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Democratic Legitimacy of algorithmic public services across Citizen–System Interfaces: The case of Bürokratt's algorithmic governance in Estonia (2020-2025)

MA Thesis

Supervisor: Dr. Kristina Muhhina

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I have prepared this thesis independently. All the views of other authors, as well as data from literary sources and elsewhere, have been cited.

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Abstract

This thesis examines the degree of democratic legitimacy of Bürokratt's governance arena that involves the algorithmic mediation of public services in Estonia between 2020 and 2025. Bürokratt is analysed as an interoperable, LLM-based virtual assistant that aims to facilitate citizens' access to public services and strengthen Estonia's digital government infrastructure. The thesis combines literature on algorithmic governance, transparency and legitimacy with the framework of democratic anchorage in governance networks. Methodologically, it adopts a qualitative single-case study design based on public documents and public-facing textual materials that directly mention Bürokratt. The corpus includes government strategies, policy documents, public webpages, technical reports, European Union materials, academic studies, opinion articles and newspaper articles.

The analysis assesses Bürokratt's governance across four anchorage points: democratically elected politicians, participating groups and organisations, territorially defined citizenry, and democratic rules and norms. The findings show that Bürokratt's democratic legitimacy is institutionally strong but democratically uneven. The strongest evidence appears in its anchorage in elected politicians and politically accountable institutions, especially through ministerial sponsorship, national AI strategies, agenda-setting and public-sector coordination. The evidence is more limited regarding participating groups and organisations, where actors appear mainly as implementers, adopters, or technical partners rather than as representatives connected to membership bases. In the citizenry anchorage, citizens are highly visible as users and beneficiaries of improved public services, but much less visible as actors able to participate in, contest or influence the system's governance. Democratic rules and norms appear only partially, mainly through stakeholder involvement, openness, and references to rights protection, but are not consistently translated into explicit procedures for deliberation, justification, or contestation.

The thesis concludes that Bürokratt's legitimacy is largely constructed through state capacity, service efficiency and Estonia's broader digital government narrative. Its democratic anchorage remains more limited where legitimacy would require clearer citizen influence, membership-based representation and visible mechanisms of public justification.

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Introduction

Democratic governments increasingly rely on algorithmic systems to structure how they see, classify and respond to citizens. As machine learning and, more recently, Large Language Models (LLMs) permeate public administration, they do not simply improve efficiency; they also reshape how public authority is exercised and justified. These systems are often opaque and technically complex (O'Neil, 2016). They tend to position citizens primarily as service users rather than as members of a political community engaged in collective decision-making (Papadopoulos, 2010). This thesis starts from a normative concern: as democratic governments delegate key functions to opaque socio-technical systems and frame citizens mainly as service users (Meijer et al., 2021; Ananny & Crawford, 2016), the basis of democratic legitimacy risks shifting from representation and accountability to service delivery and convenience.

This thesis analyses the legitimacy of a Large Language Model (LLM)[1] in the public sector in the context of a specific national artificial intelligence (AI)[2] project: the Estonian government's virtual assistant Bürokratt. Estonia has positioned itself as a digital frontrunner of the 21st century, and Bürokratt is a flagship initiative in its AI strategy. In August 2018, the Ministry of Economic Affairs and Communications and the Government Office formed an expert group to propose measures for implementing AI ("*kratts*") in the public sector. Between 2020 and 2021, they developed and beta-tested Bürokratt, an AI-based assistant for access to government services, including tax forms, passport renewals, and family benefits. The first version of Bürokratt was officially launched in 2022, enabling citizens to interact with government services 24/7 via conversational interfaces. From 2023 onwards, Bürokratt has expanded into a network of chatbots on various government agency websites and has been presented internationally as a leading public-sector AI project. A roadmap for the end of 2025 foresees the development of a functional foundation for nationwide adoption, including the

[1] According to Microsoft, "large language models (LLMs) are advanced artificial intelligence systems that understand and generate natural language, or human-like text, using the data they've been trained on through machine learning techniques. LLMs can automatically generate text-based content". Retrieved from: https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-are-large-language-models-llms

[2] According to ISO, artificial intelligence "refers to computer systems capable of performing tasks that typically require human intelligence, such as reasoning, learning, perception and language understanding". Retrieved from: https://www.iso.org/artificial-intelligence/what-is-ai

deployment of an LLM with retrieval-augmented generation (LLM/RAG)[3] and the creation of a central global classifier to allow different instances of Bürokratt to communicate securely. Looking beyond 2026, the vision is that each institution or domain will operate its own personalised AI agent within a cooperative network, supported by an LLM adapted to the Estonian language. The project is led by the Ministry of Economic Affairs and Communications and implemented by the Information System Authority (RIA), in collaboration with bodies such as the Ministry of Education and Research, the Estonian Language Institute, and private partners including Net Group, Texta, Stacc, Solita and Microsoft, supported by European Union funding (Information System Authority - RIA - and Ministry of Economic Affairs and Communications).

Bürokratt is thus more than a technical tool. It is a multi-actor governance network and a state project that aspires to reconfigure how the Estonian state appears to and communicates with its citizens. However, public and academic debate about LLMs in government remains limited, given the scale of these ambitions. In Estonia, language barriers make it difficult for foreigners to assess how citizens perceive such systems in everyday political life. Globally, the literature on algorithmic governance, transparency and accountability is extensive, but work focusing specifically on LLMs and generative AI in public administration is emerging and remains limited in scope. Studies on algorithmic transparency, predictive systems and smart cities (Ananny & Crawford, 2016; Coglianese & Lehr, 2019; Meijer et al., 2021; Nesti & Graziano, 2019) provide important insights, yet they rarely address LLM-based infrastructures. In parallel, research on governance networks and democratic anchorage has not yet been systematically applied to AI-based state interfaces. There is also little attention to the possibility that the legitimacy of a high-profile AI project may diverge from the legitimacy of the public organisations that promote it, even though project-based legitimacy research suggests that such dynamics are likely (Baba & Brunet, 2024).

This thesis addresses this gap by analysing the democratic legitimacy of Bürokratt, an interoperable, LLM-based virtual assistant for Estonian citizens, between 2020 and 2025. It treats algorithms in government primarily as a democratic risk, not because they are inherently

[3] According to IBM, "retrieval augmented generation, or RAG, is an architecture for optimizing the performance of an artificial intelligence (AI) model by connecting it with external knowledge bases. RAG helps large language models (LLMs) deliver more relevant responses at a higher quality". Retrieved from: https://www.ibm.com/think/topics/retrieval-augmented-generation

illegitimate, but because their opacity and tendency to recast citizens as mere users can undermine democratic values if they are not properly anchored. Building on Meijer et al. (2021), it understands Bürokratt as part of the algorithmization of bureaucracy. This socio-technical arrangement reshapes information relations, expertise and organisational structures in the Estonian state. Drawing on Ananny and Crawford (2016), it examines how different forms of transparency and accountability are invoked or sidelined in official narratives about the system. Using Sørensen and Torfing's (2005) notion of democratic anchorage and Nesti and Graziano's (2019) practical application of democratic anchorage in the smart cities context, it investigates how Bürokratt is normatively and institutionally tied to elected politicians, organised civil society, affected stakeholders and democratic norms, and how these ties are distributed across its governance network. Finally, it recognises that Bürokratt is also a project inside government, and that its legitimacy as a project may reinforce or weaken the perceived legitimacy of Estonia's digital government agenda more broadly (Baba & Brunet, 2024).

Because Bürokratt's project legitimacy may reinforce or weaken the perceived legitimacy of Estonia's broader digital government agenda, this thesis does not assess legitimacy only as a matter of project success, institutional reputation or service performance. It assesses its democratic legitimacy, understood as the extent to which the governance arenas surrounding Bürokratt are anchored in the institutions, actors and norms that make networked governance appropriate within a democratic order (Sørensen & Torfing, 2005). Governance networks are understood as relatively stable patterns of interaction between mutually dependent actors clustered around policy problems and operating within institutionalised frameworks of rules, norms, shared knowledge and social meanings to produce public value (Sørensen & Torfing, 2005; Klijn et al., 2025). In this context, democratic legitimacy depends on whether Bürokratt's governance arenas are anchored in elected politicians, participating groups and organisations, a territorially defined citizenry, and democratic rules and norms (Sørensen & Torfing, 2005; Nesti & Graziano, 2019). In the case of Bürokratt, these governance arenas include ministries, agencies, technical partners, citizens and implementation arrangements, design choices, coordination, and justification.

Therefore, this thesis asks: What is the degree of democratic legitimacy of Bürokratt's governance arenas that involve algorithmic mediation of public services?

Governance arenas are understood here as institutionalised settings in which interdependent public, private and societal actors interact around a public problem, negotiate roles, coordinate resources, frame objectives and contribute to the production or justification of public value (Sørensen & Torfing, 2005; Klijn et al., 2025). This understanding follows governance network theory, which defines governance networks as relatively stable patterns of interaction between mutually dependent actors clustered around policy problems and operating within frameworks of rules, norms, shared knowledge and social meanings (Sørensen & Torfing, 2005; Klijn et al., 2025). In the case of Bürokratt, governance arenas refer to the concrete institutional and documentary spaces in which the system is designed, coordinated, implemented and publicly justified. These include ministries and agencies involved in the AI and digital government agenda, the State Information System Authority, technical and private partners, official strategies, policy documents, technical reports, public webpages, implementation arrangements and selected media materials through which the project is presented and debated. The term does not imply a single formal decision-making forum. It captures the distributed character of Bürokratt's governance, in which political direction, technical development, institutional coordination, and public justification are spread across multiple actors.

Methodologically, the thesis adopts a qualitative single-case study design. It focuses on the period from 2020 to 2025, which covers the strategic definition, pilot implementation, and consolidation of Bürokratt's architecture, up to the planned deployment of LLM and classifier components. The empirical basis consists of public documents and public-facing textual materials that directly mention Bürokratt, including white papers, official planning and budget documents, government strategies, public webpages, interviews and speeches by key officials such as the Chief Data Officer and Bürokratt sponsor Ott Velsberg, technical reports, ministerial reports, European Union documents that analyse or promote the project, Estonian newspaper and opinion articles, and academic studies. These materials are produced by a range of actors who form the governance network around Bürokratt: central ministries, the Information System Authority (RIA), other public bodies involved in language and education policy, private partners involved in development and implementation, Estonian academic institutions, and Estonian media outlets. Analysing how these documents describe, justify and frame Bürokratt makes it possible to trace how democratic anchorage and legitimacy are constructed discursively and institutionally over time. The analysis of civil society's position in media outlets and academic

studies informs citizens' inclusion and perspective on Bürokratt, allowing for a deeper examination of whether citizens are included in the process not only as service users.

To do so, the thesis is organised as follows. Chapter 2 situates Bürokratt within the broader literature on algorithmic governance, transparency, and accountability, and develops the theoretical framework by combining insights from algorithmization and transparency as essential to democratic legitimacy. Chapter 3 places Bürokratt in the context of democratic anchorage in governance networks, presenting the conceptual framework used to analyse its constructed legitimacy over time. Chapter 4 presents the research design and methods, detailing the case selection, the document and textual corpus, and the coding strategy. Chapter 5 offers the empirical analysis of how Bürokratt's democratic legitimacy is constructed across different actors and documents between 2020 and 2025, structured around anchorage dimensions and organisational practices. Chapter 6 concludes by summarising the main findings, discussing their implications for the democratic governance of LLMs in the public sector, and outlining how this single-case study can serve as a starting point for comparative research on other governmental AI systems.

Theoretical Framework and Literature Review

This chapter develops the theoretical foundation of this thesis. It situates Bürokratt within broader debates on algorithmic governance and the algorithmization of bureaucracy, and discusses why algorithms in government can be understood as a democratic risk. It then defines legitimacy in line with Suchman's (1995) classic formulation, examines how transparency and accountability have been framed in the literature on algorithmic systems, and briefly addresses how project and organisational legitimacy can interact. Together, these elements justify the focus on democratic anchorage in governance networks, which is developed in detail in the conceptual framework chapter.

2.1 Algorithmic governance and the algorithmization of bureaucracy

Public administration scholarship has increasingly recognised that digitalisation is not only about new tools but also about transformation in how bureaucracies work, see, and decide. Meijer et al. (2021) describe this process as the algorithmization of bureaucratic organisations. They draw attention to the ways in which algorithms are integrated into bureaucratic routines and structures, reshaping flows of information, professional expertise and organisational control.

At a basic level, algorithms can be defined as encoded procedures that transform input data into outputs through specified calculations (Meijer et al., 2021; Cormen, 2013). In government, however, these procedures do not operate in isolation. Meijer et al. (2021) emphasise that algorithms in the public sector should be understood as part of socio-technical arrangements that include data infrastructures, legal frameworks, professional roles and organisational routines. When algorithms are embedded in such arrangements, they can alter who has access to which information, who can interpret it, and how decisions are prepared and implemented.

An important distinction in this debate concerns systems that automate decisions and systems that support human decision-making. Veale and Brass (2019), as discussed by Meijer et al. (2021), point out that automated systems can act with minimal human intervention, whereas decision-support systems present outputs that officials can adopt, ignore, or contest. In practice, the boundary between the two is often blurred. Even tools formally labelled as decision-support

can structure options and expectations so strongly that discretion becomes limited, especially when officials lack time, expertise or institutional backing to challenge model outputs. This observation is relevant for systems such as Bürokratt, which are designed to guide interactions between citizens and public administration rather than to sign off on decisions. The algorithmization of bureaucracy thus concerns not only who makes the final decision, but also how the space within which decisions are made is shaped.

From the perspective of governance network theory, the governance of algorithmic systems should not be treated as occurring within a single organisation, since public governance networks are defined by interactions among interdependent actors clustered around policy problems (Sørensen & Torfing, 2005; Klijn et al., 2025). Algorithmic systems in government usually rely on contributions from several public bodies, private partners, professional communities and regulatory frameworks, which makes algorithmic governance a networked phenomenon (Meijer et al., 2021). In this sense, algorithms become part of webs of ministries, agencies, vendors and experts who jointly contribute to the production of public outcomes. This networked character is central to the way this thesis approaches Bürokratt and justifies assessing its democratic legitimacy through the lens of democratic anchorage in governance networks (Sørensen & Torfing, 2005; Nesti & Graziano, 2019).

2.2 Algorithms as democratic risk: opacity, scale and power

While algorithmic tools are often promoted as ways to improve efficiency, consistency and personalisation, critical work has underlined that they also introduce specific democratic risks. O'Neil (2016) characterises algorithmic models used in public and private sectors as "weapons of math destruction". These models tend to share three features: they are opaque, operate at scale, and can cause or reinforce significant harm, especially to already vulnerable groups. Opacity refers not only to technical complexity but also to a lack of meaningful oversight and the difficulty of contesting outputs. Scale implies that small biases or design choices can affect large populations. Harm arises when these systems shape access to resources, rights and opportunities in ways that are hard to detect and correct.

Zuboff (2019) similarly argues that contemporary digital infrastructures have enabled new forms of power through the extraction and analysis of behavioural data. In her account of

surveillance capitalism, those who control data infrastructures and predictive models gain privileged capacities to monitor, anticipate and shape behaviour. Although Zuboff (2019) focuses primarily on private corporations, her analysis is relevant to public administration when governments rely on infrastructure, platforms, or models developed and maintained by large technology firms. In such cases, the distribution of knowledge and technical capacity between public authorities, vendors and citizens can become highly asymmetric.

In the context of algorithmic governance networks, these insights suggest that algorithms should be treated as potential democratic risks rather than as neutral instruments (O'Neil, 2016; Zuboff, 2019; Meijer et al., 2021). When states adopt complex socio-technical systems to mediate citizen interactions, they create new concentrations of informational and technical power (Zuboff, 2019; Meijer et al., 2021). If these concentrations are not counterbalanced by robust democratic anchorage, they can weaken accountability, marginalise affected groups and reduce the scope for contestation within the governance network (Sørensen & Torfing, 2005; Ananny & Crawford, 2016; Busuioc, 2021). For this reason, this thesis starts from the assumption that algorithmic systems in government need to be scrutinised with particular care from the standpoint of democratic legitimacy (O'Neil, 2016; Meijer et al., 2021).

2.3 Conceptual definition of legitimacy

In most debates discussed so far, transparency is connected to accountability and legitimacy. However, legitimacy remains a relational and audience-dependent concept. This thesis adopts Suchman's (1995, pp. 574) definition of legitimacy as "a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions." In this research, the primary audiences directly accessible through the corpus are the actors who initiate, design, develop, promote, or publicly discuss Bürokratt: public institutions, system developers, institutional partners, and media outlets. The analysis focuses on how these actors construct, justify or contest the desirability, propriety and appropriateness of Bürokratt as a public-sector AI project. This does not reduce legitimacy to the perspective of government actors alone. Selected newspaper materials serve as public-facing arenas where institutional claims, public concerns, and wider societal interpretations can be present. In this sense, the thesis examines legitimacy as it is

constructed across official, institutional and mediated public discourse, while recognising that direct user and citizen perceptions would require complementary empirical methods.

Suchman (1995) distinguishes between pragmatic, moral and cognitive forms of legitimacy, but this thesis does not attempt to classify empirical findings into these subtypes. Instead, it uses the core of his definition as a broad conceptual anchor: legitimacy is treated as a collectively held perception that a given arrangement is appropriate within a relevant normative framework. In this research, that framework is the idea of democratic legitimacy. It refers to the extent to which the governance arrangements surrounding Bürokratt can be perceived by stakeholders as desirable, proper, or appropriate in light of democratic norms and expectations.

These democratic norms include, at a minimum, expectations of accountability, participation, contestation and respect for representative institutions. Importantly, democratic legitimacy is not derived solely from efficiency or service quality. A system can be efficient yet perceived as democratically problematic if it undermines accountability or marginalises certain groups. Suchman's (1995) general definition thus provides a flexible but precise way to think about legitimacy as a perception anchored in shared normative standards, rather than as a purely procedural or outcome-based property.

This conceptualisation underpins the choice of democratic anchorage in governance networks as the primary analytical lens. Sørensen and Torfing's work can be read as an attempt to translate Suchman's (1995) broad concept of legitimacy into a set of explicitly democratic criteria for assessing the legitimacy of governance networks. Their dimensions of anchorage in elected politicians, groups and organisations, affected stakeholders and democratic rules and norms specify what it means, in practice, for a networked governance arrangement to be perceived as appropriate within a democratic normative order. Therefore, Suchman's (1995) definition provides the general concept of legitimacy, while an adapted democratic anchorage framework, as proposed by Nesti and Graziano (2019), provides the concrete dimensions through which the degree of democratic legitimacy of Bürokratt's governance arenas is assessed. The latter is developed in the conceptual framework chapter.

2.4 Transparency and accountability in algorithmic systems

Transparency has become a central theme in debates about algorithmic governance. It is often presented as the main condition for making algorithms accountable. However, the literature discussed in this section shows that transparency is a contested and limited ideal and that its relationship to legitimacy is neither automatic nor straightforward.

Ananny and Crawford (2016) provide a critique of what they call the transparency ideal in relation to algorithmic systems, arguing that common calls for transparency often rely on oversimplified chains of reasoning. If a system is opened up and made visible, observers will understand it better and then be able to control it, thereby bringing accountability and legitimacy. For Ananny and Crawford (2016), this assumption is misleading. Accountability requires both seeing and understanding, and there is no automatic bridge between the two. Technical visibility does not guarantee that relevant actors will have the expertise, time or institutional power to interpret the information and use it to challenge or reshape the system.

To capture this complexity, Ananny and Crawford (2016) propose thinking about transparency as a chain that runs from observation to insights and from insights to knowledge. Transparency only plays a meaningful democratic role when it produces effects along this chain. If transparency initiatives do not lead to improved understanding or to changes in practice, the ideal risks becoming an end in itself and losing its purpose. Ananny and Crawford's (2016) argument implies that transparency is not a simple binary property of systems, but a relational and contextual feature that depends on who is looking, with what tools, under which institutional conditions.

This relational understanding of transparency is reinforced by Busuioc's (2021) argument that the use of AI in public-sector decision-making creates accountability deficits that extend beyond technical opacity. These deficits include compounded informational asymmetries, limited capacity to explain and justify algorithmic functioning, difficulties in diagnosing failures, and weak possibilities for redress (Busuioc, 2021). In accountability theory, public accountability depends on an actor providing information and justification to a forum that can question, assess and respond to that account (Bovens, 2007; Cech, 2021). This is directly relevant to democratic legitimacy because Sørensen and Torfing (2005) treat accountability, public scrutiny and

contestability as conditions for the democratic anchorage of governance networks. If public authorities cannot understand how an algorithmic system operates, explain its outputs or assume responsibility for its consequences, the governance network becomes less capable of meeting the democratic expectations attached to public accountability (Sørensen & Torfing, 2005; Busuioc, 2021). Algorithmic accountability is therefore part of the democratic infrastructure through which AI-mediated governance can remain answerable to elected institutions, affected actors and citizens (Bovens, 2007; Sørensen & Torfing, 2005; Busuioc, 2021).

Cech (2021) adds another layer to this debate by approaching accountability as a relationship between an actor and a forum. In this formulation, accountability depends not only on the actor's obligation to provide information and justification, but also on the forum's capacity to question, assess and respond to that account (Cech, 2021). This forum dimension connects directly to democratic legitimacy in governance networks, since Sørensen and Torfing (2005) argue that networks must be anchored in elected politicians, participating groups and organisations, a territorially defined citizenry, and democratic rules and norms. Citizens, oversight bodies, elected representatives, or affected organisations may formally receive information about an algorithmic system but still lack the knowledge, access, authority, or procedural channels required to challenge it (Cech, 2021; Busuioc, 2021). In that situation, transparency remains disconnected from the forms of scrutiny and contestability that democratic anchorage requires (Sørensen & Torfing, 2005). Accountability, therefore, links transparency to democratic legitimacy by turning information and justification into something that relevant forums can question, assess and respond to within the governance network (Bovens, 2007; Cech, 2021; Sørensen & Torfing, 2005).

The central implication is that transparency is necessary but insufficient for democratic legitimacy. Ananny and Crawford (2016) show that transparency only becomes meaningful when visibility can be translated into understanding, critique and institutional response, while Busuioc (2021) argues that algorithmic accountability depends on whether public authorities can explain, justify and assume responsibility for the systems they use. For this thesis, claims about transparency in the official narratives around Bürokratt are therefore assessed in relation to whether they create conditions for citizens, elected politicians and relevant stakeholders to understand how the system operates, question its governance and influence the institutional

arrangements that sustain it (Ananny & Crawford, 2016; Busuioc, 2021; Sørensen & Torfing, 2005).

2.4.1 Legal and procedural transparency: fishbowl and reasoned transparency, and algorithms' understandability

Coglianese and Lehr (2019) approach transparency from a legal and regulatory perspective, focusing on how administrative law can respond to the use of machine learning in government. They distinguish between 'fishbowl transparency' and 'reasoned transparency'. Fishbowl transparency refers to making internal system components, such as code, data, and technical documentation, visible. Reasoned transparency, by contrast, concerns the provision of clear, public justifications for decisions, policies and rules, even when internal technical details remain partly opaque.

Coglianese and Lehr's (2019) analysis shows that existing legal requirements for administrative decision-making already create some expectations of reasoned transparency, for example, through duties to provide reasons for decisions, allow for review and respect procedural fairness. These requirements can, at least in part, be extended to contexts in which machine learning systems support or inform administrative action. At the same time, Coglianese and Lehr (2019) note that fully opening complex models is often impractical and may not be the most effective path to accountability.

Busuioc's (2021) analysis complements this distinction by linking model understandability directly to public accountability. If public bodies are expected to justify decisions made by AI systems, they must retain sufficient oversight of how those systems operate. For this reason, Busuioc (2021) argues that transparent and interpretable models should be preferred in public sector contexts over black-box alternatives, especially when algorithmic systems affect citizens' rights, access to services or exposure to state power. This means that public authorities should not adopt systems whose functioning they cannot meaningfully monitor, explain or contest within existing accountability structures.

Busuioc's (2021) argument sharpens this discussion by showing that public accountability depends on whether public authorities retain the capacity to understand, monitor and justify the algorithmic systems they adopt. This reinforces Coglianese and Lehr's (2019)

distinction between fishbowl and reasoned transparency. Technical openness may provide access to code, data or system architecture. However, it does not necessarily ensure that public authorities can explain how a system affects administrative action or that affected actors can challenge its consequences. Reasoned transparency, by contrast, shifts attention to the public justification of decisions, policies and institutional choices surrounding algorithmic systems. The distinction is therefore relevant for evaluating the democratic legitimacy of algorithmic governance networks because it connects transparency to broader questions of institutional answerability, contestation and public control, rather than treating disclosure as sufficient in itself.

2.4.2 Transparency, e-government and perceived legitimacy

Transparency has also been studied empirically in the context of e-government. Grimmelikhuijsen *et al.* (2013) examined how different forms of online transparency affect citizens' trust in government, perceptions of honesty and satisfaction with services. Grimmelikhuijsen *et al.'s* (2013) findings suggest that the relationship between transparency and perceived legitimacy is contingent. In some settings, increased transparency can enhance trust; in others, it may have a limited effect or even expose problems that reduce confidence (Grimmelikhuijsen *et al.*, 2013).

Even though this research does not measure citizens' perceptions through surveys or interviews, it does not exclude citizen-facing perspectives from the analysis. Grimmelikhuijsen et al. (2013) show that transparency in e-government does not automatically increase trust or perceived legitimacy; its effects depend on how information is communicated, how citizens interpret it and how it interacts with pre-existing expectations about government. This thesis treats media materials as a complementary source for observing how Bürokratt enters public-facing debate. Newspapers are not used as a representative measure of public opinion, but rather as public arenas in which political issues, institutional claims, and citizen concerns can be articulated, mediated, and contested (Habermas, 1989; Koopmans & Statham, 1999). This makes them useful for assessing whether perspectives beyond public institutions and system developers appear in the publicly available discussion around Bürokratt. In this sense, media sources help connect the analysis of transparency and e-government trust to the broader question of democratic legitimacy: they allow the thesis to examine not only how official actors present

Bürokratt, but also whether and how this presentation is publicly questioned, contextualised or challenged.

2.5 Projects, organisations and legitimacy dynamics

The literature on legitimacy has traditionally focused on stable organisations, industries and institutional fields whose existence is taken for granted (Suddaby et al., 2017). More recently, scholars have argued that projects should also be studied as organisational forms that seek and negotiate legitimacy. Baba and Brunet (2024) define project legitimacy as the generalised perception or assumption that a project is desirable, proper or appropriate given its goals, means, timing, symbolism and impacts. They argue that the legitimacy of a project may differ from that of the organisation that promotes it, and that legitimacy can spill over in both directions.

Baba and Brunet (2024) theorise four trajectories through which legitimacy can move between projects and organisations: project reinforcement, project degradation, organisational reinforcement and organisational degradation. In some cases, a legitimate organisation can confer legitimacy on a controversial project; in others, a controversial project can damage the reputation of an otherwise legitimate organisation. Their analysis highlights that projects do not operate in a vacuum. They are embedded in broader organisational and institutional contexts and can both reflect and reshape broader legitimacy judgements.

The main contribution of this discussion to the context of Bürokratt is interpretive rather than operational. Bürokratt is both a component of Estonia's long-term digital government strategy and a project with its own timeline, budget, partnerships and symbolic meaning. While the empirical analysis focuses on the degree of democratic legitimacy of Bürokratt's governance arenas, it is helpful to keep in mind that changes in how Bürokratt is framed and perceived may affect the legitimacy of Estonia's digital government agenda more broadly and *vice versa*. The notion of project and organisational spillovers serves as a reminder that legitimacy is dynamic and that assessments of one element in a governance network can affect the perceived legitimacy of others.

2.6 Synthesis

This chapter has outlined the theoretical foundations that inform the analysis of Bürokratt. The algorithmization of bureaucracy literature highlights that algorithmic systems are integrated into bureaucratic structures and governance networks, affecting information flows, expertise and organisational control (Meijer et al., 2021; Veale & Brass, 2019). Critical work on algorithms and surveillance capitalism emphasises that these systems should be treated as potential democratic risks due to their opacity, scale and capacity to concentrate informational power (Zuboff, 2019; O'Neil, 2016). Debates on transparency and accountability show that transparency is a necessary but insufficient condition for democratic legitimacy and that its effects depend on how information is made usable for understanding, contestation and change (Coglianese & Lehr, 2019; Ananny & Crawford, 2016; Grimmelikhuijsen *et al*., 2013).

Building on Suchman (1995), this thesis adopts a broad concept of legitimacy as a collective perception of appropriateness within a normative framework. It specifies that, in this case, the relevant conceptual framework concerns the democratic quality and anchorage of LLMs, drawing on Bürokratt's case. The discussion of project legitimacy suggests that projects such as Bürokratt can have their own legitimacy dynamics that interact with the legitimacy of the organisations and agendas to which they belong (Baba & Brunet, 2024). Together, these elements justify the use of a framework that focuses explicitly on the democratic quality of governance networks.

The next chapter develops this framework by examining democratic anchorage in governance networks as proposed by Sørensen and Torfing (2005, 2009) and its operationalisation by Nesti and Graziano (2019). It explains how their insights are applied to assess the degree of democratic legitimacy of Bürokratt's governance arenas through a qualitative, code-based analysis of public documents.

Conceptual Framework

The previous chapter outlined the theoretical foundations, defining legitimacy in line with Suchman (1995) and situating algorithmic systems such as Bürokratt within debates on algorithmization, transparency and democratic risk. This chapter develops the conceptual framework for assessing the democratic legitimacy of Bürokratt's governance arenas. It does so by adopting Sørensen and Torfing's (2005) concept of democratic anchorage in governance networks and by drawing on Nesti and Graziano's (2019) operationalisation of this framework in the context of smart city governance. The chapter then explains how this framework is adapted for the case of Bürokratt and algorithmisation, including a slight modification of the original components of analysis and the decision to use them for a qualitative code-based analysis rather than as an index as proposed by Nesti and Graziano (2019).

3.1 Democratic anchorage in governance networks

Sørensen and Torfing (2005) start with a simple yet demanding question: when public governance increasingly takes place in networks of public, private, and civil society actors, under what conditions can these networks be considered democratically legitimate? In their view, it is not enough to ask whether governance networks are effective or innovative. It is also necessary to ask whether they are anchored in democratic institutions, stakeholders and norms. They refer to this as democratic anchorage.

Democratic anchorage is a way of assessing the extent to which a governance network is normatively and institutionally tied to a democratic political order. Rather than treating governance networks as detached from representative democracy, Sørensen and Torfing (2005) propose evaluating them in terms of four anchorage points: anchorage in elected politicians, anchorage in the membership bases of participating groups and organisations, anchorage in a territorially defined citizenry, and anchorage in democratic rules and norms. Each anchorage point captures a distinct dimension of democratic legitimacy, and the overall democratic quality of a governance network depends on how these four dimensions combine.

3.1.1 Anchorage in elected politicians

The first anchorage point concerns the relationship between governance networks and elected politicians. Sørensen and Torfing (2005) argue that, even when policy is developed and implemented through networks, these networks still exist within representative systems in which governments derive their authority from elections. Networks do not replace representative institutions; they operate in the "shadow of hierarchy", where the possibility of political intervention remains present.

Anchorage in elected politicians is about whether and how political actors meta-govern the network. Sørensen and Torfing (2005) highlight several roles that elected politicians can play: they can design the overall governance structure, decide which actors are invited to participate, define institutional procedures, frame the goals of the network, coordinate activities among participants, mediate conflicts and set or adjust the agenda over time. In this thesis, these roles are reflected in components such as political design, network composition, institutional procedure design, goal framing, conflict coordination and mediation, and agenda setting.

Normatively, strong anchorage in elected politicians does not mean that politicians control every decision within the network. Instead, it means that they have meaningful capacity to shape mandates, intervene when network activities clash with broader democratic commitments and be held accountable for the overall direction of governance. In the context of algorithmic governance, this anchorage raises questions about whether elected politicians set the terms under which systems like Bürokratt are developed, define their purposes and constraints, and retain the authority to intervene if these systems generate democratically problematic outcomes.

3.1.2 Anchorage in the membership basis of participating groups and organisations

The second anchorage point refers to the link between governance networks and the membership bases of the organisations that participate in them. Many actors in governance networks claim to speak on behalf of someone else: public organisations act in the name of citizens, companies in the name of shareholders or clients, and associations in the name of

members. For Sørensen and Torfing (2005), democratic anchorage requires that these claims of representation are backed by some form of accountability to those bases.

They emphasise three elements in particular. First, members should have some influence over the selection and instruction of their representatives. Second, they should have access to information about what these representatives do in the network. Third, they should have the capacity to criticise and, if necessary, sanction their behaviour ex post (Sørensen & Torfing, 2005). In this thesis, these ideas are captured through components such as the participation of affected actors, selection and instruction through membership, performance reporting, and criticism capacity.

In the context of a governance network around an algorithmic system, this anchorage invites questions about whether public organisations, private companies, and civil society groups or representatives who take part in designing, implementing, or promoting the system are meaningfully connected to those they claim to represent. If ministries, agencies, vendors or associations act without mechanisms that allow their constituencies to instruct, monitor and criticise them, then participation in the network may strengthen technical or organisational influence without a corresponding increase in democratic legitimacy.

3.1.3 Anchorage in a territorially defined citizenry

The third anchorage point shifts attention from organised actors to the broader territorial citizenry. Even if governance networks are anchored in elected politicians and in organisational memberships, democratic legitimacy also requires some form of connection between network activities and the wider public living in the territory affected by those activities (Sørensen & Torfing, 2005). This anchorage concerns whether citizens can know what the network is doing, form opinions about it, and try to influence it.

Sørensen and Torfing (2005) note that governance networks often make it difficult to identify clear lines of responsibility, because decisions emerge from interaction among multiple actors. They therefore emphasise the importance of ‘public contestation through narratives’. Networks and their participants should provide public accounts of what they have done, why

they have done it and with what effects, and these accounts should be open to counter-accounts from critical publics (Sørensen & Torfing, 2005).

In this thesis, this dimension is operationalised through components such as publicly accessible outcomes, participation of affected citizens, citizens' dialogue and contrast of decisions, affected citizens' justification and citizens' influence power. These components pay particular attention to affected citizens, on the grounds that democratic anchorage is not only about abstract opportunities for voice, but also about concrete possibilities for those directly impacted by a system to participate, question and shape its evolution.

Applied to algorithmic governance and to Bürokratt in particular, this anchorage raises questions about how citizens are positioned within the system. Do documents, articles and media outlets present Bürokratt primarily as a tool for users, or as an institutional arrangement that citizens can scrutinise and influence? Are outcomes and rationales presented in forms that citizens can realistically access and understand? Are there channels through which they can challenge or seek justification for the way the system operates and affects them?

3.1.4 Anchorage in democratic rules and norms

The fourth anchorage point turns to the internal conduct of governance networks. While the previous dimensions focus on links between networks and external constituencies, anchorage in democratic rules and norms concerns the 'code of conduct' that shapes how actors interact within the network (Sørensen & Torfing, 2005). Sørensen and Torfing (2005) argue that, for a governance network to be democratically anchored, it must be guided by rules and norms that reflect basic democratic principles of inclusion, deliberation and respect.

They highlight the importance of including relevant stakeholders, enabling open political discussion, tolerating and integrating conflict and pursuing solutions that enhance social justice and equality (Sørensen & Torfing, 2005). This thesis translates these ideas into components such as involvement of relevant stakeholders, deliberative decision-making, respectful dialogue, socially and politically enhancing outcomes and ongoing democratisation. The explicit inclusion of respectful dialogue underlines that the quality of interaction matters, not only formal

participation. Ongoing democratisation points to whether governance practices, over time, strengthen democratic capacities and norms rather than merely preserve existing patterns.

In the governance of algorithmic systems, this anchorage draws attention to how decisions about design, deployment and oversight are made inside the network. It asks whether technical and managerial logics dominate discussions or whether there is space for normative and political arguments. It also invites scrutiny of how disagreements are handled, whether critical voices are included, and whether concerns about rights, fairness and power imbalances are treated as integral to decision-making or as secondary to efficiency and innovation.

Taken together, these four anchorage points provide a structured framework for thinking about the democratic legitimacy of governance networks. They do not prescribe a single model of democratic governance, but they identify key dimensions along which a network's democratic quality can be higher or lower. In this thesis, they serve as the backbone for assessing the degree of democratic legitimacy of the governance arenas surrounding Bürokratt. The following sections build on this framework by considering how Nesti and Graziano (2019) have operationalised democratic anchorage in the context of smart cities and by explaining how their components are adapted for the analysis of an LLM-based virtual assistant in the Estonian public sector.

Table 1 - Summary of Torfing *et al.* framework for democratic anchorage of governance networks

	Anchorage in elected politician	**Anchorage in participating groups and organizations**	**Anchorage in a territorially defined citizenry**	**Anchorage in democratic rules and norms**
Networks	Intense, ongoing dialogue between politicians and network actors	Voice options that grant the affected access to be represented and to reject representative claims, and exit options that allow them to reject network arrangements	Public scrutiny of the goals, procedures, and outcomes of networks	Network constitutions that rely on democratic rules and norms

Source: Torfing *et al*. (2012)

The next chapter sets out the research design and methods used to apply this framework. It describes the selection of documents, the construction of the corpus, and the coding strategy

used to identify and interpret references related to each anchorage component over the period from 2020 to 2025.

Methodology

This chapter explains how the conceptual framework developed above is translated into empirical research. This thesis adopts a qualitative single-case study design to analyse the democratic legitimacy of Bürokratt's governance arenas between 2020 and 2025. The case is examined through public documents, academic papers and selected media that describe, justify, or frame Bürokratt as a public-sector AI initiative. The purpose is not to evaluate the system's technical performance or to measure citizens' perceptions directly, but to assess how democratic legitimacy is constructed, supported, or left underdeveloped in the documentary and textual record surrounding the project.

The methodological challenge of this study lies in moving from a normative theory of democratic anchorage to observable empirical categories. Sørensen and Torfing's (2005, 2009) framework identifies the democratic conditions under which governance networks can be considered legitimate, but it does not, by itself, provide a procedure for analysing empirical material. For this reason, this thesis draws on Nesti and Graziano's (2019) operationalisation of democratic anchorage, while adapting it to the specific context of algorithmic governance and to the qualitative analysis of a single case.

The chapter begins by presenting the logic of this methodological approach, including the construction of the analytical framework and the research design. It then explains how Nesti and Graziano (2019) translate democratic anchorage into components that can guide empirical assessment. It then clarifies how these components are used in this thesis as analytical categories for document and textual analysis, rather than as indicators in a composite index. This distinction is important because the objective of the research is not to rank Bürokratt against other cases, but to examine how different dimensions of democratic anchorage appear across the documents and how their presence, absence or framing shapes the assessment of democratic legitimacy.

The following section presents the selection of documents and articles and the coding strategy used to examine the material. Together, these choices allow analysing Bürokratt as a

governance network whose legitimacy depends not only on institutional sponsorship or technical innovation, but on the extent to which its governance arrangements are connected to democratic actors, procedures and norms.

4.1 Case selection: Bürokratt as a single-case study

This thesis adopts a qualitative single-case study design centred on Bürokratt, the Estonian government's interoperable virtual assistant for public services. Bürokratt was selected as a single case study for its theoretical relevance to the analysis of democratic legitimacy in algorithmic governance. It brings together three features central to the research question: it is an AI-mediated public-sector initiative, it operates at the citizen–state interface, and it is embedded in a governance arrangement involving ministries, public agencies, technical experts and private partners. These characteristics make it suitable for examining how democratic anchorage is constructed around algorithmic systems that do not merely support internal administrative routines, but mediate how citizens access and interact with the state.

The Estonian context underscores the case's relevance. Estonia is widely described as one of the most digitally advanced states in the world, a position reflected in the European Commission's Digital Economy and Society Index, the 2024 Digital Decade Country Report and the International Telecommunication Union Global Cybersecurity Index (European Commission, 2020, 2024; International Telecommunication Union, 2024). In 2024, the European Commission described Estonia as a "front runner" in digital public services, scoring 98.9 for digital public services for businesses and 95.8 for citizens (European Commission, 2024). Digital government in Estonia is therefore not a marginal reform agenda, but a central component of state capacity, administrative organisation and public service delivery. The country's digital identity infrastructure, online public services and long-standing investment in e-government provide the institutional setting for developing AI-based public services not as isolated experiments, but as part of a broader model of digital statehood.

Estonia already applies AI across several areas of public administration, with more than 80 public services reportedly supported by AI-based tools (Ministry of Justice and Digital Affairs, 2024). Within this broader ecosystem, Bürokratt was selected not because it is one additional AI initiative, but because it occupies a strategic position in Estonia's future model of

digital government. While many AI applications support specific administrative tasks or sectoral services, Bürokratt is designed as an interoperable architecture for integrating citizen interaction across public institutions. Its analytical relevance lies in this institutional role: it is not only a service tool but also a projected interface through which citizens may access, navigate, and communicate with the state.

Bürokratt is designed to provide a unified conversational interface between citizens and Estonian public services. Its architecture connects different public-sector chatbots and service environments, allowing users to interact with public administration without navigating separate institutional websites or fragmented administrative channels. The system is associated with expected gains in service availability, administrative efficiency, cross-institutional coordination and citizen communication. As its development moves towards integrating LLM and retrieval-augmented generation (RAG)[4] components, Bürokratt raises questions beyond service optimisation. It raises issues of public authority, institutional responsibility, and democratic control in a setting where algorithmic systems increasingly mediate communication between citizens and the state.

The single-case design follows from this analytical role. The thesis does not treat Bürokratt as representative of all public-sector AI systems, but as an information-rich case in which algorithmic governance, digital state capacity and citizen-facing service delivery intersect. This design allows the analysis to examine the relationship between institutional narratives, governance arrangements and democratic anchorage in depth, without reducing the case to a comparative variable across a broader sample. Bürokratt is used to investigate how democratic legitimacy is constructed in a strategically significant case of AI-mediated public administration.

The empirical scope of the case covers the period from 2020 to 2025. Although the broader policy process began in 2018, when the Ministry of Economic Affairs and Communications and the Government Office convened an expert group on the use of kratts in the public sector, 2020 marks the point at which Bürokratt emerges as a more defined strategic and

[4] Retrieval-augmented generation (RAG) refers to an approach that enhances large language models by connecting them to external knowledge sources before generating responses. Instead of relying only on information encoded during model training, RAG allows the system to retrieve relevant information and use it to ground its output, which can reduce hallucinations and improve the accuracy, relevance and transparency of generated answers (Amugongo et al., 2025). Retrieved from: https://doi.org/10.1371/journal.pdig.0000877

architectural initiative within Estonian digital government. The period from 2020 to 2025 captures the transition from policy vision and conceptual design to pilot implementation, institutional consolidation and preparation for broader deployment. It includes the main public definitions of Bürokratt's purpose, governance setting, implementation logic and expected public value, as well as the planned movement towards LLM and classifier components by the end of 2025. The time frame is thus appropriate for analysing how the democratic legitimacy of Bürokratt was constructed while its governance arenas, institutional responsibilities and technical architecture were still being publicly defined.

4.2 From anchorage to components: Nesti and Graziano's contribution

While Sørensen and Torfing (2005, 2009) provide a rich normative framework, their work is primarily conceptual. Nesti and Graziano (2019) take a further step by translating democratic anchorage into a set of empirical components that can be used to assess the democratic quality of governance networks in practice. Focusing on smart city initiatives, they treat these initiatives as governance networks involving public authorities, private firms and local stakeholders, and they develop an index to measure the degree of democratic anchorage across different cases.

For each of the four anchorage points, Nesti and Graziano (2019) identify specific components that capture how democratic anchorage is expressed in concrete governance arrangements. For example, anchorage in elected politicians is operationalised in terms of political leadership, formal mandates and the design of political control mechanisms. Anchorage in organisations and groups is linked to the participation of affected actors and the ways in which these actors are selected, instructed and held to account. Anchorage in the territorially defined citizenry is assessed through indicators such as public access to information, opportunities for citizen participation and channels for contestation. Finally, anchorage in democratic norms and procedures is captured through components related to inclusive deliberation, respect for rights and ongoing democratic development.

Table 2 - Assessment Framework of democratic anchorage of governance networks

Indicator	Dimension	Sub-indicator	Sub-dimension

IADEP	Anchorage in democratically elected politicians	IPD	Democratically elected politicians design the organization of the network
		IPF	Democratically elected politicians frame the goals of the network
		IPM	Democratically elected politicians manage the network
		IPP	Democratically elected politicians directly participate in the network
IAMGO	Anchorage in membership basis of participating groups and organizations	IGOP	Representatives of groups and organizations participate in the governance network
		IGOSI	Representatives of groups and organizations are selected and instructed by the membership basis to participate in the network
		IMI	Membership basis is informed about representatives' performance
		IMSC	Membership basis scrutinize and criticize representatives' performance
IATDC	Anchorage in a territorially defined citizenry	IIA	Availability of information to the public (transparency)
		ICP	Citizens participate in the network
		ICV	Citizens can dialogue/contest decisions taken in the network (voice)
		ICI	Citizens can influence decision taken in the network
IADRN	Anchorage in democratic rules and norms	IR	Inclusion of all relevant and affected actors in the network
		IDA	Adoption of a democratic deliberative/consensual approach to decision-making in the network
		IOSPJ	Production of outcomes that enhance social and political justice

		IDGN	Democratization of governance network process

Source: retrieved from Nesti & Graziano (2019).

Nesti and Graziano (2019) use these components to construct a composite index that scores smart city initiatives on their degree of democratic anchorage. Their work shows that it is possible to move from a general normative framework to a structured assessment of concrete governance arrangements. It also demonstrates that, in practice, smart city governance networks tend to be strongly anchored in public authorities and organised stakeholders, but only weakly anchored in the broader citizenry (Nesti & Graziano, 2019). This pattern is normatively relevant for this thesis, as it raises questions about whether algorithmic governance networks, such as those surrounding LLM-based systems, reproduce similar imbalances.

4.3 Adapting democratic anchorage to the case of Bürokratt

This thesis adopts Sørensen and Torfing's (2005, 2009) democratic anchorage as its primary analytical lens and draws on Nesti and Graziano's (2019) components to bridge normative theory and empirical analysis. However, the framework requires adaptation since it is applied here to a different empirical object. Nesti and Graziano's (2019) study focuses on smart city governance networks, whereas this thesis examines an algorithmic governance arrangement centred on a public-sector AI system. In this context, questions of democratic anchorage concern not only participation, representation, and accountability in networked governance, but also how authority, expertise, and contestation are organised within a technically complex system that mediates interactions between citizens and public administration.

Two adaptations are therefore introduced. First, some components are slightly modified to capture aspects of democratic anchorage that are especially relevant to algorithmic governance in the public sector, including political steering, agenda-setting, public justification, citizen influence, and the quality of interaction among actors. These changes do not alter the logic of Sørensen and Torfing's (2005, 2009) framework. Rather, they make it possible to apply its four anchorage points to a governance network in which technical design, institutional responsibility and democratic control are closely intertwined.

Second, this thesis does not reproduce Nesti and Graziano's (2019) index-based approach. Their components are not used to calculate a score or to rank the case against other governance networks. Instead, they are used as deductive analytical categories for qualitative document and textual analysis. The aim is to examine whether, how, and to what extent each dimension of democratic anchorage appears in the documentary and textual record. The research seeks to interpret the construction of democratic legitimacy in context, rather than to produce a numerical measure of anchorage.

The following subsections explain these two adaptations in more detail. Section 3.3.1 presents the modified components used in the analysis, anchoring them in public administration, political science and algorithmic governance literature. Section 3.3.2 then explains how these components are employed as categories for qualitative and code-based document and textual analysis.

4.3.1 Modified components of democratic anchorage

For anchorage in elected politicians, this thesis uses six components: political design, network composition, design of institutional procedures, framing goals, coordination and mediation of conflicts, and agenda setting. The decision to separate design, coordination and agenda setting reflects the fact that, in meta-governance settings, 'managing' a network can involve different activities. Sørensen and Torfing (2009) show that meta-governance includes shaping institutional frameworks, framing meanings and goals, managing interactions among actors, and direct participation in network processes. Similarly, Torfing et al. (2012) emphasise that democratic quality in interactive governance depends on how elected politicians structure, supervise and connect networked arrangements to representative institutions, while Klijn and Koppenjan (2012) underline that governance networks require coordination across actors, rules and interaction processes. Political actors may therefore design the overall governance structure, define who participates, establish institutional procedures, frame the goals of the network, coordinate actors and resources, mediate conflicts and set or adjust the agenda over time. Treating these as distinct components allows the analysis to trace more precisely how elected politicians shape Bürokratt's governance arenas.

For anchorage in participating groups and organisations, the thesis uses four components: participation of affected actors, selection and instruction by memberships, performance report, and criticism capacity. These components follow Sørensen and Torfing's (2005) argument that governance networks are democratically anchored not only through the presence of organised actors, but through the extent to which these actors remain accountable to the constituencies or membership bases they claim to represent. Torfing et al. (2012) similarly emphasise that the democratic quality of interactive governance depends on voice options that allow affected actors to be represented and to reject representative claims, as well as exit options that allow them to reject network arrangements. Nesti and Graziano (2019) operationalise this dimension by examining whether representatives of groups and organisations participate in the network, whether they are selected and instructed by their membership bases, whether members are informed about their representatives' performance, and whether members can scrutinise and criticise that performance. In this thesis, these components are used to assess whether and how organised stakeholders and public bodies involved in or affected by Bürokratt participate in governance processes, how they are selected or mandated, whether their performance is reported on, and whether they have the capacity to voice criticism and influence outcomes.

For anchorage in the territorially defined citizenry, the components are: publicly accessible outcomes, participation of affected citizens, citizens' dialogue and contest of decisions, affected citizens' justification and citizens' influence power. These components follow Sørensen and Torfing's (2005) argument that governance networks must be open to public scrutiny by the broader citizenry affected by their decisions. Torfing et al. (2012) emphasise that this anchorage depends on public contestation of the goals, procedures, and outcomes of governance networks, since citizens must be able to access information, form judgements, and challenge the narratives produced by network actors. Nesti and Graziano (2019) operationalise this dimension by examining the availability of public information, citizen participation, opportunities for dialogue and contestation, and citizens' capacity to influence decisions. In the context of algorithmic governance, these components are also informed by Cech's (2021) emphasis on the agency of the forum: citizens may formally receive information, but democratic accountability depends on whether they can question, evaluate and respond to the justifications provided. The focus on affected citizens is further supported by work on deliberative participation in unequal settings, which shows that democratic voice cannot be assumed from the

mere existence of participatory arenas and must be assessed in relation to who participates, under what conditions and with what capacity to shape outcomes (Parthasarathy et al., 2019). In this thesis, the inclusion of affected citizens therefore underscores that democratic anchorage is not only about offering a formal opportunity for voice, but also about enabling active participation by those most directly influenced by the system. The emphasis on dialogue, justification and influence reflects the importance of reason-giving interactions between authorities and citizens in democratic settings.

Finally, for anchorage in rules, norms and procedures, the thesis draws on: the involvement of relevant stakeholders, deliberative decision-making, respectful dialogue, socially and politically enhancing outcomes, and ongoing democratisation. These components follow Sørensen and Torfing's (2005) argument that democratic anchorage also depends on the internal rules and norms that structure interaction within governance networks. In this dimension, democratic quality is not assessed only by whether relevant actors are formally included, but also by whether the network operates according to norms of inclusion, deliberation, conflict tolerance and respect for democratic principles. Torfing et al. (2012) similarly link this form of anchorage to network constitutions grounded in democratic rules and norms, while Nesti and Graziano (2019) operationalise it through the inclusion of relevant and affected actors, deliberative decision-making, socially and politically just outcomes, and the democratisation of governance processes. The explicit inclusion of respectful dialogue is further supported by the collaborative governance literature, which treats dialogue, trust-building, and shared understanding as central conditions for legitimate interaction among public, private, and civil society actors (Ansell & Gash, 2008). In this thesis, respectful dialogue therefore captures the quality of interaction among actors, not merely their formal presence in the network. The focus on socially and politically enhancing outcomes and ongoing democratisation points to whether the governance network contributes to strengthening democratic practices over time rather than merely maintaining existing arrangements.

These adaptations preserve the operational logic of Nesti and Graziano's (2019) framework while adjusting its components to the specific concerns of algorithmic governance. The modifications do not change the four anchorage points proposed by Sørensen and Torfing (2005), but refine how they are observed in a context where democratic legitimacy depends on

the distribution of political steering, institutional responsibility, public justification, citizen influence and the quality of interaction around technically complex systems. They also reflect the thesis's normative position that algorithms in government should be treated as potential democratic risks, since they can concentrate informational and technical power unless their governance networks are meaningfully anchored in representative institutions, organised actors, affected citizens and democratic rules and norms.

Table 3 - Comparative table: Nesti and Graziano (2019) and proposed sub-dimensions for algorithmic governance

Anchorage dimension	**Nesti & Graziano sub-dimension**	**Proposed sub-dimensions for AI governance**	**Type of data used for observing the sub-dimension**
Anchorage in democratically elected politicians	Democratically elected politicians design the organization of the network	Democratically elected politicians design the organization of the network	Official strategies, policy documents, legal and institutional materials describing mandates, leading institutions and governance arrangements.
	Democratically elected politicians frame the goals of the network	Democratically elected politicians frame the goals of the network	Strategies, presentations, and institutional webpages describing the system's objectives, expected public value and strategic direction.
	Democratically elected politicians manage the network	Democratically elected politicians design the network's institutional procedures	Policy, legal, technical and procurement-related materials describing institutional responsibilities, interoperability rules, open-source requirements and data governance arrangements.
	-	Democratically elected politicians set the networks' agenda	Strategies, roadmaps, budget documents, policy reports and institutional statements defining priorities, targets, timelines and future development plans.
	-	Democratically elected politicians coordinate and mediate political conflicts	Case studies, implementation reports and institutional statements describing inter-agency collaboration, feedback practices and coordination mechanisms.
	Democratically elected politicians directly participate in the network	Democratically elected politicians directly participate in the network	Official reports, presentations, and public webpages identifying ministries, government offices, or senior public officials as actors in steering, implementation, or oversight.

Anchorage in membership basis of participating groups and organizations	Representatives of groups and organizations participate in the governance network	Representatives of groups and organizations participate in the governance network	Case studies, institutional reports, technical materials, media articles, and academic studies identifying public agencies, private partners, academic actors, and organised stakeholders, and their roles.
	Representatives of groups and organizations are selected and instructed by the membership basis to participate in the network	Representatives of groups and organizations are selected and instructed by the membership basis to participate in the network	Organisational documents, public statements, consultation materials and evidence of representative mandates.
	Membership basis is informed about representatives' performance	Membership basis is informed about representatives' performance	Progress reports, implementation reports, public statistics, institutional webpages and public communications reporting activities, adoption or performance.
	Membership basis scrutinize and criticize representatives' performance	Membership basis scrutinize and criticize representatives' performance	Media materials, opinion articles, academic studies, public statements, and feedback materials indicating criticism, contestation, or review, where available in the corpus.
Anchorage in a territorially defined citizenry	Availability of information to the public (transparency)	Availability of information to the public (transparency)	Public webpages, official reports, policy documents, technical documentation, open-source repositories, public indicators, media articles and academic studies.
	Citizens participate in the network	Citizens participate in the network	User-oriented academic studies, media materials, public-facing webpages and feedback-related materials describing citizen involvement in use, testing, evaluation or governance.
	Citizens can dialogue/contest decisions taken in the network (voice)	Citizens can dialogue/contest decisions taken in the network (voice)	Media and opinion articles, user-oriented academic studies, public-facing materials, feedback channels and consultation-related materials, where available in the corpus.
	-	Citizens can find publicly available justifications of the network's decisions	Public webpages, policy documents, technical explanations, media interviews, institutional statements and reports explaining design choices, implementation decisions or governance arrangements.

	Citizens can influence decision taken in the network	Citizens can influence decision taken in the network	User-oriented academic studies, feedback evidence, consultation outcomes and documented changes linked to citizen input, where available in the corpus.
Anchorage in democratic rules and norms	Inclusion of all relevant and affected actors in the network	Inclusion of all relevant and affected actors in the network	Case studies, policy documents, institutional reports, technical materials and public webpages identifying stakeholders involved in design, implementation, oversight or evaluation.
	Adoption of a democratic deliberative/consensual approach to decision-making in the network	Adoption of a democratic deliberative/consensual approach to decision-making in the network	Policy documents, steering-group descriptions, consultation-related materials and reports indicating joint decision-making or deliberative procedures.
	-	Adoption of respectful dialogue between actors in the network	Institutional materials, reports and case studies indicating recognition of different mandates, forms of expertise and rights-oriented roles within the governance process.
	Production of outcomes that enhance social and political justice	Production of outcomes that enhance social and political justice	Policy documents, public webpages, institutional reports, media materials, and academic studies that describe accessibility, inclusion, rights protection, service equality, or public-value outcomes.
	Democratization of governance network processes	Democratization of governance network processes	Open-source materials, transparency mechanisms, public reports, consultation-related materials and institutional statements indicating openness, public scrutiny, shared information or increased accountability over time.

Source: made by the author based on Sørensen and Torfing (2005, 2009), Nesti and Graziano (2019)

The thesis does not seek to reconstruct the internal workings of Bürokratt's governance arenas. It examines how democratic legitimacy is publicly constructed, justified or left underdeveloped in documents and public-facing textual materials. Document analysis is appropriate for this purpose due to documents being not only records of events, but also social and institutional artefacts that can be systematically examined for meaning, context and purpose (Bowen, 2009). In policy research, documents are also relevant for analysing policy content,

policy processes and the public articulation of policy choices (Dalglish et al., 2020). In this thesis, the relevance of each sub-dimension depends on whether roles, mandates, procedures, justifications, participation channels and accountability mechanisms are publicly articulated in the corpus. At the same time, some sub-dimensions, especially participation, criticism capacity, conflict mediation and respectful dialogue, may require interviews or observation to be fully assessed as practices. The third column in Table 3 makes this distinction explicit by indicating the type of textual data used to observe each sub-dimension.

4.3.2 Using components for qualitative and code-based analysis

The second adaptation concerns how the components are used analytically. Nesti and Graziano (2019) employ their components to build a quantitative index that ranks smart city initiatives by their degree of democratic anchorage. This thesis follows a different analytical purpose. It uses the modified components as deductive analytical categories for qualitative document and textual analysis. The objective is to examine how each component of democratic anchorage is constructed, justified or left underdeveloped in the documentary and textual record, rather than to produce a numerical measure of legitimacy.

This methodological choice is grounded in qualitative research as an interpretive mode of inquiry. Denzin and Lincoln (2017) describe qualitative research as an approach concerned with situated meanings, representations and practices. In this thesis, public documents are therefore treated not only as sources of information about Bürokratt, but also as materials through which institutional actors construct, justify and delimit the democratic meaning of the project. The analysis focuses on what the documents make explicit, how they frame governance arrangements, which actors and mechanisms they identify, and which dimensions of democratic anchorage remain vague, implicit or absent.

The code-based procedure follows Saldaña's (2021) understanding of coding as a method for organising qualitative data and assigning analytical meaning to selected excerpts. In this thesis, each modified component functions as a deductive code derived from the democratic anchorage framework. The first round of coding mapped excerpts according to the anchorage point and component to which they were most directly related. This step ensured that the corpus

was read systematically across the four dimensions of democratic anchorage, without using the codes to produce a score or numerical index.

After this first round, a second round of coding focused on the analytical centrality of each excerpt. For each selected passage, a keyword or brief descriptive phrase was added to capture the main issue addressed by the excerpt, such as relevant stakeholders, agenda-setting, criticism capacity, citizen participation, or public justification. This step helped distinguish between excerpts that merely mentioned a component and excerpts that provided substantive information about how that component appeared in the governance of Bürokratt.

A third round then standardised these keywords into interpretive categories and assessed whether each excerpt provided strong or weak evidence for the relevant component. This distinction was qualitative, not numerical. An excerpt was considered strong when it provided contextualisation, explanation, justification, or institutional detail about the component. An excerpt was considered weak when it consisted of a vague, isolated, or generic reference without further explanation of the actor, process, justification, or mechanism involved. For example, a passage naming relevant stakeholders without explaining their roles was coded differently from one describing how those stakeholders participated in a decision-making or implementation process.

This iterative procedure allowed the analysis to move from deductive mapping to qualitative interpretation. The first round ensured that the corpus was read systematically through the four anchorage points; the second and third rounds refined the analytical meaning of each excerpt by identifying its central contribution to the relevant component. This follows Saldaña's (2021) understanding of coding as a process of organising data and progressively assigning analytical meaning to textual material. In this thesis, coding therefore served not as a scoring mechanism, but as a way to distinguish between the mere presence of a theme and its substantive contribution to the assessment of democratic anchorage.

The qualitative interpretation of democratic anchorage is based on the substance, specificity and institutional meaning of the coded excerpts. A detailed description of a mechanism through which citizens can influence decisions, for example, provides stronger evidence of democratic anchorage than several general references to citizen participation.

Similarly, the absence of references to contestation, justification or influence may indicate a weakly developed dimension of anchorage, even when documents describe the system as citizen-centred. The analysis distinguishes between identifying evidence related to a component and assessing its democratic significance.

4.4 Document and textual corpus, and selection criteria

The empirical analysis is based on a document and textual corpus composed of official and institutional materials published between 2020 and 2025. The documents and media materials were selected according to three criteria. First, they had to be produced or published by relevant stakeholders in Bürokratt's governance environment, including governmental actors, public agencies, European institutions, international organisations, institutional actors involved in digital government, AI governance or public-sector accountability, civil society organisations or academic institutions. Second, they had to mention Bürokratt directly. Third, they had to fall within the temporal scope of the thesis. For official governmental documents, a fourth criterion was applied. These official documents had to be available in English to ensure consistency in textual interpretation and to avoid relying on machine translation for coding politically and institutionally sensitive material. For academic papers and media materials, Google Translate or the premium version of ChatGPT was used to translate them. In addition, the websites of relevant Estonian civil society organisations were searched using the terms "Bürokratt" and "Bürokrati", but no public online materials or position statements directly discussing the system were identified. A complementary mapping of the public-facing sources searched is presented in Appendix 2.

The corpus includes policy documents, strategic reports, official webpages, institutional presentations, budgetary documents, parliamentary materials, European Union reports, Estonian universities web articles, Master's Theses, and online newspapers opinion articles. The documents included in the final corpus were selected because they provide insight into how Bürokratt is described, justified, and positioned by actors involved in or relevant to its governance environment. The analysis does not treat documents only as factual records of implementation. It treats them as institutional texts through which the democratic meaning of the project is constructed, delimited and made publicly intelligible.

The selection of documents also followed the analytical framework's logic. Before coding, the documents were preliminarily classified according to the anchorage point they appeared most likely to inform: elected politicians, participating groups and organisations, territorially defined citizenry, or democratic rules and norms. This preliminary classification did not determine the final interpretation of the documents. Its purpose was to ensure that the corpus covered all four dimensions of democratic anchorage and that the analysis would not be limited to documents reflecting only the governmental or technical framing of Bürokratt.

The final corpus is presented in Table 4 - Bürokratt's analysed document and textual corpus. The table identifies each document, its type, institutional source, author, link and preliminary anchorage classification. This organisation makes the selection process transparent and allows the subsequent analysis to trace how different types of documents contribute to the assessment of democratic anchorage across the four dimensions.

Table 4 - Bürokratt's analysed document and textual corpus

Main Topic	Document Title	Author / Institution	Link	Anchor. 1	Anchor. 2	Anchor. 3	Anchor. 4
Bürokratt	Building the human-centric government	Velsberg, O.	https://ega.ee/wp-content/uploads/2022/10/Presentation-AI-ENG_Velsberg_Estonia.pdf	Yes	No	No	No
Bürokratt	Digital public services based on open source: case study on Bürokratt	Gonçalves, D.	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt	No	Yes	No	Yes
Bürokratt	Estonia's Bürokratt, a concept of how state could operate in the age of artificial intelligence	Mäe, I.	https://investinestonia.com/estonias-burokratt-is-a-concept-of-how-state-could-operate-in-the-age-of-artificial-intelligence/	No	No	No	Yes
Bürokratt	Is Estonia's new AI the future of public administration?	Jenkins, N.	https://eestielu.ca/is-estonias-new-ai-the-future-of-public-administration/	No	Yes	Yes	No
Bürokratt	Open Source Software Country Intelligence Report: Estonia 2025	Janin, M. Thévenet, A.	https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/OSS%20Country%20Intelligence%20Report%20Estonia%202025.pdf	No	Yes	No	Yes
Bürokratt	State Budget Strategy	Ministry of Finance	https://www.fin.ee/sites/default/files/documents/2024-12/Riigi%20eela	Yes	No	No	No

	2025–2028		rvestrateegia%202025-2028_eng.pdf				
Bürokratt	The vision of Bürokratt	Information System Authority (RIA)	https://www.ria.ee/en/state-information-system/personal-services/burokratt	No	No	No	Yes
Bürokratt	Virtual Assistant Bürokratt	Ministry of Justice and Digital Affairs	https://www.kratid.ee/en/burokratt	No	Yes	Yes	No
Bürokratt	Virtual assistant brings the benefits of technology to every citizen [Estonia]	Microsoft	https://news.microsoft.com/en-cee/2022/11/28/virtual-assistant-brings-the-benefits-of-technology-to-every-citizen/	No	Yes	No	Yes
Bürokratt	Eesti juturobot pistab rinda kasutajate kõrgete ootustega	Ress, T.	https://peegel.ut.ee/node/810	No	Yes	Yes	No
Bürokratt	Priit Kongo: riigi digiteenuste arendamiseks on vaja tsentraalset juhtimist	Kongo, P.	https://www.err.ee/1609186408/priit-kongo-riigi-digiteenuste-arendamiseks-on-vaja-tsentraalset-juhtimist	No	Yes	No	Yes
Bürokratt	Vincent Homburg: inimese loodud tehnoloogia ei ole neutraalne	Homburg, V.	https://www.err.ee/1609042403/vincent-homburg-inimese-loodud-tehnoloogia-ei-ole-neutraalne	No	No	Yes	No
General AI	AI strategy	Ministry of Justice and Digital Affairs	https://e-estonia.com/wp-content/uploads/factsheet-ai-strategy.pdf	Yes	Yes	No	Yes
General AI	Estonia and automated decision-making: challenges for public administration	Kerikmäe, T. Feklistov, V.	https://e-estonia.com/estonia-and-automated-decision-making-challenges-for-public-administration/	No	Yes	Yes	Yes
General AI	Government data-driven decision-making (DDDM) framework implementation	OECD	https://reforms-investments.ec.europa.eu/document/download/44381eb7-01fc-4a5c-ab90-826aed42096a_en?filename=Deliverbles%203.1_edited%20%2B%20cover_0.pdf	Yes	Yes	Yes	Yes
General AI	Report on Auditing Discrimination and Bias within Estonian Public Sector Systems	The Gender Equality and Equal Treatment Commissioner's Office of Estonia The Office of the Equal Opportunities Ombudsperson of Lithuania Ministry of Economic Affairs and Communications of Estonia Ministry of Justice of Estonia	https://www.volinik.ee/volinik-live-web-prd/s3fs-public/2024-12/Equitech_AuditReport_TalTech_25.11.24.pdf	Yes	Yes	Yes	Yes

		Tallinn University of Technology					
General AI	The Situation of Article 2 TEU values in Estonia	Wikström Avaria, A. Schnedl, A. Marzocchi, O.	https://www.europarl.europa.eu/RegData/etudes/IDAN/2024/754387/IPOL_IDA(2024)754387_EN.pdf	No	Yes	No	Yes
General AI	Tehisintellekti kasutus ja arendamine Eestis: Krattide lugu	Tallinn University of Technology	https://aidoc.pages.taltech.ee/uhiskondlik-moju-ja-eetika/TI-Eestis/	No	Yes	No	Yes
Total	**18**			**5**	**13**	**7**	**12**

Source: Made by the author.

4.5 Operationalising the components through guiding questions

After defining the corpus, the next methodological step was to operationalise the adapted components of democratic anchorage into guiding questions for document and textual analysis. This step was necessary because the components derived from Nesti and Graziano's (2019) framework indicate what should be observed. Still, they do not automatically define how each dimension should be identified in the documents. The guiding questions translate each component into a more precise analytical prompt, keeping the coding process connected to the conceptual framework while remaining applicable to textual material.

Each guiding question was formulated to specify the kind of evidence relevant to a given component. For example, the component political design, underpinned by elected politicians, was operationalised through questions asking whether the document explicitly describes the governance arrangement's political design and whether this design is justified. The component network composition within the same anchorage point was translated into questions about whether the document identifies who is part of the governance network and explains how this composition is defined. The same procedure was applied across the remaining anchorage points, so that each component could guide the identification of textual evidence.

This operationalisation served two purposes. First, it ensured internal consistency between the four anchorage points, the modified components and the coding process. Second, it reduced ambiguity in document and textual analysis by clarifying which types of evidence would be considered relevant for each component. The guiding questions did not predetermine the findings. They structured the corpus reading and enabled the analysis to determine whether each

dimension of democratic anchorage was substantively addressed, only partially developed, or absent in the material. The full set of components and guiding questions is presented in 'Table 5 - Sub-dimensions' guiding questions' below.

Table 5 - Sub-dimensions' guiding questions.

Code ID	Anchorage Dimension	Component Name	Coding Questions
1.a1	Elected politicians	Political design	Does the document explicitly describe the political design of the governance arrangement?
1.a2	Elected politicians	Political design	Is this design justified?
1.b1	Elected politicians	Network composition	Does the document explicitly state who is part of the governance network?
1.b2	Elected politicians	Network composition	Does the document explicitly state how this composition is defined?
1.c1	Elected politicians	Design of institutional procedures	Are the institutional procedures governing decision-making within the system clearly described?
1.d1	Elected politicians	Framing goals	Are the system's goals explicitly framed?
1.d2	Elected politicians	Framing goals	Are the goals of the governance arrangement explicitly framed?
1.d3	Elected politicians	Framing goals	Is it clear who formulates these goals?
1.e1	Elected politicians	Coordination and conflict mediation	Does the document indicate mechanisms for coordination between actors?
1.e2	Elected politicians	Coordination and conflict mediation	Does the document outline mechanisms for mediating conflicts within the network?
1.f1	Elected politicians	Agenda setting	Are there clear indications of who sets, steers or revises the agenda for the system and its governance?
2.a1	Participating groups and organisations	Participation of affected actors	Are affected organisations and groups explicitly included in the governance process?
2.b1	Participating groups and organisations	Selection and instruction by memberships	Are participating organisations and groups selected according to previously established norms or procedures?
2.b2	Participating groups and organisations	Selection and instruction by memberships	Are representatives instructed or mandated by their organisations or memberships?
2.c1	Participating groups and organisations	Performance report	Are there publicly available performance reports about participating organisations' roles or contributions?
2.d1	Participating groups and organisations	Criticism capacity	Are there forums or mechanisms through which groups and organisations can express criticism or

			contest decisions?-
3.a1	Territorially defined citizenry	Publicly accessible outcomes	Are the outcomes, decisions or impacts of the system made publicly accessible to the citizenry?
3.b1	Territorially defined citizenry	Participation of affected citizens	Do affected citizens have opportunities to participate in the process beyond being treated merely as service users?
3.c1	Territorially defined citizenry	Dialogue	Are there channels through which citizens can enter into dialogue with authorities about the system?
3.c2	Territorially defined citizenry	Contestation	Are there channels through which citizens can contest decisions or uses of the system?
3.d1	Territorially defined citizenry	Justification for affected citizens	Are there publicly available justifications that explain decisions or arrangements to affected citizens in an intelligible way?
3.e1	Territorially defined citizenry	Citizens' influence power	Do citizens have any effective influence over the design, implementation or revision of the system?
4.a1	Democratic rules and norms	Involvement of relevant stakeholders	Does the document indicate that relevant stakeholders are intentionally involved in governance processes, rather than a narrow set of actors?
4.b1	Democratic rules and norms	Deliberative decision-making	Is there evidence that decision-making within the governance network has a deliberative character?
4.c1	Democratic rules and norms	Respectful dialogue	Is the dialogue among actors described or framed in terms that reflect mutual respect and recognition?
4.d1	Democratic rules and norms	Socially and politically enhancing outcomes	Are the expected or claimed outcomes of the system presented as socially and politically enhancing, not only as efficiency gains?
4.e1	Democratic rules and norms	Ongoing democratisation	Is there any indication that the governance arrangement is expected to contribute to ongoing democratisation over time?

Source: Made by the author.

4.6 Coding refinement and interpretive assessment

After the components had been operationalised through guiding questions, the first round of coding produced the initial set of coded excerpts reported in Table 6. This first round mapped the material according to the anchorage point, component and guiding question to which each excerpt appeared to be most directly related. It also served as the basis for assessing whether a passage provided analytically useful evidence for the democratic anchorage framework. Some excerpts initially coded in this stage, including passages that mentioned Bürokratt directly, did not substantively support any anchorage dimension once read in relation to the guiding

questions. These excerpts remained part of the first-round coding distribution reported in Table 6, but they were not taken forward into the subsequent interpretive rounds of classification. The second and third rounds, therefore, focused on the excerpts that provided analytical support for assessing how each anchorage dimension was constructed, justified or left underdeveloped in the material.

The second round focused on the analytical centrality of each excerpt. For each selected passage, a keyword or brief descriptive phrase was added to capture the main issue addressed by the excerpt. These terms included, for example, relevant stakeholders, agenda-setting, criticism capacity, citizen participation, public justification, and service efficiency. This step helped distinguish excerpts that merely referred to an anchorage component from excerpts that provided more substantive information about how that component appeared in the governance of Bürokratt.

The third round standardised these keywords into interpretive categories. At this stage, the analysis assessed whether each excerpt provided stronger or weaker evidence for the relevant component. An excerpt was treated as stronger evidence when it provided contextualisation, explanation, justification or institutional detail about the component. An excerpt was treated as weaker evidence when it consisted of a vague, isolated or generic reference without further explanation of the actor, process, justification or mechanism involved. For example, a passage that only named stakeholders was treated differently from one that explained their roles in implementation, coordination, or decision-making.

This procedure follows Saldaña's understanding of coding as a method for organising qualitative data and assigning analytical meaning to textual material (Saldaña, 2021). In this thesis, coding was not used to produce a score, to measure frequency, or to rank the excerpts. It was used to organise the corpus and support a qualitative assessment of how each dimension of democratic anchorage was constructed, justified or left underdeveloped in the material.

The coding refinement also helped preserve the difference between the presence of a theme and its democratic significance. A document could mention citizens, stakeholders or transparency without providing evidence of citizen influence, stakeholder accountability or meaningful public justification. For this reason, the analysis did not treat every reference to an

anchorage component as equally relevant. Each excerpt was interpreted in relation to how the component it addressed, the institutional context in which it appeared and the type of democratic anchorage it supported.

4.7 Methodological limitations

This study has two main limitations. The first concerns language. The analysis relied primarily on English-language documents. This decision was shaped by the author's lack of fluency in Estonian and by the difficulty of relying on automated translation for institutional, legal and technical material. Selected opinion articles, expert commentaries and media materials containing relevant analysis of Bürokratt were nevertheless translated from Estonian into English using Google Translate, because they provided access to public-facing debate not available in the official English-language corpus. These sources were used cautiously, mainly to identify broad framings, recurring themes and visible forms of criticism, rather than to support detailed claims about legal, technical or institutional procedures.

The second limitation concerns the absence of interviews. Interviews with actors involved in the design, implementation and oversight of Bürokratt would have helped clarify issues that remain underdeveloped in the documentary and textual record, especially internal decision-making, conflict mediation, stakeholder participation and accountability mechanisms. This limitation follows from the research design. The thesis examines the public construction of democratic legitimacy through documentary and public-facing textual materials, rather than the internal operation of Bürokratt's governance arenas. As a result, the analysis can assess which governance arrangements, justifications, and mechanisms are publicly articulated. Still, it cannot determine whether informal practices of participation, criticism or conflict mediation exist beyond the analysed corpus. This limitation was partially mitigated by incorporating public-facing media materials, especially newspaper articles and expert commentaries, as complementary sources. These materials do not replace interviews with users, citizens or governance actors, nor do they provide a representative measure of public opinion. However, they help capture how Bürokratt appears outside the official institutional narrative, including how the system is described, contextualised, questioned or criticised in public debate. Official documents and governmental websites mainly reflect the perspective of initiators, developers and

institutional partners, while media materials can reveal concerns or framings that are less visible in the official record.

The limited visibility of citizen perspectives in the corpus should not be treated only as a problem of data availability. Public institutions differ in how they create, publish and archive citizen-facing accountability channels. For example, London City Hall maintains a public "Questions to the Mayor" database, where Assembly Members question the Mayor, written answers are published, and citizens can suggest questions to be taken forward by Assembly Members (Greater London Authority, n.d.). This contrast shows that the public availability of citizen-facing material is also shaped by institutional choices about whether participation, questioning and answers are made searchable and publicly accessible. In the case of Bürokratt, the absence of comparable public-facing materials limits the analysis. Still, it is also relevant to the assessment of how far citizen perspectives are made visible in the system's public governance narrative.

These limitations also define the scope of the findings. The thesis does not claim to reconstruct every internal decision behind Bürokratt. It assesses how democratic legitimacy is constructed in the public documentary and textual record. Within that scope, the analysis remains relevant because the documents reveal which dimensions of legitimacy are publicly articulated and which remain underdeveloped.

4.8 Synthesis and link to research design

In summary, this chapter has translated the general concern with democratic legitimacy into a concrete conceptual framework centred on democratic anchorage in governance networks. Democratic anchorage theory provides a set of normative criteria for assessing the democratic quality of networked governance arrangements. Nesti and Graziano's (2019) work demonstrates how these criteria can be operationalised into components and codes that capture empirical manifestations of anchorage in elected politicians, organisations, citizens and democratic norms.

In the case of Bürokratt, the thesis adopts and slightly modifies Nesti and Graziano's (2019) components to better reflect the specific demands of algorithmic governance. It distinguishes between different forms of political steering, highlights the active participation of affected citizens and foregrounds respectful dialogue and ongoing democratisation as key aspects

of rules of conduct and procedures. Rather than aggregating these components into an index, the thesis uses them as structured categories for qualitative code-based analysis of public documents, selected media materials, and academic studies. The first round of coding produced the initial distribution of excerpts by guiding question. In contrast, the subsequent interpretive rounds refined this mapping by identifying each excerpt's analytical centrality and standardising these observations into broader interpretive categories.

The next chapter applies this methodological approach to the empirical analysis of Bürokratt's document and textual corpus between 2020 and 2025. It examines how the four anchorage points appear across the documentary material. It assesses how democratic legitimacy is constructed, justified, or left underdeveloped across each dimension, distinguishing between the mere presence of references to an anchorage component and their substantive democratic significance.

Data Analysis

This chapter presents the empirical analysis of Bürokratt's governance arenas. It is organised around the four democratic anchorage points that structure the analytical framework: elected politicians, participating groups and organisations, territorially defined citizenry, and democratic rules and norms.

The analysis is based on 319 coded excerpts extracted from the document and material corpus. Of these, 85 excerpts mention Bürokratt directly, while 11 refer directly to the broader Kratt strategy for artificial intelligence in the Estonian public sector. These figures provide an overview of the empirical material underpinning the qualitative analysis.

The distribution of coded excerpts by component is presented in 'Table 6 - Distribution of coded excerpts per guiding questions'. This table indicates how the material is distributed across the analytical categories derived from the democratic anchorage framework during the first round of coding. It is included to make the analysis's structure transparent, not to assign numerical weight to any dimension of legitimacy or to imply that all coded excerpts carry the same analytical weight.

Table 6 - Distribution of coded excerpts per guiding questions.

Code ID	Anchorage Dimension	Component Name	Guiding Questions	Nº Coded Excerpts
1.d1	Elected politicians	Framing goals	Are the system's goals explicitly framed?	63
1.b2	Elected politicians	Network composition	Does the document explicitly state who is part of the governance network?	40
1.c1	Elected politicians	Design of institutional procedures	Institutional procedures – Are the procedures governing decision-making within the system clearly described?	39
1.d2	Elected politicians	Framing goals	Are the goals of the governance arrangement explicitly framed?	26
1.f1	Elected politicians	Agenda setting	Are there clear indications of who sets, steers or revises the agenda for the system and its governance?	27
1.a1	Elected politicians	Political design	Does the document explicitly describe the	13

			political design of the governance arrangement?	
1.d3	Elected politicians	Framing goals	Is it clear who formulates these goals?	12
1.a2	Elected politicians	Political design	Is this political design justified in normative or practical terms?	11
1.e1	Elected politicians	Coordination and conflict mediation	Does the document indicate mechanisms for coordination between actors in the governance network?	10
1.b2	Elected politicians	Network composition	Does the document explicitly state how this composition is defined?	2
1.e2	Elected politicians	Coordination and conflict mediation	Does the document outline mechanisms for mediating conflicts within the network?	0
			Total: Anchor 1	**243**
2.a1	Participating groups and organisations	Participation of affected actors	Are affected organisations and groups explicitly included in the governance process?	21
2.c1	Participating groups and organisations	Performance report	Are there publicly available performance reports about the roles or contributions of participating organisations?	4
2.b2	Participating groups and organisations	Selection and instruction by memberships	Are representatives instructed or mandated by their organisations or memberships?	1
2.d1	Participating groups and organisations	Criticism capacity	Are there forums or mechanisms through which groups and organisations can express criticism or contest decisions related to the system?	1
2.b1	Participating groups and organisations	Selection and instruction by memberships	Are participating organisations and groups selected according to previously established norms or procedures?	1
			Total: Anchor 2	**28**
3.a1	Territorially defined citizenry	Publicly accessible outcomes	Are the outcomes, decisions or impacts of the system made publicly accessible to the citizenry?	56
3.d1	Territorially defined citizenry	Justification for affected citizens	Are there publicly available justifications that explain decisions or arrangements to affected citizens in an intelligible way?	61
3.b1	Territorially defined citizenry	Participation of affected citizens	Do affected citizens have opportunities to participate in the process beyond being treated merely as service users?	4

3.c2	Territorially defined citizenry	Dialogue and contestation	Are there channels through which citizens can contest decisions or uses of the system?	3
3.e1	Territorially defined citizenry	Citizens' influence power	Do citizens have any effective influence over the design, implementation or revision of the system?	1
3.c1	Territorially defined citizenry	Dialogue and contestation	Are there channels through which citizens can enter into dialogue with authorities about the system?	1
			Total: Anchor 3	**126**
4.a1	Democratic rules and norms	Involvement of relevant stakeholders	Does the document indicate that relevant stakeholders are intentionally involved in governance processes?	98
4.d1	Democratic rules and norms	Socially and politically enhancing outcomes	Are the expected or claimed outcomes of the system presented as socially and politically enhancing, not only as efficiency gains?	58
4.c1	Democratic rules and norms	Respectful dialogue	Is the dialogue among actors described or framed in terms that reflect mutual respect and recognition?	11
4.b1	Democratic rules and norms	Deliberative decision-making	Is there evidence that decision-making within the governance network has a deliberative character?	9
4.e1	Democratic rules and norms	Ongoing democratisation	Is there any indication that the governance arrangement is expected to contribute to ongoing democratisation over time?	6
			Total: Anchor 4	**182**

Source: Made by the author.

The summary of the third round of coding is presented in 'Table 7 - Summary of third-round interpretive categories'. This table summarises how the excerpts taken forward from the first round were consolidated into broader interpretive categories. These categories add qualitative depth to the initial distribution of coded excerpts and provide the basis for discussing each anchorage point in the following sub-sections.

Table 7 - Summary of third-round interpretive categories

Standardised code	Nº Coded Excerpts	Standardised code	Nº Coded Excerpts
Weak framing	46	Strong outcomes	9
Strong justification	36	Strong procedures	8
Weak stakeholders	33	Strong stakeholders	7
Weak outcomes	30	Weak participation	6
Weak justification	22	Weak criticism	3
Weak cases	19	Strong network arrangement	2
Weak procedures	18	Weak policy design	1
Strong framing	16	Weak instruction	1
Total round-three coded excerpts			**257**

Source: Made by the author.

The following sub-sections examine how each anchorage point appears in the analysed materials, focusing on the actors, procedures, justifications and omissions associated with that dimension. The implications of these patterns are consolidated in the following chapter, on key findings.

5.1 Anchorage in democratically elected politicians

The first component, **political design**, appears mainly through references to ministerial mandates, national strategies and intergovernmental arrangements. Several documents connect Bürokratt and the broader Kratt strategy to ministries and government bodies, especially the Ministry of Economic Affairs and Communications, the Government Office, and later the Ministry of Justice and Digital Affairs. The Open Source Software Country Intelligence Report Estonia 2025 states that “in 2024 the Estonian Parliament approved an amendment to the Government of the Republic Act, transferring all responsibilities linked to e-government and the development of digital society, including online public services, state information systems, and cybersecurity, to the newly formed Ministry of Justice and Digital Affairs” (Janin & Thévenet, 2025, pp. 4). This passage links the broader digital government agenda to a formal political and

legislative decision, thereby situating Bürokratt within a politically designed institutional environment, and provides substantive evidence of political design connecting the digital government agenda to a formal parliamentary decision and to a clear transfer of political responsibility. However, the passage does not provide an explanation or a proper in-depth justification for this decision.

A more direct reference to Bürokratt's early political design appears in RIA's "The Vision of Bürokratt." The document states that, "as part of the Kratts project, the Ministry of Economic Affairs and Communications and the Government Office convened an expert group of representatives of state agencies and the private sector in August 2018" (Information System Authority, 2026). The creation of the expert group is not presented as a purely technical initiative but as a government-led process aimed at identifying where kratts would benefit Estonia and the measures that would support their introduction. The same document explains that the expert group was tasked with developing proposals by May 2019, after which "the strategy for Estonian artificial intelligence was prepared" (Information System Authority, 2026). In this sense, the political design of Bürokratt is linked to the broader national AI strategy and to institutional sponsorship by government bodies. However, the passages do not justify the convening or composition of the expert group. They focus on the group's objectives and expected outcomes rather than on the rationale for its institutional design.

The second component, **network composition**, is visible in documents that identify the actors involved in Bürokratt's development, implementation and wider strategic environment. The AI Strategy Factsheet describes collaboration "between the government, academia, and the private sector" as "central to Estonia's AI strategy" (Ministry of Justice and Digital Affairs, 2024, pp. 1). This provides a broad indication of the types of actors considered relevant to Estonia's AI governance model.

The *Digital public services based on open source: Case study on Bürokratt* states that the platform was developed through "the collaboration of the MKM with the State Information System Authority, in partnership with the Institute of Estonian Language and the Ministry of Education and Research" (Gonçalves, 2022). The same document adds that "private sector companies like Texta, Stacc, Microsoft, and Solita also provided technical support to develop the tool". At the same time, Net Group was "significantly involved in the architecture and design

phases of the project" (Gonçalves, 2022). This evidence identifies the actors that compose the governance and implementation network around Bürokratt. It shows that the system is not presented as the product of a single public authority, but as an arrangement involving ministries, agencies, language institutions and private technology providers.

The documents tend to identify the participants more often than they explain why those specific actors were included. For example, the same case study lists several public and private partners but does not provide a detailed rationale for selecting each actor or for excluding others (Gonçalves, 2022). Therefore, the documentary and textual record present the composition of the network, but provide less explicit evidence on how that composition was justified or even why those actors were chosen to be part of the arrangement.

The third component, **design of institutional procedures**, appears most clearly in documents that discuss interoperability, open-source requirements and rules for public-sector information systems. The Open Source Software Country Intelligence Report Estonia 2025 refers to the National Interoperability Framework of the State Information System. It states that it "outlines the rules for compliance when public sector institutions are developing information systems" (Janin & Thévenet, 2025, pp. 7). The report also explains that, under this framework, "public sector institutions should follow the principles of openness when developing the architecture of their information systems and procuring software" (Janin & Thévenet, 2025, pp. 7). It adds that, if proprietary software is used, "it must be suitably justified" and open-source alternatives must be considered in procurement (Janin & Thévenet, 2025, pp. 7).

This evidence does not refer only to Bürokratt, but it defines part of the procedural environment in which Bürokratt is developed as a public-sector digital system. It shows that the governance of digital infrastructure in Estonia is connected to rules on interoperability, openness and software procurement. Other evidence points to more specific procedures around Bürokratt's architecture. The report on auditing discrimination and bias within Estonian public-sector ADM systems explains that "Bürokratt is a network of chatbots" and that "the opportunities for creating AI based services and software/platform is provided to different government agencies, authorities and local municipalities by the Estonian Information System Authority" (EquiTech Project, 2024). The same report states that "each client owns and is responsible for the services within their own organisation" (EquiTech Project, 2024). This evidence describes a decentralised

procedural arrangement in which RIA provides the platform opportunity while individual organisations remain responsible for their own services. Most of the corpus on Bürokratt's development and strategy is descriptive, either presenting Bürokratt or providing a broader procedural background. The European Commission case study points out that “The MKM carries out bi-monthly meetings with government agencies to have an overview of the AI projects that are being carried out and are eligible for funding” (Gonçalves, 2022). Even though the periodicity of the meetings is stated and general procedures for overview are provided, the government agencies are not specifically identified, nor are the specific projects being evaluated.

The fourth component, **framing goals**, appears strongly in relation to Bürokratt as a system. Several documents define Bürokratt’s purpose in terms of accessibility, service quality, and ease of use. In the presentation Building the Human-centric Government, the aim is described as “making digital public services radically easier to use and more accessible to people through voice-based virtual assistants, providing the best user experience for digital government” (Velsberg, 2022, pp. 35). Similarly, the Open Source Software Country Intelligence Report Estonia 2025 describes Bürokratt as “the official AI based virtual assistant for Estonia”. It states that it was developed “to facilitate access to and smooth communications with Estonia’s digital public services” (Janin & Thévenet, 2025, pp. 8). These references frame Bürokratt primarily as a tool for improving the interaction between citizens and public services.

The documents also frame Bürokratt as part of broader AI and digital government goals. The Open Source Software Country Intelligence Report Estonia 2025 explains that the AI strategy “plans to develop open source AI components by setting targets for the public sector to adopt and publish open source AI modules” (Janin & Thévenet, 2025, pp. 6). The vision of Bürokratt states that kratts were expected to identify “areas that would benefit Estonia the most” and measures needed to support their introduction (Information System Authority, 2026). These passages show that the goals attached to Bürokratt operate at multiple levels. At the system level, the goals concern user experience, access and service availability. At the broader governance level, they connect Bürokratt to open-source AI components, public-sector AI capacity and Estonia’s national AI strategy.

The documents also provide evidence about who appears to formulate or steer these goals. The Digital public services based on open source case study explains that “in 2020, the

vision and concept paper for Bürokratt outlined the purpose of the tool, as well as the features and technical requirements the MKM committed to integrate and address" (Gonçalves, 2022). The same document states that the MKM carried out pilot projects and later worked on the development roadmap (Gonçalves, 2022). This does not mean that the MKM was the only actor involved in goal formulation. Still, it shows that the ministry is repeatedly presented as central to the framing of Bürokratt's purpose, development and technical direction.

The fifth component concerns the **coordination and mediation of conflicts**. The documents provide several examples of coordination among actors. The Open Source Observatory case study states that the development of the platform relied on collaboration between the MKM and RIA, "in partnership with the Institute of Estonian Language and the Ministry of Education and Research", with technical support from companies such as Texta, Stacc, Microsoft, Solita and Net Group (Gonçalves, 2022). This reference presents coordination as a practical requirement of the development process, involving ministries, agencies, language institutions and private-sector partners, but does not specify any mechanisms.

Coordination also appears in references to testing and implementation. In an article by the Estonian Business and Innovation Agency, Ott Velsberg states: "We are currently testing Bürokratt's chat solution in the Consumer Protection and Technical Surveillance Authority's service environment (TTJA), which lets us communicate with the advisers of the office" (Mäe, 2023). This passage shows coordination at the implementation level, where Bürokratt is tested in a specific agency environment and used to support interaction with institutional advisers. Another example comes from the Open Source Observatory case study, which notes that "network meetings already allow the MKM to receive feedback" from agencies during the rollout of Bürokratt (Gonçalves, 2022). These references indicate that coordination is not only described as institutional collaboration at the design stage, but also as an ongoing practice during testing and deployment.

The documentary and textual record do not provide direct evidence of the mechanisms for conflict mediation within the network. The analysed materials describe collaboration, testing, partnerships, feedback and international recognition, but they do not explain how disagreements between ministries, agencies, private partners or other actors would be addressed. This absence should not be read as evidence that conflicts did not exist. It only shows that mechanisms for

conflict mediation are not explicitly part of the public documentary and textual material analysed for this component.

The sixth component, **agenda setting**, appears across several stages of Bürokratt's development and the broader Kratt strategy. The earliest evidence concerns the 2018 expert group convened by the Ministry of Economic Affairs and Communications and the Government Office. 'The vision of Bürokratt' states that the expert group was asked to develop proposals "on areas that would benefit Estonia the most from kratts and what measures to support their introduction" (Information System Authority, 2026). This passage outlines the initial stages of a structured agenda-setting process for AI implementation in the Estonian public sector.

Later documents connect agenda-setting to specific ministries and strategies. The Open Source Software Country Intelligence Report Estonia 2025 states that the 'Kratt' strategy is under the responsibility of the Ministry of Justice and Digital Affairs and builds on the previous 2019–2021 national artificial intelligence strategy(Janin & Thévenet, 2025, pp. 7). It also states that the AI strategy outlines planned activities to increase the development and use of AI in Estonia, including by setting targets for the public sector to adopt and publish open-source AI modules (Janin & Thévenet, 2025, pp. 7). This evidence links agenda setting to ministerial responsibility and to strategic planning across successive AI strategies.

Agenda setting also appears through the creation of specific AI policy concepts and funding practices. The Open Source Observatory case study explains that "to facilitate the reuse of AI in government agencies, the MKM created the concept of kratijupid, open source AI components that can be reused by the public and private sectors" (Gonçalves, 2022). The same study notes that "the MKM carries out bi-monthly meetings with government agencies to have an overview of the AI projects that are being carried out and are eligible for funding" (Gonçalves, 2022). These passages indicate that agenda setting is not limited to broad strategic statements. It also appears through the creation of reusable policy instruments, monitoring practices and funding-related coordination across government agencies.

Overall, the anchorage in democratically elected politicians is the most institutionally visible dimension in the material. Bürokratt is consistently linked to ministerial responsibility, strategic planning, institutional procedures, coordination practices, and agenda setting, placing

the system within Estonia's broader AI and digital government agenda rather than as an isolated technical project (Janin & Thévenet, 2025; Gonçalves, 2022). The main limitations concern the democratic depth of this anchorage: the material identifies actors, responsibilities, and strategic goals more clearly than it explains selection criteria, procedural justification, or mechanisms for handling disagreement within the network. The section indicates a strong political-administrative anchorage, especially in terms of state steering and strategic responsibility, but a less developed account of how the network's composition and internal tensions are democratically justified or governed.

5.2 Anchorage in membership basis of participating groups and organizations

The first component, **participation of affected actors**, appears only indirectly in the analysed textual material. Some documents mention organisations and groups that are part of Estonia's broader digital and open-source ecosystem. Still, within the limits of document and textual analysis, these materials mainly show the presence of potentially relevant actors in Estonia's broader digital ecosystem. They do not provide a direct account of how these actors participate in the governance of Bürokratt itself.

For example, the Open Source Software Country Intelligence Report Estonia 2025 describes Alvatal as "a free and OSS association which unites Estonian companies, non-profit associations, and volunteers with the aim of ensuring transparency in their use of software and hardware" (Janin & Thévenet, 2025, pp. 5). The same document states that "several government bodies have partnered with Alvatal to support their activities" and that the association was mostly active in the educational sector, where it implemented pilots on cloud computing, desktop migration and open-source software applications (Janin & Thévenet, 2025, pp. 5).

This evidence shows that organised non-governmental and open-source actors exist within Estonia's digital policy environment and that government bodies have partnered with them in other areas. However, the passage does not explain whether Alvatal, or similar organisations, participated in Bürokratt's governance, development or evaluation. It also does not describe a channel through which such organisations could contribute to the design, assessment or oversight of Bürokratt. The evidence points to the presence of potentially relevant organised

actors in the wider digital ecosystem, but not to their direct participation in the governance arenas of Bürokratt.

The contrast with other Estonian digital initiatives helps clarify this point. The same report describes the Smart and Open City of Tartu project by stating that "citizens are given the opportunity to participate in the decision-making process by commenting on documents and attending meetings in order to give feedback" (Janin & Thévenet, 2025, pp. 9). This example is not evidence about Bürokratt, but it matters analytically because it shows that the documentary language of Estonia's digital agenda can explicitly mention participation in decision-making when such mechanisms are part of the project narrative. In the documents analysed on Bürokratt, comparable language about affected organisations or groups participating in the governance process does not appear with the same clarity.

Other documents frame potentially affected actors mainly as service providers, implementers or institutional users, rather than as participants in governance. For example, Bürokratt's public-facing description states that the system "is designed for public sector institutions that wish to offer user-friendly, efficient, and up-to-date customer service" and that it meets the needs of "both local governments and national agencies", including by "managing information requests, automating recurring questions, and providing customer support" (Ministry of Justice and Digital Affairs, n.d.). This passage identifies local governments and national agencies as affected institutional actors, but it frames their relationship to Bürokratt in terms of service use and customer support. It does not explain whether these institutions participate in collective decision-making about the system's governance. The passage supports the analysis of institutional affectedness, but it does not show these institutions participating in collective decision-making about Bürokratt's governance. The material allows the analysis to identify them as affected institutional actors, while leaving their role in governance decision-making empirically undetermined.

The second component, **selection and instruction by memberships,** appears in a limited and indirect way. The analysed documents provide some information about the conditions under which organisations may use or host Bürokratt. Still, they do not describe procedures through which participating groups or organisations are selected by their membership bases or instructed to represent those bases in the network. One relevant passage concerns the practical conditions

for adopting the system. The documentation states that “the software for Bürokratt is free, but hosting the solution is done, as usual, in the State Cloud, with a monthly hosting cost of about €150, plus additional costs from using large language models” (Ministry of Justice and Digital Affairs, n.d.).This evidence indicates that there are practical and infrastructural conditions for organisations that may adopt Bürokratt components in the future.

This passage helps identify criteria that may shape participation in implementation, such as access to the State Cloud and the ability to cover hosting and large-language-model costs. However, it does not show that organisations are selected through previously established participatory norms, nor that representatives are instructed or mandated by members to participate in the governance network. The evidence, therefore, relates to practical conditions for adoption, but it does not establish a membership-based selection or instruction process.

A second type of evidence concerns training and capacity-building. The AI Strategy Factsheet states: “Explore the world of data and ‘kratt’(s) through trainings. Each year, about ten trainings are commissioned, and their recordings and materials are published continuously” (Ministry of Justice and Digital Affairs, 2024). This passage indicates that training processes exist and that materials are made publicly available. It suggests that actors involved in or interested in *Kratts* can access some form of instruction or capacity-building. However, the passage does not specify which organisations participate in these trainings, whether the trainings are linked to formal representation in Bürokratt’s governance, or whether representatives receive instructions from their own membership bases. It provides evidence of generic training and instruction within the wider *Kratt* agenda, but not of selection and instruction by memberships in the strict sense used by the democratic anchorage framework.

The third component, **performance reporting**, appears through general descriptions of AI adoption and implementation results, but not through reports that attribute performance to specific participating organisations within Bürokratt’s governance network. One document states that “an extensive number of Estonian public agencies and institutions are currently implementing or have fully implemented Bürokratt components in their services” (Gonçalves, 2022). The same evidence connects this to the broader *Kratt* agenda by noting that by the end of 2020, 41 AI solutions had been deployed in the government sector. By November 2021, more

than 30 organisations had carried out over 80 AI projects using these components (Gonçalves, 2022).

This evidence provides a general picture of implementation activity and shows that multiple public agencies and organisations have been involved in using Bürokratt components or related AI components. It also indicates that the rollout of *Kratts* is being described through aggregate results, such as the number of deployed AI solutions and the number of organisations using components. However, the passage does not explain the role played by each organisation, the quality of its contribution, or its individual performance within the governance network. It offers evidence of aggregate implementation reporting, but not of performance reporting that would allow membership bases or affected groups to evaluate representatives' conduct within the network. This makes the evidence useful for tracing implementation, but limited for assessing accountability between participating organisations and their membership bases.

The fourth component, **criticism capacity**, is not directly evidenced in the analysed documents. The material reviewed does not identify forums, procedures or channels through which participating groups and organisations can express criticism, contest decisions, or propose changes related to Bürokratt's governance. This is a limitation of what document and textual analysis can capture: the corpus shows whether such channels are publicly described, but it cannot determine whether informal or internal mechanisms for criticism exist in practice. The available documents describe partnerships, implementation, training, technical support and the use of the system by public institutions (Janin & Thévenet, 2025; Ministry of Justice and Digital Affairs, 2024). Still, they do not explain how organised actors could raise concerns or challenge decisions within the network.

This absence should not be interpreted as proof that such forums do not exist. The corpus is limited to public and public-facing materials analysed for this thesis, and some internal or Estonian-language channels may not be visible in the selected documents. Criticism capacity is not presented in the available public documentation as a visible component of Bürokratt's governance arrangement.

Overall, this anchorage is weakly supported in the analysed material. Bürokratt's governance environment includes several organisations, but their roles primarily focus on

implementation, adoption, technical support, and participation in the broader digital ecosystem. The evidence shows organisational complexity, but it does not substantially connect these actors to membership bases that can select, instruct, monitor or criticise their representatives. The main finding of this section is therefore not the absence of organisations, but the absence of membership-based representation as a visible source of democratic anchorage.

5.3 Anchorage in a territorially defined citizenry

The first component, **publicly accessible outcomes**, is reflected in several types of publicly available information about Estonia's digital government and AI agenda. Some documents present results as short indicators or institutional claims. For example, the AI Strategy Factsheet states that "100% of our public services are online", and that "130+ AI projects" have been carried out in the public sector since 2019. Satisfaction with public e-services among people increased from "69%" to "90%" (Ministry of Justice and Digital Affairs, 2024). These passages make outcomes publicly visible, but in a compressed format, mostly through bullet points or headline figures. They provide evidence that results are communicated to the public, though the information is usually presented as performance data rather than an extended explanation of how the results were achieved.

Other documents make outcomes accessible through technical repositories and by making source code available. The Open Source Software Country Intelligence Report Estonia 2025 states that "one of the main features of Bürokratt, the chatbot, is currently available as a prototype under the MIT Licence and developed based on the data of the State Information System Board and the Police and Border Guard Board" (Gonçalves, 2022). The same document notes that "although the source code is available on GitLab, the access is limited to users with an Estonian eID" (Gonçalves, 2022). In another passage, the report states that "the MKM has also set up a repository on GitLab with documentation on Bürokratt's high-level architecture and front-end components" (Gonçalves, 2022). These references show that public accessibility is not limited to policy indicators. It also includes access to technical documentation and code repositories, even if access may depend on specific identification requirements, such as an Estonian eID.

The second component, **participation of affected citizens**, appears more indirectly. Some documents include broad language about citizen empowerment and co-creation. For example, one public-facing strategy states: “We empower people by valuing every person and their contribution to cocreation” (Velsberg, 2022, pp. 3). This formulation signals an institutional value of inclusion and suggests that people are not meant to be treated only as passive recipients of digital services. However, the documents analysed do not clearly describe how affected citizens participate in the design, governance, assessment or revision of Bürokratt itself. The evidence points to a general value of co-creation in Estonia’s digital government discourse, but it does not specify the participatory mechanisms associated with Bürokratt’s governance arenas.

Several passages frame citizens primarily as users of the system. One document states that “Bürokratt is intended for people who want to communicate with the government” and that it is designed for public-sector institutions that wish to offer “user-friendly, efficient, and up-to-date customer service” (Ministry of Justice and Digital Affairs, n.d.). The same description presents the system as supporting local governments and national agencies by “managing information requests, automating recurring questions, and providing customer support” (Ministry of Justice and Digital Affairs, n.d.). Another public communication states that “Bürokratt will allow users to complete a number of tasks in one session, either through voice, text, or sign language, on any device” (Jenkins, 2024). These passages show citizens as intended beneficiaries or users of the interface. They do not describe citizens as participants in the governance process beyond their role as users, service recipients or testers.

The third component, **citizens’ dialogue and contestation of decisions**, is not directly evidenced in the documents analysed. The materials describe Bürokratt as a channel through which the state can communicate with citizens and provide services. Still, they do not identify specific channels through which citizens can engage in dialogue with authorities regarding the governance of Bürokratt itself. For example, Ott Velsberg describes Bürokratt as “it will allow access to all kinds of public services, let us inform citizens about the opportunities and benefits offered by the state and answer questions and concerns around the clock” (Mäe, 2023). This passage presents Bürokratt as a tool for informing citizens and responding to questions. Still, it does not describe a deliberative or participatory channel through which citizens can influence the system’s governance.

The same pattern holds for contestation. The analysed documents do not provide evidence of a specific mechanism through which citizens can contest decisions, uses or governance arrangements related to Bürokratt. This does not demonstrate that such channels do not exist. It only means that, within the English-language public documentation analysed for this thesis, they are not explicitly described. The documentary and textual record present Bürokratt primarily as an interface for access, information and customer support, rather than as an arena through which citizens can contest how the system is designed or governed.

The fourth component, **publicly available justifications for affected citizens**, appears in several documents, but the justifications are often broad, technical or benefit-oriented. Some passages explain the transition to large language models in terms of improved performance and reduced manual work. For example, one document states: “many institutions are transitioning to large language models (LLMs), which can understand the semantic content of questions and use institution-defined sources to find information without requiring separate training” (Ministry of Justice and Digital Affairs, n.d.). It then explains that the electronic identity department of RIA was the first to adopt an LLM solution, allowing Bürokratt to support end users in real questions “without manual training”, which means “better answers and less manual upkeep” (Ministry of Justice and Digital Affairs, n.d.). This excerpt justifies adopting LLMs, but it frames the justification mainly in terms of technical efficiency and service quality.

Other justifications relate to the use of personal data and the role of public authorities. One document states that “the state has a lot of personal data on the basis of which it is possible to create new services” (Velsberg, 2022, pp. 48). Another states that the “State Information Authority is the controller of the personal data of the consents given in the consent service” (Velsberg, 2022, pp. 49). These excerpts provide some explanation of why specific public bodies are involved and how data control is allocated. They help make parts of the arrangement intelligible, especially regarding data governance and institutional responsibility. However, the explanations remain general and do not provide a detailed justification of the broader governance arrangement behind Bürokratt.

Some documents also provide directions to additional information rather than just direct justification. For instance, the Open Source Software Country Intelligence Report Estonia 2025 states that, “for information regarding the policy context of the use of open source software in

the public sector in Estonia", readers should consult the respective Country Intelligence Report on open-source software policies and its factsheet, which include an overview of political actors, strategic players, legislative initiatives and public-sector open-source software initiatives (Gonçalves, 2022). This type of reference helps users locate additional information, but it does not, in itself, justify the decisions behind Bürokratt's governance. It functions more as an informational signpost than as a reasoned explanation directed to affected citizens.

The fifth component, **citizens' influence power**, appears only indirectly and weakly in the documentary evidence. The clearest mention of a citizen-linked organisation appears in the description of Alvatal. The Open Source Software Country Intelligence Report Estonia 2025 states that "Alvatal is a free and OSS association which unites Estonian companies, non-profit associations, and volunteers with the aim of ensuring transparency in their use of software and hardware" (Janin & Thévenet, 2025, pp. 5). It adds that "several government bodies have partnered with Alvatal to support their activities" and that the association has been active mainly in the educational sector, implementing pilots on cloud computing, desktop migration and open-source applications (Janin & Thévenet, 2025, pp. 5). This passage indicates that volunteers and non-profit actors may participate in Estonia's wider open-source ecosystem. Still, it does not show that citizens influence Bürokratt's design, implementation or revision.

The remaining evidence positions citizens more clearly as users than as actors with influence power. The consent-service description, for example, refers to "the consent of the user" when explaining the conditions under which a third party may obtain data for the provision of a business service (Velsberg, 2022, pp. 49). This recognises the user's role in authorising data use within a specific service context, but it does not indicate influence over Bürokratt's governance. The materials analysed do not provide examples of changes to Bürokratt resulting from citizen criticism, citizen initiatives or direct citizen participation in governance decisions.

5.4 Anchorage in democratic rules and norms

The first component, **the involvement of relevant stakeholders**, is evident through references to public agencies, ministries, private-sector actors, and other institutional participants involved in the development or implementation of Bürokratt and related AI projects. Some of these references are broad and refer to the wider *Kratt* strategy. For example, one document

states that, “by the end of 2020, 41 AI solutions had been deployed in the government sector and companies of the private sector were also using kratts to improve their own business processes” (Gonçalves, 2022). This passage indicates that both public-sector institutions and private companies are part of the broader AI ecosystem in which Bürokratt is situated.

Other references are more specific to Bürokratt. One document identifies the “State Information System Authority, Police and Border Guard Board, Ministry of Economic Affairs and Communications and other agencies who implement Bürokratt” as involved agencies (Velsberg, 2022, pp. 38). This passage names actors directly involved in implementation, rather than referring only to the public sector in general. It shows that Bürokratt’s governance and implementation involve multiple relevant institutional actors. The evidence also connects this involvement to the practical operation of the system, since the Police and Border Guard Board and other implementing agencies appear as part of the institutional environment in which Bürokratt components are developed or used.

The second component, **deliberative decision-making**, appears more indirectly. The clearest institutional evidence comes from the broader reorganisation of Estonia’s digital governance structure. The Open Source Software Country Intelligence Report Estonia 2025 states that “in 2024 the Estonian Parliament approved an amendment to the Government of the Republic Act [...] to the newly formed Ministry of Justice and Digital Affairs” (Janin & Thévenet, 2025, pp. 4). This excerpt does not describe deliberation inside Bürokratt’s governance network. However, it shows that the institutional location of digital government responsibilities, which includes the policy environment in which Bürokratt is situated, was changed through a parliamentary decision.

Other evidence suggests deliberative processes through the existence of task forces, expert groups and collaborative development structures. The documentary and textual record describe Bürokratt’s development as relying on “a core team of 12 people” and on collaboration between the Ministry of Economic Affairs and Communications, the State Information System Authority, the Institute of Estonian Language and the Ministry of Education and Research (Gonçalves, 2022). These passages indicate that strategy development and system implementation involve multiple institutional actors. However, they do not describe the internal

deliberative process in detail, such as the alternatives considered, the disagreements raised, or the criteria used to decide among competing options.

A further example comes from the discussion of data-driven decision-making governance. The report on Estonian public-sector data-driven decision-making states that "the participation of the Data Protection Inspectorate in the Steering Group is fundamental to ensure alignment with personal data protection regulations during the design and implementation stages of the DDDM tool" (OECD, 2022, pp. 8). It also notes that, "as the DDDM system evolves, its governance structure could benefit from the participation of other actors in charge of providing independent oversight and monitoring" (OECD, 2022, pp. 8). This excerpt shows a decision-making structure in which data protection expertise is treated as relevant to design and implementation. It also introduces the possibility of additional oversight actors, suggesting reflection on the composition and limits of the governance structure.

The third component, **respectful dialogue**, is evidenced in the documents in a more interpretive way. The corpus does not provide direct descriptions of dialogue among actors, such as meeting transcripts, statements of disagreement or explicit references to mutual recognition. For this reason, the analysis treats respectful dialogue only as indirect evidence, observed through how the documents recognise institutional roles, mandates and forms of expertise within the governance process. Some passages position different institutions side by side, suggesting recognition of their respective roles. The excerpt on the Data Protection Inspectorate frames its participation as "fundamental" for ensuring alignment with personal data protection regulations during the design and implementation stages of the tool (OECD, 2022, pp. 8). This formulation does not describe dialogue directly, but it shows that the governance narrative recognises the need to incorporate a rights-oriented perspective into the technical process. In this sense, respect appears as institutional recognition of a concern that could otherwise be marginalised in a purely efficiency-driven project.

The same passage also suggests that the governance structure "could benefit from the participation of other actors in charge of providing independent oversight and monitoring" (OECD, 2022, pp. 8). This is not a direct description of respectful dialogue, but it indicates that the documentary narrative leaves room for the recognition of additional institutional voices. In the analysed documents, respect appears less as an explicit interpersonal quality of dialogue and

more as institutional recognition of expertise, mandates and oversight roles. The documents provide indirect evidence of mutual recognition among institutions, but not direct evidence of how actors communicate, disagree, or respond to one another within the network.

The fourth component, **socially and politically enhancing outcomes**, appears in two main forms. The first is linked to accessibility, convenience and service availability. Several documents present Bürokratt as a means of making public services easier to access and use. One description states that “the vision for Bürokratt is to give people the opportunity to interact with the state as easily as with a friend, in natural language, at any time, and from any device” (Ministry of Justice and Digital Affairs, n.d.). Another passage states that “the goal is to benefit from the widespread use of mobile devices and the internet to access public services more easily and efficiently” (Gonçalves, 2022). These passages frame the system as socially beneficial because it can make the state more accessible and public services more convenient.

However, the social and political value of these outcomes is often expressed through the language of efficiency, availability and user experience. The documents frequently associate public value with 24/7 access, natural-language interaction, ease of use and service integration. These are relevant outcomes for citizens, especially in a digital state, but the wording often remains closer to service improvement than to democratic empowerment. The social benefit is mainly achieved through better access to services rather than through expanded citizen participation, stronger accountability, or more visible public control.

A second type of evidence links digital governance more directly to rights and democratic protection. The reorganisation that created the Ministry of Justice and Digital Affairs is described as a merger of legal and digital responsibilities intended to protect fundamental rights amid rapid digital development. The Open Source Software Country Intelligence Report Estonia 2025 explains that “this merger of the legal and digital aspects of Estonian society was intended to protect people’s fundamental rights in the face of ‘rapid digital development’” (Janin & Thévenet, 2025, pp. 4). This excerpt connects the governance of digital society to the protection of fundamental rights, rather than only to efficiency or service quality. It provides a more explicitly political justification for the institutional design of the digital governance arrangement. For Bürokratt, this matters because the system is developed within the same digital governance agenda. The excerpt does not state that Bürokratt itself produces rights-enhancing

outcomes. Still, it places the institutional environment responsible for its development within a broader political narrative of rights protection in digital society.

The fifth component, **ongoing democratisation**, is evident through references to openness, shared information, and distributed collaboration in Bürokratt's development process. Some passages suggest openness and information sharing among actors. For example, Rainer Türner, the architect of Bürokratt at RIA, explains that "Bürokratt is developed openly because development partners who are scattered all over the world must be in the same information field at all times. The same applies to the clients of Bürokratt" (Microsoft, 2022). This excerpt presents openness as a development principle and links it to the need for shared information among partners and clients. It shows that the system is designed to require transparency and coordination across a distributed set of actors.

This evidence supports the component of ongoing democratisation only indirectly. It indicates that openness and information sharing are valued in the coordination of Bürokratt's development. Still, it does not present these practices as part of a broader process of democratic deepening, institutional learning or expanded public accountability. Similarly, the repeated mention of multiple organisations and institutions may suggest an inclusive governance environment, but the documents do not explicitly connect this inclusion to a process of democratisation. The evidence, therefore, points to openness and distributed collaboration, but not to a clear claim that Bürokratt's governance arrangement is designed to contribute to ongoing democratisation.

Key Findings

6.1 Anchorage in democratically elected politicians

The first anchorage is the most visible in the analysed documents. Bürokratt is consistently connected to ministries, public agencies, national strategies and state-led coordination mechanisms. The system is not presented as an isolated technological experiment, but as part of Estonia's broader AI and digital government agenda. This gives the project a clear political-administrative location and distinguishes it from a purely technical implementation process (Janin & Thévenet, 2025; Gonçalves, 2022; Ministry of Justice and Digital Affairs, n.d.).

The strongest dimension of this anchorage lies in political steering. The documents connect Bürokratt to the Ministry of Economic Affairs and Communications, the State Information System Authority, the Government Office, and, later, the Ministry of Justice and Digital Affairs. These actors appear as sponsors, coordinators and agenda setters (Janin & Thévenet, 2025; Gonçalves, 2022; Ministry of Justice and Digital Affairs, n.d.). The political anchorage of Bürokratt is therefore constructed through institutional proximity to the state: the system gains legitimacy by being attached to recognised public authorities, national strategies, and governmental priorities.

However, the evidence points more clearly to executive sponsorship than to public accountability. The documents show who frames the project's strategic direction, but say less about how these actors can be scrutinised for specific choices within the governance network. Political anchorage is present, but it is mostly expressed through steering, coordination and strategic ownership. It is less visible as public justification, contestability or accountability for the network's internal decisions.

A central ambiguity concerns the distinction between the goals of Bürokratt as a system and the goals of Bürokratt's governance arrangement. The documents explain relatively well what Bürokratt is expected to deliver: easier access to public services, 24/7 availability, user-friendly interaction, institutional interoperability and better customer support (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 8; Ress, n.d.). These service-related goals form the core public narrative around the system. By contrast, the democratic and institutional

purposes of the governance arrangement are less clearly specified. The documents do not consistently explain what the network around Bürokratt is expected to achieve in terms of accountability, representation or public justification.

This distinction is important because the legitimacy of Bürokratt depends not only on what the system promises to deliver, but also on how its governance arrangement is justified. If the analysis focuses only on service delivery, the project's political anchorage appears relatively strong: it is clearly framed as part of a national digital strategy and tied to politically accountable institutions (Information System Authority, 2026; Janin & Thévenet, 2025; Ministry of Justice and Digital Affairs, 2024; Gonçalves, 2022). If the analysis focuses on the governance arrangement itself, the evidence is more limited: the documents say less about how responsibilities are distributed, how the network's composition is justified, and how decisions can be scrutinised or revised (Information System Authority, 2026; Janin & Thévenet, 2025; Gonçalves, 2022).

The network's composition follows the same pattern. The documents name ministries, agencies, language institutions and private-sector partners involved in the development or implementation of Bürokratt (Gonçalves, 2022). This makes the network identifiable. However, they rarely explain why these actors were selected, what criteria guided their inclusion, or whether alternative actors were considered. In governance networks, composition is not a neutral administrative detail. It shapes which interests, capacities and forms of expertise enter the decision-making process (Nesti & Graziano, 2019; Klijn & Koppenjan, 2012; Sørensen & Torfing, 2005). The lack of justification for network composition limits what can be inferred about the democratic quality of political design, even when the network itself is publicly visible.

This limitation also applies to institutional procedures. The documents make some broader procedural rules visible, especially around interoperability, open-source development and public-sector information systems. These rules situate Bürokratt within Estonia's regulated digital-government environment. Yet much of this evidence concerns the general architecture of the digital state, rather than specific decision-making procedures for Bürokratt's governance arenas. The procedural environment is visible, but the internal governance procedures are less systematically explained.

The most significant gap within this anchorage concerns conflict mediation. The documents describe collaboration, testing, meetings, implementation and shared strategic work among ministries, agencies and private partners (Janin & Thévenet, 2025, pp. 7; Ministry of Justice and Digital Affairs, 2024; Gonçalves, 2022). Yet they do not explain how conflicts between actors would be addressed. For democratic anchorage, evidence of cooperation is only one part of the picture. The framework also requires examining how disagreements, trade-offs and competing priorities are handled within the governance network. A governance network that only presents coordination, without making conflict mediation visible, constructs a public narrative of consensus. That narrative may strengthen the image of administrative coherence, but it leaves unclear how the network deals with disagreement.

Bürokratt's political anchorage is visible, but uneven. The documents connect the system to ministries, national strategies, public mandates and agenda-setting processes, giving it a clear institutional foundation within the Estonian state. Yet this anchorage is concentrated in executive sponsorship and administrative steering. It is less developed, where democratic anchorage would require a justified network composition, explicit conflict mediation, and a clearer explanation of how the governance arrangement itself operates. The result is political anchorage through proximity to the state, with more limited evidence that this proximity is translated into public scrutiny and contestability of the network's decisions.

6.2 Anchorage in membership basis of participating groups and organizations

The second anchorage presents weaker evidence. The documents make organisational involvement visible, but rarely show membership-based representation. Bürokratt is a multi-actor initiative involving ministries, agencies, technical partners, public-sector institutions, and actors from the broader open-source ecosystem (Information System Authority, 2026; Janin & Thévenet, 2025; Gonçalves, 2022). Yet the presence of many organisations does not, by itself, create democratic anchorage in participating groups and organisations. For this anchorage, it is relevant whether these actors are connected to constituencies that can select, instruct, monitor their performance, and criticise their conduct within the network.

The dominant pattern is functional participation rather than representative participation. Public bodies are usually presented as adopters, implementers or testers of Bürokratt components

(Information System Authority, 2026; EquiTech Project, 2024; Gonçalves, 2022). Private companies appear as technical partners or providers of development support (Information System Authority, 2026; Gonçalves, 2022). Civil society-related actors, such as Alvatal, appear in the wider open-source ecosystem, but not as organisations with a visible role in Bürokratt's governance (Janin & Thévenet, 2025, pp. 5). The documentary and textual record shows that different actors contribute to implementation, but not that they participate as representatives of organised constituencies.

This distinction is central to the second anchorage. A governance network can be multi-actor and still weakly anchored in membership bases if participation is organised around expertise, infrastructure or implementation capacity rather than representative accountability. In the analysed documents, organisations are visible as contributors to the system, but not as actors whose participation is authorised, monitored or criticised by members or affected groups. The network's organisational complexity is therefore clearer than its democratic representativeness.

Alvatal illustrates this limit. Its presence in the documents shows that Estonia has organised actors in the open-source field that could be relevant to the governance of a digital public infrastructure. However, the evidence does not show that Alvatal participated in Bürokratt's governance, shaped its evaluation, represented members in project decisions, or influenced the development of the system. It signals the existence of a potentially relevant ecosystem, but it does not demonstrate membership-based anchorage in the case of Bürokratt (Janin & Thévenet, 2025, pp. 5).

The contrast with Open Tartu reinforces this interpretation. In that case, the documents explicitly describe citizens participating in decision-making by commenting on documents and attending meetings to provide feedback (Janin & Thévenet, 2025, pp. 9). Open Tartu is not analytically equivalent to Bürokratt. Still, the comparison shows that Estonian digital government documents can name participatory mechanisms when these mechanisms are part of a project's public narrative (Janin & Thévenet, 2025, pp. 9). In the Bürokratt corpus, similar language around participation, feedback, criticism, or membership-based influence is much less visible.

The components of selection, instruction and reporting are especially limited. The documents mention practical conditions for adoption, such as software availability, State Cloud hosting and costs associated with large language models (Information System Authority, 2026). They also refer to training opportunities around data and *Kratts* (Ministry of Justice and Digital Affairs, 2024). These elements indicate technical support and capacity-building, not democratic representation. Training can prepare actors to use or implement a system, but it does not show that representatives are selected by membership bases, instructed by constituencies or accountable to them.

Performance reporting follows the same logic. The documents provide aggregate figures about AI deployment and the number of organisations using *Kratt* components, which helps demonstrate scale and implementation progress (Janin & Thévenet, 2025, pp. 6). However, aggregate reporting does not allow membership bases or affected groups to assess whether their representatives acted appropriately, defended their interests or influenced decisions. The documents report the expansion of the programme, but not the representative performance of actors inside the governance network.

Criticism capacity is the least visible component of this anchorage. The documents do not identify forums through which participating groups and organisations can criticise decisions, contest design choices, or propose revisions. This does not prove that such channels do not exist internally, informally or in Estonian-language materials outside the corpus. It shows that the capacity for criticism is not part of the public documentary narrative analysed. Organised actors are framed as collaborators, implementers, partners or users, rather than as actors with visible channels to challenge the network (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 5–6; Gonçalves, 2022).

The second anchorage reveals an important distinction between collaboration and democratic representation. Bürokratt is clearly not governed by a single actor, but its multi-actor character is not accompanied by clear evidence of membership-based accountability. The documents show organisational involvement, but they do not show how participating organisations are democratically connected to those they represent. This makes the network visible as an implementation arrangement, while leaving its representative foundations underdeveloped.

6.3 Anchorage in a territorially defined citizenry

The third anchorage reveals the clearest gap between service accessibility and democratic participation. Citizens are highly visible in the documents, but mainly as users of Bürokratt, not as political actors in its governance. The system is repeatedly framed as a way to make the state easier to reach, services easier to access and interactions more convenient (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 8; Microsoft, 2022; Velsberg, 2022, pp. 35) . This supports a service-oriented claim to legitimacy, but it provides much weaker evidence of anchorage in the citizenry as a democratic constituency.

The strongest evidence under this anchorage concerns publicly accessible outcomes. The documents disclose performance indicators, digital government results, technical repositories, and some information about Bürokratt's architecture and source code (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 6–8; Ministry of Justice and Digital Affairs, 2024; Gonçalves, 2022). This makes parts of the system and its wider policy environment visible to the public. However, this visibility remains closer to informational openness than to democratic participation. The documents show that citizens may access information about the system, but not that they can use it to shape, contest, or revise its governance.

The dominant pattern is the construction of the citizen as a user. Citizens appear as people who communicate with the government, complete tasks, receive information, use voice or text and benefit from customer support (Information System Authority, 2026; Microsoft, 2022). This framing is not democratically irrelevant, since easier access to public services can generate public value. Yet it narrows the role of the citizen. The citizen is recognised as the addressee of a more efficient service, but not as a participant in its governance.

This narrowing is also visible in the treatment of dialogue and contestation. Bürokratt is presented as a communication interface between citizens and the state, but there are no arenas in the governance arrangement through which citizens can debate the governance of the system itself (Information System Authority, 2026; Mäe, 2023). A citizen asking a question through a chatbot is not the same as a citizen participating in the design, revision or oversight of the system. The documents do not make visible channels through which citizens can contest

decisions related to Bürokratt's architecture, data use, institutional responsibilities or future development.

The same limitation appears in public justifications. Some documents explain technical and institutional choices, especially the move towards LLMs, the use of public-sector data and the role of RIA in data governance (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 6–8). However, these explanations are mostly framed in terms of efficiency, better answers, reduced maintenance, service improvement, and customer orientation. They explain why the system may work better, but they say less about why the governance arrangement is democratically appropriate. The result is a justification strategy centred on usefulness rather than democratic accountability.

The weakest component is citizens' influence power. The documents do not show citizen input changing the design, implementation or revision of Bürokratt. References to Alvatal and the broader open-source ecosystem indicate the presence of civic and non-profit actors in Estonia's digital environment, but they do not demonstrate the territorially defined citizenry's influence over Bürokratt's governance (Janin & Thévenet, 2025, pp. 5). Similarly, references to user consent in data-sharing contexts should not be conflated with influence. Consent provides limited agency in a specific transaction; it does not give citizens a role in deciding how the system should be governed (Information System Authority, 2026).

This third anchorage exposes one of the main democratic limits of the case. Bürokratt may make the Estonian state easier to access. Still, the documents do not show that citizens are given comparable means to shape, contest or influence the governance of the interface through which that access is mediated. Its legitimacy is strongly built on accessibility, convenience, and service performance, while the citizenry remains weakly positioned as a source of democratic scrutiny, justification, or influence.

6.4 Anchorage in democratic rules and norms

The fourth anchorage shows an uneven pattern. Bürokratt is embedded in a governance environment that values stakeholder involvement, institutional collaboration, openness and rights protection (Janin & Thévenet, 2025, pp. 6–8; EquiTech Project, 2024; Gonçalves, 2022). However, these values are not consistently translated into explicit democratic procedures.

Democratic rules and norms appear less as operating rules of the network and more as principles surrounding the broader digital governance environment in which Bürokratt is developed.

The strongest evidence concerns the involvement of relevant stakeholders. The documents identify public agencies, ministries, private-sector actors and technical institutions involved either in Bürokratt specifically or in Estonia's broader AI agenda (Janin & Thévenet, 2025, pp. 6–8; EquiTech Project, 2024; Gonçalves, 2022). This points to a multi-actor governance environment. However, stakeholder involvement alone does not establish democratic quality. The documents show that several actors participate in implementation and technical development. Still, they say less about whether this participation is balanced, inclusive of affected groups, or structured by democratic criteria.

Deliberative decision-making is less visible. The reorganisation of Estonia's digital governance responsibilities through parliamentary amendment shows that the institutional environment surrounding Bürokratt is not entirely technocratic (Janin & Thévenet, 2025, pp. 4). It is connected to formal political decision-making. At the level of Bürokratt itself, however, the evidence is thinner. Task forces, steering groups and interinstitutional teams indicate that decisions involve several actors, but the documents do not show how alternatives were discussed, how disagreements were handled, or how competing values shaped final decisions (Janin & Thévenet, 2025, pp. 4, 6–8; EquiTech Project, 2024; Gonçalves, 2022). The presence of multiple institutions suggests coordination; it does not, by itself, demonstrate deliberation.

Respectful dialogue is also only indirectly evidenced. The clearest material concerns the inclusion of data protection and oversight perspectives in the governance of digital tools. The Data Protection Inspectorate's participation in a steering group shows that rights-oriented concerns are not presented as external obstacles to technical development, but rather as relevant to design and implementation (OECD, 2022, pp. 8). This is important for democratic rules and norms because it suggests some recognition of normative concerns within technical governance. Still, the documents do not describe actual dialogue among actors, responses to criticism, or the handling of disagreement. Respect appears as institutional recognition of relevant perspectives, not as a documented practice of interaction.

The component of socially and politically enhancing outcomes is more visible, but it is framed mainly through service improvement. Bürokratt is presented as socially beneficial because it can make state services easier to access, reduce friction in public services, enable interaction at any time, and support communication in natural language (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 8; Microsoft, 2022). These are meaningful public benefits. Yet the narrative remains largely centred on availability, efficiency and convenience. The documents explain how Bürokratt can improve citizens' experience of the state, but less often how it strengthens democratic participation, accountability or public scrutiny.

There is one more politically substantive layer in the evidence: the connection between digital governance and rights protection. The creation of the Ministry of Justice and Digital Affairs links digital development to legal safeguards and the protection of fundamental rights (Janin & Thévenet, 2025, pp. 4). This places Bürokratt within an institutional environment that recognises the political stakes of rapid digitalisation. However, the documents do not state that Bürokratt itself produces rights-enhancing outcomes. The stronger claim is that the system is developed within a broader governance agenda that increasingly connects digital transformation to legal and rights-based concerns.

Ongoing democratisation remains the most limited component. References to open development, shared information, and distributed collaboration suggest a governance process that values transparency among partners and clients (Gonçalves, 2022). Yet these elements are framed primarily as conditions for coordination and development, rather than as commitments to democratic deepening, institutional learning, or expanded public accountability. Openness is present, but it is not consistently articulated as democratisation.

This anchorage reveals a governance network that is collaborative and institutionally aware, but not clearly deliberative in a democratic sense. Stakeholders are present, rights are mentioned, and openness is valued. Still, the documents provide limited evidence that these principles become stable procedures for deliberation, respectful dialogue, contestability or ongoing democratisation. The democratic rules and norms surrounding Bürokratt are visible as a normative background, but less visible as practical rules through which the network metagoverns.

6.5 Democratic legitimacy across the four anchorage points

Across the four anchorage points, Bürokratt's democratic legitimacy appears institutionally strong but democratically uneven. The strongest evidence is concentrated in the first anchorage, where the documents connect the system to ministries, public agencies, national strategies and state-led coordination (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 4, 6–8; Ministry of Justice and Digital Affairs, 2024; Gonçalves, 2022). The fourth anchorage also provides relevant evidence, especially through stakeholder involvement, references to openness, and the institutional connection between digital governance and rights protection (Janin & Thévenet, 2025, pp. 4; EquiTech Project, 2024; OECD, 2022, pp. 8; Gonçalves, 2022). The second and third anchorages are more limited: participating organisations are visible, but their links to membership bases are weakly documented; citizens are highly visible as users, but much less visible as actors with influence over the governance of the system.

The main pattern is that Bürokratt's legitimacy is constructed primarily through governmental sponsorship, administrative capacity and service performance. The documents repeatedly frame the system as a way to make public services easier to access, improve user experience, support 24/7 interaction and strengthen Estonia's digital state (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 8; Microsoft, 2022; Velsberg, 2022, pp. 35). This creates a coherent service-delivery narrative. Yet, within the democratic anchorage framework, accessibility and efficiency do not exhaust democratic legitimacy. Bürokratt may make the state easier to reach without necessarily making the governance of that access more open to citizen influence, membership-based representation or public contestation.

This distinction between access and participation can be perceived across the analysis. Citizens are present throughout the documents, but mainly as users of a better public service; organisations are framed mainly as implementers, adopters, or technical partners (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 6–8; Microsoft, 2022; Gonçalves, 2022). Even democratic rules and norms are often framed through collaboration, openness and rights awareness rather than through visible procedures for deliberation, criticism or revision (Janin & Thévenet, 2025, pp. 4, 6–8; EquiTech Project, 2024; Gonçalves, 2022). The result is a governance arrangement that is multi-actor and institutionally coordinated, but not clearly pluralist in the democratic sense.

A significant portion of the corpus explains what Bürokratt is, how it operates and what it is expected to improve. These descriptions are relevant to understanding the system's architecture and expected public value, but many do not provide evidence of democratic anchorage. They explain how queries are routed, how services can be more integrated, and how the user experience can be improved (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 8; EquiTech Project, 2024). They say less about who can shape the governance arrangement, how affected actors can challenge decisions, or how citizens can obtain reasons for choices made within the network. The technical and service logic of Bürokratt is more visible than the democratic logic of its governance.

The same pattern holds for transparency. The documents make some information publicly available, including descriptions of the system, technical documentation, open-source repositories and indicators about Estonia's digital and AI agenda (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 6–8; Ministry of Justice and Digital Affairs, 2024; Gonçalves, 2022). However, visibility is not consistently linked to processes of justification, scrutiny or revision. The documents often explain what Bürokratt improves, but leave unexplained how decisions about its governance are justified to affected actors. Democratic legitimacy does not require citizens to control the technical architecture directly. Still, it requires intelligible explanations of the governance arrangement, a clear allocation of responsibilities, and channels for raising, assessing, and addressing concerns.

The documents also construct a highly consensual narrative around Bürokratt. They emphasise coordination, collaboration, shared strategic direction and expected benefits, but say little about disagreement, competing priorities or procedures for handling trade-offs (Janin & Thévenet, 2025, pp. 6–8; Mäe, 2023; Gonçalves, 2022). Within the democratic anchorage framework, this limits what can be inferred about public scrutiny and contestability, since these depend not only on visible cooperation, but also on how network decisions can be questioned and justified (Sørensen & Torfing, 2005). In the analysed corpus, the governance network appears administratively coherent, while the institutional treatment of disagreement remains largely outside the public narrative.

A further transversal issue concerns linguistic inclusion. Bürokratt's legitimacy is partly built on the promise of easier access to the state, which makes language availability politically

relevant. Some documents present Bürokratt as a tool that allows people to communicate with the state in Estonian, while later documentation indicates planned communication in English and Ukrainian (Information System Authority, 2026). This can be read as inclusive for Estonian-speaking users and, later, for some non-Estonian-speaking groups residing in Estonia. However, the absence of Russian as a language of interaction raises questions about public justification, especially given Estonia's linguistic composition. Statistics Estonia's 2021 census reported that 40% of Russians living in Estonia do not speak any other language, while 50% speak Estonian as a foreign language (Statistics Estonia, 2022).

The issue is not to characterise Russian-speaking residents in broad political terms, but to assess whether the documents justify the linguistic boundaries of a national citizen-facing system. If Bürokratt is presented as an interface for accessing public services, language availability affects the scope of that accessibility (Information System Authority, 2026). The documents analysed do not provide a clear public justification for prioritising Estonian, English and Ukrainian while not addressing Russian as an interaction language (Information System Authority, 2026; Statistics Estonia, 2022). This creates a tension between the claim of broad service accessibility and the linguistic conditions under which access is actually offered.

According to the analysis presented, Bürokratt's governance arenas show strong indications of democratic legitimacy in their anchorage in elected politicians, especially through political design, governmental sponsorship, strategic framing and agenda setting (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 4, 6–8; Ministry of Justice and Digital Affairs, 2024; Gonçalves, 2022). They show more moderate and uneven adherence to democratic rules and norms, particularly in documents that mention stakeholder involvement, openness, and rights protection (Janin & Thévenet, 2025, pp. 4, 6–8; EquiTech Project, 2024; OECD, 2022, pp. 8; Gonçalves, 2022). They show weaker indications in the membership-based and citizenry anchorages, where evidence of representative accountability, criticism capacity, citizen participation and influence is limited (Information System Authority, 2026; Gonçalves, 2022; Nesti & Graziano, 2019; Sørensen & Torfing, 2005).

Bürokratt's degree of democratic legitimacy is best understood as strongly anchored in state-led political and administrative structures, partially anchored in democratic rules and norms, and weakly anchored in societal and citizen-based mechanisms of influence (Nesti &

Graziano, 2019; Sørensen & Torfing, 2005). The system is presented as efficient, innovative and institutionally coordinated (Information System Authority, 2026; Janin & Thévenet, 2025, pp. 6–8; Mäe, 2023; Gonçalves, 2022). Its governance arenas are less clearly presented as spaces where organised groups and citizens can shape, contest or demand justification for the decisions that structure this citizen-state interface.

Conclusion

This thesis examined the degree of democratic legitimacy of Bürokratt's governance arenas that involve the algorithmic mediation of public services. It combined debates on algorithmic governance, transparency and legitimacy with the framework of democratic anchorage in governance networks. The analysis focused on public official documents of the Estonian government and private partners produced between 2020 and 2025. It assessed how Bürokratt's governance is anchored in four dimensions: democratically elected politicians, participating groups and organisations, a territorially defined citizenry, and democratic rules and norms.

The main finding is that Bürokratt's democratic legitimacy is institutionally strong but democratically uneven. The system is strongly anchored in Estonia's political and administrative structures. It is connected to ministries, national AI strategies, public mandates, agenda-setting processes and coordination mechanisms. This gives Bürokratt a clear institutional foundation and situates it within Estonia's broader digital government agenda.

However, this anchorage is concentrated in executive sponsorship and administrative steering. The documents show who sponsors, coordinates, and frames the project, but they are less explicit about how the governance arrangement itself is open to scrutiny, justified to affected actors, or connected to visible channels of contestation. Proximity to public institutions strengthens political anchorage, but it does not automatically produce a balanced democratic anchorage across the network.

The second and third anchorages are weaker. Participating organisations primarily appear as implementers, adopters, technical partners, or ecosystem actors. The documents provide limited evidence that these organisations are connected to membership bases that can select, instruct, monitor or criticise them. Citizens are also highly visible, but mainly as users of an improved public service. They are expected to communicate with the state more easily, complete tasks in a single session, access services around the clock, and benefit from customer support. They are not clearly positioned as actors who can shape, contest, or influence the system's governance.

This creates the central analytical tension of the thesis. Bürokratt may make the state more accessible, but accessibility does not equal democratic participation. A citizen who can access a service more easily is not necessarily one who can influence the rules, assumptions, or institutional arrangements behind that service. The corpus narrative constructs Bürokratt primarily through a service-delivery logic: efficiency, convenience, availability and user experience. These are relevant public values, but they do not fully address the democratic requirements raised by governance networks and algorithmic systems.

The fourth anchorage occupies an intermediate position. The documents mention stakeholder involvement, openness, institutional collaboration and rights protection. They also place Bürokratt within a broader digital governance environment increasingly linked to legal safeguards and fundamental rights. At the same time, these values are not consistently translated into visible procedures of deliberation, respectful dialogue, public scrutiny or ongoing democratisation. The governance environment appears collaborative and institutionally aware, but not clearly deliberative in a democratic sense.

Taken together, the findings show that Bürokratt's legitimacy rests on a narrow but strong foundation: a capable state, a strong digital government narrative and a promise of better public service delivery. The project is democratically legitimate to the extent that it is state-led, strategically framed and connected to Estonia's administrative capacity. Its legitimacy becomes more limited where democratic anchorage would require clearer evidence of citizen influence, membership-based representation, public justification and visible mechanisms for coordination and contesting decisions. In conclusion, Bürokratt's governance arenas show strong legitimacy in their political-administrative anchorage, partial legitimacy in their connection to democratic rules and norms, and weaker legitimacy in their societal and citizen-based anchorages.

This finding has implications beyond the Estonian case. LLM-based systems such as Bürokratt are not only technical interfaces. They reorganise how citizens encounter the state, how services are accessed, how information flows across institutions and how public authority is experienced. If their legitimacy is justified primarily by efficiency and service improvements, key democratic questions remain underdeveloped. The question is not whether such systems should exist, but whether their governance is made visible, intelligible and open to scrutiny by affected actors.

The thesis also shows that official documents are politically significant sources. They do not merely describe Bürokratt; they participate in constructing its public legitimacy. In this case, the documentary and textual record explains in detail what the system is expected to deliver, but says less about the processes through which its governance is debated, challenged or revised. This is not only a methodological constraint. It is also an analytical finding: participation, criticism, conflict mediation and citizen influence are not central to the public narrative through which Bürokratt is legitimised.

Further research

Future research should first complement this study with a systematic analysis of Estonian-language documents. This would allow a more complete assessment of domestic debates, legal discussions, parliamentary materials, media coverage and public consultations that may not be available in English. It also helps determine whether the weak visibility of citizen participation and societal anchorage reflects the governance arrangement itself or the limits of the English-language corpus.

Second, future research should include interviews with key actors involved in Bürokratt's governance. Interviews with officials from the Ministry of Justice and Digital Affairs, the State Information System Authority, the Ministry of Economic Affairs and Communications, implementing agencies, technical partners, data protection authorities and civil society organisations could clarify how decisions are made, how conflicts are handled and whether informal channels of participation or criticism exist. This would help distinguish between mechanisms absent from governance and those that exist but are not publicly documented.

Third, Bürokratt should be compared with other AI initiatives in the Estonian public sector. A comparative design would enable assessment of whether the patterns identified in this thesis are specific to Bürokratt or reflect a broader tendency in Estonia's AI governance. Such research could compare systems with different degrees of public visibility, institutional location, technical complexity and citizen-facing interaction, such as OTT and ABC Gates. This would help determine whether strong political-administrative anchorage combined with weaker citizen and societal anchorage is a broader pattern in Estonian public-sector AI.

More broadly, future research could apply the adapted democratic anchorage framework to other governmental LLMs and AI-mediated public service interfaces. As public administrations increasingly adopt generative AI and conversational systems, democratic legitimacy will depend not only on technical performance but also on how these systems are institutionally justified, socially anchored, and made open to scrutiny. Bürokratt offers an early and analytically rich case for examining this problem. Its main lesson is that a public AI system can be innovative, useful and institutionally embedded while still leaving significant democratic questions unresolved.

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Appendix 1

Table A1.1 - First-round with deductive codes

Nº	Code ID	Component Name	Coding Questions	Example Quote	Nº of Coded Excerpts	Source
1	1.a1	Political design	Does the document explicitly describe the political design of the governance arrangement?	“Bürokratt is not just an IT project but a concept of how digital services and the state could operate in the age of artificial intelligence,” says Ott Velsberg, Chief Data Officer of Estonia’s Digital Government.”	13	https://investinestonia.com/estonias-burokratt-is-a-concept-of-how-state-could-operate-in-the-age-of-artificial-intelligence/
2	1.a2	Political design	Is this design justified?	“In 2022, the MKM aims to continue onboarding public agencies and implement their projects on the Bürokratt platform. To add the main envisioned functionalities, the development team is working further on the dialogue-based system, the speech recognition and synthesis capabilities, creating personalised services for both the public and private sectors and continuing the development of the government mobile application and communication channels. Until the end of the year, the government hopes to create 10 interoperable and personalised public services and to develop a customer contact classification module to correctly forward citizens’ inquires. The system should be interoperable with the systems in other countries, such as Finland and its AuroraAI platform.”	11	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt
3	1.b1	Network composition	Does the document explicitly state who is part of the governance network?	“The development of the platform relied on a core team of 12 people, thanks to the collaboration of the MKM with the State Information System Authority, in partnership with the Institute of Estonian Language and the Ministry of Education and Research. Private sector companies like Texta, Stacc, Microsoft, and Solita also provided technical support to develop the tool. The Estonian company Net Group in particular, has been significantly involved in the architecture and design phases of the project, being responsible for developing the algorithm that answers the users’ questions.”	40	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt
4	1.b2	Network composition	Does the document explicitly state how this composition is defined?	“"The Ministry of Justice and Digital Affairs (Justiits- ja Digiministeeriumiks) 4: In 2024 the Estonian Parliament approved an amendment to the Government of the Republic Act, transferring all responsibilities linked to e-government and the development	2	https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/OSS%20Country%20Intelligence%20Report%20Est

				of digital society – including online public services, state information systems, and cybersecurity – to the newly formed Ministry of Justice and Digital Affairs. This new ministry began work on 1 January 2025, with several government agencies related to digitalisation coming under its remit, including the Information Systems Authority. This merger of the legal and digital aspects of Estonian society was intended to protect people's fundamental rights in the face of "rapid digital development". Previously, the development and promotion of the digital public sector and information society were under the auspices of the Ministry of Economic Affairs and Communications, including through the e-State Development Department 5 and the Information Society Services which maintained a GitHub page.6"		onia%202025.pdf
5	1.c1	Design of institutional procedures	Are the institutional procedures governing decision-making within the system clearly described?	"As part of the kratts project, the Ministry of Economic Affairs and Communications and the Government Office convened an expert group of representatives of state agencies and the private sector in August 2018. The task of the expert group was to develop specific proposals by May 2019 on areas that would benefit Estonia the most from kratts and what measures to support their introduction. At the same time, proposals related to the use of kratts were developed for the development of the Estonian legal space to ensure legal clarity and the necessary safety. Based on the report of the expert group, the strategy for Estonian artificial intelligence was prepared."	39	https://www.ria.ee/en/state-information-system/personal-services/burokratt
6	1.d1	Framing goals	Are the system's goals explicitly framed?	"Bürokratt is not just an IT project but a concept of how digital services and the state could operate in the age of artificial intelligence," says Ott Velsberg, Chief Data Officer of Estonia's Digital Government."	63	https://investinestonia.com/estonias-burokratt-is-a-concept-of-how-state-could-operate-in-the-age-of-artificial-intelligence/
7	1.d2	Framing goals	Are the goals of the governance arrangement explicitly framed?	"Digital Agenda 2030, 2021 19: The latest version of Estonia's digital agenda lays out a long-term plan to achieve the objectives of the broader Estonia 2035 strategy through digital technology. The Digital Agenda lists the development of digital government as one of its core objectives, with a focus on user experience and sustainability of digital government applications."	26	https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/OSS%20Country%20Intelligence%20Report%20Estonia%202025.pdf
8	1.d3	Framing goals	Is it clear who formulates these goals?	"In 2020, the vision and concept paper for Bürokratt outlined the purpose of the tool, as well as the features and technical requirements the MKM committed to integrate and address. In 2020, the MKM also carried out the first pilot projects for Bürokratt."	12	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-st

						udy-burokratt
9	1.e1	Coordination and conflict mediation	Does the document indicate mechanisms for coordination between actors?	“Bürokratt is a network of chatbots. The opportunities for creating AI based services and software/platform is provided to different government agencies, authorities and local municipalities by the Estonian information System Authority. Each client owns and is responsible for the services within their own organisation. As of today, the AI chatbot is being used for answering people’s general questions.”	10	https://www.volinik.ee/volinik-live-web-prd/s3fs-public/2024-12/Equitech_Audit Report_TalTech_25.11.24.pdf
10	1.e2	Coordination and conflict mediation	Does the document outline mechanisms for mediating conflicts within the network?	No coded excerpts	n/a	n/a
11	1.f1	Agenda setting	Are there clear indications of who sets, steers or revises the agenda for the system and its governance?	“– Bürokratt, a network of virtual assistants designed by the Ministry of Economic Affairs and Communications, aimed at improving public sector communication.”	27	https://e-estonia.com/estonia-and-automated-decision-making-challenges-for-public-administration/
12	2.a1	Participation of affected actors	Are affected organisations and groups explicitly included in the governance process?	“According to Velsberg, the final product will greatly simplify communication between people and the state. “It will allow access to all kinds of public services, let us inform citizens about the opportunities and benefits offered by the state and answer questions and concerns around the clock,” Velsberg notes.”	25	https://investinestonia.com/estonias-burokratt-is-a-concept-of-how-state-could-operate-in-the-age-of-artificial-intelligence/
13	2.b1	Selection and instruction by memberships	Are participating organisations and groups selected according to previously established norms or procedures?	“The software for Bürokratt is free, but hosting the solution is done, as usual, in the State Cloud, with a monthly hosting cost of about €150, plus additional costs from using large language models (LLMs). For institutions, adopting the solution requires contributing to the collection and, if necessary, cleaning of input data. The Estonian Information System Authority (RIA) offers support from the first demo to production. See the detailed LLM guide here.”	1	https://www.kratid.ee/en/burokratt
14	2.b2	Selection and instruction by memberships	Are representatives instructed or mandated by their organisations or memberships?	“Explore the world of data and “kratt”(s) through trainings. Each year, about ten trainings are commissioned, and their recordings and materials are published continuously.”	n/a	https://www.kratid.ee/en/burokratt
15	2.c1	Performance report	Are there publicly available performance	"People are disappointed because Bürokratt can only answer the questions it has been trained to answer,” said Maris Männiste, a lecturer in critical	6	https://peegel.ut.ee/node/810

			reports about participating organisations' roles or contributions?	data research at the Institute of Social Sciences at the University of Tartu'"		
16	2.d1	Criticism capacity	Are there forums or mechanisms through which groups and organisations can express criticism or contest decisions?-	"The central principle in the development of Estonian "crats" is trust and transparency . Citizens must always know when they are interacting with artificial intelligence, and they must have the opportunity to challenge decisions."	n/a	https://aidoc.pages.taltech.ee/uhiskondlik-moju-ja-eetika/TI-Eestis/
17	3.a1	Publicly accessible outcomes	Are the outcomes, decisions or impacts of the system made publicly accessible to the citizenry?	"+ saving 1407 years annually + 651 institutions and enterprises + 504 public sector institutions + 2691 different services + over 900 million transactions per year + exported to Finland, Kyrgyzstan, Namibia, Faroe Islands, Iceland, Ukraine, and other countries"	56	https://ega.ee/wp-content/uploads/2022/10/Presentation-AI-ENG_Velsberg_Estonia.pdf
18	3.b1	Participation of affected citizens	Do affected citizens have opportunities to participate in the process beyond being treated merely as service users?	"Thus, Bürokratt directs received user queries to the specific chatbot of the respective institution, and further communication with this institution remains private. The service provider describes 27 the recognition of its service (keywords, sentences and rules for referral to the institution and requests) in the Bürokratt user interface."	8	https://www.volinik.ee/volinik-live-web-prd/s3fs-public/2024-12/Equitech_Audit Report_TalTech_25.11.24.pdf
19	3.c1	Dialogue and contestation	Are there channels through which citizens can enter into dialogue with authorities about the system?	"According to Velsberg, the final product will greatly simplify communication between people and the state. "It will allow access to all kinds of public services, let us inform citizens about the opportunities and benefits offered by the state and answer questions and concerns around the clock," Velsberg notes."	1	https://investinestonia.com/estonias-burokratt-is-a-concept-of-how-state-could-operate-in-the-age-of-artificial-intelligence/
20	3.c2	Contestation for affected citizens	Are there channels through which citizens can contest decisions or uses of the system?	""People are disappointed because Bürokratt can only answer the questions it has been trained to answer," said Maris Männiste, a lecturer in critical data research at the Institute of Social Sciences at the University of Tartu'	n/a	https://peegel.ut.ee/node/810
21	3.d1	Justification for affected citizens	Are there publicly available justifications that explain decisions or arrangements to affected citizens in an intelligible way?	"In the spring of 2022, a new methodology was introduced in the development of the virtual assistant Bürokratt: the entire development process would be public, from the planning of the work and the daily code delivery to the publication of the results."	61	https://news.microsoft.com/en-cee/2022/11/28/virtual-assistant-brings-the-benefits-of-technology-to-every-citizen/
22	3.e1	Citizens'	Do citizens have	"Alvatal 15 is a free and OSS	5	https://interoperab

		influence power	any effective influence over the design, implementation or revision of the system?	association which unites Estonian companies, non-profit associations, and volunteers with the aim of ensuring transparency in their use of software and hardware. Several government bodies have partnered with Alvatal to support their activities. Alvatal was mostly active in the educational sector and has implemented various pilots on cloud computing, desktop migration, and the use of different OSS applications."		le-europe.ec.europa.eu/sites/default/files/inline-files/OSS%20Country%20Intelligence%20Report%20Estonia%202025.pdf
23	4.a1	Involvement of relevant stakeholders	Does the document indicate that relevant stakeholders are intentionally involved in governance processes, rather than a narrow set of actors?	“The development of the platform relied on a core team of 12 people, thanks to the collaboration of the MKM with the State Information System Authority, in partnership with the Institute of Estonian Language and the Ministry of Education and Research. Private sector companies like Texta, Stacc, Microsoft, and Solita also provided technical support to develop the tool. The Estonian company Net Group in particular, has been significantly involved in the architecture and design phases of the project, being responsible for developing the algorithm that answers the users’ questions.”	102	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt
24	4.b1	Deliberative decision-making	Is there evidence that decision-making within the governance network has a deliberative character?	"The Ministry of Justice and Digital Affairs (Justiits- ja Digiministeeriumiks) 4: In 2024 the Estonian Parliament approved an amendment to the Government of the Republic Act, transferring all responsibilities linked to e-government and the development of digital society – including online public services, state information systems, and cybersecurity – to the newly formed Ministry of Justice and Digital Affairs. This new ministry began work on 1 January 2025, with several government agencies related to digitalisation coming under its remit, including the Information Systems Authority. This merger of the legal and digital aspects of Estonian society was intended to protect people’s fundamental rights in the face of “rapid digital development”. Previously, the development and promotion of the digital public sector and information society were under the auspices of the Ministry of Economic Affairs and Communications, including through the e-State Development Department 5 and the Information Society Services which maintained a GitHub page.6"	9	https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/OSS%20Country%20Intelligence%20Report%20Estonia%202025.pdf
25	4.c1	Respectful dialogue	Is the dialogue among actors described or framed in terms that reflect mutual respect and recognition?	“As part of the kratts project, the Ministry of Economic Affairs and Communications and the Government Office convened an expert group of representatives of state agencies and the private sector in August 2018. The task of the expert group was to develop specific proposals by May 2019 on areas that would benefit Estonia the most from kratts and what	11	https://www.ria.ee/en/state-information-system/personal-services/burokratt

				measures to support their introduction. At the same time, proposals related to the use of kratts were developed for the development of the Estonian legal space to ensure legal clarity and the necessary safety. Based on the report of the expert group, the strategy for Estonian artificial intelligence was prepared."		
26	4.d1	Socially and politically enhancing outcomes	Are the expected or claimed outcomes of the system presented as socially and politically enhancing, not only as efficiency gains?	"In 2022, the MKM aims to continue onboarding public agencies and implement their projects on the Bürokratt platform. To add the main envisioned functionalities, the development team is working further on the dialogue-based system, the speech recognition and synthesis capabilities, creating personalised services for both the public and private sectors and continuing the development of the government mobile application and communication channels. Until the end of the year, the government hopes to create 10 interoperable and personalised public services and to develop a customer contact classification module to correctly forward citizens' inquires. The system should be interoperable with the systems in other countries, such as Finland and its AuroraAI platform."	58	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt
27	4.e1	Ongoing democratisation	Is there any indication that the governance arrangement is expected to contribute to ongoing democratisation over time?	"While this initiative aims to promote convenience and accessibility, researchers have suggested caution in the use of AI for governmental services, which raises the question: to what extent can we rely on AI as the future of public administration?"	6	https://eestielu.ca/is-estonias-new-ai-the-future-of-public-administration/

Source: Made by the author.

Table A1.2 - Third-round with interpretive categories

Nº	**Code**	**Example Quote**	**Nº of Coded Excerpts**	**Source**
1	Strong framing	"In recent years the government has developed open source AI modules for public services as a key objective of the national AI strategy known as Kratt 3 – in reference to an Estonian mythological creature. As part of this strategy, Estonia was the first country to launch an open source AI chatbot to provide around-the-clock access to public services information and services: Bürokratt."	16	https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/OSS%20Country%20Intelligence%20Report%20Estonia%202025.pdf
2	Strong justification	"Several public sector institutions already use Bürokratt. Earlier solutions, such as Rasa-based chatbots, relied heavily on pre-defined question-answer training, which required a lot	36	https://www.kratid.ee/en/burokratt

		of resources from institutions. While those solutions worked reasonably for recurring questions, they demanded constant manual maintenance and content updates."		
3	Strong network arrangement	"Bürokratt is a network of chatbots. The opportunities for creating AI based services and software/platform is provided to different government agencies, authorities and local municipalities by the Estonian information System Authority. Each client owns and is responsible for the services within their own organisation. As of today, the AI chatbot is being used for answering people's general questions."	2	https://www.volinik.ee/volinik-live-web-prd/s3fs-public/2024-12/Equitech_AuditReport_TalTech_25.11.24.pdf
4	Strong outcomes	"As this vision is realized, institutions will be able to integrate virtual assistants into the network — independent AI agents that cooperate with each other, which, based on a person's requests, find necessary information and carry out required actions (e.g. submitting an inquiry, application, or booking). In the future, these assistants will be able to offer people seamless and personalized service."	9	https://www.kratid.ee/en/burokratt
5	Strong procedures	"The principle that people give their data only to one government body, combined with the data protection law passed by Estonia, means that data has to be stored in that place where it is captured. This data protection law means that it is not legally feasible for the ministries in question to create a data hub through which mass processing or queries can be conducted. Because of this, a network of interoperable, localised chatbots associated with individual government entities and databases, needed to be built rather than a single government chatbot."	8	https://www.volinik.ee/volinik-live-web-prd/s3fs-public/2024-12/Equitech_AuditReport_TalTech_25.11.24.pdf
6	Strong stakeholders	"The Information System Authority (Riigi Infosüsteemi Amet – RIA) 7: RIA is the national competence centre responsible for managing the technological infrastructure underpinning Estonia's e-government system, arising from the merger and evolution of different institutions including the Estonian Informatics Fund established in 1990. RIA has existed in its current form since 2011 and is one of the main agencies in Estonia providing ICT support for the public sector. RIA is managed by the Ministry of Justice and Digital Affairs 8 and is responsible for the implementation of the Estonian Digital Agenda 2030 9 in the areas of digital public services and cybersecurity 10 . Core to RIA's responsibilities are X-Road / X-tee 11 (see below), eID and eVoting, which are all partially or fully based on OSS. RIA is active on GitHub. 12"	7	https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/OSS%20Country%20Intelligence%20Report%20Estonia%202025.pdf
7	Weak cases	"Customer call analysis" SKA, Unemployment Insurance Fund,Statistics Estonia, Health Insurance Fund and others."	19	https://ega.ee/wp-content/uploads/2022/10/Presentation-AI-ENG_Velsberg_Estonia.pdf
8	Weak criticism	"The central principle in the development of Estonian "crats" is trust and transparency . Citizens must always know when they are interacting with artificial intelligence, and they must have the opportunity to challenge decisions."	3	https://aidoc.pages.taltech.ee/uhiskondlik-moju-ja-eetika/TI-Eestis/
9	Weak framing	"• We protect people's basic rights • We cherish Estonian culture and language • We maintain trustworthiness	46	https://ega.ee/wp-content/uploads/2022/10/Presentation-AI-ENG_Velsberg_Eston

		• We are technology neutral • We build digital society together • We are innovative"		ia.pdf
10	Weak instruction	“Explore the world of data and “kratt”(s) through trainings. Each year, about ten trainings are commissioned, and their recordings and materials are published continuously.”	6	https://www.kratid.ee/en/burokratt
11	Weak justification	“In 2020, the vision and concept paper for Bürokratt outlined the purpose of the tool, as well as the features and technical requirements the MKM committed to integrate and address. In 2020, the MKM also carried out the first pilot projects for Bürokratt.”	22	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt
12	Weak outcomes	"seamless public services implementation in process"	30	https://ega.ee/wp-content/uploads/2022/10/Presentation-AI-ENG_Velsberg_Estonia.pdf
13	Weak participation	"We empower people by valuing every person and their contribution to cocreation"	8	https://ega.ee/wp-content/uploads/2022/10/Presentation-AI-ENG_Velsberg_Estonia.pdf
14	Weak policy design	“The use of artificial intelligence (AI) in the public sector is one of the European Commission’s key priorities to create a resilient Europe in the Digital Decade. Through the Coordinated Plan on Artificial Intelligence (updated in 2021), Member States are incentivised to accelerate investment, act on AI strategies and programmes, and align their AI policy to avoid fragmentation at the global level.”	1	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt
15	Weak procedures	“The conception of Bürokratt followed the release of proposals on advancing the take-up of AI by the MKM. Legitimised by Estonia’s national AI strategy”	18	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt
16	Weak stakeholders	“One of the main features of Bürokratt, the chatbot, is currently available as a prototype under the MIT Licence and developed based on the data of the State Information System Board and the Police and Border Guard Board. Although the source code is available on GitLab, the access is limited to users with an Estonian eID.”	33	https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/document/digital-public-services-based-open-source-case-study-burokratt
17	n/a	“However, experts have cautioned against the use of AI in the provision of governmental and public services.”	62	https://eestielu.ca/is-estonias-new-ai-the-future-of-public-administration/

Source: Made by the author.

Appendix 2

This appendix presents the mapping of Estonian civil society organisations and media outlets searched for public references to Bürokratt. These sources were selected because they could potentially reflect public-facing perspectives from actors relevant to Estonia's digital governance, civil society or media debate. The search was conducted on each source's website, using the available search field and the terms "Bürokratt" and "Bürokrati", in order to identify public materials, position statements, articles or opinion pieces discussing Bürokratt. The search results and the decision on whether each source was included in the corpus are presented in the Appendix 2.1 below.

Table A2.1 - Mapping of public-facing sources

Nº	Source type	Organisation / outlet	Relevance to the study	Website	Search result	Included in corpus?	Reason
1	Civil society organisation	Estonian Chamber of Disabled People	Represents a broad network of organisations of persons with disabilities (digital inclusion).	https://epikoda.ee/	No public material identified	No	No direct reference to Bürokratt was found.
2	Think tank	Praxis Think Tank	Independent public-interest think tank. Relevant for public services, personalisation, data and social impact.	https://www.praxis.ee/	No public material identified	No	No direct reference to Bürokratt was found.
3	Civil society foundation	Open Estonia Foundation	Relevant to democracy, accountability, fundamental rights and civil dialogue.	https://oef.org.ee/en	No public material identified	No	No direct reference to Bürokratt was found.
4	Public debate platform	Arvamusfestival	Civic public debate platform. Relevant for debates on AI, digital state, digital rights and public services.	https://arvamusfestival.ee/en/	No public material identified	No	No direct reference to Bürokratt was found.
5	Civil society organisation	Estonian Human Rights Centre	Independent human rights organisation. Relevant to fundamental rights,	https://humanrights.ee/en/	No public material identified	No	No direct reference to

			digital society, AI, privacy, discrimination and accountability in public-sector AI.				Bürokratt was found.
6	Open data / civic tech organisation	Open Knowledge Estonia	Relevant to open data, transparency, open government and civic technology in government digitalisation.	https://okee.ee/	No public material identified	No	No direct reference to Bürokratt was found.
7	Civic tech organisation	Citizen OS Foundation	Civic technology organisation created in Estonia, with a platform for participation, debate, voting and collective decision-making.	https://citizenos.com/	No public material identified	No	No direct reference to Bürokratt was found.
8	Civil society umbrella organisation	Network of Estonian Nonprofit Organizations	Umbrella organisation for Estonian civil society. Relevant to civic participation, non-profit organisations and public debate.	https://heakodanik.ee/	No public material identified	No	No direct reference to Bürokratt was found.
9	Participatory governance organisation	Estonian Cooperation Assembly	Manages Rahvaalgatus.ee, a portal for citizen discussions and collective proposals.	https://kogu.ee/en/home/	No public material identified	No	No direct reference to Bürokratt was found.
10	Citizen initiative platform	Rahvaalgatus.ee	Citizen initiative platform. Relevant for petitions, collective proposals and formal citizen debates.	https://rahvaalgatus.ee/	No public material identified	No	No direct reference to Bürokratt was found.
11	Independent media outlet	Levila	Independent media outlet focused on social narratives, personal experiences, audio stories and interpretive journalism.	https://www.levila.ee/	No public material identified	No	No direct reference to Bürokratt was found.
12	Digital magazine	Edasi	Digital and essayistic magazine. Relevant for qualified opinion and reflective texts on society.	https://edasi.org/	No public material identified	No	No direct reference to Bürokratt was found.

13	Cultural and social media outlet	Müürileht	Relevant for contemporary culture, society and critical perspectives.	https://www.muurileht.ee/	No public material identified	No	No direct reference to Bürokratt was found.
14	NGO and online magazine	Feministeerium	Civil society source contributing to public debate from a feminist perspective on politics, society and culture.	https://feministeerium.ee/en/	No public material identified	No	No direct reference to Bürokratt was found.
15	English - language online magazine	Estonian World	Independent English-language online magazine. Relevant for texts on Estonian society, technology and Estonia's international image.	https://estonianworld.com/	No public material identified	No	No direct reference to Bürokratt was found.
16	Public media outlet	ERR	Public media with news, interviews, opinion materials and Estonian, English and Russian-language versions.	https://www.err.ee/	Relevant materials identified	Yes	Selected materials were retained in the corpus.
17	National newspaper	Postimees	Major national newspaper. Relevant for public opinion, columns, politics and society.	https://www.postimees.ee/	Only descriptive or government -replicating material	No	Materials identified did not add substantive evidence beyond official or institutional descriptions.
18	Digital news portal	Delfi	Major digital portal. Relevant for public debate, comments, opinion, society and technology.	https://www.delfi.ee/	No public material identified	No	No direct reference to Bürokratt was found.
19	Newspaper / media group	Eesti Päevaleht / EPL	Newspaper in the Delfi/Ekspress media group. Relevant for opinion and political debate.	https://www.epl.ee/	Only descriptive or government -replicating material identified	No	Materials identified did not add substantive evidence beyond official or institutional descriptions.

20	Weekly newspaper / opinion outlet	Eesti Ekspress	Weekly newspaper with investigative, opinion and interpretive coverage. Relevant for critical analysis and public debate.	https://ekspress.delfi.ee/	Only descriptive or government-replicating material identified	No	Materials identified did not add substantive evidence beyond official or institutional descriptions.
21	Newspaper / tabloid	Õhtuleht	Popular newspaper. Relevant for less technical and everyday public perceptions.	https://www.ohtuleht.ee/	No public material identified	No	No direct reference to Bürokratt was found.
22	Technology and digital media outlet	Geenius	Private technology and digital media outlet. Relevant for Bürokratt, AI, e-government and digital services.	https://geenius.delfi.ee/	No public material identified	No	No direct reference to Bürokratt was found.
23	Technology and business media outlet	ITuudised	Technology and business media outlet. Relevant for public IT, digitalisation and AI discussions.	https://www.ituudised.ee/	No public material identified	No	No direct reference to Bürokratt was found.

Source: Made by the author.