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A Review of Governance Challenges in Cross-Ministerial Collaborations for IT-Based Service Provisioning

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Abstract. Central government policy departments need to collaborate with executive agencies to provide IT-based services to society. These collaborations are complicated by the fact that the executive agencies are controlled by different ministerial hierarchies, resulting in conflicting interests. Yet, a detailed analysis of these challenges is lacking in the literature. In this paper, we analyze the challenges at several ministries through interviews focused on specific cases as well as interviews focused on expert knowledge. We identified the challenge themes and compared them with the literature, finding several new challenges in practice, including restricted procurement, a Goldilocks zone for escalation, the inability to hold an agent ultimately accountable, and the low priority the central government policy departments give to the implementation. Paradoxically, central government policy departments, as principals, are less powerful and highly dependent on executive agencies instead of the other way around, as suggested by principal-agent theory. These findings imply that there is a need for new governance mechanisms able to deal with all the challenges encountered. The overview of the challenges can serve as a sound foundation for conducting further research into cross-ministerial governance.

Keywords: Public collaboration · digital government · IT-based service provisioning · agency theory · governance challenges

1 Introduction

Public organizations in governments have to collaborate in organizational networks to deliver their digital services to society. Often, specialized executive agencies are used, frequently using information technology (IT), to provide services to multiple organizations [1]. The ministries responsible for delivering these IT-based services encounter impediments in safeguarding their interests in these complex collaborations. Although agency theory warns of potential conflicts of interest and information asymmetries that complicate the principal's control of the agent (e.g. [2, p. 5]), there is additional complexity in these collaborations. The complexity originates from the use of IT, which frequently changes [3, 4, p. 7], the unpredictability of the political domain, and the fact

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that service delivery organizations are often part of different ministerial hierarchies [4, p. 2, 5, pp. 17,31]. In such cases, the governance of inter-organizational collaborations [6, 7] is not always effective [5]. Since many implementations fail in government [8, p. 69], the specific challenges and complexities need to be understood.

Figure 1 shows the specialized, executive agencies that governments have established to provide IT services for the benefits of scale, for standardization, and to retain expertise (a.o.) in relation to the principals who need these services. These executive agencies are part of a ministerial hierarchy, but also provide services to policy departments of other ministries. So, a request from one ministry policy department (A) has to compete with requests coming from other ministries' policy departments (B and X) or from the policy departments in its own hierarchy (within Ministry B).

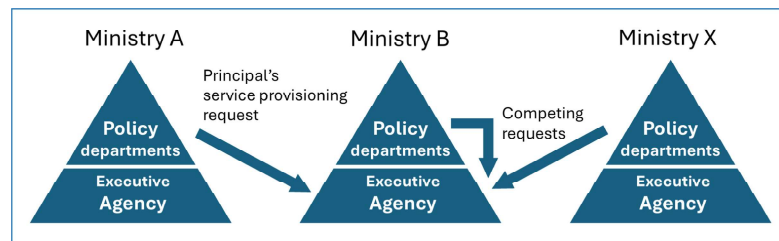


Fig. 1. Policy executed by a part of another ministry

These executive agencies weigh their own interests and the interests of their clients, who act as principals, driven by the objectives and concerns of the hierarchy they are part of. This can be characterized as the *multiple principals problem* in which the agency works for many principals [9]. Not surprisingly, the interests of the collaborative partners (agents and principal(s)) in the public sector do not always align [10, p. 46]. As De Bruijn and Ten Heuvelhof [11] state: “Getting what you want – even if you are the boss – isn’t always easy. Almost every organization, big or small, works among a network of competing interests.” [11, p. 1]. Although this general challenge of conflicting interests is well recognized, current research remains at the level of recognition of this challenge. Still, deeper analyses of the typical challenges within the government have not been conducted yet. Understanding these challenges is needed as a solid basis for improving governance. Therefore, our research question is: *What challenges inhibit the principal’s ability in an intra-governmental collaboration to effectively safeguard its interests when implementing IT-based services?*

This paper is structured as follows: We first discuss the governance challenges identified in the literature. Next, we outline the data collection methods, followed by a detailed description of the typical challenges found in our empirical research. After that, we discuss the findings, and draw conclusions in the last section.

2 Literature Background

In this paper, we research a principal's challenges in governing collaborations and safeguarding his interests. While we use the term 'challenges', in the literature various synonyms are used, including problems, issues, impediments, obstacles, barriers, limitations, hindrances, hurdles, complications, difficulties, or pitfalls. This section provides a brief overview of the current scientific knowledge on these governance challenges, to provide context for our empirical findings later in this paper. This overview was obtained from key scientific fields: network governance, collaborative governance, agency theory, and contracting theory. The literature was researched until thematic saturation was reached. Although much has been written in scientific literature about challenges in the governance of collaborations [9, 12–14], not all of these challenges are relevant to this research. We are not interested in private sector challenges. Also, while some challenges pertain to collaboration more broadly, such as challenges related to resources, coordination, and technical barriers, these are not governance-specific and can be excluded. This leaves us with the challenges in governing collaborations, as mentioned in **Table 1**.

Table 1. Overview of the main governance challenges related to collaborations.

Theoretical Fields	Challenges	Scholars	
Network and collaborative governance	Interpersonal & individual	Autonomy preference	[2, p. 28], [15, p. 8], [16, p. 398]
		Cultural differences	[14, p. 105], [17], [18]
		Personality and interpersonal issues	[19, p. 15], [14, p. 105]
		Trust and prehistory of antagonism	[6, p. 237], [13, p. 550], [17]
	Structural & systemic	Power imbalances	[13, p. 551], [20, p. 1], [21, p. 22], [22, p. 1]
		Conflicting interests	[19, p. 4], [23, p. 58], [12, p. 21], [24, p. 298], [17, p. 753]
		Multiple-principal problem	[19, p. 13], [9, p. 1]
	Contractual & risk-related	Information asymmetry, communication issues and monitoring	[19, p. 4], [12, p. 10], [24, p. 298], [17, p. 753]
		Bounded rationality complexity, uncertainty	[25], [26, p. 709], [27, p. 718]
		Incomplete contracts, and task programmability	[19, p. 6], [23, p. 58], [28, p. 845], [27, p. 716], [29, p. 1], [19, p. 7]
Agency Theory	Risk aversion and different risk appetites	[19, p. 4], [23, p. 58], [24, p. 298]	
		[30, p. 839]	

Mitnick [12] proposes multiple ways to categorize challenges, e.g., based on ownership of the problem (principal or agent) or based on the stage of the process in which they occur. However, we follow Mitnick's advice that "any categorization of agency problems would depend, of course, on the purpose and setting of the analysis" [12].

Categorizing the challenges based on the scientific areas of network governance, collaborative governance, agency theory, and contracting theory is problematic because these theories overlap and interact in complex ways. A categorization that fits in well with this and gives a better picture of the types of challenges is the breakdown into individual and interpersonal dynamics, structural and systemic challenges, and contractual and risk-related challenges. Still, these categories are not mutually exclusive. Many challenges have elements that span multiple categories.

Interpersonal and Individual Challenges. The first category concerns challenges that originate from organizations being social constructs with people interacting on a personal level. This results in challenges due to autonomy preference, cultural differences, personality & interpersonal issues, and trust.

- *Autonomy preference:* Agencies will strive for higher autonomy to resist coordination from the principal and gain the freedom to let their own interests weigh more heavily [2, p. 6]. Also, the agent may perceive coordination as limiting if held accountable for individual performance [2, p. 8].
- *Cultural differences:* Organizations with different cultures may adopt varying approaches to conflict management, which can hinder effective governance [14, p. 105]. Arnold & De Lange [17, p. 755] demonstrate that organizations can develop strong cultures rooted in opportunism. Naturally, the principal may find it challenging to govern such organizations in a way that aligns with their interests.
- *Personality and interpersonal issues:* O’Leary & Bingham [14, p. 105] remind us that organizations are made up of people and that governance is carried out by and on people. These people can clash with each other on a personal level. Bendickson et al. [19, p. 15] add that psychological factors include “mood, affect, emotion, and personality.”
- *Trust and prehistory of antagonism:* In a climate of distrust, goal congruency between principal and agent diminishes [6, p. 237], lowers commitment, and may cause dishonest communication [13, p. 553].

Structural and Systemic Challenges. The second category contains structural and systemic challenges like power imbalances, conflicting interests, multiple principal problems, and information asymmetry.

- *Power imbalance:* Power imbalance increases the risk for opportunism by the strong collaboration partner to gain the most value from the collaboration [20, p. 1, 13, p. 551]. Imbalances also reduce ex ante incentives to collaborate, due to fears of not receiving a fair return on investment [13, p. 552].
- *Conflicting interests:* One of the basic premises of agency theory is that the interests of the principal and agent do not align [17, p. 753, 24, p. 298]. What may be profitable and in the interest of one could be an expense for the other [23, p. 58, 19, p. 9, 12, p. 21].
- *Multiple principal problems:* An agent may have multiple principals, which can cause conflicts with other principals [19, p. 13] and make the principal compete with the

interests of the other principals, increasing the agent's autonomy and opportunistic behavior [9, pp. 671, 676].

- *Information asymmetry, communication issues, and monitoring*: Information asymmetry occurs when the principal lacks the information to govern the agent. This can be information regarding the behavior of the agent or information regarding the contribution to the principal's objectives [12, p. 19, 19, p. 4]. The agent can capitalize on this information asymmetry to pursue its own interests [17, p. 753, 24, p. 298, 19, p. 4].

Contractual and Risk-Related Challenges. The last three challenges deserve a separate third category together: bounded rationality, contractual, and risk-related challenges. These belong together due to their mutual influence. For example, an incomplete contract increases risks, while risk appetite and aversion determine the desired contract completeness and form.

- *Bounded rationality, complexity, and uncertainty*: As previously discussed, our governance challenges extend beyond organizations to include individuals and their inherent limitations. One such limitation is the cognitive constraint known as bounded rationality, which prevents individuals from making fully rational decisions with complete knowledge of all relevant factors, potential consequences, and future contingencies. [19, p. 7, 25] This, of course, directly impacts the effectiveness of the applied governance and becomes more prevalent in complex situations (e.g., IT-based implementations) or high uncertainty (e.g., innovative markets and political environment).
- *Incomplete contracts and task programmability*: If we take into account factors like information asymmetry, bounded rationality, and difficulty specifying appropriate behavior by the agent in advance (task programmability) [23, p. 61], contracts are inherently incomplete, and it would be exceptionally costly to include all eventualities [27, p. 718, 29, p. 1, 19, p. 7, 23, p. 61]. This incompleteness can lead to opportunistic behavior by agents, potentially undermining the effectiveness of contractual agreements supporting current governance and alignment with the principal's interests.
- *Risk aversion*: Agents are known to be more risk-averse than principals [24, p. 298, 23, p. 58, 30, p. 839]. This may motivate risk-reducing action by the agent, hinder the governance, and undermine the interests of the principal. As Bendickson et al. [19] tell us "governance mechanisms are needed to help align risk and monitor agent behavior by the agent" [19, p. 4].

This overview of challenges demonstrates the diverse, interconnected, and complex nature of collaboration, as seen through different theoretical lenses. It is therefore important to gain insight into how these challenges manifest in government setting.

3 Research Methodology

This paper aims to gain a deep understanding of the challenges inhibiting the principal's ability in an intra-governmental collaboration to effectively safeguard its interests. Our research is "exploratory-descriptive" [31, p. 6], using multiple interviews covering various cases to ensure a deep understanding of the challenges encountered and to understand the enabling configuration elements and contextual conditions [32].

3.1 Data Collection and Case Selection

This research focuses on IT-based cases, where relatively many implementations encounter problems [8, p. 69]. Considering the rapid IT developments [33–35], we selected recent cases limited to the last 15 years.

3.2 Representativeness Cases and Sample Size

To ensure the representativeness of our research for the whole government and different implementations, we interviewed people from five ministries (out of 15 ministries present in 2024) with various public tasks, including implementations carried out in collaboration with different types of external and internal agencies. To ensure a complete set of challenges, we examined cases until no new generic challenges emerged – only case-, ministry-, or agency-specific ones that were no longer relevant to the broader analysis. [36, p. 611, 37]. Ultimately, we gathered challenges from ten interviews in total. Two interviews were used to check for this point of saturation: one interview with a principal advisor and one with an agency advisor. We predicted our sample size based on the system literature review research of Hennink & Kaiser, who found that saturation occurred at 12 to 13 interviews within a range of 9 to 17 [38, p. 7]. In our study, this saturation of challenges was obtained after only 10 interviews.

3.3 Data Source/collection

Data was collected through semi-structured interviews and from available documentation. The interviewed civil servants, whether principals or agents, held positions in the highest decision-making governance bodies of projects or served as direct advisors to those decision-makers. The three main selection criteria for the interviewees were subject expertise, diversity of roles, and civil servants from different ministries. The advisors were especially concerned about citations becoming public and traceable, and about 1 in 2 toned down their literal quotes.

3.4 Interview Protocol

An interview protocol for the semi-structured interviews was developed with variants adapted for the different target groups: single case interviews with a principal, multi-case interviews with a principal, short multi-case interviews with a principal, and interviews with an agent. The multi-case interviews, focusing on the interviewee's expertise,

tended to be more expert than case interviews. The interview questions addressed the background of the interviewee, the context and characteristics of the case, the role of the interviewee, and the challenges within the case. Possible prompts were developed for each question to address governance instruments based on the theoretical fields described in Sect. 2: Theoretical Background. Keeping a focus on challenges, the interviewer considered those prompts that could lead to fruitful and useful elaborations in each interview. Since saturation on the challenges was reached, we can be sure that no essential themes were missed. The interview process was approved by the ethical committee of Delft University of Technology. The interviews were recorded and, if allowed by the interviewee, transcribed and otherwise at least summarized in a concise report. All confidential, personal, and, as much as possible, organizational information was omitted. The interviewee checked, edited, and approved the transcription and report. The cases and roles of the civil servants interviewed are included in Table 2.

Table 2. Overview of case interviews

Interview			Principal Ministry	Agencies		Imposed by	Interviewee	
ID	Case	Type		Int.	Ext.		employer	(former) role
01	New EU regulations	Explore	AA	-	R, D	EU	AA	Controller
02	Data exchange	Explore	AA	S	R, D	EU	AA	Advisor
03	Customer inform. system	Explore	AB	I	F	NL	AB	Advisor
04	Business ops. system	Explore	AC	U	-	Ministry	AC	Mgr. CIO Office
05	Multi-case / expert	Explore	AA	-	R	EU, NL, Min.	AA	Dir. of Finance
06	Multi-case / expert	Explore	AC	U	G	NL, Ministry	AC	Mgr. CIO-Office
07	Multi-case / expert	Verify	AD	-	R	Ministry	R	Strategic I advisor
08	Multi-case / expert	Explore	AA	-	-	EU, NL, Min.	AA	Deputy SG
09	Multi-case / expert	Explore	AE	-	-	EU, NL, Min.	AE	CIO Gov NL
10	Inspection system	Verify	AF	W		Ministry	AF	Advisor

Abbreviations: Int – Internal; Ext – External; EU – European Union government; NL – Dutch government; Min. – Ministry; Dir. – Director; Mgr – Manager; inform. – information; ops. – operations

3.5 Coding

The initial coding was performed inductively using open coding, identifying recurring patterns and assigning concise codes to statements. Axial coding was used to identify relations between codes and the extraction of main themes. Themes with only one code were merged into overarching themes based on conceptual similarity. Saturation was

reached during the coding process, however, all interviews were still fully coded. All final themes were recognized by at least three interviewees and occurred in at least three ministries, demonstrating their relevance across multiple cases.

4 Results and Analysis

As expected, the interviews yielded many challenges. Not surprisingly, since we researched projects where IT was a deliverable, which are known to have a low success rate. The challenges inhibiting the principals' usage of governance instruments were coded. These challenges ranged from the human to the organizational and political. Ten themes emerged amongst the codes, which are summarized in Table 3 and expanded upon in the following text. The confrontation with the scientific theories from the previous section, 'Literature Background', is discussed in the following section, 'Discussion'.

Table 3. Common challenges across cases based on ministries and interviewees.

Challenge themes inhibiting principals' governance	Ministries	Interviewees	Interpersonal & individual	Structural & systemic	Contractual & risk-re-
1. Personal interests	3	3	X		
2. Independency	5	7	X	X	
3. Information asymmetry	4	6		X	
4. Prioritizing across clients	4	6		X	
5. Low prioritization by principal	3	5		X	
6. Goldilocks zone for escalation	4	6		X	
7. Restricted procurement	4	5		X	
8. Conflict aversion principal	4	5			X
9. Bounded rationality & incomplete contracts	4	5			X
10. Inability to hold the agent accountable	4	7			X

1. Personal Interests

Personal interests were mentioned several times. Sometimes, people were not able to collaborate on a personal level. *"If those were two egos, that wouldn't work"* (AB.03). Due to personal interests, the assignment and execution of implementation may encounter higher transaction costs than necessary. *"I called this stalling earlier. It seemed like people benefited from raising these kinds of discussions."* (AA.02).

2. Independency of Agents

Ministries are faced with the problem that the agencies are highly autonomous (AA.05, AD.07). For example, the agencies draw up their own portfolio and strategy which do not always fit the needs of the principal, and the agency feels increasingly free to refuse assignments if they do not fit their portfolio (AA.02) and then complicate assignments to delay the implementation (AB.03). Agencies also have a different focus

than the ministry and that they “often feel the need to account for themselves to society, stakeholders, and clients.” (AA.01). This was also noted by Van Thiel [5, p. 35]. The sense of urgency and necessity of a ministry can, therefore, differ significantly from that of an agency, particularly if this is an external agency (AB.03; AA.01). Commonly in the Dutch government, there is a distinction in responsibilities between ministry and agency, in which the ministry is only allowed to describe what needs to be delivered, leaving the agency free to determine how to implement this. “*The client is no longer allowed to say anything about the ‘how’ during implementation, while the agency’s choices have an impact on the result or the ‘what’.*” (AC.06).

3. Information Asymmetry Between Principal and Agent

An agency is not always inclined to provide the ministry with information since an agency is reluctant to make its internal shortcomings known externally (AB.03, AA.01, AA.05): “*Is it in the interest of the agency that it becomes transparent? Some will think, no, because then we have to expose the bookkeeping and that will only cause us problems.*” (AA.05). This ties in with a cultural aspect mentioned by Van Thiel: “Political pressure and media attention are often only focused on incidents: as a result, implementing organizations avoid raising potential problems promptly and unrealistic expectations are not challenged.” [5, p. 55].

The other side of the coin is that, due to the high workload of the ministry, the ministry has to prioritize what the minister can be held accountable for. Since the main task of the principal is policy formulation and commissioning implementation (AA.02), processing information from the agent is often given lower priority (AA.05). Also, due to the high autonomy of the agency, asking for more information can be seen as distrust by the ministry and damage the relationship (AA.02).

4. Agents Prioritizing Across Clients

An agency within the government often has multiple client ministries [5], and we found several reasons why they prioritize across clients. Political ambitions mostly exceed the capacity of the ministries and executive services [39, p. 7], so there is often more work for an agency than can be done (AA.02). Despite meetings about the agency by the ministries, they do not result in consensus on prioritization for the agency (AD.07). Regardless of the workload, an agency is very protective of their existing statutory tasks (primary task) which can cause them to deprioritize new services (AC.06). Also, agencies are reluctant to prioritize a request if it does not fit in with the agency’s portfolio, architecture, and/or expertise (AA.02). For the ministry, this creates much uncertainty as to whether an agency will accept its new assignment, even if it has a high priority, since the agency with multiple clients may also experience different priorities: “*you are just part of the game [...] the agency weighs that information in another context, in a larger whole that you are not aware of.*” (AA.05).

5. Low Prioritization by the Principal (Ministry)

As already mentioned, political ambitions exceed the capacity of the ministries [4, p. 2, 39, p. 16], who, just as the agencies, must prioritize their work. As one of the interviewees mentions, the ministries’ focus is mainly on policy formulation and making sure their policy is implemented (AA.02), and higher-quality governance is “*only done for the larger programs that involve a lot of money and many political interests.*” (AA.02) Of

course, this reduced attention of the ministry to monitoring the collaboration hinders the timely detection of the necessary intervention and the proper application of instruments. This workload of higher management also means that governance is often delegated to levels where mandate and organizational position are lacking (AA.05). This lack of mandate hinders the application of instruments. It frequently means the need for escalation to a higher level.

6. ‘Goldilocks Zone’ for Escalation

As mentioned in the previous theme, ‘Low Priority Principal’, the workload at the principal’s top management means that governance is often delegated to levels where the mandate is lacking. Because of this, escalation is often necessary to deviate from existing agreements (AA.02, AA.05). This causes two problems: Because higher management at the principal usually is not involved, their knowledge about the implementations is subpar [40, p. 28], which hinders consideration of the issue on substantive grounds. (AC.06) Also, moving up the hierarchy can quickly lead to a level where the problem is no longer significant enough to discuss in the larger scheme of issues at that level (AC.06, AB.03).

The interviewees indicated a ‘*goldilocks zone*’ of management layers where the lowest management level has a sufficient mandate, and the highest level still has sufficient knowledge and managerial interest. They also gave examples of parties with the most to lose, trying to stay below the Goldilocks zone (AA.01, AB.03, AC.06, AF.10) or quickly escalating to rise above it. We are aware that this challenge could also be explained as a derivative of previous and following challenges, like low priority for the principal, conflict aversion by the principal, and personal interest. However, because the interviewees explicitly and separately mentioned it, we let this challenge stand independently.

7. Restricted Procurement

As explained earlier, the Dutch government and its ministries use executive agencies with specialized services to implement and execute their policies [1]. They often have a history of providing these specialist services over an extended period (AB.03) and are the single source of specific public data (AA.02). Migrating services to another agency is difficult anyway because agencies are often overloaded and, therefore, not eager for new clients. Thus, in selecting an agency for new service provisioning, there is often only one choice. Approaching non-governmental companies is also prohibited, e.g., because the government cannot simply release sensitive data to third parties (AA.02), (AC.06). The agency realizes this and acts accordingly: “*This behavior is partly due to a monopolistic position*” (AA.01). This monopolistic position results in a lack of incentive to perform at their best or accommodate requests. It is seen as an obstacle to using associated governance instruments (AA.05).

8. Conflict Aversion of the Principal

As is well known, managers in the public sector are generally more risk-averse than in the private sector. The fear of personal risks leads to conflict aversion and hinders discussions between principals about prioritization in meetings (AD.07). Conflict aversion also determines which control instruments are used and followed through. Soft controls are preferred because they make it easier to maintain relationships and relations (AA.05). Furthermore, the agencies’ autonomy makes it possible to refuse instruments

such as audits, and the principal does not want to enter a conflict about this (AA.01). This also causes over expenditures: “*We are willing to pay extra millions because we want to maintain a good relationship.*” (AA.05).

9. Bounded Rationality and Incomplete Contracts

Mentioned by several interviewees, the future is not always predictable, and contracts have limited use (AC.06): “Assignments are not to the point and sharply formulated ... You cannot rule out everything at the outset, and there are always ways out.” (AA.05). Moreover, the (financial) risks, typically serving as an incentive, are borne by the ministry, leaving the agency without this motivating factor: “... the agreement with the agency is that you do not get guarantees on the budgets agreed upon in quotations.” (AA.02).

10. Inability to Hold the Agent Accountable

Another challenge arises because ministries and agencies are both part of the legal entity ‘State’ [5, p. 14]. This means that contracts within the government have no legal value, and it is not possible to take disputes to court (AB.03). Besides this legal limitation, the agreements are often not SMART (Specific, Measurable, Assigned, Realistic and Timed [41]) enough to hold the agency accountable. (AA.05). Even if it is possible, the principal can be faced by an agency being part of another hierarchical line, in which case it could prove difficult to hold them accountable, even if requested by the CFO of the ministry (AA.05).

One interviewee made the especially interesting note that there may be a shared interest behind not making specific agreements: “*The client [principal] and contractor [agent] have an interest in not specifying it fully at the front. This gives the contractor room to say [to the principal] ‘Not foreseen, so this [costs] is additional.’ and for the client to also say [to finance department] ‘Not foreseen, so extra money is needed.’*” (AA.05).

5 Discussion: Relating Literature to Practice

A number of the ‘challenges in practice’, as shown in **Table 4**, are found in the scientific literature, whereas others were only found in the interviews. Some challenges play a very significant role in practice: conflict aversion, information asymmetry, and prioritization across clients (ministries). Four challenges are unique for governments: a ‘goldilocks zone’ for escalation, restricted procurement, the inability to hold an agent ultimately accountable, and the low priority the principals give to the implementation. Two challenges from the literature did not surface in our interviews as challenges: Cultural differences were not mentioned explicitly, possibly because they are not commonly considered in internal discussions or are viewed as too vague or sensitive, although different underlying manifestations were noted, such as different risk appetites and priorities. Lack of trust and a history of antagonism were identified only as contextual factors, maybe because they were not considered influenceable within the scope of the implementation case.

We will briefly discuss the challenges from the interviewees, revealing paradoxically that the principals are found to be less powerful and highly dependent on agencies, instead of the other way around.

Table 4. Comparison of challenges in practice to theory

	Challenges in practice	Mapping to challenges in theory
Interpersonal & individual	Personal interests	Personality and interpersonal issues [19, p. 15], [14, p. 105]
		Cultural differences [14, p. 105], [17], [18]
		Trust and prehistory of antagonism [6, p. 237], [13, p. 550], [17]
Interpersonal & individual	Independency	Autonomy preference [2, p. 28], [15, p. 8], [16, p. 398]
		Power imbalances [13, p. 551], [20, p. 1], [21, p. 22], [22, p. 1]
		Conflicting interests [19, p. 4], [23, p. 58], [12, p. 21], [24, p. 298], [17, p. 753]
Structural & systemic	Information asymmetry	Information asymmetry, communication issues, and monitoring [19, p. 4], [12, p. 10], [24, p. 298], [17, p. 753]
	Prioritizing across clients	Conflicting interests [19, p. 4], [23, p. 58], [12, p. 21], [24, p. 298], [17, p. 753]
	Multiple principal problem	[19, p. 13], [9, p. 1]
Contractual & risk-related	Low prioritization by principal	[Not found in reviewed literature]
	Goldilocks zone for escalation	[Not found in reviewed literature]
	Restricted procurement	[Not found in reviewed literature]
	Conflict aversion principal	Risk aversion and different risk appetites [19, p. 4], [23, p. 58], [24, p. 298], [30, p. 839]
	Bounded rationality & incomplete contracts	Incomplete contracts and task programmability [19, p. 6], [23, p. 58], [28, p. 845], [27, p. 716], [29, p. 1], [19, p. 7]
	Inability to hold agent accountable	Bounded rationality, complexity, uncertainty [25], [26, p. 709], [27, p. 718]
		[Not found in reviewed literature]

- **Personal interests (known):** Personal interests occur everywhere people work. We won't go into more detail.
- **Agency independence (known):** Several challenges arise from how the government implements the agency model and governs its agencies. A high failure rate of implementations causes reduced trust, with a need for more monitoring conflicting with the agency's independence. Stewardship is proposed as a solution, however. Bjurström tells us this transition is difficult in a low-trust environment [42, p. 1073].
- **Information asymmetry (large impact):** A prerequisite for network coordination and one of the foundations of agency theory is transparency in information. Ramadass et al. [43] state that "Interdependence between the public sector agencies (partners) is critical for interaction processes and information sharing" [43, p. 767]. However, agencies in other hierarchical lines with their own political objectives and lack of enforceable contracts make agencies highly independent, while the absence of alternative service providers makes the principal highly dependent. Further research can be done on the effects of introducing alternative service providers.

- **Prioritization across clients (large impact):** A high workload causes a need for prioritization. Despite a shared social and national interest, coordination between principals is difficult due to compartmentalization and bureaucracy [5, p. 33]. The multi-principal problem, therefore, causes prioritization by agents. Further research is warranted on whether this prioritization of (the implementation of) political commitments by the agencies is desirable from the perspective of the cabinet.
- **Bounded rationality & incomplete contracts (known), inability to hold accountable (unique):** Contracts have limited value as governance instruments in government. They are not legally binding, and the complexity and unpredictability of IT and politics make contracts incomplete. In our results, we also found a mutual interest in avoiding strict accountability and, thus, the need to maintain ‘escape routes’ for both parties. Literature suggests that behavior-oriented contracts (as opposed to outcome-oriented contracts) and relational governance (as opposed to contractual governance) could be more suitable. Further research could be based on Eisenhardt’s propositions regarding when a behavior or outcome-oriented contract best suits the collaboration and how to reduce transaction costs.
- **Restricted procurement (unique):** Hardly discussed in much detail in the literature is that ministries for their services are limited to suppliers within the government: “Of course, we must remain within the government for management of certain software.” (AB.03) “Can the central government simply share information with an independent public-law administrative body?” (AA.02). This is also mentioned by Thiel [44, p. 4].
- **Conflict aversion (large impact):** Managers in the public sector are known to be more risk-averse than in the private sector [30]. Add to this that for top management in central government, the job market is small, and collaboration roles can change or become inverted. Therefore, we notice that much attention is paid to maintaining good relationships with potential future collaboration partners and/or higher-ranking colleagues. Our findings show that conflicts are avoided as much as possible, and there is a reluctance to challenge agencies’ fellow managers, even in cases of non-compliance. Concern for self is leading to the preferred conflict management style [45, p. 216] and its effectiveness [46, p. 435, 47, p. 158].
- **Low prioritization by the principal (unique):** Provan & Kenis [6] distinguish between three forms of collaboration networks in their paper “Modes of Network Governance”. Due to the high workload, we found that the principal only governs programs himself, acting like an NAO, if they have a significant financial or political impact, and leaves other programs to a lead agency that governs the collaboration. According to Provan & Kenis [6], in our cases where there is often reduced confidence, these collaborations could still be effective in accomplishing their goals if the network governance is brokered and members collectively monitor decisions.
- **Goldilocks zone for escalation (unique):** Due to the many management layers within the government [48] and the tendency to delegate downwards due to the high workload at the top, it is difficult to find a management layer with sufficient mandate to decide on the conflict and sufficient knowledge to make a good decision. Also, escalating disputes to a hierarchical level above the ministry politicizes the issue, which it inherently often is not. Discussing issues in interdepartmental meetings and thus broadcasting them in the presence of unrelated ministries is avoided. This should not be unique for governments but is underexposed in scientific literature.

There are some limitations and caveats to the research in this paper. One of the obvious limitations of interview-based research is that it is based on subjective information from the personal worldviews of the interviewees. This introduces bias in the findings, which, despite being triangulated, could be widespread. Since there are differences in accountability styles per country, there could also be other differences that affect the unique challenges. Future research can be directed at other national contexts. The causal relations between (combinations) of contextual aspects of the government and the unique challenges could be an area for further research.

6 Conclusion

While the general challenge of conflicting interests is well recognized when central government's policy departments and executive agencies collaborate on IT-based services, deeper analyses of the typical challenges within the government have not been conducted yet. Our research investigated what challenges inhibit the government's ability in intra-governmental collaborations to effectively safeguard its interests when implementing IT-based services. For this, literature was reviewed, and eleven challenges were found: (1) preference for autonomy, (2) cultural differences, (3) personality and interpersonal issues, (4) trust and a prehistory of antagonism, (5) power imbalances, (6) conflicting interests, (7) multiple-principal problem, (8) information asymmetry, communication issues and monitoring, (9) risk aversion and different risk appetites (10) incomplete contracts, and task programmability, and (11) bounded rationality complexity and uncertainty. Our interviews revealed that ministries face several challenges not highlighted in the literature, including: restricted procurement, a Goldilocks zone for escalation, an inability to hold an agent ultimately accountable, and the low priority the principals (ministries) give to the implementation. This confirms our starting point that deeper analysis was needed. Also, several challenges seem especially prevalent in governments: conflict aversion, information asymmetry, and prioritization across clients (ministries). This results in, paradoxically, principals that are less powerful and highly dependent on agencies instead of vice versa. These findings imply that there is a need for new governance mechanisms able to deal with all the challenges encountered. Current governance mechanisms might not hold in practice in the specific context of governments. Further research can focus on overcoming the challenges by developing effective governance.

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