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Bachelor's Thesis

THE REALITY OF DUTCH AI IMPLEMENTATION

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Abstract

This thesis uses a content analysis of first-party government data to analyse the envisioned implementation of the Dutch AI strategy as communicated through the Strategical Action Plan on Artificial Intelligence in 2019. 24 documents were coded and analysed in Atlas.ti, and the findings were ordered based on three sub-questions dealing with the planning, implementation, and role of values in policy that resulted from the AI strategy. It exposes an underlying narrative throughout Dutch policy documents, which contrasts the initially communicated ideal of what the Dutch version of AI was meant to be. Dutch AI policy is a policy field like all others in the Netherlands, following the same rules and structures. Existing projects are bundled, and constraints are created based on several focal points in Dutch policy like the largest benefits scandal of the last decade, or the covid-19 pandemic. Policy is created at the top and then passed down a long chain of formal and semi-formal government institutions before landing at the agency that is supposed to be implementing it. It exists in a policy environment dominated by materialist values like economic growth, enforcing the rule of law and political stability. This contrasts the envisioned Dutch AI with reality.

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Chapter 1: Introduction

1.1 Background

On the 10th of April 2018, the European Commission published the European Union Declaration on Cooperation on Artificial Intelligence. This declaration signed by all member states is a cooperation agreement on progress towards the creation of a single digital market in the European Union. It calls upon the member states to increase the AI capacity of Europe for economic growth, addressing socio-economic challenges within the legal and ethical framework built in the EU. This document contained the Europe-wide plans for the future of AI and calls upon the member states to create their own national AI strategy to translate European plans into national implementation. The Dutch government published their AI strategy, named the Strategical Action Plan Artificial Intelligence (SAPAI) on the 8th of October 2019. This strategy document outlines the opportunities of AI in the Netherlands, as well as possible risks that need to be considered with designing and implementing the Dutch version of AI. This 'Dutch AI' claims to have fundamental rights like privacy, freedom of discrimination and autonomy as central values for Dutch AI projects, in line with the European declaration.

The SAPAI is a document filled with grand plans and opportunities of what Dutch AI could become. However, it does not clearly detail the way in which the Dutch government sees itself implementing these AI plans. The Dutch government is not unique in this, as Heumann and Zahn (2018) identified methodological weaknesses in numerous AI strategies and argued for clearer input and output variables to measure the results of AI strategy implementation in Germany with the purpose of creating a benchmark of AI strategy implementation. They concluded that despite severe methodological weaknesses in these strategies, the reports have not been met with significant public criticism. Surya (2019) analysed and compiled literature reviews to produce an overview of current AI implementation in the United States' public sector, future aspirations and challenges associated with public sector use of AI. They concluded that whilst AI has been continuously researched and implemented for over a decade, AI is still often seen as something from the near future, and it is unknown when the costs of AI like job displacement might catch up with its perceived benefits. The state of the art of AI strategy research provides a strong basis for examining and comparing strategy documents. Fatima, Desouza and Dawson (2020) examined 34 AI strategies in their study to perform a content analysis on to identify where governments saw opportunities, what the role of the public sector is in carrying out the strategy, and where investments are supposed to be directed to. More practical AI implementation research is often focused on private sector implementation or on the complexity of larger AI projects but is still relevant as it identifies challenges in organizational routines and opportunities for beneficial practices like data-sharing and increased connection between different organizations which can also apply to the public sector (Campion, Gasco-Hernandez, & Mikhaylov, 2020). The knowledge gap in this subject that this thesis deals with is in the envisioned implementation of AI outlined in the strategy documents. This thesis aims to shift the focus from possibilities and opportunities that often dominates public sector AI documents to a practical assessment of implementation stage of artificial intelligence in the Netherlands, and the role core values and fundamental rights play in it.

1.2 Research Question

To attain this shift in focus, the vision of the Dutch government on its AI strategy will be analysed and tested to answer the following main research question:

How does the Dutch government envision the implementation of the Dutch AI strategy?

For the Dutch AI strategy to be effectively implemented, a clear picture of what needs to happen is necessary. As is the case with many emerging technologies, imagination of the endless possibilities a technology might have can run wild in the first stages of public discourse. Then, a more realistic image of what opportunities AI might have to offer to the Netherlands is made by public officials, which culminates in the AI strategy. But for these opportunities to become reality, it needs to be clear which actions are to be taken and how the government imagines this process. That is what this thesis aims to show by assessing the envisioned planning and organisation of this AI strategy, in accordance with the core values established in the document to protect society from possible pitfalls that come with

emerging technologies. This implementation question can be divided into three parts, namely planning, organisation and values. This leads to the following three descriptive sub questions:

1) *How does the Dutch government plan to implement the Dutch AI strategy?*

This sub-question deals with the overall planning of the Dutch AI strategy. Public and private AI projects already exist in the Netherlands but need to be organized and united into this new vision of 'Dutch AI'. This requires policy to be made across the government that follows this strategy for all current and future implementations of AI.

2) *How is the structural organization of the implementation of the Dutch AI strategy envisioned by the Dutch government?*

The next step after creating the foundation for Dutch AI is organizing the implementation of the strategy. This is concretised in the Netherlands through documents like ministerial plans that are created by the cabinet. These documents contain the structure of the plan, who is responsible, in what timeframe the plan is to be carried out and sometimes even what the costs are expected to be.

3) *In what ways does the envisioned implementation of the Dutch AI strategy sustain core values?*

This third sub-question deals with a more evaluative phase of AI implementation, namely the role of values in the implementation process. Here it is crucial that the ambitions to create a value-centric version of AI that fits within the Dutch and European image is properly translated into reality through policy. If this is not thoroughly considered throughout the planning and implementation stages of AI, Dutch AI will likely not be different from any other type of AI as it will be based on market forces instead of the values that were considered to be at the centre of Dutch AI.

1.3 Societal Relevance

This thesis is based on an analysis of real Dutch public policy documents concerning AI. It aims to discover and show what the future of Dutch AI will look like, not by means of overarching statements and ideals but by a real interpretation of existing plans and projects. This bears great societal relevance as these policies effect most if not all Dutch citizens regularly. An analysis of the role values play in Dutch AI is very current following the ongoing developments of the Dutch algorithm scandal, the 'Toeslagenaffaire'. This was a manifestation of algorithmic policy that was not designed with the right values in mind, which led to devastating consequences for some of the most vulnerable ones in Dutch society. If the same mistake is made in AI implementation policy, something similar could easily happen again. This thesis can also be used as a partial basis on a study on how feasible certain Dutch AI projects might end up being.

1.4 Research Approach

This thesis is an interpretive analysis of Dutch government documents to create a clear description of how the Dutch government envisions the implementation of its AI strategy. A content analysis is the best way to answer the research question as it deals with a narrative that is created by the Dutch government on how it sees itself implementing the AI strategy. These documents all exist within the same context and are written in a certain way because they are all Dutch policy documents of which it is known in advance that they will be made public. A content analysis consists of an interpretation of a qualitative dataset to discover patterns of rhetoric that span across the dataset by coding the documents. A content analysis offers the opportunity to highlight both explicit and implicit patterns across the dataset. It is a singular method in which all documents are analysed, which allows for cross document comparison more easily than a different analysis type like standard textual analysis. As findings are discovered, the content analysis iterates upon itself to become stronger as the more obvious patterns might be found first, but the hidden patterns will show as more documents are analysed. The meaning of a code or theme is at first somewhat disconnected from the subject matter as in this thesis they were deduced from theory, but as they are applied to the dataset they develop into deeper interpretations of the findings. In order to carry out the content analysis, the Atlas.ti software was chosen.

Chapter 2: Theory

2.1 Introduction

Policy studies as a field can be divided into two main parts, namely policymaking and policy analysis. The first concerns itself with how a policy is made, how it is worded and how it can evolve over time and is more about policymaking in general. The second concerns itself with the effects a policy can have or has had in the past. They cannot exist without each other, as one always influences and informs the process of the other (Nagel, 1981). This thesis is a manifestation of the policy analysis, as it does not focus on how the Dutch AI strategy came to be, but on what its effects will be and how the government sees itself achieving its aims. To do this, parts of three mainstream public administration theories are applied to the Dutch AI strategy. The first, concerned with path dependencies and isomorphism, is a part of the neo-institutionalist stream of public administration. The second is one of six parts of the cleavage approach to policy analysis. The third contains two models that belong in policy implementation theory.

2.2 Neo-institutionalism

In the first decades of the 20th century, numerous case studies of organizations were published with an institutionalist approach (Steunenberg, Vries, & Soeters, 1996). They analysed the outcomes of formal and structured institutions through an assessment of how the institution constrained individuals within their organisational strategy. The purpose of an institution as an entity was to further its own interests. The institutionalist approach did not factor in independent human behaviour as something that influenced the outcome of an institution, but the institution shaped the outcome of human behaviour within itself instead. This was met with criticism by many scholars, leading to the behaviouralist approach that became the dominant approach especially during the sixties and seventies of the 20th century. The behaviouralist approach focuses on this human behaviour aspect to explain the outcomes of institutions and put individual human acts at the centre. This individualist approach sees a policy decision as the net sum of individual preferences within an institution. Context was placed aside, and unbound human behaviour was used as explanation. This in turn was also met with criticism, through publications of Meyer, Rowan, Miskel and DiMaggio in which they formulated the neo-institutionalist approach. This approach refocuses on institutions, not as actors but as environments. Human behaviour is directly embedded into the institution they act in. The institutions are made an independent variable that influences the outcome of human behaviour to explain decisions (Steunenberg, Vries, & Soeters, 1996).

2.3 Path Dependencies and Isomorphism

In a neo-institutionalist approach to organisation studies, AI policy planning in institutions can be categorized into two distinct directions: differentiation and homogenization. According to DiMaggio and Powell (1983) organizational fields are in their early stages considerably different in their approach and form. Once it becomes more established however, a push for homogenization of the field happens. This phenomenon can also be observed in the AI policy field. At first, national and international government institutions took individual actions based on emerging situations. Then, both in an independent effort and in an effort for collective action, nations started to push for homogenized action through the publication of strategy documents. This is a clear example of the (sociological) phenomenon of isomorphism (Meyer & Rowan, 1977). A nation's push to have a unique approach to AI by emphasising different aspects in a strategy document inadvertently makes its policy outcomes more homogenized with other nations who also made strategy documents, because of the earlier homogenization of strategy policy studies in general. The formulation and subsequent publishing of an AI strategy can be seen as a focal point that starts the path dependency towards homogenization of any institution trying to plan an implementation of AI policy (Sydow & Schreyögg, 2009). Following this theory, a testable hypothesis to answer the first sub-question is:

H1: *Focal points have forced the Dutch government to push AI policy homogenization.*

2.4 Top-down and Bottom-up Implementation Theory

To go from strategy to results, the Dutch government will have to organize the implementation of its AI policy. According to Knill & Tosun (2012) there are two dimensions to the results of policy implementation. On one hand there is policy outcome, that which is a direct consequence of the implemented policy. On the other there is policy impact, the totality of changes that an issue goes through after a policy is implemented, which is susceptible to outside factors. The desired policy impact might not be met if the policy outcome is not sufficient, or if outside factors render the policy ineffective. To assess the process that leads to policy outcomes, there is policy implementation theory. Policy implementation theory provides a framework for empirical analysis of the implementation process. Pressman and Wildavsky (1984) present a top-down approach to policy implementation research. Here they pose their findings that the length of policy chains, consisting of actors in a vertical hierarchy, greatly influences the deviation in envisioned policy outcome, or policy goals. They argue that since the implementation process depends on actors that are required to cooperate, even if they have opposing views, there is a chance for a mismatch between intended and actual policy results. A longer policy chain leads to more opportunities for conflict, delays, and deviations within the implementation process (Pressman & Wildavsky, 1984). Conversely, bottom-up approaches to policy implementation define successful policy outcome differently (Knill & Tosun, 2012). Bottom-up approaches generally value flexibility in policies to adapt to changing environments and promote the outcome to be that which is most preferred by involved actors on the microlevel instead of something devised by central actors at the macro level. Here policy deviation also happens because of a mismatch of what is valued most between the two levels, and microlevel actors implement the same policy different on a local scale (Matland, 1995). Therefore, in both approaches a difference in preference of outcomes is what determines the deviation between policy goal and policy outcome. In the Dutch AI strategy, central norms and values are established at the macro level or the top. This "value-based design" (Rijksoverheid, 2019) presents several values like equal treatment, privacy, human dignity, autonomy, and security that are to become essential to Dutch AI projects. According to the top-down model, if the implementation of the Dutch AI strategy were to happen across a long policy chain, the relative importance of these values might shift, or some might even phase out after being assigned less importance by an actor. In the bottom-up model, each individual implementation project might emphasise a selection of these values based on the preference of the relevant actors, and possibly even leave some out altogether. From the hierarchy of policy documents that exists, starting at the European level and working its way down the chain to a specific project within a ministry, it is likely that the Dutch AI implementation is planned from the top down. This leads to the second hypothesis:

H2: *Dutch AI policy is planned from the top down with a long policy chain*

2.5 Materialist – Post-materialist Cleavage

The cleavage approach can be used to explain an issue from two different sides. Cleavages are always based on two opposing aspects of an issue. Common examples used throughout history are cleavages like church versus state, or owner versus worker. The materialist – post-materialist cleavage approach can be used to investigate what the focus of a policy document is when it comes to dominating values. It is the part most relevant to AI strategy policy as it opposes values like privacy to economic growth (Knill & Tosun, 2012). Materialist values prioritize political stability and economic strength. Post-materialist values prioritize other issues like environmental protection, inclusion, and equality. The division between these two is created by what is deemed more important more by those involved, and their past experiences concerning political and economic stability. Those with a lack of stability in their past are more likely to prioritize it for the future, and those operating from a very stable base are less likely to do so. AI policy documents can focus either on economic opportunities and social stability, which would classify them as materialist, or on values like privacy and discrimination which would classify them as post-materialist. By observing typical values associated with each perspective, documents and consequently institutions can be categorized as one of the two. The document that acts as the background for this thesis, the SAPAI, often uses terms like value-based design and human-centric design. The Netherlands can also be seen as a relatively stable state over the past two centuries, even preserving its state integrity to some extent during the second world war. This suggests a preference for post-materialist values, which leads to the third hypothesis:

H3: *Dutch AI policy prioritizes post-materialist values of materialist values*

2.6 Conclusion

In conclusion, the three established hypotheses can guide this thesis to answer the research question with a theoretical basis. The neo-institutionalist approach to path dependencies can explain the organization of the implementation of the Dutch AI strategy. The neo-institutionalist perspective suggests a focal point leading into homogenization of AI policy planning throughout different branched of the Dutch government. The concept of policy implementation can be assessed from the top-down and bottom-up approaches. The top-down approach provides the chain-length model to predict the possibility of deviation from the intended policy outcome. The bottom-up approach values flexibility in policy plans so a changing environment can be properly dealt with to best achieve the preferred policy outcome. To assess the concepts of values materialist – post-materialist cleavage frameworks can be applied to policy documents. The materialist – post-materialist cleavage framework deals with what is valued by the policy makers, and the context from which this preference emerges. These three models provide the theoretical basis for this study.

Chapter 3: Methods

3.1 Introduction

This thesis aims to assess the way the Dutch government envisions the practical implementation of their AI strategy. This is divided into three different aspects to investigate, namely planning, organization and the role of values, which are central to the three sub questions. To do this, several qualitative public documents will be assessed in accordance with the theories presented in the theory section. The database to be analysed consists of for example strategy documents, letters to parliament, policy documents and information strategies. This data is collected directly from the Dutch government, and publicly available. Because this research aims to deal with abstract concepts like vision, planning and core values, these documents will be key to gathering and understanding information on this topic of envisioned AI strategy implementation.

3.2 Case Description

The publishing of the European declaration on cooperation and the Dutch action plan for AI created a largely abstract collection of ideas and visions of what the European version of AI is, what the Dutch version is and how the latter fits within the former. These documents spurred the ministries on to create their respective ideas of what these versions of AI mean to them in both their future visions and their day-to-day actions. This creates a large paper trail consisting of policy documents, current action summaries, future action plan, information strategies and more. These need to then be used to inform parliament of their progress, and questions regarding this progress need to be answered regularly. The multi-layered facet of this progress and the relative independence of the Dutch ministries when it comes to deciding their course after the cabinet formation agreement can possibly create a disconnect with the envisioned Dutch AI on the different levels at which it is supposed to be implemented. If every ministry interprets the same plan a different way, then what is Dutch AI really? That disconnect is the case this thesis aims to analyse, by establishing what the practical reality of Dutch AI is within the Dutch government through the sea of documents produced after the initial release of the SAPAI. This period ranges from the middle of 2019 to early 2022. If there is no real disconnect, then the SAPAI can be seen as a successful effort by the government to unite AI under one Dutch umbrella. If the reality of Dutch AI differs largely to the governments envisioned future, this could lead to a scattered policy field with complication and little use for shared expertise throughout the government with as consequences inefficiency on the mild side, but scandals on the more severe side. A corrective course instead of a visionary course for AI implementation could be required if this is the case.

3.3 Methods of Data Collection

Data for this thesis was collected through the government search engine called Rijksoverheid Documenten. This database consists of almost sixty thousand documents that were published by the government or sent to either of the two chambers by the government. The types of documents it holds are policy plans, answers to parliamentary questions, ministerial reports and documents commissioned to inform parliament or the public. The most common authors of these documents are the ministries in the name of the minister themselves. There are 27 different types of documents in this database on which can be filtered optionally. It also includes files like media briefs, videos and sound fragments, but these will not be used in this thesis as there were none relevant to the topic of AI.

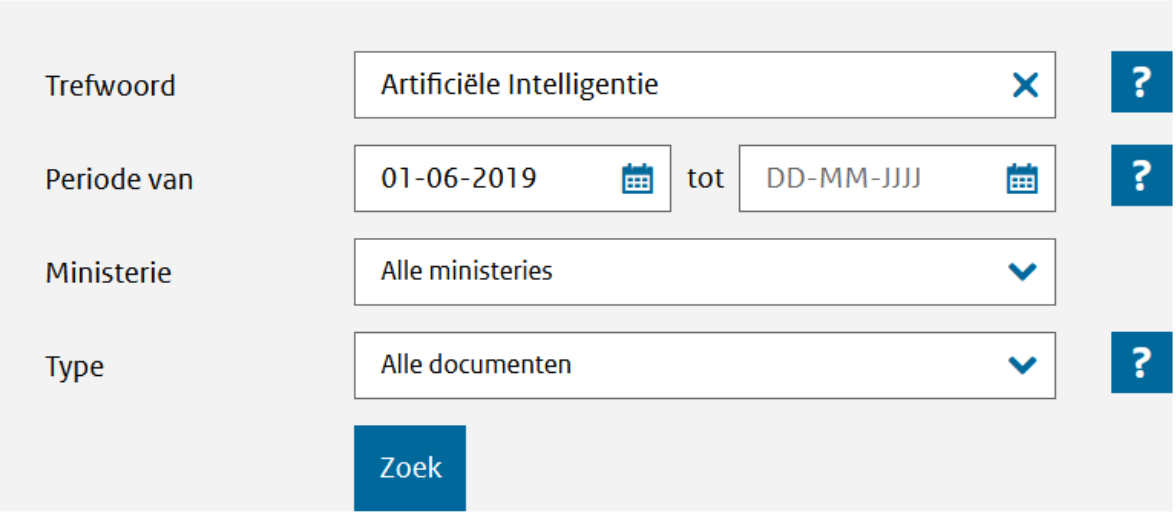

Figure 1: The Rijksoverheid Document Search Engine at rijksoverheid.nl/documenten

To gather data for this thesis the search terms "artificiële intelligentie", "strategie", "AI" and "AI strategie" were used in the Rijksoverheid government document database. Using the period from middle 2019 to as recent as possible, produces 62 documents at the time of writing. A large number of these documents mention AI but are in no way deemed to be relevant to this thesis. An example of this is the advice of the national health council on when screening for skin cancer would be recommended. All of the documents that did have something to do with AI or the AI strategy were downloaded and placed into a folder. They were then numbered to make referencing them easier. The data collected for the thesis can be seen in Appendix 1.

The resulting 24 documents consist of 9 letters to parliament, 3 answers to parliamentary inquiry, 5 reports, 5 information plans and 2 policy notes (beslisnota). This collection of different types of documents strengthens the thesis as they are written for different audiences and by different people within the government, giving a more complete insight into how it envisions the implementation of the AI strategy. The letters of parliament cover different topics, like economic growth and healthcare. The answers to parliamentary inquiry consider the strategy in general, the European AI act, and AI at the policy and are directed at both the first and second chambers of parliament. The 5 reports have a similar range of topics to the letters to parliament. One information plan is made to be government wide, and the others are made and updated by the ministry of justice and security. They are the only ministry that produces a comprehensive and complete information plan every year. The policy notes are documents that are meant to inform parliament on decisions that are to be made. They explain the context of the decision that is to be made, stress key points and come with a recommendation. These documents are a good indication of what the government envisions the implementation of AI to be like on specific topics.

3.4 Method of Data Analysis

The collected data forms a database of qualitative content. To uncover and unmask patterns within the database, a content analysis can be performed on it. A content analysis operates based on the principle that all texts are open to multiple subjective interpretations and can reflect a plurality of meaning based on the context in which it is read (Given, 2008). Content analyses are not limited to exclusively text-based documents but can also be used to analyse images. A content marks the content of a database by means of themes and codes. The themes in this thesis are derived from the theory that fits best with a sub-question, and the codes are the manifestations of the theory in practice. The coding scheme used in this thesis can be seen in table 1. Using a content analysis has its benefits over a standard textual analysis. For one, it can be used to highlight both explicit and implicit patterns throughout a database systematically. In a textual analysis, methods can differ for different types of documents. A content analysis is also self-improving, as throughout the analysis the hidden patterns within the database are highlighted through the coding, which can in turn lead to more insight on where to look. Simply reading

and interpreting the documents used violates the principles of transparency, methodology and reproducibility.

The validity and reliability of a content analysis are central to the method. Because this thesis was made by a single person, no inter-coder reliability measures exist. Acknowledging that texts are subjective, and its interpretation is biased through the reader is the basis of a content analysis. This method of using theoretical codes to mark everything within the database that corresponds to these codes ensures a systematic interpretation of the database, and only relates the data to each other. It is important to realize that this does not eliminate personal biases completely, however.

The content analysis in this thesis was performed through a software called Atlas.ti. The documents gathered from the Rijksoverheid database were all imported into the software, and the codes were created in line with the theoretical basis of the thesis. The documents were then coded one by one in a random order. Once all documents were coded, some recurring words and phrases were searched for again through Atlas.ti's search and code feature. This allows for quick improvement of the coding based on early discoveries when it comes to language used throughout the database and fill in any gaps that might have been missed whilst coding the first time. Then, the findings were process code by code to answer the sub-questions. Due to the nature of the theory, the codes already existed in a sort of hierarchical order, which dictated the order in which the findings of the respective codes should be analysed.

Table 1: Coding Scheme used for the Content Analysis

Theme	Theory	Codes
SQ1: Planning	Isomorphism and Path dependency	Sporadic action, focal point, homogenization, differentiation
SQ2: Organization	Top-down and bottom-up policy implementation	Central projects, decentralized projects, policy chain, subsidies, policy flexibility
SQ3: Core Values	Materialist – post-materialist cleavage	Economic opportunities, market solutions, political stability, value-based design, citizen participation, citizen rights

3.5 Conclusion

The method used to find the way the Dutch government envisions Dutch AI is a content analysis. The data was gathered through a publicly accessible government database and loaded into a software called Atlas.ti to be coded. The codes were extracted from the theory of this thesis, and through the content analysis they were made a bridge between theory and reality. Then, after successfully coding the database, the findings per code were processed and can be found in the next chapter. In the 24 documents, 241 quotations were marked using 15 codes. The iterative search and code function was mainly used on the focal point code, as once it became clear what the focal points were it became easier to search through previously coded documents for the specific terms that were found to be a pattern.

Chapter 4: Analysis

4.1 Introduction

In this chapter, each sub question will be answered separately through the analysis and interpretation of the findings per code. The codes exist in a certain order that originates from the theory, which allows for a clear build-up towards the answer to every sub-question. The hypotheses established in Chapter 2 will be tested on the findings. The individual answers to the sub-questions combined then answer the overarching research question in 4.5 conclusion.

4.2 Analysis Sub-question 1

The first sub-question focuses on the organisation of the implementation of the Dutch AI strategy. This organisation was somewhat explained within the SAPAI but has continued to evolve past this original document. This has happened through several focal points in Dutch AI policy, which united sporadic action into one version of Dutch AI through homogenizing AI policy.

Sporadic Action

Many projects within the Dutch government institutions using AI can still be categorized as sporadic action. Completely disconnected systems, with relatively little data to work with and small budgets to perform one or a few actions slightly more efficiently than before. Like the minister of Justice and Safety stresses in source 10, AI in justice settings is not meant to make tasks be performed quicker, but more efficiently so more tasks can be done at once with the same resources. The possibilities of AI are not completely known throughout the government, and many projects find one thing to optimize using machine intelligence, and either develop their own solution or purchase it from a commercial party. The projects are scattered across subsections of the ministries and identified in different ways. Some projects are called initiatives, which suggests a very early stage of implementation, whilst others are referred to as programmes, which suggests a certain degree of formalization within the project (18, p11). The highest concentration of sporadic AI projects exists under the ministry of healthcare. It refers to AI projects very randomly and does not seem to have any overarching structure in place that unifies them (21, p2). There are projects that deal with personalization of healthcare, projects focussed on air quality, analysis of radiological results and many more. These projects are always listed separately from the policy in the policy documents, through footnotes or full-page example cases. This makes sense considering the nature of the Dutch healthcare system, which can be seen as privatized with high government intervention. These AI projects are also technically private but funded by the government and are to be used in general Dutch hospitals, not exclusive to expensive private clinics (21, p4).

Focal Points in Policy

The toeslagenaffaire is a Dutch scandal that was brought to light around 2017 and has been actively influencing government policy over the past five years. Since around the year 2004, the Dutch tax office had been actively discriminating citizens that were eligible to receive benefits from the state based on nationality, surname and other perceived "risk indicators". These indicators were programmed into an algorithm that flagged individuals and put them on a blacklist. Source 14 explicitly names this process as one of the risks increased AI implementation brings to the Dutch state and its citizens. In 2020, multiple motions were passed in parliament to create stricter rules for algorithmic and artificial intelligent use of sensitive data of Dutch citizens. This suggests that the toeslagenaffaire was a focal point in Dutch AI policy making, possibly even more so than the creation of a national strategy as it was much more widely publicized and discussed in parliamentary debates. This scandal changed the language used throughout policy documents from ambitious to cautious. No ministry wants to be the next villain in the algorithmic government scandal. The ministry of internal affairs explicitly lists preventing people from ending up in debt by giving them access to benefits as one of the goals it has in further digitalizing its service platforms (3, p20). Especially the quote "*we assume trust instead of distrust and recognize our responsibility to provide analog alternatives to our digital services*" (3, p20) is typical for post-scandal government rhetoric. Similarly, in response to parliamentary inquiries on algorithmic government the cabinet states "*to prevent problems with algorithms a proactive stance is essential*" (14, p3).

Another focal point in Dutch AI implementation, this time originating more from the demand side of AI projects, is the covid-19 pandemic and the subsequent increase in demand for efficient healthcare implementations of AI, as well as private demand for AI implementations for consequences like remote access for those working from home. The government recognizes that the pandemic has led to a large amount of uncertainty and calls for an increase of flexibility within the healthcare structure (18, p12). The pandemic led to an increase in funding for remote e-health solutions directly (13, p5). The ministry of health also published a document specifically detailing how AI could help in the battle against the virus (13, p5). This document contains plans on sharing data and supporting healthcare providers digitally. Covid was a central topic to the 2020 version of the actualization of the digitalisation strategy and continued to play an important role in the 2021 version as well.

The European Commission could already be seen as the driving force behind the original publishing of the AI strategy in 2019, but once again acted as a focal actor in forming Dutch AI policy through the "AI Act" which was published early 2021 (21, p4). This AI act serves to regulate all AI implementations that are brought to market under existing legislation EU wide. This regulation is hoped to bring more stability and security to the AI internal market, which could make it a more attractive market to investors. It once again stresses the importance of the European values listed in the original AI cooperation declaration and expands its coverage on healthcare implementations of AI following the pandemic. It hopes to create a European version of AI that is "*safe, transparent, ethical, without bias and under human control*" (21, p4). This is a focal point because it largely took the power and responsibility of regulating AI away from member states and placed it at EU level. The Dutch government actively involved itself with this act and aims for a government wide effort within the European negotiations concerning AI, in which they want to represent their Dutch version of AI and to ensure that the AI act is compatible with two existing European regulatory healthcare documents, the Medical Device Regulation (MDR) and the In-Vitro Diagnostica Regulation (IVDR), representing the interests of the Dutch healthcare sector and its AI innovations explicitly.

Push for Homogenization of Policy

To ensure the toeslagenaffaire does not happen again, the design process of AI was homogenized through policy, so all institutions create AI in a similar way in the future (14, p1). Interinstitutional guidelines were drafted on how to handle data, and what kinds of projects would be considered acceptable and unacceptable within the Dutch government. Source 14 is one of the documents that indicates a clear push for homogenization of Dutch public AI implementation. Sources after this joint letter by ministers now talk about "showing deviations to general AI policy" (12, p4) and "collective AI action to further the individual" (18, p7). The police's implementation of AI is one of the best examples of AI policy homogenization. They bundled their existing programmes into one, and joined multiple AI coalitions (10, p7). The first is the ECP, which is also known as the platform for information society. They also joined a Dutch AI coalition and participate in ethics pilots by expert groups from the European Commission. They also participate in a transparency test by the ministry of internal affairs. The police fall under the ministry of safety and justice and participating in cross-government information sharing programmes was less common before (21, p 3-4), so it is likely at least one of the focal points increased its occurrence.

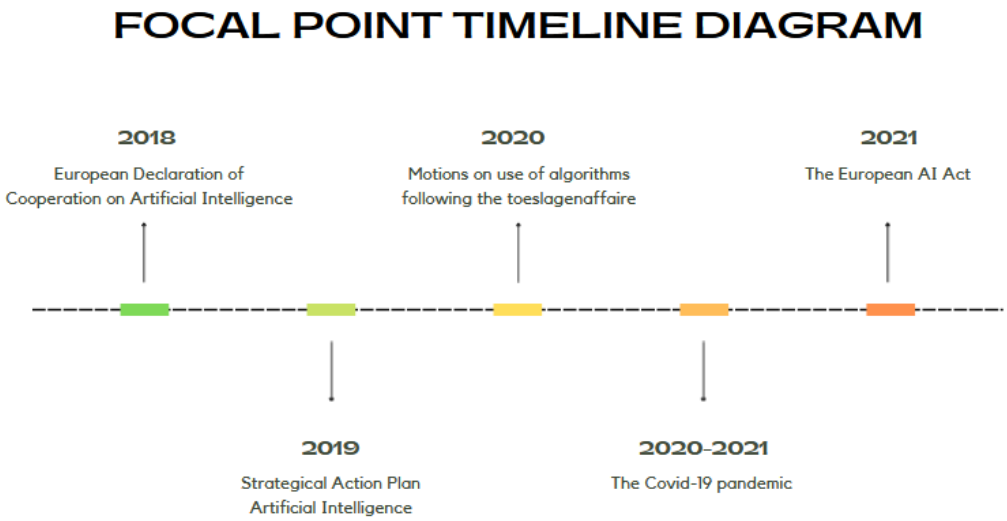

Figure 2: A timeline of focal points in Dutch AI policy

The three focal points established can be connected in a chronological order, as seen in figure 1. First, the European Declaration required the Dutch government to start thinking about what AI means to the Netherlands in order to create a strategy. This effectively graduated AI from sub-section of information policy to fully fledged policy field. Then the SAPAI was published, which established the concept of Dutch AI and combined all existing public AI implementations in the Netherlands under one umbrella. Then, the meaning of Dutch AI and the risks it could bring were forced to be reconsidered following the algorithm scandal of the toeslagenaffaire, and a larger focus was placed on the ethical side of AI. Shortly after, the covid-19 pandemic rapidly increased the demand for AI implementations, especially in healthcare but also in other solutions like working from home. This increased the importance of rapid AI development, and AI once again attracted more attention from policy makers. Then, most recently, the European AI act expanded the policy field from nation-based to EU wide and made it the responsibility of the European Commission and formalized the legal framework in which AI exists. This reduced the idea of Dutch AI to the Dutch interpretation of European AI. Each focal point, each step brought with it an increasing amount of homogenization of the policy field of AI, proving **H1** to be correct. The answer to sub-question 1 is that through a number of focal points that influenced the field of AI, the organization of the implementation of the Dutch AI strategy was formalized into increasingly greater scale documents, thus homogenizing the policy field to exist within the bounds of strategies and acts. These documents act to organize the implementation directly and explicitly and are openly accessible to all.

4.3 Analysis Sub-question 2

Sub question 2 focusses on the day-to-day organization of the implementation of the AI strategy by the Dutch government. To answer this question, first an assessment of the centralized, overarching projects and the decentralized, local projects is made. Then the subsidy structure of these projects is analysed. These three combined lead to a partial image of what the policy chain is like, and how flexible these policies might be. This shows how the government envisions the structural implementation of the AI strategy, which answers the second sub-question.

Organization of AI Projects

In the SAPAI, the government establishes a wish to become a breeding ground for AI talent within Europe. Current policy initiatives to achieve this are lacking. The NWO, the Dutch governmental organisation for science financing, invests in programmes that span multiple disciplines at universities with the hopes of attracting outside talent to Dutch universities. These investment programmes are then translated into percentage scores of foreign scientists at a faculty by universities to measure its success. The ministry of education acknowledges this practice is too general and not enough to become the AI talent hub the Netherlands wishes to be (12, p4). After acknowledging this problem, they go on to propose programmes that once again have nothing to do with AI specifically, like increasing the probability foreign scientists stay in the Netherlands by offering their partners a job. The ministry of economy does a similar thing. They also recognize the current AI talent strategy is lacking, but then propose a marketing solution called the "Netherlands Branding" and "Talent Coalition" to solve the problem (12, p5). The only practical, AI specific solution is proposed by the AI Coalition, which is funding AI hotspots in tech-heavy areas like Eindhoven through their AI Lab investment programme.

According to the SAPAI, ethics are central to the Dutch version of AI. In source 14 (p4-5), fifteen United Nations, European Union, Council of Europe and national ethics charters and guidelines are assessed specifically in the context of AI. Some examples are the Ethics Guidelines by the European Commission, the national Data Protection act and the Dutch Code for Digital Governing. The minister of legal protections, a minister specialized in legal protections but separate from the minister of justice, concludes that none of these fifteen documents are legally binding when it comes to the ethical side of Dutch AI implementations, except when they deal with high-level personal data. This means that there is no formal legal oversight on the ethics of these projects, and there is no legal definition of which projects are ethical. The documents merely contain guidelines, reference tables and recommendations when it comes to the ethics of AI. The minister argues for an addition to the European AI Act concerning specifically the ethics of human-oriented AI implementations. The cabinet supports this effort, but also recognizes that this could take too long, and legislation will have to be created nationally in the meantime. They do this by prioritizing the elimination of bottlenecks in the current legislation and charters like the processing of personal data to prevent discrimination in algorithms (14, p6). These must be legally binding, or no progress will be made.

Decentralized AI implementation projects funded by the Dutch government fall under the Small Business Innovation Research (SBIR) programme of the ministry of internal affairs. In the period of 2020-2021 this programme helped set up around 40 small commercial projects that develop AI specifically for public sector usage throughout the country (14, p2). They form innovation partnerships and guarantee aid whilst they grow from start-up to business. 21 projects were successfully developed in 2020 using the SBIR (13, p32). Developing these public sector AI innovations with the help of the ministry can help to ensure a better synergy between public values and private innovations from the start. It can however also enforce biases in these projects, as they are all developed under the same programme. According to the 2021 information plan, the main challenge for the government will be ensuring the projects stay focused on what the original intent of the project was, and to ensure public values play a centre role (18, p14).

Subsidy policy

To better understand the structure of day-to-day implementation of the AI strategy, analysing the subsidy structure and policy could create a larger understanding. In the database for this thesis, 22 projects are explicitly named together with their respective allocated subsidy amount. These projects can be found in Appendix 2. Together, the allocated subsidies amount over 1.1 billion euro, but no

inference can be made from their respective budgets as they differ in timeframe, origination, allocation and many more aspects which would be too far removed from the aims of this thesis. What can be seen quite easily however, is that 16 out of 22 subsidy structures were created by the national ministries. There are two projects mentioned in the documents that originated from the European Union, and three that were made on a provincial level.

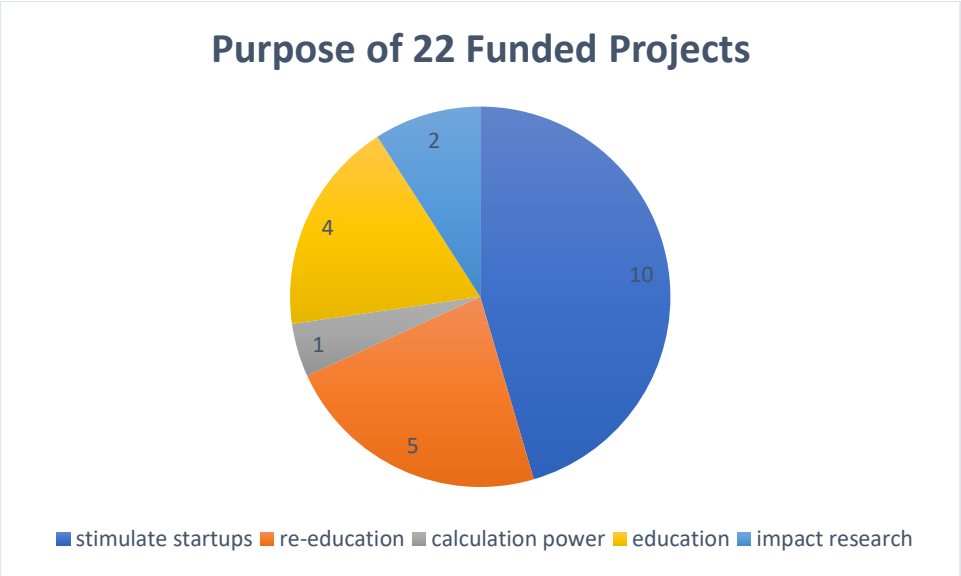

Figure 3: A pie chart illustrating the respective purposes of the projects found in the database

Just under half of the funded projects have the stimulation of start-ups as their purpose. These projects have names like "smart industry" and "development fund" and are meant to stimulate new small businesses in the field of AI, both in the public and private sector. 9 projects have a form of education as their purpose, either education or re-education. Education projects are meant for those that are still completing school, often young adults at all levels of post-secondary school education. Re-education programmes are explicitly aimed at those that have completed their education in the past and have been working for several years already. The projects stress that AI can shift the balance of where people are needed, and the re-education programmes hope to enable those at risk of losing their job to AI to move into a job utilizing AI instead. There was one project focussed on increasing available calculation power for AI research, and two projects that perform ongoing research into the impact of AI on various sectors.

Policy Chain

It has been established that a majority of AI projects within the Dutch government are both orchestrated and funded from the top down, from the cabinet to the national ministries to the implementation level. Documents discussing AI programmes mention concepts like "respecting the existing chains and primary processes" (18, p7) and public-private cooperation (2, p2) (3, p19). However, this remains quite vague. Elaborate structures are created to house AI projects in as many places as possible, spread across multiple ministries based on the perceived end result (3, p20). Take for example the Digital Society initiative. The initiative is created on cabinet level at its formation, to allow easy and inclusive digital access to government services. A problem is created, and then handed over to three national boards with their own interests. They then create long documents containing criteria for the initiative, and possible concrete projects that might help to accomplish the goal set by the cabinet. These then go to different ministries, like the ministry for social services and labour, and the ministry for infrastructure based on what issue the projects try to solve. This means at least 5 separate (partial) government entities have input on the conceptualisation stage of a project. In the case of a mobility project, like the one proposed to the ministry of infrastructure, it will then be passed down along the chain to Rijkswaterstaat, which is the practical executive branch of the ministry of infrastructure, to be implemented. Rijkswaterstaat then use their contractors to implement the project. Even for a national project, this creates a policy chain of 6 links before anything happens.

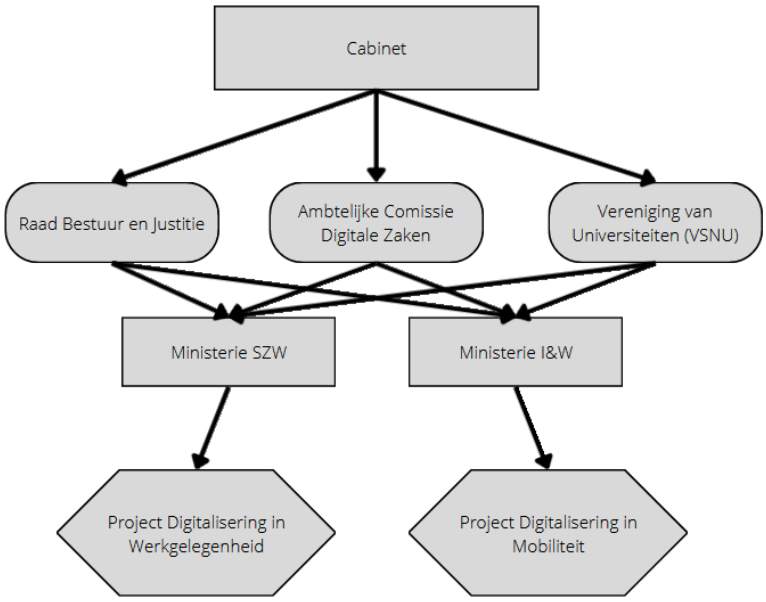

Figure 4: Top part of the policy chain for the Digital Society initiative

Policy flexibility

The Dutch government itself is not very confident in the flexibility of its AI policy. Aspects like feasibility, reliability and cost control remain to be "further investigated" (18, p8) through every iteration of the information strategy of the Ministry of Justice. The ministry of healthcare quotes "structural barriers" to be in the way of quick scaling of existing AI policies with healthcare uses (21. p1). The SAPAI itself already mentions that to properly scale AI technologies, increased communication standards are needed within the Dutch government. The government commissioner for information management has started an initiative to deal with this, called "open op orde" which roughly translates to openly in order (3, p12-13). This initiative asks departments to take transparency of data into account before they start a project, but it is unclear if any real-world implementation of this has taken place.

The answer to the second sub-question on how the Dutch government envisions the structural organisation of the implementation of the Dutch AI strategy could be by sticking to the status quo. Large bureaucratic structures that have formed over the past centuries are kept in place, and information and communication is spread across all involved actors. The cabinet creates a plan or an initiative and passes it down the chain to be executed elsewhere. Given the stately organisation of the Netherlands this would be the status quo for policy making. The government has however since the start recognized in their SAPAI that this would not be the ideal setup to remain competitive in the AI field internationally, and that to properly create Dutch AI a different path had to be taken. This is easier said than done however, especially with policy makers and implementers wanting to "respect existing chains and primary processes" (18, p7). Hypothesis 2 seems to hold up based on the data analysed for this thesis.

4.4 Analysis Sub-question 3

Sub question 3 focusses on the role that values play in the implementation of the AI strategy by the Dutch government. The theoretical basis is the materialist – post-materialist cleavage, in which manifestations of the strategy prioritize either materialist or post-materialist values in their implementation process. To answer the sub-question and investigate the hypothesis, both sides will be investigated to see which dominates Dutch AI policy. If post-materialist values are predominant in the policy documents, this would be in line with the vision of Dutch AI that was presented in the SAPAI. If this is not the case, the reality of Dutch AI and its implementation are different from the image that was presented originally.

Materialist values

The materialist values that were coded for this thesis are economic opportunities, a preference for market solutions and maintaining political stability. These values are not uncommon in policy documents around the world and can be expected to be found regularly. The difference in this case is that the Dutch government themselves created an expectation of Dutch AI in which it would be different from simply maximising economic gain and would instead prioritize other values like autonomy and privacy. There are however a number of cases in which materialist values are made to dominate policy implementation, clashing with the created vision of Dutch AI.

Economic opportunities

Economic opportunities, economic growth and economic competition are all mentioned regularly (1, p7; 12, p1; 3, p5). The terms are often connected to a subsidy programme, or a summary of what the goals of an AI project are. It is seen as a given that AI will boost the Dutch economy (1, p7) without elaborating on how or why. Moreover, it is stated that if the Netherlands wants to remain a competitive economy at all, the development and implementation of AI solutions must be sped up on a large scale (1, p7). Again, any mention of why or how is nowhere to be seen. Source 12 mentions on page 1 that one of the prerequisites for AI to boost the economy is human capital, and that it would be a wise direction for investment. Many mentions of economic opportunities are nuanced with terms like "sustainable growth" and "fair and safe economy" (3, p5). The economy is always named, but almost never elaborated on. This does however create a context for the policy plans it is mentioned in, forcing their aim to consider whether the plan would in the end contribute to economic growth. Plans that prioritize materialist values are likely to, but plans focussed specifically on post-materialist values are less likely to be of the same profitability, as it is simply not the central aim.

Market solutions

The SAPAI states that the ideal market solutions for public use of AI come to exist through a co-creation project from the ground up (1, p17-8, p21-22). The business model is created with the government and their values in mind explicitly. Following this, special procurement legislation is to be made to formalise this co-creation process. This would be the ideal situation according to the SAPAI. The reality is quite different, especially when it comes to government use of cloud computing. In 2011 the government developed its own in-house cloud solution called "Rijkscloud". In the decade after, the government slowly adopted an increasing number of public products created by Microsoft (16, p21-22). This culminated in the Trusted Cloud concept in 2020 (18, p17), where the government abandoned the ideal of the Rijkscloud and embraced (American) private solutions from Microsoft, Google and Amazon. They transferred a large amount of data and login systems, as well as computational power to the networks of these three companies. This practice is in line with the neoliberal course the government has taken over the past decades and could be seen as a preference for materialist values, sacrificing what was considered to be essential to Dutch AI in the background.

Political stability

In response to the toeslagenaffaire and parliamentary inquiry, a code for proper digital public administration was created by the government to guide public servants at all levels on how to handle the consequences of digitalisation of government services (7, p3; 14, p3). This code established three "anchor points" in digital public service, democracy, rule of law and administrative power. The code is explicitly aimed at public servants implementing policy, instead of higher up policy makers. These three anchor points can be considered the basis for the materialist strive towards prioritizing political stability,

and by strengthening them at the implementation level the government inadvertently places them above other values, once again changing the meaning of what Dutch AI is to value in practice.

Post-materialist
The SAPAI proposed the version of Dutch AI to be different from other nations' versions of AI as it would prioritize post-materialist values like privacy and freedom of discrimination. These values were often mentioned throughout the dataset, but not necessarily in the way as set out by the government at the start. These values often had to make way for the market and law enforcement. This creates a disconnect between the expected based on initial communication and reality based on real policy documents.

Value-based design and citizen rights
The concept of value-based design is introduced by the government as the design process in which values like privacy, autonomy and freedom of discrimination are actively safeguarded. It is the fundamental basis on which the government, society and economy can operate in a digital world. This was illustrated in figure 5 by means of a tree. The trunk consists of the fundamental rights, from which the government, society and economy can grow. This image is seen as a clear embodiment of what Dutch AI is to mean. The fundamental rights mentioned are equal treatment, privacy, human dignity, autonomy, and safety. These values are the essence of value-based design. One of the examples in which this value principle can be violated according to the government, is in the training of AI on biased data. The outcomes of this AI could be discriminating towards certain groups of people, like the algorithms in the toeslagenaffaire. The government explicitly mentions the gender distribution of AI developers as a possible problem, as AIs are often created by a group that is dominantly male. To combat this, the government envisions new legally binding ethical and judicial frameworks created specifically for AI. This sentence is immediately placed into a materialist context by stressing that these frameworks must consider the "fundamental importance" of open and competitive markets (1, p39). What these frameworks have become instead of the envisioned binding requirements for value-based design, according to the status update on the progress of AI, is non-binding instruments that can aid government organisations through the implementation of AI and algorithms (14, p2). This essentially means the legal framework to battle bias has become second ranking to the market requirements.

Figure 5: The fundamentals on which the government, society and economy can grow; (3, p5)

One of the most often named values is privacy as an essential right to protect in the SAPAI (1, p 7). However, privacy is one the rights that is supposedly subject to change to facilitate law enforcement,

as in a letter to parliament the minister of Justice and Safety would like to eliminate some protections when it comes to using personal data to train AI instead of dummy data, specifically for police usage (10, p6). Later in the same document, it is acknowledged that self-imposed safeguards ("*Waarborgen tegen risico's AI*") when it comes to profiling have no legal weight, so discrimination could legally occur within AI implementations when it comes to policing if the resulting police activity is legal (10, p6-7).

Citizen participation
The government has recognized a trend in communication with citizens in which the citizens want to be increasingly involved in the policy process in general (8, p9). The same goes for AI policy. The government wants to facilitate this increased demand for participation through public dialogues with citizens through conferences (13, p14). To increase the usefulness of these dialogues, the government wants to increase AI skills in citizens. A government ordered survey concluded that two-thirds of the general population do not consider themselves to have any knowledge on the topic of AI at all. The government aims to correct this by actively involving citizens in the development process for public AI implementations. Three mayor projects are in healthcare, scam prevention and policing. In the healthcare project, the government sets up funded experiments with e-health applications of AI, through which citizens are supported in the "self-management of their health" (1, p16-17). In the scam prevention project, AI is used to advise citizens on what actions to take after they have fallen victim to an online scam. Citizens are asked for input on the advisor website and its accessibility (10, p5). In the policing project, the police experiments with different online communication channels to report crimes or disturbances (8, p11). These three projects all seek to use an increased demand for participation to their advantage, and stress this helps the government keep the end-user or citizen central to the design process which is seen as an integral part of the envisioned Dutch AI (6, p2).

The answer to the third sub-question is not as straight forward as the third hypothesis. The basis contains a strong implementation of post-materialist values, but they are always overcast or undermined by materialist policy. Humans are central, as long as its economically viable. Privacy is important, as long as it does not diminish the strength of the rule of law. This shows the difference between the narrative the government envisioned for Dutch AI, and the practical nature of the actual implementation. It is hard to find any mention of post-materialist values without them being placed in a materialist context. This is a power structure in which materialist practice dominates post-materialist rhetoric. Therefore, the third hypothesis is not correct.

4.5 Conclusion
The Dutch planning of AI implementation experienced a series of reality checks that forced the government to alter their initial envisioned planning of the implementation of AI projects on a large scale. These focal points led to a push for homogenized action throughout all branches of government to reduce the risks of large-scale scandals like the toeslagenaffaire from happening again and to formalize oversight structures for AI and algorithms. This is in line with what was expected from the first hypothesis. The structural day-to-day implementation of the AI strategy largely sticks to the status quo. Long lines of policy from the top down, with little initial room for flexibility. As the policy plans are passed down the chain, more and more requirements are added to constrict policy even further. The government knows of this problem, but so far does not take active action to tackle it. The second hypothesis is therefore also correct. Post-materialist values are communicated as central to the image of Dutch AI but are in practice often dominated by the materialist context in which they need to be implemented. They are presented as the basis and are allowed to be so as long as they do not get in the way of other factors like rule of law or economic growth. This means hypothesis 3 is false. There is a disconnect between the initial narrative as presented by the government on what Dutch AI is to be, and the reality of what is practically implemented. One is simply presentation to the outside world, and the other is business as usual.

Chapter 5: Conclusion

5.1 Key Insights

This thesis aimed to create an understanding on how the Dutch government envisioned the implementation of its AI strategy as laid out in the Strategical Action Plan on Artificial Intelligence. Based on a content analysis of first party government policy documents, it can be concluded that even though the government stated both an ambition and a need for a different approach to AI policy, it is actively resorting to the status-quo of governing this policy area. This status quo is a nationally homogenous policy field, orchestrated from the top down and largely dominated by materialist values. This means that the initially communicated vision of "Dutch AI" that was supposed to be unique and based on post-materialist values, was just that – a way of communicating AI. The reality of Dutch AI is likely the reality of AI in most countries. It is a scramble to unite existing projects under one banner and to test them for their economic viability above all. The government recognized this was likely not the correct path to take but went ahead anyway. Rights like privacy and freedom from discrimination remain at risk, and another toeslagenaffaire-like scandal seems far from impossible.

5.2 Knowledge Gap

The knowledge gap this thesis filled is one of looking beyond the initially communicated when it comes to AI strategies specifically. It tested the ambitiously set possibilities and opportunities against reality. It could act as a reality check on Dutch policy and uncovered a problem the government knows of and has acknowledged through its own language. A new and different approach was needed for successful implementation for the AI strategy according to the government. They knew this was not actually going to happen, possibly from the start already. The ideals of Dutch AI were watered down and made to exist within existing bounds instead of creating a new policy space with its own rules as was envisioned. This knowledge gap will likely be explored more intensely throughout the coming decade, as more and more nations further their progress in the implementation of their AI strategies, and scientists are able to use data to reconstruct and reflect the path taken from the initial publication to the present.

5.3 Practical Implications

It is unlikely this study will have many practical implications. At least, it has changed the view of Dutch AI for a handful of people. At most, it could influence Dutch AI policy nationally. The strength of this thesis is that it is a way in which one can test a policy strategy against reality. It can be repeated in a few years with a new dataset on the same topic, or it can be repeated now on a different topic or a different country. This thesis acts as a description of reality based on a selection of publicly available policy documents. There are likely dozens if not hundreds of relevant documents that were not made public. Therefore, all that has been analysed was authorized to be released by the government directly, and things that were considered sensitive were possibly not released outright but must be requested through (parliamentary) inquiry in the future. It was however still clear through the analysis of the available dataset that the government was creating two different narratives, one of the ideal and one of reality. Through the content analysis, this thesis was able to unmask the second by testing the first. Therein lies the strength of this thesis, instead of producing a narrative itself it used the language of the government to project something that is closer to reality. If the Dutch government is serious about becoming a European leader for value-based AI design, it needs to actively change the way in which AI implementation projects are planned and organized. The current constrained course is unlikely to produce anything noteworthy or unique in the field of AI.

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Appendix 1: Data List

1. Rapport SAPAI – Strategisch Actieplan voor Artificiële Intelligentie
2. Kamerbrief bij Strategisch Actieplan voor Artificiële Intelligentie
3. Kamer brief hoofdlijnen beleid voor digitalisering
4. EK Schriftelijke vragen AI-verordening
5. Antwoorden op vragen Eerste Kamer over Europese AI-verordening
6. AI binnen de overheid: leren van elkaars ervaringen dankzij de NLAIC-database
7. Kamerbrief voortgang algoritmen en artificiële intelligentie (2021)
8. Informatieplan 2021 en Informatiestrategie 2017-2022
9. Resultaten onderzoek databeschikbaarheid voor artificiële intelligentie (AI) in de zorg
10. Tweede Kamer beantwoording schriftelijke vragen AI bij de politie
11. Kamerbrief over rapport Inventarisatie AI in gezondheid en zorg
12. Kamerbrief over kunstmatige (artificiële) intelligentie (2020)
13. Nederlandse Digitaliseringsstrategie 2020
14. Brief regering Voortgang AI en algoritmen (2021)
15. Informatieplan 2019
16. Informatieplan 2020
17. Informatieplan 2020 in vogelvlucht
18. Informatieplan 2021
19. Kamerbrief over groeistrategie voor Nederland op de lange termijn
20. Kamerbrief over update en voortgangsrapportage Nederlandse digitaliseringsstrategie
21. Kamerbrief over waardevolle AI voor gezondheid
22. Beslisnota behorende bij de kamerbrief over hoofdlijnen beleid digitalisering
23. Beslisnota bij waardevolle AI voor gezondheid (gelakt)
24. Inventarisatie Projectgroep normering en toezicht algoritmen

Appendix 2: Subsidy Table

Project	Amount in Million €	Oversight	Purpose
TechLeap.nl	65	Ministry	stimulate start-ups
Limburg Business Development Fonds	3,8	Province	stimulate start-ups
STAP-regeling voor omscholing	200	Ministry	re-education
VWData supercomputer	18	Ministry	calculation power
European Horizon Project	61	European Union	stimulate start-ups
Leercultuur MKB	60	Ministry	re-education
MKB!Dee	7,5	Ministry	re-education
AI op de werkvloer	3	Ministry	impact research
Regionaal Investeringsfonds AI MBO	25	Province	re-education
Include AI in software developer qualifications	70	Ministry	education
Onderwijsinnovatie ICT	15	Ministry	education
NWO call	2,3	Ministry	impact research
AI Coalition labs	23,5	Ministry	education
AI university consortium	19	Ministry	education
Covid-19 E-health at home	23	Ministry	stimulate start-ups
Smart Industry Field labs	14,55	Ministry	stimulate start-ups
Start-up in Residence	6	Ministry	stimulate start-ups
Nationale Roadmap Wetenschappelijke Infrastructuur	80	Ministry	stimulate start-ups
NL Leert Door	50	Ministry	re-education
Smart Industry (EU)	83	European Union	stimulate start-ups
Smart Industry (region)	103	Province	stimulate start-ups
Smart Industry (NL)	177	Ministry	stimulate start-ups