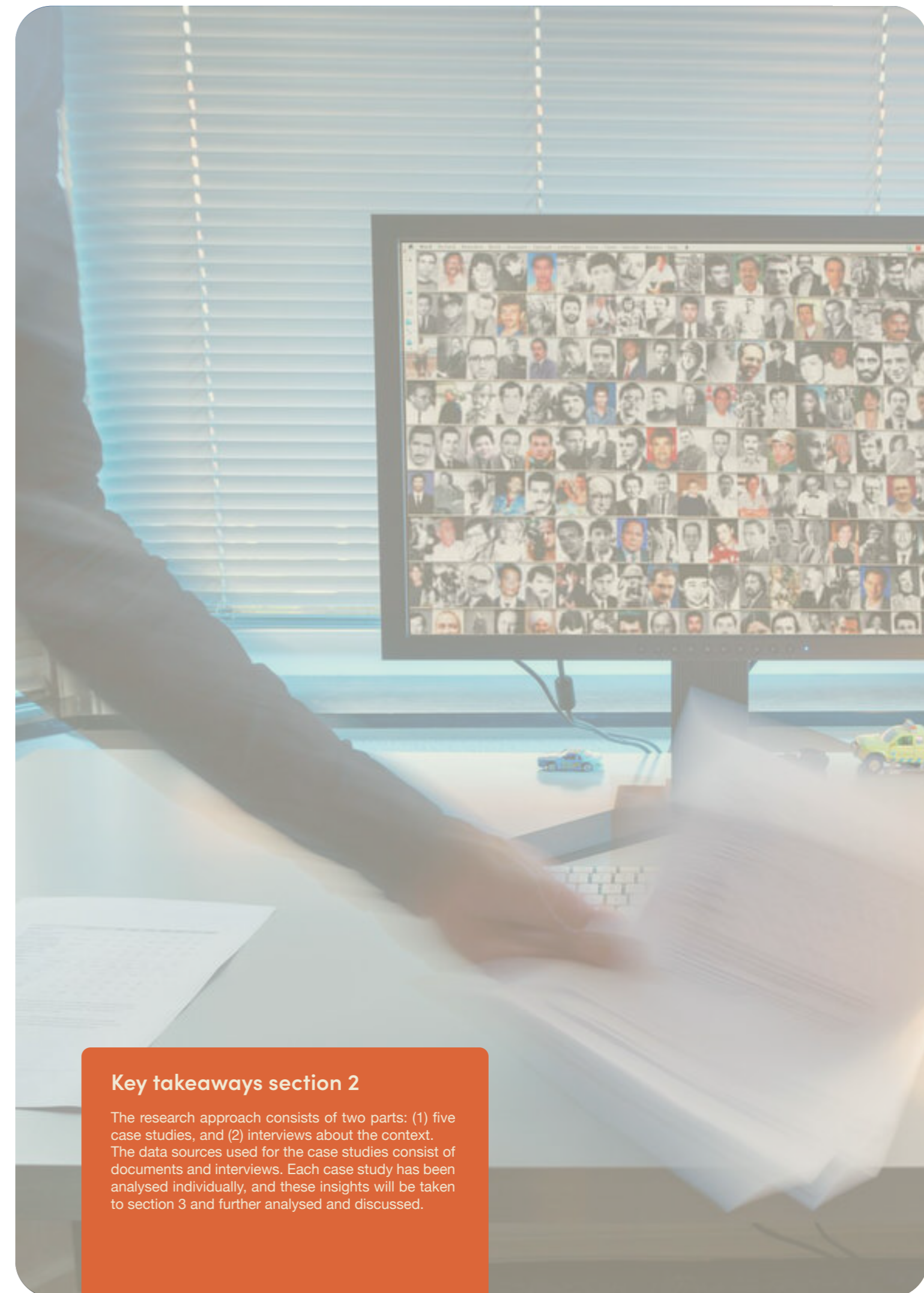
Key takeaways section 2

The research approach consists of two parts: (1) five case studies, and (2) interviews about the context. The data sources used for the case studies consist of documents and interviews. Each case study has been analysed individually, and these insights will be taken to section 3 and further analysed and discussed.

SUMMARY OF THE AI EXPERIMENTS

1 IMAGE RECOGNITION

The IND is carrying out a project in the field of image recognition. This concerns recognising stamps and signatures on foreign source documents, such as birth certificates or marriage certificates. The system must provide a probability assessment of the authenticity of these documents. Currently, approximately 50,000 source documents are manually checked for authenticity each year. This is time-consuming. In this project, techniques for image analysis are developed and used to validate documents, whereby AI separates authentic and not real. This substantially speeds up the research process and increases its effectiveness and efficiency. Unique here is the triple helix collaboration between IND, TNO and a company for developing, producing, and publishing software. (Rijksportaal, 2021)

2 AI KNOWLEDGE SYSTEM FOR JUDICIARY

A project has been started at the Oost-Brabant District Court under the name Artificial Intelligence Knowledge System for the Judiciary. The key question of this AI experiment is: "What are the possible applications of an AI knowledge system in the analysis, preparation and making of decisions by the judge?" This project goes further than just a traditional AI experiment. It does not only want to answer these questions based on theoretical insights but also develops an artificially intelligent knowledge-supporting system and will experiment with it. The AI experiment is thus a combination of thinking and doing. The knowledge system analyses the entered data / procedural documents itself, searches for comparable legal cases based on texts (the procedural documents), and gives the user the top 10 of most comparable legal cases. It gathers the facts and searches for matches with other lawsuits based on that. This initially happens in relatively simple "bulk" cases, in particular Mulder cases (light traffic offences). The aim is to see whether this specific AI functionality can improve the quality of the judiciary, how the actors in the judiciary can deal with this and what impact this technology has on the judiciary. (Rijksportaal, 2021)

3 JURISPRUDENCE ROBOT

AI could enable the Public Prosecution Service - and more broadly, the judicial chain as a whole - to extract more quickly, more efficiently, but also more relevant information from the case-law of the judiciary. Because artificial intelligence is used, there is an artificial learning capacity, which means that the results become increasingly "smarter". The aim of this innovation is, therefore, to use AI to build a custom-made tool to not only limit the research time of the professional within the Public Prosecution Service to find relevant case law but also to have it prepared in better quality on a case or hearing by finding other

types of data. The social effect of this innovation, therefore, implies that the officers of the Scientific Bureau OM (WBOM) will become more productive, can make better decisions, and therefore can devote attention to more socially relevant work, such as personally interacting with a victim, picking up cold cases or getting things done faster. (Rijksportaal, 2021)

4 AI ALGORITHM TO IMPORT PENALTY CARDS

Last year, together with the NFI and JenV data lab (formerly Living lab of DI&I), an experiment was started to train an AI algorithm that can import penalty cards. A penalty card is an extract that shows what people have on their records after committing a criminal offence. Based on the JenV-wide ambition to bundle and strengthen the scarce expertise in the field of big data and data analysis, AI experiments are being carried out to investigate the possibilities of information-driven working. This is done to create added value from the current data sources and data. Within this framework, the NFI is the contractor of the AI experiment within Justid. (Rijksportaal, 2021)

5 FIRE (THE SUCCESS STORY)

In serious crime investigations, the police often investigate data carriers such as cell phones, computers and hard drives to search for incriminating evidence. It often involves so much data that it is impossible to search it manually one by one. Young data scientists at the NFI have therefore developed a self-learning algorithm that can quickly extract specific images from all data. For example, it sees whether there are weapons or drugs in a photo and recognises texts on photos, such as license plates or account numbers on stolen bank cards. (NFI, 2021)

SECTION 3

Analyse & Conclude

This section outlines the cross-case drawn conclusions of the five cases, combined with insights from contextual interviews. The conclusions are divided in 'general findings' and 'supporting and limiting factors'.

General findings

The general findings are essential prior knowledge of the supporting and limiting factors. The general findings are explained through three elements: the process of an AI experiment, the initiative and the main differences.

THE PROCESS OF AN AI EXPERIMENT
Based on the case studies, literature research and qualitative interviews, the desired process of the AI experiments has been drawn up (Figure 11). This process consists of three stages; the PoC, the pilot, and the implementation. After the AI experiment has been completed in the lab, it can be tested in real life, followed by the implementation consisting of scaling up the final pilot version. The AI experiments that have not been implemented are somewhere between the PoC and pilot stages.

THE INITIATIVE
The initiative for the AI experiments lies with an implementing organisation of JenV, which means a task-oriented organisation within a department. Who exactly takes the initiative within the implementing organisation does not influence on the course of the AI experiment.

THE MAIN DIFFERENCES
Table 1 explains the main differences between the not implemented AI experiments and the implemented AI experiment.

Supporting and limiting factors

The case studies have demonstrated how the elements of the perspectives influence the implementation of an AI experiment. Most of these findings are supported by the literature. However, much of the research on innovation has been on the private sector (and, within that, biased towards manufacturing). Nevertheless, the processes involved in the innovation for the private sector are equally relevant to the public and the private sector (Bessant, 2010). Therefore, the influence of factors found in literature research on the private sector has been considered for this research.

The key insights from each perspective are summarized in limiting and supporting factors. Not every perspective contains supporting factors.

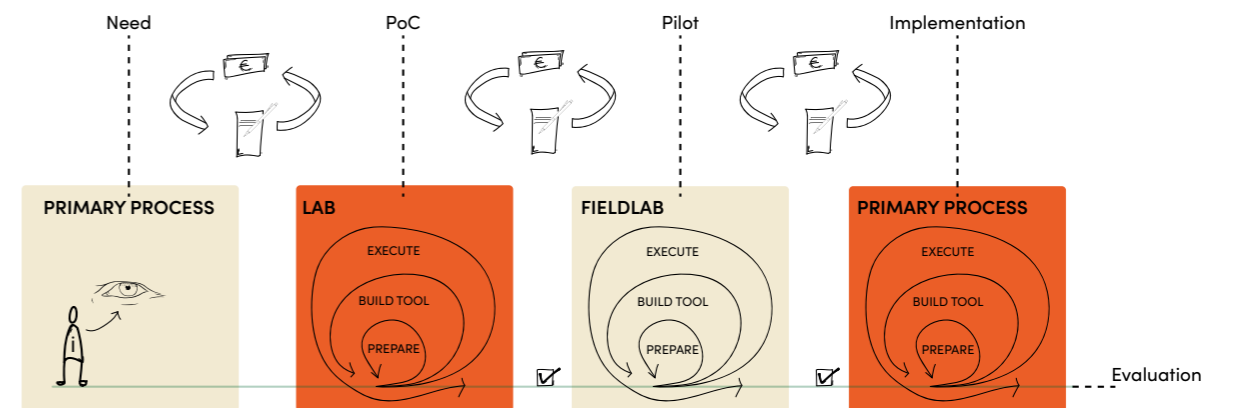| Not implemented AI experiments	Implemented AI experiment
The AI experiments are seen as low priority by other departments in the organisation (e.g. management team)	The AI experiment is of high priority by other departments in the organisation (e.g. management team).
There is no clear AI experiment trajectory to follow when conducting an AI experiment.	The implemented AI experiment had a clear trajectory.
The results are mainly subjective and sometimes superficial.	The results come with a clear advice that indicates how the results should be interpreted.

Table 1: Main differences AI experiments

Figure 11: In-depth process of AI experiment

SECTION 3

SECTION 3

Perspective 1: How does the strategy influence implementation?

Perspective 1 outlines the insights on the innovation strategy of JenV. Literature states that there is a need for an innovation strategy to entail a successful innovation; otherwise, the efforts may become a bunch of best practices instead of an innovation (Pisano, 2015; Saleh & Wang, 1993).

INNOVATION VISION AND EXPLORATION OF THE FUTURE
Observations
The AI experiments come with much preparation, so creating efficiency and effectiveness is not achieved in the short term. The case studies have shown a difference in the vision of the organisation's management side and the initiators. The organisation's management side has a short term vision. In contrast, the initiators and the labs have an innovative vision that focuses on long-term possibilities:
• The initiators work on their vision by conducting AI experiments that offer these long-term possibilities in the field of efficiency and effectiveness.
• The organisation's management side does not recognise their vision in these experiments since these do not have short-term advantages: the AI experiments do not yield any immediate profit when it comes to financial matters.

Theoretical foundation
• The organisation's management side focuses on the short term (up to 4 years) since it works based on policy. In recent years, this policy does not seem to have contributed to an improvement in the productivity of JenV, which can be equated with an improvement in effectiveness and efficiency (Blank & Heezik, 2017).
• To make a success out of a design project, there is a need for a shared vision. When there is a widespread clarity on stakeholders' and designers' understanding of the project goals and direction, one can speak of a shared vision. A shared vision within an organisation will increase the chance that the outcome of AI experiments leads to an implementation (Van Erp, 2018).

ALIGNED PRIORITISATIONS
Observations
In combination with the lack of an innovation strategy, the complexity of the organisation entails a misaligned prioritisation within JenV. This difference in priorities has two sides: (1) different interests and (2) higher & lower priorities:

1. Different interests: The AI experiments are often conducted in the labs of JenV. In general, implementing an AI experiment is not a priority for the labs because their interests do not lie in implementation. Their interests lie in retrieving knowledge. They conduct AI experiments in order to learn from them. The interests of the initiators of the AI experiments lie in the implementation of the outcome of the AI experiments because this leads to a new way of working. However, this difference in interests comes with more complexity. It is within the possibilities that the initiator is in the lab. If this is the case, the initiator and, therefore, also the lab wants to create a new way of working (implementation).

2. Higher & lower priorities: Besides the differences between the labs and initiators, there are also differences between the AI experimenters and the rest of the organisation. The rest of the organisation does not always see the importance of AI experiments. The not implemented AI experiments are of low priority within the organisation. As a result, resources are scarce, and it is not easy to take the AI experiment further. The case studies have shown that when a goal of an AI experiment does have a high priority to JenV (as countering crime), the AI experiment is implemented.

Theoretical foundation
• Literature states that in order to innovate, there is a need for aligned priorities (Pisano, 2015).

Key insights perspective 1

Limiting factors:
• JenV lacks a shared vision. The organisation's management side has a short term vision. In contrast, the initiators and the labs have an innovative vision that focuses on long-term possibilities.
• The interests of the labs differ from the interests of the initiators. The interests of the initiators of the AI experiments lie in the implementation of the AI experiments, where the interests from the labs, in general, lie in learning from the AI experiments.
• The priorities of the implementing organisations do not align with the priorities of JenV. As a result, resources are scarce, and it is not easy to take the AI experiment further.

Supporting factor:
• The innovative vision of the initiators and the labs is what got the AI experiments going in the first place.

Perspective 2: How does the ecosystem influence implementation?

The second perspective focuses on (internal- &) external collaboration, access to knowledge and knowledge retention.

(INTERNAL- &) EXTERNAL COLLABORATION
Observations
The case studies have shown that external collaboration influenced the AI experiments in a supporting and a limiting manner:
• Supporting: the external collaboration has resulted in a great deal of knowledge in the cases of the AI experiments; It has resulted in the development of new tools. However, it must be considered that collaboration on a technical level does not immediately mean a supporting factor for the implementation.
• Limiting: the negative impact lies in the field of knowledge retention.

During the interviews, a considerable number of stakeholders emerged that largely overlap with each other. Figure 12 shows which stakeholders have been involved in the AI experiments. Appendix C shows the collaborative Miro boards used to gain this information during the interviews.

Theoretical foundation
• Literature states that when an organisation engages in both internal and external collaboration, the chances of success are the highest. (Johnson & Filippini, 2009).

ACCESS TO KNOWLEDGE
Observations
The knowledge needed for AI experiments is often gained elsewhere. If this occurs, it is difficult for the organisation to understand everything fully. Moreover, when adjustments have to be made to the tool,

this must always be done elsewhere. In addition, the knowledge does not lie within the organisation but outside of it. As a result, few in-house (internal) stakeholders have the proper knowledge. The last difficulty lies in privacy regulations, making it difficult to collect specific data (which is necessary for building knowledge).

KNOWLEDGE RETENTION
Observations
Maintaining the knowledge is even more complex because the process is unclear (see Perspective 4: P&G). As a result, there is a long time between the steps within an AI experiment, and this - combined with the complexity of the organisation - leads to a lack of clarity about where the knowledge is located within the organisation. In addition, due to privacy regulations, some acquired knowledge cannot be kept for long, and some acquired knowledge cannot be shared with everyone.

Direction
Citizen
Potential user
Operational Manager
Initiator   Direction X
Legal expert
Executive
Program Manager
IT-department
Procurement expert
Journalist
Guidance Committee
(Innovation) Lab   Funding organisation
Privacy officer   Scientific party
Figure 12: Stakeholders
System development Manager
Security expert

Key insights perspective 2

Limiting factors:
• External collaboration leads to challenges regarding knowledge retention because the knowledge is not retrieved in-house and, therefore, is hard to maintain in-house.
• Privacy (violation) leads to problems with access to (and retention of) knowledge due to challenges regarding collecting, saving, and sharing.
• The lack of clarity in the process entails unclarity about where the knowledge is located within the organisation.

Supporting factor:
• External collaboration leads to retrieving knowledge that can be used to conduct AI experiments and build the tools.

SECTION 3

Perspective 3: How do results influence the implementation?

The third perspective is about how results influence the implementation and focuses on the elements: definitions & criteria and the presentation of the results.

DEFINITIONS & CRITERIA

Observations

JenV consists of many organisations that all perform different tasks. Within these organisations, there are different branches, such as the business side and the technical side. All these different branches pursue different goals when it comes to innovation. This difference in goals is represented in the definitions of success and innovation. The initiators conduct AI experiments intending to create a new way of working. The labs, on the other hand, aim to learn by doing AI experiments. Therefore, the labs see every AI experiment as a success, even if it has not led to an implementation. Added to this is the difference in definitions when it comes to innovation. One group already sees it as an innovation if something new has been learned. The other group only rates it as an innovation when the outcome of the AI experiment has been implemented. This lack of clarity regarding innovation and success also means that the AI experiments do not have a clear end-stage. When and if an AI experiment is completed is a question for many.

Although there seems to be a difference in the goals of an AI experiment, within JenV, everyone pretends that everything is a success.

Theoretical foundation
• Within JenV, everyone pretends that everything is a success is substantiated by literature. Within governmental organisations, there is a reluctance to close failing programs (Albury, 2005).

PRESENTATION OF THE RESULTS

Observations

The presentation of the results of the AI experiments differs a little for each AI experiment but has many similarities. Two main similarities:
• First, the desired results of the AI experiments have not been fully established prior to the AI experiments. Thus, there is room for free interpretation. Prior to the AI experiments, the desired outcome was not evident in terms of numbers or percentages.
• Second, the results afterwards are presented qualitatively. There are quantitative aspects, such as single measurements. However, these measurements are overshadowed by the almost subjective way of describing the results. The results are not fully defined prior to the AI experiment because the initiators do not want to create expectations that they cannot meet. In this way, everything remains a 'success' as mentioned above.

Perspective 4: How do P&G influence the implementation?

This paragraph outlines how P&G influences the implementation. P&G ensures processes in an organisation are correctly performed (Jeston & Nelis, 2008). The elements of P&G that came to light during this research are AI experiment trajectory, internal collaboration, and ownership.

AI EXPERIMENT TRAJECTORY

Observations

The case studies have shown that the initiator has no guidelines about what to do when starting an AI experiment. The process that can be seen in Figure 11 (page 33) describes what the process looks like in broad lines, but this does not clarify the precise steps that must be taken and who should be involved when.

INTERNAL COLLABORATION

Observations

The organisations are not aware of each other's AI experiments, so duplication of work is done. In addition, a limitation of the internal collaboration is also represented in not all stakeholders being aware of the AI experiments and their progress. This also applies to the decision-maker, that is often only involved in the AI experiment after the PoC has been completed. At the same time, this decision-maker has to make important decisions about the progress of the AI experiment.

On the positive side, in each AI experiment, internal collaboration with Directie X led to the start of the AI experiment. In addition, Directie X has provided resources that have served as a catalyst for AI experiments.

Theoretical foundation
• Decision-making stakeholders should actively be involved in processes (Scherrer, 2003).

OWNERSHIP

Observations

Who took the initiative, which stakeholders need to be involved and whom all benefit from implementing the outcome of the AI experiment? The organisational stakeholders of the AI experiments are part of the executing organisation. Their drive to complete the project is represented in the AI experiments; all initiators gave an enthusiastic impression during the interviews. They felt a strong sense of proprietorship. However, as the AI experiment progresses, the initiators seem to want the AI experiment to progress. However, they let the sense of proprietorship go away. This has resulted in unclarity about the owner of the AI experiment.

Theoretical foundation
• The strong sense of proprietorship the initiators felt at the beginning of the AI experience entails a drive to complete the project. (Van Erp, 2018).

Key insights perspective 3

Limiting factors:
• Everyone within JenV has a different definition of success, leading to a difference in the perception of a successful AI experiment.
• The results are presented in a qualitative manner, which makes it hard to measure them.
• Prior to the AI experiments, the desired outcome is not set, which makes it hard to say if the goal has been reached (since the goal is not clear).

Key insights perspective 4

Limiting factors:
• There is no clear trajectory process. As a result, the initiator has no guidelines about what to do when conducting an AI experiment.
• There is no clear overview of who the stakeholders are and when they should be involved.
• As the AI experiment progresses, the initiator wants to continue but lets the sense of proprietorship go away. This has resulted in unclarity about the owner of the AI experiment.
• The organisations are not aware of each other's AI experiments, which results in duplication of work and not all stakeholders being aware of the AI experiments and the progress of it.

Supporting factor:
• The strong sense of proprietorship of the initiators, in the beginning, entails a positive impact on the AI experiment.

SECTION 3

Perspective 5: How does culture influence the implementation?

This paragraph focuses on the innovation mindset, including technology acceptance.

THE INNOVATION MINDSET
Observations
JenV responds reluctantly to innovation. In general, it can be noted that there is a limited innovation mindset within the organisation. This limited innovation vision results in a persistence of change. However, there is an innovation mindset among the initiators of the AI experiments. Their innovative mindset is what got the AI experiments going in the first place.

Theoretical foundation
- Go ask yourself the following questions: 'Would you like to have a new job tomorrow? From now on, soccer will be played with eight players instead of eleven to make it more dynamic. Is that okay with you? Alternatively; would you like to have a new dog and hand in your old one?' Probably, your first reaction is, 'No, I do not need that, everything is just fine how it is!'. Well, that is how organisations respond to innovation. (De Ruiter, 2019).

THE ACCEPTANCE OF TECHNOLOGY
Observations
During the interviews, it emerged that it is quickly received as scary when people talk about AI. The interviewees explained that they see concerns about the ethical side of AI in their environment. This, in combination with the previously mentioned continuous judgemental gaze the media casts on the government, creates a fear of making mistakes in AI-based innovation.

Theoretical foundation
- AI brings a certain uncertainty, which entails growing concerns about ethical challenges among the end-user of the AI system developed in the AI experiments. (Mittelstadt, 2019) "People assign extreme intentions to humans and narrow intentions to machines" (Hidalgo et al., 2021). So, when a machine makes a mistake, it is way worse than when a human does.

Key insights perspective 5

Limiting factors:
- Throughout JenV, there is a limited innovation mindset. The organisation seems to believe that everything is good as it is.
- People have concerns about the ethical side of AI, which entails a fear of making mistakes when it comes to AI-based innovation.

Supporting factor:
- The innovative mindset of the initiators is what got the AI experiments going in the first place.

Interesting quotes obtained during the case studies:

"And now the tool is ready and then there is no money and no one putting effort in it. When the experiment is finished, no resources are available, and everybody goes back to business as usual.'" – Interviewee

"Management can simply say, "BDOC is not necessary at all. It houses millions or a few of those people. We can already spend that in a different way, and we take the risks of forged source documents." Because that is a management trade-off." – Interviewee

"We needed really specific knowledge in the field of AI and that specific image analysis technique. So that's the point. That combination had not yet been fully developed, not at all in this area. It was completely new." – Interviewee

"So, they did say: well, it's good, but they also include the notion of that it will be necessary to decide during the elaboration of the project whether that performance is really good enough."– Interviewee

"I haven't thought about the implementation. If I'm very honest, I also think my inexperience plays a role in that. And I think that's also my enthusiasm." - Interviewee

Key takeaways of the Define chapter

Strategy

No shared vision

JenV lacks a shared vision. The organisation's management side has a short term vision. In contrast, the initiators and the labs have an innovative vision that focuses on long-term possibilities.

Differences in interest

The interests from the labs differ from the interests of the initiators.

No aligned prioritisation

The priorities of the implementing organisations do not align with the priorities of JenV. As a result, resources are scarce, and it is not easy to take the AI experiment further.

> The innovative vision of the initiators and the labs is what got the AI experiments going in the first place.

Ecosystem

External collaboration

External collaboration leads to challenges regarding knowledge retention because the knowledge is not retrieved in-house and, therefore, is hard to maintain in-house.

Access to knowledge

Privacy (violation) leads to problems with access to (and retention of) knowledge due to challenges regarding collecting, saving, and sharing.

Knowledge retention

The lack of clarity in the process entails unclarity about where the knowledge is located within the organisation.

> External collaboration has resulted in a great deal of knowledge in the cases of the experiments. The collaboration has resulted in the development of new tools.

Results

Presentation of the results

The results of the experiments are presented qualitatively (subjectively). It is not clear in advance when an experiment has booked a success. The desired results are unclear, what exactly must be achieved?

Defenitions & criteria

All stakeholders have a different view on the definition of innovation. Whether an experiment was successful is also different for all stakeholders.

Process & Governance

Innovation trajectory

There is no clear trajectory process. As a result, the initiator has no guidelines about what to do when conducting an AI experiment. In addition, there is no clear overview of who the stakeholders are and when they should be involved.

Ownership

As the AI experiment progresses, the initiator wants to continue but lets the sense of proprietorship go away. This has resulted in unclarity about the owner of the AI experiment.

Internal collaboration & communication

The organisations are not aware of each other's AI experiments, which results in duplication of work and not all stakeholders being aware of the AI experiments and the progress of it.

> The strong sense of proprietorship of the initiators in the beginning entails a positive impact on the AI experiment.

Culture

Mindset

The mindset within the organisations is described as: Order of the day, 9 to 5. Throughout JenV, there is a limited innovation mindset. The organisation seems to believe that everything is good as it is.

Acceptation

People have concerns about the ethical side of AI, which entails a fear of making mistakes when it comes to AI-based innovation.

> The initiators have an innovative mindset, which initially creates the experiments.

Figure 13: Summary of the limiting factors

Key takeaways of the Discover chapter

The research has provided insights into the many challenges behind the problem of AI experiments not getting implemented. The challenges are subdivided into five perspectives: strategy, ecosystem, results, P&G and culture.

Figure 13 outlines the key takeaways of the research: the limiting factors found in the case studies supported by the literature. The limiting factors are most important for this research, since these will lead to the answer of the research question.

The figure also shows the supporting factors; these are indicated in the dark green boxes.

3. DEFINE

This chapter describes the iterative converging process that starts with revising the scope, followed by prioritising the challenges, that will be converted to opportunity areas. Through validation, the opportunity areas are being denounced, and the challenges are iterated in order to ultimately deliver a revised problem statement.

Challenges

Design focus
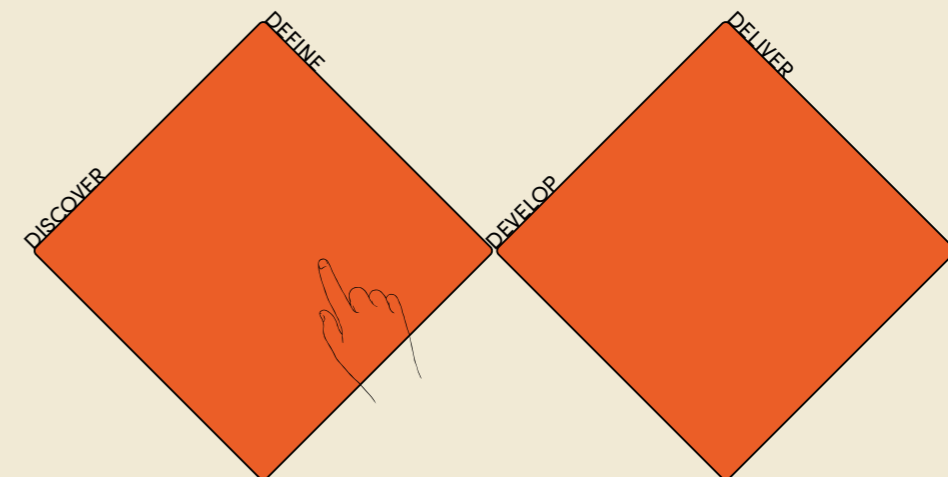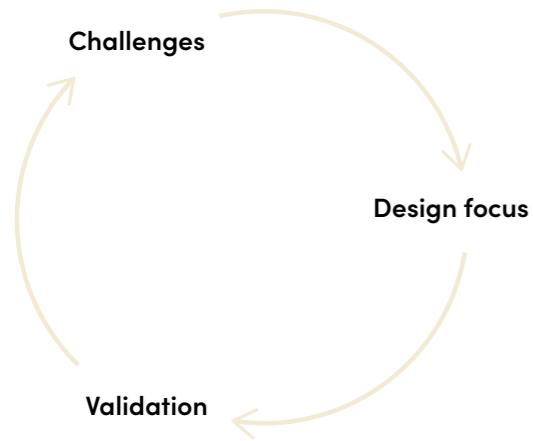
Validation

Iterative process

The process starts with revising the scope. After that, it prioritises the challenges and translates these into opportunity areas for the design focus. Finally, the opportunity areas are denounced through validation, and the challenges are iterated to deliver a revised problem statement.

Revising the scope

The limiting factors found in the previous chapter are the challenges JenV is dealing with regarding experimenting with AI. However, not all the challenges can be addressed within the scope and timeframe of this graduation project. Therefore, it is vital to prioritise the challenges and extract the main challenge.

Nevertheless, first, the research has led to two insights concerning the scope of the project.

INSIGHT 1

Prior to the research, it was said that AI experiments are initiated by someone that benefits directly from it. The general insights of the case studies showed that who exactly takes the initiative within the implementing organisation has no influence on the course of the AI experiment.

INSIGHT 2

The initial scope stated that the AI experiments rarely lead to a new way of working. However, it should be noted that the AI experiments did not finish yet, but they are on pause or just running slow. Therefore, it is not clear when the AI experiments go to the next phase, how long it will take and if it will happen.

The aim of this project still is to increase the chance AI experiments go into practice.
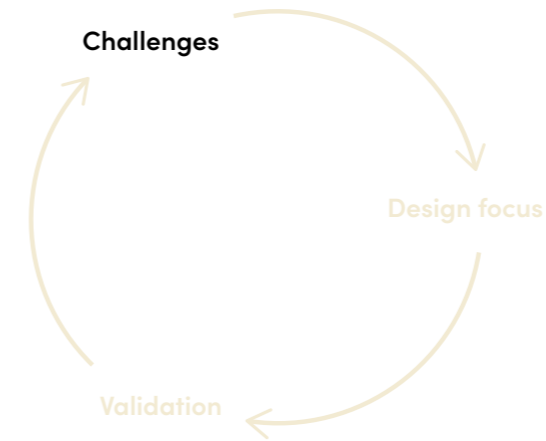
Prioritising the challenges

The challenges are sometimes contradictory, as they are part of a different perspective. Therefore, an argument map has been created that clarifies the pros and cons of focusing on a certain challenge (page 46-47). This argument map has been combined with a systematic review of the AI experiments. In this systematic review, each AI experiment is examined on how much a particular challenge weighed as a limiting factor. Subsequently, a score was obtained for each factor that indicates the influence of the factor on the AI experiments (see Appendix D). In combination with the argument map, the systematic review has led to a prioritisation of the challenges. Figure 14 outlines a visual explanation of how this has been executed. The result of the prioritised challenges will be taken as the basis of the design focus.

* Factor and challenge are used interchangeably.

Several challenges.

Why is it (not) interesting to focus on a certain challenge? This has been reviewed by means of an argument map with the result that some challenges are eliminated.

The remaining challenges have been given scores (0-7) on how much a challenge has limited each experiment. The sum of the scores provides an indication of the influence.
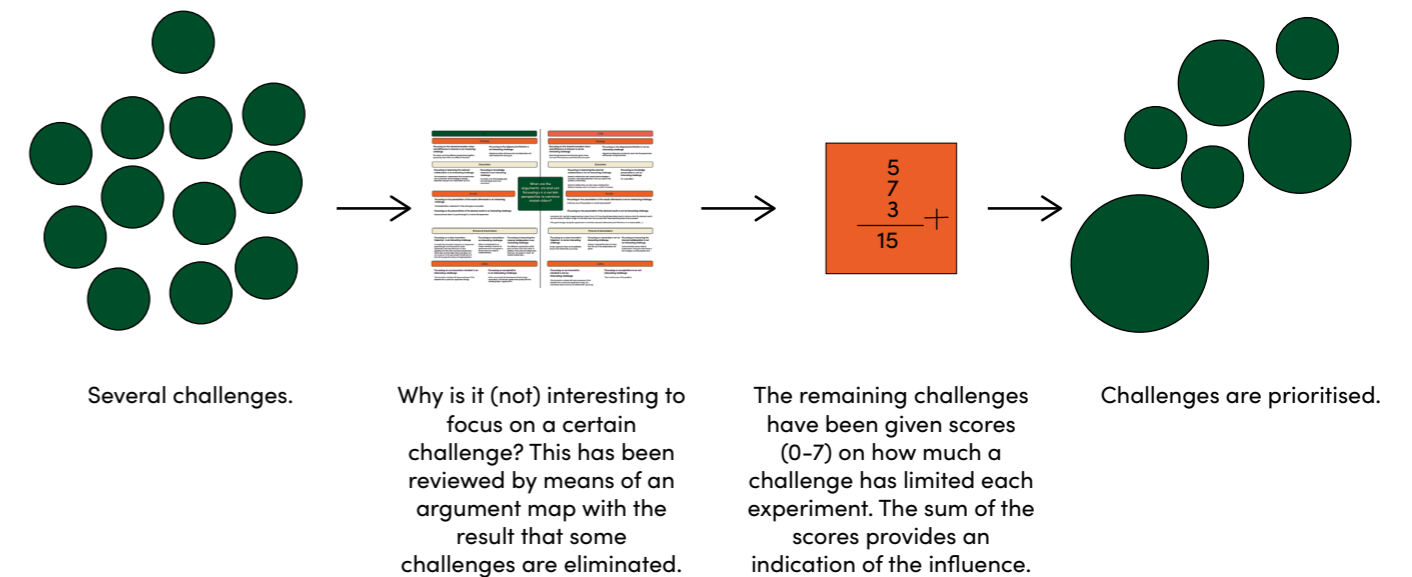
Challenges are prioritised.

Figure 14: Visual explanation of the prioritising of the challenges

PRO

Strategy

Focussing on the shared innovation vision and difference in interests is an interesting challenge

The vision can bring different perspectives together (especially when there are different interests).

Focussing on the aligned prioritisation is an interesting challenge

Aligned priorities will ensure that all stakeholders will work towards the same goal.

Ecosystem

Focussing on improving the external collaboration is an interesting challenge

The innovations / experiments that are performed are incremental. The knowledge is already elsewhere and JenV can make better use of it.

Focussing on knowledge retention is an interesting challenge

Currently, much knowledge gets lost, and things have to be reinvented.

Results

Focussing on the presentation of the results afterwards is an interesting challenge

If all stakeholders 'understand' it, they will agree more quickly.

Focussing on the presentation of the desired results is an interesting challenge

Everyone knows when it is good 'enough' to continue the experiment.

Process & Governance

Focussing on a clear innovation trajectory is an interesting challenge

Currently, the innovation trajectory an experiment goes through is not the same for every experiment because there are no clear guidelines for this. Who must be involved when which step must be taken, and when can you move on to the next stage? Clarification of this will take away the uncertainties the initiators are dealing with and increase the chance of implementation. Currently, much knowledge gets lost, and things have to be reinvented.

Focussing on ownership is an interesting challenge

When an experiment is no longer owned by 'anyone', an experiment will not progress in the process from need to implementation.

Focussing on improving the internal collaboration is an interesting challenge

The different organisations within JenV can learn from each other. In addition, if the internal collaboration improves, it is easier to 'reach' all needed stakeholders and avoid duplication of work.

Culture

Focussing on an innovation mindset is an interesting challenge

This innovation mindset will raise awareness of the benefits that a particular application brings.

Focussing on acceptation is an interesting challenge

When one accepts the development (technology / innovation), one will also agree more quickly with the following steps.

CON

Strategy

Focussing on the shared innovation vision and difference in interests is not an interesting challenge

Even though everyone has the same goal, it does not mean that everyone would take the same path.

Focussing on the aligned prioritisation is not an interesting challenge

Aligned priorities does not directly mean that the experiments will be seen as high priorities.

Ecosystem

Focussing on improving the external collaboration is not an interesting challenge

External collaboration also means that knowledge is acquired / expanded elsewhere. This may result in the question of ownership.

External collaboration can also mean creating from different interests, which can lead to a conflict of interest.

Focussing on knowledge preservation is not an interesting challenge

It's a side effect.

Results

Focussing on the presentation of the results afterwards is not an interesting challenge

Is this the core of the problem or a small improvement?

Focussing on the presentation of the desired results is not an interesting challenge

Innovation lab / test lab is experimenting to learn from it, if it has already been determined in advance what the intended results are, the chance of 'failure' is high. On the other hand: Is it the desired goal? Does everything have to be a success?

If the goal changes during the experiment, it cannot be measured afterwards (and if the focus is on measurability ...)

Process & Governance

Focussing on a clear innovation trajectory is not an interesting challenge

A clear approach does not immediately ensure that stakeholders 'go along'.

Focussing on ownership is not an interesting challenge

Having a responsible does not mean that the rest of the stakeholders will agree.

Focussing on improving the internal collaboration is not an interesting challenge

Communication versus internal collaboration; The goal of this thesis is not to design a communication tool.

Culture

**Focussing on an innovation mindset is not an interesting challenge**

This innovation mindset will raise awareness of the benefits that a particular application brings, but awareness does not ensure all stakeholders 'go along'.

Focussing on acceptation is an not interesting challenge

This is not the core of the problem.

What are the arguments pro and con focussing on a certain perspective?

Challenges

Design focus

Validation

Challenges

Design focus

Validation
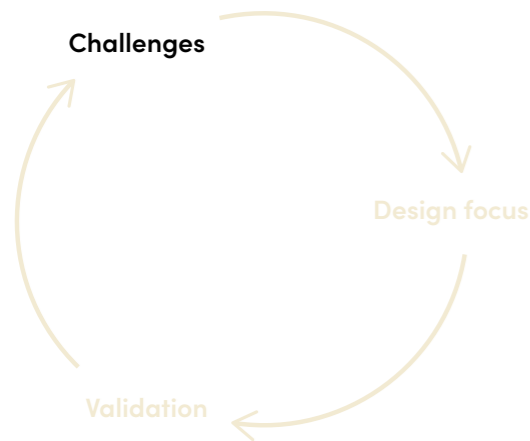
Prioritised challenges

Prioritising the challenges has resulted in an overview of important and less important factors. The scores given to each of the factors can be found in Appendix D. From each perspective, one or two challenges have emerged that have the most influence on the implementation of the AI experiments (A total of 7 challenges). Combining the perspectives that are closely connected has resulted in three clusters.
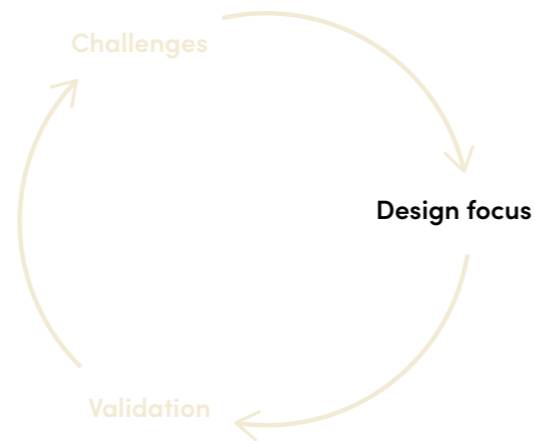
CLUSTER 1: STRATEGY (P1) + CULTURE (P5)
• No aligned prioritisation
• Difference in interest
• Lack of an innovative mindset

CLUSTER 2: RESULTS (P3)
• Presentation of the results
• Difference in definitions & criteria

CLUSTER 3: ECOSYSTEM (P2) + P&G (P4)
• Knowledge retention
• Unclear AI experiment trajectory
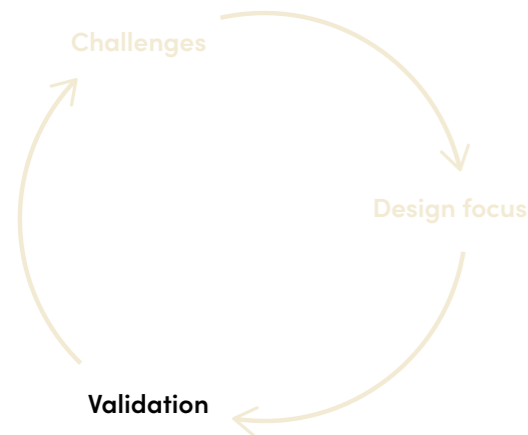
Opportunity areas

After clustering the main challenges, these were translated into opportunity areas.

The overview (Figure 15) outlines the clustered challenges found in 3.2. Subsequently, it shows what to do about it and translates it into opportunity areas for the design focus.
A fascinating insight is that the clear overview of the stakeholders is reflected in each of the opportunity areas.

Prioritised challenges | What to do? | Opportunity areas of the design focus

No aligned prioritisation

Difference in interest

Lack of an innovative mindset

Cluster 1 (P1 + P5)

Directly imposing the same interests, the same priorities, or an innovative mindset on everyone is complicated. Therefore the initiators must understand the interests and priorities of the other stakeholders by first understanding who the stakeholders are. Second, aligning the interests by collaboration; the initiator and the labs should collaborate to work towards the same goal.

A clear overview of the stakeholders and how to involve them.

The initiator and the labs need to collaborate and work towards the same goal.

Opportunity area 1

Presentation of the results

Definitions & criteria

Cluster 2 (P3)

The results are necessary to get all stakeholders on board since it is a measurable factor that serves as a convincing element. Therefore, it is important for the initiators to have clarity about how to present these results, so they can act on them. In addition, for this challenge, it is also important to know who the stakeholders are so that the initiators know to whom they should present the results.

In addition, what one person sees as a success, another sees as incomplete. Therefore, it is not clear when an AI experiment is finished.

A deliberate decision making mechanism: When is the experiment finished?

Clear definition of a successful experiment and innovation as well as clear guidelines on how to present the results (desired results and afterwards).

A clear overview of the stakeholders and how to involve them.

Opportunity area 2

Knowledge retention

Unclear AI experiment trajectory

Cluster 3 (P2 + P4)

In order to improve knowledge retention, the initiators must know what to do with the acquired knowledge and where it is going. To do this, it must be clear what the trajectory looks like. In addition, it is also important to understand for which stakeholders certain knowledge is important, so it is once again an opportunity to create clarity on who the stakeholders are.

Create a clear trajectory for the initiator to follow.

A clear overview of the stakeholders and how to involve them.

Opportunity area 3

Figure 15: Opportunity areas

Challenges

Design focus

Validation

Increase the priority of the AI experiments.

A clear overview of the stakeholders and how to involve them.

All stakeholders involved in the AI experiments need to collaborate and work towards the same goal.

New opportunity area 1

START

A deliberate decision making mechanism: When is the experiment finished?

Clear definition of a successful experiment and innovation as well as clear guidelines on how to present the results afterwards.

A clear overview of the stakeholders and how to involve them.

New opportunity area 2

Figure 16: Shift in opportunity areas

Validation

Initially, two additional case studies were conducted to validate whether the opportunity areas correspond to the identified challenges. Analysing these case studies has resulted in three shifts in the opportunity areas. However, analysing the case studies gave more insights than just these three shifts. The analysis has created an awareness that, to ultimately deliver a design that answers the aim of the project, more convergence needs to be done.

This section outlines the two validating case studies, including the design of the studies, a summary of the researched AI experiments and the conclusions.

Design

The design of the case studies is similar to the design of the case studies conducted in the Discover chapter. However, this time only two case studies have been collected to research. One case study is on an AI experiment that has been implemented, and one is on an AI experiment that has not been implemented. This number of case studies is sufficient since the aim is to validate instead of to explore. However, if new challenges are defined that also played a role in the previous case studies (but have not been defined yet in the previous chapter), these will be included.

DATA SOURCES
- Documents containing project plans, outcomes / results, etc.
- Empathising interviews with stakeholders of the projects, mainly the initiators
- Semi-structured interviews with stakeholders of the projects, mainly the initiators

COLLECTION PROTOCOL
Validity and trust are taken into consideration the same way as in the previous case studies.

Collect

A summary of the two selected case studies provides a general understanding of the researched AI experiments. It can be found in the next paragraph.

SUMMARY OF THE AI EXPERIMENTS

1 VIRTUAL ASSISTANT
The project aims to use AI to unlock information from open and closed sources and to use it to form images and judgments within VRF, a crisis organisation and resulting in strengthening the decision-making of the crisis organisation.
VRF structures large amounts of data in a new way, by which events can be automatically translated into scenarios. They develop an information model for incidents and test the added value of a virtual assistant for the crisis organisation. (Rijksportaal, 2021)

2 CJIB
Collecting by telephone is a prevention instrument that can be used to prevent debt accumulation among citizens. When using the instrument, citizens are approached by telephone to be able to make payment agreements with citizens, prevent debt accumulation, and avoid more expensive collection means. The employees of the CJIB have been trained for this purpose in special conversation techniques in the field of motivational collection. Using data analytics, the most promising target groups for the application of this instrument are determined. (Rijksportaal, 2021)

Analyse

A detailed overview of the case study reports can be found in Appendix D.
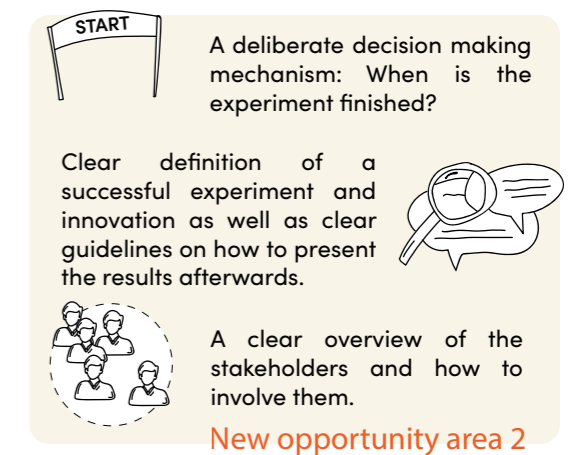
Analyse & Conclude

This paragraph outlines the key conclusions of the case studies, which are three shifts in the opportunity areas.

SHIFT 1: COLLABORATION
The first shift concerns the first opportunity area: the collaboration between the labs and the initiators was addressed as an opportunity area. The last two case studies clarified that not only do these two parties need to work together but also that a collaboration between the business side and the technical side of the organisation is necessary to tackle the initial challenges concerning the difference in interest, a lack of an innovative mindset and the not aligned priorities. This insight had emerged in the five previous case studies but had not yet been seen as a considerable challenge.
This insight creates a shift in the opportunity area: from 'a collaboration between the labs and the initiators' to 'entailing a collaboration between all the stakeholders involved in the process of the AI experiment'.

SHIFT 2: PRIORITIES
The second shift also concerns the first opportunity area : the case studies of the AI experiments that have been implemented show that an AI experiment in which the outcome has a social impact or focuses on detecting crime is given priority.
Therefore, the design focus should aim at how to increase the priority of the not implemented AI experiment.

SHIFT 3: THE RESULTS
The third shift concerns the second opportunity area: the case studies demonstrated that the results could not be entirely determined in advance because wishes are added during the AI experiment. The fact that these wishes are added later has to do with the fact that the initiator does not want to set goals he/she cannot reach but wants to ensure that their AI experiment is a success in advance. However, it is

also more challenging to show that the AI experiment has achieved the desired results without clear goals. The implemented AI experiments show that these goals need to be defined in a way most suitable for that specific AI experiment, which does not have to be by the percentage of improvement.
Therefore, the opportunity area should only focus on presenting the results afterwards (and not on how the desired results should be presented).

The shifts in the opportunity areas are shown in Figure 16.

Excess

The number of opportunity areas have been revised and the following has emerged: due to the timeframe of this graduation project, not all the opportunity areas can be addressed. Therefore, it will also not be possible to comply with all three key conclusions.

Key takeaways validation

Two validating case studies were conducted to research whether the opportunity areas correspond to the identified challenges. These case studies have initially led to three shifts in the opportunity areas. However, analysing the case studies gave more insights than just these three shifts; to ultimately deliver a design that answers the aim of the project, more convergence needs to be done.

Challenges

Design focus

Validation
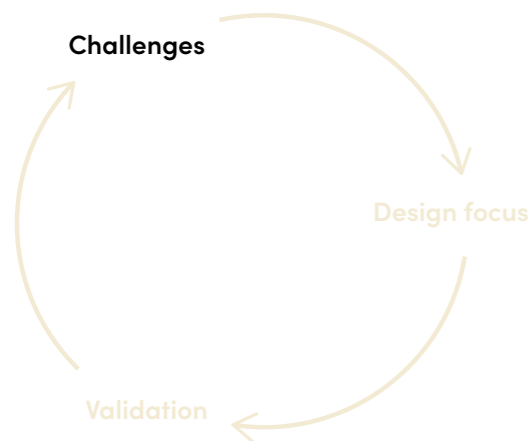
Reframing the challenges

As mentioned, the challenges need to be further converged before they can be translated into a design focus. This convergence must be tackled at the core by reframing the prioritised challenges, which is done in three steps:
1. By eliminating one cluster.
2. By extracting the underlying challenges.
3. By translating the underlying challenges into a revised problem statement.

STEP 1: ELIMINATING ONE CLUSTER

Cluster 1 (P1 + P5): no aligned prioritisation + differences in interest + lack of an innovative mindset
First, due to the scope and timeframe of this graduation project, the challenges in the first cluster cannot be explored within the project.
'No aligned prioritisation and differences in interest' are challenges that initially arise from the different mindsets throughout the organisation. In addition, the fact that there is a lack of an innovative mindset throughout the organisation is a major challenge that lies within the organisation. An increase of AI experiments going into practice may be a push in the right direction to solve this challenge. However, the lack of an innovative mindset is a challenge that cannot directly be tackled since this element (culture) is very opposing when it comes to change (Livework studio, 2021).
Eliminating the challenges does not mean losing sight of everything in the opportunity area of this cluster. These challenges have resulted in an opportunity area involving the following: (1) a clear overview of the stakeholders, (2) a collaboration between the labs and initiators, and (3) increase the priority of the AI experiments. This first objective can also be found in the other clusters and will be explored that way. The other objectives will be moved to the recommendation section of this project so that Directie X can work on that in the future.

STEP 2: EXTRACTING THE UNDERLYING CHALLENGES

Cluster 2 (P3): presentation of the results + differences in definitions & criteria is due to uncertainty about the AI experiment
The initiators do not determine precise desired results in advance because they are afraid that they will not

achieve these results. This (non)action stems from the original fear of failure that arises when working on innovation regarding AI. This had initially resulted in the challenge concerning presenting the results. However, the underlying challenge is the uncertainty about the AI experiment (and the result of this is the challenge regarding the presentation of the results).
In addition, behind the differences in definitions of success and innovation also lies the problem as mentioned above of uncertainty about the AI experiment. Due to the uncertainty, it is not determined prior to the AI experiment when the AI experiment is a success or innovation by the initiator. That is why it is difficult to determine in retrospect whether the AI experiment was indeed successful. (Figure 17).

Cluster 3 (P2 + P4): knowledge retention + unclear AI experiment trajectory is due to unclarity about the stakeholders
The challenge regarding knowledge retention is mainly a result of the unclear AI experiment trajectory. Therefore, I delved deeper into the cause of this: the lack of clarity in the AI experiment trajectory has been acknowledged as a challenge of great importance. A large part of this challenge is caused by the unclarity of the stakeholders (Figure 18). This ambiguity about the stakeholders is mainly because prior to the AI experiment, it is not thought about who should be involved when the AI experiment succeeds. Why is it not thought about? Because the initiators have little certainty prior to the AI experiment. Subsequently, this problem also works the other way: There is little certainty because the stakeholders are not involved. (Figure 17).

STEP 3: TRANSLATING THE UNDERLYING CHALLENGES INTO ONE REVISED PROBLEM STATEMENT.

Finally, the underlying challenges are translated into a revised problem statement (3.5.1). **The following insight had to be considered: The technology (AI) was not a limiting factor of significant importance for implementing AI experiments.** Therefore, the challenge concerning technology acceptance had been eliminated. However, the scope does not reach all experiments conducted at JenV but is specifically focused on the AI experiments.
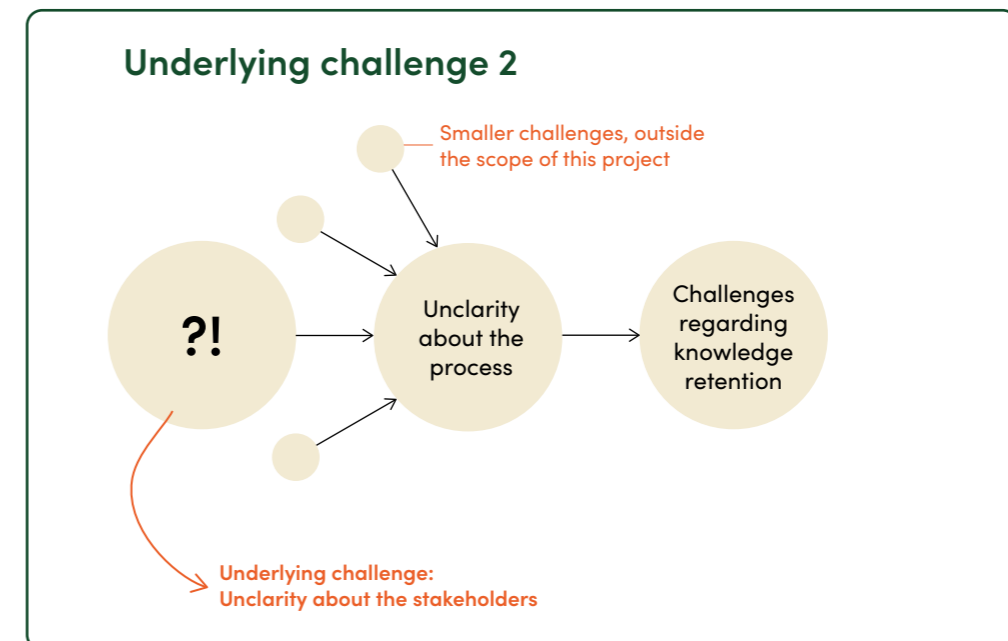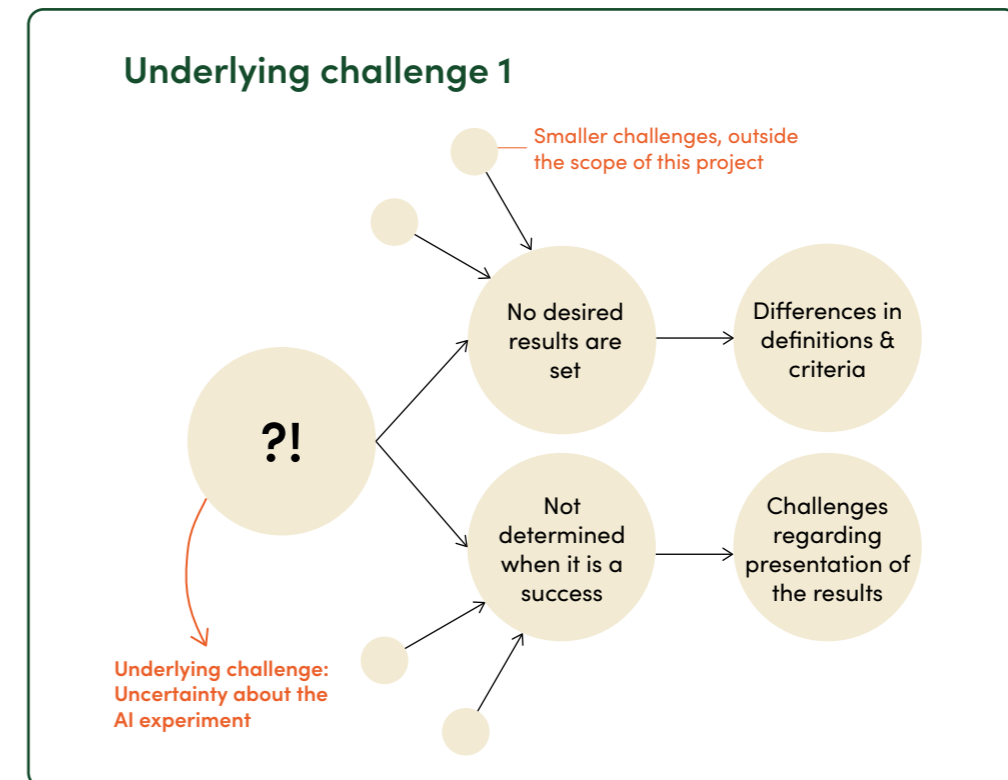
Underlying challenge 1

?!

Smaller challenges, outside the scope of this project

No desired results are set → Differences in definitions & criteria

Not determined when it is a success → Challenges regarding presentation of the results

Underlying challenge: Uncertainty about the AI experiment

Underlying challenge 2

?!

Smaller challenges, outside the scope of this project

Unclarity about the process → Challenges regarding knowledge retention

Underlying challenge: Unclarity about the stakeholders

Figure 17: The underlying challenges

Unclarity & Uncertainty

Unclarity
Not clear // It is not clear to the initiator who the stakeholders are and how to involve them.

Uncertainty
Not to know // The initiator does not know how the AI experiment will go and what it will deliver.

Revised problem statement

Initiators experience uncertainty prior to AI experiments because they have **no clarity** about the trajectory of the AI experiment and mainly lack clarity about who the **stakeholders** are and how they should approach them. This unclarity about the stakeholders, in turn, results in more uncertainty about the AI experiment.
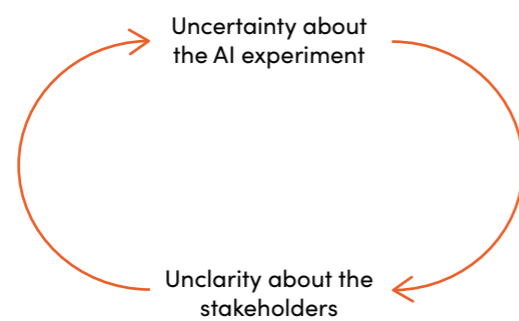

Uncertainty about the AI experiment

Unclarity about the stakeholders

Figure 18: Loop of challenges

Key takeaways of the Define chapter

The Define chapter has started with several challenges; iteration and validation led to a revision of the problem.

Prioritising the challenges had initially led to three clusters:
- **CLUSTER 1: STRATEGY (P1) + CULTURE (P5)**
  No aligned prioritisation
  Difference in interest
  Lack of an innovative mindset
- **CLUSTER 2: RESULTS (P3)**
  Presentation of the results
  Difference in definitions & criteria
- **CLUSTER 3: ECOSYSTEM (P2) + P&G (P4)**
  Knowledge retention
  Unclear AI experiment trajectory

Each of these clusters has a corresponding opportunity area.

Two validating case studies were conducted to research whether the opportunity areas actually correspond to the identified challenges. These case studies have initially led to three shifts in the opportunity areas. However, analysing the case studies gave more insights than just these three shifts; to ultimately deliver a design that answers the aim of the project, more convergence needs to be done. This convergence is tackled at the core by reframing the prioritised challenges, which is done in three steps:
1. By eliminating one cluster.
2. By extracting the underlying challenges.
3. By translating the underlying challenges into a revised problem statement.

The prioritisation has outlined that the technology (AI) was not a limiting factor of significant importance for implementing the outcome. However, the scope of the problem statement does not reach all experiments conducted at JenV. However, it is specifically focused on AI experiments.

The outcome of this chapter is the revised problem statement:

Initiators experience uncertainty prior to AI experiments because they have no clarity about the trajectory of the AI experiment and mainly lack clarity about who the stakeholders are and how they should approach them. This unclarity about the stakeholders, in turn, results in more uncertainty about the AI experiment.

4. DESIGN FOCUS

This chapter serves as a bridge between the Define chapter and the Develop chapter. It translates the revised problem statement into a design focus.

Challenges

Design focus

Validation
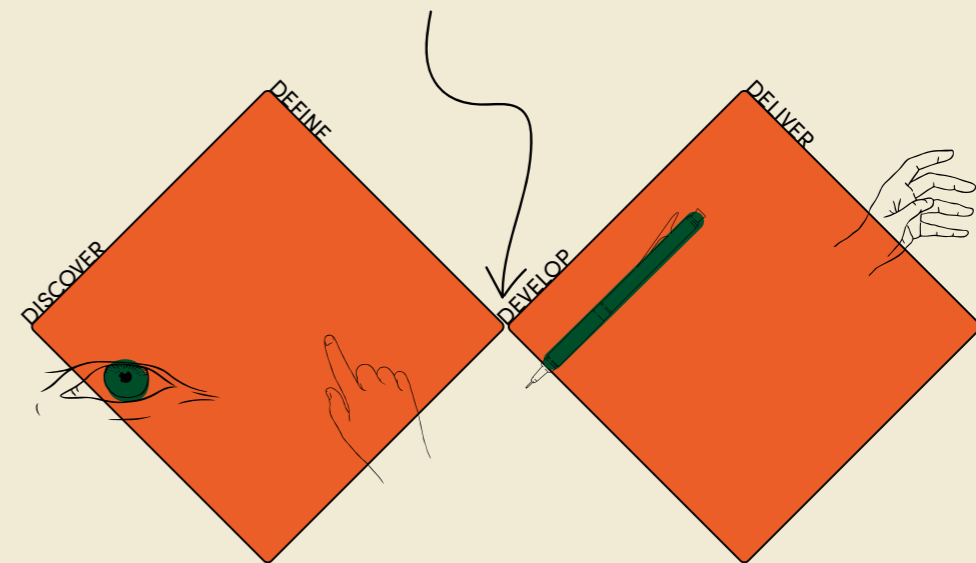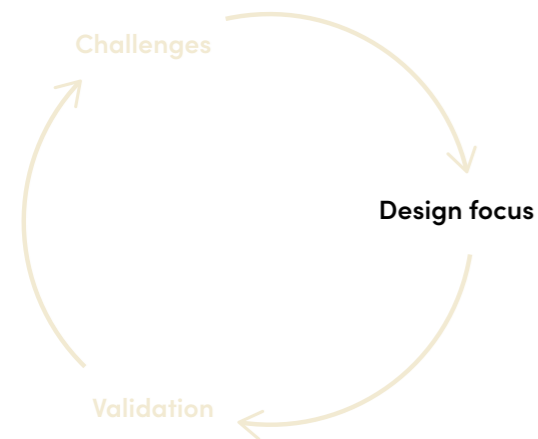
The previous chapter has resulted in the basis of the design focus, which is the uncertainty experienced by the initiators when they start an AI experiment related to the unclarity about the stakeholders.

Therefore, it must be ensured that the uncertainties prior to the AI experiment are reduced by clarifying who the stakeholders are and how they should be involved.

Reflection on the design objective

THE INITIAL DESIGN OBJECTIVE

The initial design objective was: design a strategy supported by a tool that increases the chance that AI experiments that promise a more effective and efficient way of working go into practice and lead to innovation.

Directie X is the client of this graduation project. They want to strengthen the innovation capacity throughout the organisation. One way they do this is by supporting AI experiments, which are set up to create a new way of working. **Bringing the AI experiments to implementation is not the role of Directie X. However, they need to support the initiators to entail an implementation without being part of the whole process.** They need to provide a helping hand to the initiator by reducing their uncertainties prior to the AI experiment. Directie X will do this by means of a tool that focuses on clarity about who the stakeholders are and how to involve them.

Complying with the above has resulted in the design focus (4.2).

Design a strategy supported by a tool that reduces the uncertainties of the initiators prior to an AI experiment by providing clarity about the stakeholders.

58

5. DEVELOP

This chapter outlines the first part of the second diamond, which focuses on the strategy. The chapter starts by introducing three principles related to the stakeholders. It ends with the final design objective that serves as the basis of the tool.
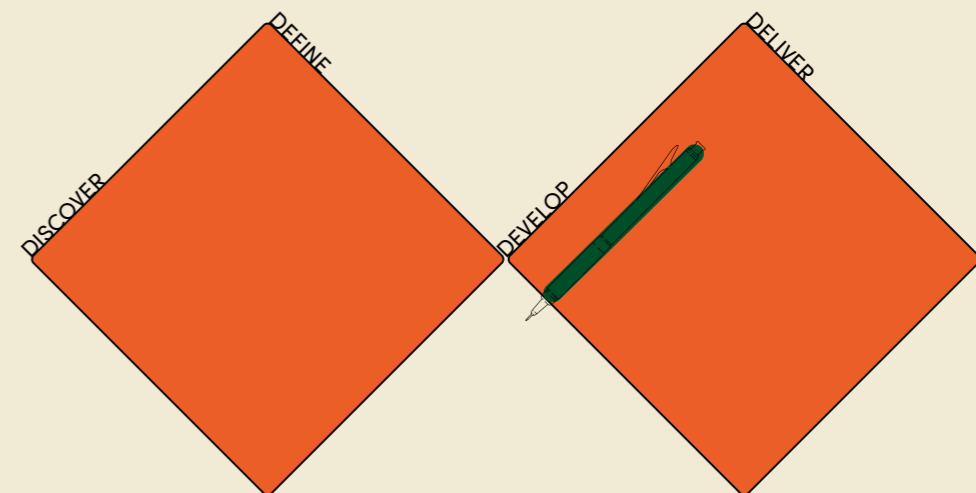
THE PRINCIPLES

Developing principles

Step one of the development phase is focusing on the strategy. The strategy is based on the research and the design objective. The choice to focus on providing clarity about the stakeholders is a strategic choice. This section introduces three principles that are strategically chosen.

As mentioned before, it is not the role of Directie X to bring the AI experiments to implementation. However, they should support the initiators to bring about implementation without being part of the whole process.
Ideation involving brainstorming has led to the development of three principles. These principles will be followed and translated into a tool so Directie X can hand them over to the initiators. Therefore, the tool only serves to communicate the principles and acts as a hands-on concept by which the initiators can get started. (Figure 19).

The three principles are based on clarity, engagement and transparency. Complying with the principles will ensure that the problem statement can be tackled. The principles are a good starting point when the tool is being developed. In addition, the principles can also be used to develop a new or additional tool if the current tool does not meet expectations or needs to be updated.

Principle 1: It's all clear!
Clarity

WHY CLARITY?

The research part of this graduation project has shown the need for clarity regarding the stakeholders. So, it is the role of Directie X to help to provide this clarity to the initiators.

PROVIDING CLARITY

In order to provide clarity about the stakeholders, the stakeholders must be identified. During the case studies, a list of all stakeholders was developed (2.4.2), which has been validated during the ideation with the program manager of Directie X. The stakeholders differ slightly for each AI experiment. However, some stakeholders perform similar roles in the AI experiments. It has therefore been decided to cluster the stakeholders and place them under different roles, which has resulted in six roles (the Roles):
1. The user
2. The decision-maker
3. The internal advisor
4. The internal supplier
5. The external supplier
6. The external

Each of the Roles has its wants & needs, and concerns. Therefore, in collaboration with the program manager of Directie X, these have been determined for each role, based on the case studies and contextual interviews. In addition, an interview has been held with a stakeholder in the decision-maker role - because, for this role, it was the most difficult to determine the wants & needs and concerns to define these (Appendix E).

5.2 The Roles shows the optimised and, therefore, final version of the Roles. The Roles have been validated during an online collaborative validation session.: after creating the concept (Chapter 6: create), a collaborative session has taken place to validate the concept. Besides focusing on the concept, the session focused on optimising the Roles. Details of the validation session can be read in 7.1 Validation. The version of the Roles used for the validation session can be found in Appendix E.
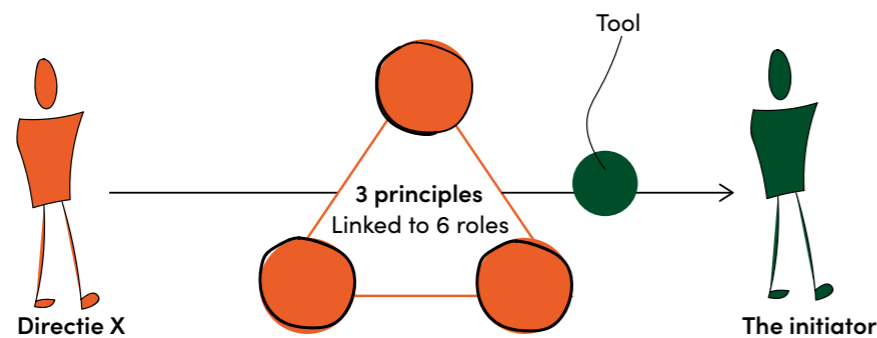
Principle 2: Doing it with!
Engagement

WHY ENGAGEMENT?

Directie X needs to provide a helping hand to the initiators by focusing on who the stakeholders are to understand how to engage them: it is no longer about involving stakeholders but about engaging. Involvement refers to 'doing it', while engagement refers to 'doing with'. (Ferlazzo, 2011). Engagement also focuses more on the benefits for the relevant stakeholder than involvement, which is crucial because it is desirable that all stakeholders are satisfied with the (implementation of the) AI experiment.

LEVEL OF ENGAGEMENT OF THE ROLES

As mentioned above, engagement refers to 'doing with'. (Ferlazzo, 2011). The Roles must be engaged throughout the AI experiment. However, the level of engagement differs per role and during the process. The wants & needs, and concerns, combined with research into previous AI experiments, have resulted in at which level the Roles should be engaged. The two roles (User, Internal supplier) closest to the problem and the solution must therefore be engaged at the highest level. 'Chart 1: Level of engagement' visualises the level of engagement of each role. This chart serves as a guideline for the initiator.

Principle 3: Clear to all!
Transparency

WHY TRANSPARENCY?

The third principle has been developed based on the research but mainly based on the two previous principles. The concept must respect transparency because transparency, in this case, ensures that clarity is created about the stakeholders and experiences can be shared. Transparency, therefore, actually stands for an open attitude and no secrets; there is a need for a transparent working method.

WHEN TRANSPARENCY?

When engaging stakeholders, transparency is essential to gain insights into the relevant stakeholders' wants & needs and concerns.

In addition, transparency is essential in gaining insights into previous AI experiments for the initiators to learn from each other's successes and mistakes. In addition, through the previous experiences, they realise that making mistakes is not always wrong to take away the uncertainties of the initiators.
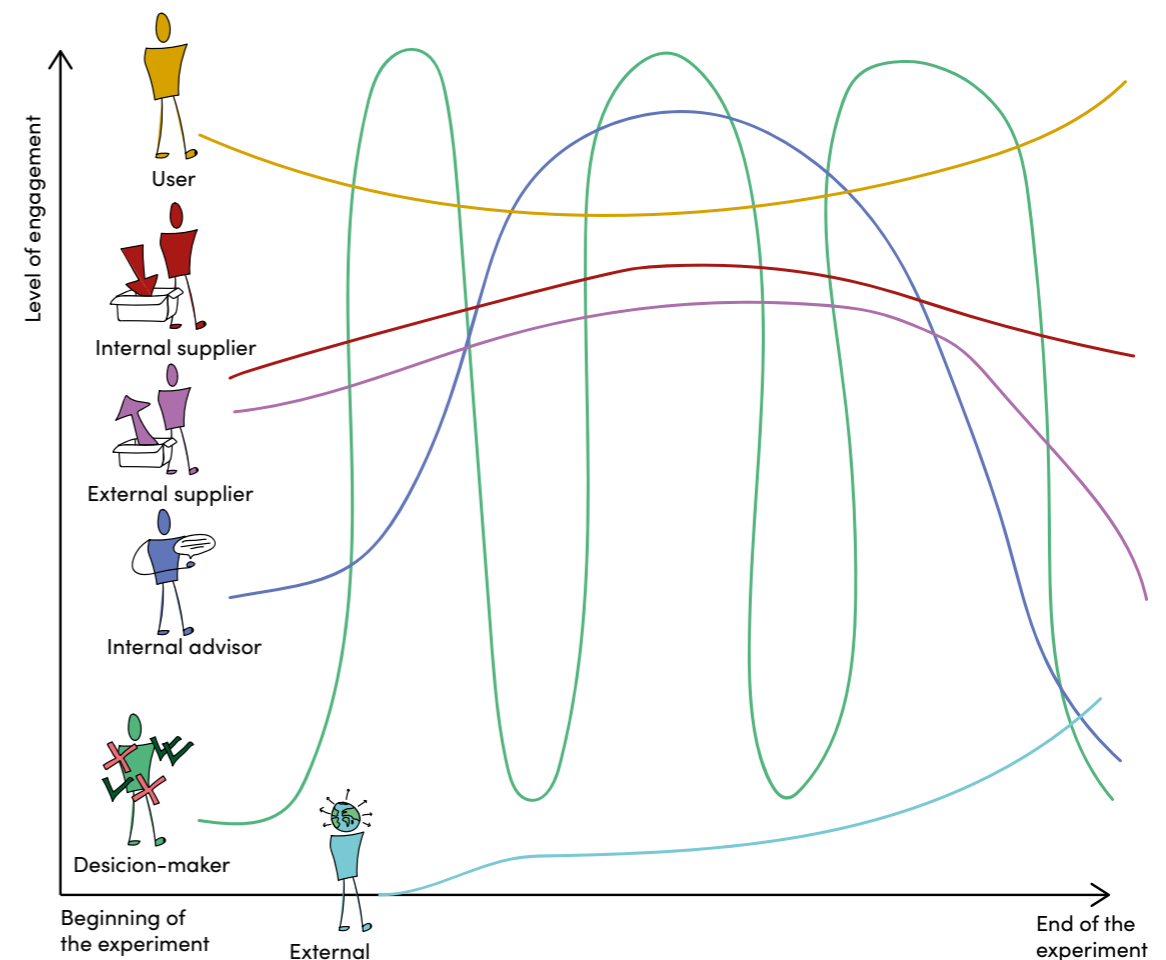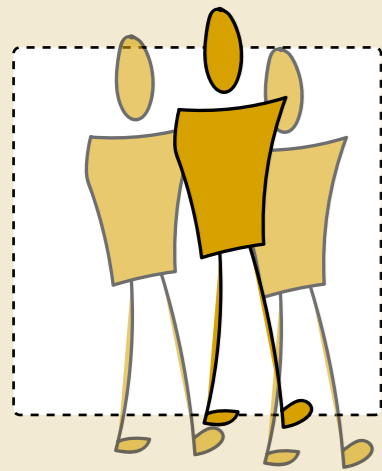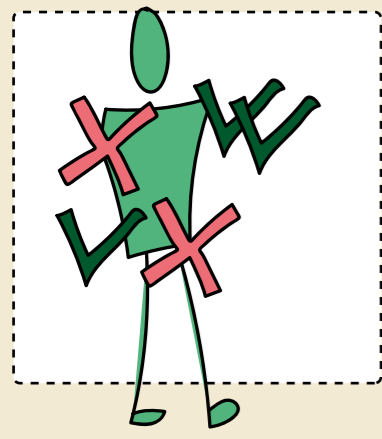

Figure 19: 3 principles supported by a tool
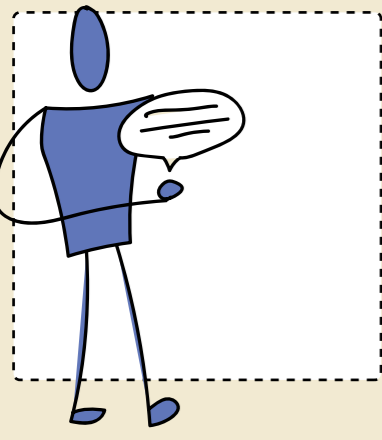

Chart 1: Level of engagement

THE ROLES

THE USER
The user is an internal user of JenV

Stakeholders of the user

Initiator
Test (group)
Other users

Losing the original tasks does not mean losing the job, the tasks of the job just change.

Want & needs of the user

New way of working
More efficiency and effectiveness
More fun

Key characteristics of the user

The user has a direct benefit from the solution & is the one closest to the problem (problem owner).

The user is quite 'low' in the organisation's hierarchical structure and therefore cannot simply push through initiatives.

Concerns of the user

Losing job
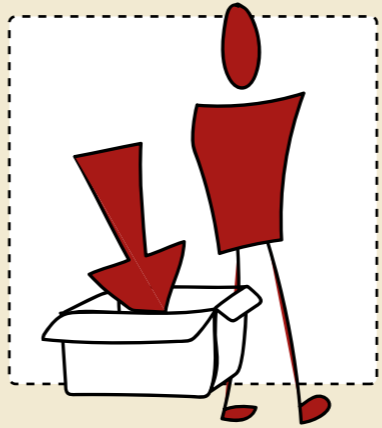Uncertainty – about change
Losing autonomy

THE DECISION-MAKER

Stakeholders of the decision maker

Program manager, line manager, executive steering group, (initiator)

The decision maker has to weigh priorities.

Want & needs of the decision maker

Capacity
Clarity about the effect
No extra work
Save costs

Key characteristics of the decision maker

They are located at all different levels in the organisation and differ from each other. They must therefore also be approached in a different way.

Their wants and needs are located on the short-term axis.

Concerns of the decision maker
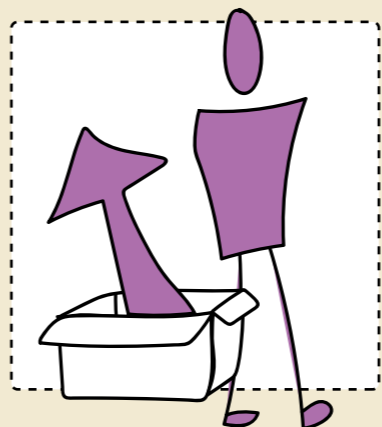
Extra work
Too little capacity

THE INTERNAL ADVISOR

Stakeholders of the internal advisor

JenV data lab, Team X, experts in different fields (legal, privacy, procurement, etc.)

The question of the problem owner may be unclear to them...

Want & needs of the internal advisor

Strengthen the innovation capacity

Better use of available knowledge

Key characteristics of the internal advisor

The internal advisor gives a push in the right direction, this can be through funding, support or setting benchmarks.

The internal advisor does not benefit directly by the experiment.

Concerns of the internal advisor

Doing an experiment that does not deliver anything; Money not wisely used; Loss of knowledge; Experts all have their concerns in own field
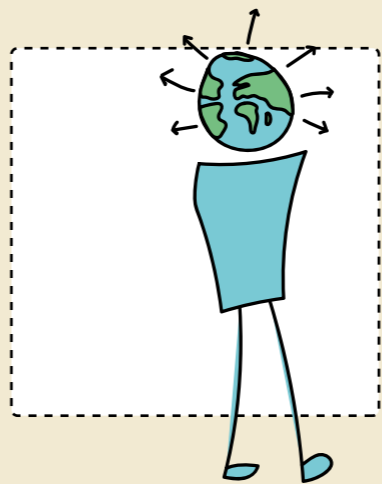
THE INTERNAL SUPPLIER

Stakeholders of the internal supplier

Labs (test, innovation), developers, IT Desk (they can hold back, even though they are no decision-makers), NFI

A finished experiment means success according to them, but finished does not mean implemented...

Want & needs of the internal supplier

Experimenting
Image
Capacity, money

Key characteristics of the internal supplier

The internal suppliers in general do not work together, their goals differ a little.

The internal supplier does not directly benefit from the solution. The internal supplier is also not the problem owner.

Concerns of the internal supplier

Tools not being used
Fail to deliver
Them not being noticed
No one sees what they did

THE EXTERNAL SUPPLIER

Stakeholders of the external supplier

TNO, IT companies, other supply companies, service providers, developers

The question depends on the contract: Deliver solution for initial problem vs deliver solution for final problem.

Want & needs of the external supplier

Money to research, develop and innovate
Profit
Image

Key characteristics of the external supplier

The external supplier gives advice regarding knowledge, with that they cover themselves for possible errors / failures.

The external supplier is 'far' away from the problem and solution. The external supplier is not even part of JenV.

Concerns of the external supplier

Fail to deliver
Image damage

THE EXTERNAL

Stakeholders of the external

Citizens
Journalists
End user (External)
NGOs

To present JenV as a transparent organisation, this role must be included!

Want & needs of the external

Sensation, Being helped,
A story to tell, Feel safe,
Trust

Key characteristics of the external

The external can make it or break it.

Even though it seems like the external is far away from the problem and solution, they benefit from a more efficient and effective government.

Concerns of the external

Discrimination
Privacy
Ethical aspects
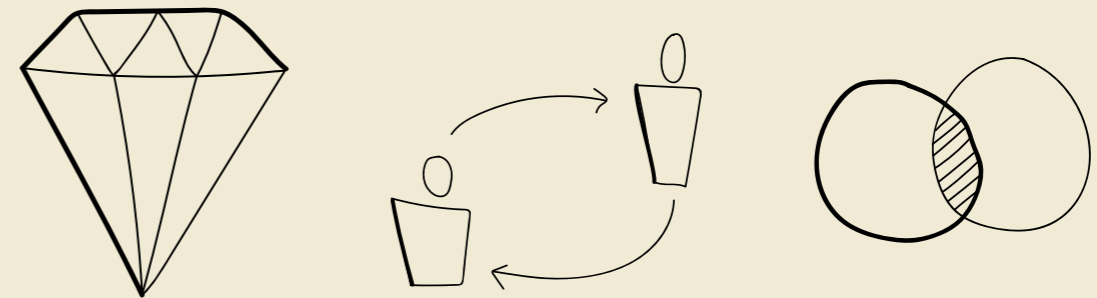Losing control

DESIGN OBJECTIVE

Final design objective

The principles entail a shift of the design focus into a final design objective.

The design focus: *"Design a strategy supported by a tool that reduces the uncertainties of the initiators prior to an AI experiment by providing clarity about the stakeholders"*

The final design objective:

Design a tool that reduces the uncertainties of the initiators prior to an AI experiment by focusing on clarity about the stakeholders, engaging the stakeholders and transparency.

Key takeaways of the Develop chapter

Directie X should support the initiators to bring about implementation without being part of the whole process. Ideation involving brainstorming has led to the development of three principles, which are based on clarity, engagement and transparency. Directie X, as it were, hands these principles over to the initiators by translating the principles into a tool. The tool, therefore, only serves as a means of communication of the principles and acts as a hands-on concept that the initiators can get started with.

The three principles:
1. It's all clear! (Clarity)
2. Doing it with! (Engagement)
3. It's clear to all! (Transparency)

The principles are based on the stakeholders. The stakeholders differ slightly for each AI experiment. However, some stakeholders perform similar roles in the AI experiments. It has therefore been decided to cluster the stakeholders and place them under different roles, which has resulted in six roles (the Roles):
1. The user
2. The decision-maker
3. The internal advisor
4. The internal supplier
5. The external supplier
6. The external

Ultimately, the Develop chapter has led to a final design objective that serves as the basis of the creation of the tool:

Design a tool that reduces the uncertainties of the initiators prior to an AI experiment by focusing on clarity about the stakeholders, engaging the stakeholders and transparency.

6. CREATE

This chapter outlines the second part of the second diamond, which is the conceptualisation of the tool. It starts with setting the design requirements, whereafter ideation takes place, and the idea will be moved from an abstract stage into a first concept.

DEFINE

DELIVER

DISCOVER

DEVELOP
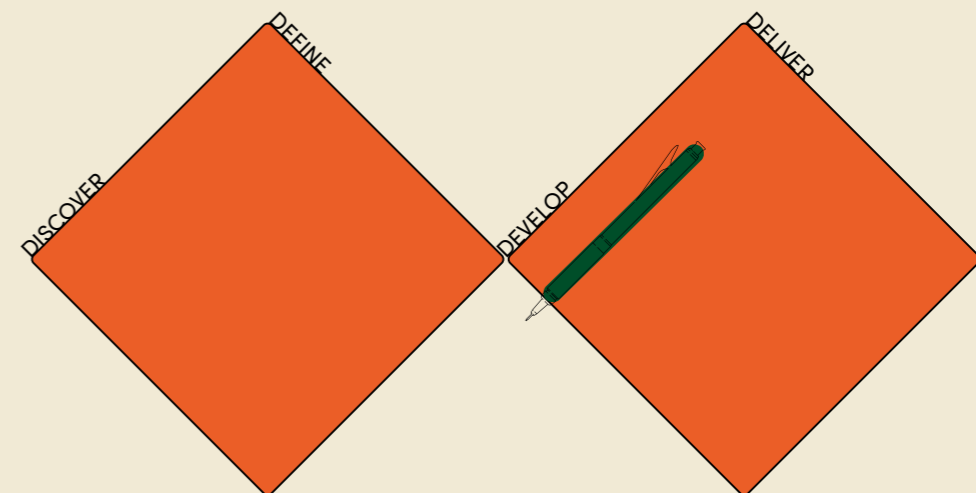
CREATING THE TOOL

Ideation

Ideation is an iterative process involving brainstorming about responding to clarity, engagement, and transparency. Finally, it translates this answer into design requirements as a guideline to design the tool.
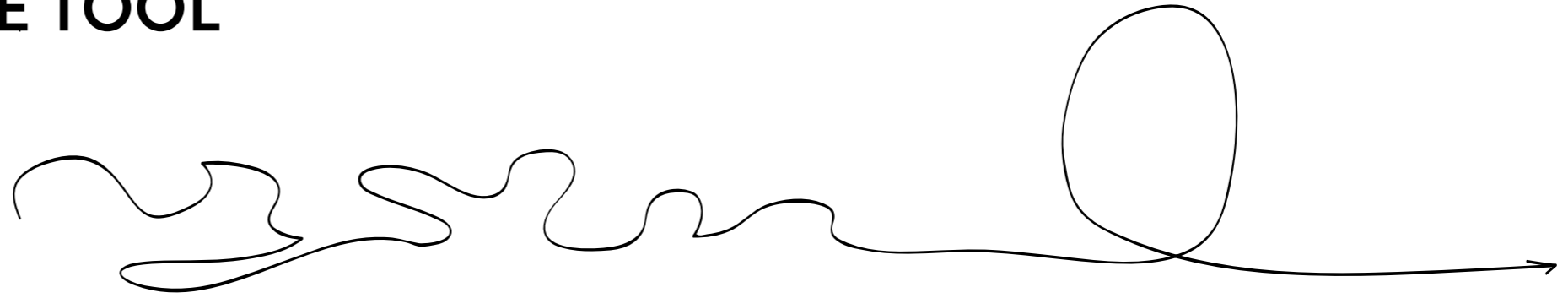
1 Design for clarity, engagement and transparency

The tool should comply with viability, desirability, and feasibility. Within these three lenses lies the sweet spot for innovation (Pillai, Vipin & Abhilash 2020); see Figure 20. Ideation on how the tool can comply with the three principles (clarity, engagement and transparency) and the three lenses has resulted in the following design requirements:

The tool will be a toolkit because just one tool will not comply with all requirements.

VIABILITY
Clarity
• TThe toolkit needs to provide clarity by ensuring that it is clear who the stakeholders are to the initiator.

Engagement
• The toolkit needs to provide a helping hand to the initiators by showing the wants & needs, and concerns.
• The toolkit needs to provide insights and guidelines of the level of engagement of the stakeholders.

Transparency
• The toolkit needs to entail transparency by sharing the experiences.

Other
• The toolkit needs a **learning character** because this will help to reduce the uncertainties of the initiators.

DESIRABILITY
• The toolkit will make the user feel ready to start the AI experiment.
• The toolkit is attractive and inviting to use.

FEASIBILITY
• The toolkit can be delivered directly without JenV having to make investments or purchase specific software.
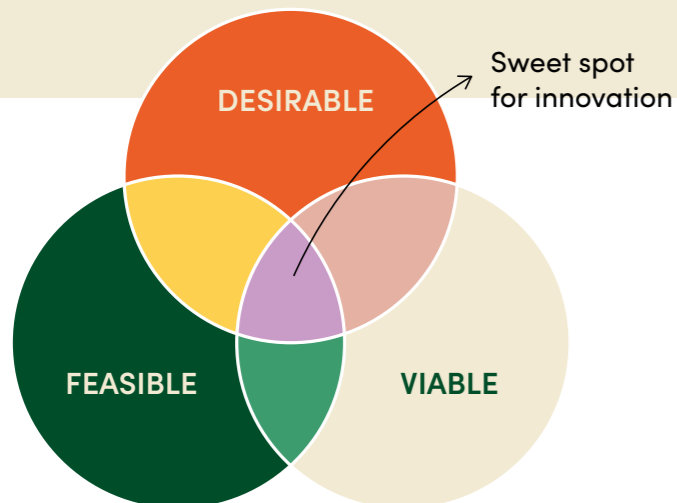• Anyone can use the toolkit without prior knowledge.

Figure 20: Sweet spot for innovation

2 What toolkit?

Ideation has resulted in possible tools that can tick off these requirements (Figure 21, Figure 22). This ideation emerged into a concept consisting of stories and canvases. Stories and canvases entail alternation between learning and doing, which will keep it interesting.

STORIES
The stories are intended to learn about the stakeholders in a more general sense. It is not about the specific AI experiment that the initiator will conduct but other AI experiments conducted at JenV. Experiences of other initiators will be presented so that the initiators can also be inspired by this and learn from it. These experiences will also show that AI experiments are not always successful and that it is okay to make mistakes.

The stories are chosen because the initiators can learn without consequences since reading the stories has no direct effect on the AI experiment.

THE CANVASES
The canvases focus on the specific AI experiment that the initiator is going to conduct. One canvas should be completed prior to the AI experiment, and one should be completed afterwards:

• The canvas that must be completed prior to the experiment contributes to clarifying who the stakeholders are. In this section, the six roles will be highlighted. First, the initiator will have to fill in which specific stakeholders for his/her project are located within that role. Second, the initiator will also discuss the wants & needs, and concerns of these stakeholders so that he/she can take these into account when the experiment starts.
• The canvas that has to be filled in afterwards has the form of a Reflection canvas. This canvas reflects on the different stages of the AI experiment (PoC, the pilot and the implementation), bearing in mind the stakeholders.

Canvases are chosen because filling in a canvas provides clarity by making it uncluttered. In addition, by filling the canvases, the initiator is actively involved in preparing and reflecting.
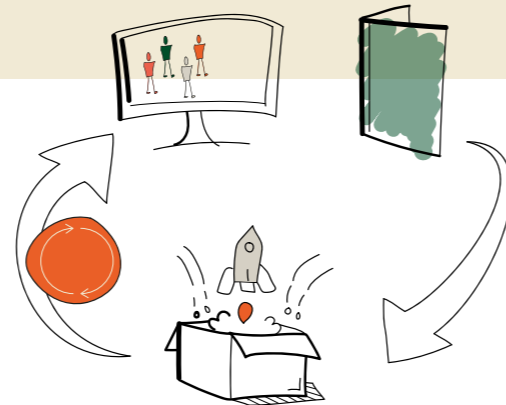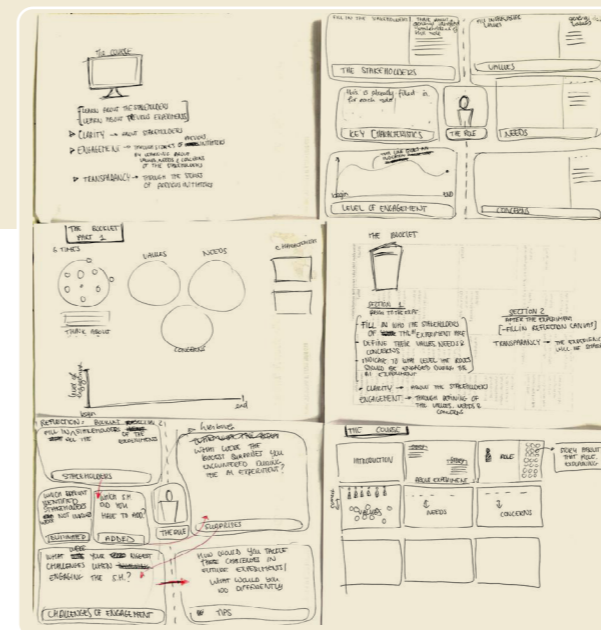

Figure 21: Ideation about tools

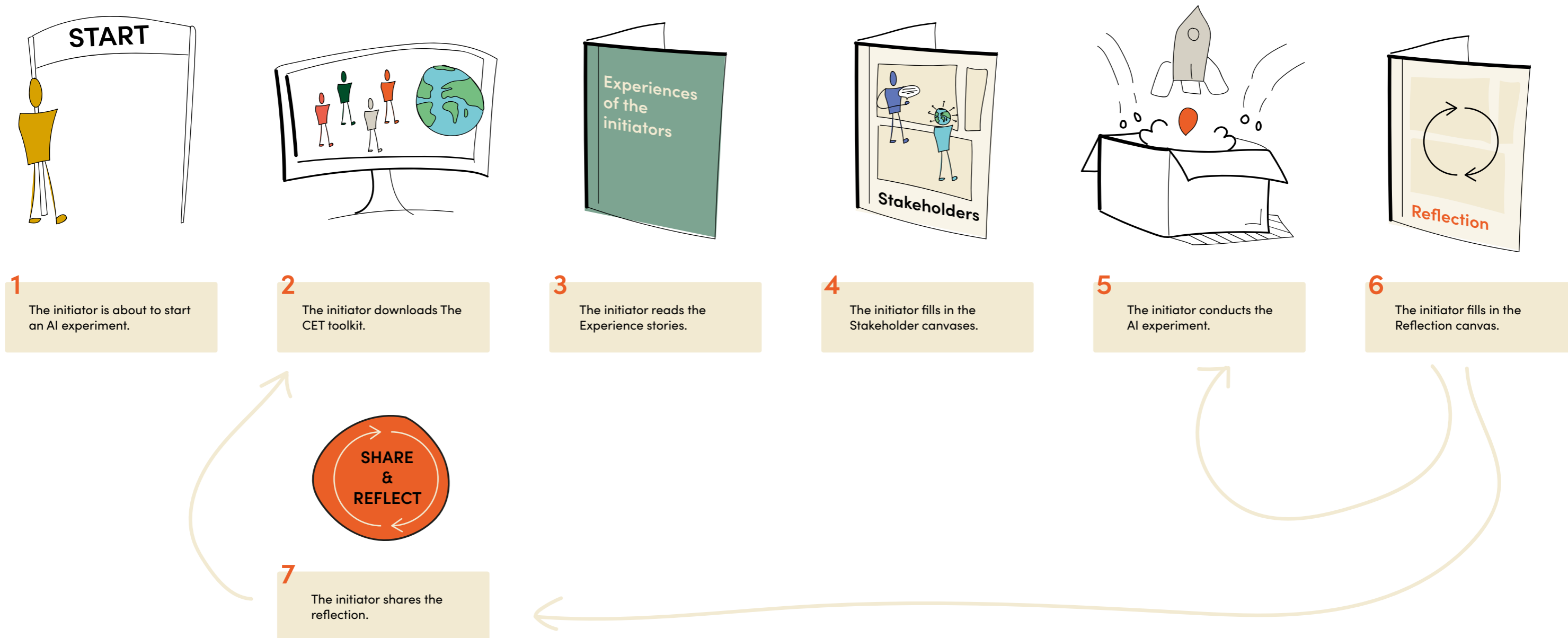Figure 22: Ideation about tools

THE CONCEPT

Introduction to the concept

The purpose of this paragraph is to provide an introduction to the concept. The concept serves as a basis for the initiator when starting an AI experiment. It functions afterwards as a place to reflect. The concept will be referred to as **The CET toolkit.** CET stands for Clarity, Engagement and Transparency. Figure 23 explains the initiator's journey when conducting an AI experiment supported by The CET toolkit. The initiator journey shows that the concept consists of three parts; the Experience stories, the Stakeholder canvases and the Reflection canvases. It also shows that after filling

in the Reflection canvas, the initiator continues to run the AI experiment; this is a step repeated several times because, as mentioned, the experiment is often on hold after the PoC stage. Therefore, the initiator has to go back to step 5 after step 6 and continue conducting the experiment. The CET toolkit contains four Reflection canvases so that the initiator can reflect after the PoC, pilot, implementation and evaluation phase. The initiator must go back and forth between steps 5 and 6 until the AI experiment is implemented.

Downloading The CET toolkit

The initiator's journey shows that in step 2, the initiator downloads The CET toolkit from a digital environment. The purpose of the digital environment is that the digital version of the toolkit can be updated so that the initiator always has the latest version. The update is based on the reflections they have filled in in the Reflection canvases (step 6) and shared (step 7).

1 The initiator is about to start an AI experiment.

2 The initiator downloads The CET toolkit.

3 The initiator reads the Experience stories.

4 The initiator fills in the Stakeholder canvases.

5 The initiator conducts the AI experiment.

6 The initiator fills in the Reflection canvas.

7 The initiator shares the reflection.

SHARE & REFLECT

THE CONCEPT

6.2.1 Introduction

The concept is further explained in this chapter. The CET toolkit consists of several components. Each component is self-explanatory. In addition, there is an introductory section that introduces the entire toolkit.

The components:
•   Introductory page
•   Experience stories
•   6x Stakeholder canvases
•   4x Reflection canvases

THE INTRODUCTORY PAGE

The toolkit's introductory page provides a brief explanation of the entire toolkit and how to use it. The introductory page starts with the three principles and accompanying explanation, followed by the initiator's journey as described on the previous page. However, 'the initiator' is replaced by an imperative so that the initiator feels personally addressed. The introductory page is demonstrated in 6.3.

6.2.2 The Experience stories

The purpose of the Experience stories is that the initiators learn from others without there being consequences. Therefore the Experience stories entail transparency. In addition, the learning character will help to reduce the uncertainties of the initiators.

The Experience stories (Figure 24) describe several relevant experiences regarding the stakeholders from previous initiators.
The Experience stories do not discuss the content of the AI experiment because this is not relevant for the initiator. Instead, it is purely focused on the stakeholders. It is built on The Reflection canvas, which will be explained in 6.2.4 The Reflection canvas.

The Experience story is constructed in the following way:
Stage of the AI experiment
The stage of the AI experiment is indicated by a circle around the relevant stage, referring to the stages indicated in figure 25.

Surprises
What were the biggest surprises regarding the stakeholders encountered by the initiator at this stage?

Challenges
What were the biggest stakeholder challenges encountered by the initiator at this stage?

Tips
Tips regarding the stakeholders would for the next conductor of an AI experiment?

ENSURING THE STORIES REMAIN RELEVANT

As mentioned, the Experience stories remain relevant because they are continuously updated. The updating is done based on new insights that are obtained through the Reflection canvases. Directie X has the responsibility of making this update happen.

6.2.3 The Stakeholder canvases

The purpose of the Stakeholder canvases is to entail clarity about the stakeholders to the initiator to reduce the uncertainty prior to the experiment. In addition, it entails engagement by providing insights about the role's wants & needs, and concerns, which can function as guidelines for involving the role.

The second part of the CET toolkit is the six Stakeholder canvases. These six canvases examine the six roles that are part of the AI experiment.

The initiator must complete the following sections for each of these roles:
•   Which stakeholders are in this role?
•   At what level should the role be engaged?
•   What wants & needs does this role have?
•   Which concerns are shared by this role?

The initiator will be guided by the sections that are filled in by default:
First, generally identified stakeholders of the role will be presented in the box where the initiator needs to fill in the specific stakeholders within the role.
Second, general identified wants & needs and concerns of this role are presented on the canvas.
Third, two key characteristics have been identified for each role and can be found on the canvas.
Fourth, there is a general statement that the initiator must take into account for each role. These default elements can be found in 5.3 The roles.
Finally, concerning the level of engagement, there is a line indicating it on the canvas.

The general canvas can be found in 6.3 Stakeholder canvas. The six canvases specific for the roles can be found in Appendix F.

6.2.4 The Reflection canvases

The purpose of the Reflection canvases is to help the next initiator by gaining insights that can be incorporated in the Experience stories and learning by letting the initiator become aware of the actions taken during the AI experiment.

The Reflection canvases are meant to be completed after the AI experiment. Since currently, it is unknown when and if the AI experiment gets implemented, the Reflection canvas has to be filled in after each phase, whereby the initiator has to indicate at which stage the AI experiment is at that moment. The CET toolkit contains four Reflection canvases so that the initiator can reflect after the PoC, pilot, implementation and evaluation phase. Thus, the initiator must go back and forth between steps 5 and 6 until the AI experiment is implemented.

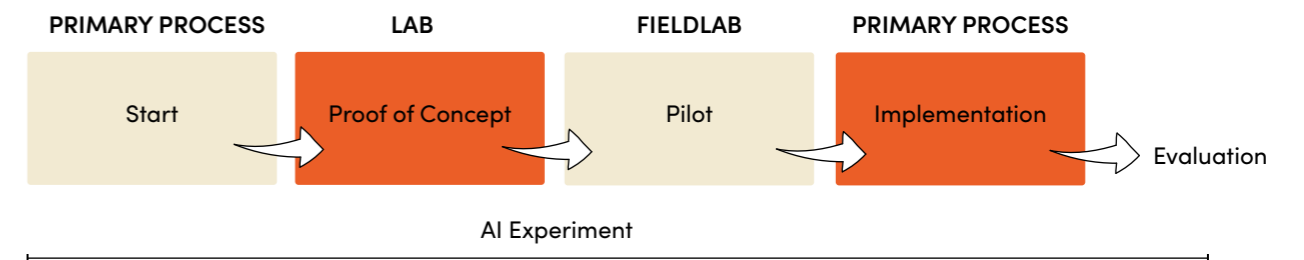The Reflection canvas can be found in 6.4.

Figure 24: Experience stories

Figure 25: AI experiment
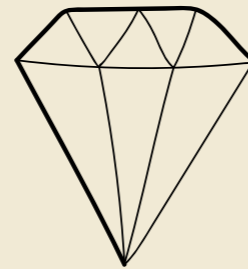
THE CONCEPT

THE CONCEPT

Summary of the concept

The concept is based on the three principles. In this section, the concept is explained through the viability requirements to determine whether the concept connects to these three principles and answers the design objective.

CLARITY

The concept clarifies the stakeholders by ensuring that it is clear to the initiator who the stakeholders are. This is done by:
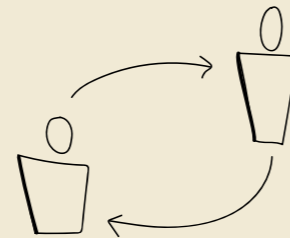1. Providing insights and guidelines about the stakeholders within the Stakeholder canvases.
2. Filling in the Stakeholder canvases, which the initiator will do.
3. Insights about the stakeholders in the Experience stories provide clarity regarding stakeholders of previous AI experiments.

ENGAGEMENT

The concept provides a helping hand to the initiators by showing the wants & needs, and concerns. In addition, it provides guidelines on the level of engagement. In this way, the initiator can conduct the AI experiment 'with' the stakeholders. This is done by:
1. Providing insights and guidelines (of the level of engagement) about the stakeholders within the Stakeholder canvases, including wants & needs and concerns.

TRANSPARENCY

The concept entails transparency by sharing experiences. This is done by:
1. Insights on experiences about the stakeholders in the Reflection canvas.
2. Translating these insights about the stakeholders in the Experience stories.
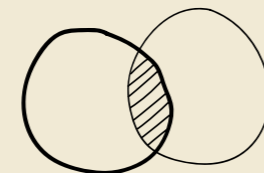
LEARNING CHARACTER

The concept has a learning character, which is incorporated in the following elements:
1. The initiators will learn from the experiences of previous initiators by reading about this in the Experience stories.
2. When filling in the Stakeholder canvases prior to the experiment, guidelines are provided that give insight into the role. The initiators learn from these guidelines.
3. While reflecting, the initiator will become aware of the actions taken during the AI experiment and thereby learn how to improve himself.

The CET toolkit reduces the uncertainties of the initiators prior to an AI experiment by focusing on clarity about the stakeholders, engaging the stakeholders and transparency.
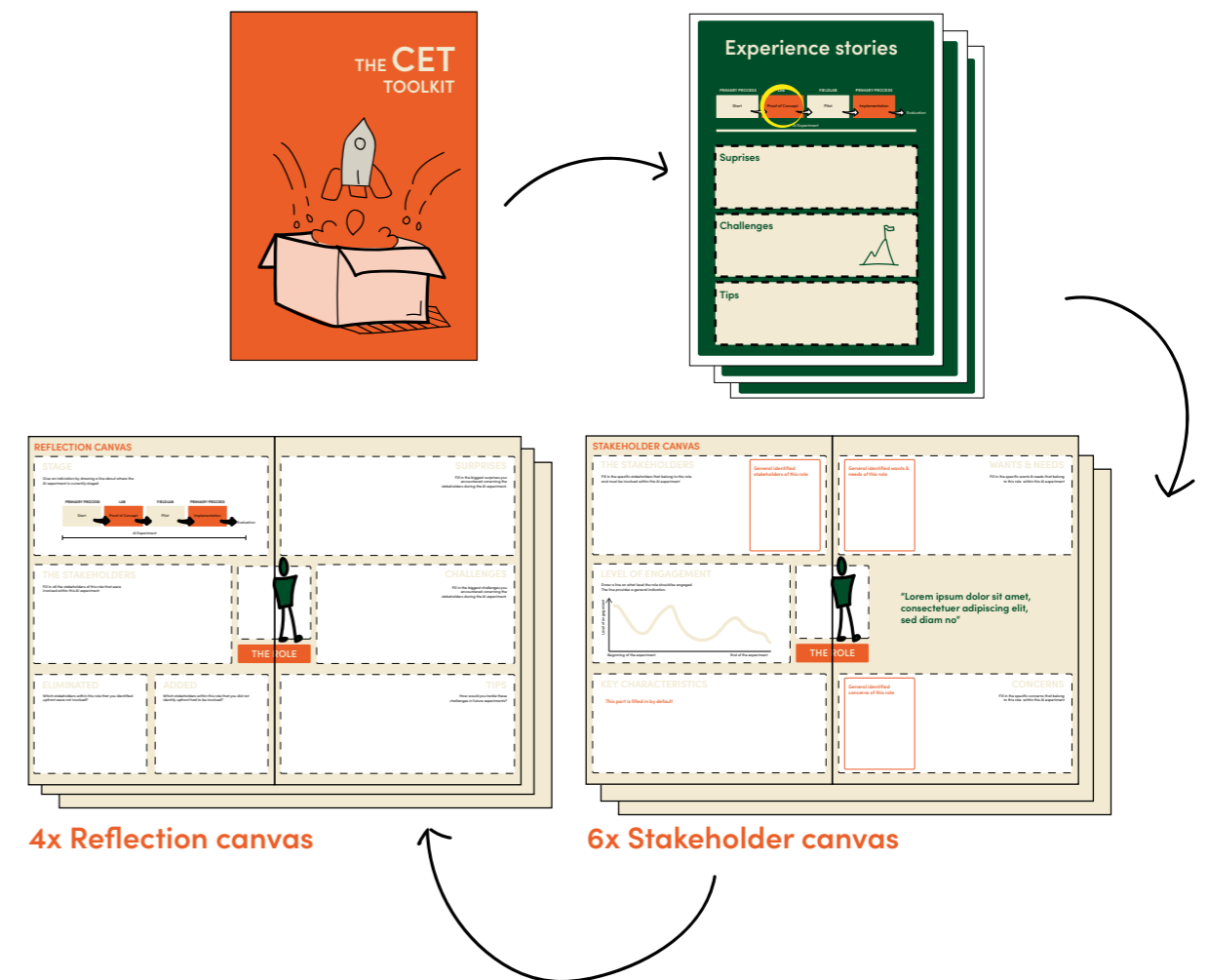
4x Reflection canvas   6x Stakeholder canvas

Figure 26: Overview concept

Hello!

You are about to start an AI experiment. The CET toolkit provides a helping hand by means of three principles: clarity, engagement and a. The toolkit consists of the following components, which are each self-explanatory:
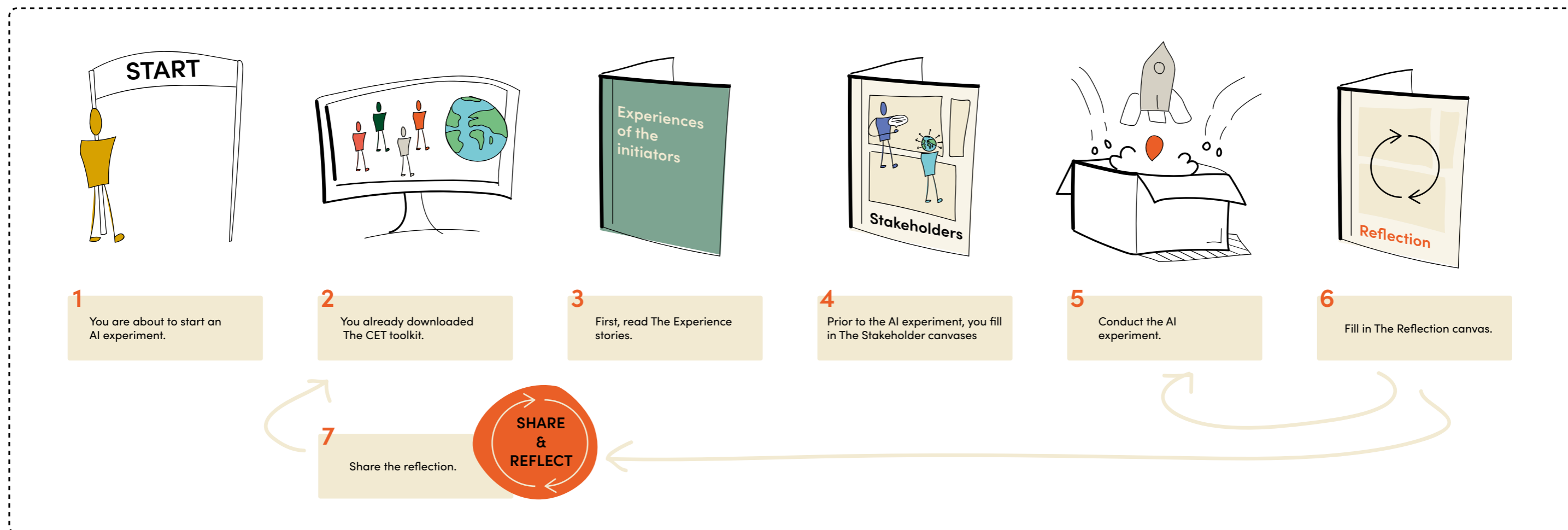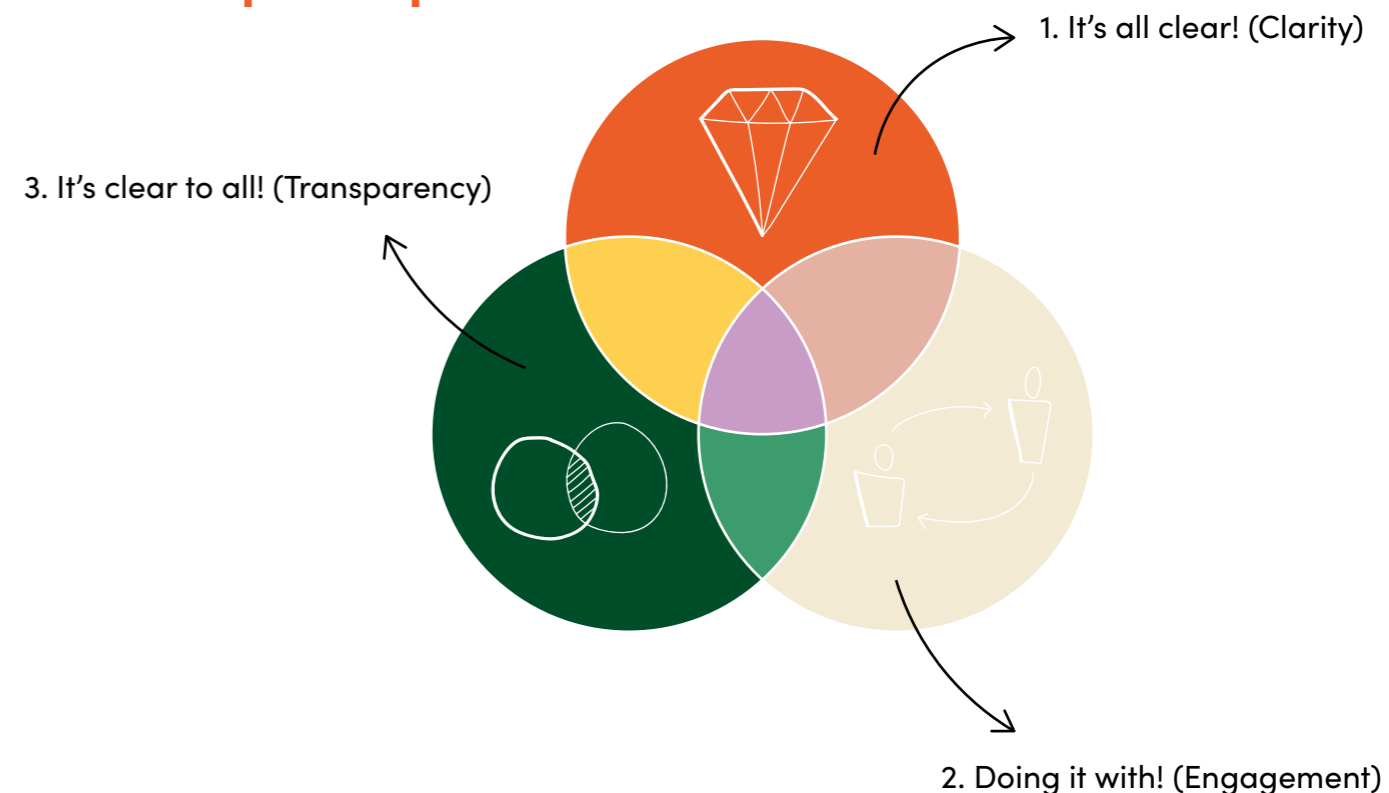- Experience stories
- 6 Stakeholder canvases
- 4 Reflection canvases

The CET toolkit alternates between learning and doing. So get started and enjoy the journey of experimenting with AI!

What does the CET toolkit?

The CET toolkit provides clarity about the stakeholders. It provides you with a helping hand by showing the wants & needs, and concerns of the stakeholders. In addition, it provides guidelines on the level of engagement. In this way, you can conduct the AI experiment 'with' the stakeholders. Finally, the CET toolkit concept entails transparency by sharing experiences.

The principles

1. It's all clear! (Clarity)

3. It's clear to all! (Transparency)

2. Doing it with! (Engagement)

START

Experiences of the initiators

Stakeholders

Reflection

1 You are about to start an AI experiment.

2 You already downloaded The CET toolkit.

3 First, read The Experience stories.

4 Prior to the AI experiment, you fill in The Stakeholder canvases

5 Conduct the AI experiment.

6 Fill in The Reflection canvas.

7 Share the reflection.

SHARE & REFLECT

THE STAKEHOLDERS

Fill in the specific stakeholders that belong to this role and must be involved within this AI experiment

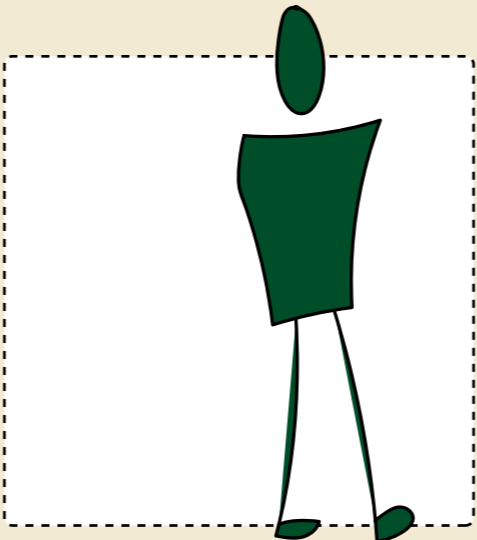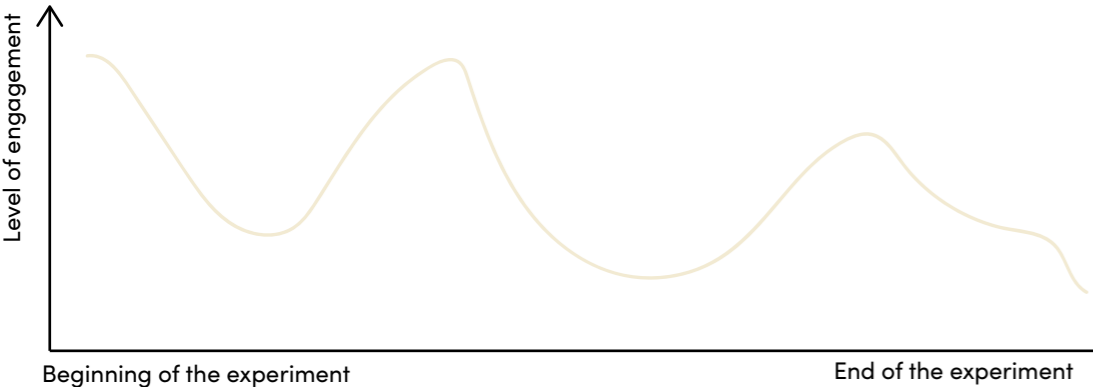**General identified stakeholders of this role**

WANTS & NEEDS

Fill in the specific wants & needs that belong to this role within this AI experiment

General identified wants & needs of this role

LEVEL OF ENGAGEMENT

Draw a line on what level the role should be engaged. The line provides a general indication.

Level of engagement

Beginning of the experiment   End of the experiment

THE ROLE

"Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam no"

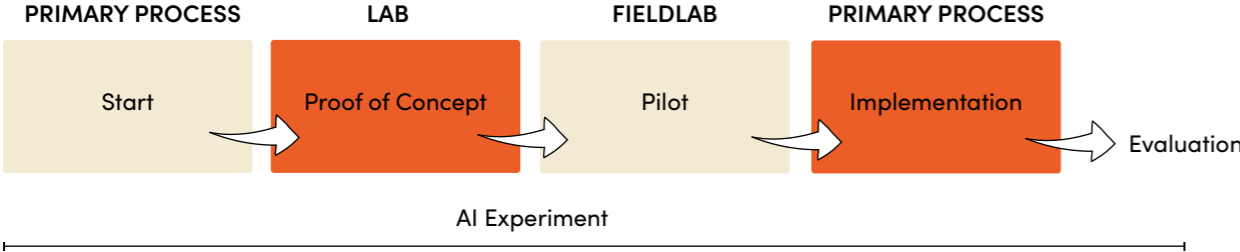## KEY CHARACTERISTICS

This part is filled in by default

CONCERNS

Fill in the specific concerns that belong to this role within this AI experiment

General identified concerns of this role

REFLECTION CANVAS

STAGE

Give an indiciation by drawing a circle around the current stage of the AI experiment.

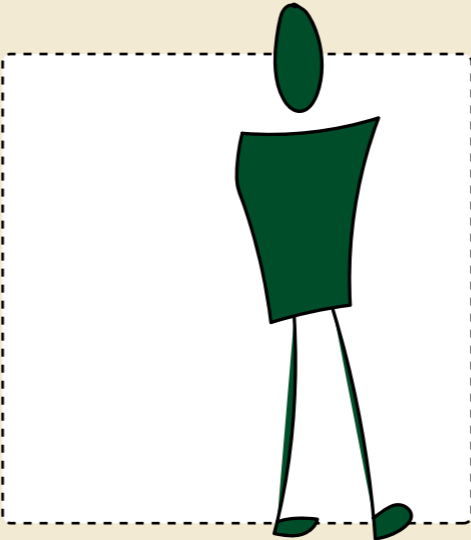| PRIMARY PROCESS	LAB	FIELDLAB	PRIMARY PROCESS	
Start	Proof of Concept	Pilot	Implementation	Evaluation

AI Experiment

SURPRISES

Fill in the biggest surprises you encountered conerning the stakeholders during the AI experiment.

THE STAKEHOLDERS

Fill in all the stakeholders of this role that were involved within this AI experiment.

THE ROLE

CHALLENGES

Fill in the biggest challenges you encountered conerning the stakeholders during the AI experiment.

ELIMINATED

Which stakeholders within this role that you identified upfront were not involved?

ADDED

Which stakeholders within this role that you did not identify upfront had to be involved?

TIPS

How would you tackle these challenges in future experiments?

Reflection canvas

Figure 27 explains the easy use of the Reflection canvas: The white arrows indicate how the Reflection canvas needs to be filled in.
Figure 27 also shows how the Reflection canvas, on the one hand, is used for improving the Stakeholder canvases and, on the other hand, for gaining insights for the Experience stories.
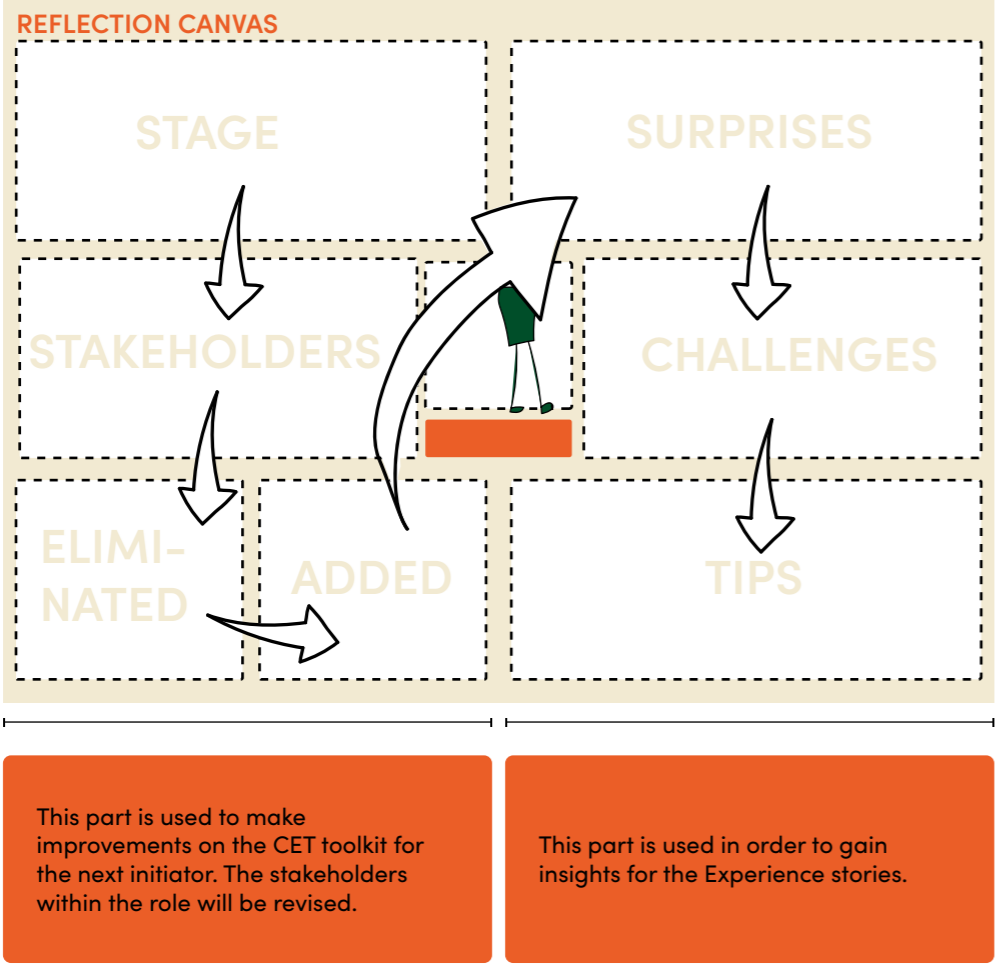

Figure 27: Reflection canvas

Key takeaways of the Create chapter

The Create chapter started with exploration and resulted in the concept: The CET toolkit.

The CET toolkit consists of 3 parts and an introductory page:
•   The Experience stories
•   6x Stakeholder canvas
•   4x Reflection canvas

The purposes of the different parts of the CET toolkit:
•   The purpose of the Experience stories is that the initiators learn from others without there being consequences. Therefore the Experience stories entail transparency. In addition, the learning character will help to reduce the uncertainties of the initiators.
•   The purpose of the Stakeholder canvases is to entail clarity about the stakeholders to the initiator to reduce the uncertainty prior to the experiment. In addition, it entails engagement by providing insights about the role's wants & needs, and concerns, which can function as guidelines for involving the role.
•   The purpose of the Reflection canvases is to help the next initiator by gaining insights that can be incorporated in the Experience stories and learning by letting the initiator become aware of the actions taken during the AI experiment.

7. DELIVER

This chapter outlines the validation of the concept resulting in key insights into the extent to which the CET toolkit meets the design requirements. Finally, the chapter finishes with how to deliver the concept to the initiator and maintain it to stay relevant.

DISCOVER DEFINE DEVELOP DELIVER
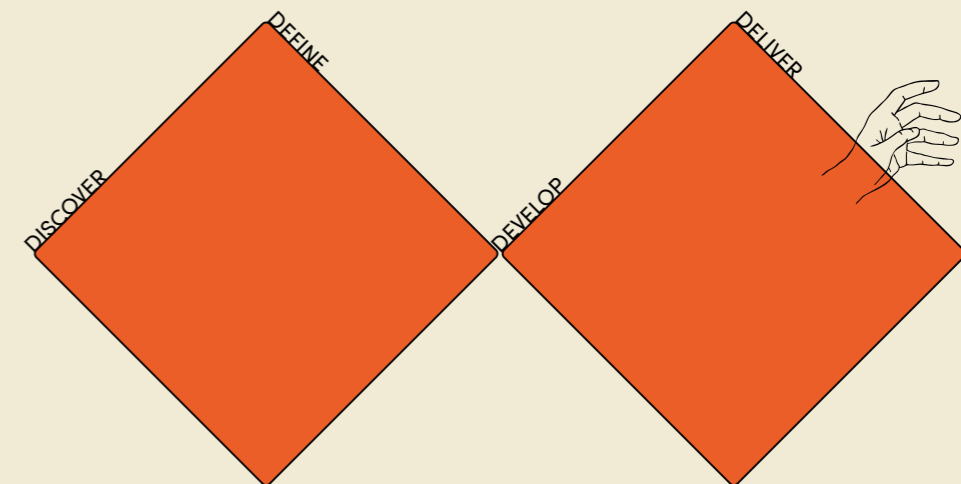
VALIDATION

An evaluation of the concept answers whether the CET toolkit meets the design requirements. The assessment is done through (1) an online collaborative validation session and (2) an online survey.

Conducting the validation in an online environment, spread in two approaches, ensures that the participants can take part from wherever they want and whenever they want. This is desirable because, due to Covid-19, we cannot easily come together at the moment. In addition, many stakeholders live far from each other, and the validation takes place when many employees of JenV are absent.

The collaborative session

THE CANVASES BY MEANS OF AN ONLINE COLLABORATIVE SESSION

It is essential to know whether the interaction with the canvas part of the concept runs smoothly and whether it invites use. An interactive, collaborative session provides the opportunity to analyse the participants. This collaborative session was partly focused on the evaluation of the Roles. The result of this has already been incorporated into the Roles presented in this master thesis.

THE AIM OF THE SESSION

The aim of the session is evaluating the interactive part of the CET toolkit on the design requirements, in other words, validating the two canvases.

PARTICIPANTS

Six participants joined the session. These participants came from different departments of JenV:
• Two people from Directie X who had not previously been involved in the research in order to obtain an unbiased opinion.
• One person from the AI team.
• Three people from other JenV departments. The participants all have an innovative vision and are open to change.

SET-UP

The session was held in Miro, an online collaborative platform. The session lasted a total of two hours. Before this, the participants had received introductory information to get a good idea of the project. The session started with a 'getting to know each other and Miro', then a presentation about the project, followed by two interactive sessions. One session focused on validating and improving the roles, and one session.

The survey

THE EXPERIENCE STORIES BY MEANS OF A SURVEY

In addition to the collaborative session, a survey was conducted. In this survey, the focus was on the Experience stories. A survey is a suitable validation tool because the low threshold ensures that stakeholders can easily complete it in their own time. In addition, the Experience stories are part of the CET toolkit that will be used passively by the initiator; there is no interaction. Therefore, it is unnecessary to analyse the interaction with this part of the concept in an (online) collaborative session and a survey sufficient.

THE AIM OF THE SURVEY

The aim of the survey is twofold. On the one hand, the aim is to evaluate the passively used part of the CET toolkit on the design requirements. In other words, validating the Experience stories. On the other hand, the aim is to validate whether the stakeholders are willing to share their experiences and thus contribute to the Experience stories.

PARTICIPANTS

Stakeholders from various departments of JenV were approached to participate in the survey, including all interviewees of the stakeholders and all members of Directie X. This amounts to a total of approximately 50 participants. In the end, seven participants completed the survey.

SET-UP

The participants were able to complete the survey online through a link they had received. The survey consisted of sections that focus on a transparent working method in general and sections that focus specifically on the AI experiments.
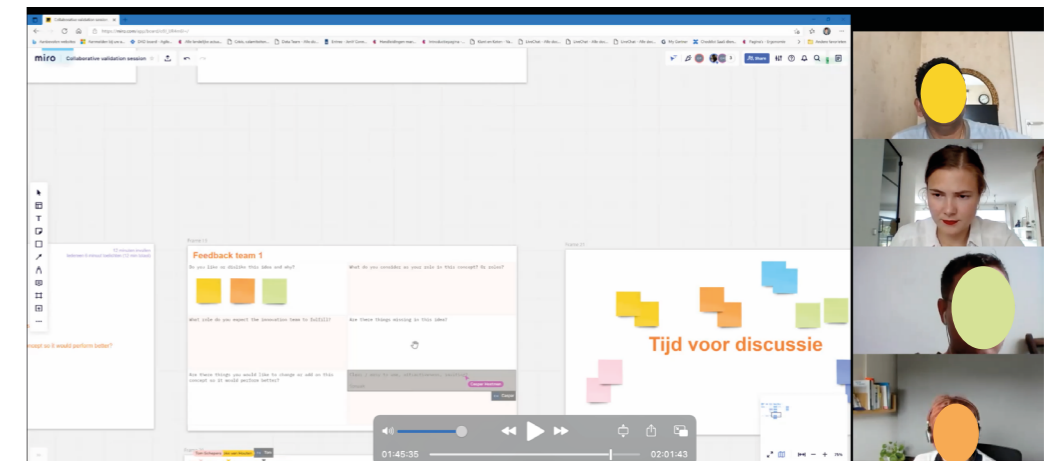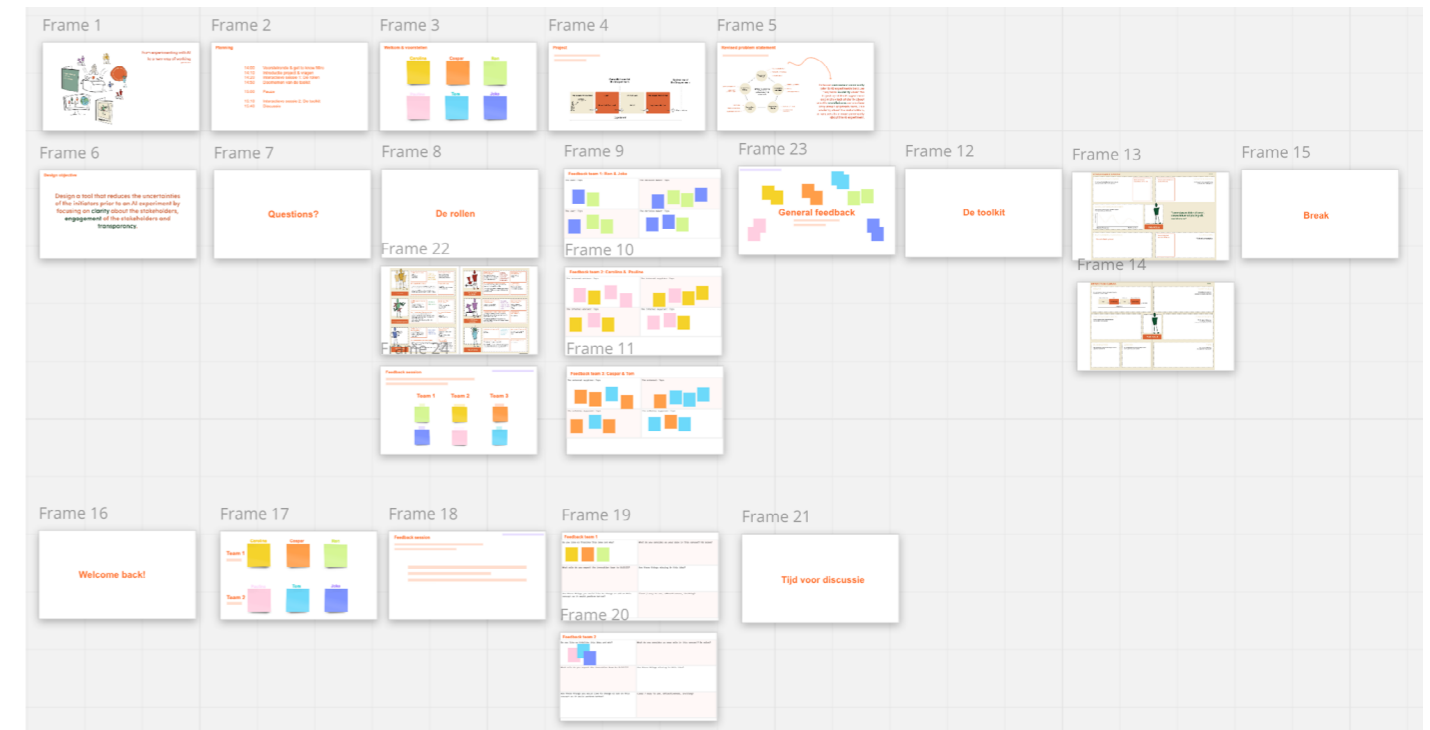

Figure 28: Screenshots of the online collaborative validation session

VALIDATION RESULTS

This section outlines the key insights - gained during the session and the survey - on desirability, viability and feasibility. The extent to which the CET toolkit meets the design requirement is indicated in green, orange and red. Green means that the CET toolkit completely meets the design requirement, orange partially and red means that the CET toolkit does not meet the design requirement. The consequences of meeting the design requirement only partially or not are discussed at the end of this section.

Viability

CLARITY

● Does the toolkit provide clarity by ensuring that it is clear to the initiator who the stakeholders are?
- *The CET toolkit clarifies whom the stakeholders are by giving examples in the Stakeholder canvases to the initiator. During the session, the participants indicated that these canvases created a clear picture of the stakeholders.*

ENGAGEMENT

● Does the toolkit provide a helping hand to the initiators by showing the wants & needs, and concerns of the stakeholders?
- *The toolkit provides insights about the wants & needs, and concerns. The participants indicated that these insights lend a helping hand when the initiator starts an AI experiment. However, the wants & needs and concerns only go one way; they describe what the role of the initiator expects. Therefore, to really lend a helping hand, it is also advisable to indicate what the initiator of the role can and may expect. In other words, the wants & needs and concerns now work as a one-way street, while to lend a helping hand, there must be a two-way street.*

● Does the toolkit provide insights and guidelines of the level of engagement of the stakeholders?
- *The graph indicates at which level the role should be involved. The collaborative session outlined that this graph, in combination with the wants & needs and concerns, provides insights and guidelines that make it clear to the initiator how they can engage the role.*

TRANSPARENCY

● Does the toolkit entail transparency by sharing the experiences?
- *The session showed all participants understood the aim of the Reflection canvases and reported feeling more aware of their actions when completing the canvas. However, the results of the survey showed that not everyone is equally willing to share their experiences. Furthermore, they even assume that others within JenV follow a less transparent working method than themselves. What does this say about the trust people have in the previous initiators' Experience stories? So it cannot be said with all certainty that sharing experiences entails transparency.*

OTHER

● Does the toolkit have a learning character that helps the uncertainties being reduced?
- *The participants of the session indicated that by filling in the Reflection canvas, they become aware of the actions they have performed. In addition, they gained new insights through the Stakeholder canvases. So these are two ways in which the AI experiment satisfies its learning nature. Most importantly, the survey indicated that the initiator expects that reading the Experience stories will reduce uncertainties.*

Desirability

● Does the toolkit make the user feel ready to start the AI experiment?
- *Because the toolkit was not tested at the start of an actual AI experiment, the validation session and the survey did not provide significant insights into the extent to which the toolkit user feels ready to start an AI experiment. However, the participants indicated that they would feel more prepared by taking actions prior to an AI experiment than if they did not take these actions.*

● Is the toolkit attractive and inviting to use?
- *The participants of the session indicated that they found the toolkit well designed graphically and that they were looking forward to working with it.*

Feasibility

● Can the toolkit be delivered directly without JenV having to make investments or purchase specific software?
- *The interactive part of the toolkit is finished and can be used immediately. For the Experience stories, experiences from previous initiators still need to be generated. No additional software is required to do this. However, time has to be invested, and time is money. The time that must be invested needs to come from Directie X, and JenV does not need to make any investments for this.*

● Can the toolkit be used by anyone without prior knowledge?
- *Half of the participants had no prior knowledge about the experiments, and half did. Both parties were able to complete the canvases.*

Improvements (consequences)

ENGAGE MORE

As stated in the evaluation of engagement, it has become apparent that there is a need for two-way traffic when it comes to insights regarding wants & needs and concerns. This wish will partly be met through the interim meetings with stakeholders from all roles. In the recommendations (8.3) is discussed how Directie X can continue to meet this wish completely.

SHARE MORE

The participants of the survey indicated that they believe they have a transparent working method.

However, 7 of the 50 approached participants completed the survey. This implies the extent to which employees of JenV are willing to share their experiences. The cause is not because the employees do not want to share their experiences because of keeping their insights private but probably because they do not want to make time for it.

TEST MORE

Thus, the validation did not provide significant insights into the extent to which the toolkit user feels ready to start an AI experiment. Therefore, the CET toolkit should be tested in the long term with an actual AI experiment.

REFLECT MORE

According to the concept, the Reflection canvases should be completed four times. During the session, they indicated that they needed to fill in the canvases more often to be even more aware of their actions. In addition, they also indicated that it would seem attractive to them to fill in the canvases in a team form occasionally. Therefore, the toolkit will consist of eight Reflection canvases instead of four. Between the phases, the initiators will individually reflect on the stakeholders of the AI experiment. They should organise one meeting with a stakeholder from each role to reflect together during the phase itself.

Key takeaways validation results

- The CET toolkit has met almost all design requirements. However, because the toolkit was tested during a session and a survey and not during an actual AI experiment, it cannot be said with complete certainty what the CET toolkit delivered concerning the following requirement: the toolkit makes the user feel ready to start the AI experiment.
- The validation has shown that there is a need for more frequent reflection. Therefore, the CET toolkit will consist of eight Reflection canvases instead of four.
- It has become apparent that there is a need for two-way traffic regarding insights of the wants & needs, and concerns. This wish will partly be met through the interim meetings during the AI experiments with stakeholders from all roles.
- The time employees are willing to share experiences is limited. So sharing experiences is not limited by transparency but by the willingness to spend time on it (priorities).
- The CET toolkit is a validated first step to reduce the initiators' uncertainties by means of clarity, engagement and transparency.

DELIVERY

This section outlines a brief overview of the recommended steps that Directie X should take to ensure that the toolkit is used correctly and remains relevant with the ultimate goal that the AI experiments lead to a new way of working.

1 Now (September 2021)

The CET toolkit has been created under the guise of being ready to use. That is why the toolkit will also be provided directly by Directie X when an AI experiment will start. However, direct might be a bit premature, as there are still some steps that Directie X must take before this.

To ensure that the initiators can start with the experiences of previous initiators, Directie X should provide insights, regarding stakeholders, of a few previous initiators. Directie X will do this based on several generative sessions about the participants' experiences (Valsplat Design & Research Lab, 2021) and therefore provide valuable insights. During these sessions, the previous initiators will fill in the Reflection canvases so that Directie X can extract the correct insights. Multiple generative sessions will be conducted to gain as many experiences as possible.

Generate & go

2 December 2021 – May 2023

A pperiod of 1,5 years of testing and improving is the prospect of Directie X. This time span is chosen based on the researched AI experiments and their lead time. **The toolkit must be continuously updated** based on performed AI experiments through the Reflection canvases. In addition, Directie X should actively search for previously performed AI experiments to extract insights to incorporate in the toolkit.

There are two possible outcomes from this:
1. The current CET toolkit does not appear to meet expectations. As a result, a new toolkit must be created based on the three essential principles when conducting an AI experiment.
2. The current CET toolkit appears to meet expectations. As a result, the chance that AI experiments will go into practice has increased. However, to speed up the process, it is relevant and exciting for Directie X to explore this project's recommendations (8.3 Recommendations).

Test & improve

3 May 2023 – Future

Technology is developing at lightning speed (Ministerie van Justitie en Veiligheid, 2020a), which is why Directie X will not be able to stand still when the toolkit does its job. They will have to continuously develop the resources they provide to initiators of AI experiments. The CET toolkit is the tool that, based on this research, is most relevant for now. However, due to the shift in technology, it is just possible that this will be different in two years.
Directie X should continue analysing AI experiments and fight for innovation.

Develop & adjust
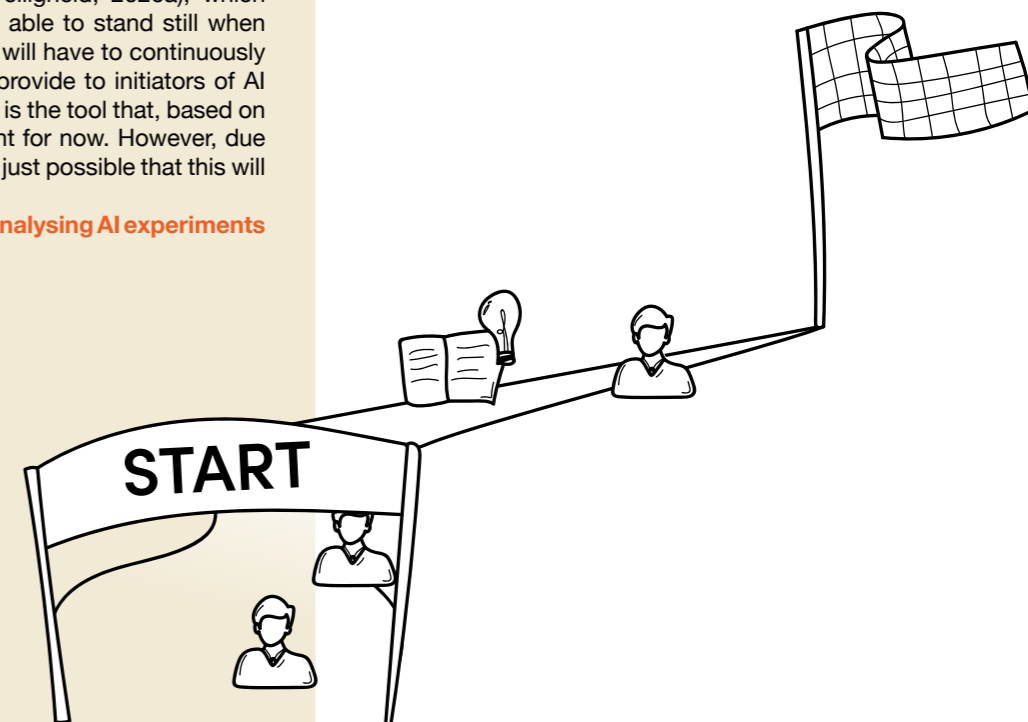
Key takeaways of the Deliver chapter

The Deliver chapter has discussed the validation and its results. It outlines the first steps Directie X should take to ensure that the toolkit is used correctly and relevant.

An evaluation of the concept answers whether the CET toolkit meets the design requirements. The evaluation is done through (1) an online collaborative validation session and (2) an online survey. The validation has resulted in the following key insights:
- The CET toolkit has met almost all design requirements. However, because the toolkit was tested during a session and a survey and not during an actual AI experiment, it cannot be said with complete certainty what the CET toolkit delivered concerning the following requirement: the toolkit makes the user feel ready to start the AI experiment.
- The validation has shown that there is a need for more frequent reflection. Therefore, the CET toolkit will consist of eight Reflection canvases instead of four.
- It has become apparent that there is a need for two-way traffic regarding insights of the wants & needs, and concerns. This wish will partly be met through the interim meetings during the AI experiments with stakeholders from all roles.
- The time employees are willing to share experiences is limited. So sharing experiences is not limited by transparency but by the willingness to spend time on it (priorities).
- The CET toolkit is a validated first step to reduce the initiators' uncertainties by means of clarity, engagement and transparency.

The chapter finishes with three recommended steps that Directie X should take to ensure that the toolkit is used correctly and remains relevant with the ultimate goal that the AI experiments lead to a new way of working:
1. Generate & go: to ensure that the next initiators do not start without the experiences of previous initiators; It is the task of Directie X to provide insides, regarding stakeholders, of a few previous initiators.
1. Test & improve: the toolkit must be continuously updated and improved to remain relevant.
2. Develop & adjust: directie X should continue analysing AI experiments and fight for innovation.

8. CONCLUDE

This chapter outlines the final conclusions. It starts with the conclusion & discussion, thereafter limitations. After that, recommendations for further research are presented. Finally, I share my personal reflection on the graduation project.

CONCLUSION & DISCUSSION

LIMITATIONS
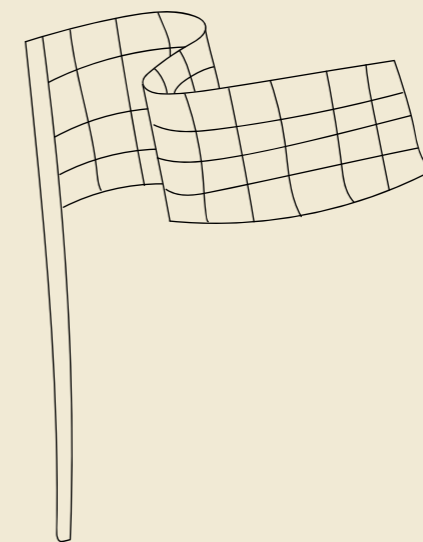
Conclusion

This graduation project started with the following research question (RQ):

"Why do AI experiments at JenV rarely lead to a new way of working?"

The RQ is answered by examining five sub-questions, each focusing on a perspective that includes limiting and supporting factors. The perspectives are strategy, ecosystem, results, P&G and culture.

Answering each of the sub-questions has led to several challenges. Looking beyond just adding up the challenges, and extracting the underlying problems, provided a holistic answer to the RQ:

"Initiators experience uncertainty prior to AI experiments because they have no clarity about the trajectory of the AI experiment and mainly lack clarity about who the stakeholders are and how they should approach them. This uncertainty about the stakeholders, in turn, results in more uncertainty about the AI experiment."

This problem statement required a solution; this has resulted in three principles based on clarity, engagement, and transparency. Directie X, as it were, hands these principles over to the initiators by translating the principles into a tookitl. Therefore, the toolkit only serves to communicate the principles and acts as a hands-on concept by which the initiators can get started.

The three principles:
1. **It's all clear!** (Clarity)
2. **Doing it with!** (Engagement)
3. **It's clear to all!** (Transparency)

As a final result, to comply with the three principles, the CET toolkit has been created, consisting of stories to read and interactive canvases.

The CET toolkit is a validated first step to reduce the initiators' uncertainties by means of clarity, engagement and transparency.

Discussion

This section discusses the outcome of this master thesis. In addition, it addresses its relevance in the context of JenV and the field of strategic design.

RELEVANCE IN THE CONTEXT OF JENV

The project outcomes provide JenV guidelines by means of three principles. These three principles have been translated into a toolkit that JenV can use immediately. As stated in literature, it is not the question when to innovate, but how (Von Hippel, 1986; Vega-Jurado, Gutiérrez-Gracia, Fernández-de-Lucio, & Manjarrés-Henríquez, 2008). 'When and how to innovate?' is chiefly being addressed by JenV itself by conducting AI experiments that aim to create a more efficient and effective working method. However, the results of this rarely lead to innovation. Therefore, the toolkit supported by the principles contributes to the 'how' by providing a helping hand to the initiator of the AI experiments to increase the chance AI experiments go into practice and lead to innovation.

To conclude, innovation is desirable for organisations to remain efficient and effective (Moore, 2005). The CET toolkit supported by the three principles shows its relevance in the context of Jenv by increasing the chance AI experiments go into practice and therefore lead to innovation.

RELEVANCE IN THE FIELD OF STRATEGIC DESIGN

The limiting and supporting factors subdivided into the five perspectives initially provide insights within the scope of AI experiments. However, these factors add value in the field of strategic design in general, as the perspectives are extracted from KPMG's Innovation Maturity Model. This model says something about how mature an organisation is concerning innovation. Based on the factors found in this research, organisations can measure themselves and determine whether they are dealing with such a limiting factor. If so, the organisation can mature in innovation by minimising this limiting factor.

In addition, the three principles can provide guidelines when organisations want to realise innovations by means of experimenting with AI.

In order to deliver a holistic research project, it is essential to address the limitations. This chapter discusses the most important limitations and describes how it is minimised for each of them.

COVID-19

Due to the pandemic, we are currently in, working remotely has become the norm. This research consists of many interviews. Conducting these interviews online sometimes made it difficult to understand what people mean immediately. This limitation is minimised by first conducting an empathising interview with (almost) every interviewee.

Another limitation that Covid-19 has brought is that this virus has caused a shift in priorities of the whole world and JenV, which has put the AI experiments on the back burner. This is a challenge that has not been included in limiting factors of the implementation. This limitation has been minimised by examining AI experiments conducted over a longer time frame than just the past two years. However, it should be mentioned that the AI experiments that started much longer ago have also had to deal with Covid-19 because the moment of implementation is unknown.

WIDTH AND DEPTH

The results of the research are based on seven case studies, additional interviews and supporting literature research. The amount of case studies is a possible limiting factor. When this number is extended, one can say with more certainty that the conclusions drawn are correct.

One or two roles were involved in each of the AI experiments studied. This has resulted in the fact that not all visions of the AI experiment and its course have been mapped out.

The limitation regarding the case studies and the number of views on this has been minimised by substantiating it with literature research. In addition, after conducting the case studies, an additional interview was held with someone in another role that had not previously been involved.

The scope and timeframe of the graduation assignment entailed that 'Cluster 1 (P1 + P5): No aligned prioritisation + Differences in interest + Lack of an innovative mindset' had to be eliminated. Therefore, it is recommended to explore the eliminated cluster and its possible solutions (8.3 Recommendations).

VALIDATION

The online survey was completed by fewer participants than expected, which means that the results are not quantitative.
In addition, the CET toolkit has not been tested during an actual AI experiment because such an experiment has a time frame that is outside the duration of this project. However, by prescribing advice for this in 7.3 Delivery, this limitation is minimised.

BIAS

Conducting research is accompanied by a bias. The interpretation of the results is not entirely objective. This limitation is minimised by highlighting as many sides as possible during the project.

RECOMMENDATIONS

PERSONAL REFLECTION

This chapter introduces several future research directions and recommendations.

Explore more!

EXPLORE THE DESIGN OPPORTUNITIES OF OTHER CHALLENGES

Behind the research question: 'Why do AI experiments rarely lead to a new way of working at JenV?' are many challenges found during this research. As mentioned in the limitations of this research, 'Cluster 1 (P1 + P5): No aligned prioritisation + Differences in interest + Lack of an innovative mindset' had to be eliminated. It is recommended to explore the eliminated cluster and its possible solutions.

EXPLORE THE TWO-WAY TRAFIC

It has become apparent that there is a need for two-way traffic regarding insights of the wants & needs, and concerns. This wish will partly be met through the interim meetings with stakeholders from all roles. However, this does not fulfil the need. Therefore, Directie X will have to look for a way in which this can be done. They must first clearly map out the interaction between the various roles based on the wants & needs and level of engagement.

EXPLORE THE CONTEXT

The research is based on seven case studies, additional interviews and supporting literature research. The problems that JenV now faces regarding the implementation of AI experiments may not be the same as those that will arise in two years. It is, therefore, important that the context is continuously explored. It is recommended to do this through case studies and not through literature research to be close to the source.

EXPLORE THE GENERAL CONTEXT OF INNOVATION

The scope of this project concerns the innovation around the AI experiments that JenV carries out. In addition to these AI experiments, JenV also conducts experiments that are not AI-related but should lead to innovation. Therefore, it is advisable to test the added value of the principles in combination with the CET toolkit on innovation experiments to increase the value of the results of this research.

In addition, as the perspectives that serve as the basis of this research are extracted from KPMG's Innovation Maturity Model, JenV can use the factors found in this research to mature in innovation by minimising the limiting factors.

Design more!

The government writes policy and proceeds based on this. That also applies to JenV. This way of working is not the same as the double diamond method used during this graduation project. If the organisation wants to bring about innovation, it will have to go hand in hand with 'design'. I recommend moving away from their current approach. An innovative approach will lead to a new way of working and, therefore, innovation.

Share more!

The validation has shown that within JenV, employees see their fellow employees as less transparent than they judge themselves. In addition, the survey was completed by fewer participants than expected, which indicates a low level of willingness to share. In order to ensure that JenV becomes more innovative as an organisation, everyone must contribute to this. That is why Directie X will have to encourage everyone within the organisation to share more. Lastly, there is a need for more trust among the employees with the goal that, in the future, employees consider others as transparent as themselves.

The final chapter of this master thesis outlines my personal reflection. This personal reflection is based on the motivations and personal ambitions I set prior to the project in my Design brief (Appendix A).

The competencies I wanted to use

MY INDEPENDENT, PRO-ACTIVE WORK ATTITUDE, STRONG COMMUNICATION AND ENSURING EACH PARTY WILL BE HEARD

These are competencies that I thought I had prior to the graduation project and wanted to use. However, it turned out that I found it very difficult to make each party heard. The different stakeholders had different wishes, and I stood in between as the connector. The differences between the client's wishes of the TU Delft and of myself were not huge. Still, I sometimes found it challenging to be the connector in this. Putting myself away as a strong communicator is therefore not entirely correct. In the future, I need to improve this by focusing on the following: I need to adopt a more flexible attitude, and when my opinion differs from the other parties, I need to substantiate it better with pros and cons. In addition, I have to ensure that the various parties are well aware of each other's wishes.

The competencies I wanted to improve

HANDLING CRITICISM

Handling criticism to me also means not acting stubborn. Sometimes I found it very difficult during the process to put aside findings I had made or to make choices that would take the project to the next stage. During the graduation project, I received useful feedback, which I sometimes left aside for a bit too long and first looked for alternatives myself, while I should have listened directly. This was especially the case when I was told I could not tackle all the challenges but had to converge. On the other hand, I reckon that by exploring it myself, I can better reason my choices afterwards and now fully support them.

Finally, prior to the graduation project, I saw criticism as something negative. However, during the past half-year, I have learned to deal with this better, and instead of something negative, I now see it as feedback to work with.

EXPLANATION SKILLS

I expected that my explanation skills would not be good enough to clarify what I meant from the start. This was indeed sometimes the case during coach meetings. I think that if I had first told myself out loud what I meant, I could sometimes have made better use of the coach meetings. During larger meetings and presentations, I have always prepared the explanation out loud and often recorded it to improve this skill. That's why a tip I want to give to myself is that I should always say what I mean out loud before a meeting.

No matter how big, small, short, long or important the meeting is, I can always provide a clear story.

Complying with my ambitions

LEARNING ABOUT AI

Prior to the graduation project, one of my ambitions was to learn more about AI. While I was orientating myself and doing preliminary research, I read a lot of papers and watched lectures regarding AI. However, when the graduation project really started, the focus was mostly on the process of the AI experiments and the implementation. With so much to discover, the exploration of AI has been put on the back burner. However, I gained a solid basic knowledge. The complexity of the technique continues to interest me immensely, and I hope to learn a lot more about it after the project is finished.

SHOW THE IMPORTANCE OF DESIGN WITHIN THE GOVERNMENT

By participating in the team of Directie X and presenting interim results, I was able to show how important design is. If I look at JenV in general, Directie X is already a department where the importance of design is most recognised. Nevertheless, I believe this recognition has been increased through this project. In addition, I hope that the importance of design will spread like a chain reaction through JenV and other governments. The first step must be taken somewhere, and for me, this was within Directie X.

DESIGN FOR SOCIAL IMPORTANCE

During the last years of my studies, I noticed more and more how valuable I think it is to design for social importance instead of for a profit-oriented company. By carrying out my assignment for the government, it feels to me as if I have been able to contribute to society. Because when the government works more efficiently and effectively, the citizen will also be helped more quickly.

To finish...

I would like to finish with the journey I have made from the beginning of this graduation assignment to the end. I went to great lengths from the start to get the most out of it. I cannot say that I underestimated the graduation assignment, but I did run into myself every now and then. I have had some setbacks; sometimes, it was a shame that due to Covid-19, it was not possible to spend the amount of time on location as I would have liked. This concerns both working at the TU Delft and at the ministry. I am sorry that most of the contact has been online, and I have not been able to meet everyone on the client's team in person. Fortunately, there have been many enthusiastic stakeholders who made me feel at home within Directie X.

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FIGURES
All figures are made by the author

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