GOVERNMENT COLLABORATION AND DIGITALISATION

COMPARATIVE CASE STUDIES ON COLLABORATIVE MANAGEMENT FOR GOVERNMENT DIGITALISATION AND PUBLIC SECTOR INNOVATION

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EXECUTIVE SUMMARY

In order to unlock the full potential of ICT-related public sector innovation and digital transformation, many have claimed that governments must embrace collaborative working structures and collaborative leadership. However, little is known about how this works in government contexts often defined by hierarchy, silo cultures and procedural accountability. How to successfully structure and lead collaboration between public organisations towards digital transformation and service improvement? In this comparative case study report we aim to understand the organisation, leadership, challenges, and outcomes of collaboration between public organisations. The report presents ten case studies in order to analyse how five European countries (Belgium, Denmark, Estonia, Germany and the United Kingdom) have responded to the challenges resulting from the set-up and steering of intergovernmental collaboration in the context of ambitious digitalisation projects aimed to improve and innovate public service delivery. We bring together the perspectives of central government (implementing national government-wide portals for online services) and local government (implementing Smart City strategies) by selecting case studies at both levels. In order to ensure a systematic case study approach, the analysis of the case studies was guided by a joint conceptual framework emphasising certain defined variables. The findings are based on an extensive document analysis and 62 interviews with 64 experts who all played key roles in either setting up or steering collaborative public networks. The cross-case findings reveal that implementation of new digital solutions is complex, and that collaboration is resource intensive, demanding and needs continuous attention and investment. However, various approaches and experiences also exist which can adequately address these challenges. Many of the cases point to the relevance of a central coordinator with sufficient legitimacy, implementation capacity, trust, and a clear vision. The importance of building a cohort of experienced leaders and experts fully committed to drive digitalisation forward is also emphasised. To this end, the cases in the study utilised both horizontal and vertical collaborative management approaches. Moreover, context shaped many of the starting conditions for the digitalisation projects. Thus, the context is important to consider when looking for solutions to challenges connected to ICT-related collaboration. In the conclusion of the report, we present eight recommendations of how practitioners can make effective use of intergovernmental collaboration to drive digital transformation.
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1. Introduction

In view of the widespread belief that digitalisation has triggered broad organisational and cultural changes imposing a dramatic paradigm shift (Dunleavy et al., 2005), it may be surprising how little evidence we have for its actual impact on all levels of public administration. Despite the broad spectrum of ambitious initiatives of the past decades such as the “Tallinn Declaration on eGovernment” signed in 2017\(^1\) or the European Commission’s “eGovernment Action Plan” of 2016-2020\(^2\), and the rhetoric around fostering public sector innovation, in many European countries, progress towards digital transformation is clearly lagging behind aspirations. Even the Estonian government, which is known for its extensive digital reforms and transformative “speed” (Hertie School, 2020; OECD, 2018), has repeatedly encountered challenges and resistance, for example, when implementing the nation-wide Employment Registry (see chapter 2.1.2). At the same time, at the local government level the various Smart City projects that have been launched across Europe in recent years are still in their infancy with insecure funding or unclear aims and outcomes. These digital initiatives have rarely been implemented coherently and often bear the risk of remaining pilot or niche products (e.g. Heuermann, et al., 2018, p. 88).

As it stands, the digital transformation of public administration in Europe has not progressed as rapidly as desired. This has been frequently attributed to inadequate coordination, fragmentation or “silo thinking”, which is why enhanced collaboration in and between governments seems all the more important going forward (Ferro and Sorrentino 2010; Juell-Skisel et al., 2017; Meijer, 2015; NKR, 2019a). In particular, it is the holistic quality of digitalisation that creates specific needs for the effective reintegration of public sector processes into joined-up services in order to do things ‘once-only’ instead of several times (Margetts and Dunleavy, 2013). This generally requires identifying interdependencies and reorganising workflows in and between different public organisations to provide a consistent, across the board digital approach.

In light of this, literature and research have announced a new era of governance, in which we observe a trend towards collaboration giving rise to labels and concepts such as collaborative

---

governance (Ansell and Gash, 2008; Emerson et. al, 2012), networked governance (e.g. Eggers and Goldsmith, 2003), new public governance (Osborne, 2010) or whole-of-government (e.g. Christensen and Lægreid, 2007). Collaboration is argued to have a clear advantage compared to other unilateral strategies for promoting public sector innovation (Torfing, 2019). In short, digitalisation can enable collaboration across organisational boundaries, but getting digitalisation projects done also requires intense collaboration in the first place.

In line with the TROPICO Grant Agreement (No. 726840, Annex 1 part B, p. 8), in this report we understand collaboration “as a relationship between different government organisations and bodies established to achieve distinct objectives, most notably in formulating government policies or delivering public services with regard to developing and implementing new digital way of providing government services, for which different means are applied that can be distinguished regarding their scope, formality, and intensity”. Given the widely claimed beneficial effects of collaboration and digitalisation to drive government transformation in general, it is often neglected that success depends not on the collaboration per se but its careful design. Collaboration is a complex process involving a variety of challenges, and if these are not adequately addressed, it may fail and/or have adverse effects (e.g. Hartley et al., 2013; O’Leary and Vij, 2012). If the latter holds true, collaboration has not only fallen short of its intended outcomes but has in fact proven to be ineffective. However, despite potential shortcomings, collaboration has become mandated in several instances, due to digital transformation projects which require joint efforts to coordinate technology, administrative processes, and organisation. As a result, leadership and management are now called upon to embrace collaboration (e.g. Hammerschmid et al., 2019; Juell-Skielse et al., 2017; Meijer, 2015). This considered, there seems to be a normative consensus on how to successfully steer towards innovation which necessitates network structures to employ more flexible and facilitative institutional responses in order to thrive (e.g. Crosby, et al., 2017; Sørensen and Torfing, 2012; Vangen and Huxham, 2003). Hierarchical principal agent structures which embody more traditional Weberian, or New Public Management-inspired, efficiency-oriented ideals have been said to be outdated. However, the empirical evidence supporting this claim remains weak. On the contrary, some studies give reason to believe that ICT related collaborative approaches exacerbate the problems of government coordination. This view
holds that collaborative practices collide with the traditional forms of bureaucratic hierarchical coordination (Mayntz and Scharpf, 1975; Painter and Peters, 2010; Scharpf, 1993) and that ICT may in fact ultimately strengthen existing organisational patterns and power distributions (Cordella and Tempini, 2015; Fountain, 2001; 2006; Kraemer, 2003). Consequently, several scholars have challenged the consensus and iterated the importance of re-evaluating the role of hierarchical intervention in managing collaborative networks (Hartley et al. 2013; Meuleman, 2008; Wegrich, 2019). When aiming to better understand these collaborative innovation networks, recent empirical research efforts have largely focused on external collaboration with non-governmental actors (e.g. Ansell and Gash, 2008; Emerson et al., 2012; Neumann, et al., 2019), whereas the dynamics of collaboration between public sector actors often remain a ‘black box’ (for exceptions see Gil-Garcia et. al, 2019; Juell-Skielse et. al, 2017).

1.1 Aim of the report
Against this backdrop, in this comparative case study report we aim to understand formal and interpersonal approaches that have been selected and pursued by leadership in order for collaboration to occur in and between public organisations in the context of ambitious digitalisation efforts. Although we provide a more sceptical picture of the digital projects and question the alleged panacea that is collaboration, we do believe that it can be an effective strategy and indeed make a significant contribution to the digital transformation process assuming the right public management and leadership interventions are taken. This report is thus guided by the following lead question:

*How do we successfully steer collaboration between and within public organisations towards digital transformation?*

It is of high relevance for practitioners and policy makers to know how to progress digitalisation in situations where multiple stakeholders must act in concert and gradual adjustment to service improvement by individual actors is considered insufficient. This applies to collaborative endeavours in the national context, such as the digital service platforms providing user-friendly access to online public services in line with the European Commission’s
Single Digital Gateway Regulation\(^3\), as well as the various Smart City projects across Europe implemented as part of the European Commission’s strategy “Shaping Europe’s Digital Future”\(^4\). In both cases, changing demands to keep pace with progressive digitalisation and the need to innovate public services often require immediate measures and joint forces in every member state, which is why we have identified both cases as ideal research scopes for this comparative analysis. This comparative case study approach allowed us to bring together the perspectives of local and central governments. The following report therefore presents ten case studies in order to analyse how five European countries (Belgium, Denmark, Estonia, Germany and the United Kingdom) have responded to the challenges resulting from the set-up and steering of intergovernmental collaboration in the context of ambitious digitalisation projects aimed to improve public service delivery. We looked at which measures have been implemented to face these challenges. If “digitalisation affects us all”, are the measures similar across countries or do they differ? If so, in what ways? How is the effectiveness of the projects perceived by the actors involved?

In order to analyse these questions in a comprehensive manner, and to ensure a common approach across countries, the TROPICO partners contributing to the present report developed a joint case study protocol to guide the analysis. The protocol shared among the participating researchers consisted of:

1. clear criteria for the case selection;
2. a conceptual/theoretical framework underlying the analysis;
3. a (semi-) structured interview guideline to guide data collection.

This report is structured as follows: the remaining part of chapter 1 describes the process of data collection and analysis. This includes the case selection, the conceptual framework designed to guide the analysis, and the methodological approach taken. In chapter 2, the case studies are presented, focusing on the characteristics, challenges, public management interventions and outcomes of each of the analysed digital collaborative projects. In chapter

\(^3\) Regulation (EU) 2018/1724 of the European Parliament and of the Council of 2 October 2018 establishing a single digital gateway to provide access to information, to procedures and to assistance and problem-solving service.

3, we compare and synthesise the findings with a special focus on the variables of interest. Based on this comparative case analysis, the report concludes with summarising the cross-country observations and outlining key success factors for ICT-related intergovernmental collaboration as well as practitioner-oriented recommendations (chapter 4).

### 1.2 Case selection

Each partner was requested to choose two different types of cases to cover different government levels: One that dealt with implementing a national government-wide portal for online services towards the ideas of the EU Single Digital Gateway and another one concerning the implementation of a Smart City Strategy at local government level (see Table 1). To ensure a systematic approach among all partners, each case additionally had to fulfil certain selection criteria regarding scope and function.

#### Table 1: Selected cases for the report

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<th>Country</th>
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<th>Smart City Strategy</th>
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<td>Belgium</td>
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<td>Antwerp’s Smart City policy</td>
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<tr>
<td>Denmark</td>
<td>eIDas regulation 2014</td>
<td>The City of Albertslund’s DOLL</td>
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*Source: Authors’ own elaboration.*

The cases selected for the online platforms were to be projects that were considered as key national projects or programs that were used to implement digital platforms towards the Single Digital Gateway (SDG). By adopting the SDG regulation in September 2018, the EU pushed its member states to accelerate the digital transformation of administrative government services in order “to seize the full potential of the digital transformation” (EU, 2017). The SDG regulation requires that all EU member states provide public services through the EU Platform ‘Your Europe’ within five years (Council of the EU, 2018). The regulation not
only defines which public services should be offered, but also outlines the fundamental principles to guide their design and management, such as ‘once-only’ and ‘user-centric’, which require intensive vertical and horizontal collaborative efforts by ministries and agencies.

The selection of cases on Smart City coordination aimed for cities with at least 50,000 inhabitants and for projects that were seen as national frontrunners in digitalisation and Smart City implementation. The cities did not necessarily have to be labelled as ‘Smart Cities’, but it was crucial that each city had (1) published a current document outlining a digital strategy or agenda and (2) that the planned approaches largely corresponded to the concept of a Smart City. What particular concepts define a Smart City are still ambiguous, and the research literature therefore disagrees on a precise definition. In this study, we used the following definition by Caragliu et al. (2011, p. 70):

“We believe a city to be smart when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance”.

While initial approaches to applying ICT in the context of cities, as seen by Dutton et al. (1987), only recognise one networked city (Wired City), the term ‘Smart City’ has become increasingly common in the last ten years. In addition to the pure networking of ICT, what today constitutes ‘intelligent’ and ‘smart’ has been expanded to include the pluralism of actors, the use of artificial intelligence, self-learning algorithms and the internet of things. These additional elements further add to the complexity of Smart City projects and hence make their management particularly challenging.

For both type of cases, the implementing actors/institutions of the projects had to be clearly assigned to the public sector. Regarding the implementation status, we expected that in order to be able to adequately assess leadership and institutional design of the implementation, at least some of the planned measures needed to have already been implemented. Cases that were still in the early implementation phase were accepted only on the condition that the planning phase had already been completed. After the ten cases had been selected, the research conducted aimed to understand how the involved government actors in each country
had proceeded to organise collaboration and cope with the implementation challenges - both horizontally as well as across different government levels. The research further sought to explore the extent of Europe-wide variations in governing digital transformation and to look for common findings regarding successful intergovernmental collaboration.

1.3 Conceptual framework

The case studies were guided by a conceptual framework based on a meta-analysis of research on collaboration (e.g. Ansell and Gash, 2008; Brown and Osborne, 2013; De Vries et al., 2016; Emerson et al., 2012; Hartley, 2005; Klijn and Koppenjan, 2014; Ricard et al., 2017; Torfing, 2019), which included the following variables (see Figure 1): (1) system context; (2) collaboration challenges and dynamics; (3) public management interventions; and (4) reform outcomes.

![Conceptual framework to understand intergovernmental collaboration](image)

**Figure 1: Conceptual framework to understand intergovernmental collaboration**

**System context** (1) relates to contextual factors surrounding the collaboration and thus ultimately influences its nature and prospect. **Complexity, risk, and power imbalance** are regarded here as powerful intertwined forces inherent in every collaboration while having
mutual effects. All three forces might prove challenging if at least one disproportionately occurs, as it could destabilise collaboration and must be addressed through methods of institutional design and/or leadership. We therefore assume that institutional design and leadership are key public management interventions (3) to cope with the challenges associated with complexity, power imbalance and risk. Institutional design provides the mechanisms for governance to take place and leadership is essential to drive, mediate and facilitate the collaborative process. For institutional design we make the distinction between either hierarchy- (e.g. bureaucracy, rules and regulations), market- (management instruments e.g. contracts, indicators and results-control) or networked-based (consultation, joint bodies, transparency) approaches. Leadership may either rely on transactional (goal setting, monitoring behaviour and reward/sanctions) or collaborative styles (empowering, trust-building and encouraging ‘out-of-the-box-thinking’). Outcomes (4) can either be disruptively innovative or entail a more stepwise, incremental change and may be assigned to four types of innovation (process, product, governance or conceptual). Collaborative challenges and dynamics (2) are understood as iterative processes in which the system context, the collaboration challenges, the institutional design, leadership, and outcomes have a reciprocal effect. This differentiated approach allowed us to advance our research question as to whether we indeed observe a shift towards more lateral types of design and leadership (i.e. networked-based and/or collaborative/facilitative), or whether the process of implementing ICT-related collaboration facilitates more traditional patterns of command and control (i.e. hierarchy-based and/or transactional leadership). These approaches considered, we expect that digital government systems are affected by the context they are embedded in (Fountain, 2001) and that there is “no best way”. We therefore take a contingency approach “that specifies and explains when, where and why each of the […] strategies, or perhaps a combination of them, is beneficial” (Ansell and Gash, 2012; Hartley et al., 2013, p. 828).

1.4 Method
As method of inquiry, we chose a combination of desk research and expert interviews. The desk research aimed to provide systematic information on the context and the set-up of the case. It enabled us to already collect information on the four key variables of the theoretical framework. Documents worth considering for the analysis included legal documents (laws and
secondary legislation), governmental policy documents, strategies, action plans, reports and websites as well as relevant academic literature. To complement the document analysis, in total, 62 in-depth interviews were carried out with 64 interviewees. The interviewees were selected on the basis that they played a key lead role in either setting up or steering the collaborative public network. The interviewees represented the following groups: members of the advisory board, senior government officials, executives from public companies, programme managers and other experts such as consultants. By exclusively focusing on representatives from the different government organisations involved in the collaboration efforts, we safeguarded that the interviewees were able to convey a more comprehensive perspective, which, in addition to providing personal points of view, helped us to better understand the underlying causal relationships.

Most of the experts were identified by asking an initial key stakeholder for recommendations on further relevant contacts. The interviews took place between September 2019 and March 2020 and were mostly conducted at the workplace of the interviewees, each lasting 0.5-1.5 hours. After receiving the approval from the interviewees, all interviews were recorded verbatim and were stored on a secure server of the implementing partner institution. In order to ensure that all relevant variables were covered at least once during the interviews, the work package partners were provided with a structured interview guideline containing detailed instructions on how to conduct the interview. For this guideline, we favoured an approach of broader questions without providing narrow definitions and operationalisations to keep the research open and avoid an overload of questions. Prospectively, each interview will be transcribed and will serve as the basis for a collective coding by the partners, resulting in a joint publication. The description of the selected case studies in this report follow an identical structure comprising five sections:

1) Brief case introduction
2) System context and starting conditions
3) Collaboration dynamics and challenges
4) Public management interventions: institutional design and leadership and their effectiveness
5) Reflections on lessons learned and conclusion
In this scope, we present the rich empirical material collected and conclude with a synthesis as well as overarching recommendations for the practitioners and policy makers in charge of setting up and steering collaborative innovation towards digital transformation.
2. Case studies

2.1 Governing for online platforms towards the SDG

2.1.1 Belgium: The Civil Registry

*Dries Van Doninck, Jan Boon and Koen Verhoest, University of Antwerp*

**Case introduction**

The 31<sup>st</sup> of March 2019 marked the transition of the Belgian Civil Registry from a system implemented by Napoleon in the nineteenth century to a new, digital, and modern system. The digitisation of the Civil Registry required converting physical civil service records on paper to digital records in a database accessible via a digital platform. More than a decade of consultation, studies and recommendations preceded this moment, which indicates just how complex the collaboration was. The project won the 2019 Agoria E-Gov Award, which rewards Belgian governments or European institutions who have improved public service delivery to citizens and companies by using digital technologies.<sup>5</sup>

In the first part of this case study report, we will present the collaboration and its objectives and delineate the partners involved. The Belgian Civil Registry, which is composed of civil status records, determines, guarantees, and proves the legal status of each Belgian citizen. The civil record of every person consists of a birth certificate as well as other supplemental documents such as a marriage certificate, a certificate of sex or name change and/or a certificate of death.

Before the 31<sup>st</sup> of March 2019, each of the 581 Belgian municipalities (and 102 foreign consulates) managed a separate registry. Every record in the registry had to be signed by the responsible local civil servant. These signed documents were then stored, physically, in the municipal office, and a copy of the record was sent and stored once a year with the Court of First Instance of their respective district. After 100 years, a copy was then sent to the Federal Public Records Office.

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One can imagine the problems occurring when the Court of First Instance of each district had to archive all civil records of all their citizens for 100 years, both in terms of feasibility and reliability. The same problems occurred at local city halls, where significant space had to be given up for the storage of all the civil records. As a result, local governments began taking initiatives towards a modernisation and digitisation of their civil registries as early as the 1990s.

**Collaborating actors**

In order to understand the internal coordination of the collaboration regarding the digitisation and modernisation of the civil service registry, we will first start with a description of the most important actors involved and their role in the collaboration. A graphic presentation of the collaborating actors is included in Figure 2.

*Figure 2: Collaborating actors of the Belgium Civil Registry*
Local governments comprised the core actors of the collaboration, as they were the end users of the new system. The Belgian constitution requires local governments to draw up civil service records and store them in the Civil Registry. The Flemish, Walloon and Brussels Association of Cities and Municipalities often represented local governments in the collaboration. The civil servants of local municipalities in Flanders are represented by the employers’ association known as VLAVABBS. They were an important collaborator, as they have a broad network and legitimacy among civil servants in local municipalities. The Walloon Region and the Brussels Capital Region have similar representative bodies for civil servants.

The Ministry of Foreign Affairs were involved as users as well. They are responsible for the 130 Belgian foreign consulates and embassies. Belgian citizens living abroad have to go to their foreign consulate to register their civil status records, for example the birth of a child or a marriage.

As the Civil Registry determines the legal status of Belgian citizens, the Federal Ministry of Justice was one of the core actors. Because the Civil Registry is a judicial matter, the Ministry of Justice covered the exploitation costs of the new Civil Registry from their budget. The judicial branch was also represented in the collaboration by the Public Prosecution and the College of Courts and Tribunals; however, they were not as centrally involved as the Ministry of Justice.

Another important source of personal records of Belgian citizens is the National Register, which has been already centralised and digitised. Where the Civil Registry contains the legal status of citizens, the National Registry accounts for the personal data of Belgian citizens (e.g. addresses and citizens’ parents’ names). The management of the National Register is a responsibility of the Federal Ministry of Internal Affairs. In the light of e-government and the once-only-principle, the newly created database of the Civil Registry had to be connected to the National Register. Therefore, the Ministry of Internal Affairs was an important collaborator as well. They brought to the table human resources as they were already experienced with the management of a large civil database with civil data. The Ministry of Internal Affairs was eventually charged with the operational management of the central database of Civil Registry.
Registry. It is important to note that the Administrative Simplification Service is a horizontal federal department. This means that they coordinate projects across other ministries that contribute to their mission: the simplification of the federal administration. The investment costs of the project were assumed by the Administrative Simplification Service.

Lastly, another core actor in the collaboration was DXC, a private company that often works together with the Administrative Simplification Service and other federal departments. Together they coordinated the collaboration. In the digitisation and modernisation of the Civil Registry, they were charged with the development of the central database, several applications, and the overall IT support of the partners.

The abovementioned ministries and organisations were the most important actors. Some other actors were involved, because they often work with the Civil Registry or need information from the Civil Registry for their service delivery. These actors are depicted in Figure 6 as ‘peripheral actors’. They did not take on an active role in the collaboration, but they were involved in the discussion surrounding it. At some point, they faded out of the collaboration.

This description of the different partners involved in the collaboration gives an idea of the complexity of the project. In this report we will discuss the challenges which occurred as a result of the different perspectives and agendas of the collaborators. As mentioned, not all actors were equally involved throughout the process that started in 2010 and ended with the implementation of the new central database of the Civil Registry in 2019. The collaboration afterwards progressed without the coordination of the Administrative Simplification Service with a different constellation of actors.

In order to analyse the system context, collaborative dynamics, and public management interventions which shaped the collaboration, we analysed strategy documents, studies and legislation and conducted six interviews with important actors.
System context

A crucial element of system context is that, according to the Belgian Constitution, the Civil Registry is the responsibility of local municipalities. This has two important consequences. First, it made the local municipalities essential actors in the collaboration, as their support was very important to the success of the project. Second, this decentralised approach to the Civil Registry contradicted somewhat the idea of a central database. The creation of a central database was one of the key objectives of the project, as it allowed the Civil Registry to be connected to other databases with civil data (e.g. the National Register). Many public organisations rely on the Civil Registry for parts of their service delivery, and thus their work could be carried out more efficiently by the centralisation of the Civil Registry.

Changing the Constitution in Belgium requires a two-thirds majority in parliament, and has to be done through a process that is spread over two federal legislatures. As this would have taken too much time, the problem was addressed by the installation of the management committee which was tasked by Royal Decree to manage the central database of the Civil Registry (Geens, 2019). The committee consists of 17 members. The nine members of the local municipalities were nominated by the Federation of Cities and Municipalities. Other members of the management committee represent the Federal Ministry of Justice (two members), the Federal Ministry of Internal Affairs (two members), the Federal Ministry of Foreign Affairs (one member), the Prosecution (one member), the Committee of the Courts (one member) and the Federal Public Records Office (one member).

Another important factor of the Belgian system context is the fact that local municipalities and civil servants are quite well organised in Belgium, in terms of interest representation. The Association of Flemish Cities and Municipalities was founded in 1977, followed by the association of civil servants VLAVABBS in 1983, followed by the association of civil servants. Local municipalities and civil servants in the Walloon Region and the Brussels Capital Region are similarly organised and represented. The presence of these representatives significantly eased consultation and allowed the local municipalities to inform the federal legislative powers of their concerns regarding the Civil Registry. It also allowed the coordinators to cooperate closely with local municipalities from the beginning of the project, which was
important because support among local municipalities was crucial for the success of the project.

Through their organisation, local governments and representatives of civil servants could raise awareness at the political level. The first impulses were thus launched bottom-up from the political level, for example through various studies about potential costs and benefits. Some local and international digitisation initiatives in the first decade of the 21st century caused the political awareness to grow further, and in 2010 the then Federal Minister of Justice and the Secretary of Administrative Simplification gave a political mandate to the Administrative Simplification Service to set up a working group in close cooperation with the Ministry of Justice to explore ways to modernize the Civil Registry.

Some elements of the administrative framework of the Belgian federal government influenced the collaboration as well. As mentioned, the Ministry of Justice is responsible for the use of the central database of the Civil Registry, as the Civil Registry determines the legal status of citizens. Another important database is the National Register, which contains the civil identity of citizens and is controlled by the Ministry of Internal Affairs. Both are large federal departments and most respondents noticed a significant struggle for authority between both departments.

The Administrative Simplification Service is a horizontal federal department which falls under the authority of the Prime Minister. As the Ministry of Simplification is neither responsible for the Civil Registry, the National Register, nor any other responsibility that would threaten the other partners’ sovereignty over their competences, they were seen as a neutral coordinator. The majority of the respondents thought this was a very important element for the eventual success of the collaboration.

The Belgian political context in the years after the start of the collaboration in 2010 was important as well. It took Belgium an astounding 541 days to form a federal government after the June 2010 federal elections, during which the former government remained in office with its authority diminished to a government in running affairs. This resulted in a situation where there was no parliamentary control over the government, and the government’s authority
was thus limited to administrative (or very urgent) decisions. In practice, this meant that no new initiatives could be started, though it also allowed the collaborators to continue their study of possible modernisation scenarios for the Civil Registry, which ultimately had a positive effect on the political support for the project. By the time the federal government was established in 2011, a quite thorough and budgeted plan was ready. As soon as they could be given political consent for implementation, the roll-out of the plan started almost immediately. The 2011 coalition agreement\(^6\) contained the intention to continue the study, and the next coalition in 2014 added the implementation of the modernisation and digitisation of the Civil Registry to its coalition agreement\(^7\). This political approval meant that the digitisation and modernisation of the Civil Registry had to be implemented by the end of the legislature in 2019. Though the first launch date was the first of January 2019, this was postponed to the 31\(^{st}\) of March. Half of the respondents mentioned this had an important influence on the political approval for the eventual implementation of the project.

Local municipalities in Belgium share certain services as part of inter-municipal collaborations. These structures can be legal entities or not. Through these inter-municipal collaborations, multiple municipalities often share IT support. The collaborative structures are governed by a board of directors that is composed according to the political balance in the municipalities. Often mayors and aldermen are members of the Board of Directors of these inter-municipal structures. A third of the respondents thought this had an influence on the collaborative process. The partners had to be cautious not to side-line these inter-municipal collaborations as this could diminish support among local municipalities. Further, mayors and aldermen of local municipalities are often also members of the Federal parliament, where support for the project was also important.

The coordinators of the project therefore opted not to develop client-based applications, but rather to develop a central database with which the client-based applications of the local municipalities could be connected. There were several reasons for this. First, a centrally


developed client-based application would mean that local municipalities could not develop their own applications according to their wishes. Second, a new client-based application would mean a bigger transition for the civil servants, as they would have to learn the new client-based system. As federal members of parliament are often mayors or aldermen in their municipalities, imposing a central system could harm the political support for the project. Further, if every municipality were to use their own system, this would place the cost for the development of a client-based system at the local level and thus save costs from the federal investment budget.

**Collaborative challenges and dynamics**

**Risk**

As risks are often hard to accurately analyse upfront, Browne and Osborne (2013) and Timeus (2019) argue it is not the risks themselves but rather the perception of risk that influences collaboration. The support for a thorough modernisation of the Civil Registry existed long before the start of the project. Most of the partners were thus rather positive about the project. However, there were some perceived risks as well.

The perceived risk brought up the most was the struggle for authority between the National Register and the Civil Registry. The majority of the respondents mentioned this tension. The coordinators thought this was the main reason the actual implementation of the new Civil Registry took as long as it did. One of the main objectives of the project was to connect the Civil Registry to the National Register, making the exchange of data possible and respecting the once-only-principle, but both departments responsible for these databases had their concerns about this integration. The Ministry of Internal Affairs receives many demands for excerpts of the National Register on a daily basis. With the National Register being this frequently used, the Ministry of Internal Affairs did not want to take any risks regarding their database, because a failure of the system would pose significant problems for social and economic life in all of Belgium. They were thus quite conservative at first when considering integrating the National Register database with the new central Civil Registry, and the Ministry of Internal Affairs initially doubted the point of the project altogether. They rather thought it would be better to simply add certain information to the National Register.
The Ministry of Justice, on the other hand, was concerned that the incorporation of the databases would mean they had to give up power over the Civil Registry. Legislation determines meticulously the legal consequence of every record in the Civil Registry, whereas the data contained in the National Register is a bit more practical, i.e. referring to the civil identity of citizens. In other words, they were worried the digitisation and modernisation would prevail over legislation and move the power over the Civil Registry away from the Ministry of Justice.

Though the Civil Registry falls under the authority of the local municipalities according to the Constitution, they worried they would not be involved enough in the decision-making about its modernisation and digitisation. VLAVABBS had their concerns about this as well, as the civil servants were the actual end-users of any new system that was to be implemented. For the project to be a success, the particular local knowledge and practice of local municipalities and their representatives needed to be respected. Foreign consulates felt the same way, and two respondents noted that there had been a history of the central level imposing changes that were not fully supported by local municipalities and foreign consulates and ended up being not fully compatible to local practice. This issue was addressed by granting the local municipalities the majority of the votes in the management committee.

Worries regarding the transfer of authority were recognized and addressed by the coordinator from the very beginning of the collaboration. One of the first decisions made was the safeguarding of authority as it was. The procedure to change the Constitution is too complicated and does not have the necessary support politically. Other shifts in authority would have significantly hampered collaboration, as this was exactly what the most important partners feared. The decision to safeguard competences was not really a case of leadership or institutional design, which will be discussed later, but is more a testament to the experience and vision of the coordinator, and his understanding of the sensitivities of the partners. By safeguarding existing roles of authority, the coordinator sidestepped obstacles that could come up in the future.

The overall complexity of the project was a risk mentioned by half of the respondents. This complexity was technical in nature, as the whole Civil Registry had to be designed with practicality in mind. The Civil Registry and the legal consequences of its content is laid out in
Belgian civil legislation, but the modernisation of the Civil Registry meant that civil legislation would have to be altered alongside the development of a new Civil Registry system and its required applications. This involved many actors and the majority of the respondents noted that it was therefore very important that a neutral coordinator was appointed. The Administrative Simplification Service was seen as neutral because they did not have a particular interest in the Civil Registry, nor in any database that had to be connected to it.

Although the support among civil servants of the municipalities was certainly there, they foresaw some risks as well. Both civil servants and local administrations were worried about what the transition in terms of digitisation and modernisation would mean for them. It was clear that a thorough education and support of civil servants in all Belgian municipalities would be required. Furthermore, there is a large diversity of resources among municipalities in Belgium and not every municipality has the same capacity. Large cities may have multiple civil servants to address Civil Registry issues, but small villages may have only one civil servant tasked with all civil issues.

Aside from the organisation of civil servants and local municipalities in Belgium, a thorough study of the transition was important. The costs and benefits of a digitisation and modernisation of the Civil Registry were already accurately calculated and considered an investment primarily by the Ministry of Justice at the federal level. Earlier studies also clearly proved that the eventual gains in efficiency and cost-saving would predominantly be made at the local level. This proved to be an important argument for the local governments to support the project.

**Complexity**

**Substantive complexity**

The overall objectives were rather clear at the beginning of the project in 2010. Many studies had delineated the possibilities and it was clear from the beginning that both modernising and digitising the Civil Registry was necessary. The modernisation of the Civil Registry concerned the discussion about which civil records were needed to identify the legal identity of a citizen and the discussion about what data those acts needed to contain. The digitisation of the Civil Registry regarded the development of a new digital system that was accessible from anywhere
and could be connected to other digital databases. An important source of substantive complexity revolved around these two main objectives of the collaboration and their consequences. The Ministry of Justice was concerned that modernisation and digitisation would take priority over legislation. They were thus more conservative than other parties in modernising the Civil Registry. The Ministry of Internal Affairs on their part wanted to secure the function and relevance of the National Register and thus wanted digitisation to be implemented cautiously. Regarding the modernisation, they did not want to relinquish importance of the National Register, which meant in practice that the Civil Registry could not contain too much data that was also stored in the National Register.

While objectives were clearly delineated by the different perspectives present in the collaboration, there were different approaches to the same objectives. The struggle for authority between the Ministry of Justice and the Ministry of Internal Affairs was the main source of this substantial complexity. There are two examples mentioned by most respondents on which this claim can be substantiated.

The first example came up at the very beginning of the collaboration. The Ministry of Internal Affairs thought a good way to modernise the Civil Registry was to simply add the data of the Civil Registry to the National Register. This way, there would be no risk for the National Register when it would have to be connected to the new central Civil Registry. The Ministry of Justice rejected this idea on the concern that its department would lose its control of the Civil Registry.

A second exemplary conflict was rather practical in nature. In the old system, a civil record had to be signed by a civil servant of the concerned municipality and all relevant parties (e.g. parents in case of a birth certificates, husband and wife in case of a marriage certificate, etc.). In a digital Civil Registry, the civil records are digital as well, which means they would have to be signed with an electronic signature. This is not always convenient for citizens, as they would be obliged to have an e-ID in order to sign essential documents. Another problem was that foreign consulates sometimes have no electricity or internet connection, which would mean that Belgians living in a foreign country would not be able to register the birth of their child if the electricity of the foreign consulate were down. The Administrative Simplification Service
therefore proposed to have civil acts only electronically signed by the responsible civil servant. This was difficult for the Ministry of Justice because they thought that this would alter the legal principle of the civil act. In other words, they saw digitisation and modernisation taking priority over legislation, as was their concern from the beginning.

**Strategic complexity**

The collaboration was characterised by regular consultation between the involved parties, and strategies were considered to be well coordinated. However, as already mentioned, the Ministry of Justice had a bit of a conservative approach in order to respect legislation, whereas other parties were primarily focused on the development of a good application and letting legislation follow practice. This was not always easy to anticipate for the collaborators, especially the Ministry of Justice. The coordinator sometimes even turned this strategic complexity to his advantage and used it to prevent or solve deadlocks and keep the collaboration moving. This approach will further be discussed in the sections on power imbalances and leadership.

Most respondents were experienced federal bureaucrats and knew the tensions and issues that commonly played out between the partners. Therefore, they thought they could anticipate the partners strategies rather well.

**Institutional complexity**

There was significant institutional complexity in the digitisation and modernisation of the Belgian Civil Registry. Many problems occurred that were practical consequences of a difference in internal process. For example, as already mentioned, not every municipality had the same capacity, nor the same IT system with which the new central Civil Registry had to be connected. Another example was the foreign consulates and the international legislations with which they had to comply. The aforementioned electronic signature, for example, was not accepted by international law. This meant that the internationally accepted seal also had to be digitalised. The representatives of local governments noticed some institutional complexity among them as well, as it was often hard to formulate a single position for all local
governments. For example, there were significant differences of opinion between Flemish and Walloon municipalities and between small and large municipalities.

Practical problems were mainly solved through institutional design, with the foundation of a multidisciplinary committee where complaints or requests from users (i.e. municipalities or consulates) were addressed on a weekly basis. Furthermore, the Administrative Simplification Service, by whom the IT-provider was contracted, added a clause to the contract that made it possible for the other departments to request from DXC specific applications and solutions. For example, the Ministry of Foreign Affairs asked for the development of a client-based application for their foreign consulates, whereas the Belgian municipalities already had client-based applications through their contracts with their respective IT providers.

A respondent representing local municipalities noted that some institutional complexity has been remedied by the new system. The system is uniform for every municipality and foreign consulate and is designed to require civil servants to use it in the same way, which has in turn established a de facto set of shared rules.

**Power imbalances**

An imbalance that was identified was the actors’ knowledge and experience regarding IT systems and data storage. Several respondents noted that the Ministry of Justice did not have the required human resources to manage the implementation of the new Civil Registry central database. The Ministry of Internal Affairs was then tasked with the instalment and maintenance of the central database because they already had experience with the National Register, thus making the integration of both databases easier. A respondent from the IT provider recalled that this integration was at first hindered because the Ministry of Internal Affairs built in control mechanisms to safeguard their system. The Ministry of Internal Affairs thus had more power in operating the database.

The Administrative Simplification Service was said to have an IT knowledge advantage as well. This was not caused by their prior experience or knowledge, but rather by their relationship with the IT provider DXC. As a coordinator, and as the party who contracted DXC, they were closer to DXC than the other partners. Respondents from the Ministries of Justice and Internal
Affairs thought this was a significant advantage, as the Administrative Simplification Service was therefore able to smoothly develop applications together with DXC and avoid deadlock and discussions about legislative changes. Sometimes, the Administrative Simplification Service even developed applications before consensus had been reached about legislative changes, which in turn put pressure on the Ministry of Justice to accept proposed changes that were a bit more radical than they would have liked. This pragmatism was the core of the Administrative Simplification Service’s approach to making sure the project kept progressing.

Another power imbalance was pointed out by respondents representing local municipalities and regarded actor's capacity to influence politics. The Ministries of Justice and Internal Affairs, for example, work directly under the cabinet of their respective ministers and have close contact with them. The Administrative Simplification Service is under the administration of the Chancery of the Prime Minister. This gave these partners a direct line to the federal government. When some discussions caused deadlocks, the decision could be escalated to the political level, where the cabinets would negotiate an agreement. Although many mayors are also members of the federal parliament, municipalities do not have cabinets on the federal level. As soon as the project was politically approved, the federal parliament was not involved in the project, but cabinets of the concerned ministers were. Local municipalities thus had less power to influence the decision-making of political actors. However, an escalation of decisions to federal cabinets did not occur too often and this power imbalance changed soon after the launch. From that moment on, the Administrative Simplification Service relinquished coordination duties, and the management committee (with the majority of votes afforded to municipalities) was fully charged with the coordination of the digitised Civil Registry.

Respondents from the Ministries of Justice and Internal Affairs saw another power imbalance in the fact that meetings were not always attended by the same profiles. Some parties sent staff while others sent their department leaders. The staff workers could not always decide on everything, and often had to ask for feedback of their superiors. While the respondents noted that every party was conscious and understanding of this, this weakened their bargaining position. They saw some instances where decisions were being implemented and developed before, they could properly object or argue their case.
This coordinating mandate caused their influence to rise. The Administrative Simplification Service often negotiated bilaterally with other partners. This put them in the best position at management meetings, because they were the only partner to know the position of all the partners and could choose which agenda to push.

**Public management interventions**

*Leadership*

The Administrative Simplification Service was appointed as coordinator for the implementation of the digitised Civil Registry. All collaborating actors thought the Administrative Simplification Service’s neutrality was crucial for the collaboration to succeed, because the partners were involved in substantial struggles over authority. The Director General of this department is a very experienced bureaucrat and knows the ins and outs of the Belgian federal administration well. He was aware of the struggle for authority between the Ministry of Justice and the Ministry of Internal Affairs and the concerns of the local municipalities that they would be left out of decision-making. A mediator leadership style was put forward to resolve these issues.

One of the first decisions made was that there would be no transfer of authority. The coordinator took on the role of an honest broker by assuring every party had a voice in the bargaining process. The local municipalities were assured that the Constitution would not be altered and that they would receive the majority of the votes in the management committee. The Ministry of Justice was assured that the Civil Registry would remain a separate database alongside the National Register. Though the Ministry of Internal Affairs was at first reluctant, they were eventually convinced to participate by assurances to preserve the importance of the National Register by leaving out information like addresses in the new modernised Civil Registry. Furthermore, they were granted the management and maintenance of the central database of the new Civil Registry.

The decision to put the operational management of the central Civil Registry with the Ministry of Internal Affairs also resolved other issues. The Ministry of Justice did not have the necessary IT experience or knowledge to maintain the central database. The positioning of the database of the Civil Registry in the same ministry as the National Register also eased the processing of
information requests managed by the National Register. The coordinators and other respondents noted that this was due to the efforts of coordinators to resolve tensions.

Support among local municipalities was very important, as civil servants in municipal administrations were the ones who would have to implement and use the new modernised and digitised Civil Registry. There was substantial concern among civil servants for the effort the transition would require of them. This perceived risk was countered by the coordinators with a catalyst leadership style. The president of VLAVABBS, the representative organisation for civil servants, had a big part in this. Together with DXC, VLAVABBS organised workshops and meetings where civil servants could voice their concerns and their suggestions for the new system. By informing and educating civil servants up front, the coordinators and the president of VLAVABBS identified value-creating opportunities and engaged in ‘systems thinking’ by encouraging participation through workshops (Ansell and Gash, 2012).

In the digitisation and modernisation of the Belgian Civil Registry there was substantive complexity, as the Ministry of Internal Affairs wanted to safeguard their database of the National Register and the Ministry of Justice wanted to make sure the sovereignty of the civil legislation remained intact. Klijn and Koppenjan (2014) argue for a joint reflection and joint framing of the problem. The coordinator’s approach to address substantive complexity in this case was quite different. By making sure the project kept progressing and developing, the coordinator managed to stay ahead of possible conflicts and deadlock. This approach could be described as a transactional style of leadership as it involves directive steering and it emphasises the operational level (Ricard et al., 2017; Van Wart, 2014). Transactional leadership focuses on the exchange between leaders and followers (Ricard et al., 2017), and thus assumes some level of authority of the leader. Due to the Administrative Simplification Service receiving a clear mandate to coordinate the project, they had this authority and were able to lead in a transactional way. This pragmatic approach, as we consider it, was the most important driver of the collaboration according to the majority of the respondents.

Uncoordinated or hard to anticipate strategies did not frequently occur in the collaboration because most decisions were made through consensus and dialogue. Furthermore, the collaborators were quite experienced and knew the federal administration well, which ultimately made it easier for them to predict the other partners’ strategies.
Institutional complexity became mostly apparent in the form of practical problems. An example is the lack of a trustworthy internet connection in foreign consulates. These issues were solved through institutional design, with the foundation of a multidisciplinary committee where every complaint or request from users (i.e. municipalities or consulates) is addressed on a weekly basis.

**Institutional design**

All partners who had an interest in the Civil Registry were included in the collaboration. Every partner who depended on information gathered in the central database of the new digitised Civil Registry was given representation on the management committee. The collaboration was therefore designed rather inclusively. To develop applications and prepare the implementation of the new system, multiple expert groups were founded (e.g. a legal group to write legislation, a technical group). These expert groups were hierarchically subordinate to the management committee.

The objectives of the digitised and modernised Civil Registry and authorities responsible for the management of the system were written down in law. The functioning of the management committee was decided by Royal Decree. Therefore, coordination from the political level was done with hierarchy-type mechanisms. However, the responsibilities were not delineated very clearly. The Ministry of Internal Affairs, the Ministry of Justice, and the management committee were all responsible for some part of the management or maintenance of the system. This made it more important to come to an agreement in the management committee through the use of network-type coordination.

To resolve technical and practical issues, like writing adaptations to the law or developing IT applications, the management committee could create working groups of individuals with specialised technical experience and knowledge. For example, a working group about privacy and data protection has now been created. The management committee is the most important decision-making body and is hierarchically superior to the expert groups. Most respondents noted that this hierarchy was very important, because some issues needed to be escalated to a higher level in the case of deadlock.
There is also a system that allows formal change requests, annotations or feedback from the local municipalities and the foreign consulates (e.g. the users). Though the system is currently up and running, there are still practical problems being fixed and discussed on a weekly basis by a multidisciplinary committee. When problems occur in the field, or if mistakes are made, then the central consultation will notify all the partners, and the issue will be treated by the appropriate working group. This way, the system is being constantly adapted and improved with input of the users. Institutional complexity is also addressed by this consultation mechanism.

Lastly, the system also has a notification application where the central committee and users can send each other requests about certain files, adaptations, instructions, etc. This way, there are ample communication channels to prevent and solve the problems that occur.

Market-type mechanisms were not really used for coordination. There were some meetings where coordinators showed the progress of every municipality, which encouraged concurrence between municipalities and made municipalities that were behind eager to catch up.

**Outcomes and lessons learned**

Although the collaboration between multiple actors with significant differences in agendas and interests caused some tensions and conflicts, the collaboration was viewed by all the respondents as a success. The system is operational and will be implemented in the institutions of the judicial branch throughout 2020. The governance structure is securely in place and is mainly occupied with operational problems and bug-fixing. The project has also received national and international acclaim. As mentioned, they won the Belgian e-Gov Award, and the Administrative Simplification Service is regularly consulted by foreign administrations to give them advice for similar implementations.

The objectives of the modernisation and digitisation of the Belgian Civil Registry were disruptive compared to the old system, both in terms of technology and functionality. They were process innovations, both technological and administrative, and the centralised approach to the Civil Registry meant a governance innovation to the Civil Registry. The
introduction of new digital technology was transformative and enabled new possibilities for the Civil Registry like new connections to the National Register and other databases.

This technological process innovation meant substantial administrative process innovation as well. The introduction of the new system enhanced the trustworthiness and uniformity of the civil status records and a better protection against fraud. Furthermore, the customer friendliness improved significantly, and the new system also contributed to the once-only principle. Citizens will now only be asked for information once, as changes and additions to the Civil Registry or the National Register will automatically be updated in all databases. The new system also means a big saving in cost for local municipalities. Before the digitisation and modernisation of the Civil Registry, local municipalities managed the Civil Registry themselves with little uniformity in their systems. The centralised management of the Civil Registry with a management committee in which the local municipalities have the voting majority is a governance innovation.

**Conclusion**

As the discussion of the power imbalances, complexities and perceived risks indicate, the collaboration was characterised by significant conflicts of interest and power struggles. The Administrative Simplification Service has been tasked to coordinate simplification and modernising projects across multiple departments. They work in a project-based manner and pass on the coordination when the project is implemented. The political approval of the implementation of the project in 2014 also came with a deadline. The digitisation and modernisation of the Civil Registry had to be implemented by the end of the legislature in 2019. This deadline, the identity and mission of the Administrative Simplification Service, and the tensions and struggles for authority between the collaborators necessitated the coordinator to take on a pragmatic approach. The project had to keep moving and deadlock and stagnation had to be avoided.

The coordinators’ pragmatic approach can be described by letting practice precede legislation, and sometimes also consultation. As mentioned, the Civil Registry determines the legal status of citizens, and its modernisation and digitisation thus required legislative changes. The strategy of the Administrative Simplification Service was to make sure that applications and
the system were being developed and the project progressed. This put pressure on the Ministry of Justice, who had a rather conservative approach, to approve legislative changes throughout the process.

Support among local municipalities and some of the power imbalances mentioned were the reasons for the success of the Administrative Simplification Service’s pragmatic strategy. Support among the local municipalities was important because they are constitutionally responsible for the Civil Registry and, as a consequence, have the majority of the votes in the collaboration’s management committee. This support was achieved by a mediator leadership style, including them in decision-making from the beginning, and a catalyst leadership style by thoroughly informing and educating civil servants up front. The director of VLAVABBS, representing the civil servants, and the private IT partner DXC had a large hand in this as well. This pragmatic coordinating strategy also used power imbalances to the coordinator’s advantage. Because they negotiated bilaterally, they knew every party’s position, and because they had contracted the IT developer DXC, they had the ability to let them develop applications before consensus between the partners was reached. Furthermore, the Ministry of Justice’s lack of IT knowledge weakened their bargaining position and also contributed to the success of the coordinator’s pragmatic strategy.

The fact that the project was approved politically by law was very important as well. It was a significant advantage for the Administrative Simplification Service to coordinate the collaboration because it meant the partners were obliged by the political level to implement the digital Civil Registry. An exit strategy was therefore not possible. Due to the pragmatic approach of the coordinators, the Ministry of Justice indicated that despite their reluctance to alter legislation, they sometimes found themselves in a position where they had no other choice because they were obligated by law to proceed with the project. Furthermore, the coordinators and the representatives of local municipalities acknowledged the Ministry of Justice’s flexible attitude as a crucial part of the success of the collaboration. The Ministry of Internal Affairs was a bit more conservative when new applications were proposed, as they were primarily concerned with the safeguarding of their own systems.
2.1.2 Estonia: The Employment Registry

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Case introduction

The Estonian employment registry was originally introduced in 2014 and the initiative has been headed since its inception by the Estonian Tax and Customs Board (henceforth ETCB). Over the years, there has been a problem with a high number of unaccounted wages, which was enabled due to a lack of tools with which to perform oversight. This resulted in substantial inefficiencies in different work processes, which in turn resulted in significant costs for several organisations. The ability to perform oversight through raids was impaired, as it was very difficult to provide details about the employment relationship. This propelled the ETCB to address their internal routines and interactions with different client groups through an ICT-based solution. This was highlighted in the 2013-2016 development plan of the ETCB, which stated that the focus is on instating measures to increase the efficiency of control measures to ensure a fair entrepreneurial environment (ETCB, 2013). This was further driven by the already existing technological advancement of the ETCB and the need to achieve a high level of efficiency in conditions of austerity, which created a suitable environment for developing the next generation of digitally advanced tools. Due to the uniqueness of the digital infrastructure conditions in Estonia, there was already an established consensus regarding what kind of solution was needed. The initial idea developed from a sector-based solution to a registry that aimed to incorporate all the data created through employment to ensure a single, coherent dataset. As a result, the Estonian employment registry records all the individuals, whose employment creates a tax liability in Estonia, regardless of their particular type of employment contract. After the initial vision was decided, peripheral actors were engaged to the process, and the registry was ultimately developed through collaboration among the following actors shown in Figure 3:
The wide level of engagement is contingent on the fact that the collected data through the unified portal is exchanged for the provision of different services in various policy fields. The solution required a certain level of legitimacy in order to justify its implementation. Although the collaborative arrangement regarded all parties as equals through an option to voice out concerns and propositions, there were variations regarding the potential benefits of the registry and how it could be applied to the benefit of internal work processes. The role of the Ministry of Social Affairs, the Ministry of Finance and the Ministry of Justice were particularly relevant regarding the development of the legal framework and maintaining its general scope.

The involved actors varied in interests, size and their position within the administrative structure. The ETCB is an executive agency subordinate to the Ministry of Finance. Amongst their tasks is the administering of state revenues and the implementation of the national tax and customs policy, through which they are closely connected to the field of labour. As an executive agency, the ETCB enjoys relatively large levels of autonomy in their day-to-day operations, as the Ministry of Finance lacks the resources to supervise. Additionally, the ETCB
possesses quite robust technological capabilities, which has enabled them to steer ICT-based reforms within their area of governance. However, they are reliant on the Ministry for initiating new reforms and therefore find themselves in a position where they must defend their ideas in front of the Ministry of Finance.

The Unemployment Insurance Fund is a legal entity under the public law, which provides them extensive autonomy. This gives them more freedom in participation and financing ICT-based projects, with the Ministry of Social Affairs’ influence limited to a Supervisory Board. Their existing technological capability is amongst the more advanced within the public sector. Through the Unemployment Insurance Act, the Unemployment Insurance Fund has been given the legal basis to administer services and other support schemes connected to unemployment insurance. They are prevalent in policy implementation and policymaking alongside the Ministry of Social Affairs. Similar autonomy is enjoyed by the Health Insurance Fund. However, their connection to the Employment Registry is more peripheral, as they had already established their own data collection mechanisms and the user-centric perspective of the Employment Registry produced limited interest from their side, as they remained sceptical.

The Labour Inspectorate is located within the Ministry of Social Affairs. As an inspectorate, their role is connected with supervision of work environments, labour relations and work-related accidents. However, their small size limits the amount of resources they are able to allocate to projects.

The Social Insurance Board and Police and Border Guard Board are also executive agencies responsible for policy implementation and thus enjoy relatively considerable autonomy in their day-to-day operations, so long as it stays within their specific field. However, their connection with the Employment Registry, as well as their participation in the collaboration, remains quite limited. The Social Insurance Board needs information regarding employment to provide social security. The Police and Border Guard Board supervises the working conditions of foreigners and regularly needs to access information regarding their employment status.
The Registry gives public agencies the opportunity to perform data analytics of the labour market in real time and to perform oversight over other processes at a very accurate level. Employers can choose to interact with the Registry in different ways, for example, they can submit their personnel data by either inserting it manually through e-Tax Board/e-customs, or automating the process by means of machine-to-machine interface via X-Road. The X-road is one of the main pillars in the Estonian national digital infrastructure. The X-Road provides the interoperability platform for existing decentralised databases and a data exchange layer that can be used by both public and private sector actors (Kattel and Mergel, 2018). Employees can only interact with the Registry to the extent of verifying the registration of their employment, and increased authority must be granted by their employer. The process innovation derived from the Employment Registry enables all actors to redesign their data accumulation, processing and analysis. The actors who were more directly connected with data input felt the change more strongly and reported a significant improvement for their internal processes. The peripheral actors, on the other hand, perceived the changes to a more limited extent. The Employment Registry in any case provides considerable opportunity for data analysis, marking an important development in the national digital infrastructure.

The employment registry plays an important role in fulfilling the SDG requirements regarding employment data by moving towards the implementation of ‘once only’ data submission. The Employment Registry creates a single access point for employers to communicate with the public sector (Ministry of Finance, 2014a). Registration of employment through the platform also enables the registration in national pension and health insurance schemes, which is made possible by the cross-use of existing data. This reduces the need for additional input from employers and employees, and therefore represents another step closer to meeting the requirements outlined in the SDG.

The positive feedback loop created has enabled the Employment Registry to be subject to constant development, with the most recent significant change implemented in June 2019. This incremental approach is consistent with the expectations and hopes of the ETCB and other related actors who support the expansion of the Registry. The key leaders in this collaborative arrangement see the Employment Registry as a part of a wider effort for digitalisation and technological advancements to improve the general digital infrastructure in
Estonia. The Employment Registry offers solutions to several problems in the sector by reducing the administrative burden for employers, providing certainty for employees regarding their health insurance and pensions, and offering a more competitive business environment and increased revenue for the state (Ministry of Finance, 2014b). Since the initiation of the idea, the ETCB has been strongly motivated to assume and retain leadership and has thus taken a very dominant position in the collaborative arrangement. This power imbalance has affected interactions between the ETCB and other actors, as the way that resources were allocated enabled them to adopt an ambitious approach towards decision-making. Not all stakeholders were equally motivated, and this required the ETCB to strike a balance between catering to the ambitiousness of certain core actors and gaining legitimacy among the more sceptical ones.

This problem has been acknowledged for long time, and actors started deliberating on possible solutions for a considerable period before official development began. The ETCB started moving forward with the problem and searching for ideas in 2012. The ETCB and other core actors looked to similar examples from foreign countries when considering the approach to take. The ideas created were then screened by the ETCB, Unemployment Insurance Fund and the Labour Inspectorate and compared to their own priorities. The ETCB initiated the official project in 2013 with the ICT-based development phase beginning in the second half of 2013 and concluding in the first half of 2014. The legislative changes were accepted by the Parliament in Spring 2014, and the instating of the Employment Registry went into effect in July 2014. As mentioned, the Employment Registry has undergone constant updates since its developmental phase.

System context

National context

Estonia operates a decentralised administrative system, where responsibility has been extensively delegated towards ministries who exhibit significant control over their area of governance. However, due to limited resources, ministries are focus mainly on policy formulation, and are unable to take on additional administrative tasks (Sarapuu, 2011). As a result, there is extensive reliance on subordinate government and departmental agencies for
professional day-to-day management knowledge and overall supervision is limited. This creates a more autonomous environment for the agencies, which make up the majority of public sector employment and spend most of the national budget (Sarapuu, 2012). This decentralised nature in resource distribution has spurred reform attempts to address the resulting organisation-centric and siloed government culture. International studies (OECD 2011) have highlighted the need for a more coordinated administrative structure, though this failed to materialise due to minimal political interest and organisational resistance. Institutions tasked with horizontal coordination within the administrative structure operate with limited resources, which has further inhibited the ability to provide formal strategic guidance (Savi and Randma-Liiv, 2016). Coordination remains strongly reliant on informal networks, especially in cases of inter-ministerial coordination. This has enabled a strong reliance on individual public sector managers in decision-making and implementation. Although collaborative measures have been formally institutionalised, they have been implemented only to a limited extent, and have been highly dependent on the capability of single individuals. This has resulted in the marginalised role of third sector organisations, as government organisations assume prevalence in solving problems (Kattel and Raudla, 2013). The engagement of third sector organisations is further hindered by their lack of resources. Estonia has retained throughout the past few decades a public sector which views reform as the building blocks to success. This has engendered a strong culture of reform willingness amongst top officials that positively affects the propensity towards change. This has enabled certain agencies (including the ETCB) to establish themselves as strongly reform-oriented organisations with a reputation of trustworthiness and an expectation to constantly lead new initiatives. Reforms have not focused on radical improvements, however, but rather have been predominantly oriented towards cost-cutting measures and adjustments on the operative level through the use of e-government tools. This has been affected by the strong influence of past NPM-oriented reforms which were spurred by waning public approval of the state (Randma-Liiv and Sarapuu, 2012). Highlighted failures and a strong focus on austerity have increasingly shaped a mindset where officials are sceptical about initiatives perceived to be overly ambitious. E-government tools and digitalisation efforts have, however, received a lot of attention and prioritisation from the political and administrative leadership due to the high level of trust towards digital solutions. ICT-based solutions have thus become a standard
option for reform initiatives in the Estonian public sector (Lember et al., 2018). The increased pressure for austerity in the public sector during recent years has only provided additional incentives for digitalisation efforts of public services (Lember et al., 2018; Kattel and Raudla, 2013). However, austerity as a driver has also provided limitations regarding the possible actions moving forward in the form of budgetary constraints on the initiatives themselves. Solutions are thus affected by the need of officials to evaluate reform initiatives with regard to feasibility and cost-efficiency.

Although top leadership has provided strong support over the years, digital advancements in Estonia have remained mostly decentralised due to the lack of a central office for digitisation and the relatively limited technologically oriented steering at the ministerial level (Lember et al., 2018; Kattel and Mergel, 2018). Implementation of new digital solutions has often been guided not so much by the government’s holistic strategy, but rather by isolated actors who possess the zeal and motivation to implement their vision (Kalvet, 2012). The open nature of the Estonian civil service system has served to attract talent from the private sector with ICT backgrounds who bring to their roles increased competency and legitimacy (Kattel and Mergel, 2018). Their participation has served to alleviate fears of the risks associated with digital transformation amongst different actors. Due to the decentralised nature of development, digitalisation has been strongly reliant on bottom-up initiatives led by digitally advanced agencies, which has further fostered uneven digital capabilities in the public sector. There have been only limited attempts made to enhance collaboration between agencies, which has done little to level the gap in digital competencies.

**Institutional context**

The government agencies in Estonia vary considerably in size and structure. The ETCB is one of the largest agencies, consisting of more than 1000 employees, whereas the Labour Inspectorate is far smaller. This variance in capacity has an effect on the agencies’ abilities to enact and carry out reforms. Additionally, their differences in legal status affect the level of autonomy that the different organisations are provided, which affects their capability to implement organisational change. Due to the decentralised nature of reforms and the individual discretion afforded to public sector managers, strong differences have manifested
in the digital capabilities of agencies to influence policy and take up new digital initiatives. The ETCB has strong digital capabilities, which provides them the ability to clearly recognise and articulate their needs and imagine the possibilities of digital innovation. It has furthermore resulted in their high level of competency as a procurer. This has given them a certain reputation within the public sector and has affected their ability to carry out cross-organisational reforms.

Agencies are incentivised to automate their work processes in order to address the need for high level service delivery in conditions of austerity. Digital infrastructure advancements enable organisations to relieve the pressure of austerity by implementing new forms of contact which substitute human-to-human with machine-to-machine interactions. However, the budgets for these sorts of projects vary, and agencies remain financially responsible for their own internal developments to utilise the Employment Registry to its maximum benefit. This carries over to the development of the Employment Registry itself, as various partners have increased incentives to bargain from their perspective.

Initiatives are dependent on informal networks created within the civil service network and often remain within the pre-existing arenas. These pre-established networks of collaboration influence the exact composition of the actors and their role in developing the Employment Registry. The informal linkages between the most relevant civil servants from the ETCB, Labour Inspectorate and the Unemployment Insurance Fund created enhanced conditions for new ideas to come forth, as individuals perceived a more intimate environment. The respective organisations have collaborated beforehand and they have linkages through their parental ministries. For example, the supervision of formal employment status in the private sector is based on joint actions between Labour Inspectorate and the ETCB. The pre-existing exchange of data between the organisations provided an opportunity for improved collaboration. The relatively small size of the state moreover reduces the perceived formal distance, which simplifies informal coordination.

The lack of formal collaboration measures affects the motivation of organisations to participate. The individual actors within the project team possessed the mandate to make decisions for their organisations, which enabled them the agility to quickly adapt to change.
Providing sufficient resource and power allocation translated into increased ambition and willingness to contribute.

Amongst civil servants in small states there is a strong tendency to avoid conflict (Randma-Liiv and Sarapuu, 2019). Officials are incentivised to maintain positive relations due to their interlinkages in various arenas, and compromises are therefore made with the interests of all actors in mind. As a result, the ETCB prioritised keeping all the necessary actors in the loop from the beginning. This had an impact on the chosen solutions and favoured an incremental approach.

Through the use of constant digital advancements, the ETCB has managed to attain a high level of efficiency in its work processes and has gained a reputation as a trustworthy innovator amongst the public and its associated organisations (Kattel et al., 2019). It has also served to create an internal positive feedback loop, where initial successful developments serve to inspire new innovative solutions (Ibid.). Collaborative arrangement has been reinforced by the positive reputation of the Unemployment Insurance Fund, as its reputation for efficiency and innovation provides an incentive for less digitally advanced agencies to collaborate with them due to increased perceived benefits.

**Collaboration challenges and dynamics**

The implementation of the Employment Registry was achieved within a very short timeframe, which, in addition to the pre-existing institutional context, led to several challenges. The most considerable issue which hindered the collaboration was the fact that the organisations involved had very different backgrounds, resources and priorities.

**Complexity**

There were limited problems related to complexity within the collaborative arrangement. As the product owners, the ETCB has opted to take sole responsibility of technical tasks and the development of the solution (I1; I2). The inclusion of other partners has been mostly limited to their input during the development phase, which has reduced the necessary level of commitment from each partner and with it the possibility of partnership fatigue. The key factor contributing to complexity was the actors’ strong adherence to organisational priorities.
Other contributing factors included differing work processes, and the surrounding institutional framework.

The knowledge base of the individuals engaged varied considerably and depended heavily on organisational values, routines and practices, which were supplemented only to a limited extent by cross-organisational interactions. As a result, priorities varied among the organisations involved. The ETCB found commonalities with the Labour Inspectorate through increased efficiency in supervision, but experienced difficulties with the Health Insurance Board regarding the timely provision of health insurance. This led to the ETCB needing to accommodate certain underestimations of the priorities of the Health Insurance Fund (I5). Specifically, the ETCB wanted to provide employers the flexibility to change data they had already entered into the database, but this was later found to be incompatible with the Health Insurance Fund, which relies on the validity of the data as originally entered for health care provision. The inability to perceive the effect of organisational priorities was affected by the fact that cross-organisational collaboration was present in certain phases. The ETCB put more focus on cross-organisational collaboration with the core actors at the initial stages of the project, which limited joint comprehension of the underlying problem and solution. The differences were additionally influenced by the existing differences in the level of technological capability that affected the ability of actors to recognise what digital solutions were possible for them or imagine what benefits they could potentially gain from the project. Engaged actors rely strongly on internal work processes, mostly due to cost considerations, which affects the interactions between different stakeholders. The actors attempt to barter for their priorities, as changes require financial investments that are hard to justify in conditions of austerity. The most prevalent differences regarding operational logic arose with the Health Insurance Fund, as the retroactive employment data changes allowed by the Employment Registry were difficult for them to adjust to (I5). This creates incompatibilities in the underlying logic of the Employment Registry and the goals the Health Insurance Fund. This is further exacerbated by the fact that all continued developments utilising the outputs provided by Employment Registry would have to be funded and carried out separately with limited support from ETCB (I4). Additional developments have to operate in a separately constructed framework, where the original collaborative arrangement offers marginal gains.
The ability to justify the costs to meet the internal goals was more difficult therefore for actors with limited resources. As one of the interviewees expressed: “*It always comes down to who has the funds in their budget and to what extent*” (I4).

The limitations with the funding therefore affected the willingness to make concessions to placate other actors in the partnership, and compatibility was always an important factor to consider when designing the Registry.

As employment data is connected with very different services and work processes, it is very difficult for organisations to comprehend the overall surrounding institutional framework in terms of labour. The data collected for the Registry concerns individual and business tax liability, unemployment benefits, health insurance, and other social support schemes.

The variance of the collected data influences the various institutional frameworks. The legal framework has been designed to offer an organisation-centric approach by specifically underlining the obligations and position of each organisation within the policy field. But these strict organisational and systematic rules have created a barrier which affects the mindset of individual representatives. If the organisations perceive a lack of benefits from the collaboration, they have been provided an option for a confrontational approach, as they are entitled to receive the necessary data input for processes regardless of the means (I4; I5). This led to a solution in which organisation-centric considerations took priority over the cross-use of data.

*Risk*

There was very little perceived risk involved, due to the specific setup and the conditions surrounding the collaborative arrangement. Those interviewed did not perceive a risk of losing control, despite the mission to condense data into a single registry and the strong leadership position taken by the ETCB in managing this transition (I3; I4). The system context enabled the ETCB’s role in this regard, due to the fact that the ETCB was already one of the main collectors and retainers of datasets within the public sector. Other actors contributed less than the ECTB in terms of resources, and thus felt they had less to lose in the case of failure (I4). Risk
therefore played a limited role, though there were reportedly some risks associated with existing policies and the uncertainty regarding time pressure and ambitious goals.

Despite the established arrangement setup and accountability lines, political risk remained existent due to the sensitivity of the data and its connected topics (I5). The data from the Employment Registry involves both entrepreneurs and ordinary citizens and the work processes require the analysis of sensitive data for provision of several social support schemes (unemployment benefits, health insurance etc.). Setbacks to the provision of services risked damaging the reputation of the ETCB and the other involved organisations.

The development of the Employment Registry has occurred under considerable time pressure and with ambitious goals. There was considerable pressure to meet the set deadlines, and the project team reported a strong sense of responsibility not to fail the administrative leadership which had provided them so much support (I1; I2). As one interviewee outlined: “By the time the steering committee received an overview, you had to have found some solutions [...]” (I1). This led to uncertainty amongst various involved parties, as the outcome was dependent on the efforts of several working groups. It was especially unclear how changes to the Employment Registry would affect internal work processes and if they would lead to further burdens.

**Power imbalance**

Though the structure of the collaborative arrangement contained an existing power imbalance with regards to the ETCB and the other organisations involved, this did not reportedly pose much of a challenge with regards to the progress of the collaboration (I3; I4; I5). It is evident that engaged parties varied in size, resources and organisational priorities. The Employment Registry was clearly a top priority for the ETCB and the Labour Inspectorate with regard to labour supervision. The Unemployment Insurance Fund saw it as an opportunity to promote the development of their digital infrastructure and automate their internal processes. The strong variation in resource provision and motivation has thus been a situation accepted by the actors involved.

With regard to power imbalance, the key factors affecting the collaborative arrangement were pre-existing dependencies (I1), existing competencies (I2), and the allocated resources (I2; I4).
The institutional context (I1; I3; I5), organisational priorities and motivation for participation (I2; I5) also played a contributing role.

Pre-existing linkages among actors, as well as a history of depending on the ETCB affected how roles were distributed within the collaborative arrangement (I1). Success in previous projects gave the ETCB legitimacy to act with more leeway in defining solutions and a stronger position in the collaboration. The ETCB was furthermore able to hold monopoly over technical development and information accessibility through their product ownership. The ETCB found themselves responsible for establishing sufficient communication channels, as they would be blamed in the event of failure, but ultimately the informal linkages among actors lead to those with stronger connections and more resources having more influence. Smaller or less well-connected actors reportedly felt excluded to an extent (I2; I3; I5).

The differences in organisational culture and ‘language’ spoken by the representatives affected their designated position within the collaborative arrangement. The ETCB’s role as one of the leading organisations in public sector digitalisation has enabled them to attain nearly unparalleled competency in project management (I2). This affected the role designation within the Employment Registry project and the ability of the ETCB to successfully ameliorate the perception of power imbalance. The ETCB attained the monopoly in maintaining communication and technical development. This obvious power imbalance was, however, not perceived as an issue by the other stakeholders, as they considered the ETCB to have been a fair and reasonable decision-maker. The difference in institutional backgrounds carried through to day-to-day operations in project conditions, where the ETCB through its leadership position had to compensate for the perceived lack of experience of other engaged organisations (I2). As a result, project was subjected to additional costs while they waited for other actors to get up to speed. It furthermore took the ETCB time to acclimatise less-experienced members with the agile and flexible settings within the collaborative arrangement.

Another power imbalance was related to the allocated financial resources and capacities that stakeholders were provided for the employment registry project. The ETCB as the coordinating actor has been able to invest considerably more resources than any other actor
The ETCB possesses the strongest interest in achieving a positive solution due to established priorities, which have been highlighted in past strategic documents (for instance the Estonian Tax and Customs Board Development Plan 2013-2016) and media outputs. Support from administrative leadership furthermore enabled the project team an additional measure in gaining public acceptance and support from other key actors. The Director General of the ETCB arranged meetings with representatives of enterprises and other professionals to introduce and engender support amongst the wider range of actors (I3).

Level of motivation varied amongst the actors involved, depending on what each actor served to gain from participation in the project. The ETCB and Labour Inspectorate felt the costs of the project to be a worthwhile investment, as they knew in the long term it would decrease losses from unaccounted wages (I1; I4). The Unemployment Insurance Fund saw the project as an opportunity to automate their internal processes and improve their digital infrastructure (I3). An interviewee stated: “We have advanced in different processes due to data from the Employment Registry. The ability to register as unemployed and to receive the decision in seconds is possible due to this” (I3).

The varying levels of optimism and scepticism amongst the initially involved parties affected how roles and communication lines were designated in the formal structure.

As the field of labour is very broad and encompasses a large variety of actors, no single actor, including the ETCB, possesses exclusive legal authority or control in the field. The legal framework provides several actors the right to employment data to conduct their work processes from employment relationship supervision, unemployment benefits, health insurance and collection of tax revenue. It involves the ETCB, Labour Inspectorate, Unemployment Insurance Fund, Health Insurance Fund, Social Insurance Board, police and Border Guard Board. Every engaged actor has bargaining power through which it is possible to direct the partnership. Power originates from obligations delegated by the legal framework, which details the necessary input and output, for which an organisation remains liable for. As a result, there is dependency on each other for the justification of a new Registry due to the sensitivity of the topic and the necessary changes for incorporation (I1; I5). As an interviewee
stated: “Our interests were to combat unaccounted labour, but that was insufficient to justify the need for the Registry” (I1).

The power dynamics of agencies and ministries affected the possible acceptable solutions for the Employment Registry itself and determined the autonomy of engaged actors. Agencies are provided substantial autonomy for day-to-day operations and conducting digital innovation due to limited steering by the ministries. As a result, agencies found themselves in a position where they had to actively advertise and defend their ideas in front of the ministerial representatives to achieve the necessary support for institutional change (I1).

**Public management interventions: leadership and institutional design and their effectiveness**

The collaborative arrangement surrounding the Employment Registry exhibits characteristics similar to a hybrid system, in which hierarchy type mechanisms are most prevalent, yet network type mechanisms are also present. The constant expansion of the Employment Registry and the ambitions of the ETCB regarding its scope has necessitated the ETCB to use a combination of tools to retain focus and feasibility, while still catering to the wishes of different actors in an effort to maximise the benefits (I1). As an interviewee emphasised: “(...) we put the vision together and went to introduce it to our partners, what we had in mind and what they wanted to add to it” (I1).

This has been affected by the fact that the Employment Registry is a user-oriented solution, which requires collaboration between organisations of different backgrounds in an effort to reduce the administrative burden for citizens. Despite the user-oriented nature of the solution, the collaborative arrangement retained a strong power asymmetry, where the ETCB sustained a strongly advantageous position relative to the other partners. This considered, the authority and trustworthiness of the ETCB as the lead organisation enabled the arrangement to successfully function. The strongly hierarchical arrangement was designed due to a scarcity of cross-agency collaborations and a lack of the tools and competencies needed to engender a non-hierarchical approach. This is consistent with the organisation-centric approach that surrounds digital innovation initiatives. The willingness to share resources remains rather limited due to which strong positional asymmetries are widely accepted.
**Institutional design**

The design of the institutional framework relied considerably on the established informal networks between the engaged actors. The initial framework was constructed in collaboration between the ETCB, Unemployment Insurance Fund and Labour Inspectorate, who possess multiple interaction arenas between themselves (I1; I3; I4). To retain the necessary level of flexibility throughout the development and implementation of the Employment Registry, the ETCB opted to rely on a combination of formal and informal measures that relied on existing dynamics. This approach served to reduce the perceived risks and power imbalance, as the distance between actors was minimised.

The formal project organisation was split between two different levels: a steering committee concerned with strategic issues, and working groups, managing the project’s operation. Working groups were composed of different units, who were working on needs such as formulating changes to the legislative framework and creating functional solutions to technical and business-related matters. The steering committee was comprised of administrative leadership from the engaged actors and the working groups were comprised of top-level officials guided by a clearly established mandate. The support of the administrative leadership underscored the intention of the ETCB and other core actors to have the solution implemented, incentivising stakeholders to contribute (I1; I3). As an interviewee mentioned: “From our organisation I had a total mandate, which enabled me to move in at full speed” (I3).

The success in engaging top level officials from core partner organisations added legitimacy to the project and served to persuade parties who were initially sceptical that their perceived risks were being addressed. Additionally, it provided necessary pressure towards lower level officials which served to direct them towards a more conciliatory approach to avoid possible deadlocks and placate administrative leadership.

The position of Project Manager was introduced to keep general overview of the process. The Project Manager was provided a very strong mandate from the administrative leadership at ETCB, which gave them consensual legitimacy and authority. The Project Manager was tasked to manage maintaining focus and adherence to deadlines, as the collaborative arrangement consisted of actors with varying backgrounds. This enabled a stronger position of authority for
personal leadership and enabled the willingness of the relevant actors for following guidelines (I2; I3; I4). One actor mentioned: “If you have a Project Manager, who constantly provides reminders and direction, that is important, and you could see it” (I3).

The role of Project Manager expedited the process and reduced uncertainty amongst the actors, as it enabled the leading individuals to react more quickly and officials in the project were provided an overview regarding the necessary tasks. Actors accepted the level of authority given to the Project Manager, as it meant their administrative burden was significantly reduced. The Project Manager furthermore served to interpret the perspective of various actors within the arrangement and thus reduce underlying complexities. For some actors, the Project Manager role served to legitimise the collaborative arrangement, as the collaborative process and interactions became clearer through the work of the project manager and the mandate. It also positively affected the perceived power imbalances, as the differences from culture and organisational backgrounds were taken into account when developing the framework.

The collaborative arrangement instated entry rules to maintain a feasible composition at the initial stages, when the project was more at risk. The entry rules were based on the limitations of time, the surrounding legal framework, relevance to the solution, the results of the ETCB process mapping and the willingness to join and contribute to the collaborative arrangement. These limitations reduced the number of redundant actors, who would have had marginal benefit for the initial workable solution. The actors in question were provided an opportunity to join at a later date after the Employment Registry was implemented in 2014 (I1). These limitations enabled the project to maintain its scope, but the engagement of additional actors at a later stage has affected their access to required information. The actors who joined later in the project lacked the existing informal relationships of other actors and were therefore at a disadvantageous position. It is for this reason that the actors joining the project late had a more negative perception with regards to power imbalance.

Scheduled formal working group meetings and subsequent protocols were used as an instrument to keep track of the overall progress and address the existing complexities. They furthermore enabled the teams to keep track of all decisions and to monitor the overall
progress. The creation of content during official meetings retained importance as well, as it provided additional opportunities for the involved actors to meet and interact. Official meetings also remained an important opportunity for discussion and content creation. Informal meetings were initially used by the ETCB as a tool for developing the final formal structure by gauging actors’ willingness to participate. The pre-existing informal networks enabled relevant actors to rely on more flexible measures for solving problems, as individuals communicated with each other immediately on the arrival of new problems rather than following structured lines of communication. This reduced the pressure towards the formal structure and reduced necessity of the steering committee to engage in conflict resolution. It also served to expand on the legitimacy of the ETCB by creating a sense of belonging through incorporating relevant actors into each decision, as actors were given an opportunity to express their position through various arenas. The variety of communication channels highlighted the intention of the leading actor to enable an opportunity for deliberation. Providing formal and informal channels of communication demonstrated the prioritisation of a constant flow of information and sustained a positive environment. It furthermore enabled the ETCB a clear overview of the organisational goals and priorities of the actors within the partnership.

Following the initial discussions with key actors, the ETCB formally published its end goals within a clear vision document from which there was little deviation to ensure limited risks for the collaborative arrangement (I1). It was the decision of the leadership to keep a strict scope on the project and not to overextend themselves during initial phase, where higher levels of risk were perceived due to hesitancy from relevant actors and the reception from the end-users. One interview mentioned: “If a scope is set, then you have to stick to it” (I1).

Negative outcomes invoke more scrutiny than positive gains, which causes actors to premeditate the proper course of action (Hood, 2002). The document served as a tool to balance between satisfying the needs of the relevant actors and staying within the reach of feasibility considering the limitations. This at times resulted in opting to leave out input from actors. The vision document served as the base document which all actors could rely on to keep in track with the development of the project. The ETCB designed the document with flexibility in mind, acknowledging their inability to perceive all the necessary affected work
processes and potential new processes that may be brought along. The flexibility was further enabled by the fact that it was drawn up in collaboration with actors familiar with one another through pre-existing informal networks.

Despite the strong asymmetrical composition of the arrangement, role designation served to empower actors and mitigate power imbalance. For example, the Unemployment Insurance Fund initiated the effort to lead the working group responsible for the design of the legal framework (I3; I4). This resulted in a stronger position within the formal governance structure. The ETCB felt entitled to take this initiative due to their existing high-level competency in the legal framework surrounding employment. As was mentioned by an actor: "The willingness of different actors to solve questions and take responsibility, that was there in the project" (I3). The ETCB relinquished control over the working groups where they lacked the necessary competency. The collaborative arrangement made use of the actors’ pre-existing high motivation when considering role designation, which served to further empower the actors, engage qualified leadership within the working groups and incentivise active collaboration.

One of the key factors affecting the design of the collaborative arrangement was the level of personal motivation, thought the core reasons for motivation did vary to a certain extent. Personal motivation was strongly influenced by dissatisfaction with the current situation, as the ETCB and Labour Inspectorate were wasting considerable resources doing supervisory work with limited effect (I4). The Unemployment Insurance Fund saw the possibility to reform the employment insurance system through incorporation of the solution, as previously they had limited opportunities to gather the necessary data (I3). This dissatisfaction with the status quo meant that actors were already willing to make sacrifices to improve the current situation, and therefore allowed the development of a broad framework which limited oversteering through formal instruments and provided necessary leadership. This translated into doing overtime and initiatives in providing new ideas for utilising the Registry (I3; I4). As was iterated by an interviewee: “When it was being created, then we had the idea that with the success of the Employment Registry, we will be able to develop something in the future by ourselves as well” (I4).
The chosen framework enabled the flexibility to follow the very limited deadlines set by the administrative leadership (I1). This gave key partners a conviction that the solution would be implemented, despite the difficult conditions they were working under (I3). The actors’ disposition depended heavily on the levels of trust that the collaborative arrangement had managed to achieve.

The implementation of the Employment Registry served another purpose as well, in that it allowed the ETCB to bridge the gap between organisational culture and language with the other organisations and reduce complexity. The partners have been able to instil a similar mindset between engaged actors through effective communication channels. Less digitally advanced organisations have increased their technological capabilities and reduced their costs, which in turn has resulted in the increase of their ability to determine their exact needs, which ultimately has made the collaborative arrangement more flexible and has reduced the amount of resources organisations have had to commit (I5).

The institutional design was perceived to be very effective in addressing the existing challenges within the collaborative arrangement. The governance structure managed to find a necessary balance, with the steering committee providing the necessary support for working groups to focus on content. The established channels of communication enabled the actors the flexibility to upgrade the innovation to its current state.

**Leadership**

Due to the previously discussed institutional conditions, The ETCB obtained a leadership position within the collaborative arrangements from the initiation phase onwards. Their leadership role was adjusted throughout the collaboration in order to address various problems.

The ETCB made considerable use of transactional leadership throughout the collaborative arrangement, as they had set up and organised the innovation. The asymmetrical position of the ETCB granted them a considerable advantage in steering the arrangement. The asymmetrical levels of development necessitated the ETCB to at times take more transactional approaches to develop the initial vision. The ETCB communicated in the vision document very
clearly the instated vision and the scope of the Employment Registry (I1). As an actor stated: “[The vision document] highlighted the entire process and the main rules” (I1).

The position of Project Manager was clearly designed to provide the measures for transactional leadership within the collaborative arrangement. The mandate provided has given the ability to implement hierarchical control within the arrangement. The position furthermore expedited supervision over the tasks carried out by different individual actors and ensured that they followed the set timeframe. This served to keep the project on track and reduce possible risks and complexity.

In moving forward past the initial stages, leadership used a facilitative approach to foster acceptance in a cross-organisational setting. The ETCB paid strong attention to engaging new actors through deliberations regarding stakeholder expectations of the Employment Registry. This enabled the ETCB to react as a catalyst by recognising new opportunities and capitalising upon them. During the project the ETCB took a compromise-based approach, providing all actors the opportunity to provide suggestions for improvements and change (I1). The ETCB encouraged actors to determine and communicate the possible benefits of the project for their internal work processes thus created incentives for collaborating through a series of compromises (I1). An interviewee remarked: “Value-proposition was defined by the engaged organisations themselves. We were unable to evaluate entirely by ourselves, how the processes within the organisations are set up” (I1).

This motivated the organisations with limited resources, i.e. the Labour Inspectorate, to voice their positions without the fear of losing any standing in front of their peers (I4). It has resulted in the addition of new data fields, adjustments in functionalities for end users and data exchange (I3; I4; I5). The ETCB has encouraged motivation for participation through providing a clear future vision and established promises through a roadmap. The ETCB highlighted how the benefits of the digital solution became clear only after implementation, when stakeholders could recognise the possible opportunities surrounding it. The collaborative arrangement retained an element of flexibility to enable the necessary value proposition for the engagement whilst avoiding overextension. Stakeholders were made clear that their suggestions would be noted and taken into account after an initial implementation. This
framework has enabled the ETCB to build up initial support for the Employment Registry and gather additional knowledge and has enabled a more innovative approach to address substantive complexity.

The leadership encouraged further learning and communication within the collaborative arrangement to address the differences in priorities and substantive complexity. Despite the end goal being clearly communicated, the adjacent opportunities were left open for interpretation to incentivise additional value creation, thus making the arrangement more attractive. The ETCB actively encouraged stakeholders to offer suggestions for improving the Employment Registry. This has resulted in increased incentives for participation and perceived usefulness, as stakeholders feel their input is being taken into account and utilised. This has been consistently reinforced during and following implementation, where the initial solution has been developed consistently. It has resulted in the addition of new functionalities and data fields, expanding upon the initial idea which was conceptualised by the ETCB. This was the result of the ETCB’s chosen approach, to decide upon an end goal based on the existing problem while still acknowledging the fact that unforeseen complexity regarding the affected work processes would arise (I1). The linkages between employment data and various services was not immediately apparent, which contributed towards engaging new actors throughout the process as opportunities arose. The efforts of the ETCB in encouraging active search for value proposition and maintaining a consistent message proved crucial in alleviating initial scepticism from more peripheral actors, as reinterpretation of the problem enabled to search for a universally acceptable solution. It has served as the basis for actively reframing the role of the Employment Registry itself as well (I1; I3; I4). The Employment Registry has expanded from a sectoral registry to a registry gathering all employment data, thus creating value for all connected stakeholders.

In addition, the ETCB took great effort in mediating between organisations to ensure proper positive reinforcement. The ETCB acknowledged that they would need outside input in order to construct a sufficient framework which ensured that all actors could mutually understand each other (I1). Opportunities for discussion and communication provided early on in the process allowed the engaged actors to develop a mutual understanding. As a result, initial
adversarial tendencies were prevented, and the actors developed a shared knowledge pool which allowed them to better anticipate the consequences of their actions.

Fostering these beneficial relationships enabled the engaged organisations to construct a common framework with less resources and set mutually beneficial goals (I4). As described by one interviewee: “We actually knew our partners and knew how work processes are organised [...] Expectations were clear, we didn’t have to comprehend what they are doing or if they had the right to access data” (I4).

The common cognitive framework was mostly achieved through preparatory work initiated by the ETCB prior to the official initiation of the project. It maximised on the possible value of the project by expanding the initial ETCB idea of a sectoral, as the initial idea possessed limited benefits for stakeholders besides the ETCB and Labour Inspectorate. The ETCB, Labour Inspectorate and Unemployment Insurance Fund made use of their pre-existing connections to engage in interactions with limited costs.

Throughout the development and implementation of the Employment Registry, the ETCB has exercised various roles to foster collaborative innovation. The flexibility of the ETCB to adjust their role according to the situation was of paramount importance in order to enable a successful outcome.

**Lessons learned and conclusion**

The successful ideation and implementation of the Employment Registry was a result of various collaborative management practices that were influenced by the surrounding context. The importance of the individual in the Estonian public administration constitutes an important factor in any initiative, as officials tend to have more individual power due to the limited amount of resources available (Randma-Liiv and Sarapuu, 2012). It is difficult to contextualise exactly the importance of individuals relating to this project, yet it is clear that the contribution of key individuals from different agencies proved vital for successful collaboration. It is left unclear whether the existing management intervention measures would have functioned as efficiently with the substitution of the key individuals. It is evident that the framework was tailored considering the existing extensive informal linkages already
in place between the civil servants, which enabled the combination of the informal and formal measures within the collaborative arrangement. It furthermore limited additional resource costs and took advantage of well-established informal networks within the Estonian public administration. The lack of turnover in key individuals has contributed to the stability of the system and has yet to test the resilience of the structure without the key personnel who were instrumental in its formulation. The possible loss of expert knowledge linked to specific individuals could prove detrimental for the sustainability of the collaboration. The operation of the network relies heavily on key individuals and that creates uncertainties for all parties involved, as they lack alternative communication channels that can operate at the same efficiency. Overreliance on single individuals has thus far created backlogs regarding communication between parties and has strained relations, as there is a sense of a lack of feedback. Overreliance on single individuals and the resulting lack of feedback has led to a lack of information exchange within the collaborative arrangement. The information deficiencies have been subjected to arbitrary interpretation due to inability to comprehend the causes, which has inhibited positive feedback.

The leadership of the ETCB was of paramount importance in initiating the collaborative arrangement and sustaining it in the initial phases, when the level of scepticism towards the proposed solution was at a higher level amongst peripheral actors and target groups. Due to their overwhelming advantage in resources, the ETCB was instrumental in designing the current structure of the collaborative arrangement. The measures undertaken within the collaborative arrangement relied strongly on the ETCB’s position in leading digital initiatives (I4; I5). As a result, actors are currently content with the state of affairs, and respect the high degree of control the ETCB has in the collaboration. The trustworthiness of the organisation and the strong initiative of key individuals from various levels of government enabled the agenda to move past its initial stages where the level of institutionalisation was comparatively lower. Additionally, the ETCB has done a good job in their role and actors remain motivated by the perceived benefits of the collaboration.

It is important to highlight the importance of the actors’ motivation to the success of the Employment Registry. The long existing dissatisfaction with the inefficient status quo proved crucial for incentivising key individuals within the organisations to collaborate. It enabled a
level of flexibility that otherwise would have been very difficult to attain. This served a strong contributing factor in the continued importance of informal networking and reduced the importance of formal instruments, as actors had constructed a more flexible arrangement that did not require specific rules to be managed. It proved to be crucial in having relevant actors sacrifice organisational resources to keep the project on schedule and enable a more dynamic approach for problem solving, as actors could opt for solutions which in different conditions would have been difficult to achieve.

Despite pressures to take on ambitious goals, the project did not deviate from its initial scope, which enabled it to be successfully implemented within the set timeframe. The Employment Registry faced a lot of suggestions for early expansion from interested parties, who saw potential benefits for their particular fields. Despite this input, the ETCB opted for feasibility over rapid expansion. The ETCB consciously opted for incrementally developing a ready solution to build upon prior successes, which served to help keep actors motivated to participate. The incremental successes played a key role in building the solution with room to expand.

The ability to communicate the value of the project from a long-term perspective proved crucial in incentivising acceptance and participation. This was important for stakeholders to be able to allocate resources in a way which would maximise the benefits. This was crucial for the initial composition of the arrangement, as it helped determine the necessity of individual members, and enabled leaders to know when to involve relevant stakeholders.

The formal setup of the collaborative arrangement was designed to provide the level of flexibility to meet the initial demanding timeframe. It was a result of the initial collaborative arrangement being tailored to meet the needs of the first key actors, who had well-established connections beforehand, and reduced the need to use a more rigid formal structure. It has enabled actors the freedom to actively contribute to the project in a more familiar setting. However, it has resulted in stakeholders who joined the project at a later stage feeling excluded and left out of necessary communication.
Both human-to-human and machine-to-machine interactions need a proper governance structure in order to maximise their benefits. As the data exchanged during the process is interpreted in different institutional settings, it became necessary for stakeholders to guarantee a proper governance structure to ensure valid interpretation of the data exchanged. Currently this remains a point which requires improvement, as the ETCB has suffered errors in relations with other relevant actors in data exchange and communicating updates with the Employment Register (I5).

The successful collaborative arrangement has demonstrated how certain practices could benefit similar arrangements in the future. The importance of delegating a Project Manager with a strong mandate to supervise tasks and adherence to the schedule cannot be understated. This can of course only be achieved when the actors have agreed upon a set timeframe and deadlines, which enables actors to adjust their resources accordingly. Additionally, the participants need to possess a clear vision regarding the goals they aim to achieve and agree upon this in initial stages to avoid overextension and negative feedback cycles. Coordinating actors can benefit from the expert knowledge provided by other engaged actors by providing them the appropriate position and authority within the arrangement. This requires leaders to exhibit a more facilitative role in enabling actors to provide relevant input during the process. This not only improves the quality of the outcome but also fosters small wins within the arrangement that ultimately motivate actors to be more active.
2.1.3 Denmark: eIDas regulation 2014

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Case introduction

This case study deals with the Danish implementation of the EU Regulation 910/2014 of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market. Henceforth, the eIDAS Reg. 2014.

The study is based on six interviews with nine persons, which have all played a key role in the implementation of the SDG in Denmark, as well as a number of public policy documents and PP presentations. The data was collected during autumn 2019. The selected interviewees were four current and two former employees of the following five Danish government agencies: the Danish Agency for Digitisation, the Danish Business Authority, the Danish Tax Agency, ATP/Udbetaling Danmark, and the Danish Agency for Science and Higher Education. The interviews were conducted by Peter Triantafillou with assistance from Signe Christensen from Roskilde University by using the interview guideline developed by the Hertie School team. All interviews were recorded and transcribed. A written informed consent was obtained from all interviewees.

After a brief explanation of the rationale for focusing on the implementation of this particular regulation, this section accounts for the key features of the regulation. It also places the regulation in the context of the general ambition of the EU to promote the digitalisation of public services.

This study examines the implementation of the eIDAS Reg. 2014, rather than the EU Regulation 2018/1724 establishing a single digital gateway to provide access to information, to procedures and to assistance and problem-solving services (henceforth SDG Reg. 2018). The latter must be fully implemented by member states by 2023. In the Danish case this entails that, apart from a few initial ideas on how to plan the implementation process, the Regulation had not sparked any substantive interventions by autumn 2019. The main reason for picking the eIDAS Reg. 2014 is that it is regarded by the Danish Agency for Digitisation and, as it turned out, the other interviewed government agencies as the regulatory steppingstone for the SDG
Reg. 2018. Moreover, the eIDAS Reg. 2014 came into full force in September 2018 and was therefore a suitable case to gain insights into the actual and full range of implementation processes. It should be noted that the eIDAS Reg. 2014 is less comprehensive and less demanding to implement than the SDG Reg. 2018. Yet exactly because it is less demanding, the challenges encountered during the implementation of the eIDAS Reg. 2014 are likely to reoccur with even greater force during the future implementation of the SDG Reg. 2018.

The overall aim of the eIDAS Reg. 2014 is to further consolidate the EU’s internal market for the production and exchange of goods, capital, labour and, in particular, services. More precisely, it seeks to: ‘enhance trust in electronic transactions in the internal market by providing a common foundation for secure electronic interaction between citizens, businesses and public authorities, thereby increasing the effectiveness of public and private online services, electronic business and electronic commerce in the Union’ (eIDAS Reg. 2014, p. 1). The EU Commission, the Council and the Parliament regard a high level of trust in online services as vital to the EU’s economic and social development. Lacking trust and legal uncertainty may make consumers, businesses and public authorities refrain from carrying out transactions electronically and adopting new services. Such non-use may, in turn, be an obstacle for creating an efficient and competitive internal market, which is seen as vital to ensure the wealth and welfare of the EU member states and their citizens. Another important background for the eIDAS Reg. 2014 is the EU Commission’s Digital Agenda for Europe (EU Commission, 2010a), which pointed to ‘fragmentation of the digital market, the lack of interoperability and the rise in cybercrime as major obstacles to the virtuous cycle of the digital economy’. Moreover, its EU Citizenship Report 2010, Dismantling the obstacles to EU citizens’ rights (EU Commission, 2010b), identified obstacles to Union citizens enjoying the benefits of a digital single market and cross-border digital services.

In spite of the broad economic and social background for the adoption of the eIDAS Reg. 2014, it is essentially a very technical and, at least in the first instance, a rather limited regulation. It basically seeks to ensure that any person or company in one EU member state (A) seeking to use the online public services of another EU member state (B) can be uniquely identified by the relevant public authorities of the two member states. In particular, it requires that the public authorities of B accept the electronic ID provided for a citizen or corporation by their
host A. It should be stressed that the Regulation only includes cross-border services, i.e. services that are deemed relevant for citizens from other member states. Moreover, eIDAS Reg. 2014 does not include the right or the actual possibility to make use of the public services. Rather, the above-mentioned SDG Reg. 2018 deals with the actual ability to access and use cross-border services online.

Each member state has developed various systems in order to comply with the eIDAS Reg. 2014. Hence, the exact way in which identification is ensured varies between member states. In the Danish case, the Agency for Digitisation under the Ministry of Finance has developed a national eID-gateway that may be used by other Danish public service providers to accommodate the eID of citizens and companies from other member states. Though citizens from other member states can log on and view online public services available to Danish citizens, as mentioned above, the Regulation does not require that they can actually use these services.

The following case study of the eIDAS implementation in Denmark essentially holds three elements: the legal ratification of the eIDAS enactment, development of eIDAS gateway and the integration of online services to the gateway. Each of these are analysed below, with a focus on the second and the third elements. The first element took place in 2014 and mainly involved the parliament and the top level of the government ministries. The development of eIDAS gateway mainly took place in 2015, though subsequent amendments and dialogue with other public agencies wanting to make their own services available to citizens from the other EU member states were subsequently taken up by the end of 2017. Finally, the integration of the online services, which involved extensive dialogue and collaboration between the Agency for Digitisation and a number of other government agencies, ran between the end of 2017 until September 2018.

**System context and starting conditions**

Denmark is widely regarded as a welfare state, which provides a wide set of mostly tax-financed public services to its citizens. The public authorities generally enjoy a very high level of public trust. This may be the reason for the acceptance of the personal registration system, which was adopted in 1968 and gradually developed to form the basis for all interactions
between citizens and public authorities. The personal registration system, which entails that all Danish citizens are identified by a unique numerical code, has been used to build up a large number of registers on Danish citizens pertaining, for example, to their health, education, tax payment, reception of social benefits, etc. While there are several legal and technical obstacles to synthesise and utilise information across these registers, they potentially provide a source for the exercise of extensive government monitoring and control.

It should be stressed that the digitalisation of the public services in Denmark builds upon the personal registration system in two ways. First, in a moral sense, the high level of public trust in government with regard to the information enabled through the personal registration system has been largely conferred from the old, paper-based system to the new digital systems. Together with the other Nordic countries and Switzerland, Denmark consistently ranks as one of the countries in the world with the highest level of public trust in government (OECD, 2013, pp. 25, 29). It seems obvious to assume that this high level of trust is conducive to the digitalisation of public services. Second, in a technical sense, the digitisation services all depend upon the personal registration system. No person can receive any public service without this unique identity number. This is crucial for the implementation of the eIDAS Reg. 2014, as non-Danish citizens by default do not have such a number. The personal registration number is only granted to citizens of other EU member states in case the specific person is actively seeking to make use of a service offered by a Danish public authority and that this authority finds the person entitled to use the service.

Since the late 2000s, many of the Danish public services have been made available to citizens online and Denmark scores consistently high on the European Commission’s digitalisation index (EU Commission, 2019). Starting with the introduction of the Digital Signature in 2001 over the Citizen Digital Portal in 2010 to the mandatory use of digital solutions for almost all communication between citizens and the public authorities in 2015, shifting digitisation strategies have made Denmark one of the world leaders in digitisation of public services. This development has in large part been driven by the Ministry of Finance. This institutional anchoring has two important implications for driving the digitalisation process. Firstly, the Ministry has seen digitisation as a crucial instrument for curbing expenditures in the delivery of public services. Thus, while the various digitisation projects have different specific
rationales, they are all expected and, in many cases, required to result in more cost-effective services. Thus, in order to get funding for digitalisation project accepted from the Ministry, the public organisation responsible for the project must convince the Ministry that it will reduce costs in the medium or long term. Secondly, since the early 1990s the Ministry of Finance has risen to become the most influential Danish ministry. Formally speaking, it has the right to veto applications from other ministries or regional and local government for funding that are not part of the annual budget. In practice, the Ministry is now involved not only in budget issues, but also in many of the major strategic decisions that formally reside under other ministries. While this interference often leads to frustration among the other ministries, there is a decisive sense that it is not possible to ignore the goals of the Ministry of Finance, including the quest for a comprehensive digitalisation of public services.

The concept of digitalisation as a tool to increase the efficiency of the public sector and the support of this tool by the Ministry of Finance are likely to have contributed to the overall success of digitalisation, though there are some striking exceptions, such as the digitisation of certain tax services. Today, virtually all exchanges of information between the public sector (both central and local government), citizens and companies are digitalised. Traditional paper or telephone communication between public authorities and civil society is only allowed under exceptional circumstances for people with disabilities or senior citizens with no ICT skills. Today, around 92 per cent of the population over 15 years old uses digital public services. Digitalised communication takes place via some 13,000 public services available online to Danish citizens. Most of these services are accessible via two general digital platforms administered by the Danish Agency for Digitisation, namely: NemID (for citizens, https://digst.dk/it-loesninger/nemid/) and NemLog-in (for companies, https://digst.dk/it-loesninger/nemlog-in). It is estimated that online services save the public sector 265 million Euros annually compared to traditional paper-based services (Kampmann, 2019).

In order to systematise and spur the drive towards digitalisation of the public sector, the Agency for Digitisation was established in 2011. This agency, which is placed under the jurisdiction of the Ministry of Finance, has 290 full-time employees that are assisted by a number of private consultants for the development and testing of new online services. In line with its Ministerial anchoring, the overall mission of the Digitisation Agency is ‘to digitalise the
public Denmark and contribute to the Ministry of Finance’s mission of strengthening growth and productivity and securing the efficiency of the public sector’ (Digitaliseringsstyrelsen, 2020). It is organised in 10 offices dealing with various aspects of digitalisation. The eIDAS 2014 Regulation and the on-going SDG 2018 Regulation are both handled by the International Team under the Office for Digital Services. On a subjective note, all our interviewees seemed to hold the opinion that the Digitalisation Agency was very knowledgeable about digitalisation and all seemed to accept that the overall rationale driving the Agency, i.e. increasing the cost-effectiveness of public services, was legitimate.

The large number of online public services poses a challenge for Denmark in the context of the EU’s attempt to make online services available to citizens across member states. As mentioned, a citizen must have a personal number to access any public service offered by Danish authorities. If all the citizens of the other EU member states should potentially have access to these services, it would entail that they all be equipped with a Danish central personal number. This is not realistic and therefore the Danish Agency for Digitisation, together with other EU member states, have argued that only the services that are most relevant to citizens from other member states should be made available online:

“The first thing we did when the regulation was adopted, was to make an interpretation in Denmark of what it would mean for the Danish digital self-services. The interpretation we made was of course in line with the regulation with regard to the demand for foreign IDs to be valid for relevant self-services”.

Public management interventions: leadership and institutional design and their effectiveness

The implementation process has evolved around three basic milestones: the enactment of the eIDAS Reg. 2014 in the Danish parliament, the development of the eIDAS gateway, and the integration of selected public online services to the gateway. These are examined below.

The enactment of the Regulation took place and implied negotiations between the Danish government, represented by an inter-ministerial group headed by the Agency for Digitisation, and the other member states. These negotiations took place in 2014. A key issue was the question of what services the Regulation should include (breadth) and whether these services
should actually be accessible to the citizens of other member states (depth). On the latter, it was clear early on that the Regulation should only pertain to verify the identity of the legal subject (person or company) not to ensure their actual use of the services. With regard to breadth, it was agreed between the member states that it is up to the individual member state to decide which of its services it regards as transboundary and therefore relevant to render accessible – at some point in time – to legal subjects from other member states.

As mentioned, the Danish contribution to these negotiations was conducted by an inter-ministerial group headed by the Agency for Digitisation. We have rather limited information from this early part of the implementation process, but it seems that all the ministries were invited and that a few of these actually participated actively, such as the Ministry of Health and the Ministry of Taxation. Once the position of the government was established, it was presented to parliament in the European Affairs Committee in October 2013 (EUA Committee, 2013). At the meeting, only one party, the left-wing Unity List, was against the proposal. Consequently, the government’s proposal was adopted. In an ensuing modification and specification of the proposal in 2016, all political parties supported the regulation (SIA Committee, 2016). In brief, the formulation of the eIDAS Reg. 2014 has not been an issue of politicisation in Denmark, but rather seen as a mostly technical topic.

As with its formulation, implementation of the eIDAS Reg. 2014 caused little if any political debate, but consensus was not assumed from the beginning of implementation. As stated above, the Regulation leaves it up to the member states to decide the scope of services to be included in the Regulation. The interviews with current and former employees of the Agency for Digitisation similarly stressed the wide space left open for interpreting which services would be included and what kind of technical solutions would meet the requirements of the Regulation. This openness could have led to debates or even conflicts in Denmark over which of the thousands of online public services should be made accessible to the citizens of other member states and which should not. Yet our clear impression from all the interviewees is that there was a widespread agreement to keep the number of services to be made accessible to other EU member states limited to instances where these presented a good business case (opportunity for efficiency gains), or where its necessity was obvious, i.e. services where there was already a clear demand from non-Danish EU citizens. A major reason for this consensus
was the recognition of the high administrative complications and the financial costs linked to making services accessible. As these costs would need to be covered by ministries already under strong fiscal pressure, this consensus is not very surprising.

The second major element in the implementation process, the design and the programming of the Gateway, was conducted almost wholly by the Agency for Digitisation itself with the proviso that part of the actual programming was to be contracted out to a private consultancy (NNIT). No other ministries were involved in the design. According to the interviews made by current and former employees in the Agency for Digitisation, the key technical requirements and design features were given by the EU Commission or, more precisely, by the Innovation and Networks Executive Agency, INEA. There was therefore really no reason to involve the other Danish ministerial agencies in this part of the implementation process. The ministerial agencies interested in making some of the online services available to citizens from other EU member states also had to develop a local gateway between their entrance portal and the Agency for Digitisation. Many ministries, including the Business Authority, had already developed such a gateway already by the end of 2015, though they did not really do much with the platform until the beginning of 2018, when it was further developed and tested to enable communication the other way as well, i.e. allowing users to access the seven services that the Business Authority had decided should be available other/non-Danish EU citizens.

While this second part of the process was a relatively simple technical operation that saw limited collaboration, it did require precise and intense communication. In the autumn 2017, the Agency for Digitisation opened a communication site on its homepage to communicate all new developments on the Gateway⁸. The site is open to the public and has currently 115 members, mostly managers and IT specialists from a wide range of ministerial agencies and a few private consultancies hired by the agencies. The site has seen quite intense activity in the period from November 2017 to October 2018, mainly in the form of news from the Agency for Digitisation and a limited number of questions from the other ministerial agencies. Yet, after this rather intense one-year period, there has been virtually no activity, indicating that the

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⁸ [https://www.digitaliser.dk/group/3003373](https://www.digitaliser.dk/group/3003373).
implementation of the Gateway was completed as required by the Regulation by September/October 2018.

Ad hoc institutional design

It is only with the third element, the integration of the gateway with some of the online public services offered by Danish public organisations, that collaboration became part of the implementation process. It is crucial to understand that because the eIDAS Gateway emanates from an EU regulation, not from the Danish parliament, the implementation of the Gateway needed to be fully financed - and therefore fully controlled - by the state under the Agency for Digitisation. The implementation of all EU regulations in Denmark can be similarly characterised by single actor control, while in contrast the development and implementation of almost all other digital public services in Denmark are jointly financed by the state, the regions and the municipalities. A particular institutional setup has been developed to aid this collaboration known as a “joint public steering group” (den fællesoffentlige styregruppe), in which various public actors negotiate over the purpose, scope and actual design of the digital services:

“It is a steering group where we have a chairman from [the Agency for Digitisation], and then there are some other actors from the state who work a lot with digitalisation. Especially from the Business Authority, the health sector, the employment sector etc. The regions and municipalities partake as well. Within this steering group, we agree on how the new [gateway] should look. What should it consist of? What should it cost? How do we implement it in the public sector?”.

The financial costs implied in the implementation of the eIDAS gateway have been covered by the Agency for Digitisation, the ministries with services to be included in the Gateway, and to some extent by EU funding (INEA). This financing structure, together with legal responsibility, made the typical Danish institutional structure of a joint public steering group unsuitable for implementing the eIDAS Reg. 2014. The implementation of the Gateway has been therefore controlled unilaterally by the Agency for Digitisation.
The absence of a joint public steering group meant that the institutional design of the implementation process had to be invented somewhat ad hoc by the Agency for Digitisation. The basic structure of the multilateral part of this collaboration process is illustrated in Figure 4 above. The multilateral meetings and the extensive bilateral communication between the Agency for Digitisation and the other interested government agencies were only loosely structured in order to meet the eIDAS Reg. 2014’s deadline for compliance (September 2018). Within this time frame, the process format above was decided by the Agency for Digitisation, who gradually adapted the format along the way in line with the changing level of participation and the needs of the participants. More precisely, the Agency for Digitisation started the collaborative process by sending out invitations to all the other ministries and ministerial agencies to inform them about the development of the Gateway and to urge them to participate in a working group on the scope and specific technical design. The invitation included the possibility to apply for EU funding from INEA, which sparked a widespread interest. In 2015 around 20 agencies informed the Agency for Digitisation that they had one or more specific services that they would like to render available to other EU citizens. Together with the Agency for Digitisation, around 20 applications were made to the EU for funding, the

**Figure 4: Structure of the multilateral part of the Danish eIDAS collaborative implementation process**

The basic structure of the multilateral part of this collaboration process is illustrated in Figure 4 above. The multilateral meetings and the extensive bilateral communication between the Agency for Digitisation and the other interested government agencies were only loosely structured in order to meet the eIDAS Reg. 2014’s deadline for compliance (September 2018). Within this time frame, the process format above was decided by the Agency for Digitisation, who gradually adapted the format along the way in line with the changing level of participation and the needs of the participants. More precisely, the Agency for Digitisation started the collaborative process by sending out invitations to all the other ministries and ministerial agencies to inform them about the development of the Gateway and to urge them to participate in a working group on the scope and specific technical design. The invitation included the possibility to apply for EU funding from INEA, which sparked a widespread interest. In 2015 around 20 agencies informed the Agency for Digitisation that they had one or more specific services that they would like to render available to other EU citizens. Together with the Agency for Digitisation, around 20 applications were made to the EU for funding, the
largest number of any EU member state. These applications were accepted by INEA by 2016, and the funding had to be spent between 2017 and 2018.

While the possibility for funding from the EU initially sparked an intensive interest in the Gateway and the implementation process, it turned out that only a few of the agencies were actually interested in making their services available, at least within the period eligible for EU funding:

"It was a long list, but many of them were some who, when I was project manager, suddenly did not want to be a part of the gateway, because their solutions were not relevant in a cross-boundary context, or because they had not really understood it properly, or did not see any great music in it".

Most of the 20 projects were never initiated and only the agencies responsible for the remaining services continued to participate in the joint working group, which was formed some time during 2016. There may be several reasons for this drop in interest, but it seems clear that some of the agencies changed their mind because they realised that it would take a lot more resources and time to make their services fully available to other EU citizens than they had realised. In particular, it may have been problematic that the EU funding only covered expenses for tasks contracted out to other actors, notably the making of the gateway. It did not cover the other administrative expenses which the ministerial agencies themselves had to undertake in order to actually make services available to citizens and companies from other EU member states.

Unilateral leadership with significant room for manoeuvre

The number of meetings in the joint working group (Figure 4) has been rather limited. We have not managed to get the exact number, but it seems to amount to a minimum of four and most likely no more than six meetings in total (Digitaliseringsstyrelsen, 2019a; 2019b). The limited number of meetings may be attributed to the decrease in interest from other ministerial agencies mentioned above, as there was little point in holding a very large number of multilateral meetings when only around four or five government agencies ultimately participated.
The call for and organisation of meetings were undertaken by the Agency for Digitisation. The call for the meetings was an open one, in the sense that invitations were sent by email to all government ministries inviting those who – in their own opinion – could benefit from participating. It was also the Agency for Digitisation who controlled the agenda for the meetings and their general proceeding, though it seems they managed to allow ample room to discuss a wide range of operational and even strategic issues. The fact that strategic issues were brought up in the working groups, which were supposed to deal only with operational (administrative and technical) issues, seems to have to do with the absence of a separate steering group for wider strategic decisions, see above. In fact, some of the participants later criticised the lack of a clear separation between these two sets of issues, as will be discussed more in the final section. The number and composition of participants varied somewhat at these meetings. In addition to the decision by several ministries to abstain from (or at least postpone) the integration of some of their services with the gateway, the number of participants at the meetings in the work group generally fell over time. Aside from the Agency for Digitisation, the most active participants were the Danish Business Authority (Erhvervsstyrelsen), the Danish Agency for Science and Higher Education (Styrelsen for Forskning og Uddannelse), and ATP/Udbetaling Denmark (responsible for the payment of public pensions and a wide range of other social benefits).

The activities in the joint working group have been complemented by a much larger number of bilateral dialogues between the Agency for Digitisation and each of the above-mentioned ministerial agencies, mostly regarding specific technical issues about the functioning of the Gateway. This bilateral communication, which took place through email and telephone exchanges, seems to have been conducted very professionally and satisfactory. Again, the Agency for Digitisation functioned as a hub for this bilateral communication. As far as we could discern, the only communication between the other government agencies (not the Agency for Digitisation) only took place at the multilateral meetings mentioned above.

To summarise, this somewhat ad hoc institutional design of the Gateway, which combined the Agency for Digitisation’s unilateral leadership of the integration with some online public services has led to mixed results. On the one hand, it was not very successful in setting up a very clear agenda and in delineating the scope of the eIDAS Reg 2014. The mix of strategic and
operational topics included in the multilateral meetings created confusion and uncertainty until rather late in the process. Another point, which may have more to do with legal clarification than design or leadership, is that participation dropped substantially once the other ministerial agencies realised that they were not actually required to make their digital services available to the citizens from other member states. On the other hand, the leadership can be nominally considered a success in the sense that the eIDAS Reg. 2014 was ultimately implemented. Moreover, those government agencies that did decide to make some of their services digitally available to citizens from other EU member states found that the collaboration with the Digitisation Agency was productive and useful, though they too pointed to some elements for better steering, see below.

Collaboration challenges and dynamics
Generally speaking, the implementation of the eIDAS Reg. 2014 in Denmark has not encountered any major challenges or conflicts. One reason for this has most likely to do with the externally mandated nature of the Gateway, which left not much room for domestic contestation. Another reason for the rather smooth process is likely to have to do with the perception that the Regulation was seen as a mainly technical project, rather than political or economic. While the preamble of the Regulation did point to the wider purpose of enabling cross-boundary access to public services, a hotly contested issue in Denmark, the Regulation really only required a procedure for identity verification, a requirement too small to warrant much opposition. Finally, and perhaps most importantly, the fact that the decision about which public services should actually be made available to the citizens of other EU member states was entirely decentralised and therefore most likely pleased political and administrative actors potentially concerned with the ideological implications (free market liberalism) and the economic costs for the Danish welfare state.

Different but compatible interests and unequal power relations
In spite of this general image of a smooth and orderly process, the collaboration which took place during the implementation was not wholly without challenges. First of all, the various ministerial agencies did not have identical interests and power. While all actors, at least by 2018, seemed to have agreed on providing minimum solutions to keep costs down, differences
in the very nature of the services delivered by the various ministerial agencies meant that they had somewhat different interests. Of course, as the organisation legally responsible for implementing the _eIDAS Reg. 2014_ in Denmark, the Agency for Digitisation had a strong interest in making all the other agencies come up with workable platforms for selecting services to be connected to the Gateway. Thus, a key concern for the Agency for Digitisation was/is obviously compliance. However, this turned out to be rather easy, as we found no trace of opposition among the other ministerial agencies against complying with the Regulation and the decisions made by the Agency for Digitisation. There are probably several reasons for this compliance and lack of dissent, and it is hard to pin down any one of these with certainty. Still, in our view, compliance was the result of the following factors: (1) a long Danish tradition of adhering to laws and regulations, whether given by the Danish parliament or by the EU, (2) the superior political power held by the Ministry of Finance, (3) the acknowledgement of the Agency for Digitisation’s technical expertise, and (4) the high degree of autonomy of the other agencies in selecting the services to be part of the gateway.

Apart from this difference in the interests and the power relations between the Agency for Digitisation and the other ministerial agencies, we also found different interests within the ministerial agencies themselves. In particular, ATP/Udbetaling Denmark differed from most of the other agencies by selecting a fairly large number of services to be made available to other EU member state citizens. ATP/Udbetaling Denmark was furthermore not satisfied with receiving advice from the Agency for Digitisation on how to design and provide a digital gateway. They instead insisted on discussing how many of their services could actually be made available and how such solutions could be evaluated:

”The Agency for Digitisation was very focused on the fact that the regulation should be met, which only states that you should verify yourself. We really wanted it to be useful, so there was a lot of dialogue about us being really focused on the linkage, that is, the thing that makes it possible to get the personal identifier into this system. This is also because all of our services are based on this, it is our services for private individuals”.

As ATP/Udbetaling Denmark is responsible for the payment of pensions and a number of other social benefits, they were obviously concerned with the identity verification of non-Danish citizens claiming such benefits. ATP thus tried to convince the Agency for Digitisation of the
need to expand the scope of the implementation process. In the end, it seems that the Agency for Digitisation found that the best way to accommodate this need was to engage in a series of bilateral meetings and communications with ATP rather than broadening the scope of the working group meetings.

In contrast to ATP’s approach, the Tax Agency decided rather early on in the process to adhere to a rather narrow interpretation. Even if the Tax Agency, like ATP, is offering a number of services that are of potential interest for citizens from other EU member states, it decided to build the gateway only and not to modify or develop any of their existing online services to make these available to citizens in other EU member states. One reason for this approach seems to revolve around the uncertainty related to identity verification of the non-Danish citizens trying to access Danish service such as taxation. Other interviewees mentioned this particular challenge too. In the specific case of the Tax Agency, it may be added that it has been and still is suffering from the failures of two large ICT systems and has been since 2017 split up into a number of new organisational units. This may very well have contributed to a low desire for engaging in building up new large digital services, in particular when it was not mandatory.

Finally, it may be worth mentioning the example of the Danish Agency for Science and Higher Education. At an early stage in the implementation process, it decided that one – and only one – of its services were relevant for the eIDAS Reg. 2014. This service is an online portal where young people can apply for admission in one or more Danish universities. As a large number of young people from other EU member states apply to Danish universities, the agency was certain that this service was a transboundary service falling within the scope of the Regulation. The agency also saw the Regulation as an opportunity to increase the efficiency of its services. Since the early 2000s, all Danes applying for admission at a Danish university have had to do so via the online portal and accordingly upload all documents relevant for the application in an electronic format. The agency hoped that the eIDAS Reg. 2014 would enable them to require that students from other EU member states follow the same procedure and thereby eliminate the handling of large loads of hardcopy documents. However, this has not been the

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9 www.optagelse.dk.
case. Even students from countries included in the Gateway, such as Germany, are not required to use the Gateway and therefore many still send paper applications. This disappointment notwithstanding, the Danish Agency for Science and Higher Education participated actively in the working group meetings in order to learn about the reflections other agencies had on selecting services and, not least, to ensure that their gateway would function properly. In brief, while we find similar interests among all the agencies with regard to the overall objective of complying with the regulation, avoiding creating unnecessary new administrative burdens, and using it as an opportunity to further increase the efficiency of the public services, there were important differences at a more concrete level. The fact that the Agency for Digitisation clearly was/is in a superior power position vis-à-vis the other ministerial agencies obviously allowed it to structure the implementation process and go for a rather minimalist mode of collaboration focusing above all on coordination and extensive communication.

Limited risks

Most interviewees found the issue of risk was hard to relate to. Either they were not sure what the issue involved in the present context, or, if they did, they found that there were few if any risks involved in the collaboration. The two former employees of the Agency for Digitisation did point to a fundamental risk related to the technical design of the Gateway. They explained that they were wary of a technical solution that would double the existing general online access platform for Danish citizens and companies (NemID) and have a separate entrance for non-Danish EU citizens. Such a double solution may have been technically viable but would have been very costly if it were meant to provide the citizens of other member states actual access to all the services available to Danish citizens via the Danish NemID portal. A more indirect form of risk for the ministerial agencies during the implementation process had to do with the uncertainties linked to the actual costs implied by making one or more of their services available to the citizens from other EU member states. As mentioned above, it was possible to have parts of these costs covered by INEA. However, at the time of application for this funding, it seemed that many of the ministerial agencies had no clear idea about the precise magnitude of the total costs. This risk was handled in the first instance by simply making an estimate and applying for INEA funding. In the second instance, many found that
the administrative and technical requirements were of such a magnitude that they decided to reduce the number of services to be available via the new gateway.

**Complexity and uncertainty about regulatory scope**

The example of the rejection of the double entry solution to the Danish online public services points to the wider issue of complexity. The substantial complexity and costs implied by granting non-Danish citizens and companies access to the Danish online services also impinged on the collaborative relations between the ministerial agencies involved in the implementation process. Save for the Agency for Digitisation, all the ministerial agencies interviewed expressed that they initially strongly doubted the scope of the *eIDAS Reg. 2014* and the implications the Regulation would have for the gateway they would have to establish. In particular, they were in doubt about to what extent citizens from other states should actually be able to use the Danish services, and they were in doubt about who and how the issue of identification should be handled. Though the Agency for Digitisation around 2015 had a quite clear position on these issues and communicated rather extensively with the other ministerial agencies, this uncertainty influenced the early phase of the collaboration. In this early phase, it seems that the collaboration was more about securing clear one-way communication from the Agency for Digitisation to the other ministerial agencies than about exchanging ideas and experiences. Only later in the process, during 2017 and 2018, when the meetings in the working group were taking place, did the ministerial agencies start exchanging their reflections with each other about which services to include (and which to exclude) and how to build the local gateways to the Agency for Digitisation. Yet even at this later stage, such mutual exchange of reflections and experiences remained rather limited. While some of the interviewed agencies praised the idea of exchanging reflections and experiences, the low number of meetings and – not least – the low number of participants at the meetings limited such opportunities (Digitaliseringsstyrelsen, 2019b).

**Limited innovation**

When asked whether the implementation of the *eIDAS Reg. 2014* spurred any innovation of existing online services offered by the ministerial agencies, the interviewees essentially responded either none or very little. The representatives from Business Authority explained
that they had translated the guides for some of their services into several other European languages, but had retained the original functionality of their services: “*We have made more small translations and stuff like that to other languages than we are used to, but no new functionalities. It is only things related to user-friendliness*”.

Similarly, ATP/Udbetaling Denmark, the organisation that decided to provide a gateway to quite a large number of its services, did not alter anything in the basic functionality of their services, though they did develop parts of the user interface for some of these services to make them easier to understand for citizens from other member states. It seems that the other government agencies interviewed had not changed anything.

**Reflections on lessons learned and conclusion**

The *eIDAS Reg. 2014* is a case of effective implementation, but with rather limited collaboration. The emphasis has rather been on coordination and, in particular, on extensive communication between the Agency for Digitisation, which acted as the lead agency of the process, and the other ministerial agencies involved in the process. Thus, the collaborative process was a success in the sense that it accomplished its key objective, namely securing compliance with the *eIDAS Reg. 2014* by September 2018. Yet if we gauge the collaboration in terms of its intensity, scope, and innovative effects, it was not very successful. With regard to intensity and scope, the collaboration suffered somewhat from an absence of a group dealing specifically with strategies and wider managerial issues, from a limited number of meetings in the working group, and the rather few active participants in the latter group. The key reason for the rather limited element of collaboration seems to have to do with the concrete regulatory nature of the *eIDAS Reg. 2014*. As explained above, the Regulation allows for a very limited interpretation, which only obliges member states to provide a digital gateway for citizens and companies of other EU member states to access, but not actually use, online services. Moreover, it is entirely up to the responsible public agencies to decide which services, if any, should be made accessible. In brief, the Danish Agency for Digitisation and to some extent several other ministerial agencies found quite understandably that the Regulation called neither for comprehensive collaboration nor for substantive innovations.
Nevertheless, the implementation did involve a certain level of collaboration, a good bit of coordination, and extensive communication. While the coordination and communication went well, the implementation process could have benefited from a clearer framework for the collaboration. Firstly, the absence of a forum for strategic and wider managerial issues meant that these issues were mostly dealt with by the Agency for Digitisation. Nevertheless, discussions of these type occasionally spilled over into the working group. While it may have been an overkill to establish a separate strategic group exclusively for the implementation of the eIDAS Reg. 2014, the Agency for Digitisation could have been clearer about when and where strategic issues were to be taken up. One of the key strategic issues had to do with the wider ambition of the EU in this area, namely, to allow citizens and companies across the EU to access and actually use online public services across member states. This is expressed in the new SDG Reg. 2018, which will come into force in 2023. Secondly, for the more operational issues discussed in the working group, the process would have benefited from a clearer position on the actual requirements of the eIDAS Reg. 2014 earlier on. Considering the large administrative obstacles and financial costs involved in making available all services potentially relevant for citizens from other member states, the Agency for Digitisation could have been expected to have legitimately communicated the actual, rather limited requirements of the Regulation more clearly and earlier on in the process. Thirdly, for the few agencies that did see a positive business case of making a wide range of their services accessible, notably the ATP/Udbetaling Denmark, the working group did not really provide a very fruitful forum for exchange of experiences because most of the other agencies simply did not have similar interests. This being considered, the Agency for Digitisation reportedly did respond very actively to those who did show such an interest in making several services available by engaging in extensive bilateral communication.

These three lessons have been largely reflected in an internal evaluation workshop for the ministerial agencies involved in the integration project which was conducted by the Agency for Digitisation in June 2019. The aim of the workshop was to evaluate the implementation process in general and the dialogue between the partners in particular (Digitaliseringsstyrelsen, 2019b). While all the participants praised the Agency for Digitisation for its communication on the Regulation and the ensuing design of the Gateway, they did have
some more or less critical suggestions for how to improve the dialogue and collaboration in future ICT projects spurred by EU Regulations. These suggestions are therefore likely relevant for the SDG Reg. 2018 (see above). The workshop raised the following five suggestions:

1. Clearer purpose and agenda for the initial meetings in order to reduce the risk of unproductivity,
2. An early, more business-oriented approach with a clearly defined scope and communication about the major technical challenges,
3. A clearer distinction between strategic issues and operational dialogue in the steering group and working groups respectively,
4. Descriptions of the boundaries provided as early as possible in the process between the working groups and between the role of the Agency for Digitisation vis-à-vis the other agencies, and
5. Clearly defined critical milestones and establishment of the working groups with a focus on administrative and technical pitfalls.

Some of the points raised by the participants are quite similar to the three points listed above. However, they also point, somewhat paradoxically, to the need for more direct steering of the process by the Agency for Digitisation, something that could reduce the space for negotiation and collaboration. Perhaps there is no paradox here and the critical suggestions simply reflect that the participants are avid to avoid wasting time discussing issues that may turn out not to be up for negotiation after all. Point 3 may support this interpretation as it suggests that the ministerial agencies would have liked to be provided clear strategic visions and goals, which would have clarified the room available for deciding on solutions adaptable to local needs, i.e. the needs of the individual public service providers. Yet, as stressed above, several of the organisations interviewed, including the Agency for Digitisation, pointed out that the absence of a steering group dealing with strategic issues had created only confusion and added that it would have made sense to have had such a group, even if its scope of decision-making would have been somewhat limited.
2.1.4 Germany: The Online Access Act (OAA)

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“Get out of the silos and into the pleasure”¹⁰
(„Heraus aus den Silos, hinein ins Vergnügen“)

Case introduction

The following case study examines the set up and collaboration dynamics and challenges of what has been described by the Ministry of Interior project coordinator as “the largest collaboration effort of German government over the last 20 years.”¹¹ Despite a large number of government initiatives, programs and laws, there has been increasing dissatisfaction both among policy makers and in administration with the slow progress of government digitalisation over the last decade which has led to the enactment of an Online Access Act (OAA) (Onlinezugangsgesetz¹²). Initiated by federal government¹³, the OAA was approved in August 2017 by both the German Bundestag and the German Bundesrat¹⁴. It obliges federal, state, and local governments to offer all their public services online (digital first) and to connect their portals in order to establish a joint portal or gateway (Portalverbund) before the year 2022. The joint portal is required to include user accounts (Nutzerkonten) to ensure citizens and enterprises a unified authentication and communication channel to all government providers of online services. The act also requires states providing certain services to comply with IT components and standards set by the federal government. In return, the states receive additional funding for the necessary investments at state and local government levels. As this constitutes a major intervention in the federal system, it had to be accompanied with a constitutional reform of Art. 91c GG (enacted July 2017) to establish the

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¹⁰ Quote from the leading coordinator of the OAA (Ernst Bürger, German Ministry of the Interior, Building and Community) during an event at the Hertie School on government digitalisation (28.11.2019).
¹¹ Tagesspiegel Background Digitalisierung and KI, 04.03.2020.
¹² Gesetz zur Verbesserung des Onlinezugangs zu Verwaltungsleistungen (BGBl. I S. 3122, 3138)
¹³ More specifically, by the Ministry of Interior which is responsible for public administration reform and e-Government.
¹⁴ The legislative body representing the 16 federal states at the national level.
implementation of OAA as joint federal and state task (Gemeinschaftsaufgabe) (Martini and Wiesner, 2019, p. 7).

The OAA is seen as an essential step to implementing the EU Single Digital Gateway (SDG) regulation\(^{15}\), which aims to ensure that any public service currently available online for domestic users must also be accessible to users from all other EU member states. Specifically, it requires all EU member states to offer at least 21 key administrative procedures fully online in a safe, central and user-centric national platform. According to the IT Planning Council (IT-PC; \textit{IT Planungsrat}), the joint federal and state level political coordination body for all IT-related issues, there are strong synergies between SDG and OAA, and the implementation of OAA will enable Germany to fulfil the SDG requirements.\(^{16}\)

The OAA over the last year has become the centrepiece of government digitalisation efforts in Germany and has attracted a large amount of resources and political attention. The scope of the OAA is unique and poses a huge implementation challenge for German public administration. About 575 public service areas for citizens and enterprises need to be digitalised consisting of about 5800 different services and an even higher number of underlying procedures (Stocksmeier and Hunnius, 2018). Furthermore, this digitalisation has to be implemented at all three government levels, including the federal government with 14 ministries, 16 state governments and 11,054 local governments, all of which have a strong degree of autonomy. From the beginning, the CIO of the federal government emphasised that the OAA goals could be only achieved „if federal government, the states and local governments will collaborate“ (Stocksmeier and Hunnius, 2018 p.9). The necessary tasks to fulfil the OAA requirements are extensive and include the following four dimensions (BMI 2018): backend procedures within administration, frontend online services, portal-architecture and a wide range of necessary cross functionalities, such as identification, various registers and documents. OAA implementation is to be financed proportionately by the federal government and the states. The federal government has allocated 500 million EUR for the coming four years. Combined with the remaining 75 percent of the costs provided by the


states, the overall OAA amounts to two billion EUR plus an annual budget of 180 million EUR for the IT-PC.

The key mechanism for implementing the OAA is a digitalisation programme ("Digitalisierungsprogramm") pursued by the IT-PC in cooperation with the BMI. This programme follows two major lines of action: (1) the joint portal and (2) the digitalisation of services for citizens and enterprises, whereby the latter has attracted much higher attention and resources. A first so-called “initial digitalisation program” which ran from March 2017 till December 2018 focused on nine priorities (Anliegen) for citizens and enterprises. Respective work groups bringing together both federal and state government representatives analysed all relevant administrative services and developed the first digitalisation solutions. The most important result of this first phase was the development of an implementation catalogue (Stocksmeier and Hunnius, 2018), which defined the 575 services to be digitalised and clustered them into 35 live events and 17 business situations and later assigned them to 14 overarching thematic fields (Themenfelder) (for example "Family and Child" or "Corporate Management and Development"). As a rather new approach, the OAA implementation catalogue was not based on existing responsibilities, but on a user perspective, and was approved by the IT-PC in 2018.

Two further digitalisations programs were launched in mid-2018 which will run until 2022. The first is a "Federal Government Digitalisation Program" ("Digitalisierungsprogramm des Bundes"), covering all 115 services with regulatory and enforcement competence at the federal government level and under the leadership of the Ministry of Interior, Building and Community (BMI). All other services are included in the "Federal Digitalisation Program" ("Digitalisierungsprogramm Föderal") which brings together 370 services with federal government regulatory competence but enforcement competence at state/local government level and 90 services with regulatory and enforcement competence at the state or local government level) The coordination of this programme lies in the responsibility of both the BMI and FITKO (Föderale IT-Kooperation), a joint federal and state government IT agency, as the operative arm of the IT-PC. This second program, along with the efforts to establish a joint portal, constitutes a major vertical collaboration effort across all government levels in Germany and will be the focus of our analysis.
The collaboration within this programme was organised in a unique way for the German government context (Hustedt and Trein 2020, p.7). Following a “one for all principle” (Vitt 2019, p. 159), each thematic field has been assigned the joint responsibility of the federal ministry and at least one federal state who are both given the leadership (Federführung) for digitalising all public services within this field and then providing the results to all other governments. For the development of these digital services, the BMI organised a series of “digital labs” (Digitalisierungslabore). These digital labs followed the principles of user orientation and interdisciplinarity and brought together experts from administration, designers, and users to develop ideas, prototypes, and implementation concepts.

The complexity and scope of the OAA collaboration architecture is well illustrated in Figure 5, which outlines the structures and lead actors for the digital transformation of public services in Germany. This diagram originates from a report published by the National Regulatory Control Council (Normenkontrollrat, NKR) in September 2019 with the heading “Will it work?” (NKR, 2019a, p. 61).

The two most relevant actors in this complex collaboration arrangement are the IT-PC and the Ministry of Interior, Building and Community (BMI), which are formally responsible for coordinating public administration reform and digitalisation at the federal government level. The IT-PC is based on a state treaty on IT17 and since its establishment in 2010 is the central body responsible for national IT collaboration. The chair of the IT-PC annually rotates between federal and state governments, with the states being represented in alphabetical order. Its members are the federal government CIO and one representative from each state. The positions must be held by politically appointed representatives, and for the states these are mostly the state secretaries18 responsible for IT. In addition, the Federal Commissioner for Data Protection and Freedom of Information and three representatives of local government sent by the local authorities’ national associations may attend the council meetings in an advisory capacity.

17 See also the next chapter.
18 A civil service function second only to the Minister of a state or federal ministry.
Figure 5: Collaboration architecture for the implementation of the German OAA (source: NKR, 2019, p. 61).
The council tends to meet 3 times a year and the results of its meetings are made public. The IT-PC consists of permanent structures such as an office composed of staff posted from federal and state governments or an office for IT Standards and temporary cooperation groups focused on specific issues. The IT-PC is characterised by a very decentralised structure and has been criticised for its lack of power and capacity (Schardt, 2017). An important step towards strengthening the IT-PC has been the establishment of FITKO (federal IT collaboration; Föderale IT Kooperation) as its own operative arm. Following a more than two-year preparation process, FITKO was established in January 2020 as a public agency in joint custody of all states and federal government. With a target size of 44 staff (most of them not yet hired) and a budget of 180 million EUR it is expected to play a key role in implementing the OAA. By the end of 2021, all current structures of the IT-PC will be transferred to FITKO. The most relevant body within FITKO and IT-PC is a director general round table (Abteilungsleiterrunde) composed of all heads of IT from the federal and state levels. It functions as a pre-decision body and steering council for all IT-PC projects.

The BMI is the second key actor for implementing the OAA. At both the federal and state levels the competence for public administration reform and digitalisation in Germany is traditionally allocated to the Ministry of Interior. At the federal level, the BMI is responsible for government digitalisation, which relates to all OAA activities as well as a wide range of other projects such as IT consolidation or the digitalisation of internal processes (eAkte). The BMI’s competencies in the field of digitalisation have been substantially extended under the current government which went along with an increase of staff and budget. However, due to a strong commitment to departmental autonomy (Kabinettsprinzip and Ressortprinzip), the BMI’s competence towards other ministries is rather limited and it lacks directive power. IT is a very decentralised field with all ministries having their own IT departments and budgets. Since 2007 the digitalisation activities of the Ministry of Interior have been headed by a federal government CIO in the position of a State Secretary directly under the Minister and 9 other state secretaries. All digitalisation activities of the Ministry are organised in two Directorate

https://www.it-planungsrat.de/SharedDocs/Downloads/DE/Entscheidungen/17_Sitzung/14_FITKO_Konzept.pdf%3F__blob%3DpublicationFile%26v%3D2.
Generals which are subordinate to the CIO. The Directorate General DG “Digital Society; Digitisation in Public Administration and Information Technology” is responsible for implementing the OAA. Out of 11 units in this Directorate General, five units with a staff of about 75 are working on tasks related to the OAA. One of the heads of these units is also the director of the office of the IT-PC.

The Federal Chancellery is a rather new actor in the field of digitalisation. In 2018 the incoming government established a new Division (Abteilung) known as “Political Planning, Innovation and Digital Policy, Strategic IT Planning” within the Federal Chancellery to strengthen its coordination capacity especially in the area of digitalisation. Moreover, a new state Minister for Digitalisation was appointed, and a Digital Advisory Council established. Its activities are focused on coordinating and driving digitalisation within federal government. The Federal Chancellery is not involved in the operative implementation of the OAA but rather monitors and supports the OAA activities in the case that higher level interventions are needed.

The following analysis focuses on the OAA implementation components which require vertical collaboration between all government levels (i.e. the federal digitalisation programme and the joint portal initiative) and is based on both a review of government sources, documents and grey literature, media coverage and academic papers on the OAA, which provided useful information to analyse the starting conditions, the system context behind the collaboration and the formal collaboration arrangements. The case study also integrates findings from an annual government-wide survey (Zukunftspanel Staat and Verwaltung) which was conducted in 2015-2019 by the Hertie School among administrative heads from all government levels. These surveys with about 210-350 responses were conducted as part of an annual digital government conference under the patronage of the BMI. Moreover, six semi-structured interviews were carried out between February 2020 and April 2020 and lasted 30-70 minutes each. Interviewees were representatives from the two leading OAA authorities (BMI and IT-PC) as well as government representatives from state and local government level and a consultant involved in the implementation of the OAA. The interviews were used to better understand the implementation challenges, dynamics and outcomes achieved so far and to

20 https://www.zukunftskongress.info/de/zukunftspanel.
gain insights as to how to manage and lead such a complex collaboration endeavour in order to improve digital services for citizens and enterprises. The interviews were all recorded and transcribed in full, then analysed and coded by keywords and themes. For a complete list of interviewees, see Annex 1.

**System context and starting conditions**

Germany is a federal parliamentary republic based on a three-tier system which includes: the federal government, 16 states (*Länder*) and a local government level consisting of 295 districts (*Kreisverwaltungen*) and 11,091 municipalities (*Kommunen/Gemeinden*). The highly decentralised federal system delegates most functions to the state (*Länder*) and local government level. This autonomy is strongly protected by the constitution and makes centrally imposed administrative reform practically impossible. A strong involvement of the states in federal legislation forces the different layers of government to cooperate (‘interlocking of responsibilities’) and results in a rather high need for consensus in the German government system. Coordination in the German government system is notoriously challenging (Hustedt and Trein, 2020) and has been characterised by Scharpf (1985) as “negative coordination” and “political blockades.” These coordination challenges are a result of the sharing of power between multiple actors, a distinctive legalistic *Rechtsstaat* tradition with a very strong degree of legal conditionality, and a rather traditional, career-based and closed civil service system. These various institutional factors limit the German government’s ability to innovate and reform (Hammerschmid and Oprisor, 2016, p. 63). The federal system is key for the success of any public administration reform in Germany, as it places high demands on the collaboration skills of the parties involved, but also can provide flexible solutions according to local conditions (Hustedt et al., 2019).

Executive leadership is also more fragmented and weaker than in many other European countries due to the government being structured along a cabinet principle (*Kabinettsprinzip*) and the principle of departmental autonomy (*Ressortprinzip*), as laid down under article 65 Basic Law. Although at the federal government level the BMI has the formal competence for designing and implementing administrative reform, has rather limited leeway and cannot interfere with the jurisdiction of other departments to foster more fundamental and
innovative reform projects. Administrative reform progress also suffers substantially from the fact that it is always in the shadow of politically more salient topics such as internal security, the fight against terrorism, or most recently the COVID-19 pandemic. As a consequence, the general pattern of German administrative reform can be described as a trajectory of incremental changes within the boundaries of the established institutional framework. Establishing an effective overall innovation strategy and approach for the entire country has thus proved extremely difficult and this especially holds true for the “digitalisation of public services, which poses substantial demands for the coordination capacity of both politics and administration at federal, state and local government level” (Hustedt and Trein, 2020, p.2).

Over the last decade, federal public administration reform efforts – and similarly those at the state level – have showed a significant shift towards an increasing focus on digitalisation as the now overriding public administration reform theme (Hammerschmid and Raffer, 2018). As early as 2000, the German Chancellor launched an initiative ‘Deutschland-online’ to foster collaboration among government levels and to provide federal administrative procedures online. This led to a joint federal-state-local government strategy which was signed in 2003 and updated in 2006 and 2010. This was the start of a large number of strategies, programs and laws to foster e-government and digitalisation. A BundOnline 2005 initiative launched by the Ministry of Interior had the aim to digitalise all relevant federal administrative procedures and services by 2005 (Stocksmeier and Hunnius, 2018, p.1). This was followed by various other programs, laws and initiatives but also led to structural changes, such the appointment of the first federal government CIO (Beauftragter für Informationstechnik) located in the BMI to coordinate e-government activities. A major step to address the coordination challenges within the federal system was an addition to the German Constitution (Article 91c) in 2006 as part of a larger federalism II reform which allowed IT collaboration between the federal and state governments. The IT-PC was set up in 2010 as a result of this constitutional change to allow the federal government and the states to collaborate in the IT field, and especially to develop common e-government standards and drive digitalisation of public services. A first major step of the IT-PC has been the development of Germany’s first e-Government strategy. Though the strategy stays rather vague and general in its direction, it serves as a strategic
foundation of a variety of joint IT-projects and facilitates joint e-government activities across all government levels.

A first joint federal and state level e-Government strategy from 2010 expressed the goal to make Germany a forerunner in e-government. Despite such high ambitions, progress was rather low. A report commissioned by the NKR and published in 2015 came to a rather harsh conclusion that in Germany, “e-government in form of interoperable, fully digitalised offers for administrative transactions and interactions de facto does not exist” (IT Kompetenzzentrum, 2015, p.5). In the same year, the European Commission (2015, p. 72) in its European Semester Country report on Germany criticised that “the availability of online public services remains below the EU average and falls short of business needs.” In international digital public service rankings such as the European Commission’s “Digital Economy and Society Index”, Germany continues to rank poorly with regard to digital public services. In the most recent ranking published in 2019, Germany has fallen from 19th to 24th place, indicating that the gap between Germany and the average of the European countries is growing (NKR, 2019a, p.56).

The Zukunftspanel 2017, based on a survey of administrative heads at all government levels sheds light on the reasons for the slow progress. Respondents described a lack of inter-governmental collaboration, a shortage of funding, as well as a general scepticism towards innovation. These factors compounded with insufficient steering within the government system have represented the key barriers to digitalisation. Most states and local governments have their own IT structures and solutions and rarely coordinate or cooperate between themselves. The survey data indicate that local governments particularly suffer from the heterogeneity of IT structures and initiatives. The NKR also argues that “Germany is plagued by significant structural shortcomings regarding the digitalisation of the country’s public administration which have accumulated over a number of years” (NKR, 2019b, p.56).

More recently this slow progress with regard to government digitalisation has gained political attention and led to a general acceleration of government digitalisation activity. The OAA has become the centrepiece of this development. It came as result of a political compromise to provide an additional budget of 9.4 billion EUR to the states under the pretext to strengthen
the federal government’s competencies in the area of tax and digitalisation. The law itself was enacted under rather high time pressure and was described by interview partners as “precipitate labour” which took “many states by surprise” and lead to a high scepticism among the states in the early implementation phase. According to one of the interview partners, the OAA does not constitute enforceable law but is more a self-commitment which especially “requires the states to collaborate in order to progress digitalisation.”

The most recent Coalition Agreement (Merkel Cabinet IV) includes a clear commitment to the OAA by calling for a “digital citizen portal for citizens and enterprises which makes all public services accessible online” (CDU/CSU/SPD, 2018, p. 12). It has additionally initiated several structural changes to strengthen coordination and the centralised government steering of digitalisation. In 2018 a new division (Abteilung) for “Political Planning, Innovation and Digital Policy, Strategic IT Planning” was established in the Federal Chancellery, a new State Minister for Digitalisation was appointed in the Federal Chancellery and a Digital Advisory Council was established. Existing digitalisation agencies such as the federal IT Centre (ITZ Bund) and the IT agency FITKO as the operative arm of the IT-PC were strengthened, and federal government is also working on the establishment of a new eGovernment Agency. These processes of building up new coordination and implementation capacities in the area of digitalisation are however often hampered by rather slow processes of hiring/staffing these new bodies with many positions still remaining vacant.

**Collaboration challenges and dynamics**

In this section, we will analyse the dynamics and the associated challenges that have arisen throughout implementing the OAA. We are especially interested in how the factors of complexity, power imbalances and risk shaped the dynamics in the collaboration (Ansell and Gash, 2008; Crosby and Bryson, 2010; Klijn and Koppenjan, 2014; Osborne and Brown, 2011). The words used to describe the OAA and the developments it triggered have included “unique”, “milestone” and “turning point”, with a strong emphasis on how its collaboration has acted as the key to government digitalisation in Germany. According to one interview

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21 The ITZ Bund was newly established in 2016 based on the merger of two already existing federal government IT providers.
partner, although the choice of using “just do it” as the motto for the OAA was “very untypical for Germany”, it was an effective approach to mobilise. Unlike other laws which the OAA did not foresee, a clear responsibility was built on the principle “everybody supports everybody and nobody will do it himself.” This, however, had the consequence that, especially in the early phases, nobody felt responsible and “everybody pointed always to the other.” According to one interview partner, it was necessary “to bring the OAA into their heads. OAA belongs to all of us instead of somebody else.”

The initial implementation phase was also characterised by a rather high scepticism among the states, as the OAA had been pushed by the federal government and its accelerated legislation had not allowed the states much involvement and preparation. At the same time, the BMI as the main driver of the OAA was aware of the need for collaboration. According to the project coordinator, it was clearly a need „to approach this enormous task together based on a division of labour at all government levels. We need a comprehensive structure focused on collaboration.“22 The federal government CIO also pointed to strong collaboration between all government levels as the key to a successful implementation of the OAA (Vitt, 2019). One of the interview partners described how in his “experience of 20 years as a federal-junkie” he has seen that force does not work and that “the people will not collaborate if they do not see an advantage. It however “took time to build up the trust” among the various actors and especially among the various states. According to several interview partners, an important factor hindering collaboration is the very heterogenous IT systems at state and local government level. Argumentation was often dominated by a state-specific perspective, making it „difficult to reach a joint commitment.“ This was especially the case with regard to the development of the joint portal, which some interview partners described as the „biggest conflict field“ during the OAA implementation. Whereas federal government favoured a unified portal, the states pushed for a more decentralised solution which allowed them to keep their existing portals.

The OAA required a clear shift away from a rather well established system of negative coordination, which according to Scharpf (1973) is characterised by waiting for an initiative,

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testing it for possible negative consequences only on one’s own organisation and only agreeing if it does not impact one’s own interests and status quo. The difficulty to move towards positive coordination focused on improvements and results was clearly visible in the IT-PC. According to our interviews “self-interests of single states or federal government are often dominating” and the OAA is “not yet seen as a collaborative endeavour.” “Certain topics such as joint portal or service accounts are endlessly discussed and mutually blocked” as states want to assert their own interests. The principle of consensus practiced in the IT-PC in such situations led to „rotten compromises.” The NKR (2019b, p.10) similarly criticised that “traditional reflexes and defensive attitudes can be frequently observed, cost time and are annoying.”

**Complexity**

Complexity was unanimously named as most relevant challenge for implementing the OAA. The chosen approach was, from an international perspective, a „unique procedure, not found in any other country in such a systematic way” (Mergel, 2019, p. 163). This is mostly surrounding the politics regarding the government draft for the OAA which referred to “all essential services” and was later edited in its final version to refer to “all services”.

The interview partners referred to the OAA as a “mammoth task” and “marathon” which not only encompasses the entire German public administration but also all policy fields and the establishment of new digital infrastructure and architecture. A NKR report (NKR, 2019b, p.57) argued that the 460 state and local government services would result in about 180,000 implementation projects. When considering the remaining three-year timeframe, this amounts to about 60,000 implementations per year. Whereas the complexity of the digitalisation programme resulted from the sheer number of services at the different levels the interview partners also saw a very high complexity with regard to the technical infrastructure and especially the joint portal. This is seen as less a technical complexity but more of “a political complexity” due to the heterogeneity of already existing functionalities among many actors.

There was a rather high consensus about the best way to address this complexity. According to interviewees, it requires determined action, a combination of central steering and
preparation but decentral implementation and, most importantly, a strategy of prioritisation and consequent distribution of work. Especially the logic of thematic fields aimed to ensure “manageable packages to be spread on many shoulders”. This however created the need for structures which could bring together all stakeholders and establish steering and monitoring mechanisms to ensure oversight and duplication of work. According to one interview partner, communication and transparency are crucial to make the involved “people animate the principle of division of labour and start to lean on other”. Another mechanism to cope with complexity and related conflicts is to defer certain projects, as was done with the joint portal or some less relevant public services.

**Power imbalances**

Power imbalances among the various actors are also considered clear challenges for collaboration. The interview partners indicated three different sources of power imbalance. The first relates to a rather strong role of the BMI in the collaboration due to its leadership role at the federal level, a substantial budget and support from consultants. According to interview partners, this had a clear effect on the implementation dynamics, and often lead to a certain mobilising dynamic among the states towards positions and ideas supported by the BMI. However, this changed over time. Whereas in an earlier phase it led to a certain anxiety among other actors of “going to the dogs”, the BMI was increasingly perceived as helpful in times of increased pressure, and the states became more and more likely to take advantage of this support.

A second aspect is the high heterogeneity among the states related to size, budgetary power, digitalisation progress and operative capacity in the form of own IT providers. The three largest and most powerful states of Baden-Württemberg, Nordrhein-Westfalen and Bavaria were especially less open for collaboration in the earlier implementation phase (NKR 2018). Other states with less power and resources showed a much higher inclination towards collaboration due to concerns that they would not be able to achieve the OAA requirements on their own. The overall dynamic very much profited once these states became more willing to collaborate and began taking first lead of thematic fields.
And finally, a clear power imbalance did exist on the local government level. The constitution only outlines the federal and state levels of governance, with the states assigned the responsibility to represent the local government level. Consequently, the OAA only addresses federal and state governments, which caused significant debates regarding if the OAA was legally binding for local governments. The clearly weaker position of local government level is also mirrored in the set-up of the IT-PC, in which they are afforded only an advisory role. The NKR (2018, p.4) has also criticised that the specific role and influence of local government level is not yet fully clarified and that an originally announced “digitalisation convenant” among all three government levels had never been implemented. This clearly poses a barrier to successful implementation, as a large share of public services is provided at the local level. According to a survey published in September 2019 many municipalities face clear implementation problems and 42% see only a small relevance of OAA for their services. One interview partner also argued that despite a very high heterogeneity, the overall local government perspective is more similar to the federal perspective than the state perspective. Whereas states often have a sense of self-awareness which allows them to act independently, most local governments are more grateful for central coordination and support.

According to several interview partners, these power imbalances posed a substantial communicative challenge and were rather time consuming. They referred to “a kind of shuttle diplomacy” where it was crucial to understand the – often hidden – concerns of all major actors and bring them together, sometimes also with the help of additional actors such as the Federal Chancellery. However, these interests and power imbalances can also be used as basis for alliances. One interview partner emphasised the need to first understand these interest constellations which is time-consuming but necessary to develop sustainable solutions. It was also noted that sometimes it is “necessary to try to organise majorities in the background and ask what they want in return”.

**Risks and other implementation challenges**

Engaging in collaborative networks also poses risks for public actors seeking to protect the turf of their organisation and reputation risks posed by collaborative arrangements in which they have limited control over outcomes (Brown and Osborne, 2013). Such risks, according to the
interview partners, do exist but are clearly less prevalent than the previous challenges related to complexity. The interview partners referred especially to “commitment risks” with regard to their digitalisation efforts. The rather hesitant commitment of states towards collaboration was caused by the “risk of sunk investment and the fear of having to stop already developed solutions or pet projects.”

The high insecurity with regard to the re-use of solutions developed in the various thematic fields became a major source of discussions and conflict. This often addressed the “re-use issue”, or in other words how to ensure that solutions developed by one actor could be taken up by other states and local governments. As this has major financial implications, it is crucial for the success of the OAA to develop an institutionalised solution which as of late 2019 did not yet exist. The NKR (2019a, p.57) also notices that a federal eGovernment architecture that supports the reusability and combinability of solutions is still missing and, “thus becomes a crucial matter for the OAA implementation.”

Risk aversion is seen as a more general characteristic of German public administration. The Zukunftspanel “Staat and Verwaltung” survey conducted in 2017 described a “dominance of a status-quo-oriented and innovation-sceptical culture within public administration” which was assessed as one of the three most significant barriers towards implementing eGovernment in Germany. One of the interview partners also described “tentativeness as the DNA of public administration [...]. Reputation and incentives are not related to successful projects but to an avoidance of damages”. Calls for a new “error culture” are consequently seen as rather theoretical. This risk averse culture is often linked to silos and creates a need for cultural change through the introduction of new methods and working formats.

Another challenge faced in the implementation was a clear lack of implementation capacity (NKR 2018, p.2) due to a rather fragmented landscape of many state IT providers (albeit not directly involved in the OAA architecture) and several federal agencies (FITKO, ITZ Bund and a newly established e-government agency). Especially regarding the latter, a joint capacity development programme was missing, which resulted in a capacity clearly lower than some of the state level IT providers. The implementation also severely suffered from insufficient staffing, not only in the federal IT agencies but also in the BMI and Federal Chancellery, due
to its rather lengthy and ineffective hiring and staffing procedures and limited appeal for IT experts (NKR, 2018). Several interview partners also pointed out discussions regarding permanent funding. The originally allocated budget was far from sufficient, leading to calls for higher central funding. How far this federal government support should give them more power became a “permanent conflict line.”

It is also interesting that challenges and implementation dynamics differed quite substantially between the two main OAA pillars. The digitalisation programme, with its thematic field structure and digitalisation labs, was assessed much more positively than the joint portal programme. Whereas the former profited substantially from federal government resources leading to a self-enforcing positive dynamic, the latter was less attractive for policy makers, did not benefit from federal resources and affected the states’ infrastructure to a much higher degree. As of early 2020, progress with regard to the joint portal was rather low, and interview partners described the dynamic as „administering stagnation” with “actors fearing controversy.” However, this has recently changed with the SDG enforcement deadline coming up at the end of 2020 and the interview partners were quite optimistic to find a pragmatic solution to fulfil the requirements in due time.

**Public management interventions: Institutional design and leadership and their effectiveness**

The OAA was open with regard to the implementation structure. It was clear from the beginning that such a huge endeavour would require the work of many actors, managed with a good mixture of formal coordination and pragmatic decision-making, according to NKR, (2018). The NKR argued that all actors should aim “to avoid both duplication of work and stagnation due to waiting for a perfect plan, and instead organise and support collaboration and synergies aiming at high implementation speed and quality.” The interviews indicated that a lot of efforts aimed at building up the necessary structures for collaboration, and success was very much dependant on committed individuals practicing collaborative leadership styles.
Institutional design: Developing a structure for collaboration

Faced with a rather high scepticism among the states in the early phase, the BMI started with a series of workshops supported by a consortium of three consultancies to reach state and local government stakeholders and develop a joint commitment. Despite a “very bumpy start” this early phase resulted in the development of the basic institutional design which was approved by the IT-PC at the end of 2018. This already included key elements such as the OAA catalogue, division of labour via thematic fields, the use of digital laboratories and a consequent commitment to user orientation. This move from a strong focus on existing responsibilities and restrictions towards user expectations was commonly seen as a paradigm shift which was triggered by the OAA implementation.

With regard to the digitalisation programme, a rather extensive collaboration structure based on a division of labour in the form of 14 thematic fields was developed and set out in an OAA implementation concept (BMI, 2018). The thematic field structure is based on an OAA catalogue which specifies all public services to be available online and updated regularly. Each thematic field is led in tandem by a federal ministry and state government to ensure a collaborative effort. They are supported by local government representatives and can be joined by other states. The task of these thematic fields is to conceptualise and develop online services with specific implementation plans, which then can be rolled out to other federal states and local governments. A key question in this design was how to allocate the 14 thematic fields among the different actors. For the federal ministries the allocation followed existing responsibility structures but for the states a rather uncommon voluntary approach was used based on consensus and a “first come, first served” principle. The initial persuasion efforts argued with clear benefits for the states: “if you take one thematic field, you in exchange will get thirteen back” and that federal government is paying for formats and methods. After some first commitments from smaller states who saw the division of labour more positively, the process gained momentum. In the end, all states were included in at least one thematic field either as a co-leader or contributor. To enable a new way of collaboration within these thematic fields, prioritised services were processed in digitalisation laboratories organised by the BMI with the support of external consultants. With the use of agile methods, design-thinking and an interdisciplinary composition these labs allowed the development of
solutions such as prototypes, clickable dummies and implementation plans in a rather short time span, which then could be used for necessary legal changes and implementation through IT providers (BMI, 2018). According to an interview partner for this implementation phase, “a multi-stakeholder approach was crucial” to “bring together all relevant stakeholders in digital labs.” The labs were also important to reach out to the topical experts. According to an interviewee it was clear that “digitalisation only with IT and without topical field experts does not work.” The implementation via thematic fields and laboratories was documented in a continually updated “digitalisation guide” to standardise the procedure and provide a kind of reference for all participating partners. Further measures included videos and working materials available to all involved staff, the organisation of cross-project exchange and learning through inviting implementation coordinators to other labs and projects. All these factors helped to “build trust in the procedure” and had the advantage that “it is more fun to think in solutions than in problems.” According to the federal CIO 30, digitalisation labs were running by September 2019 and involved more than 70 local governments in all states.23

The IT-PC as a central decision-making body was responsible for principle decisions to organise the implementation but left the details at the early phase rather open. An interview partner described it as rather unconventional for Germany to allow this amount of agility and described the approach as “enabling” to the partners who could “jointly open the door to a room which you can shape.” However, over the last two years this has changed towards an increasingly dense administrative system. The IT-PC is described as “an extremely formal body” and the NKR (2019b, p.9) demands that “the new spirit of collaboration found in the rather informal work of the digital labs and thematic fields” must also become a standard for the formal coordination and decision structures of the IT-PC. They recommend a “positive joint narrative on the political level which shows the opportunities coming with increased collaboration” (NKR, 2019b, p.9). Key for driving the implementation is less the very political and heterogenous official IT-PC round but the subordinated Secretary-General meeting with some very committed and strong personalities. The level of relevant expertise and personal continuity was much higher in this body and allowed to build up trust. According to one

23 https://www.egovernment-computing.de/wichtige-impulse-zur-oBg-umsetzung-a-863730/.
interview partner, this group is also characterised by a rather consensual approach and an “understanding that collaboration will achieve more than using the sledgehammer.”

A key responsibility of the IT-PC and its operative arm FITKO was to establish programme management together with the BMI (BMI, 2018, p.14). It aims to structure the overall project, ensure the overall progress and direction and establish a monitoring and reporting system. There is an intensive exchange between FITKO and BMI with biweekly meetings but also intensive exchange with states to collect the necessary information. A key limitation is the rather weak capacity of FITKO as a very new organisation.

With regard to monitoring the implementation progress a rather new approach for German public administration has been chosen (NKR, 2019b, p.9). The implementation status is documented in a repository and available online together with the results of the various thematic fields. Federal Government regularly reports on the status of OAA implementation at the Conference of State Government Prime Ministers. Also, the results of the digital labs have been continually published on the Internet page of the IT-PC.

The importance of leadership

All interview partners confirmed the importance of individuals and leadership, both in regard to driving or blocking progress. For successful collaboration, both formal organisation and leadership are essential. According to an interviewee “you first always try to find organisational answers, but they do not exist... In my experience, the more you work with structures, the more you realise that it does not work. But of course, you must have them”. Structures are moreover “necessary to make new ideas mainstream”. In a public administration with a rather strong procedural logic, high formalisation and regulatory density there is also a need for leadership (the interview partners talked of “drivers”, “visionaries”, “offenders by conviction”) to drive collaboration. Individuals were described as pivotal points for collaboration and digital projects were thus characterised by “people management”.

There also seems to be a rather high consensus about what qualities characterise such leaders. The interview partners describe a move away from a rather traditional hierarchical and indecisive leadership towards a more collaborative leadership style. In collaborative contexts
leaders “cannot get through with a bossy mentality” but need to fulfil “an enabler role” described as “providing, motivating, working platform-based, building up credible relationships” but also being able to develop milestones and goals to provide orientation. As much of the current OAA work is preparation and background with not yet much visible results a key quality of leadership is a clear vision and sense-making to keep up energy.

Interviewees also emphasised the need for informal networks and communication, especially in case of tensions and conflicts: “Hard announcements which are sometimes necessary should be face to face or with a beer. Contradictions and conflicts need to be addressed in a more relaxed atmosphere and never in formal committee structures (Gremienstrukturen) which do not yield much. You of course need formal decisions, but they do not ensure that such decisions are lived.” Central committee meetings only work if the key actors communicate in advance, and one interview partner described “always meeting, talking, enabling majorities and building alliances” as crucial for success but also “terribly time-consuming”. Collaborative work moreover relies on trust and sympathy, which need to be built by leadership. It was recommended to “care about others, provide a feeling of been taken seriously, safeguard interests and bring advantages [...] You have to prove this, and then the process speeds up and they come out of their shells. With force and political attention this is also possible but much less sustainable.”

The interviewees also made clear, that such a collaborative leadership style is still rather an exception but is definitely on the rise, considering the approaches of new actors. Much more common however is what has been described as „lacking management attitude”, „a wish to please everybody and avoid discussions” and leads to a “political harmony sauce” especially at the top level and in bodies where there is more fluctuation among its members.

A clear barrier towards effective collaboration are individuals who block decisions and developments. “Not being able to remove individuals blocking major developments is a main impediment of German administration. It is much easier in German public administration to halt or protract something than to push.” Another interview partner observed a clear status-quo bias among many actors: “If you have been administering stagnation over the last 15
years, you have an emotional problem with the current speed. These people for a long time have emphasised what is not possible which makes it very difficult to give up this position.”

Such developments go along with increasing awareness about the relevance of human resource management (HRM). The federal government CIO recently emphasised the need for a higher willingness to change among all government employees. There is a need to develop new competencies at all hierarchy levels and the government has started initial attempts to modernise HRM and find new ways to attract digital talents for government.

**Outcomes achieved**

An assessment of the success and outcomes of the OAA is only tentative, as the project has only just reached the halftime of what has been described as a “marathon” (based on the implementation period of 2017-2022). With regard to the kind of innovation to be expected the interview partners widely agree that the major aim of the law (digitalising public services, setting up portals and user accounts) has been so far more incremental than disruptive. Due to the extreme broad scope and tight schedule set by the OAA, the scope for real service innovation is also rather limited.

Ines Mergel (2019) criticises that the transformative potential of restructuring administration and redefining the tasks of government has not been achieved and that the digitalisation efforts are suffering from a very mechanistic implementation of the OAA and lack of capacity and competencies. Our interview partners were more positive in their assessment. The requirement to make all public services available online is seen as a “paradigm shift” and “quantum leap” for German public administration, which has triggered many positive developments and functions as a “great enabler.” Especially with regard to the degree of freedom, the OAA is seen as unique and “very innovative” and created a spirit of “let us try something new.”

There is very high agreement among observers and interview partners that the most positive outcome of the OAA implementation up till now has been the new political relevance of the

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topic and especially a major improvement in how government is collaborating in its digitalisation efforts. A “new basic consensus” has emerged with a “stronger focus on commonalities, the need for standards, exchange and collaborative work.” One interview partner described it as “moving from a totally messy and fossilised state towards a productive work mode.” The system is “still federal, but the spirit has changed. It is now a federalism, acting target-oriented and with a consensus to move ahead which can also be seen in the current Corona situation.” External observers such as the NKR (2019b, p.9) also acknowledge this positive dynamic: “Federal government, states and local government have moved towards a productive and trustful collaboration beyond formal obligations” which is leading to an accelerated development of user-oriented digital public services.

The outcome is however less impressive with regard to visible results for citizens and enterprises. The first three years of implementing the OAA focused mostly on preparatory work and the establishment of new working formats. Housing assistance (Wohngeld) as the first official OAA online service was rolled out just in December 2019, and only in six local governments. The rollout of 30 to 50 further services is planned for 2020. A beta version for the federal portal is already running and many other IT components are also set to be launched in 2020. The interview partners also reported a solution for the crucial re-use issue and the first two major legal changes (e.g. the introduction of a uniform personal identifier) coming up very soon. However, it is clear that a much higher speed is necessary to successfully implement the OAA by 2022. Observers have assumed that a full implementation of all public services is not realistic by 2022, as it is still not yet decided how the results of thematic fields should be rolled out to all government levels, which are still characterised by very different IT landscapes. Even the State Minister for Digitalisation in the Federal Chancellery admitted that a full implementation by 2020 is not guaranteed.25

The NKR in its most recent monitoring report on government digitalisation (NKR, 2019b) similarly emphasises the need to speed up to achieve the planned outcomes. However, the NKR also acknowledges that the conditions for a successful digitalisation in Germany are currently better than ever and the measures introduced are going in the right direction.

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25 Tagesspiegel Background Digitalisierung and KI, 04.03.2020.
Reflections on lessons learned and conclusion

The Online Access Act (OAA) enacted in 2017 is commonly understood as a turning point for government digitalisation in Germany. Sparked by the high dissatisfaction with the progress of digitalisation and public service innovation and the deteriorating position of Germany in international rankings, the OAA triggered an implementation dynamic very different from the last decade. The requirement to digitalise all public services and build up the necessary digital infrastructure at all government levels in a systematic way and within 5 years is a unique approach, not found in any other European country. The scope and complexity of the OAA is tremendous – covering federal government, 16 states, about 11,000 local governments and 575 services – and poses a huge implementation challenge for the rather fragmented and decentralised system of German public administration.

Our case shows that in a country with a distinctive legalistic Rechtsstaat tradition, digitalisation and intergovernmental collaboration needs a clear constitutional and legal foundation to mobilise and legitimise its implementation. However, legislative approaches alone are not sufficient to ensure successful implementation. From the beginning it was clear, that collaboration between federal, state and local governments would be the key for a successful implementation.

It took some time to build up the necessary trust among the various actors, move from negative coordination towards positive coordination and build up momentum. The two key coordinating bodies IT-PC and BMI faced substantial challenges regarding complexity, but also substantial power imbalances and a lack of implementation capacity. From the end of 2018, collaboration was organised in a unique way for the German government context. The tasks were organised and split into 14 thematic fields to enable manageable packages and an effective division of labour. Responsibility for each thematic field was jointly taken up by one federal ministry and at least one federal state on a voluntary basis. With the help and integration of other states and local government they work to digitalise all public services within this field and then provide the results to all other governments. Digitalisation labs helped to ensure a consequent user orientation and allowed the use of agile methods, design thinking and interdisciplinary teams.
Leadership did play an important role in shaping these developments. Individuals were described as pivotal points for collaboration and a shift has already been observed towards a more collaborative leadership style which emphasises relationships, trust, communication and enables rather than directs. It is also evident that collaborative leadership styles in German public administration, while still more an exception than the rule, are on the rise especially among new actors.

The outcome of these developments has been both a major intensification and improvement in steering government collaboration towards digitalisation. If this new intensity and cross-governmental approach of reform initiatives in the area of digitalisation has the quality and intensity to break the overall pattern of incremental reform, and whether it will lead to a substantial improvement of public services for citizens is still to be seen, as the implementation is only at its halfway mark (from 2018 till 2022). 2020 will be a crucial year for rolling out new services and it is clear that to achieve a successful implementation of all services by 2022, a much higher speed is necessary. Nonetheless, the underlying conditions for a successful digitalisation in Germany are currently better than ever, and the measures introduced are going in the right direction.

The success factors for such a huge collaborative digitalisation endeavour are rather numerous. The NKR (2018, p. 41) regards five factors as crucial for implementation success: (1) obligation and collaboration in the federal government system, (2) management control and impact monitoring of implementation progress, (3) sufficient organisational capacity and competencies, especially with regard to change management, (4) sufficient funding and human resources, and (5) infrastructure and service standardisation and a professional architecture management. Our analysis also points to the importance of not reducing digitalisation to a technical issue but rather understanding it as a broader governance and management challenge which speaks to various issues within the public administration system such as civil-service/HRM, transparency, steering, collaboration and management capabilities.
To summarise, based on our analysis we have derived the following **recommendations for practitioners and policy makers**:

1. A more sequential approach with a clear priority on building trust among different actors and developing a collaborative spirit and shared understanding in the earlier phase. This initial phase should prioritise consensus, the overall aims/vision of the joint digitalisation efforts and certain principles of working together. Enforcement, a strong technical perspective and strong centralised steering are counterproductive in such an initial phase. Only with increasing mutual trust should the approach shift towards a more transactional or managerial style emphasising targets, milestones, transparency, monitoring and a more centralised coordination and programme management.

2. Understanding the interests, capacity and power of the various actors and addressing the challenges of power imbalances through a consequent multi-stakeholder approach involving all main actors from the beginning in a rather open and trustful environment.

3. For the implementation, avoid an overly technical orientation and put user orientation at the centre. It is key to include topical experts and users via interdisciplinary teams to ensure relevance. The use of agile methods and design thinking approaches can help to overcome silos and drive collaboration.

4. Ensure sufficient implementation capacity rather early in the process. This relates both to the establishment of a strong coordinating body with sufficient capacity (both staff and budget) but also a rather limited number of IT providers/agencies. Building up the necessary personnel should be understood as a long-term process which needs to be addressed early on.

5. A clear time goal for implementation creates pressure and commitment, especially in the later phases. It should be accompanied with a masterplan, interim targets, a transparent monitoring and central programme management. This should be based on a clear prioritisation of key results and assure visible interim results.

6. Ensure a strong administrative leadership by building up a core group of committed and experienced executives with a clear will to move forward with digitalisation. This group should be separate from political representative bodies, meet regularly and show high stability with regard to its members.
7. Communicate and emphasise the importance of collaborative leadership and the skills and competencies required. HR development, leadership promotion and selection should support this.

8. Ensure political interest, leadership and support by creating the necessary narratives, developing a sense of urgency and illustrating the benefit for citizens.

9. For the design of the collaboration it is important to differentiate between developing innovative digital services which require more bottom-up and decentralised approaches vs. establishing the necessary infrastructure, where a much higher degree of centralised coordination is necessary.
2.1.5 The United Kingdom: Government as a Platform (GaaP)

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Case introduction

This case study examines the collaboration between the Government Digital Service (GDS), a unit of the UK Government’s Cabinet Office, and various UK Government departments, in implementing and delivering ‘Government as a Platform’ (GaaP). Tim O’Reilly set out the initial idea of GaaP in an article in Forbes in 2009 and later in a paper (O’Reilly, 2010). Based on shared Application Programming Interfaces (APIs) that expose the business logic of government (e.g. calculating a benefit payment or checking the status of an application) and are available for use beyond the agency that developed them, the concept of GaaP “is used to refer to the whole ecosystem of shared APIs and components, open-standards and canonical datasets, as well as the services built on top of them and governance processes that (hopefully) keep the wider system safe and accountable” (Pope, 2018).

O’Reilly equates GaaP with a natural progression in line with the development of the internet, and indeed refers to it as “Government 2.0”, a novel way to define the use of Web 2.0 technologies in improving government services, processes and data. At the centre of this approach is understanding that GaaP provides data and supports technology to increase participation and transparency (O’Reilly, 2010). However, there is some ambiguity about the use of the term. Some regard it as the move to make government “digitally native”, for others it can simply mean the use of social media by government bodies. The majority would agree that the concept of GaaP is much broader than this latter view, as it has the potential to improve the way government operates by solving the dichotomy between centralised versus localised models of public service delivery (Brown et al., 2017).

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26 https://governmentasaplatform.blog.gov.uk/ The blog is now closed and the information on GaaP can be accessed at https://governmentasaplatform.blog.gov.uk/about-government-as-a-platform/.
GDS was created in 2011 with the aim of transforming the provision of public services and implementing the ‘Digital by Default’ strategy, which was proposed in a report produced for the Cabinet Office called “Directgov 2010 and beyond: revolution not evolution” (Lane Fox, 2010). GDS has over 500 staff and a Digital Advisory Board consisting of high-profile external experts, which meet bi-annually and advise the GDS on strategy. The Digital Advisory Board aims to deliver GaaP and collaborates with UK Government departments to develop GaaP’s components.

GDS has promoted the idea of GaaP since 2013 as the new vision for digital government that, through a common core infrastructure of shared digital systems, technology and processes, makes the process of building user-centric government services easier. In 2014, they made a video\(^{28}\) to clarify the idea of GaaP in using collaborative technologies to enable more participatory government and better solve collective problems at the city, regional, national, and international levels. GaaP aims to make the shift from duplication and disjointed silos to optimised, integrated and interconnected easy-to-use applications that perform set tasks.

The applications built to implement GaaP include:

- GOV.UK as a platform for publishing government services and information;
- ‘Verify’ as a platform for identity verification when using government services;
- ‘Notify’ as a platform for messaging between service teams and users;
- ‘Pay’ as a platform for processing online service payments;
- ‘Registers’ for providing services with canonical, authoritative datasets;
- ‘Platform as a service’ for hosting and managing service infrastructures; and
- ‘Design system’ which contains styles, components and patterns to help government teams create user-centred digital services.

One of the founders of the GDS has helped governmental bodies understand what is meant by GaaP. He argues that whilst a lot of the processes surrounding going digital would take some time and require an overhaul of public services, the real work lays in embedding a culture of “digital-first” within the existing services (Loosemore, 2018). Moreover, the reasons

\(^{28}\) https://www.youtube.com/watch?v=ZzPU6Pdw05s.
for promoting GaaP lay in the idea of providing a public service that is as fully inclusive as possible and allows equality of access to public services, rather than just improving the experience for those who use the services and obtaining financial savings through digitisation. There are three main aspects to GaaP’s approach to government: 1) an attempt to deliver better public services 2) the need to reorganise the institutions that provide these services in order to achieve its aims, and 3) the opportunity to review practices and make sure that they are ethical, secure, accountable and efficient (Pope, 2018). As far as security is concerned, one of the key aspects of going digital is making sure that people feel safe while they are online (O’Reilly, 2010). For example, through the platform Verify, the UK Government aims to build confidence in digital identity software and to further demonstrate the agility of the service as it adapts to the changing needs of its users (Gibson, 2019).

The following case study includes an analysis of academic papers and grey literature on GaaP, which provided useful information to analyse the starting conditions and the system context behind the collaboration. In addition, eight semi-structured interviews (I) have been conducted. These consisted of former representatives from the GDS and the departments involved in the collaboration, as well as external interviewees. The interviews were used to understand GaaP’s aims and outcomes achieved so far and the dynamics amongst the actors involved.

The interviews were carried out between October 2019 and January 2020 and lasted 50-80 minutes each. They were all recorded and transcribed in full, then analysed and coded by keywords and themes.

**System context and starting conditions**

The politico-administrative environment has played an important role in driving the collaboration between the GDS and government departments (Emerson et al., 2012). It is possible to see the influence of this environment on the promotion of the collaboration itself and on the decision to implement and deliver GaaP. Evidence for this can be found in publicly available documents, such as the UK Digital Strategies (Cabinet Office, 2012; 2017) and the Government Transformation Strategy (GTS) (Cabinet Office, 2017) and through forms of incentives that originally financed and encouraged the implementation of GaaP.
The institutional setting was reviewed in 2010 by Martha Lane Fox in her capacity as UK Digital Champion. She called for a complete renovation of services that prioritise digital strategy, in a move she described as ‘revolution not evolution.’ In order to facilitate this, there has been a dramatic overhaul of the way in which partners work and the appointment of a new Chief Executive for Digital in the Cabinet Office, who oversees the move to make all transactional services digital (Lane Fox, 2010). This, as well as further attitudes to institutional change within the civil service suggested that the move to digital would not only require process change but also a change in dynamics between institutions.

In 2012, the UK Government published a digital strategy that set out their plans for taking government services online. The government proposed that reforms would improve departmental digital leadership, develop digital capability throughout the civil service, and redesign transactional services to meet a new ‘digital by default’ standard. This would result in digital transactional services that were simple and convenient for those who choose to use them, whilst not leaving behind those who cannot. It also outlined a transition to GOV.UK and the removal of any unnecessary legislative barriers (Cabinet Office, 2012). The strategy outlined that in order for digital services to become a reality, the civil service needed to change the way that it works and move away from a process-based, bureaucratic style of management to a more innovative, target-based way of working, as a 2010 review of services found the systems in place to be inefficient (Cabinet Office, 2012).

The 2017 UK Digital Strategy, published by the Department for Digital, Culture, Media and Sport (DCMS), outlined how priority has been given to ensuring that the digital infrastructure of UK services is suitable for growth, and that progress made is in high speed broadband connection, fibre, and 5G technology. This included plans support business growth, especially in technology industries, as well as ensure that the services being developed are safe and secure. The strategy also focused on skills training and addressed the needs of adults in

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29 The Civil Service was also regarded to have a culture of bureaucracy that was problematic to the development of digital services. In 2011, the government launched the Red Tape Challenge, a cross-government programme that tackled unnecessary and cumbersome regulation and bureaucracy. The purpose of this was to use simpler digital processes in order to engage with businesses, the public, and other stakeholders by a system of ‘crowdsourcing’ whereby people could comment anonymously on the usefulness of regulations https://www.gov.uk/government/news/red-tape-challenge--7.
England who lack core digital skills. It announced the Digital Skills Partnership, that brings together public, private and charity sector organisations to help increase the digital capability of individuals and organisations and address ongoing problems such as digital exclusion. Finally, the strategy focuses its attention on the progress made in taking government services online, placing an emphasis on common technology (DCMS, 2017).

The UK civil service has recently been further restructured to give priority to digital portals and focus on digital strategy and the delivery of services online. In 2017, the GDS published the GTS (Cabinet Office, 2017), which outlines what the government has done since the 2012 strategy to radically transform its public services. It suggested that strong foundations have been laid for departments to share platforms, components, code and best practice, for instance, by making most high-volume services ‘digital by default’. It recognises the challenge of internal government transformation, which is vital if government is to collaborate better and deliver digitally enabled change more effectively. The strategy highlights the importance of collaboration across government departments to ensure implementation of the strategy and deliver better services. Among its objectives aimed at “Building better tools, processes and governance for civil servants”, there is also “Creating shared platforms, components and reusable business capabilities”, therefore emphasising the continuing pursuit of the GaaP project to reduce duplication, cost and inefficiency. Moreover, the strategy set some objectives for the GDS for the period up to 2020, such as “create, operate, iterate and embed good use of shared platforms and reusable business capabilities to speed up transformation, including shared patterns, components and established open standards”.

A report examining “Change in Government: the agenda for leadership” (House of Commons, 2011) highlighted the need for a restructure of government due to the tendency of the civil service to work in departmental silos. It concluded that cross-departmental working remains a weakness for the civil service. There have been efforts since 2011 for cross-departmental reform, including the establishment of an exchange programme designed to identify the barriers to progress. Top managers of all departments, including the centre of government, have been involved in delivering this programme. The Cabinet Office Minister recognised the need for a cross-departmental approach as a collective endeavour where each permanent
secretary leads change management programmes in their department together with their senior management teams and staff.

In 2012, the Government published “The civil service reform plan” (HM Government, 2012), which outlined a series of specific and practical actions for reform which aimed to deliver change in the civil service. ‘Action 5’, for example, was designed to deliver an improved policy to make collaborative approaches possible. Cross-departmental teams were set-up where Senior Responsible Officers (SROs) report jointly to departments. A cross-government management information system was also established in October 2012, to which departments submitted quarterly returns, but it was recognised that more work was needed to enhance data quality and embed it in departmental decision-making. The plan outlined they would begin work to build social media platforms across departments to enable more collaborative working and knowledge sharing between departments. A follow-up report published one year later (Cabinet Office, 2013), recognised that their starting point was less advanced than expected and that progress in delivering this action was slow.

The collaboration between the GDS and government departments started before GaaP. Since the GDS was formed in 2011, there has been a very strong pressure from the Cabinet Office and the Minister (Francis Maude, initially), to disseminate GDS ideas along to the departments. In 2012, a new initiative called the “Exemplars programme” was launched. The Cabinet Office-led programme identified 25 high-volume transactional services across different departments for end-to-end service redesign, including taxation, welfare, motoring, and justice. The aim was to encourage the adoption of the GDS’ methods across departments. A National Audit Office (NAO) report found that the Exemplar Programme was successful in delivering some new services and improving the user experience of some existing services. The programme concluded in 2015, with 15 of the 25 exemplars available as live services and a further five accessible to the general public in trial form (NAO, 2017).

The GDS worked very closely supporting teams in different government departments. For example, the GDS has provided tailored support to departments for the recruitment of their

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30 https://gds.blog.gov.uk/2015/02/05/exemplars-making-examples-of-themselves/.
Chief Digital Officers, Chief Technology Officers, and other senior technology roles. It has also provided direct support in the recruitment of other groups of digital specialists through its recruitment hubs (Cabinet Office, 2013). In doing this work, it became obvious that the institutional model of vertical silos and separated sovereignties was inefficient. The GDS helped departments to build their own capability by hiring over 100 people following the first three actions of the Government Digital Strategy in 2012. GaaP was the logical extension following this.

In 2017, GDS carried out research on how Government services were developed and found (unsurprisingly, given the discussion above) that there was variation between departments, often with silos between different areas and professions (House of Commons, 2019). In response to the Government Transformation Strategy (Cabinet Office, 2017), GDS set out a commitment to “build services that run seamlessly across government”.

The idea of GaaP developed under the Conservative Party that won the 2010 general election in coalition with Liberal Democrats. The Conservative Chancellor, George Osborne, agreed in 2015 for the GDS to have significant investment (£450m) in three large business cases over the next five-year spending review period. The three cases were: Gaap as a new way of delivering digital services, GOV.UK Verify as the programme to enable individuals to prove their identity online and to access government services securely and safely, and the Common Technology Services programme that will allow the Civil Service to purchase consistent, flexible and modern IT. The business case for GaaP was approved, and a Programme Director was selected to deliver the outputs in the business case.

The UK’s widespread transformative culture and financial incentives were the key factors which enabled the collaboration between the GDS and the departments in implementing GaaP. In addition to the political backing, GaaP also had the support of senior managers at GDS. Mike Bracken, a strong proponent of GaaP, was the Executive Director of Digital in the Cabinet Office and the head of the GDS. All the Director Generals who have backed GaaP have

tried to strike a good, collaborative tone with the rest of government, and have been pleased with the results of GaaP’s applications.

Francis Maude was the Minister for the Cabinet Office during the early days of GDS and was perceived as being very helpful in ensuring that the policy ideas and delivery outcomes that GDS was responsible for were bedded in and across government. One of our interviewees revealed that GOV.UK might not have succeeded without Francis Maude’s insistence on what he saw as “the ethos” behind GaaP: “We’re investing in this because we want to take a single approach to the way that we deliver government services, and we want to have a set of reasonable components to do that” (I: 3).

Ministers following Francis Maude have continued to support GaaP (e.g. Matt Hancock), albeit in different ways. Having this political support has been helpful for GDS and for the GaaP project but has not been without its problems. Research has shown that when the relationships amongst actors involved in a collaboration are based on hostility, conflict and distrust, the collaboration is likely to be dysfunctional (Ansell and Gash, 2008). GDS was able to enforce its approach and tell other departments what to do due to its strong political backing. It is alleged, however, that GDS, in its initial phase, had a patronising attitude towards the people working in departments.

**Collaboration challenges and dynamics**

*Complexity*

The UK government is complex in nature and our interviewees suggested that this complexity is hidden from itself. This means that it is impossible to find a complete list of departments which includes the taxonomy of service delivery, the people that deliver those services and the locations where they work. In the context of GaaP, it was difficult for the GDS to know whether the collaborators in departments were the best people to talk to, or whether there were others who could have been better placed. Interviewees revealed that once a collaboration for a product had started, the introduction of a new person, team or even a whole agency would have a massive impact. Though these positions had already existed, nobody knew they were there because parts of the government were unknown to others.
the UK government, civil servants are meant to be generalists and change jobs often, which forms an unstable foundation on which to build collaboration:

“You might start something that’s going to take two years and know who all the people are, and then, six months or ten months in, everyone’s moved. The key decision-makers have changed, the teams have been reallocated; budgets have been changed. That’s just a complexity that’s hard and difficult to manage” (I: 8).

The collaboration between GDS and departments is also a complex relationship. In the beginning, the GDS created a programme leadership team and several individual product teams (i.e. Notify, Pay, etc.). Those teams were responsible for analysing what the user needs were by talking to the departments on an ongoing basis about the different products. This helped them to understand whether the departments might want to use them.

Notify, for example, was built by a team of 15 people and guided by a lead product manager, or service manager. Other members of the team included: another product manager (sometimes multiple managers, depending on what they were working on at that time), a technical lead or technical architect, several developers, a content designer, and/or user researchers (senior and junior). The team interacted with at least one person per department in order to understand their needs.

Our interviewees suggested that once the individual products were established and had a definable set of capabilities, they would then form a steering group with representatives from the individual departments and GDS. Underneath those steering groups, there may also be commissioning of bits of work in departments or in GDS, but they were not permanent structures. They worked nearly full-time during some periods when there was a strong need to. On other occasions, they just acted as consultants. Involvement in these collaborations was based on voluntarism, with formal contracts only in place for the effective use of finished products.

In order to get a broad view of engagement, the GDS set up a department engagement team, which consisted of a group of five people who worked with departments to raise awareness and encourage the use of GaaP products. The engagement team split up in order to be able to reach all the departments. This approach helped to discourage departments from seeking
external solutions by buying products from outside or using their own products, in order to avoid inefficiency and duplications. They also used some existing structures, such as the Cross-Government Digital Leader Network (now called the Technology and Digital Leader Network) to make contacts with other departments. They also posted a calendar of events to talk about the work they were doing, which was more of a communication mechanism than a formal structure.

Finally, there was a separate initiative called ‘Government as a Platform Customer Discovery’, which was carried out mainly by two researchers of GDS. The initiative considered the next set of components to be built based on the data collected from 150 interviews. It lasted approximately five months and aimed at understanding the needs of the different types of teams delivering services in government, the context in which they were operating, and what the next common need would be.

Complexity varied according to the products (e.g. Verify, Notify). The technical complexity was higher for more complex components that affected every single interaction with citizens (e.g. Verify) and less complex for more commoditised components, such as Notify, that allow people to send SMS and emails which, although important, doesn’t impact the major operation of the business.

**Power imbalances**

The relationship between the GDS and the departments was partly the result of power imbalances between them measured by budgets and more general resources. (Ansell and Gash, 2008; Choi and Robertson, 2013; McGuire and Agranoff, 2011). At the outset, GDS encouraged the departments to use their skills and capacity to build products which could be also used by other departments. However, despite the departments’ willingness, they did not produce any shared components that could be utilised by other departments. The collaboration rather had the most success when the GDS internal team developed products making sure that they would meet the needs of all the departments.

The initial business case included the idea of co-creating components together with other departments. For instance, the Department for Work and Pensions was supposed to create a
payments-out component that would allow for government to pay people. It has, however, always been difficult for the departments to create something that was reusable throughout the government. The GDS had funding, a business case, and a team in place, but other departments did not have any specific funding or the capacity to dedicate a team for creating these components.

The model they ended up with was one where the GDS got funding for its own work and provided services and components to the other departments. In that sense it can be considered a collaboration, rather than a co-creation of products with the GDS as a supplier. According to our interviews, this model was the only one possible, because if a department decided to make changes in line with their specific needs, there was no one taking responsibility to check whether those changes would have had an adverse impact on other departments. For the same reason, some of the interviewees were sceptical towards the idea that GaaP was an open-source platform, citing that in order to run secure, robust, trusted platforms suited to widespread use there is inherently a need for one unit or department to be in charge.

The power imbalance between the GDS and the departments was created by politicians who supported giving the GDS the power to impose its decisions over the other departments. This phase was linked to the creation of GOV.UK. After Francis Maude left the Cabinet Office and the GDS, the situation changed radically. With new people on board within the GaaP project that supported the engagement and the research initiatives, the collaboration with the departments started to be productive and constructive. However, this took time because the initial negative experience made departments feel the risk of losing their autonomy, decision-making, and control over the outcomes of their work. As a result, the departments have been reluctant to collaborate with the GDS.

Power imbalances can also be seen in the size differences of departments. Large departments with vast volumes of transactions and highly specialised competences, the so called “big boys” (I: 1), such as Her Majesty’s Revenue and Customs (HMRC), Department for Work and Pensions (DWP) and DVLA (Driver and Vehicle Licensing Agency), have been able to shape their products more in line with their needs, compared to the interactions between GDS and smaller
departments. Additionally, after the period in which GDS generated hostility from other departments, the large departments exercised a strong veto on products coming from GDS. They did not want central products, because they were big enough to build the products themselves without any collaboration with GDS.

*Risks*

Interviewees perceived several risks in the collaboration. Firstly, even though GaaP solutions were (technically) very credible, quite often departments either had requirements that were not met by the GDS or discovered very soon after adopting the products that they were less useful than they had first thought. The collaboration, therefore, took time to prove its value. Another perceived risk was the risk of overpromising. As a result of feedback, the GDS changed their behaviour and adopted an extremely engaging attitude, especially during the time they conducted research through 150 interviews, to understand the needs of people from different departments. They understood that there was a balance to be struck between creating the impression that they were going to solve all problems at once, versus a situation where promises were underdelivered and expectations unmet.

One of the risks of this established provider-user relationship is dependency. Products may be used by many departments and relied upon on an ongoing basis, but there is a risk as soon as funding is no longer provided. As one of our interviewees said:

“*What might happen is the products might start to degrade, and a lot of people who are relying on them can no longer rely on them. There’s that risk, definitely. Has government set things up to sustainably run each of these products?”* (I: 3).

Another risk is related to the timing of when to engage in developing or adopting a new product, as a department may have external providers of products and/or contracts in place. Therefore, there was a risk of engaging departments who wanted to use their products but would be unable to do so for several years due to existing commercial contracts.
Public management interventions: leadership and institutional design and their effectiveness

The UK Government is one of the most digitally advanced in the world, because of GaaP and the transformation that has occurred since the digital strategies of 2012 and 2017. A 2016 United Nations survey showed that the UK led the world in providing government services and information through the Internet (i.e. e-government) (United Nations, 2016). The GDS has led the digital transformation of government and it is now a model that is being copied internationally. For example, GOV.UK has an open code which has been reused by governments around the world.

The innovation can be described as a disruptive innovation (Hartley, 2005) aimed at changing the way in which the UK government works. This transformation started with GOV.UK in 2012 and was represented by the GDS pushing departments to adopt the agreed policy position of having a single domain and website for government. GaaP can be regarded as a product innovation due to the creation of the various components, but also a process innovation (De Vries et al., 2016) with the introduction of a new way of working together across government departments. The latter typology of innovation refers especially to the collaborative way that GaaP was implemented among the GDS and the departments. The aim was to overcome the separation that characterised the departments, as one of our interviewees suggested:

“Maybe that’s a problem with the UK model, is that we are very centralised. Both centralised and siloed, so that departments act either completely autonomously and will do everything themselves, or they are waiting for an order from the centre to do something” (I: 2).

GaaP has shown good results, and the UK government website maintains a specific section of that reports the performance of all GaaP products. For example, in March to April 2018, GaaP celebrated 200 adopters of Pay. By August 2018, they were supporting more than 400 services from 120 organisations across the public sector. GaaP was intended to be a collaboration between the public and the private sectors with the creation of an ecosystem of

33 https://governmentasaplatform.blog.gov.uk/2018/03/12/3-years-on/.
mutual benefits. The implementation of GaaP from GDS, however, focused more on the creation of components to benefit the government. There has been some private sector engagement, including the so-called “Industry days”, during which more than 100 suppliers convene each time to learn about GaaP and its products. As one of our interviewees said: “It was more of a kind of awareness-building for private sector. “Please, do encourage your government clients to start using this” (I: 3).

While GDS had many offers from the private sector to run hosting platforms for them and to develop products, they chose to run those products and components themselves, in line with the government strategy on the extent of outsourcing to suppliers.

As mentioned above, an important factor that made the collaboration work was the shift in the GDS’s attitude towards other departments. Since 2015, a new philosophy that emphasised user needs began to spread across GDS. However, because GDS had grown up building public-facing websites for citizens, such as GOV.UK, it took some time to realise that their users were other civil servants, rather than just citizens. For some government departments, civil servants were not used to being treated as equals in conversations with the GDS. According to one of our interviewees, GDS:

“Assumed that it knew how to do digital, and people in departments didn’t, and that GDS were the experts […]. This is a slight over-exaggeration, but there was definitely that attitude” (I: 8).

This relationship was counterproductive for both parties. GDS dealt with this problem generated by complexity and power imbalances by introducing a network or ‘community of practice’ (also mentioned on the GDS website35), where people interested in the same topics are motivated by the same aim of working together to build products. According to Lave and Wenger (1991), communities of practice are informal aggregations of people who share common interests and objectives, free of boundaries created by a hierarchical structure.

The shift in behaviours was possible because of two main factors. First, because of the nature of the civil service, people changed their roles frequently. Many people left the GDS to go to

work for other departments. This fluidity between similar roles in different parts of the government made it easier to spread the message that the GDS was not patronising anymore and had shifted to a more collaborative way of working. The second factor was that the GDS invested time and human resources working across these departments (e.g. training days, conferences, qualitative research, etc.) and talking to people around the country about their roles and aims. This helped to improve understanding across departments about the potential opportunities and advantages of working in collaboration.

Our interviewees suggested that there were two main levels of interaction. One, at the top hierarchical level, when there was the need to get leaders and top heads involved, especially where significant investment decisions had to be taken. In this case, the interaction was promoted and carried out by the department engagement team that adopted a “level of communication, that felt more like sales” (I: 8). An example of the activities that the engagement team carried out were the workshops and meetings they held to gather digital leaders of the departments (approximately 10 peers across government) together to promote the use of GaaP’s products.

The second level of interaction with departments occurred at a lower level of the hierarchy and was promoted by researchers or other employees with similar interests and aims. They started with a grassroots level initiative, created the network/community of practice and communicated to each other in a friendly, informal way. As suggested by our interviewees:

“[In the case of] the communities of practice [...] You get people that self-identify as being part of the community, and then they go along to meet-ups and then you can have mailing lists or discussion forums” (I: 8).

Other interviewees defined the collaboration differently, as, “a networked movement, with open, published-on-the-web, new ways of working” (I: 5). But the common idea was that it was a working group, where people came together with a deep, practical understanding of the challenges of delivering services and of the problems that needed to be solved.

A good example of the collaboration between the GDS and the departments that could be considered as a community of practice is the network that created the GOV.UK design system. A design system is a collection of guidance and design patterns and front-end code, that the
GDS shares with the rest of government to reduce duplication of effort. It contains styles, components and patterns to help teams in government create user-centred digital services and brings together the elements found in many previous systems. It has two main functions: to let teams work quickly on a shared basis and to be able to share their work so that other teams can benefit. A cross-government community of users and contributors helps to maintain and develop the system, and the community contributes by proposing and developing a new component or a pattern. This means that, “they can quickly design accessible, useful digital public services and do not have to reinvent the wheel” (I: 4).

The model of collaboration behind the design system implies a distributed governance, so that the product is not perceived as a thing that GDS has made and is imposing on the rest of the government. According to our interviewees, the working group was made up of approximately 12 people and it was big enough that they had a good range of representations of different departments and different users, but also small enough to be able to sit in a session where everybody’s voice could be heard. This model of collaboration is based on a shared ownership, by designing and deciding what goes into the design system with a feedback loop which helps to improve products and services. It makes it more representative for users and provides the community with a sense of purpose. Ultimately, the system can empower people, which makes them more likely to suggest that their teams and departments use it.

Building a network/community of practice across government is not easy because of the complexity of government and the tendency to work in silos. Due to the decentralised nature of government, different sovereign departments have different philosophical outlooks with varying and competing priorities (House of Commons, 2011). To try and mitigate against this problem, GDS created various blogs to be as open and transparent as possible and attempt to reach people they had not had contact with before. Each blog (about GaaP more in general, or its components) allows users to subscribe in order to receive the updates, write emails whether they have comments or questions, follow them on Twitter or other Social Media, in order, for the GDS to work “collaborating with departments to help them with their own transformation […] We always start with user needs”. 
Leadership

The leadership styles behind GaaP reflect the different levels of interaction described above. In the first phase (with Francis Maude as the Minister and Mike Bracken as head of the GDS), the style was generally hierarchical and top-down. According to our interviewees, a different leadership style and less engagement with the culture of GDS and GaaP was exercised by the following leaders: Stephen Foreshew-Cain, Kevin Cunnington and Alison Pritchard. This was also due to:

“[The obsession] over this idea that GDS had always been very dismissive of government departments and needed to show a softer, kinder, gentler face that was more permissive of departmental activity and not as interested in enforcing standards and holding certain principles, as it had been previously. That fed into a stepping back from the idea that the centre is the right and correct place to provide some of these cost-cutting, useful resources that have the transformative effect” (I: 1).

Politicians were described as generally being consulted within departments and having the final sign-off of all government projects before going ‘live’. Underneath this political leadership, the GaaP leadership was quite permissive and laissez-faire. It constituted a non-authoritarian style, where leaders try to give the least possible guidance to their subordinates, to let them respond to their responsibilities in their own ways (Mondy and Premeaux, 1995; Schermerhorn et al., 2008;).

The leaders of GDS backed the general idea to be more open and collaborative with the departments. As one of our interviewees reported, the top levels said that in the new phase: “We want to have a good, collaborative style. We want to build relationships with departments, rather than tell them what to do” (I: 3).

The individual product teams were given the freedom to act as they saw fit. As a result of this leadership style, their internal organisation varied. Some of the teams were lean, flatly organised and decided everything together. In other cases, there was a person (usually the product manager) that held the vision and managed the team to work in that direction. While there were cases of very competent product managers, we heard that others had very little experience in their role. Some interviewees suggested that the “leadership vacuum” at the
top of GDS necessitated that people from lower levels to step up and take decisions where no one else was providing a coherent direction on how to proceed.

Interviewees suggested that departments are often structured in a hierarchical way and led by people that have highly politicised careers and who are interested in promotions and have their own power struggles to manage. This meant that there were problems in collaborating with those at the higher echelons in these departments, because: “The people at those top levels are so far removed from the needs of the people doing the work of delivering services at the front line, that they make bad decisions for them” (I:8).

On the contrary, a good department leader was described as someone able to pass down and spread the bigger picture of the overall benefit to citizens and the country, as opposed to seeing its short-term implications on departments. Moreover, they can understand the transformative opportunity to see change the status quo of how government operates, rather than just accepting new technology. In parallel, GDS leaders were defined as:

“Very entrepreneurial, very driven by desire to see a service through the lens of a citizen, much less worried about existing processes. Not at all worried about their career, generally. They had not joined government to have a long-term civil service career. They joined government to change things” (I: 5).

In other cases, the problem was related to the leaders’ lack of technical skills:

“The negative aspects are that most very senior leaders in the civil service are not very technically competent and therefore, sometimes, struggled to understand some of the ideas associated with transformation” (I: 6).

Interviewees regarded that the ‘best’ departments to work with were those where the problems and the mission were well defined, and the leader was able to put together a team with sufficient skills, competences, time and space to make progress. Ultimately, when it came to collaboration between departments, the culture of the group of people doing the work was said to matter more than the leadership style. In GaaP, the capacity to create and develop an open and flat network/community of practice, with a higher level of internal trust, where each opinion was considered important, was created by people at the lower hierarchical level of the GDS and government departments.
Reflections and conclusion

The most significant lesson learned was the need to have clear goals in the collaboration. Interviewees highlighted the importance of getting to know all the people involved, having sufficient time to meet and understand each other’s needs, and agreeing upon how to pursue the mission. Devoting time and resources to finding the most appropriate people for the collaboration was perceived as being time well spent.

A related point is a need to be able to understand the relative experience of the people involved in the collaboration, as whether they are experts or novices on a specific topic (in this case, a technological product) will determine the pace of change. Another key enabler for GaaP was having people at senior levels with a digital background. In the absence of this, one should consider the relative maturity of the organisations and the people that have been involved, as their level of expertise (technical in this case) will impact how quickly change can be delivered and is important to avoid creating unrealistic expectations.

Finally, as far as the technological aspects are concerned, it is important to use Open Source software or publish the new codes which are used, in order to be as transparent as possible about all the programmes used in government.

The experience of GaaP suggests that a bottom-up approach to collaboration based on voluntary participation is effective. In practical terms, it makes sense to start the collaboration with those departments that are keen to collaborate and show these results to others to get further buy-in, rather than follow a top-down approach to collaboration. There is also a need to be clear in communicating what you are doing, have a clear roadmap to follow, and be available to engage with the actors involved in the collaboration.

Another lesson learned from GaaP was the need to be realistic in outlining what the collaboration can achieve and to be conscious about the timescales and the scope of possible solutions. There is a need for strong discipline when partners enter into collaboration, to avoid overselling what can be achieved and creating unrealistic expectations. According to our interviewees, it is better to focus on identifying a subset of issues, and then designing or implementing a product able to fit those issues, rather than trying to design products for everyone. This is related to the risk of overpromising and creating the expectations that the
collaboration could solve all the departments’ problems at once. The engaging attitude of the GDS and the willingness to consult and listen to all the departments’ voices must not lead to an underestimation of the complexity and the high specificity related to the products. Effective collaboration requires significant investment of resources and effort. In this case, special efforts were placed on maintaining communication with a wide range of collaborators. There is also the issue of whether the collaboration has mutual benefit. Moreover, there is the need to overcome the departments’ sceptical attitude towards the GDS and its initial patronising approach, by being open-minded and ready to shift to a renewed, more equal and balanced role in the collaboration.

However, departments are unlikely to want to collaborate using their own resources to create a product that also fits the needs of other departments because of the way in which the civil service is organised (e.g. separate silos, each has its own budget). In fact, creating a reusable product would require a team of skilled people, funding to initiate and continue to support the implementation, and maintenance of the products built over time. This is possible when you have the right funding model in place and resources to continually develop new products and improve them.

In summary, the collaboration between the GDS and the government departments could be described as an intense but effective process. One should evaluate the departments’ cycle of maturity and needs in order to become an ally and a source of additional capability able to offer help whereas they are trying to launch a product, rather than being a distraction. As one of our interviewees suggested:

“The principles of GaaP are now very strongly at the heart of the way we tend to work between departments. The idea of departments sharing capabilities, sharing data, working much more collaboratively together, I think is strongly established. That is down to the existence of GaaP” (I: 6).

Those people who have contributed to GaaP feel a sense of ownership and shared responsibility for what has been created. This is a win/win situation for both sides, in that they are inclined to continue to use the GaaP’s products and advocate for their use in departments, which suggests that GaaP could be successful in the long run. GaaP has been a successful
experience so far and has inspired digitalisation movements around the world (e.g. Australia and US) as well as from Europe. A memorandum of understanding, signed in 2013 between the UK and Estonia, shows Estonia’s interest in GaaP and exemplifies the two countries’ commitment to developing “digital by default” public services\(^\text{36}\) (Margetts and Naumann, 2016).

2.2 Smart City coordination

2.2.1 Belgium: Antwerp’s Smart City Policy

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**Case introduction**

Cities around the world are increasingly investigating the potential of technology and ICT to tackle “wicked” societal problems while strengthening innovation potential and attracting economic activity (Meijer and Bolívar, 2016). The Belgian city of Antwerp is no different. Since 2013, the city and the Flemish regional government have adopted multiple initiatives regarding innovation, entrepreneurship and technology. Antwerp is ambitious and wants to become one of the European frontrunners in Smart Cities (Stad Antwerpen, 2017b, p. 2). This case study report will provide information about the internal coordination of the city of Antwerp’s Smart City policy.

Antwerp participates in many innovative, IT-related and ‘smart’ projects. However, what will be considered in this report is the internal coordination of Antwerp’s formal Smart City policy. This policy is the result of a 2016 covenant with the globally renowned research centre IMEC (formerly known as the Interuniversity Microelectronics Centre). While Antwerp already had several projects one could label ‘smart’, this covenant marked the start of a formal and comprehensive Smart City policy (Stad Antwerpen, 2017a). The agreement was later complemented with a strategy document (Stad Antwerpen, 2017b) and an addendum to the initial covenant agreement (Stad Antwerpen, 2018a). When discussing Antwerp’s Smart City policy in this report, we refer to the policy and strategy as outlined in these documents.

The formal Smart City policy in the strategy document (Stad Antwerpen, 2017b) establishes five ‘building blocks’ and five priorities. The first building block was a thorough digital transformation of the city’s front- and back-office processes. Second, a single digital platform called ACPaaS (Antwerp City Platform As-A-Service)37 was to be built by Antwerp’s IT partner Digipolis, a public organisation. ACPaaS is a city-wide IT architecture, which connects local

police, city hospitals, schools and other public services in a single platform where they can exchange and capture data. The third building block was the creation of Europe’s biggest open, digital laboratory with the instalment of hundreds of sensors, gateways and networks. The open laboratory was accompanied by the fourth building block, an open data policy. Antwerp offers real-time data to organisations, research institutions and innovative start-ups, but pays attention to its citizens’ privacy and the prevention of digital exclusion. The final building block of Antwerp’s Smart City strategy was an ecosystem for digital innovation. The city aimed to create a “biotope with room for citizens, companies and research centres to experiment and innovate” (Stad Antwerpen, 2017b, p. 11).

The ecosystem brought together stakeholders and Smart City initiatives, proceeding from a shared vision, centred around the following five priorities: smart governance, smart mobility, smart energy and materials, smart security and smart citizens (Stad Antwerpen, 2017b). Following these priorities, use cases and ‘smart zone projects’ could be proposed from the bottom-up to experiment and test innovative solutions for urban challenges. The internal coordination behind these projects and use cases is what we discuss in this report.

To compose this report, policy documents were analysed, and six interviews were conducted with respondents from the organisations and city departments involved in the collaboration. Figure 1 depicts the overall governance structure of the general Smart City policy and the Smart City projects that were launched within this policy. Provided below Figure 6 is a description of the relevant partners in the collaboration. This governance structure was formally introduced in the addendum to the covenant (Stad Antwerpen, 2018a), and the collaboration is still shaped like this today. The first two years of the collaboration were structured differently, although the original covenant of 2016 also mentions the founding of a steering committee like the one which currently exists in the governance structure.
The governance structure consists of four hierarchical levels, indicated by the numbers in the Figure 6. Level 1 is the steering committee. This committee gathers monthly to decide on the priorities, the projects to be brought into practice and the funds that are allocated to those projects. Level 2 is the operational committee. This body connects the strategic steering committee with project teams in the field. They account for the planning and operational execution of the projects. IMEC, Digipolis and the Department of Strategic Coordination of the City of Antwerp are represented here as well, along with the departments involved in ongoing projects (e.g. the Department of Mobility for a smart mobility project). Level 3 consists of four expert groups, who advise the steering and operational committee on the following thematic issues: ‘communication and community’, ‘infrastructure and data’, ‘business and innovation’ and ‘privacy, ethics, trust, security and legal’. Finally, level 4 are the project groups. These groups consist of members of departments and external organisations who conduct Smart City projects.

**Collaborating actors**

The most important actor in the collaboration was the city of Antwerp. They accounted for 50% of the covenant budget, which accounted for €650,000 spread over the duration of the covenant (i.e. from 2016 until 2019). IMEC accounted for the other half, however, the City
Council had a bit more leverage, as they were able to impose regulation. For example, in 2018 the City Council passed a data charter and a code of conduct with which every smart zone project had to comply (Stad Antwerpen, 2018c). The following analysis avoids referring to the city of Antwerp as a whole and will rather consider the different city departments which were involved as separate actors in the collaboration.

An important distinction between these departments can be made with regard to their position in the governance structure. In the steering committee (Level 1 in Figure 6), both the political level and the administration are represented. The members of the steering committee are the Mayor, the Alderman for Economy, and/or their representatives. The Department of Strategic Coordination is the city’s coordinator in the collaboration. As the Smart City policy is a part of the city’s economic programme, the Department of Business and Innovation is also represented in the top decision-making body of the governance structure. Other city departments are merely involved in expert groups (Level 3 in Figure 6) or project groups (Level 4 in Figure 6). As previously mentioned, when departments are involved in ongoing projects, they are also present at meetings of the operational committee (Level 2 in Figure 6), as this body forms the bridge between the strategic steering committee and the project teams.

IMEC is another core actor, accounting for 50% of the budget. IMEC is a globally renowned research centre, specialising in research regarding microelectronics, nanotechnology, artificial intelligence and ICT technology. They are a large company, with multiple international activities and various divisions. Their “City of Things” division is located in Antwerp and focuses on Smart City research. IMEC is represented in the steering committee and in the operational committee. In addition to contributing financial resources, they also bring human resources with a lot of knowledge and experience working with Smart Cities and Internet of Things.

Thirdly, Antwerp’s IT partner Digipolis is another core actor in the collaboration. Digipolis is a ‘inter-municipal association’ and, therefore, a public organisation. Flemish municipalities can establish this legal structure to delegate certain public services to external associations. In this case, the city of Antwerp (along with the city of Ghent) has delegated all of its IT-related activities to Digipolis. The covenant states that Digipolis should be considered part of the city.
Along with other IT support, Digipolis is also responsible for the development of ACPaaS, a citywide IT architecture. Digipolis adds human resources, experience and knowledge regarding IT systems and resources as they develop the city’s IT architecture.

**System context**

Contextual factors influence the collaborative dynamics and coordination (Ansell and Gash, 2008; Emerson et al., 2012). Belgium is a federal state, with authority regarding innovation, mobility, technology, digitisation and other Smart City-related fields located at the regional and local level.

At the regional level, a centre-right Flemish government took office in 2014 with a strong emphasis on economic growth, innovation and entrepreneurship. The coalition agreement puts forward the development of a policy for digital infrastructures and networks of Flanders. The goal is to “capitalise on the opportunities of Internet of Things, the cloud, big data and Industry 4.0”. This is reflected in the development of “a technology and living lab” outlined under the most recent covenant (2017-2021) between IMEC and Flanders and should not be confused with the one between IMEC and the city of Antwerp. The Living Lab is located in Antwerp, the largest Flemish city, and it has already begun the instalment of an internet of everything-lab as part of a Horizon 2020 project called SELECT for Cities.

Part of the connection between the Flemish and the Antwerp Smart City policies can be explained by the political set-up around 2016 and 2017. At the Flemish level, the centre-right government launched the Smart Flanders programme which supports Flanders’ 13 central cities in their transition to becoming Smart Cities. IMEC is the proposed partner for this transition. The Flemish government also issued Vision 2050 including, among others, the ambition of a transition to Industry 4.0 and to the circular economy.

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40 https://www.select4cities.eu/.
Meanwhile, at the local level, the same coalition took office in the City Council of Antwerp: The N-VA with the local liberals and the Christian Democrats. Antwerp enrolled its coordinated Smart City policy around the same time as the Flemish government. Multiple respondents and several government documents mention this political connection as an important driver for the collaboration. This political connection was brought up primarily by members of the steering committee, who are more involved with strategic decisions related to the overall Smart City policy in their decisions. Members of project groups, on the other hand, did not mention these matching policy agendas. This strong influence of political parties on policy and the connection between multiple policy levels can be seen as typical elements of the Belgian system context (Verhoest et al., 2012).

Ansell and Gash (2008) point out that successful collaborations in the past can facilitate further collaboration in the future. This also applies in this case, as IMEC has a rich history of collaborating with the city of Antwerp. Antwerp is a member of the network ‘Open and Agile Smart Cities’42, of which IMEC is one of the founding partners. IMEC and the city of Antwerp are also partnering in multiple Horizon 2020 projects, including SELECT for Cities43 (2015) and Synchronicity44 (2017). Those who had worked with IMEC before brought this up as an important driver of the collaboration, and this is mentioned in all of the strategy documents as well. Furthermore, Digipolis also has a rich experience in cooperating with both the city of Antwerp and IMEC. As mentioned in the first section of this report, the particular structure of Digipolis prevents the city to develop IT systems without the cooperation of its IT partner Digipolis. Like the city of Antwerp, Digipolis is therefore often involved with projects alongside IMEC.

The European networks that Antwerp is part of are another important element of system context. Several respondents mentioned the European attention for Smart Cities as an important driver for the set-up of the collaboration. Besides ‘Open and Agile Cities’ and the

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42 https://oascities.org/.
43 Horizon 2020 grant agreement no. 688196; website: https://www.select4cities.eu/.
44 Horizon 2020 grant agreement no. 732240; website: https://synchronicity-iot.eu/.
different Horizon 2020 projects, respondents also mentioned that Antwerp is part of the Eurocities Network\textsuperscript{45}.

**Collaboration challenges and dynamics**

Complex collaborations between multiple actors pose different challenges. This section will assess collaboration challenges in the context of Antwerp’s Smart City policy. We focus on three main challenges: (perceived) risk (Brown and Osborne, 2013), power imbalance (Ansell and Gash, 2008) and complexity (Klijn and Koppenjan, 2014).

**Risk**

Although most respondents indicated that they were rather excited about the project and about the application of smart technologies, there were some reservations due to its perceived risks.

Looking at the formal strategy documents, the first risk that becomes apparent is privacy, intellectual property and the use of public data (Stad Antwerpen, 2017a, 2017b). The opening of the bulk of data possessed by city governments is regarded as an important step with regards to new approaches in innovation and transparency, but with it comes certain challenges to consider (Walravens, 2012). Besides compliance with privacy legislation, the government documents also involve the factors of ownership, exclusion of citizen groups and participation regarding the open data. This ultimately resulted in the establishment of a data charter and code of conduct which needs to be endorsed by every participant involved in a Smart City project (Stad Antwerpen, 2018c). One respondent perceived this issue posed a distinct risk, but others did not really mention issues regarding privacy, intellectual property and the opening of data as risks they perceived early on. This could be explained by a lack of knowledge about data and privacy of the other respondents of the city. Every formal document, including the covenant, has at least one elaborate paragraph about the issue of privacy and data protection.

\textsuperscript{45} http://www.eurocities.eu/eurocities/home.
Another perceived risk came from the initial level of ambition depicted in the strategy documents and in external communication by the city regarding the Smart City policy. Expectations of the Smart City projects in Antwerp were set very high: Antwerp was to be a frontrunner among European Smart Cities, an innovative hub that would make city life easier, smarter and would use state-of-the-art technology to tackle the problems afflicting its citizens. However, the initial strategy document, and certainly the addendum that would follow, puts a strong emphasis on experimenting and project testing. Most respondents of all levels of the governance structure seen in Figure 6 had some concerns about where this would lead. The city’s public officials wanted a perspective of a potential upscaling of the smart projects. This perspective was lacking in the strategy documents and the covenant, as they were more aimed towards experimental and innovative projects. One respondent put it rather bluntly, and called the objectives ‘hypes’:

"Initially, I had the impression that the objectives were rather hypes. I sometimes thought that the intentions were never going to happen because there was no data yet. And it would take years to gather the necessary data."

Most respondents from the city’s administration were worried they were making unrealistic promises to their citizens. One respondent thought that what was promised initially was not possible. The respondent predicted it would take significant time to fulfil these ambitions but thought this had not been communicated properly to citizens and the public opinion. Another respondent thought that too little attention went to the negative consequences of the smart zone. For example, some projects required the street to be broken up, or testing smart lighting sometimes involved periods where streetlamps malfunctioned. These negative side-effects were not made clear enough to citizens, especially those living in the smart zone. Respondents from project teams and expert groups thought this overly optimistic communication came from high expectations of IMEC’s authority as a globally renowned institute on Smart Cities. City departments involved in project teams were also concerned about the high-level, technical nature of the content of Smart City projects. They did not have much knowledge about IT or the Internet of Things. As a result, projects and objectives were not described very meticulously, but rather put in open and imprecise terms. Another consequence was that IMEC was very influential in strategic decisions in the initial phase of Smart City projects. This
also constituted a power imbalance that we will elaborate on later. According to a respondent from a project team: “[IMEC and Digipolis used] words like ‘proof of concept’ and the like [which were] not our daily vocabulary. That is not the language we think in. So, in the beginning we rather tagged along.”

**Complexity**

Klijn and Koppenjan (2014) describe complexity as another important challenge for successful collaboration. Three types of complexity are distinguished: substantive, strategic and institutional complexity.

**Substantive complexity**

IMEC and the city departments did not have the same view about what direction to take the Smart City policy. While IMEC was mainly focused on experimenting and the opportunity to test new technologies in a living urban context, respondents from the city administration found themselves wondering where these experiments would lead to, and how they would help the citizens of Antwerp. This posed significant substantive complexity, stemming from a difference in perspectives about the purpose of the collaboration (Klijn and Koppenjan, 2014).

All but one respondent confirmed this observation. IMEC acknowledged this as well, pointing out that the innovations being implemented were not innovative and cutting-edge enough for IMEC, but at the same time they were a bit “too cutting-edge” for the city. IMEC, as a globally leading research centre, was clearly more interested in cutting-edge innovations and testing results. The city, on the other hand, had the objective to improve city life for its citizens. The projects were often too complicated to implement on a larger scale, and in the view of city administrators, not making a direct contribution to city life. Furthermore, there was no upscaling or implementation path explicated in strategy documents. One respondent explained:

> “The tension that arose stemmed from the fact that every project we did, did not go far enough for IMEC, but went too far for the city. We tested things that were not yet scalable or were too expensive to deploy on a larger scale. At the same time, those were not things IMEC could present at international conventions.”
Substantive complexity was also present, to some extent, in the collaboration between the city departments as well. The initial covenant was negotiated with a distinct ‘business and innovation’ approach, i.e. focusing on an ecosystem for technological and innovative start-ups and other companies (Stad Antwerpen, 2017a). The Department of Business and Innovation and the Department of Strategic Coordination are members of the steering committee (level 1 of the governance structure in Figure 6) and are thus involved in the overall strategic decisions regarding the objectives of the collaboration. The perception of these departments about the overall objectives of the Smart City policy were more in line with the business-oriented and innovative spirit of the covenant. Other departments, for example, those managing mobility or public lighting, were mainly looking for an improvement in the city’s services.

**Strategic complexity**

The majority of the respondents pointed out that strategic complexity, stemming from a difference in strategies used to address issues (Klijn and Koppenjan, 2014), occurred more in the beginning of the collaboration, before the formal governance structure was put in place. One respondent, for example, wanted to be more cautious with the use of city data and thought the use of public data was a delicate matter. The respondent was worried questions would be raised about privacy, and this would weaken the public’s trust in the local government. This caused some disagreement and in the addendum to the covenant, an expert group on data and privacy was created to resolve these issues of strategic complexity. From this moment on, strategic decisions were the result of consultation with the steering committee, and operational decisions were first discussed in the operational committee. A respondent recalled: “A good thing was that, when problems occurred and decisions had to be made, all parties involved in the concerned projects were also involved in the decision.”

In addressing both substantial and strategic complexity, respondents noticed a learning curve. By cooperating and learning to anticipate the partners’ behaviour, it became much easier to adjust mutual expectations and anticipate strategic decisions of other partners.
Institutional complexity

The most impactful institutional complexity stemmed from a difference in organisational culture between IMEC and the city departments. The Smart City policy, as it is shaped in Antwerp, has a strong emphasis on experimenting and testing innovative technologies. This is also the purpose of the technology and living lab IMEC had already installed in the city before the formal take-off of the Smart City policy. Respondents from the city’s administration indicated they had some reservations about experimenting with tax money when starting the project. Institutional complexity relates to the institutional frameworks that guide collaborative networks (Klijn and Koppenjan, 2014). In this case, the institutional complexity stemmed primarily from a difference in organisational culture and difference in accountability obligations. The city administration was reluctant to spend already-scarce time and public means on experiments that may not lead anywhere or may not improve the quality of life in the city. This issue of institutional complexity was of great importance and was mentioned by the coordinators of both IMEC and the city of Antwerp. One respondent added:

“We are not used to just try things with tax money. So, this innovation mindset is often difficult for us, and we have to be very cautious with it. We cannot do that in the same way as a research centre.”

Some institutional complexity stemmed from the differences between public organisations and private collaborators. Investments or other contracts need to be set up according to the prescriptions in public law and regulation, which often takes some time. Some strategic decisions also need to be approved at the political level as well. The city departments therefore had different rules to comply with than IMEC and other private organisations. All respondents pointed out this difference when asked about institutional complexity in the Antwerp Smart City case. However, due to IMEC’s extensive experience working with the city of Antwerp, this complexity did not end up causing problems.

Due to the project-based nature of the collaboration, operational decisions were often made in project teams. When decisions could not be made due to disagreements within the project teams, they were dealt with through consultations with the higher hierarchical levels. The difference in internal processes and institutions was overruled by the dynamics of collaborating on a particular project.
One respondent pointed out that different city departments answered to different aldermen and cabinets. Due to multiple departments being involved in Smart City projects, it was necessary to provide regular feedback to different aldermen and their teams of political advisors. The respondent said a different approach was required for each personal political staff. It was also important to make sure every alderman and their political staff received equal public attention when a project was successful. Experience interacting with the involved aldermen and their political advisors was therefore important for bureaucrats to decide the right approach.

**Power Imbalance**

Aside from risk and complexity, a third collaborative challenge is power imbalance. Financially, the covenant made sure each partner (IMEC and the city) provided 50% of the covenant means. This being said, in practice, power imbalances did come into play in some regards. The most important imbalance of influence to the collaboration was in practical knowledge. The collaboration required a very high-level, technological and often very specific knowledge base, which IMEC and Digipolis were far more well-versed in than the city departments. The respondents from city departments who were involved in project teams noted this was certainly a very impactful imbalance and this weakened their position in the beginning of the collaboration. Smart City projects were launched after proposals from the city departments, were able to have a major impact on the specific projects and could make sure the projects would fit their agendas. However, respondents in these project teams indicated they did not have the knowledge to really leave their mark on the projects the way they wanted to. While the city departments face problems in their everyday activities, they did not understand the possibilities of the technologies and were not familiar with smart solutions. This de facto put the decision authority with IMEC and Digipolis, as was described by one respondent: “IMEC and Digipolis, they think very technically and high-end in everything they do. That is absolutely a form of power. Throughout this whole project, expertise has been power.”

Another knowledge imbalance favoured the city departments. It became clear rather quickly that for projects to succeed, their input was very important. To launch a smart traffic light for example, the pavement has to be dug up. To install a smart junction, arrangements have to
be made with the public transportation organisation. This is knowledge that made the city departments indispensable in the collaboration and shifted some decision-making authority on certain practical matters back to the city departments. This imbalance was mentioned by half of the respondents and turned out to be a very important dynamic throughout the implementation of Smart City projects. Though the lack of knowledge of IT systems and Internet of Things put the strategic decision authority in the hands of IMEC and Digipolis, they were not able to use this authority one-sidedly, because the city departments’ knowledge of local practice could not be left out of the decision-making process. The resulting dynamic made all coordinators indispensable and necessitated collaboration be carried out on equal footing. A respondent explained that some projects were not supported by the city:

“Some projects have been proposed that we did not endorse because we know the effects. For example, there was this idea of a parking app. We know this can generate more traffic of people looking for a parking spot, so we said this does not fit within our mobility vision. I think we were on equal footing in this dialogue.”

Another power imbalance stemmed from the broad experience IMEC had with Smart Cities around the world. One respondent thought the set-up of the collaboration focused too much on the reputation and experience IMEC brought to the collaboration rather than giving attention for what the city did regarding data, IT services and infrastructure, and other smart-related projects. Another respondent believed IMEC’s strong reputation and experience in Smart Cities had given them more political leverage and influence.

**Public management interventions**

Torfing (2019) points out two important public management interventions to govern collaborative innovations: leadership and institutional design. Both are viewed to be crucial for the success of the collaboration (Ansell and Gash, 2008; Hartley et al., 2013).

**Leadership**

Respondents referred to the use of different leadership styles while confronted with different challenges. This supports the notion of a contingency approach to leadership, where the appropriate leadership style is chosen according to the situation (Ansell and Gash, 2012). In
this section, we will go over the collaborative dynamics discussed earlier and assess the leadership style that was used to address the issue.

A first risk that was perceived up front by some respondents from project teams was the technical difficulty of the projects. Respondents from city departments involved in Smart City projects did not have enough knowledge about IT and Smart Cities and therefore did not know what to expect. They saw a convener leadership style used by the city coordinator. Conveners shape the collaborative arena by promoting a mutual adjustment of expectations to empower the partners and clarify the process of the collaboration (Hartley et al., 2013). One respondent involved in a project team added that an overly technically minded coordinator was detrimental to the collaboration. Another respondent appreciated the coordinator taking a backseat role, allowing the respondent to focus on the task at hand and not be overwhelmed by the complexity of the project. This is an example of a mediator leadership style. By dividing the project into different manageable phases, the project team was able to focus on the task at hand to keep the project moving forward.

The collaboration was characterised by significant substantial complexity between IMEC and the city departments. IMEC wanted to experiment with innovative technologies and applications in a live city context. The city’s public officials primarily wanted to focus on improving city life for citizens through technology. To address this, the coordinator put forward a convener leadership style. As conveners aim to clarify interactive processes and promote mutual adjustment of expectations (Hartley et al., 2013, p. 827), this leadership style naturally fit the situation. Klijn and Koppenjan (2014) argue for joint learning and the development of shared frames of references to address substantive complexity.

The implementation of a formal governance structure addressed most of the strategic complexity. Strategic complexity was therefore primarily addressed by the institutional design of the collaboration, more than by a certain leadership style.

Most respondents saw a convener leadership style used by the city’s coordinator to address the institutional complexity stemming from the city departments’ hesitancy to experiment. By allowing the city departments to voice their concerns and discussing these concerns with the
other leading partners, the coordinator promoted a mutual adjustment of expectations. The coordinator also mentioned that this should be done even more in the future. Projects and smart initiatives should ideally originate from the needs of the city departments, as they know what is necessary for the city to improve. One coordinator explained:

“It is my role to explain that we are sometimes not doing [these projects] to scale them up, but just to test. I then try to make sure the challenges [the city departments] face are integrated in the projects.”

As mentioned in the previous section, significant power imbalances were found in the collaboration as well. There was a substantial knowledge gap between city departments and IMEC and Digipolis regarding Smart City projects. While city departments were asked to propose their own projects and use cases, they did not have the knowledge to do this and this put most of the decision-making authority in the hands of IMEC and, to a lesser extent, Digipolis. To address this issue, the coordinator took on a catalyst leadership style by reframing the problem as a learning process. By focusing on the learning opportunities, the coordinator tried to convince city departments that they would be able to have a bigger impact on the agenda of the Smart City policy in the future. This turned out to be rather effective, as all the respondents from city departments noted they did learn a lot and found they were better prepared to write use cases and propose projects in the future. One respondent saw an opportunity in this:

“It might sound abstract. But to really show and prove the role technology can play can often win someone over. That is something that is in our DNA, and it also contributes to our objectives to convince more people in the city’s administration.”

Collaborative leadership styles were used the most to address collaborative dynamics. The discussion of some perceived risks (data misuse, unrealistic expectations, privacy issues) and the complexities (different motives and cultures) along with the power imbalance (IMEC as an authority on smart cities) reveals some kind of suspicion was held by the city departments towards the Smart City policy. This was also made clear by the majority of respondent of the city’s administration. For the collaboration to succeed, leadership thus had to make sure that the city departments were motivated to participate, as they were an indispensable factor in the collaboration due to their knowledge of local practice. This situation justifies a
collaborative leadership approach, characterised by neutrality and professionalism (Ansell and Gash, 2012).

Looking at the positions in the governance structure, a difference in leadership styles can be observed. At the ‘top’ (e.g. the strategic committee, Level 1 in Figure 6) all partners are equal. Here we see more collaborative leadership styles, most often the convener collaborative style with an emphasis on the collaborative process. The ability of project teams, made through the operational committee (Level 2), to follow up on strategic decisions made by the strategic committee is often more transactional, with an emphasis on the results and the goals of the collaboration and a strong directive steering. This could be explained by the fact that there exists a hierarchy between these two groups of collaborators. The steering committee is hierarchically superior to the project teams in the governance structure.

Finally, project leaders indicate they use collaborative leadership styles to direct their respective project teams. Leadership styles in projects teams could also differ over time. As described in the discussion of substantive complexity, the members of city departments were not always convinced of the benefit of the experimental projects. In this regard, one leader of a project team indicated that he used more transactional leadership at the beginning of the project, however as the project moved on and different people were involved, the necessity of envisioning the “soul of the whole” became clearer. This brought him to take on more of a catalyst leadership style, as it was necessary to keep everyone motivated and involved.

Institutional design

A second important public management intervention to govern a collaboration is the institutional design. Institutional design describes how the collaboration is shaped and what procedures and protocols are followed (Ansell and Gash, 2008; Torfing, 2019). The formal institutional design of the collaboration is outlined in the covenant and the addendum and is depicted in Figure 6.

The collaboration is rather open and inclusive. Companies, city departments, research centres and citizens can all propose Smart City projects, make use of the smart zone and participate in the collaboration. The steering committee decides on the Smart City projects and the
covenant budget and is therefore the main decision-making body. In the covenant, it is written that the steering committee is composed of members of the city and IMEC, in line with the covenant as they both account for 50% of the covenant budget. In practice, the city of Antwerp has representatives of the mayor, the alderman of economy, the Department of Strategic Coordination and the Department of Business and Innovation in the steering committee. Digipolis and IMEC are represented as well.

An evaluation of the collaboration after one year (Stad Antwerpen, 2018b) led to an addendum to the covenant, in which the institutional design of the collaboration was changed (Stad Antwerpen, 2018a). This was done to address some collaborative dynamics and challenges. Several respondents noted that the different hierarchical levels in the institutional design were important. When decisions could not be made because of disagreements in project groups, expert groups or within the operational committee, the decision could be brought to a higher hierarchical level and deadlock could be avoided.

Substantial complexity, however, was also enhanced somewhat by the institutional design. Although the coordinator tried to discuss Smart City projects thoroughly with all the collaborators, substantive complexity still created tensions throughout the collaboration. This was because the governance structure was rather top-down. Strategic decisions were made in the steering committee (Level 1 in Figure 6), where city departments were not represented. While their concerns were made clear to the coordinator, city departments were not really involved in the actual decision-making. The city departments involved in the projects did have a voice in the operational committee (Level 2), but these discussions were primarily about practical and operational issues. Most respondents of project teams had the feeling that decisions were made above their heads.

While not all of the substantive complexity has been resolved, all respondents agree that progress is being made on a substantial learning curve. The many instances of consultation and discussion among collaborators helped to get to know each other’s motives and engage in joint learning. The fact that IMEC, Digipolis and the Department of Strategic Coordination of the city were present at all levels contributed to this process as well.
One issue of strategic complexity revolved around the use of public data. This was addressed by the introduction of a data charter, with which every project participant (including private organisations) had to comply (Stad Antwerpen, 2018c). The creation of an expert group around data and privacy also cleared up this issue. The data charter and the creation of expert groups has affected the form and structure of the collaborative network (Torfing, 2019). The creation of a platform for discussions to clarify interdependencies and the construction of common frameworks can be seen as a mediator leadership style.

The collaboration is mostly coordinated as follows: while the operational level is coordinated with network-type mechanisms, the steering committee is hierarchically superior and coordinates with hierarchy-type mechanisms. An example of a hierarchy-type coordination is the data charter and code of conduct which organisations have to endorse if they want to convey a Smart City project. This code of conduct influences the inclusiveness of the collaboration as well, as the City Council gets to decide who can participate. For example, organisations who earn profit solely from advertising are excluded.

Most respondents indicate that coordinating with network-type mechanisms was important to assess the power imbalance issues. As mentioned, the high-level technological knowledge sat mainly with Digipolis and IMEC, whereas knowledge of the local practice resided with the city departments. Dialogue and consensus were therefore imperative.

**Outcomes**

In this final section, we will assess the outcomes of the collaboration. The Smart City policy in Antwerp is still developing, and a new covenant between IMEC and the city will be negotiated in the future. However, the initial covenant has ended and comparing the initial objectives to the eventual outcomes provides insights about the overall development and success of the collaboration up until now.

As mentioned, the initial objectives of Antwerp’s Smart City policy were rather ambitious. The strategy document underlines the city’s ambition to rise to the top of innovative European cities. In so doing, the city wants to improve the quality of life for Antwerp’s citizens by implementing innovative solutions for societal problems and improving service delivery. While
these are certainly bold ambitions, it is clear that they are not attainable overnight. This is also made clear in the strategy documents, and the emphasis of the covenant with IMEC is placed on providing the opportunity for innovative partners and city departments to test innovative solutions and applications. These initial objectives are thus aimed at product innovations (De Vries et al., 2016). New, innovative technologies can be tested and developed through experiments in a real live city lab. This was often very specific: a smart light on a square in the smart zone that adapts to noise and movement on the square, for example.

Several respondents see the roots of the current Smart City projects in past projects. The living lab was already planned and to some extent activated by IMEC. In different Horizon 2020 projects, the city was also already experimenting with Internet of Things solutions and applications. Some product innovations were therefore rather incremental. Things that were already in place were altered to be more efficient and often more integrated with other efforts. Examples are the further development of Mobility as a Service, or the further integration of data islands. Other product innovations were rather disruptive and meant a profound change of existing products in the city. Examples are the experiments with smart lighting and a smart junction in the smart zone.

Another ambition of the Smart City policy is the creation of an innovative ecosystem for start-ups, private companies, research institutes, citizens and investors. This ecosystem should make the local economy flourish, should develop innovative solutions for the needs of citizens and should connect different actors through open data, artificial intelligence and Internet of Things. This ambition can be labelled a governance innovation, as it aims to develop new forms and processes to address societal problems (De Vries et al., 2016, p. 13). Innovation exceeds the boundaries of the city’s administration, new pools of human and material resources are tapped, private and public responsibilities are redefined, and multiple non-state actors are being invited to develop solutions for problems in the city (Moore and Hartley, 2010).

This ambition of governance innovation was perceived as rather disruptive. Respondents from all parties note that the collaboration involving multiple city departments and both public and private external partners has never been done this thoroughly. As noted, this collaboration
posed significant learning challenges for the partners as well, indicating that it was new to them.

The initial ambitions were not fulfilled by the end of the initial covenant. Only a few external partners proposed Smart City projects, so the instalment of a real ‘innovative ecosystem’ has not been attained yet. Many further smart zone experiments turned out to be too complicated or too expensive to be rolled out in other parts of the city. Therefore, the ambitions to ease city life with innovative solutions were not really met when the covenant expired.

However, when asked about the success of the Smart City policy up till now, almost all respondents were positive. Expectations were probably a bit too high to attain in just four years (the length of the initial covenant), but all partners made significant progress in cooperating with each other. The instalment of the governance structure in the addendum of the covenant certainly eased the collaboration and resolved some collaborative challenges. This can be coined an administrative process innovation, as it concerns the creation of new organisational forms and methods (De Vries et al., 2016).

The initial ambitions are not yet fulfilled, the projects are still ongoing and there may be a new covenant in the future, however, the collaboration did result in innovative practices and it is perceived by most respondents as a success. In other words, though the initial ambitions, product and governance innovations were not met, the collaboration did successfully achieve process innovations.

**Conclusion**

As Smart City projects are complicated and involve many different perspectives, knowledge of local practice was imperative for their success. This was acknowledged from the beginning of the collaboration, and city departments were asked to propose Smart city Projects that would address the problems faced by citizens and the city departments. However, due to a lack of IT and technical knowledge, city departments were not able to do this. This put the most decision authority in the hands of IMEC and Digipolis who, in turn, lacked knowledge about local practice.
This interdependent relationship on the one hand created the potential for collaborative advantage. On the other hand, collaboration was also hampered by significant substantial complexity between the coordinators of the collaboration and the city departments. Where the coordinators of the project were primarily looking to experiment and test smart solutions and innovative applications, the city departments wanted to improve city life and looked for feasible projects that could be scaled up. Moreover, there was institutional complexity between the city departments, who were reluctant to experiment directly with public resources, and the external partners, where experimentating and innovating was an integral part of their organisational culture.

To address these tensions, the coordinators put forward a collaborative leadership style to make sure the city departments could voice their concerns, be included in decision-making and enhance their interactions. The coordinator supported city departments as a mediator by clarifying the process and making sure they could grasp the idea of the Smart City projects. This was necessary, as they did not have the necessary knowledge from the beginning. Furthermore, the coordinator tried to help city departments as a convener in voicing their needs and the particular issues the smart projects should address.

This leadership style had certain success, as all respondents note they had learned a lot and were now better equipped for a possible continuation of the collaboration. The coordinator acknowledged that the core collaborating actors, IMEC, Digipolis and the Department of Strategic Coordination, now have a better idea of how to approach city departments and who to include. City departments state they are now better prepared to propose smart projects and make sure the projects address their needs and problems they see in the city.

Furthermore, after an evaluation of the first year of the collaboration, a change was made to the institutional design with the addition of a formal governance structure and the creation of expert groups. A data charter was also introduced later on. These interventions addressed some of the strategic complexity and streamlined the decision-making process with a clear delineation of a steering committee.
While both leadership and the changes to the institutional design addressed some of the collaborative dynamics, they also contributed to a shift in outcomes. The initial ambitions of the Smart City strategy and the covenant between IMEC and the city were primarily the testing of product innovations in a living lab in the city and the instalment of an innovative ecosystem. While leadership sought a collaborative approach, the institutional design of the collaboration was still very top-down, and city departments were not sustainably or equally included in strategic decision-making.

As a result, the outcome of the collaboration was primarily a process innovation, as opposed to the initial ambition of product and governance innovations. This process innovation was primarily innovative in different ways. City departments noted that they are now better equipped to develop projects that use technology and IT to address problems they face in the city. The coordinating actors mentioned they are now better able to collaborate with city departments and include their knowledge of local practice in decision-making processes.

This case study indicates the importance of support among the collaborating partners who have to implement the outcomes of a collaborative innovation project. When implementing innovative applications in a real-life, complex environment, knowledge of local practice is important to address practical issues that are often inevitable. Strategic decisions have to take local practice into account. Furthermore, partners have to be empowered and supported by the coordinators so their knowledge of local practice can be applied to contribute to better decision-making.
2.2.2 Estonia: Tallinn’s Sustainable Urban Mobility Plan (SUMP)

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**Case introduction**

The implementation of the Tallinn Sustainable Urban Mobility Plan (henceforth Tallinn SUMP) was crucial in defining the future framework for mobility development for the city of Tallinn and its adjacent local municipalities. Harju County, in which the city of Tallinn is located, lacks an overall mobility strategy, and this has contributed to the challenge of coordination between different local governments and the disconnect between public transport and new urban developments. This led to the increased use of private cars, which entailed several drawbacks in terms of finance, time and environment for both citizens and municipalities in Tallinn. Tallinn SUMP incorporated a more holistic approach, which focuses on the collaboration between various stakeholders to ensure user-centric mobility experiences. This provides a basis for the development of a modern urban environment with transportation solutions that are more aligned with the individual needs of citizens and shifts the mindset from an organisation-centric approach towards a holistic representation of the urban environment.

Tallinn SUMP was developed through work in the following thematic areas:

- Public transport, especially addressing the potential for modal shifts for routes across the city
- Smart and safe infrastructure that encourages walking, cycling and use of intermodal public transport
- Transport demand management, including parking policy
- Integration of land use planning and transport
- Urban Freight

According to key individuals involved, the Tallinn SUMP aims to: reduce costs related to mobility; limit the use of private cars; increase the rate of people walking, cycling and using public transport through increased multi-modal accessibility to necessary locations; and limit the negative environmental impact from urban transport. The goals entail an attempt to instil an alternative mindset within the design process of urban environment. The goals were
determined through a process of extensive engagement with various stakeholders to provide additional perspectives through seminars, workshops and surveys.

Tallinn SUMP provides an opportunity to incorporate a framework for enhanced data-based decision-making, by bringing together existing information that was previously fragmented between different stakeholders. This has been supplemented by additional supporting studies, which address existing knowledge deficiencies to formulate a holistic representation of the current situation. Additional digital solutions have come into play during the process of implementing and reaching the goals of Tallinn SUMP, both in the use of new collaboration modes between institutions as well as during the processes of urban planning and transport management.

In the future, Tallinn SUMP will set the criteria for all transportation infrastructure projects taking place in the Tallinn capital region. It follows the principles outlined by the European Commission within the 2013 Urban Mobility Package, with a focus on an integrated vision of improving all modes of transport through stakeholder engagement and evidence-based assessment. Tallinn SUMP will additionally be harmonised with the Helsinki Region transport strategy and plans, as there is a need to address jointly the planning and management of cross-border traffic issues like intensive goods logistics, truck traffic, and Estonian private car approaches to the Helsinki airport.

Key actors within the city of Tallinn and the national level have been engaged during the process of developing and implementing Tallinn SUMP. Figure 7 (below) provides an overview of the relevant actors and their roles in in the collaboration process. It consists of representatives of the following stakeholders:

- The Tallinn City Government;
- The City of Tallinn Transport Department;
- The City of Tallinn Public Works Department;
- The City of Tallinn Urban Planning Department;
- The City of Tallinn Financial Department;
- The City of Tallinn Environmental Department;
- The Estonian Road Administration;
- The Ministry of Economic Affairs and Communications;
- The Union of Harju County Municipalities; and
- Various External Experts.

Figure 7: Actors’ engagement within the collaborative arrangement of Tallinn’s SUMP

The constellation is made up of both key administrative and political actors to ensure legitimacy. It was developed based on assumptions of how best to structure well-functioning coordination both horizontally as well as vertically. It enables experts with highly diverse backgrounds to apply their knowledge to develop a holistic, forward-thinking.

Tallinn SUMP has been in development since the second half of 2016, beginning with the initiation of support surveys and diffusion of the concept amongst stakeholders. An initial Tallinn Region SUMP concept paper was distributed and considered in 2017, and the following year was spent on discussions in different thematic groups to determine the vision, objectives, alternatives and choice of key measures through seminars and workshops with the relevant stakeholders. The main project was concluded in May 2019 with most relevant actors accepting and incorporating the end result. However, the city of Tallinn has yet to formally
accept Tallinn SUMP. It has brought along certain shifts in approach, as the Ministry of Economic Affairs and Communications and City of Tallinn have signed a memorandum of cooperation, which is strongly based on the framework endorsed within Tallinn SUMP. The memorandum states that the City of Tallinn and Ministry of Economic Affairs and Communications will collaborate to develop a user-centric multimodal mobility network that provides everybody a comfortable and safe transport option (Ministry of Economic Affairs and Communications, 2019).

System context
Estonia is a small and very centralised country, considering the top-down authority between central and local government. It has had a single-tiered city and rural municipality government system since 1993, which was formulated via the Local Self Government Foundation Act of 1989 and the Local Government Organisation Act in 1993. Administrative reforms in the 1990s set the status of local governments within the administrative structure (Mäeltsemees, 2016). The Estonian Constitution provides local governments with substantial legislative autonomy, and the central government is furthermore prohibited from making administrative interventions on the local level. The main tasks of the rural municipalities and cities are stated in the Local Government Organization Act. The distribution and delegation of obligations to local governments can only be on the basis of law or mutual agreement between relevant stakeholders. Since the 1990s, all local issues are dealt with and resolved by local authorities, unless otherwise specified by the legislative framework. Municipalities are provided the autonomy to manage public services independently from the central government through a separate budget that forms part of the public sector’s budget, but doesn’t form part of the state’s budget (Mäeltsemees, 2012). The Constitution has guaranteed rural municipalities and cities autonomous budgets, which reflects the right to municipal self-administration to ensure performance for local self-government functions. The drafting of the budget and procedures has been stipulated with the Local Government Financial Management Act. The local level has therefore been provided the freedom to organise services as they see fit, and larger municipalities are able to maintain a more complicated administrative structure consisting of multiple departments each lead by their respective deputy mayor (Mäeltsemees, 2016).
The municipalities’ expenditure in the post-communist period has remained between 5-10% of the GDP. Local finances are, to a large degree, still dependent on the central government budget despite their legislative autonomy. This is due to the fact that the main sources of municipal revenue are taxes imposed by the state and federal subsidies, leaving municipalities strongly reliant on federal funding in order to function. The central government exerts considerable influence on local governments by leaving them unable to make necessary decisions that rely on resources from the central government. The central government is able to use subsidies and grants to steer and restrict local discretion and has continuously worked to decrease the ability of local governments to employ alternative revenue sources (Mäeltsemees, 2016; Mäeltsemees, 2012). The de facto administrative capacity amongst local governments differs to a considerable extent, as the largest municipalities have managed to maintain more financial autonomy from state control. The ability to independently carry out reforms and spur innovation is thus limited to only a select number of local governments (Mäeltsemees et al., 2013).

The ability to coordinate on the local level has remained a constant problem, as the autonomous local government system in Estonia is characterised by a considerable level of fragmentation (Mäeltsemees et al., 2013). Municipalities have engaged in collaborative arrangements through joint provisions of public services, especially in areas such as waste management, education, transport, social welfare and health care (Mäeltsemees, 2016). However, despite the enabling legal framework to conduct collaboration between municipalities, initiatives of this kind have been rare. Local actors have often neglected the necessity to collaborate meaningfully in areas that surpass administrative borders (Sootla, Kattai, 2020). This has been driven by fears of losing local autonomy, as municipalities obtain a risk-averse position in an attempt to avoid a perceived loss of power (Ibid.). This is further reinforced by a deeply rooted culture of individualism prevalent in Estonian administrative structure. This has been highlighted by the OECD, who indicated a propensity towards competitiveness and individualistic mentality within the public administration (OECD, 2011). Individualism manifests both on the national and local levels, and fragmentation results in limited inter-municipal collaborative arrangements, as municipalities often engage in competition rather than collaboration. The inability to formulate strong inter-municipal
collaborative ties has negatively affected local governments’ ability to influence policymaking on the national level and given the central government an asymmetrical amount of power (Sootla, Kattai, 2020). Although the Association of Estonian Cities and Municipalities is intended to gather all the rural and urban municipalities of Estonia and represent their interests, as a non-profit, nongovernment organisation it has a rather low status, and thus lacks the capacity to contribute significantly to policymaking.

The association has limited resources due to which they lack significant power and the legal ambiguity surrounding inter-municipal collaboration limits incentives for engagement. Their legitimacy is further hampered by their superficial engagement on the national level in policymaking with participation mostly occurring after the substantive policy decisions have been made already.

In addition to inter-municipal issues with coordination, the local governments receive mixed signals from the national level as well. Support from the central level tends to remain fragmented, due to the fact that the central ministries lack a coherent policy towards the municipalities. Interactions occur individually between actors in each policy area and suffer from a lack of a coherent vision. The central government provides neither incentives nor support for collaboration on the local level (Mäeltsemees et al., 2013). The problems prevalent on the central government level become apparent in engaging with the local level - weak cross-organisational coordination and a lack of capacity to implement measures efficiently. OECD indicated that this impacts service delivery at all levels of government and affects regional development (OECD, 2011).

**Starting conditions**

As the capital city of Estonia, the City of Tallinn possesses a unique position among the municipalities. Tallinn is the source of 50% of the GDP of Estonia, and provides substantial amount of employment, which has enabled access to revenues that far surpass other municipalities. The revenue received from personal income tax is considerably higher than average, which has trickled down to the surrounding municipalities and enabled Tallinn a larger level of autonomy from the central government (Mäeltsemees, 2016). As the most populous city in Estonia (more than 4x larger than next largest city), Tallinn possesses
substantially more resources than other municipalities for the administering of local tasks and steering policy.

The City of Tallinn has delegated service provision to various departments who are responsible for fields such as urban planning, road maintenance and public transportation. These departments remain responsible for only their specific policy fields, which has resulted in fragmentation, and there is considerable competition between the different departments for resources and power. Despite the increased importance of holistic strategic planning, the governance structure within the City of Tallinn remains highly focused on individual departments, with limited overview over the general progress itself. Efforts to consolidate a more integrated approach have been initiated through a strategic planning department under the Financial Department of the City of Tallinn, but they possess limited resources to coordinate different policy fields.

The City of Tallinn has increased its attention to tackling issues resulting from rapid urbanisation and the uneven distribution of economic activity. Transportation is one of the main sources for CO2 emissions, and as the majority of movement in Estonia is concentrated to the capital region, sustainability has become one of the key areas needing to be addressed. The administration has considered new ways to reframe their approach to governance; Principles like sustainability, quality of life and resource efficiency are being mentioned in strategic documents, and both local and national levels have issued commitments to tackling the issues. The Tallinn Development Plan 2018-2023 has highlighted the goal to increase the use of sustainable modes of transport and the availability of public transport offerings (Tallinn City Government, 2018). Political leadership within the City of Tallinn has clearly highlighted the need to implement a citizen-centric common vision through the method of cross-departmental collaboration.

The emerging mindset towards sustainability has also been spurred by international pressures, as the EU’s structural funds are allocated based on the ability of municipalities to show their use of resources with sustainability in mind. As a result, more individual actors have been committed towards discussing the implementation of sustainable principles. However,
these initiatives struggle to expand from their limited, project-based settings, as financial sustainability inhibits possibilities for more stable arrangements (Randma-Liiv et al., 2015).

One of the key policy fields in Estonia that has been deferred to the local level is mobility. Urban mobility policy is a highly complex field which is affected by a wide range of conditions, such as congestion, traffic accidents, pollution and resource costs. These complexities furthermore transpire unto strategic planning, where actors have to consider a multitude of variables. Institutional complexity is another factor with regards to urban mobility policy, and the provision and organisation of public transport within Harju county has been delegated to different organisations with varying accountabilities. The City of Tallinn organises public transport independently within the urban area through Tallinn Transport Department, which remains responsible for planning out the system and supporting framework. Tallinna Linnatranspordi AS, a city-owned enterprise, provides the services. Other municipalities of Harju County have organised public transport through Põhja-Eesti Public Transport Centre. Trains are operated by a state-owned enterprise known as Elron AS. The different organisations are accountable to entirely different organisations, which results in different policies and fragmentation among the different modes of transport. For example, the City of Tallinn provides free public transport for residents within the urban area, but this does not apply to other residents of Harju County.

Urban mobility has received considerable attention on the supranational level, as the European Commission has formulated a set of guidelines to empower the cities and towns to develop a SUMP of their own. The European Commission introduced their SUMP concept in 2009, with initial guidelines being formulated in 2013 and a revised edition released in 2019 based on the collaboration of hundreds of practitioners, researchers and policymakers. The guidelines involve eight key principles and best practices to support local governments to develop and implement their own SUMP. Suggestions are, amongst other things, connected to possible set of actions, actors to be engaged, and issues of which to be aware. Through SUMP, a conscious effort has been made to reframe urban mobility policy approaches to consider functional rather than administrative borders. Additionally, the integrated approach attempts to address fragmentation in governance structure by formulating decisions on evidence-based situation assessment. It furthermore attempts to incorporate all relevant
elements, including all modes of transportation, the supporting infrastructure and its effect on the surrounding functional urban environment.

The European Commission is increasingly promoting urban municipalities to follow and devise their own SUMP S, and the ability to receive funding from different EU support schemes EU is directly linked to developing and implementing a SUMP. This approach enables individual municipalities to communicate their vision, indicating strategic planning competency and efficient use of resources. The EU’s available resources constituted a substantial proportion of the Estonian national budget, and therefore represented an essential source of funding for the project (Randma-Liiv et al., 2015).

Smart city initiatives within the City of Tallinn often remain fragmented due to a lack of a coherent strategic approach. Initiatives often remain within their project teams and fail to be known and replicated by external actors. Tallinn SUMP faces a similar problem, as the associated organisations remain reluctant to adopt an approach that would result in considerable internal process adjustments. Though Tallinn SUMP aligns with key themes that have been highlighted in strategic documents, the practical actions taken towards implementing it have remained very limited. Tallinn Development Plan 2018-2023 has outlined SUMP as a measure to achieve an urban space which is cosy, inspiring and environmentally friendly (Tallinn City Government, 2018). However, this has failed to translate to coordinated actions to develop a clear, forward-thinking vision.

**Collaboration challenges and dynamics**

Collaboration dynamics surrounding Tallinn SUMP were strongly affected by multiple challenges, but the most relevant were the ones related to substantive complexity. Those formulating Tallinn SUMP wanted to create a plan which would be widely accepted, but what resulted was an engagement of actors with very different understandings of the underlying problem, the project’s importance, and what possible measures could be taken.

**Complexity**

Complexity entailed strong problems for the Tallinn SUMP collaboration. The inclusion of different actors from both the subnational and national levels contributed further complexity.
Substantive complexity impacted the collaborative arrangement the most, though strategic complexity also contributed its share of issues. Key factors included the differences of opinion regarding the current situation and goals and the existing framework on local level organisational priorities. Contributing factors included the inability to communicate Tallinn SUMP to the political level, and interactions between national and local level entities.

Regional transportation is one of the key areas for formulating and maintaining daily routines. It is inherently linked to many different policy fields, and results in a situation where actors are unable to jointly evaluate the current state of affairs, which in turn makes it difficult to formulate common goals. Actors are in agreement regarding the deteriorating situation in general but remain unable to decide on how to measure its extent, due to the fact that mutually comprehensible indicators are very difficult to formulate (I1; I4). Indicators considered were the reasoning of transportation preferences, average time of travel, average speed of public transportation, average use of private transportation, as well as other factors (I1). The issue of transparency also came into play with regards to assessment, as interpretation of indicators affects the measures to be taken to solve them (I4). Actors were uncertain whether the goal should be to decrease the use of private transport, keep the current level proportional with population increase, or other alternatives, which resulted in unclarity regarding the Tallinn SUMP overall vision (I1; I5).

The City of Tallinn manages service provision by different administrative departments, which has resulted in strong fragmentation. The lack of holistic strategic planning has remained a persistent issue, which was consistently mentioned during interviews (I2; I3). As one interviewee described: “Organising mobility as a whole is currently nobody’s topic (...) its holistic approach falls into a grey area” (I2).

The Transport Department is responsible for public transportation and traffic management, the Urban Planning Department remains responsible for the maintenance of the framework designing the urban environment, and the Public Works Department is responsible for the maintenance of the urban environment (I2). Particular conflicts in Tallinn SUMP arose between the Urban Planning and Transport departments regarding how to approach certain topics such as parking (I1). It was further accentuated by the prevalent laissez faire approach.
Furthermore, despite the increasing urban congestion and its connected costs, there is little prioritisation for change amongst the primary actors (I2). As a result, actors possess limited willingness to reorient their existing mindset and routines to find a common understanding. The considerable reliance on external experts and lower level officials contributed to problems in communicating the initiative to political and administrative leadership. The project was perceived to be distant from the day-to-day organisational routines and practices, which led to failure in engaging the administrative leadership. Individual stakeholders failed to perceive how it would improve daily routines, as they regarded it as an unnecessary addition to current obligations. The administrative leadership lacked the willingness to transmit their ideas to the political leadership. Additionally, the lack of a mandate for the project team inhibited their ability to independently engage political leadership. As a result, political leadership was unaware of the importance or progress of Tallinn SUMP and, in certain instances, publicly disregarded the project (I1).

Fragmentation on the local level results in issues in organising a coherent regional approach as well. The task of providing public transportation has been divided between various levels of government and different legal entities, which has complicated coordinating between the relevant stakeholders. There are limited connections to the regional forms of public transport because the Transport Department remains responsible only for transportation within the urban area of Tallinn. County areas are operated by a different entity, Põhja-Eesti Public Transport Centre, and the train lines are operated by another state-owned enterprise, Elron (I1). Each entity is accountable to a different organisation, and their different legal status results in a different operational framework. The fragmentation in public transport authorities results in a situation where there is a lack of central steering, as each entity is focused on their individual organisational priorities. This incentivised strategic behaviour amongst actors and inhibited collaboration. The inability to address it in the past has resulted in considerable costs for citizens who have travelled between the City of Tallinn and adjacent municipalities, incentivising them towards car transportation. This led to increased recognition within the project team of the need to attempt to shift the current organisation-centric mindset.
Risk

Tallinn SUMP faced several perceived risks that affected its development. This was to an extent connected with its chosen approach to engage as many actors as possible. The key factors included political risk and a lack of ownership due to unclear task delegation. Contributing factors included a significant time pressure, which resulted in higher levels of uncertainty.

Urban mobility is a field where benefits manifest only after a considerable timeframe, and this makes it very difficult to create appeal for it from either administrative or political leadership (I1). Urban mobility projects require consistent changes and adjustment throughout their development and implementation, which can cause stakeholders to become sceptical of their progress. Stakeholders may be unable to perceive the positive gains and focus on the many changes and their accompanying costs. The negative feedback from both the wider public and private sector can affect the power of the relevant actors (I1), and the perceived possible loss resulted in actors’ reluctance to invest considerable resources. In the context of Tallinn, political leadership hasn’t committed to Tallinn SUMP and has provided only limited political backing. This has been further hampered by the volatility in political positions, which lack long-term stability and are prone to change (I2).

The lack of a proper regional level authority made it unclear whether the initiative should be driven by local actors or government agencies. This has resulted in ownership issues, as none of the key actors have been able to effectively take leadership on a consistent basis (I1; I2). One interviewee elaborated: “Until the end it was difficult, the ownership question, who dispenses tasks and how to move forward” (I1).

There has been a constant transference of responsibility between the national and subnational levels. This has resulted in unclarity regarding the distribution of obligations. The Transport Department put in the most resources for the Tallinn SUMP with manpower and expertise, yet due to the regional nature of the initiative, it transcends their area of competence and they perceive the jurisdiction needs to come from the national level (I1). Formally, it was agreed upon that the National Road Administration would act as the coordinating actor. The Estonian Road Administration were charged with coordinating and
maintaining oversight over the progress, but their authority over other stakeholders was based on acceptance of all actors, as they lacked the opportunity for command-oriented measures. However, the arrangement failed to translate into practice, as the resource allocation and perceived contribution remained limited (I1). The issue of a lack of leadership carried over into the allocation of responsibility with the project team. Despite the project team highlighting the importance of the initiative being the work of all actors, none of the partners were willing to provide too much priority towards it (I1). As was stressed by one interviewee: “(...) at the start we seriously underestimated the necessary manpower” (I1).

Members of the project team were perceived to be disconnected from practical issues, and garnering support for future-oriented solutions was difficult due to the fact that their partner organisations were still busy struggling with existing everyday problems (I3; I4). The project therefore struggled to engender an alternative mindset within the organisations, whose members perceived its negative effects on the status quo to outweigh its benefits (I2).

Lastly, Tallinn SUMP tried to achieve their goals of a holistic approach to urban mobility in a very limited timeframe of only two and a half to three years. This plan was highly ambitious, considering it was the first time it has been tried in Tallinn region (I1). The previously mentioned complexities, compounded with the time pressure by the project team to deliver, furthermore resulted in a high level of uncertainty.

The short timeframe was due to the fact that funding of Tallinn SUMP was mostly originated from the EU’s structural funds, which required them to set specific deadlines for implementation. The deadlines were considerably shorter than the individual stakeholders felt necessary for achieving the intended shift in mindset (I2). However, funding Tallinn SUMP from domestic sources would have been impossible due to its low priority, which required stakeholders to adjust to the limited timeframe. The lack of assurances and financial stability within the administrative structure resulted in a higher level of uncertainty and unawareness regarding the end result.
Power imbalance

Power imbalances manifested very little, due to the use of various platforms for interaction and discussion throughout the project. Rather, the key factor was the distribution and contribution of the roles within the project.

It was clear that the National Road Administration and the Transport Department of the City of Tallinn would be able to contribute more resources, as the initiative aligned more directly with their organisational priorities. Additionally, the Ministry of Economic Affairs and Communications acquired important roles within the collaborative arrangement, as they were strongly committed to fostering an alternative mindset (I2). Because they had contributed the most in terms of resources, the National Road Administration and Transport Department of the City of Tallinn was expected to take the leadership roles within the initiative. Formally, the Estonian Road Administration were chosen to coordinate the initiative due to the regional nature of the issue (I1). However, often the primary roles were taken by the Transport Department due to their advantages with regards to resource allocation and financial experts. This was further enabled by the limited interactions taking place outside official arrangements, which provided them with privileged access to information and expert knowledge. As a result, the organisations who embraced the new mindset with more ease, like the Tallinn Transport Department and Estonian Road Administration, were able to steer the collaborative arrangement. As was outlined by one of the participants: “(..) some wanted to achieve substantive change with the project, whereas others just wanted to get it over with“ (I2).

Public management interventions: leadership and institutional design and their effectiveness

Tallinn SUMP was an attempt to establish a collaborative arrangement exhibiting network type mechanisms. The temporary, project-based nature of funding necessitated the use of flexible, network type mechanisms. Actors were committed to establishing strong communication channels, which provided participants equal footing and lead to increased engagement in the process. The individual actors relied on the shift in mindset introducing additional deliberation opportunities between relevant stakeholders. Interviewees reported
that the project had succeeded in its goal of instilling a new mindset through voluntary engagement.

*Institutional design*

Tallinn SUMP utilised a two-tiered formal structure, which comprised of a steering committee and the project team. The steering committee mostly consisted of leadership from the engaged organisations and deputy mayors, which added a level of legitimacy to the project. The position of the steering committee was intended to establish increased awareness and gather more top-level support for the initiative (I2). The project team was composed of leading experts, external consultants and representatives from the City of Tallinn and the Estonian Road Administration. As previously mentioned, the Estonian Road Administration was formally assigned the coordinating role for SUMP, as the initiative took place on a regional level and transcended the areas of responsibility for the City of Tallinn. However, in practice, the effectiveness of this structure was hampered by several key factors. First, the steering committee possessed limited importance, as they were engaged only in order to gain a token level of acceptance from leadership. The steering committee had very few meetings, which led to little leadership engagement in the collaborative process (I1). The engagement of political leadership from deputy mayors within SUMP has remained lacklustre, which has limited further legislative progress. The inability to engage political leadership from the start resulted in a situation where there have been inconsistencies between the position of political leadership and the ideas covered in Tallinn SUMP (I1; I2). Political leadership was either unaware or refused to acknowledge the initiative and its principles at various stages, which impeded progress in altering an organisational mindset. This resulted in increased pressure for the project team, as the steering committee did not end up providing them the legitimacy for which they had hoped (I1). Secondly, despite their formal role, the Road Administration contributed Tallinn SUMP quite limited resources in the early stages by hiring its representatives for only temporary employment periods (I1). This resulted in difficulties in engendering common ideas towards approaching sustainable mobility issues within Tallinn SUMP. Additionally, it caused a shift in the formal structure, where City of Tallinn felt they had obtained a more extensive role than initially planned. This resulted in increased frustration with the collaborative arrangement due its insufficient formal structure.
Most of the work was conducted through regular weekly meetings, which served as platforms for deliberation and general progress reports (I1; I2). The project manager also attempted to more actively engage deputy mayors by setting up separate regular progress report meetings (I1; I2; I5). The commitment of various actors to contribute additional resources towards Tallinn SUMP remained somewhat low, which put additional importance upon the formal meetings to ensure further progress (I2). However, meetings also gave rise to conflicts when departments asserted different perspectives and extensive deliberations were needed in order to come to a common understanding (I1). Decision-making within the project was based on a consensus-based approach, where the individual actors tried to formulate a mutual understanding of the current situation and the different possible scenarios they could take moving forward. This approach remained key to ensure the engagement of all actors and to motivate them to participate.

To reinforce the formal meetings, the project team hosted morning seminars involving a wider range of actors, which enabled an additional arena for deliberation among partners in which all actors were provided an opportunity to contribute and highlight their ideas. This proved crucial in the initial stages, where it became apparent through discussion how different the perspectives were between different departments of the City of Tallinn (I1). However, because parties contributed limited resources, the ability to engage all affected parties was constrained (I4). This was a result of the differing topics covered by Tallinn SUMP, which limited the possible input of certain actors. Despite the issues regarding input, the regular meetings did provide a benefit in determining the optimal role allocation between different actors and the extent of the conflicts faced by various organisations.

To address the complexities of the cross-organisational collaborative arrangement, Tallinn SUMP engaged an external project manager to oversee the process and ensure that deadlines were met. Initially, a single coordinator was also appointed who was responsible for the development of Tallinn SUMP. The individual exhibited a dual role and accountability, being employed simultaneously by the National Road Administration and the Tallinn Transport Department to ensure representation of the key leading actors (I1; I2). However, the initial limited resource allocation and the dual accountability necessitated a reorganisation in management, as the initial coordinator went on extended leave and the team was overhauled.
with the introduction of a new project manager and experts. The reorganisation aimed to mitigate overreliance on single individuals and was an acknowledgement that the initial structure of the team had severely underestimated the necessary resource costs for the initiative (I1). Additionally, it recognised the varying organisational cultures and priorities, which had hindered the ability of the initial coordinator to carry out tasks. The shift was carried out after considerable time had passed, which required the new project manager to first familiarise themselves with the project (I2). This created considerable setbacks within the project, as it resulted in new difficulties. The project manager possessed the competency to comprehend and manage the content side, but faced difficulties in organising the work and allocating tasks (I1). Firstly, the project manager had not come from any of the engaged organisations and thus possessed limited influence within the arrangement. Authority was based on the partner’s acceptance of the project manager’s position, which caused issues with task allocation, as the project manager lacked the mandate to make decisions and settle conflicts. Additionally, the project manager was perceived to have other external obligations, which affected relationships with other team members (I1; I2). The shifts in managerial roles and accountability with Tallinn SUMP achieved limited success in addressing the complexity within the collaborative arrangement. As one interviewee stated: “An external project manager had been chosen, but it was very difficult to give commands to people that don’t obey to them (...)” (I1).

The institutional design of Tallinn SUMP had several drawbacks, which affected the success of the initiative. The formal structure failed to follow its original design, and the project team was forced to take up tasks that had been originally delegated to the steering committee. Platforms for interaction did provide an opportunity to adjust the framework to consider different perspectives, yet it failed to engage the linked organisations more broadly. The project manager was unable to exercise the role as designed due to issues with accountability and the provided mandate.

*Leadership*

As the arrangement engaged both local and national actors, it relied extensively on collaborative leadership to facilitate change. The lack of authority applied by any single entity
limited the possibility for transactional leadership, as mutual agreement was the basis for moving forward. As Tallinn SUMP represents the first attempt in the capital region to reorganise urban mobility planning towards a holistic approach, then relevant stakeholders were unable to entirely perceive the shifts that inter-organisational collaboration would require. Problems with leadership throughout the collaborative arrangement occurred, as there was a lack of clarity regarding leadership and an unwillingness to solve it. It was left unclear whether the Tallinn Transport Department or Estonian Road Administration should be coordinating the initiative and despite formal role designation, stakeholders were unable to agree upon the obligations and necessary actions. Limited motivation of engaged stakeholders further impeded this. The ambiguity provided the opportunity to avoid taking practical actions, which would have required the allocation of additional resources from stakeholders (I1). As was remarked by one of the actors: “There is an understanding that a regional mobility plan and strategy is required, but the entire time the question remains regarding who is the initiator and whose role it should be to lead it” (I2).

The formal structure provided limited support towards efficiency. Additionally, it inhibited the use of transactional leadership, as none of the engaged organisations were willing or able to make use of it extensively.

The strategic plan was developed with the engagement of as many relevant mobility experts within Estonia as possible (I1). The project team consisted of individuals with various backgrounds, including experts from NGOs and public officials. Both the Tallinn Transport Department and Road Administration employed leading experts within the field to identify the opportunities available to the initiative. Existing connections and the already limited number of experts within Estonia provided the actors a good idea regarding who should be engaged from the onset. The choice for strong expert representation was connected to the fact that the initiative had been strongly led by mid-level officials, who sensed inadequacies in the current approaches towards mobility (I5). The initiators wanted to act as catalysts within the collaboration and prompt a cognitive shift towards a long-term perspective. This resulted in a more concrete position to present to authorities based on supporting studies and expert opinions. While the engagement of specialists and experts has brought about new understandings towards mobility and ensured integrity to the project, efforts to usher in a
wider cognitive shift have remained ineffective. The ability of long-term strategic planning in urban mobility remains insufficient, as stakeholders are focused on short-term perspective by alleviating current problems.

The initial differences in approach were strongly based on the limited amount and fragmentation of necessary information. To counter the substantive complexity derived from this, new support studies were procured, and existing datasets reanalysed. This served to reframe the current situation and enable all relevant actors a position from which to initiate debate regarding the possible opportunities. It furthermore resulted in the carrying out of several additional studies, which measured factors related to feasibility, parking, and user preferences on the modes of transportation within Harju County (I2). Tallinn SUMP analysed the compatibility of public transportation routes and multiple other factors with data regarding parking, individual mobility, preferences, satisfaction, average travel times, traffic congestion, accommodation and employment locations (I1). Using the data collected from studies proved to be crucial to ensure legitimacy and reduce the amount of guesswork in the process.

Additionally, the Tallinn SUMP project team focused on spurring cognitive shifts by utilising their ties with representatives from Helsinki. Helsinki was engaged throughout various phases in the project, including a visit to introduce the approach and a review of the end-result (I1; I2). By engaging Helsinki, the project team had hoped to ensure legitimacy and foster an alternative mindset on both the political level as well as in their respective organisations. However, it proved to be of limited benefit, as the local level perceived their participation to be irrelevant (I2).

The project team tried to address the risks and add legitimacy to the project by actively engaging political and administrative leadership. To appeal to the risks perceived by administrative and political leadership, the final document of the initial phase of SUMP outlined a detailed description of three possible scenarios. This report was reviewed by the steering committee and wider pool of actors, and its goal was to provide a more informed, evidence-driven basis for decision-makers regarding the different alternatives moving forward (I2). This was also an important tool for properly framing the underlying problem itself, as
there was a lack of understanding of the different policies and their effects. The project team tried to initiate a change in mindset to perceive the issues in urban mobility, yet they avoided limiting options moving forward to avoid possible alienation.

The various leadership roles exhibited throughout the collaborative arrangement had mixed success. The arrangement succeeded in introducing new perspectives, however, there is still the question of sustainability, as they failed to initiate a change of mindset within the engaged organisations and the wider spectre of actors. As was highlighted by one of the actors: "(...) it failed to move on to the level of deputy mayors and mayor" (I2).

**Reflections on lessons learned and conclusion**

Tallinn SUMP is an inter-disciplinary and boundary-crossing attempt towards a governance approach that deviates considerably from the fragmentation of existing setups. The motivation level for individual participants remained high, which enabled a certain level of flexibility within the project. However, the obstacles were considerable and negatively affected the willingness and motivation of individual actors (I2). The process was further affected by the unclear designation of roles, which left the project manager lacking the necessary mandate and resources to manage the process and lead to shifts in team composition.

The governance structure the stakeholders aimed to instate failed to materialise in practice, as the project team had to take up several duties the steering committee was supposed to be responsible for. This enabled stronger influence from the standard characteristics of the Estonian administrative structure, including fragmentation, lack of long-term strategic considerations and overreliance on certain individuals. Fragmentation within and between the municipalities and in national and subnational interactions has clearly influenced the efficacy of the collaborative arrangement. The lack of a centralised vision increased competition between different organisations, and there were only limited attempts to harmonise priorities. The lack of a common framework resulted in a situation each organisation interpreted the project’s goals differently (I1). Specialised organisations lacked the ability to see the larger picture and agree upon the key problems within a common framework. As a result, each organisation determined the key problems independently, which fostered
increased competition between different organisations, who sought to protect their relative position within the administrative structure.

The project’s laissez-faire approach has led to limited commitment. This has been exhibited by all engaged actors to some degree but has especially prevalent within departments and political leadership on the local level (I2). As was mentioned by one participant: “These type of projects face the risk that they won’t be politically accepted” (I2).

The decision-making lacked long-term strategic thinking, which affected the policies which were developed. The focus addressed current perceived problems, like the construction of new roads, rather than possible long-term solutions like designing a more citizen-centric public transportation system through compatible inter-modal transportation. The project still lacks an overarching vision, and the development of one is still not considered a priority by the involved parties (I2). Novel initiatives remain project-based and have little lasting influence after the conclusion of their project. To foster a more stable environment for change, it is necessary to establish more stable funding sources.

The Tallinn SUMP strongly relied on the input of certain key individuals. Their particular competencies allowed the project team to utilise their knowledge as best they saw fit, yet it also resulted in overreliance on single individuals within and connected to the project. It furthermore affected the long-term viability of Tallinn SUMP, as the reliance on certain individuals made turnover a risk difficult to mitigate. This was emphasised by an actor: “We did everything possible with the project team, but as the mayors and deputy mayors switched, the continuity stopped” (I2).

The organisations themselves lacked appropriate replacements for key individuals, which leaves the capabilities fostered within Tallinn SUMP at considerable risk in the event of turnover. The strong reliance on external experts and a temporary workforce has additionally affected the ability to engender acceptance within the participating organisations. Public officials perceived limited connection between the initiative and their daily routines.

The project team experienced several difficulties in finding widespread support from leadership for Tallinn SUMP. The long-term nature of Tallinn SUMP, competition with other
initiatives, and limited available resources made it very difficult to attain support. The lack of experience and culture in strategic planning led to a situation where administrative and political leadership were unable to understand completely the intent of the initiative (I5). As was highlighted by one actor: “The development department has been demoted to project-based coordinators of externally funded projects, which do not lead substantive themes” (I2). As a result, they perceived the initiative to remain external to the organisational mindset (I5). The individual stakeholders employed specifically for Tallinn SUMP found it difficult for them to gather acceptance within their organisations where officials remained sceptical about the changes. A more clearly defined role for the strategic planning units within the administrative structure of the city of Tallinn would have allowed a more coherent approach towards managing initiatives and fostering long-term change.

The lack of engagement from policymakers affected the success of the initiative. It has led to officials reacting confrontationally, in the form of considerable organisational resistance that has been very difficult to bypass (I2). There has been a perceived rejection of the ideas developed within Tallinn SUMP, which has hampered the relations of the project team and other members. Due to the project-based nature of the initiative, there is a lack of stability to overcome the organisational resistance.

There are incompatibilities between the goals and the chosen approaches towards achieving them. The engendering of an alternative mindset requires a framework which encourages organisations to accept the project. With Tallinn SUMP it was clear that there were difficulties in disseminating the results beyond the project team (I5). It was perceived from actors that the nature of formulating strategic documents requires other settings than the one provided by the project-based structure (I2). Their formulation requires long-term dedication, support from both administrative and political leadership and stable funding. However, alternative approaches are very difficult to achieve in the current context, as it is difficult to secure the funding due to the low priority currently afforded to Tallinn SUMP. The difficulties in achieving stable funding reflect the gap between general rhetoric and practical actions, as stakeholders remain unwilling to contribute resources. One actor reflected upon it: “When it comes to choosing solutions, then the jointly agreed-upon goals disappear and major discord regarding measures appears” (I2).
The underestimation of resources needed by the involved actors had a strong initial impact on the development of the project. Although resource deficiency was addressed in the later stages, Tallinn SUMP did suffer setbacks, as this resulted in turnover and losses of key competencies (I1). This may have been affected to an extent by the fact that the planning phase was mostly omitted, with actors choosing to jump straight ahead to the implementation of specific actions (I1). Additionally, there were deficiencies within the organisations themselves that were left unaddressed, namely with accommodating strategic planning (I2). The inability to meaningfully engage either administrative or political leadership led to a situation where project members needed to carry out roles originally assigned to the steering committee (I1; I2). The limited influence of the project team impacted the dissemination attempts of Tallinn SUMP, as they lacked the necessary authority to initiate meaningful change. The failure of administrative leadership to carry the same message through various deliberation arenas complicated the ability to disseminate the message of Tallinn SUMP. This issue could have been mitigated if Tallinn SUMP had clarified obligations of actors from the beginning of the collaboration. The project team and steering committee would have possessed a clearer understanding of their roles and expectations. More active participation from the administrative leadership would have enabled the project team with a significantly stronger mandate for incorporating the ideas into the existing work routines.

The inability to determine the exact roles of the different organisations has led to the initiative lacking support to move further. This has been further affected by actors’ indifference and lack of active participation. This lack of ownership enabled actors to strategically limit their contribution whilst maintaining their reputation.

The collaborative arrangement surrounding Tallinn SUMP experienced several challenges and setbacks which could be taken into consideration in similar arrangements. Assigning clear roles and responsibilities for both engaged individuals and organisations would enable the actors a clear understanding of their obligations, thus avoiding the constant handing off of tasks to one another and the resulting blame game when tasks were not completed. Ambiguities lead to confrontational situations, where actors deflected on their initially agreed-upon obligations. The engaged actors could have benefitted from a more thorough planning process to mitigate possible structural issues and ambiguity within the initiative.
### 2.2.3 Denmark: The City of Albertslund’s Danish Outdoor Lighting Lab (DOLL)

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#### Case introduction

DOLL (Danish Outdoor Lighting Lab) is Europe's largest test field, showroom, and innovation hub within intelligent lighting. Its living lab is located in the suburban municipality of Albertslund, located some 15 kilometres west of Copenhagen. DOLL is based on a partnership between various public actors – the municipality of Albertslund, the Danish Technical University (DTU) and the regional partnership promoting green transition Gate 21, also located in Albertslund. The partnership was funded by the state’s Green Lab DK programme as well as by the municipality of Albertslund.

DOLL was established in 2013 to provide a testbed for intelligent city light solutions based on LED and photonics. The key components of the partnership were three laboratories: a ‘Virtual lab’ using virtual reality technology to envision the aesthetics of solutions before buying them; a ‘Quality lab’ (located at Risø, DTU) allowing smaller companies to test their prototypes to current standards; and finally, a 1:1 Living Lab launched in 2014, located in the Hersted industrial area, where around 12 kilometres of road is equipped with the infrastructure needed to demonstrate and test intelligent outdoor lighting products, an initiative which currently boasts around 80 installations set up by around 50 different companies (Interviewee (I): 2). Whereas the former lab has functioned mostly as a ‘gimmick’ (I: 2), the latter two labs, and in particular the Living Lab, have exceeded initial expectations.

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46 [https://doll-livinglab.com/](https://doll-livinglab.com/).
47 [https://www.gate21.dk/](https://www.gate21.dk/).
The Living Lab has attracted several of the leading Danish and international providers of intelligent outdoor lighting and light management systems. As more providers established test grounds at DOLL, awareness from interested buyers and international media (such as Chinese television, CNN, NBC, BBC, Financial Times and New York Times) grew, leading to the establishment of a visitor centre organising visits and meetings in between providers and buyers. This included mainly delegations from other cities and regions, in particular from the Nordic countries, but also from around the globe (I: 2; I: 3). So far, the visitor centre has received more than 500 organisations.

Whereas the initial aims of using the living lab as a testbed for LED solutions was energy efficiency, the potential for combining it with Smart City solutions has gradually proven to be key (I: 1; I: 2). Thus, today the Living Lab has broadened its activities to include Smart City solutions across mobility and parking, Internet of Things (IoT) communication systems, environmental monitoring, waste management, indoor lighting, and driverless busses (State of Green, 2019). DOLL thus includes two ‘tracks’, one for intelligent lighting and another for smart urban services, such as waste management and parking (I: 2), also funded by the state’s Green Labs DK programme. In the waste management project, for instance, Albertslund municipality collaborates with a number of waste solution sensors and system suppliers to test different waste solutions in a living environment. By installing sensors in a number of larger housing associations, institutions, public areas, industries and office environments, the aim is to find ways to optimise the collection and route planning of waste. (State of Green, 2019). DOLL thus also plays a pivotal role in Albertslund’s Smart City strategy by testing
solutions in three objectives of the municipality: increasing quality of welfare services, accelerating sustainable green transition, and supporting innovation and growth of the business community.\textsuperscript{48}

Besides its director, DOLL has five employees working with project management, coordination in between DOLL, partners and installations, organising visits and communications. The employees work partly on DOLL and partly on other activities within the Gate 21 Smart City programme, which currently has 14 full-time employees. The annual budget of DOLL is 4 million DKK, but a majority of investments in DOLL are carried out by its partners and therefore not included in the budget.

In terms of the innovative outcome and potential of DOLL, the aim of the partnership is to enable product and service innovations. The project was initially intended to help Albertslund (and other cities) in exploring the full potential of replacing the existing outdoor lighting with intelligent solutions based on LED technology. The living lab, combined with the visitor centre, creates an environment in which being at the forefront of technological development has become a sine qua non for participating.

“It is a condition [for being part of the living lab that] they have to make solutions and user-cases here that are up-to-date and, preferably, on the cutting edge of development, since this is what this place demands. Sometimes, some are relatively inactive, but they may naturally receive less attention, since it isn’t quite as interesting to tell about and share” (I: 3).

Although the long-term effects are yet to be seen, the fact that DOLL has established itself as the leading outdoor lighting living lab in Europe indicates some product and service innovation.

DOLL, however, also contains some degree of governance innovation (development of new forms and processes to address specific societal problems), in the sense that the living lab has proven to be a well-functioning format for collaboration between public and private partners as well as for involving citizens in decision-making. With regards to the former, the fairly

\textsuperscript{48} See https://albertslund.dk/borger/by-trafik-og-natur/byen-i-udvikling/innovative-samarbejder-om-lys-og-smart-city/.
simple setup of the living lab in which DOLL provides the basic infrastructure and a visitor centre and private actors rent parcels on a three year basis without any further requirements than staying within Danish regulations, has proven to be a format with several synergies enabling further and strengthened collaboration between the parties involved (see also section 3). It also implies that unlike other Smart City initiatives, DOLL has been able to maintain a rather stable income by financing the operation of the living lab from the companies renting parcels (I: 1).

Regarding the latter, the municipality of Albertslund has experimented with using the living lab to visualise possible future solutions by appointing a team of ‘light ambassadors’ to represent the various housing areas that will be subject to the replacement of outdoor lighting (I: 4; Albertslund kommune, 2020). The initiative, thus, involved both educating the ‘lighting ambassadors’ in the state-of-the-art technology, as well involving them in the development of solutions and eventually the decision-making at the local level.

**System context and starting conditions**

The contextual story of the role of DOLL goes back to at least the early 1970s, where a series of two oil crises pushed public authorities to radically transform the energy sector, which was at that time heavily dependent on oil. Denmark experienced substantial public resistance against nuclear energy, which forced policymakers to look for other solutions (Petersen, 2016). One key solution was to use surplus heat from electricity production in the district heating supply systems, which were often organised and run by municipalities or by user cooperative societies. Furthermore, at the national level, the Heat Supply Act of 1979 established specific zones of heat networks throughout the country, regulated the heating sector for the first time, and required municipalities to conduct an analysis of their local space heating needs and available heat resources (Chittum and Østergaard, 2014, p. 3). The result has been a rather unique and highly energy-efficient system used in most urban areas in Denmark. According to Chittum and Østergaard (2014, p. 4) the Danish tradition of political consensus, along with the stable energy policy since 1976 and municipal planning are important factors to explain the positive outcome of this initiative. Karnø and Garud (2012) point to somewhat similar explanations to the rise of the windmill industry in Denmark, which
began with singular entrepreneurs developing the first prototypes and evolved into to the world-leading industry it is today. This was made possible due to collaborative endeavours between entrepreneurial networks of the (at the time small) companies involved and state-supported research in technology and schemes subsidising the development and purchase of windmills.

The examples illustrate a long tradition of investing in research in energy. In 2010 Denmark was ranked fourth among OECD countries in allocated funds per capita in research and development in energy (Klima-, energi- og bygningsministeriet, 2012). One of the funding schemes ELFORSK initiated was a strategic commitment towards research in LED technology, which in 2004 had already fostered a globally renowned network of researchers (from DTU Photonics), designers, entrepreneurs, and lighting companies (Elforsk, 2015). Another example is the funding scheme of DOLL, Green Labs DK, which was established in 2010 with a three-year budget of 28 million euros to support investments in lab facilities for testing climate technologies in realistic settings on a large scale.

At the local level, a number of factors are relevant for the establishment of DOLL. Most of the buildings in Albertslund were established during the 1960s, in order to provide housing for the employees working at the prison (I: 1). Since then the municipality has been governed by Social Democratic mayors. The city was planned according to new ideals of separating cars from housing, recreational areas, cyclists, and pedestrians. The city thus has an extensive path system with outdoor lighting.

The city has been a trailblazer when it comes to integrating environmental concerns into the city planning and public services (I: 1). In the 1990s, it introduced ‘green accounts’ of the city’s consumption of water, electricity and heating. It was the first municipality in Denmark to acquire a 100 % certification within the European Eco-Management and Audit Scheme. Today, it brands itself as the ‘green playground of the capital area’ 49. As part of the focus on sustainability, the partnership Gate 21 was established in 2009 in Albertslund and five other municipalities as a kind of triple-helix organisation in collaboration with companies and

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49 See https://albertslundudvikling.dk/bo-i-albertslund/.
universities to accelerate the green transition. Gate 21 promotes the green transition of the economy through project-based collaborations with municipalities, regions, research and educational institutions, and companies. In 2016 it merged with Energycluster Zealand to become a cluster for green transition for Greater Copenhagen (Gate 21, 2019b). The organisation had a turnover of 48.9 million DKK in 2018 and claims to have initiated projects of a total value of 900 million DKK (Gate 21, 2019a).

According to the director of Gate 21, the municipality of Albertslund has been a frontrunner in understanding the need for ‘collaborating across municipal borders’ (Albertslundposten, 2017). An example is the way the district heating supply system of Albertslund today is connected to a number of electricity plants in other cities, as well as to a number of local industries with surplus heat, e.g. cooling (Nyvold, 2019).

Niels Carsten Bluhme, then working in the municipality of Albertslund, explains the rationality of the municipality for establishing Gate 21, which is funded by a combination of municipal, regional, state, and EU sources. As most of the city was built in the 1960s, it was in need of massive investments for renovating buildings and increasing energy efficiency.

“I thought that this transition of the city is such a big undertaking for such a small administration and such a poor municipality that we have to think of another way of doing it. So, I thought a lot about public private partnerships, public private innovation since we have to develop continuously. So, I thought why not use the urban transformation as a driver for innovation, and that led to the creation of Gate 21 after establishing the core group having been wandering around to other municipalities, companies and universities. (...) And we managed to establish a secretariat capable of handling this form of network collaboration” (I: 1).

It was also Niels Carsten Bluhme who initiated the municipal interest in LED technology as a potential source of increased energy efficiency (I: 1; I: 4). The existing lamp lighting over all paths in Albertslund, coined as the ‘Albertslund lamp’ was a design icon, but in need of replacement. Bluhme invited a designer to create a new lamp, that happened to become the world’s first LED lamp (I: 1). The project was supported by Elforsk, one of the state funds, and developed together with DONG energy and Philips lighting. After the lamp won a prize, the mayor was ‘melted’ and gave Bluhme the support to carry on (I: 1). It also fostered contacts with DTU Photonics, which again provided Bluhme with an understanding of the EU Horizon
2020 programmes. Bluhme went on to become part of a task force in the European Commission working on these issues (see European Commission, 2013) and chairman of the Danish Lighting and Innovation Network under the Ministry of Research.

Thus, the road was paved for the creation of DOLL, which was also initiated by Bluhme, as a collaboration between DTU and the municipality of Albertslund. To the municipality of Albertslund, DOLL was seen as integral to developing and implementing the future lighting policy plan (see Albertslund kommune, 2020). The activities -or ‘ecosystems’ as the people in DOLL call them (I:2; I: 3)- in Gate 21 and DOLL are closely interrelated. Physically, DOLL is located in the offices of Gate 21, which functions as a ‘project motor’ developing projects that often overlap with the authority of the DOLL network (I: 3). Companies can thus be involved only in DOLL, but those who are also members of Gate 21 also benefit from the synergies resulting in being enrolled in developmental projects from the beginning (I: 2).

In conjunction with increasing awareness of Smart City concepts, The Ministry of Education has asked Gate 21 to establish, in close collaboration with DOLL, a national Smart City cluster focusing on the areas of energy transition, Smart Cities and local communities, sustainable mobility, and circular economy and resources (I: 2).

Interviewees also point to more structural reasons for why companies have an interest in the collaboration. First of all, the mayor points out that Denmark is a particularly suitable place for testing solutions:

“Unlike many other countries, Denmark is pretty well-organised and has a clear division of labour between businesses, municipalities, regions and the state. Citizens in general are rather law-abiding. So, in that way, Denmark is a large testbed and has the potential to become an even bigger testbed for technological solutions” (I: 4).

Additionally, the fact that Danish municipalities dispose more than 60 % of public funds makes them a significant purchaser (I: 1). Figure 10 below illustrates how DOLL is organised and how the different actors (public and private) are integrated.
Collaboration challenges and dynamics

This section presents the collaboration challenges and dynamics identified in this case which were related to complexity, risk, and power imbalance. Since the challenges and the ways in which they are handled are deeply intertwined, the section will also address the institutional designs that have been constructed to address the challenges.

Complexity

The interviewees addressed mainly two complexity challenges. The first relates to how the various actors involved in DOLL speak very different ‘languages’ as they have different professional backgrounds and knowledge. It thus relates mainly to the issue of substantive complexity. The idea of a living lab is initially grounded in recognising this challenge. Several of the interviewees (2,3,5) recognise the challenge of, on one hand, getting companies to understand the everyday practices and constraints at the user level and, on the other hand, getting the practitioners in the local public authorities to understand the potential benefits and pitfalls of the new technologies.
“You may say that it is also a process of recognition and education (erkendelsesproces) for the employees in the municipality realising that these new things can optimise the way we are running the municipality. But it doesn’t happen from one day to the other, this whole development of competences. It’s a long haul” (I: 2).

DOLL’s relation to key employees in the municipality seems vital to coping with this potential barrier for collaboration and innovation. At the Albertslund municipality’s Department of Technical and Environmental Services, an administrative officer (I: 5) has been delegated the task of coordinating in between the municipality, its frontline practitioners and the companies’ part of DOLL. The administrative officer describes her role as someone who both coordinates and communicates (e.g. through status meetings) with the partners of DOLL and her colleagues in the municipality, as well as upwards in the organisation. This is challenging to those trying to develop solutions who are: “speaking different languages [...] Just getting to understand what IoT is, and what kind of network we are using...” (I: 5).

Another challenge is getting citizens to understand and take part in the development of new solutions. One issue is how to ensure that technology makes sense to its citizens and end users. This can be time consuming and is often inhibited by the often-short-term perspectives of the projects (I: 5). As mentioned earlier, one of the ways in which DOLL and the municipality of Albertslund have experimented with including citizens is through appointing so-called ‘light ambassadors’ to represent various housing communities. In the process of replacing existing lighting in these areas, the light ambassadors are invited to the DOLL living lab to see various solutions. Through dialogue between the ambassadors, DOLL and its partners, a shortlist of three complete setups were installed in an area corresponding to the real setting (I: 2).

In addition to including citizens in the process, there is also the challenge of collaborating with politicians. This is often a matter of speaking the ‘language’ of (local) politicians and giving the politicians an idea of the nature of these technologies. It was described by one interviewee as a matter of ‘educating the politicians’:

“They are just ordinary people elected with some opinion towards whatever, but they are the ones sitting with the budgets allocating money, and if they think that this ‘Smart City’ is completely crazy, they won’t give any money. Therefore, you need to learn to speak the language of politicians” (I: 2).
The director of DOLL points to how the Sustainable Development Goals have become ‘the new black’ and thus a way to tie the Smart City activities in DOLL to the political agendas in the municipalities (I: 2). By framing investments in lighting systems as investment in particular Sustainable Development Goals, politicians get an additional argument for legitimising such investments. There is also the challenge for companies in understanding the other potential technological solutions with which their specific product will interact. Manufacturers of streetlamps are today in need of a number of competences well beyond the demand of supplying light. The streetlamp is becoming an integrated part of Smart City infrastructure, requiring them to acquire new skills and knowledge, or collaborate with companies who already have them (I: 3).

Another challenge relates to how the actors involved in DOLL possess quite different rationales for, and interests in, participating. The challenge thus relates mainly to the issue of strategic complexity. Firstly, the companies involved are interested in developing businesses and, in the end, serve to gain a profit from participating. They are also challenged by the fact that they are competing with other companies, of which some are also part of DOLL. The municipality, on the other hand, has other interests, such as finding cost-effective solutions or attracting jobs to the area. However, all the interviewees point to dynamics and elements in the institutional design of DOLL that circumvent these potential challenges.

Interviewees point to the way all actors involved share the recognition that actors collaborate because they are interdependent. Companies in this sector are increasingly recognising that, apart from the largest players, they cannot develop innovative solutions alone and therefore need to form partnerships. The current leader of DOLL also notes this dynamic of mutual dependency:

“You have to open up and create partnerships, because people with the right competences can be put together and, suddenly, you get collaborative relations that are different. That’s an important part of creating the ecosystem” (I: 2).

A similar interdependency is recognised from the perspective of the municipality. Collaboration beyond the municipal borders is seen as the ‘only way to get smarter’. This
applies not only to collaboration between municipalities, but also the with the private sector, who in turn have "other competences and insights" (I: 5).

Finally, the clear division of labour and roles between DOLL, the companies and the municipality underpin their interdependent relationship. For instance, the founder of DOLL points to the importance of Albertslund having no interest in gaining profits (and patents) from the collaboration (I: 1). Rather, each actor gets different value out of the collaboration resulting in a ‘win-win’ situation (I: 1). Companies get a place to make prototypes and test them in an environment that provides them with a unique understanding of what their potential public clients need. Research institutions get a chance to move their activities outside campus and into society. This factor of interdependency also relates to the issue of risk and potential power imbalances.

**Risk and power imbalances**

The first challenge identified relates to the risk of businesses for involving themselves in the collaboration, and in particular in relation to the risk of collaborating with other market competitors. The design of the collaboration is key here. The fact that DOLL offers the complete infrastructure and that most of the investment in installing the equipment is covered by the funding from Green Lab DK means that businesses: "didn’t have to make a giant investment, which they didn’t know would pay off. Thus, it eased the negotiation process that they could join the collaboration relatively free of risk” (I: 2).

At the same time, the businesses involved recognise the great potential of developing showcases that would be relevant for other municipalities as well (I: 5). The institutional framework thus ensures that companies only engage in DOLL if ‘they can see that it is valuable’ (I: 2). Initially, they make three-year contracts, and those having surpassed this period ‘can leave whenever they want to’ (I: 2). The basic idea is to have partners who are part of DOLL only because they believe it is ‘fun being here, because those are the ones creating energy, bringing new ideas’ (I: 2).

The people working at DOLL describe their roles as ‘facilitators of the place’ and ‘facilitating the ecosystem around the facilities in place’ (I: 3). The initial three-year contract ensures a
‘commitment that goes both ways’, meaning a joint commitment to form good lasting relations and a joint investment in each other (knytte holdbare bånd) (I: 3).

When it comes to the risk of collaborating with competitors, the leaders at DOLL point to the importance of ‘neutrality’ embedded in the design of DOLL. The rules underpin that no partner is ‘prioritised’ over others and all partners pay the same standard price for renting (I: 3). The platform is ‘neutral’, which means that DOLL does not try to enter anyone’s market and is therefore not ‘a risk for some companies’. For instance, many cities have been asking DOLL for help, but the response from DOLL is “we can’t, but the consultancies can” (I: 2). DOLL’s visitor centre also "underpins the neutral story" (I: 3).

“We see ourselves as storytellers telling a story about ‘what are you able to do? What are you not able to do? What is smart? What is going on?’ It’s really about what is going on since we talk to a lot of people and thus have a pretty good sense of ‘what is doable and what is not?’” (I: 2).

The neutrality seems to foster another more positive dynamic between the business partners. By literally standing side by side with competitors, companies improve their specific use case and strengthen their storytelling. By looking to their ‘neighbour’, the partners become able to pinpoint exactly what they do well. A project manager at DOLL believes that ‘it is quite unique that we’ve managed to create this self-reinforcing organism’ (I: 3).

The collaboration also bears the risk of creating power imbalances in between larger and smaller private actors. The interviewees, however, do not find this to be a challenge in the setting and practices around DOLL. The former leader of DOLL, for instance, argues that small entrepreneurs in fact are dependent on collaborating with, and being ‘pitched’ to, larger global players with more ‘muscles’ and capital’ in order to be able to access global markets (I: 1). For instance, he sees the presence of large companies as a prerequisite for developing projects with municipalities due to the risks the latter carry when engaging in such projects:

“It may facilitate that [the smaller entrepreneurs] enter and be part of the developmental package, but if something goes wrong, I want to be able to go to a solid company and say, ‘you need to change this’” (I: 1).
Public management interventions: leadership and its effectiveness

A first point to note is that leadership enabling the collaboration takes place at several levels. It is evident from the Sections 1 and 2 that the founder of DOLL, Niels Carsten Bluhme, may be seen as a kind of catalyst, seeing the potential of LED technology and thus bringing new knowledge and actors into play and exploring ‘out-of-the-box’ thinking. The first level is at the political. The mayor himself describes his role as a kind of convenor who is not in need of sitting ‘at the end of table and make every concrete decision’ (: 4). Instead, he points to how projects have often emerged from the frontline workers in their confrontation with everyday problems. The mayor thus considers to the role of the municipality to:

“...constantly look into the future and ask ourselves whether there are opportunities we ought to catch, given the everyday problems we are in fact facing. That is why it must be everyday-based, since I as a mayor cannot be hands-on” (I: 4).

With this approach, it is the role of the mayor and city council to set the agenda for the desired direction of change, as well as determine what kind of ‘mindset’ employees of the municipality should have (I: 4). This role is recognised by the interviewees. The founder of DOLL speaks of the importance of political leadership recognising the value of atypical public managers (‘daredevils’) such as himself, that do not fit within a ‘no-mistakes-culture’ (I: 1). A project manager at DOLL also emphasises the ‘political courage’ of the municipality by very clearly stating a political choice of making the city available for testing, a ‘rather visionary mindset’ that implies a lot of commitment when ‘you are working on the edge’ (I: 3).

The setting of a clear political agenda and support from top management also underpins the collaboration and participation in the projects of DOLL internally in the municipality. The administrative officer coordinating the activities of DOLL within the municipality has been able to bring together partners from DOLL and employees in the municipality ‘because the municipality has decided that this is what we do’. In daily life, this simply implies that colleagues help when asked for advice and support of activities: “and this is why, when I call my colleagues and ask what we need to consider, they’ve helped” (I: 5).

The second level relates to the way in which the public administration of the municipality in general is managed. Several interviewees mentioned the ‘agility’ of the municipality (I: 1, I: 2;
I: 3). The municipality, which is relatively small, has a rather flat structure, which leaves only a short distance (literally and metaphorically) from the mayor to the frontline employees, and a large degree of autonomy at the ‘lower’ levels in the organisation. This has proven to be crucial in the collaboration with the private partners of DOLL. This is described as a ‘agile’ form of leadership, in which decisions can be taken fast with a strong and clear mandate (I: 3).

“If you add too much structure, you lose agility. And this is one of the things that is pivotal when you run a living lab, agility. You have to be able to make decisions fast. And I think it’s been one of our strengths that if a partner has asked us whether something was doable, we’ve been able to confirm it at the same meeting. It’s been possible due to our close collaboration with the municipality of Albertslund, which means that they have delegated a great amount of decision-making competence to us. […] This requires that you are close and trust each other. Such a trust-based relationship is something that you need to build and maintain” (I: 2).

The motivation of the municipal administration, political will, and the acceptance of the citizens to make the city available for testing is thus seen as pivotal for the success of DOLL. It ensures that DOLL has “a close and continuous dialogue, and it is necessary in order to promote these things” (I: 3). The close and trust-based relationship is also important in the role of the administrative officer in coordinating the activities internally in the municipality. The municipality is rather small, compared to other Danish municipalities, with only a short distance from frontline workers to top management and an established culture of ‘helping each other’ (I: 5). In this setting, the administrative officer seems to take the role as a kind of mediator who builds trust by constructing common frameworks and bringing actors together. This is also evident in the third level which involves frontline employees and end users. Here, again, the coordinator in the municipality plays a key role in finding and engaging the relevant frontline employees for potential development projects. This requires social skills in including people who are not used to “sitting by a desk and writing, but nonetheless know what is going on out there and are super good at it” (I: 5). Including people in the municipality is thus a matter of finding ways that make people contribute their particular competences to their roles and fostering mutual interdependence and recognition (I: 5).

“So you open the box and try different things, but you have to include some of those positioned who will be using the solution that you end up with. It may be that not all
should join, but when you start a project, it is important to ask yourself ‘who are the actors?’” (I: 5).

According to the coordinator, the inclusion of frontline employees in the development has provided important feedback to the developers requiring them to show the usability of their solutions in real life. The coordinator described the collaboration as a process of finding a ‘common language’ while recognising the differences in competences and skills.

“I like that you do not speak the same language […] You are getting challenged. […] How would you develop if we weren’t different? You can’t, if you want to develop these kinds of things and use it in operation. That’s why I find it fun. It’s fun when you are different, because it’s the only way to get better” (I: 5).

In this dynamic, the coordinator plays the role of ‘conveying’ messages back and forth from developers to front-line employees.

Reflections and conclusion

The interviewees pointed to a number of lessons learned. First, all point to the value of using living labs as a driver for public-private innovation. The current leader of DOLL believes that “every country should have a living lab. Not a lot, but a few, in order to attract a critical mass of installations in the lab, because if you have a critical mass it won’t be exciting, and people won’t come” (I: 2). He also points to the close collaboration with the city as a prerequisite for a well-functioning living lab. The will and capacity of the municipality is a prerequisite for having ‘agility in the installations’ for instance, by ensuring that red tape (e.g. applications for permission to activities) do not freeze the collaboration and innovation (I: 2). According to the mayor, the success of DOLL lies in the “combination of aesthetics, that you can see the many solutions, and that all solutions contain a high degree of technology and that they are scalable meaning you can go home afterwards and order the lighting solutions” (I: 4). Also, from the perspective of the municipality, the administrative officer points to the value of testing before purchasing. The municipality has more trust in the functionality of the solutions, since they have ‘been part of the journey’ (I: 5). As mentioned earlier, the ability to collaborate between public and private actors is also seen as a particular Danish or Nordic asset.
“Using the public sector as a kind of testbed is, in many ways, the way we think about things in Denmark. What we can do is pretty unique, and that is that we have a strong public sector with great volume. This means that when it demands solutions, it creates a market. I once met one of the vice presidents of Cisco and he told me that the greatest experience of participating in DOLL was that, whereas he used to approach clients and say ‘this is the solution’, at DOLL he was asked to develop a solution” (I: 4).

Second, the interviewees agreed, as illustrated in section 4, on the importance of political will to drive the project, and therefore the importance of legitimising the activities with them (I: 1). According to the founder of DOLL, the political will does not simply come by itself:

“You need political knowhow, because you have to make sure that it is anchored politically. My most important message is that often it takes process and massage work in order to massage things in place. And you have to put effort into it” (I: 1).

To conclude, this case study identifies a number of different variables that are all important to understand the success and challenge of DOLL, of which it is very difficult to point out the most important. Some are more national, some are more local, and some are related to specific individuals. Furthermore, some factors relate to rather long historical trajectories, e.g. national and local strategies of sustainability and energy efficiency and a certain culture of collaboration, whereas other relate to recent actions to exploit the potentials of LED and Smart City technologies through various partnerships and research programmes.
2.2.4 Germany: Digitalstadt Darmstadt

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**Case introduction**

The following case study examines the leadership and coordination challenges of ‘innovative’ collaborative digital practices in the city of Darmstadt located in the German federal state of Hesse. Darmstadt serves as particularly suitable case as it won the “Digitale Stadt” competition by the IT industry association *Bitkom* and the German association of cities and municipalities (*Deutscher Städte- und Gemeindebund*, DStGB). The competition was launched in 2016 to create a German “digital model city with international appeal” that could be placed in the top league of Smart Cities (*Bitkom e.V.*, 2020).

In addition, Darmstadt has been honoured as the most sustainable German city four times in a row by the well-established national magazine *Wirtschaftswoche* (*Bitkom e.V.*, 2019, p. 53ff.). In light of this, “as a pioneer, the city today with its accumulated experience, makes an invaluable contribution to all cities and municipalities” (DGStB, 2019).

Thanks to the support of the association *Bitkom* after winning the competition in 2017, Darmstadt benefitted from several pro bono services from private sponsors which sought to develop Darmstadt into an innovative and lively experimental space for the design and testing of digital Smart City technologies. Motivated by this success story, the state of Hesse decided to mark Darmstadt as a Hessian model municipality (*Hessische Modellkommune*) and to contribute another 5 million euros over a two-year funding period (2018-2020). This corresponds to a 95% funding quota, whereby the remaining 5% must be provided by the city from its own funds.

Since then, several stakeholders from the fields of science, politics and business have been working together in a dynamic network of 50-70 members to implement the “Digitalstadt Darmstadt” (Digital City of Darmstadt). According to Darmstadt’s incumbent mayor, this

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An overarching project belongs to a group of comprehensive and ambitious Smart City approaches in Germany, which he understands as an opportunity for self-determination, that is, “to test the future and shape digitalisation instead of letting it happen to us” (Kulmus, 2018, p.85; Partsch and Kolmer, 2020, p.3). The overarching Smart City Strategy is divided into a total of 32 funded subprojects at the operational level that are currently being processed in the following 14 thematic areas: administration, mobility, trade and tourism, education, society, environment, energy, security, IT infrastructure, cyber security, data platform, health, culture and Industry 4.0. This strategy has been subject to bottom-up influences, as it in fact emerged from winning the competition, but was based on an existing strategy that had already incorporated digitalisation as an essential element (HEAG, 2018).

Digitalstadt Darmstadt’s strategy outlines a four-phase process (see Figure 11) in order to develop its various projects such as smart parking, the House of Digital Media Education, multimodal mobility, intelligent traffic light control, patient data networking and resilient city concepts. Project development has taken place with the help of government, private sector sponsors and other “strong partners” (Digitalstadt Darmstadt, 2018), such as the Technical University of Darmstadt or several Fraunhofer research institutes, who have all contributed additional financial or technical support for individual project implementations.

The main goal of these diverse projects relates to the concept of public value creation, i.e. to provide citizens with new, sustainable digital solutions to support their everyday lives on the premise that these projects will also ultimately generate benefits for the greater urban society (Roland Berger, 2018, p. 7).

Figure 11: The German Digitalstadt Darmstadt’s four phases of strategy implementation (authors’ illustration based on Roland Berger, 2018, p. 38).
In order to mark the start of this ambitious initiative, certain necessary conditions had to be created to successfully build and implement smart technologies. This included not only setting up fast 4.5G mobile and broadband networks, but also the creation of a novel organisational structure by founding the limited liability company “Digitalstadt Darmstadt GmbH” (hereafter referred to as “Digitalstadt GmbH” or “the GmbH”), a 100% subsidiary of the city under private law, which centrally controls all matters related to the city’s digital transformation (Roland Berger, 2018, p. 4).

Digitalstadt GmbH, which is responsible for the project’s management, networking, financing, and public relations, considers itself as an “innovative laboratory” created to bring together relevant actors in order to achieve the desired digital outcomes. Although it operates as a legally independent entity, its endeavours are closely intertwined with the core administration and its further outsourced entities. All public actors involved, whether originating from or still deeply rooted in Darmstadt’s core administration, bring to the table extensive administrative experience. It is exactly this coordination unit on which we concentrate our analysis of modes of collaborative governance and leadership.

Method

Our case study methodology utilised document analysis and semi-structured interviews for data collection. As the objective was to gain an in-depth understanding of the collaboration challenges and public management mechanisms applied to set up and steer Digitalstadt GmbH, all six interviewees were chosen to represent one of the organisational levels displayed in Figure 12. These included:

- One current and one former managing director of the GmbH;
- the current head of the city’s Department for Urban Economics and Development;
- the CEO of the city’s holding for public enterprises (HEAG Holding AG); and
- the divisional heads of cyber security and mobility.
The interviews were conducted in January and February 2020 and typically lasted 1-1.5 hours. They were conducted mostly at the workplace of the interviewees. In order to ensure anonymity in this report, direct quotes are not assigned to individual interviewees.

Our investigation of Darmstadt as part of this case study started at the end of 2019 and therefore in the fourth phase of the funding period of the Digitalstadt Darmstadt project (cf. Figure 1). Accordingly, we were able to raise questions about both the project’s initiation and its course. Interview questions aimed at identifying the primary challenges that evolved during the collaboration process as well as the kind of public management interventions enacted in order to address them. Respondents were further asked about their perceptions and experiences regarding the effectiveness of the measures taken.

System context and starting conditions

German local government responsibilities traditionally encompass a wide range of functions, including urban planning and development, social and cultural functions, and public services, all of which are in principle considered suitable for intergovernmental collaboration (Kuhlmann and Wollmann, 2019).

Hesse, in which Darmstadt is located, consists of 422 municipalities and is relatively densely populated compared to other federal states in Germany (Statistik. Hessen, 2020). Emphasising the federal state of Hesse is relevant in this context, as German federalism is characterised by its decentralised administrative organisation through interstate competence distribution and the high autonomy granted to local governments in its constitution (kommunale Selbstverwaltung). This means that processes observed in Hesse do not necessarily represent the processes in other German federal states due to legal and institutional heterogeneity.

At 159,207 inhabitants, Darmstadt belongs to a comparatively small set of 81 German cities which as of 2018 had at least 100,000 inhabitants. According to the local system of government, the mayor and the city council are both elected by its citizens. The city council is assigned a particularly strong position compared to the mayor, who only has voting rights as a council member. In some federal states, including Hesse, the mayor has thus relatively little institutional power. Since the municipal election in 2011, the city council in Darmstadt consists of ten parties. The Alliance 90/The Green party, to which the incumbent mayor belongs, is
considered centre-left with a tendency towards the centre and holds the relative majority. It is worth noting that this composition is exceptional in Germany, as most large cities are governed by one of the two major parties (CDU or SPD). Darmstadt’s current mayor has been in office since 2011 and is thus in his second six-year term. According to all interview partners, the mayor’s participation was instrumental in the Bitkom competition, and thereafter key to the development of Digitalstadt GmbH. Though the impetus to set the direction for digital transformation came from the Department of Urban Economic and Development (bottom-up), according to interviewees, it owes its subsequent success largely to the strong political support from the mayor.

Interestingly enough, it was neither the mayor nor the city council’s idea to enter the Bitkom competition. Rather, it was requested externally by Bitkom itself, due to the fact that the city of Darmstadt exhibits conditions that corresponded well with the Bitkom’s understanding of a future digital city. These included the election of a progressive mayor, as well as pressing infrastructural challenges typical of rapidly growing cities with high commuter traffic such as Darmstadt. The Bitkom competition was furthermore aimed at rather medium-sized cities, as they were said to have a certain agility. The most important prerequisite, however, was the strong ecosystem of specialists available in Darmstadt with the knowledge needed to implement future-oriented digital endeavours. Darmstadt owes this strength to its relatively young population and vibrant start-up scene. In addition, Darmstadt is home to several universities and renowned research institutions which associates it with a long tradition of innovation (Roland Berger, 2018, p.4); In 1997, the Ministry of Interior of the State of Hesse coined Darmstadt as “Science City”. This self-attributed openness towards science and innovation is now reflected in the city’s comprehensive digitalisation programme which has taken place over the last two years under the central coordination of Digitalstadt GmbH.

*Governance structure*

Initially led by a team of three managing directors, Digitalstadt GmbH is now directed by a two-person executive team and a steering committee. It is hosted in a building belonging to the Fraunhofer Institute Darmstadt, one of its key non-governmental stakeholders. The steering committee, which holds final decision-making power, brings together all public
enterprises owned by the city, which include the following: the mayor, the funding body of the Hessian Minister of Digital Affairs, Darmstadt’s Chief Digital Officer (CDO), the GmbH’s two managing directors, the head of the Department of Urban Development and Economics and the CEO of HEAG Holding AG. It is furthermore supported by expert councils, including an ethics and technology council and a company advisory board. The Digitalstadt GmbH employs between seven to nine people and consists of a programme management branch as well as three units concerning IT infrastructure, communication, and finance. In addition, 14 divisional heads with a certain degree of managerial authority serve as intermediaries between the Digitalstadt GmbH, the subproject teams and the core administration and are each responsible for implementing the strategy in their respective cluster (Figure 12). Each cluster is additionally linked to one department in the core administration, whereby it primarily depended on the department’s capacity available whether a project was assigned to it or not. The composition of the subproject teams can vary considerably depending on the projects’ different tasks and objectives and can include governmental and/or non-governmental actors. Except for the Managing Director and the staff of the GmbH, all other actors involved have a dual role as they continue their regular employment and provide additional, largely voluntary commitment to the Digitalstadt’s endeavours.

Figure 12: Governance structure of Digitalstadt Darmstadt (authors’ illustration based on Roland Berger, 2018).
Darmstadt designed this governance structure based on the examples of other leading European Smart Cities such as Amsterdam, Barcelona and Vienna. The collaboration efforts of Darmstadt’s local government required by this approach can be regarded as progressive, as emphasised by one of its divisional heads: "I have been working for Darmstadt’s city administration for 30 years and it’s the first time I’ve seen people actually working together across disciplines."

Outcomes
In this respect, it is less the subject-specific Smart City projects than the set-up of the limited liability company Digitalstadt GmbH itself that should be understood as innovative. Following De Vries et al.’s classification (2016, p. 153), the Digitalstadt GmbH could be regarded as a “context-specific” governance innovation which is also accompanied by conceptual innovations. The extent to which it can be established as a process and the associated individual subprojects as product or service innovations strongly depends on how the overall project will be carried out in the long run once the funding period has ended. If one were to wonder about the actual degree of these innovations, being either disruptive or incremental (cf. Hartley, 2005), the newly built governance structure could be seen as a fundamental change to an existing pattern and thus, to a certain extent, disruptive. However, since the GmbH has acted largely as a legally independent entity and as an “experimental field” only since 2018, no ultimate disruptive effects on other areas of the city administration nor the greater urban society have yet been observed. There have certainly been a few fundamental changes triggered by the overall Digitalstadt Darmstadt initiative which owe themselves to increased know-how and altered relationships between individual employees. The 32 individual subprojects are currently still quite small, and it is not yet decided whether the Digitalstadt GmbH will continue to exist beyond its initial funding phase of two years. If the implementation of the subprojects was successful across the board, one may in fact speak of disruptive elements. However, these subject-specific projects have to date been characterised by incremental innovations and gradual improvements, due to their long preparatory phases and piecemeal realisations often hindered by restrictive legislation (Partsch and Kolmer, 2020, p. 5).
Against this backdrop, in the following chapters we will discuss in more detail how these governance structures and strategies have played out, what implications this has had with regards to intergovernmental collaboration dynamics and how leadership and management have shaped its progress. It will conclude with reflections on lessons learned in order to guide other collaborative efforts towards the implementation of Smart City strategies.

Collaboration challenges and dynamics

In this section, we elaborate on the dynamics and the associated challenges that have arisen throughout the Digitalstadt Darmstadt endeavour. From the literature we will focus on the following distinct, but at the same time interlinked, challenges to collaboration: complexity, risk and power imbalance (Ansell and Gash, 2008; Crosby and Bryson, 2010; Klijn and Koppenjan, 2014; Osborne and Brown, 2011).

Complexity

"Dialogue, cooperation and communication are the cornerstones of a successful digital transformation - because it affects us all and cannot function without an intensive exchange" (Roland Berger, 2018, p. 34).

Sustaining the complex Digitalstadt network, while at the same time funding and managing a large number of projects, required constant dialogue and cooperation. This approach provided many benefits, but at the same time turned out to pose the greatest challenge. The key challenge rested in the tension between the logic of collaborative management across network actors on the one hand, and the logic of managing individual public sector organisations on the other (cf. Agger and Sørensen, 2018; O’Leary and Vij, 2012). In preparing their application to the competition, the key promotors of Digitalstadt Darmstadt (the mayor, the head of the Urban Economy Department and the CEO of HEAG) had to first activate and to some extent integrate Darmstadt’s innovation ecosystem, including the relevant research institutions, civil society actors and the local start-up scene. After the funding had been approved, they had to set up the GmbH’s structure and team in a limited time, with each of the 14 divisional heads being responsible for assembling his or her own working group at the operational level. As important as the existing city network was for the project’s success, it was difficult during implementation to keep an eye on all the projects and actors involved,
especially at the management level, and also with regard to the actors’ very different interests. It proved to be no simple feat managing the networking and communication among 14 fields of action with 14 divisional heads and 3 committees. At the same time, constant external communication was required to carry through with such a complex project, in the hope that its public value would be widely recognised, supported, and continued during and beyond the initial funding period.

Risks
Those responsible had to deal with the general problem of establishing legitimacy. A pivotal concern of the public sector, democratic legitimacy concerns mostly stem from the risk that public initiatives might not be sufficiently accepted by the population (Scharpf, 2000; Skelcher and Torfing, 2010). In the case of Digitalstadt GmbH, this possible lack of legitimacy clearly outweighed other risks, precisely because the projects were chosen on the condition that they create added value for Darmstadt’s greater urban society. If the public did not recognise the value of their projects in the first place and utilise them accordingly, their intended benefits would never come to fruition and further compound the GmbH’s struggle for visibility and acceptance.

There have been negative experiences in this regard that have made the risk of being rejected by society realistic rather than only hypothetical. For example, citizens and/or political opponents often criticised that the project’s goals were being realised too slowly, if at all. According to one interviewee, this was largely due to the background nature of most digital applications, such as sensor technology, whose value can often be measured in terms of its imperceptibility to the general public. In this sense, it was both a success and a pitfall that the GmbH’s work was often invisible to citizens. Setbacks made in the testing ground environment of the GmbH also strained relations with the public. For example, in an effort to develop a new parking system, the GmbH invested considerable time and work before it became apparent that urban society had had no interest in the plan in the first place. Another threat to the project’s legitimacy occurred when the time came to create the basic 5G infrastructure for the project, which prompted a citizen’s initiative citing “great concern” about excessive radiation exposure (Bürgerinitiative Bergstraße, 2020).
Though the implementation of 5G was ultimately successful, as it stands, fears still persist among Darmstadt’s population regarding the consequences of digitalisation. The negative aspects associated with digitalisation have been frequently projected onto the local government and thus onto the Digitalstadt GmbH, despite the fact that the GmbH is a coordinating entity and not an approval authority. According to all interviewees, this has often made it difficult for the Digitalstadt GmbH to promote itself and to foster a positive public image which is not driven by "blind digital capitalism".

The fact that this was brought up in all interviews shows how relevant it seemed for the respondents to dissociate from potential allegations that public funds had not been adequately allocated and utilised. Smart City endeavors in Germany have not always been welcomed with the same enthusiasm as they have in other national contexts, due to arguments that they represent neoliberal concepts which encourage the privatisation of public infrastructure (Grossi and Pianezzi, 2017; Morozov and Bria, 2017, p. 38f.). Winning the Bitkom competition involved numerous private sponsorship services, and may have furthermore triggered or increased the interviewee’s need to clarify their financial integrity, as engaging with a partially privately sponsored public project had enhanced the risk of blurring the border between the public and private sectors. Overstepping this border would not only have brought about criticism, but also potentially served to contradict the ethical guidelines of the project. Most of the aspects listed in the ethical guidelines limited from the outset the involvement of private entities in public matters. Since the Digitalstadt GmbH was free to choose between various pro bono services, it repeatedly felt driven to reassess decisions about whose help should be accepted.

“According to the motto: Whoever awards prizes, [...] also wants to have a say in how these projects are carried out”.

Several times, for instance, some of the private sponsors demanded to include their company products when realising the individual projects, or to use generated public data for their own purpose. The existing controversy about the city’s digital transformation was further instrumentalised by political opponents, especially in the city council, in order to strengthen their position in the next local elections.
In addition, the factor of time played a critical role with regards to risk. There were general apprehensions that the projects could not be successfully implemented within the funding period. This was also due to long-term procurement processes, which the project was still subject to despite its private funding. Given the complexity of the project and the limited, tight timeframe of two years, this risk could not be denied. For instance, it was clearly impossible for a medium-sized city like Darmstadt to expect to hire an army of new people for a two-year project implementation, not least because the hiring process could last up to several months. The mere prospect that the projects could not be realised within the timeframe made it not only difficult for the project initiators to inspire stakeholders to participate in the collaboration, but also to maintain their motivation afterwards. However, aside from a few personnel changes in divisional heads, team cohesion and engagement proved to be no severe issue.

Regardless of the feasibility of the projects, according to interviewees another crucial concern of many public actors was one that typically arises in connection with the use of new technologies or with innovations in general; Namely, that one can hardly rely on experience nor assess the risks associated with the planned change. Furthermore, there is a considerable lack of legislation around matters of digitalisation. For example, the divisional heads met unanticipated risks resulting from liability in the context of tendering procedures. Until then, they had only worked in the clearly structured apparatus of the core administration, e.g. as head of department. As project leaders in the context of the Digitalstadt GmbH, they suddenly entered new territory because they were now responsible for ensuring that the complex legal framework for tendering was respected.

**Power imbalances**

Although new responsibilities typically lead to changed power relations, none of the interviewees rated different power positions as a key challenge or detrimental to the collaboration process. According to one interviewee, this owes primarily to the topic of digitalisation, as all public actors were affected similarly by the challenges and were breaking new ground under similar conditions, which made it all the more important to join forces and to bring a variety of existing competences into the collaboration.
Yet, apart from this common perception among interviewees, there were, of course, underlying power inequalities that more or less indirectly impacted the overall course of implementation. The 32 subprojects were largely supported by the municipally owned companies represented by HEAG Holding AG, which provided a strong network partner of more than 8,000 employees in contrast to the small number of the Digitalstadt GmbH personnel. In addition, as all advisory boards were directly linked to the Digitalstadt GmbH and not to the overall Digitalstadt Darmstadt programme, the GmbH had a certain power advantage in selecting information and setting the agenda. Above all, however, the formal requirements of the funding scheme - based intrinsically on the principle of reward and sanction - introduced certain formal power structures to the project, as one is inevitably in a dependency relationship and always gives up a certain degree of autonomy. The project had to meet the requirements of the State of Hesse as main funding body and was therefore tied to numerous conditions and a strict reporting system. As a result, the Digitalstadt GmbH felt limited in its decision-making, which was characterised by one interviewee as “the higher [the government level], the more formal and less flexible.” In this regard, complex procurement law in particular was seen as a clear roadblock to the efforts of cross-sectional digitalisation projects, in which it was considered important to be able to make quick and unconventional decisions. One respondent experienced this as a paradox inherent in the current funding system: "The funding body wants to promote innovations, but actually inhibits them through its framework conditions."

In summary, the complexity of the project was increased by the large amount of parallel information, by the divergent interests of the network members and also by the dual roles of the internal actors involved. Darmstadt was particularly challenged by the perceived risk of lacking visibility and broader acceptance as well as of the project’s potential infeasibility, all of which stemmed from the fear of a decline in democratic legitimacy. Power inequalities became particularly evident in the different resources in the allocation of funds and in the different capacities regarding the ex- and inclusiveness of the collaboration process.
Public management interventions: leadership and institutional design and their effectiveness

Following Torfing’s (2019) distinction, we specifically tried to find out how far personal leadership and institutional design played a role in exerting a positive influence on the course of events. Both are said to be, in principle, capable of considerably improving the likelihood of effective collaboration and contributing to change (Ansell and Gash, 2012; Thornton, et al., 2012; ‘t Hart, 2014).

A stepwise approach towards the network

When asking the interviewees for the kinds of measures taken to meet the above-mentioned challenges and to make Digitalstadt Darmstadt a success, all agreed that the establishment of the complex network, including the GmbH itself, meant especially extensive formal requirements as well as enormous efforts on the part of leadership and management. Setting up the network proved to require a step-by-step approach of skilful institutional design and leadership, that “first thinks in large dimensions and then breaks it down into actionable measures.”

This mediating approach helped to cope with the project’s inherent complexities and to counteract the risk of its infeasibility early and successively at the conceptual stage. In the beginning, a small group of three key individuals with high, policy-relevant positions took a (bottom-up) initiative and then proceeded to implement the idea/vision.

“With such big strategic steps [as the Digitalstadt Darmstadt], key personalities are traditionally extremely important project drivers. We had that in Darmstadt with the mayor, the head of Fraunhofer SIT and the former CEO of the Software AG (as part of Bitkom).”

This initial idea was deliberately disseminated only in a small network, as a well-functioning small group dynamic with a common vision proved to be beneficial in attracting other actors from their networks. In contrast, trying to attract a large number of actors in the initial phase was expected to have been less promising. This smaller network initially comprised of the ‘usual suspects’ of Darmstadt’s established ecosystem, who were persuaded to participate by persistent communication on the part of leadership. “Communication, communication and...
“communication again” was exactly what was required to inspire people to an idea and vision, as one interviewee noted.

The broader network finally consisted of private companies, civil society, and research institutions. This included the Technical University of Darmstadt, which has since been willing to foster the projects’ long-term implementation by contributing their expertise also beyond the funding period. According to critics in 2018, however, citizens’ involvement was solicited much less than initially promised (Kulmus, 2018, p. 85). This aspect was not raised by the interviewees though, and they rather pointed out that both the creation of the broader network and the subsequent recruitment of the Digitalstadt GmbH’s internally engaged actors took place on an equal footing and were discussed in a collaborative manner amongst leadership. After all, given the voluntary nature of the network, the goal was to inspire stakeholders to engage with a highly demanding and ambitious endeavour. In this respect leadership tried to "consistently keep up the project’s esprit so that it never threaten[ed] to become a plain administrative task, but stay[ed] an exciting, engaging project". However, besides appealing to enthusiasm in a catalyst manner, the prospect of receiving funding proved to be an essential incentive for the network partners to participate. This was also the case for most of the divisional heads, who saw the programme’s financial support as an opportunity to implement their predefined projects much more easily.

A commitment to engaging the right people
As the composition of the network was pertinent to success, staff recruitment and support played critical roles. Compliance and mutual trust were further ensured by choosing actors that had worked together before in the context of the city administration, which served to mitigate the perceived risk of failure, rejection, or loss of reputation.

The qualification profile in the context of the Digitalstadt GmbH was special in two respects: it required not only advanced project-specific knowledge, but also the willingness to be involved in the project beyond regular working hours. With the exception of one of the Digitalstadt GmbH’s ‘managing directors, all other leadership positions were involved in the project on top of their regular duties in the city administration. As challenging as their dual roles may have been, it also enabled leaders to get engaged in the project more ambitiously,
as their parallel position in the city administration was not in danger in the event of failure. Unlike the mayor’s limited term of office, job security held also true for the company’s Managing Director, as they had all stayed parallel in their previous position or planned to return after the project’s funding phase. In order to further lessen the double burden throughout the project and to ensure divisional heads could focus on content rather than administrative matters, additional professional project management was hired in the Digitalstadt GmbH. This project management was responsible exclusively for setting milestones and keeping a financial, temporal, and strategic overview while regularly reminding the team of the imperative framework conditions.

It proved useful to opt for leaders with “medium” experience in the administrative context, who were thought to be especially capable of coping with unforeseen challenges without becoming frustrated. According to the interviewees, young employees were considered often too unexperienced or over-motivated, while long-term employees were too entrenched in the existing administrative system and often lacked the needed enthusiasm. An additional advantage was getting executives who had already worked in an interdisciplinary manner. For instance, prior to the Digitalstadt GmbH’s foundation, one of its current managing directors had been a controller in the core administration collaborating with the building authority on a regular basis. According to one interviewee, for recruiting it was thus necessary to act as a “truffle pig”, that is, to look out for and to empower those potent people in the city administration who might not otherwise be seen or whose passion for digitalisation may have otherwise been overshadowed by existing structures. Ensuring a balanced mix of both digital enthusiasts and digital sceptics was furthermore essential in order to keep ideas realistic and relevant (Digitalstadt Darmstadt, 2017).

It also played a crucial role that each person was adequately supported along the way by the Digitalstadt GmbH, especially in order to counter the risk that people would leave during the course of the project due to excessive demands, as noted by one divisional head. Interviewees considered the most important leadership quality was being empathic enough to understand the individual needs of the employees and responding accordingly. In particular, one challenge for the divisional heads was that they were often confronted with new, unknown risks. For example, the lack of clarity on legal issues related to digitalisation or in the course of the
tendering procedure. These risks were counteracted by formal measures such as trainings organised by Digitalstadt GmbH, although one interviewee remarked that these were realised relatively late in the process.

In favour of minimising both complexity and the risk of failure, as one of the interviewees stressed, it was also important to recognise if employees proved to be unsuitable for the position, for example, if professional ambitions or personal life were no longer fitting the scope of the project. In this case, it was understood as the task of leadership to take action in the spirit of the project and reassign the position to a more suitable candidate. In general, the fact that most of the public actors involved had previously worked together made acquisition and employee retention for the project much easier. Engaging people who had already proven themselves in joint collaboration or in the administrative context was an additional strategy to counter the risk that the time frame of the project was set too short. In this way, Digitalstadt GmbH sought to avoid long-term recruitment procedures and frequent personnel turnover.

**A limited liability company as key governance structure**

According to most interviewees, many of the challenges had been met by using a limited liability company (*GmbH*) which was 100% owned by the city, as an effective institutional design measure instead of, for instance, commissioning a department of the core administration. In comparison to other legal constructs, such as a special-purpose association (*Zweckverband*), it was in particular the structure of a GmbH that offered multiple advantages, and decentralisation was considered key to the digitalisation initiative’s progress. This hybrid organisation of a private law form in a public administration context in fact intensified the tensions between different logics (cf. p. 8) and thus enhanced the project’s complexity, but also allowed for a wider scope of action both strategically and financially, as well as for a softer, stewardship-promoting (Block, 2013), more networked-based approach. For instance, after the general concept of the Digitalstadt Darmstadt had been approved by the city council, its initiators were able to largely act autonomously when further pursuing the project’s plan. This enabled them to create a variety of joint bodies for technical consultation in the form of advisory boards primarily occupied by senior managers.
In its intermediate position, a GmbH can receive both public and private funding and operate outside of the branched structure of the core city administration. This served to increase the GmbH’s, as well as the overall project’s, visibility. It also allowed the project “to meet the local economy on an equal footing”, which proved very helpful in connection with engaging local enterprises and testing new Smart City formats. In addition, since it was 95% financed from external public and private funds, budget was never considered a constraint nor a concern. With money came great responsibility, but this also created many opportunities that would not have been possible in the context of the regular municipal enterprise subject to budget consolidation. This encouraged a certain trial and error culture that did not make the risk of failure irrelevant, but rather understood it as an integral part of the process.

According to one interviewee, the separated structure of this so-called intentional “testing field” also minimised the actor’s perceived risk of reputation loss in case of failure, as limited control over outcomes was seen as a characteristic and legitimate feature of innovative endeavours. However, as outlined in the previous section, this cross-sectoral role of the GmbH also posed risks and generated tensions, which were addressed by both strict framework conditions and leadership.

**Framework conditions as a means to guide collective action**

Introducing certain formal conditions in the form of a funding scheme, an ethical guideline, and a common strategy in line with existing departmental strategies provided a joint framework that all actors could rely on and helped to navigate the complexity regarding diverging interests or rationalities.

The joint framework allowed all actors involved to draw on binding principles and accordingly set limits if necessary, which was particularly useful in critical situations. It furthermore enabled all public actors involved to represent the Digitalstadt GmbH in a uniform and transparent manner to the outside world, which proved to be decisive for the effective promotion of the project idea and securing its credibility. This also helped to facilitate broader public acceptance, as it quickly became clear that it was vital to adequately respond to fears among the population about technological change e.g. with regard to data protection or being unable to keep up with complicated and changing technologies and systems. In this context,
Digitalstadt GmbH found it important to distance itself from imprudent digital capitalism by making its altruistic intentions as transparent as possible to the public. It was furthermore repeatedly communicated by leadership that conventional approaches in the city administration would be retained alongside the new digital services. This was done under the maxim that “there can be no digital city without the analogue city, and its full functionality must be preserved” (Partsch and Kolmer, 2020).

Though the funding framework was perceived as restrictive by interviewees, interestingly enough, it also appears to have in fact prevented conflicts due to power inequalities between the collaborators at the operational level. No interviewees encountered battles over resource distribution, as the project initiators had clearly defined and decided in advance who the funds would be awarded to and in what amount. Although everyone involved was able to make substantial suggestions with regard to the project design during the initial conceptual stage, the final decision on allocating the funds was reserved to the steering committee. The fact that leadership distributed the funds unevenly among the subject-specific projects resulted in a few more powerful and thus more independent projects with higher budgets. Some of them were additionally subsidised by the core municipal budget or other sources, mostly those that could be assigned to the social sector. However, as this decision-making process was kept completely non-transparent and all the divisional heads later acted largely independent of one another, this inequality did not play out negatively at the working level. Hence, this potential source of conflict was diminished by transactional leadership through opacity, delegation and imposing clear rules.

Establishing ethical guidelines further helped to commit all public actors to basic principles and alleviate concerns of any influential involvement of the private industry. The ethical guidelines set out the following nine leitmotifs:

1. commitment to the common good
2. democratic control
3. responsibility and transparency
4. non-discriminatory and barrier-free access to services
5. sovereignty of the city and citizens
(6) data protection
(7) publication of data
(8) technology assessment and sustainability
(9) guaranteeing infrastructure security

These guidelines were made binding by the strict funding requirements of the State of Hesse and hierarchically monitored through a specific reporting system managed by the Ethics Advisory Board (Digitalstadt Darmstadt, 2020). It was regarded crucial by the Ethics Advisory Board that the committee included one representative of each of the city council’s political parties as well as representatives for particular interests (e.g. women and children), so that decisions could be made which reflected the interests of greater society (Wissenschaftsstadt Darmstadt, 2018).

Leadership on all levels was required to intervene and penalise in the event of violation, though with regards to the challenge of private involvement, transactional responses were deemed not necessary, as in the end Digitalstadt GmbH agreed that extensive product offerings from private sponsors would be rejected. Furthermore, a burden of proof was imposed so that data could not be collected by anyone without justification. The city remained the data owner and, in accordance with ethical guidelines, any form of subsequent data vending was excluded.

In addition to the Ethics Advisory Board, consistent compliance was additionally supported and safeguarded by the institutionalisation of the other two external advisory bodies. All three held quarterly meetings, which also paved the way to build a common understanding of the project and to develop trust as another vital factor for successful collaboration (e.g. Bozaykut and Gurbuz, 2015; Ran and Qi, 2019; Vangen and Huxham, 2003).

*Using time to the project’s advantage*

The time factor inherent in the institutional framework was perceived as both limiting and encouraging to leadership and design. On the one hand, due to the tight timeframe of two years, there was a risk that the projects would not be fully developed and that the necessary basis of trust between the actors could not be established. At the same time, this risk was
countered by creative and efficient measures that might not have been used without the time pressure. The actor’s involvement was thus characterised by a ‘gold-rush atmosphere’, which significantly contributed to individual commitment, sometimes beyond the regular working hours. However, this led to the dilemma that increased time pressure from outside shifted to the inside, which sometimes even evoked “panic”, and resulted in rash, hierarchically exerted measures when facilitative approaches would have been in fact more appropriate, as one interviewee noted.

Internal time pressure was mitigated by a variety of regular networking activities involving technical and non-technical topics which were instigated by conveners and mediators. Some of them were required and others voluntary and, at least in a few instances, these events fostered friendships outside of the context of the project. As all of the interviewees agreed, it was the time spent with each other that created trust, spurred collaboration, and ultimately carried out the implementation of the entire project. Moreover, the fact that leadership encouraged actors within the structure of the Digitalstadt GmbH to address each other informally by their first names further reduced personal distance.

In this context, however, a distinction must be made between two parallel structures. For example, the trust-building measures took place horizontally between the levels of the Digitalstadt GmbH structure (Figure 12) and separately in the substructure of the 32 individual projects with the 14 divisional heads in charge. In this way, the divisional heads who were not active in decision-making bodies such as the steering committee could have the opportunity to be involved in the overall Digitalstadt Darmstadt project and bring in their own out-of-the-box ideas. According to one divisional head, they never had the feeling of "running against invisible walls" within the structure of the GmbH. In case topics overlapped among subprojects, divisional heads exchanged views independently of upper management. For example, the divisional heads of cyber security and mobility were encouraged to work together on issues of road safety. In the context of the respective substructure of the individual projects, a particular dynamic developed which contradicted established hierarchical patterns. Within these individual implementation projects, the focus was primarily on generating ideas, which allowed for more flexibility and taking advantage of individual strengths. For example, the divisional head of cybersecurity, who had previously
run an IT lab, was given the freedom to include lean and agile methods (i.e. Scrum, Software Kanban and single “caretaker” approaches, cf. Mergel, 2016) to the subproject, which he considered valuable but were unknown to the core administration. Leadership in this instance respected the self-regulating character of collaborative innovation processes, to which time pressure was considered rather detrimental.

Unlike the outlined prevailing network- and hierarchy-based approaches, business-like designs may have been in place, but according to the interviewees, they were of clearly lower relevance to cope with complexity, risks, or power imbalances. This was possibly because tasks that involved target systems and results-control had largely been passed on to the project management and only became relevant once the funding bodies demanded them with the project's completion. Furthermore, although external competition among network partners may have been high, internal competition remained low. It should be noted however that the creation of a limited liability company under private law (GmbH) led to a decoupling from the core municipal budget and constituted by definition a market-based approach.

Finally, all interviewees seemed convinced that while effective design formed the basis for good progress, leadership was the key to conducting formal design modifications. Such a complex networking project depended on the extraordinary commitment and collaboration of all its involved actors, but it would not have succeeded without the powerful support from the top level, especially in this case the mayor.

**Reflections on lessons learned and conclusion**

In conclusion, all measures taken to address the various challenges related to the recruitment, support or retention of actors in the intergovernmental collaboration, which clearly underlines the relevance of people’s action in contrast to formal structures.

The initial ex- and inclusiveness of the collaborative process was determined by authoritative action, as only an exclusive inner circle from the top level decided on the network’s exact composition. However, when organising consensus and joint effort within the network, collaborative leadership approaches proved to be appropriate. Though these approaches were indeed achievable within the separate laboratory-like structure of the newly established
Digitalstadt GmbH, it is likely this was only possible due to the existing safety net of a well-functioning administration.

Considering this, it appeared that overall, innovative solutions required less rigid, more lateral arenas for their development that left opportunities open for alternative methods and horizontal learning processes. Implementation had to be complemented by a solid institutional structure based on certain rules, stewardship and clear-cut responsibilities which made the stakeholders involved capable of acting as they saw fit.

In the case of conflict situations, hierarchical strategies authorised a small group to define the problem and find an appropriate solution, which was then made available through rather collaborative means. Leadership was able to face and handle situations with more confidence knowing that in case of escalation, they could always rely on both a binding institutional framework as well as on the assertiveness of the upper hierarchical level (i.e. the mayor or managing directors). Thus, for the maintenance and stability of the Digitalstadt GmbH, established and efficiency-oriented measures of top-down control and management dominated, regardless of whether it focused on an innovative topic seeking for transformation.

With this in mind, one could ask what actually distinguishes digital transformation from other change processes in public administration. Its comparatively unknown scope, its cross-disciplinary nature and that it more or less “affects everyone alike” is certainly characteristic. In this sense, the interviewees felt rather united in the face of unpredictable challenges, which supplemented stewardship and joint sense-making. This called for certain personal leadership skills that needed to adapt to meet their dual roles with regard to autonomy versus dependence, informality versus formality and/or heterarchy versus hierarchy. Leadership had to catalyse, mediate, and convene, while at the same time convey sovereignty and steadfastness both internally and externally by setting limits, delegating and steering.

Executive leadership clearly had the power to prioritise and mobilise resources and competencies within the broader project and the Digitalstadt GmbH, but it was rather the divisional heads that had the means to facilitate innovation at an operational level. In this
regard, leadership was less about IT competence than enthusiasm, determination, flexibility, and an interdisciplinary mindset. Considering this, no shared institutional power settings were executed, and the directive of leadership remained clear and focused on single leaders.

“Administrative units, such as the GmbH, still need strong structural management”.

Leadership, nonetheless, conveyed that each internal contributor mattered for success and that continued progress resulted from active teamwork largely performed in more informal, trust-based settings.

However, besides the successful set-up of the GmbH, statements about the success of the overall Digitalstadt Darmstadt must be interpreted with caution, as its transition to the long-term implementation level is still pending. As already outlined in the section on outcomes, only some of the subprojects have yet to be realised, and what has been done has taken place only on small scales such as testing sensor technology in single streetlamps, trams or for waste management. This, according to the respondents, remains a challenge that must be tackled from 2021 onwards through a skilful combination of traditional and novel means of institutional design and leadership.

Lessons learned

When asking the interviewees about their lessons learned so far over the course of the project, they responded with potential adjustments in institutional design rather than with leadership approaches. It may, however, certainly be the case that respondents were hesitant to offer criticisms of leadership, as they were still in an employment relationship and therefore understandably seeking to protect the turf of their organisation in order to avoid rejection or a loss of reputation.

Above all, interviewees agreed that extensive sponsorship services should be treated with caution in relation to collaborative public projects. They noted that at the time of initiating the competition Bitkom might have been swept up in a “herd instinct” that Germany needed to catch up in international comparison with regard to digitalisation performance, and had thought that sponsorship services would help to trigger change and ensure quick financing. In
practice, these not only created unnecessary tensions, but also significantly hindered the process, making it much more complex and riskier. In the future, the city of Darmstadt would prefer to focus more on its own strengths as a public institution and deal with funds more carefully. When asked whether this would preclude prospective participation in such competitions, the respondents awarded the Bitkom association a steep learning curve, citing that Bitkom had indeed gained experience itself in the 3 years it had accompanied their project. They were optimistic that this would lead to adjustments in the competition format, such as excluding sponsorship services.

The funding provided from the State of Hesse was perceived similarly critically by the interviewees, and perhaps even a barrier to innovation. However, unlike the Bitkom’s support, the restrictions imposed by state subsidy were understood as “inevitable” due to the current lack of financial alternatives. The public funding authorities are already aware of this criticism, as one interviewee assured. Nevertheless, far-reaching Smart City grants are planned in the coming years, especially by the federal government, which, according to one interviewee, do not take sufficient account of this shortcoming. Ideally, a more flexible framework outside of complex and lengthy public procurement procedures for future Smart City grants could be created in order to lay the foundations for agile and innovative projects in the first place.

Furthermore, in order to address the consistent problem of a lack of visibility and resulting risk of lack of legitimacy, the respondents suggested potential future projects should engage their larger audience much earlier in the process, even before the strategy formulation. They considered this step less about obtaining external competence than about fostering greater acceptance from the outset in order to lay the foundation for smoother implementation. At the operational level, this would also entail the creation of additional joint formats such as hackathons or co-creation labs in order to bring in more external stakeholders. In this sense, much more extensive conceptual preparatory work would be required. In hindsight, a more thorough prior needs assessment would have been especially useful to ensure that each subproject, such as the smart parking system, is developed in accordance with the users’ needs. At the same time, as noted above, it would have also been important to internally prepare and support the project much earlier through training or mentoring schemes, for instance with regard to the complex tendering legislations. In fact, resources for tender
support were already an integral part of the core administration and could have also supplied the projects around the Digitalstadt GmbH.

Key recommendations
From the experience gained in Darmstadt, we can derive the following actionable recommendations for practitioners and policymakers in charge of setting up and steering Smart City networks seeking to create public value:

Setting up and maintaining the network
- Setting up the network is ideally done in a *multi-stage process*: Those in charge need to be open to input from all ranks. Initially, it should be left to a small group of key policy-relevant players to pursue the idea and to establish a common vision by first encouraging only a limited number of stakeholders to participate in the network. It is best to first concentrate on the success of this limited collaboration but to not forget to communicate on it. As soon as a healthy dynamic has developed within, it is highly probable that other stakeholders will follow, and the network will expand.
- **Involving research, economy and civil society at a very early stage** of the project is necessary as it requires the support from all interest groups. However, **independence from private sponsorship** must be maintained.
- It is further essential to **establish binding, ethical guidelines** in coordination with the actors involved and to be careful not to deviate from them as much as possible. These do not have to include detailed procedural steps but rather provide basic principles on which actors can jointly rely on.
- If ethical guidelines have been set, it is crucial to not only insist on them internally, but also to make them publicly accessible. In this way, the project conveys its own value system and that its motivated by public good. There is also a high chance, especially in the German context, that (visible) cautiousness in dealing with public funds will ultimately have a positive effect on the project’s legitimacy and thus feasibility.
- In this sense, one needs to bear in mind to regularly **communicate piecewise achievements**.
Setting up and maintaining the coordinating body

- For project coordination and implementation, it proved helpful to create a rather small, manageable setting outside of the core administrative structure. In this case, creating a limited liability company under private law entailed several key advantages.

- In support of this, external advisory boards on all relevant technical questions should be institutionalised and consistently involved. Legal know-hows, for example, in connection with the complex tendering process or digital matters in general, is often not available right from the start and must be learned. If insufficient support is provided in this context, it can quickly lead to overstress or even deter new employees.

- When assembling the team, it is critical to get people on board who are intrinsically motivated and passionate about the topic of digitalisation, to whom the basic tenor must be: “digitalisation is not an end in itself but must generate benefits for users”.

- If time is pressing and perceived risks are relatively high, it is reasonable to prioritise recruiting people from within the administration’s own ranks.

- In addition, despite the push for innovative and agile project approaches at the operational level, it is advised to hire traditional professional project management that is solely responsible for keeping financial, timely and strategic overviews.

- It proved fruitful to appoint one team caretaker for each subject specific area or cluster who is highly committed and will act as a counterpoise.

- Mandatory, rather informal opportunities to meet, share and learn on a regular basis help to further spur the collaboration and thus the entire project.

- Within this new framework setting, one should endeavour to act in a cooperative, empathetic and facilitative manner, but to not hesitate to take action in critical situations by imposing regulations. Resorting to more classic, well-established measures if necessary is a strategic approach that will be ultimately appreciated.

So, the next time practitioners and policy makers are about to master novel challenges to promote a city’s digital transformation, it is worth keeping in mind that: “There are simple and complicated tasks, these need to be addressed classically. Complex tasks, however, have to be tackled with agile methods, and chaotic [tasks] you need to stay away from.”
Case introduction

This case study examines an example of a coordination activity between two public sector actors, Bristol City Council and the University of Bristol, in managing a joint venture called Bristol is Open (BiO). The initiative aims to provide ‘a city-scale open and programmable test bed for experimentation and digital innovation in smart cities’ (Bristol City Council, 2016: 55). It aims to empower residents, communities, and businesses to innovate and develop new smart capabilities to better serve their social and economic needs.

Bristol is one of the ten biggest cities in the UK, located in the southwest of England, with a population of over one million. The city is known for its strong cultural identity and it is quickly building a variety of expanding industries in the areas of IT, creative media, and digital technology. The established industries and developing areas are supported by a strong tradition of professional and financial services and academic research (Bristol City Council, 2019).

Bristol is key to the economic health of the West of England city region, which is the UK’s most economically productive area (Calzada, 2017). Furthermore, strategic deals have allowed the possibility of tripling the current spending on major public projects, such as transport, flood defence, and housing over the next ten years. While implementing these public projects, Bristol has made sustainability a public priority, with a specific focus on environmental concerns such as traffic congestion and flooding, as well as addressing some of the entrenched inequalities in the area (Fox and McLeod, 2019). Whilst Bristol is an economically strong city, it contains areas of deprivation. The number of children living in poverty is higher in Bristol (1 in 4) than the national average for England (1 in 5) (Toy, 2016). In some parts of the city, only 35% of young people attain five or more subject qualifications of the General Certificate of Secondary Education (GCSE) (European Commission, 2017), while, in the Bristol county the average (for English language, English literature and Mathematics) was 50.3% and in England

51 https://www.bristolisopen.com/.
52.7%. The least and most deprived areas of Bristol have a difference in life expectancy of nearly nine years, and there is a high digital divide (Bristol City Council, 2019).

At the end of 2016, Bristol launched The Bristol Resilience Strategy\(^5^2\), which is a vision for how Bristol aims to look 50 years from now. The strategy seeks to address some of Bristol’s major issues, including traffic congestion, affordable housing, poor air quality and child poverty. It also aims to give people more say in the decisions made in local government.

In the area of IT, Bristol City Council was awarded £5.3m in funding (2013-2014) to develop a research and development test bed as part of the Gigabit Bristol Programme (Super Connected Cities) of the Building Digital UK (BDUK) team at the UK Department for Digital, Culture, Media and Sport (DCMS). The team has worked since 2011 to provide broadband internet connectivity in UK rural areas, towns and some areas of the city which have not received technological market investments (e.g. areas where there is a lack of fibre optic technology in the UK compared with other European countries).

BiO follows on from this UK government funded initiative. The initial goal was to deliver research and development initiatives which would solve contemporary problems and contribute to the development of Bristol as a Smart City. It was launched in April 2015 and has delivered a Smart City research and development network platform of multiple communications technologies installed around the city. It is a joint venture between Bristol City Council and the University of Bristol, who have equal shares in the company. BiO is funded by local, national and European governments, along with academic research funding and support from the private sector. Its industrial partners use the city scale research and development digital network to explore how programmable networks can be used to address a variety of challenges in the city of the future. For example, Nokia was motivated to join BiO as a long-term partner due to the synergies it could achieve working with the other partners. The University has an advanced understanding of programmable networks and Smart City technologies, and the City Council has a proven track record of demonstrating social innovation using new forms of digital connectivity.

BiO studies software defined networks, Internet of Things and Big Data technologies that contribute to Smart City solutions. As a Smart City initiative, it is a response to wider discourses, such as the United Nations Sustainable Development Goals (SDG), and the European Commission’s European Innovation Partnership on Smart Cities and Communities (Michalec et al., 2019). Specifically, it responds to SDG n. 9: Industry, Innovation, and Infrastructure and aims to provide broadband connectivity in more schools and homes, improve access to health care, and close the digital divide (Fox and McLeod, 2019).

From a broader perspective, BiO is one of many initiatives that contribute to a programme of resilience to counteract risk stemming from the population’s increasing reliance on urban structures (Toy, 2016). Section 42 of the Bristol Resilience Strategy describes the joint venture as a programme of embedding new technologies across all aspects of urban development in the region, including ultra-high-speed connectivity, cybersecurity, data analytics, transport and utilities (Bristol Resilience Strategy, 2016). The project is conceptually enabled by the Triple Helix model of innovation, in which universities, businesses, and government work together to generate entrepreneurial thinking and business development (Oplakanskaja et al., 2019).

The relationship between the two main partners has changed over time. In December 2019, the University of Bristol ceased involvement in the project. Bristol City Council’s Cabinet approved the Council’s acquisition of the University of Bristol’s shares in BiO, so that the Council became the sole shareholder of BiO, owning 2 ordinary shares and 700,000 redeemable preferences shares of BiO.

The focus of the project has also developed. In the light of technology developments such as 5G and a dynamic and evolving market, BiO’s new aims for the future are outlined in a revised business plan. This summarises how the council will deliver the project pipeline, whilst supporting other city partners to explore options to take the platform forward. These opportunities include further developing its role as a pilot test bed to scale citywide initiatives

with an operational and community focus in line with Bristol’s One City Plan\textsuperscript{55}. The Council recognises that the aim of Smart City research and development is key to the region’s economic growth and supports the region to develop fit-for-purpose infrastructure for future needs. The new objectives of BiO are: 1) to carry on the business of delivering advanced technology-based capabilities to Bristol and the West of England, and 2) to promote and support the financial, environmental, economic and social objectives of Bristol City Council.

The following case study relies on a documentary analysis of academic papers and government documents to provide information on the starting conditions and the system context behind BiO. In addition, six semi-structured interviews have been conducted with representatives from the two organisations involved and external parties who were best placed to understand BiO’s aims and achieved outcomes, as well as the dynamics amongst the actors involved.

The interviews were carried out between September and December 2019 and lasted 30-70 minutes each. They have been recorded and transcribed in full, then analysed and coded by keywords and themes.

**System context and starting conditions**

According to our interviewees, there are two main reasons why BiO was originally created: Bristol’s attitude to innovation and its collaborative environment. The first aspect concerns:

“The attitude to innovation in Bristol as a whole... [...] going right back to Isambard Brunel and his bridges, and his stations, and so on, right through to the media innovation that we have in this city with Aardman studios, Wallace and Gromit, etc.”

(I: 1).

The local council was described as being run in an unrestricted style and open to innovation. For instance, as part of its attitude to improving services, getting better value for money, and not being constrained, Bristol City Council has set up its own waste company (Bristol Waste) and energy company (Bristol Energy) as well as BiO.

Bristol has had a pioneering role in digitalisation with an open high-speed network that combines fibre, a wireless HetNet, experimental network technologies and a radio frequency mesh network deployed on 2,000 lampposts. In October 2017, it took over from London as the UK’s leading Smart City (according to the Huawei UK Smart Cities Index ranking\(^{56}\)) and has embraced a higher interest in discourses of urban crisis, particularly those surrounding resource pressure, climate change, and fiscal austerity (Caprotti and Cowley, 2019).

The Council operates a City Innovation Team that has worked on pilots of emerging Smart City technologies and the Bristol Data Dome, a 3D space for visualising real-time data. The new City Operations Centre ensures that services are effectively implemented. Knowle West Media Centre, a Bristol-based arts centre and charity, has created a development framework called ‘The Bristol Approach’ to help ensure that new digital solutions focus on the needs of citizens.

In 2017, when it overtook London as the UK’s leading “smart city” according to the Huawei Smart Cities Index 2017, Bristol has also been praised for its open data access, energy innovation, and community engagement and is aiming for carbon neutrality by 2050.

Moreover, Bristol has taken significant strides to extend its innovation programmes and more closely integrate those initiatives into a city strategy. It is seen as a city at the forefront of areas such as public participation, public access to information and has been recognised specifically as being a leading player in matters of energy innovation (Oplakanskaia et al., 2019). As such, attitudes towards digitisation and collaboration in the public sector are generally very positive, and BiO is constantly benefitting from this collaborative approach.

The European Commission suggests that Bristol is at the forefront of digital transformation, and that the impetus for this comes from the council, as endorsed by its citizens (European Commission, 2017). Bristol City Council has purported that its vision for the city is that of a ‘Smart City trailblazer’, in which digital technology is used to create an active, engaged citizenship across the city (Bristol City Council, 2019, p. 14). Events such as Venturefest (organised by Bristol and Bath to identify fast-growth tech companies and start-ups within a region) demonstrate an increasing effort to conceptualise citizens as decision-makers, rather

than data providers, and positions them as taking an active role in the deliberation process (Calzada, 2017). As such, the openness of the project is built on a complex but delicate network of citizen interactions.

Furthermore, the collaborative approach of universities, chambers of commerce, and strong public-private partnerships works together to create the conditions necessary to make Bristol an ideal test case for digital innovation (European Commission, 2017). On a global level, Bristol’s commitment to and engagement with the United Nations Sustainable Development Goals also provides an impetus to explore sustainability that can be provided by digital services, with a strong emphasis on sustainable development that reflects the concerns of local residents and community groups (Fox and McLeod, 2019).

The 2016 appointment of the directly elected mayor, Mr Marvin Rees from the Labour Party, was a key aspect to the implementation of the Bristol Resilience Strategy and for bringing an emphasis on social inequality projects. BiO was created under a Conservative UK government, and successive governments have continued to support it. Innovation supersedes politics in this case; BiO is currently sponsored by the senior leadership within the Council, including the Mayor and particularly the Deputy Mayor.

The second main reason for the creation of BiO is related to the collaborative environment. The partnerships and networks that Bristol has created over time are extremely important in Bristol City Council’s daily management. Bristol is characterised by its collaborative relationships both vertically and horizontally in the local areas. The main actors that are actively involved in digital transformation in the region come from areas of local government, universities and the private sector (European Commission, 2017). The principles that guide its innovation are openness and transparency, to meet user needs, to engage and collaborate, and to make the city both inclusive and ethical (Bristol City Council, 2019). In addition, in Times Higher Education University Ranking, the University of Bristol was ranked worldwide between 69th and 78th in the last three years for industry income, suggesting that there is an established history in the area of working collaboratively.
Within the wider context of cross-city collaboration, Bristol City Council works together with many private, public and third sector bodies who deliver city services (Toy, 2016). As a result, there are several partnerships and strategies in place to facilitate the delivery of services, such as: the Local Enterprise Partnership that brings together the public and private sectors for issues relating to economic growth; the Planning, Housing and Community Board who make recommendations on cross-boundary issues; and the Joint Transport Board who oversee the infrastructures of public transport (Toy, 2016).

External research has considered the legal implications of BiO and concluded that as a project, the work is compelling and has the potential to foster cooperation within the city (qLegal, 2016). However, the reliance on data collected from smart phones and GPS devices implies that whilst this approach will increase the accessibility of useful information, it will also provide many opportunities for creative software applications which will require legal scrutiny.

The Bristol Resilience Strategy was formed as part of a collaborative agenda to lead digital innovation and has focused heavily on transparency to foster trust (Calzada, 2017). This collaboration includes the public and private sectors and aims at fostering relationships not just in the inner city but also in the wider region. The initiative is built upon strategic industrial partnerships and its implementation was dependent upon infrastructures made available by companies in the area, both local and international. Indeed, the Council created partnerships with a wide range of inter- and multi-national corporations (e.g. NEC and Dell) who have supplied services that have helped launch the initiative57 (Garcia Espin, 2015).

An analysis of multi-stakeholder interdependencies in Bristol demonstrated an emphasis on grassroot, network-driven collaboration, in which citizens and SMEs are actively sought to drive social change and engage in local projects (Calzada, 2017). An example of collaborative working that sets a precedent for a culture of cross-working within the city is the City Leap Energy Partnership, a collaboration between Energy Service Bristol, Bristol City Council and Bristol One City that is developing a low-carbon, smart energy system that can be delivered

across the city (Energy Service Bristol, 2018). The initiative is a response to SDGs concerned with both energy and community and brings together a wide range of community groups with local businesses and enterprises. Bristol City Council views collaboration as a vital aspect to secure both the economic and social goals of the BiO joint venture and wider initiatives (Bristol City Council, 2019).

BiO brings together all the pre-existing relationships of its two main partners, Bristol City Council and the University of Bristol, and it also incorporates local projects such as the engine shed incubator at Bristol Temple Meads railway station. The project, primarily funded by Bristol City Council, is a collaboration of six universities across the South West of England and ranks 8th among 64 leading business incubators in the world (Oplakanskaia et al., 2019).

When Nokia became the first vendor to partner with BiO, it was able to build on the existing relationship the company had with University of Bristol and bring with it offers of collaboration from its existing partners overseas, as well as network and infrastructure support (Pearce, 2016). This collaboration with Nokia enabled the implementation of a citywide mesh network, which installed the capacity for Internet of Things connectivity and began to explore the capacity to solve concerns such as traffic congestion, air pollution, waste management, and roads and parking. Therefore, BiO is based on a high level of interdependency and trust already present among its partners (Ansell and Gash, 2008).

Moreover, the “smart” offering in BiO is guided by the principle that every resident should have access to technologies that are essential for their productivity, well-being and enjoyment. The unique proposition on programmability empowers residents, communities and businesses to innovate and develop new smart capabilities to better serve their social and economic needs and ultimately enables new approaches that will help the city to prosper.

From a practical point of view, our interviewees suggested that BiO was created because of a common interest between the two main actors. Many years ago, Bristol City Council had the wisdom to buy some underground ducting from a television company that used to supply television via fixed cable. The Council formed an ultrafast fibre optic network called Bristol

58 https://www.bristolisopen.com/.
network (BNet), which was a vehicle through which they could offer access to this duct
infrastructure. BNet comprises 80km of duct and optical fibre, and it is constantly being
expanded to provide increased coverage throughout Bristol. This huge asset is now driving
Bristol forward into the Gigabit Age.

At the same time, the University was developing an extremely strong wireless team and they
have become highly skilled in future wireless technology. Bristol City Council and the
University of Bristol saw an opportunity in linking the two factors together by putting the fibre
in the ducting. As a result of the collaborative leadership from both the University and the
Council pulling in the same direction, they concluded: “We’ll set up an independent company
that can be more agile than any council or a local authority can be” (I: 1).

BiO has added a layer of digital connectivity to the city centre (Cowley at al. 2018) and has
used that infrastructure to provide connectivity to several sites through Bristol and build new
applications and capabilities by linking certain buildings and locations within Bristol. It
furthermore enables them to think of different uses and create applications that leverage that
infrastructure.

The fact that BiO has had the opportunity to access this infrastructure has given Bristol a
unique position, compared to other cities that do not have the same high capacity
infrastructure. Following Bristol’s success, the government-funded programme called Local
Full Fibre Networks Programme has since 2017 made investments in other cities (e.g.
Manchester) that have duct infrastructure and looked at ways to unlock that for commercial
use and make that public asset available.

Collaboration challenges and dynamics

BiO was born as a synergy of interests between Bristol City Council and the University of
Bristol. The two organisations came together to co-create something that neither side could
have done alone. Professor Dimitra Simeonidou of the University of Bristol was involved as a
director in the first phase of BiO’s life cycle. She stated that BiO was meant to address two
important questions: how to deliver the new technology and innovation in smart cities, and
why there was a need and a willingness to deliver this kind of innovation. While they have
done a tremendous amount of scientific research, making a case for funding required them to make a business case for BiO that emphasised clear benefits for SMEs, local development, citizens and communities or towards culture or creative content creation. (Simeonidou, 2015). Different interests have led to BiO changing its nature over time. In fact, due to these disconnects between the two actors, there have been ongoing negotiations since December 2019 for the Council to take over the joint venture. The Council has procured back the University’s share in the company so that it can focus on piloting scalable projects to deliver services to citizens and move away from pure research and development. Meanwhile, the University is expanding and intends to focus its energy on building a new quarter.

*Complexity*

The different aims of the partners involved can be considered an example of strategic complexity in a collaborative network. Competing aims and objectives have often guided the phases of BiO’s lifecycle, including its initial research phase, the current pro-social phase (Klijn and Koppenjan, 2014), and the end of the relationship between its partners.

For the University of Bristol, BiO represented a partnership around shared research interests. At the beginning of BiO’s life, there was the research capability and the academic skills to drive the collaboration ahead and there was a focus on research and academic papers. It was the University that was leading this initial phase. BiO also collaborated in the 5G space, as it was responsible for getting the network up and running. Companies such as NEC, InterDigital, and Nokia were very keen to collaborate and to provide equipment. Now that 5G is a semi-proven technology, the focus on 5G has diminished, and BiO has shifted its emphasis on supporting the social initiatives within the city.

Our interviewees revealed that when BiO’s agenda moved from 5G, the University didn’t have the right participants involved to keep the collaboration focused on research. They were instead concerned with their own programmes and partnerships, which put the Council in a position to take over control of BiO. David Lawrence, acting as Interim Shareholder Liaison Director for the Council, told board members that the University had signalled it wanted to pull out of the company because its interests lay in research and development rather than
supply. The Council, on the other hand, still sees in the value of BiO as a brand and a business for profit.

BiO’s agenda is now focused on developing a more equal society, with regards to open access Wi-Fi and social injustice. BiO is perceived by interviewees to have operated over the last 18 months more like a council organisation than a collaboration. The Deputy Mayor, Councillor Craig Cheney, is now one of the main actors. BiO’s chief executive said that: “He really gets what we should be doing, and he really gets this is not about those that have, it’s about those that don’t have” (I: 1).

BiO is supporting the One City Plan Plan (a plan for Bristol to 2050 to make the city fair, healthy and sustainable) in order to allow the council to innovate on a platform without technical risks and uncertainties, and to allow them to develop services in a quality-controlled, professional environment with appropriate systems management and maintenance. The shift allows opportunities to scale up new technologies and tackle the digital divide by helping people who haven’t been connected before to get connected. The Bristol City Council has made their role in relation to the digital divide clear in the following statement: “As a local authority, we have an important custodial role to play in accelerating the deployment of full fibre and mobile networks.” (Bristol City Council, 2019, p. 12). However, their approach has been criticised for being not ambitious enough to compete with other Smart Cities such as London (Calzada, 2017).

Other elements of complexity are related to the way in which funding is managed. Research funded projects are often characterised by different researchers under separate budgets, and the money tends to have less strings attached. With BiO being controlled by the Council, there is a significant emphasis on ensuring that taxpayers’ money is spent in a transparent and accountable way. It is therefore usual to have a programme-type budget rather than discrete project budgets to guarantee the programme’s continuity. With BiO’s future in mind, the Council had to consider the following question:

“Is BiO there to benefit the University from an academia perspective, and research and development purely, or is it actually about trying to use BiO as a vehicle for the greater good of the city?” (I: 2).

Since the shift in BiO’s aims to the latter question, there is a need for new skills related to ethics, privacy, and security issues in order to scale the technological solutions to a wider audience in the city. BiO is now open to collaboration with other universities beyond Bristol, and new collaborations with University of Bath and the University of the West of England, are aimed at bringing those skills.

Another lens that can be used to interpret developments in the collaboration over time is to see the collaboration as moving from the creation of a prototype test bed, which was developed in an environment that was almost completely free of industrial quality standards, into an environment where it needed to be a stable, operated system which was maintained and upgraded regularly. Therefore, while in the beginning the interest in the research aspects was high among technologists, it later lost its appeal, but it has since providing a stable and consolidated platform that is useful for people to engage around a widespread social science phenomenon. As one of our interviewees suggested:

“I think the goal for Bristol is Open now is more of a marketing evangelist organisation for Smart City technology as a whole. I don’t think it is the technology RandD platform that it originally set out to be” (I: 4).

These aspects of complexity were the result of different aims of partners which had to be managed through the phases of BiO’s lifecycle. However, not all of our interviewees believed there were collaboration problems resulting from complexity. For some of them, it was simply the case that when the partners’ interests diverged, they decided to break up.

**Power imbalances**

There is a widespread consensus on the power imbalances that characterised BiO in its different stages. While both partners had the same decision-making power, there has always been a power imbalance related to skills and competences, especially in the first phase. At the outset, BiO relied on the University for overall guidance, staff and skills. The Council did not know what it was actually going to achieve from the project. It was effectively a project being
run by the University and only supported by the Council. BiO has now evolved into a project run as a business by the Council.

*Risks*
There was a general consensus among the interviewees on the potential risks related to a collaboration like BiO, especially due to the equal shares that the two public organisations had in the company. The Chief Executive particularly showed a complete, deep and clear vision on the potential problems related to the run of the joint venture.

Among the risks mentioned, our interviewees considered that the conflicting agendas were the most difficult issue, which eventually led to the decision to end the joint venture. This risk is linked to the fact that BiO is a network in which the two partners have the same amount of power in relation to strategic decision-making. Therefore, according to one of the board directors, it was very difficult to reach consensus where there was a difference of opinion in strategic direction because neither organisation had full control of BiO.

There is a risk of losing qualified or experienced staff and being able to ensure the continuity of the project, with regard to BiO’s change from a research and publication focus to running an innovative project to benefit the city and the citizens. The ending of the joint venture had a negative impact on BiO’s staff, who have felt unsettled and unsure about their working future. BiO’s senior management has worked hard to make the staff feel safe, valued and wanted, and to prevent them looking elsewhere for jobs and avoid losing qualified and experienced employees.

A potential risk for the Council was, for political reasons, whether it was wise to finance or invest in this area of non-statutory work. Given the aforementioned support by political leadership, this has not been an issue and there has been continuity in political control of the mayoralty.

There have been other risks related to the continuance of funding though. As previously mentioned, BiO was set up as a limited company split into halves between the two organisations. It is classified as a large corporate company, which means it must find 60% of
the funding from another source every time it obtains EU funding (e.g. Horizon 2020) or any other public grant funding. In hindsight, BiO should have been set up as a non-profit to maximise the funding opportunities. The chief executive complained that there is a: “Constant funding battle [...] We don’t make a profit, that’s not what we’re set up to do, and we don’t sell a service. So, it’s funding, it’s chasing the funding, always” (I: 1).

This chasing of external funding to pay the wages of the staff and keep the company stable is very time consuming. It is not as easy as it used to be to receive funding from big corporate technology companies because the technology has been standardised and there is no longer the need for test beds.

**Public management interventions: leadership and institutional design and their effectiveness**

BiO was incorporated under the *Companies Act 2006* on 10th November 2014 as a private company limited by shares. The staff team working on the start-up phase consisted of a managing director, a chief technical officer (Dimitra Simeonidou from the University of Bristol) a senior programme manager, two project managers, a procurement officer, two technicians, and two academic technical leads. The average number of persons employed by the company in the last three years was seven in 2017, 12 in 2018 and 13 in 2019. BiO was managed by a board made of a chief executive, a non-executive chairman, two directors from Bristol City Council and two directors from the University of Bristol. At an operational level, there are technical staff on both sides who share workspace and offices and work together on a day-to-day basis at the City Operations Centre.

BiO is organised and managed as a network, where the approach to management is associated with innovation and guided by common values and goals, trust and reciprocity (Adler, 2001; Burns and Stalker, 1961). It is characterised by openness and inclusiveness. Rather than have a set agenda, it offers a space for partners to come together and work on solving problems in the city, without having a prejudicial view on what those solutions should be. One of our interviewees suggested that:
“So really, we’re saying, ‘we’ve got some technology, we’ve got some skill, we’ve got a network that allows you to test things at scale, come along with your ideas and we’ll try them out’. So, I think it’s that openness rather than a fixed agenda” (I: 4).

As a network, BiO has a flat internal structure where lateral communication and trust between its members are encouraged in pursuing the agreed goals.

Public sector intervention

As mentioned earlier, neither organisation had more power than the other in making decisions and all ideas were embraced. This bought difficulties and slowness in the decision-making process, as often experienced by networks. It was ultimately an inadequate way of resolving internal conflicts and led to the end of the collaboration.

To address this problem, a non-executive chairman was introduced in January 2017, to manage the Board of Directors and provide independent advice. Both organisations had an equal number of Directors, and the chairman had the deciding vote if necessary. He was described as a senior businessman with a similar leadership approach as the Chief Executive. All the key players meet regularly and negotiate carefully with prospective partners to understand their issues and the potential value they can bring to BiO.

According to one of our interviewees, the agnostic advice and decision-making power of the independent chair has solved a lot of the tensions and problems. However, the conflicting agendas and different visions on the future of BiO did unavoidably lead to the decision to end the relationship and for the Council to take over. At the time of conducting the interviews, there was a debate on what the new structure would look like.

To mitigate the problem that the technical expertise only came from the University staff, new technicians, mathematicians, engineers and specialists were recruited from different platforms to form the staff of BiO. BiO’s Chief Executive said:

“I now employ very skilled engineers who are a combination of those who are experienced from the industry as well as some very young innovators. So, I’ve now got the skill within the team rather than necessarily coming direct from the University” (I: 1).
Therefore, over time, BiO has gradually developed its own team, with the technical skills and ability to execute the projects that it is now designing. The shift has been also physical, as BiO’s offices have moved from the University to the Council’s City Operations Centre, which has given the projects greater visibility and transparency.

The experience of BiO demonstrates that Bristol City Council is forward-thinking in nature, and its local politicians have shown openness, creativity and innovation in their use of funding to tackle issues such as the digital divide and social isolation. While the Mayor has encouraged and continued to support the initiative, there have been significant changes in personnel on the Council’s side on who represents the Council on BiO.

From the University perspective, there have also been key changes in leadership. Pro-Vice Chancellor Nishan Canagarajah, who originated the initiative with the previous Mayor, George Ferguson, and was later a Director of the Board at BiO, is now the Vice Chancellor of Leicester University. Other original Board Directors have retired, and the new appointees have a less broad knowledge and comprehension of BiO, likely a sign of the University’s shift in interest away from BiO. We tried to interview a series of key stakeholders who have left BiO but were unable to get them involved.

Leadership

BiO’s approach to openness was led by its Chief Executive, Julie Snell, who was appointed in December 2017 and left the organisation in January 2020. She has recently been announced as a finalist of the Digital Leader Local Champion award, a competition which honours ten of the most dedicated leaders of Smart City progress within the UK and Europe. During her time as Chief Executive, she tried to address the power imbalance of the University utilising the network more for their research interests. She mentioned the following statement as an example of her leadership when the two sets of Directors at the BiO’s Board pushed their own agendas instead of working together to achieve BiO’s goals:

“Make the ‘parents’ (Bristol City Council and the University of Bristol) [...] realise that they’ve got to have a joined-up agenda [...] That’s where it led to a final summit where they did agree that, actually, the problem was the University had got too much on their plate [...] Hence the change of ownership coming back to the Council as a result” (I: 1).
She was moreover able to use her diplomacy and communication skills to facilitate a productive working relationship between partners and get them to agree that they had to focus on delivering services for the city. She explained that: “I can visualise a couple of board meetings where you can see the angst between the Directors across the table, and you have to pour that smoothing oil on those waters to get them to come together” (I: 1).

Julie Snell came to the role of Chief Executive with a strong background and brought a real depth of industry knowledge to BiO. Having successfully moved from a senior role in industry into the public sector, she had a good understanding of what needed to be delivered and the innovative potential of the public sector. She is regarded as being a good bridge between the public and the private sector and her leadership was recognised as being a key success factor for BiO. There is a perception that she is able to keep the holding company and the commercialisation doctorate of the BiO up to date, and that all BiO development opportunities were both explored and given the necessary approvals to start. She had a strategic understanding of current projects, and, at the same time, relied on her team made of project managers, technologists, and engineers working in a very specialised space, to deliver the more technical aspects of the projects.

She was described as having real energy and passion for both the projects within BiO and for having the ‘softer’ skill for bringing people together. Our interviewees suggested that these attributes were infectious, and she was capable of grabbing people’s imaginations in terms of thinking of what might be possible. Her personal objectives were related to the improvement of connectivity and to the applications that could be layered on top of that connectivity for the benefit of Bristol citizens. She was interested in electronic healthcare and air quality monitoring in order to improve the welfare and wellbeing of citizens in poorer areas. This passion and determination are reflected in her efforts to find money to support BiO’s projects, as reported by one of our interviewees: “She is encouraging us (Department for Digital, Culture, Media and Sport) to make further investments” (I: 6).

The Chief Executive encourages people to get involved in the network and invest in the consortium. With collaborators, Julie Snell was motivating, empowering, and promoted a mutual adjustment of expectations (Ansell and Gash, 2012; Hartley et al., 2013). She was
always present and available to speak with people who understand the city, such as business leaders, community leaders, and social groups. She made sure that BiO and its projects were visible and aligned with the One City Plan, even though this process was time and resource consuming. Internally, she gave personal assurances to the team when they were afraid of losing their jobs because of the change in BiO’s legal status.

In her role at BiO, she had a facilitative leadership style, guided by the idea that no one knows everything, and therefore her approach was about listening and learning, rather than telling. She gave feedback and supported people, so they felt empowered to use their own mind to make decisions and be creative. Her keywords were ‘collaboration’ and ‘cajoling’. She could talk to large corporate organisations as well as small SMEs, changing her communication style accordingly.

In general, all the interventions such as the hiring of new staff and creating a more autonomous, business-minded BiO, have been decided by the Chief Executive. This showed her leadership in knowing what was needed to deliver projects. Some of the interviewees said that she exercised her leadership in a very constrained manner. The majority of the interviewees suggested that the new era of BiO has been strongly determined by her leadership style and she facilitated colleagues to think of ‘what might be possible’.

In addition to the leadership provided by the Chief Executive, the interviewees revealed that having a visionary Mayor also made a difference. According to our interviews the cities making the most progress in the technological area have progressive mayors, while places without political support for a technologically centred agenda are being left behind. Mayor Marvin Rees and his predecessor, George Ferguson, have been described as visionary mayors.

Innovation

According to our interviewees, the innovation from the collaboration was disruptive in nature because it radically transformed the technology that was previously in place. The early research phase of BiO led to the University of Bristol becoming one of the leading 5G research institutes in the country. The first phase of BiO is best described as being a product innovation (De Vries et al., 2016) as new products were created. In its second phase, where the focus has
shifted to providing services for the city and its citizens, it is more of a service innovation, less disruptive and more incremental, that focuses on small changes in order to achieve improvement (Hartley, 2005).

BiO has already delivered several benefits for Bristol and for its joint venture owners. It has raised the profile of the city in collaborative working and built a network of interlocking organisations. It has completed many technical trials and experiments that have supported Bristol’s role as a world-leading 5G city. Its activities have enhanced the city’s profile for being a leader in the Smart City sector in the UK and internationally. This is evidenced by many awards won by Bristol City Council (e.g. TM Forum Global Innovator of the Year, Smart City 2019, GLOMO for Smart City, Replicate Citizen Engagement etc.). It has helped organisations leverage grant funding (e.g. EU Horizon 2020 Replicate and BigClouT projects). It has several government-funded projects from the West of England Combined Authorities around 5G simulation. Through funding from the Local Enterprise Partnership, they have extended the network and achieved goals around increasing the number of jobs, and up-skilling youngsters. The collaboration between the University and the Council has allowed both actors to enhance their reputation. They are considered as role models not only for Bristol and the surrounding area, but also by other organisations in the UK, which have examined their way of working as a possible template to copy and emulate.

The involvement with 5G trials would not have occurred without BiO. BiO also represents a bridge with high-tech businesses that may be looking to invest in the area. For this reason, the DCMS tends to involve BiO within its network of contacts and connections for projects related to 5G. Moreover, the DCMS recommends BiO to commercial organisations and other councils that want to start technology projects. As a government interviewee said: “Look, there is a really good example down in Bristol of how this can work. We would urge you to go down and speak to them and take a look at what they’re doing” (I: 6).

**Reflections on lessons learned and conclusion**

According to the Bristol Resilience Strategy (2016), the success of BiO has made Bristol a leading city in the UK when it comes to public access to information, energy innovation, and public participation. The project demonstrates the benefit of high-tech enterprises’ ability to
interact with entrepreneurial universities and to conceptualise them as institutions crucial to
the generation of new ideas. The University of Bristol has demonstrated that they are able to
counteract perceptions of universities as institutions that are elitist and removed from
business activity (Oplakanskaia et al., 2019). More broadly, the Smart City concept is a
response not only to the potential for technology to produce solutions to some of the
problems currently faced by urban development initiatives, such as climate change, limited
resources, and widening social inequality, but also to the growing pressure for sustainable
development in towns and cities (Michalec et al, 2019).

BiO is not, however, without its critics. For example, there is the warning that discourses of
‘crisis’ are often used to offer technological solutions and justify the production of storylines
that support an entrepreneurial agenda. Indeed, it is argued that BiO runs the risk of creating
a vision of Bristol as a connected, open city whilst failing to systematically deal with some of
the leading causes of inequality and poverty within the area (Caprotti and Cowley, 2019).
Others say that the city’s vision does not go far enough. If the purpose of the initiative is to
establish Bristol as a viable competitor to London, then the work of BiO (and other similar
ventures) is nowhere near sufficient, as it does not take into account the predicted growth of
the city by the end of the 2020s (Calzada, 2017).

Nevertheless, Bristol is Open can be considered a successful experience considering the
research and prosocial outcomes it has been able to achieve so far and the revised vision it
has for the future. Among the key factors for this success are the initial conditions that allowed
BiO to use its existing asset (ducts) for the fibre, its strong leadership demonstrated by the
Chief Executive and Board of Directors and its public and private network which will continue
to bring added value to the future development of the Smart City.

Among the lessons learned are:

• The importance of aligning the strategies, agendas, expectations and goals of the
  partners involved and updating the business plan annually. The two organisations
  operated in a civic/University mindset, with the Council and Mayor providing the
  infrastructure and the capacity to deliver services for the city and citizens, and the
  University providing research and innovative thinking.
• The recognition of the limited timespan of such an initiative. In terms of governance and the longer-term implications as BiO, some of our interviewees thought that it had a life cycle and it had reached the end of its life as a joint venture. The good relationship and the collaboration between the two organisations will remain, although in a different form.

• The value of having a good leader who can listen to collaborators and promote effective collaboration with all partners, including the end users, to work on designing solutions to problems. With a background in the telecom industry, the leader of BiO brought different skills and experience which were lacking in the University and the local government contexts.

• The significance of choosing the legal collaboration structure in line with the aims and the needs of the organisations involved. In this specific case, with regards to funding opportunities, it would have been better to be a non-profit company.

• The choice of a management approach that allows the decision-making process to proceed smoothly. In this case, the arrival of a non-executive chairman with a casting vote helped to stop deadlock between the two equal partners.

• The recognition that having a wider advisory board (steering group), made of representatives from the communities, local businesses, as well as from the Council would have helped the process. It could have been productive to brainstorm each project with a wider group of people, to understand which projects could bring the most added value and help to decide where to deploy resources from within the city.

• The importance of open and innovative mindsets from the actors involved. A creative and forward-thinking way of doing things was an essential factor, which enabled BiO to be noteworthy for the city, the region, and potentially internationally. This level of creativity is often not abundant in UK local government.

• The ability to manage the daily challenges (e.g. funding and managing partners) around looking at future opportunities. It was also important to be able to manage the ups and the downs and ‘unknowns’, especially in a context which was innovative and breaking new boundaries.
BiO has changed significantly over time, and only time will tell whether the Bristol City Council-led project will continue to innovate and develop new smart capabilities to improve outcomes for the people of Bristol. Success will be dependent upon a multitude of factors (including the availability of finance, consistency of leadership etc.) but the foundations are in place for BiO to continue to deliver. Finally, despite the recent separation, the University of Bristol, Bristol City Council and BiO are committed to continuing to work together where there are areas of mutual research interest to support the vision for Smart Cities. Both have managed their contact in a very professional way and still want to collaborate in the future. As one of our interviewees suggested: “It’s just that the Bristol is Open vehicle might not be the one that we use long term, but we’re still talking and we’re still looking to work together in the future” (I: 4).
3. Comparative findings

The last decade has witnessed not only rapid digital progress but also a new understanding of the role of government, which calls for government by citizens instead of government for citizens. These developments have challenged traditional operating models and created the opportunity for organisations at all government levels to establish more effective ways of working and offering user-friendly online services. In light of this, it is all the more important for practitioners and policy makers to know how to best seize opportunities and mobilise action towards desired outcomes.

The case studies presented in the previous chapter clearly show that it is worth the effort to pool knowledge, resources and competences by bringing together a variety of government actors in collaboration, as this approach provides the ideal breeding ground for the development and implementation of innovative digital solutions. The individual case studies exemplify in which ways both local and central governments have succeeded in achieving effective intergovernmental collaboration in the context of digitalisation efforts and coping with challenges along the way. Based on the analysis of the cases, this chapter explores EU-wide variations and similarities in governing collaborative digital projects. These comparative findings are particularly relevant to those in charge of giving advice on intergovernmental collaboration and are aimed to unlock the potential of digital innovations towards public service improvement.

3.1 Key characteristics of the cases: Differences and similarities

Although cases were selected based on a set of uniform criteria, unique characteristics of the various cases did emerge. These were primarily related to their starting conditions, e.g. national institutional factors, as well as varying goals and scope of collaboration and digitalisation efforts.

In line with the assumption made in the previous TROPICO D6.1 report on a meta-analysis of national digitalisation strategies, which claimed that the disruptive nature of ICT and the diffusion of ‘best practices’ at international level leads to a convergence of ‘talk’ rather than ‘action’ (Pollitt, 2002), this comparative case study report indicates that ICT-related
collaborative efforts tend to follow pre-existing institutional patterns and cultural attitudes. For example, we see a rather strong hierarchical and legalistic organisation of collaboration in Belgium and Germany. Denmark and the United Kingdom, on the other hand, displayed a much more market-favouring approach, and Estonia has had its own pace by pursuing highly transformative approaches at the expense of sustainable governance structures.

In addition, whilst the included cases were all initiated in recent years and thus provided cutting-edge examples of ambitious digitalisation efforts, they varied in the degree of maturity and overall success. While most of the cases are currently still on-going and have exceeded initial expectations, the success of some of the cases, such as the German platform case, remains to be seen, especially as most practical measures have yet to be implemented. Some of the completed projects also deviated from their original trajectory, yielding some unintended outcomes.

**Government platform cases**

The key characteristics of all digital platform cases are presented in Table 2 below. All the platforms were established between 2010 (Belgium, UK) and 2018 (Germany). All cases are still ongoing, besides the Belgian platform case which was terminated in 2019. The state structures in which the cases were embedded ranged from highly federalised (Belgium, Germany) to unitary, decentralised (Denmark, Estonia) and unitary, centralised (UK). There were additionally large variations in the scope of the platform cases. For some, such as the Belgium and Estonia cases, the case followed the development of a platform designed for one specific purpose. In these cases, all parties worked together towards one single product. By contrast, the Danish, the UK and especially the German platforms had a much broader scope and complexity. In Belgium, Estonia and Germany, the desire for more administrative efficiency acted as a clear motivation to push government services online. These cases were furthermore all legally mandated, which led to tighter obligations for the relevant actors to participate. For the UK, this involved introducing a large overarching platform principle (the GaaP) and allowing specific ministries to voluntarily choose to adopt digital solutions tailored to their individual needs. The Danish platform case was more of a hybrid approach, while their implementation of EU Regulation 910/2014 (electronic identification) was legally mandated,
the ministries who chose to join implementation did so on a voluntary basis. The cases can all be seen in the context of new EU-requirements seeking to push forward the idea of a Single Digital Gateway (SDG). The large intergovernmental network was relevant for the successful implementation within the single ministries and across the board. They involved authorities at all government levels and were coordinated – with the exception of Germany – by a single lead organisation.

**Table 2: Key characteristics of the platform cases**

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Germany</th>
<th>The United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Civil Registry</td>
<td>eIDas Regulation</td>
<td>Employment Registry</td>
<td>Online Access Act</td>
<td>Government as a Platform</td>
</tr>
<tr>
<td>State structure</td>
<td>Federal</td>
<td>Unitary / decentralised</td>
<td>Unitary / decentralised</td>
<td>Federal</td>
<td>Unitary / centralised</td>
</tr>
<tr>
<td>Main goal</td>
<td>Moving the decentralised Civil Registry to a central online database / mandatory</td>
<td>Implementing electronic identity verification / voluntary</td>
<td>Moving the Employment Registry online / mandatory</td>
<td>Offering all public services online via a joint portal / mandatory</td>
<td>Introducing GaaP as an overarching platform principle / voluntary</td>
</tr>
<tr>
<td>Main motives</td>
<td>Efficiency / increased trustworthiness / increased user-friendliness</td>
<td>Ensuring national compliance with EU’s sIDAS regulation</td>
<td>Reducing unaccounted labour</td>
<td>External pressure / simple digitalisation / efficiency</td>
<td>Simple digitalisation (digital by default) / efficiency (avoid replications)</td>
</tr>
<tr>
<td>Main responsible coordinator</td>
<td>Administrative Simplification Service</td>
<td>Danish Digitalisation Agency</td>
<td>Tax and Customs Board</td>
<td>Ministry of Interior and the IT Planning Council</td>
<td>The Government Digital Service (GDS)</td>
</tr>
</tbody>
</table>

**Smart City cases**

The key characteristics of the Smart City cases are presented in Table 3. The cases varied and were highly contingent upon the available funds, but all cases were established between 2014 and 2018. The projects from Belgium (Antwerp), Denmark (Albertslund) and Germany (Darmstadt) are still ongoing, while Estonian case (Tallinn) concluded in 2019 and though the UK case (Bristol) will be continued, it is no longer a collaboration (now it is owned 100% by the Bristol City Council). All the Smart City projects were embedded in comparatively large and economically prosperous metropolitan areas and could mostly rely on well-functioning
ecosystems that brought with them a history of collaboration and innovation. In Darmstadt (Germany), the key local government responsibilities were divided between the mayor and the city council (dualistic), while the other Smart City projects were located in cities where an elected city council held all decision-making power (monistic). The projects’ scopes varied between three different stages in the implementation process i.e. conceptualising (Estonia)), structuring (Belgium and Germany), and operating (Denmark and the UK). The intergovernmental collaborations in the Danish and Estonian Smart City case studies acted on primarily efficiency-oriented motives, with the Danish case concerned with energy efficiency and the Estonian case concerned with cost efficiency. The motives for setting-up the intergovernmental collaborations were in Denmark primarily energy and in Estonia cost efficiency-oriented. In contrast, in Germany and the UK, quality improvement seemed to be the paramount aim, whereas in Belgium both the efficiency and improvement perspectives were equally present. Denmark, Belgium and the UK proactively sought for an opportunity to position themselves in international competition and thrive as a city. On the other hand, the Estonian and the German project were rather more reactionary as they were pushed by pressing infrastructural problems at hand. In all the Smart City cases, participation in the collaboration took place on a voluntary basis. All the cities except Tallinn also worked with at least one research institution, mainly with local universities. Furthermore, while the Estonian case expanded its scope of collaborators by integrating the Ministry of Economic Affairs and Communication, all the other Smart City projects limited the collaboration to stakeholders from either the local or regional levels. The numbers of core organisations involved ranged from two (the UK) to five (Estonia), whereas the broader networks involved up to 70 additional partners (Germany). Similar to the platform cases, these networks were coordinated by one (Denmark and Germany) or two (Belgium, Estonia and the UK) lead organisations.
### Table 3: Key characteristics of the Smart City cases

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium Case</th>
<th>Denmark Case</th>
<th>Estonia Case</th>
<th>Germany Case</th>
<th>The United Kingdom Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Smart City policy, Antwerp</strong></td>
<td><strong>Danish Outdoor Lighting Lab (DOLL), Albertslund</strong></td>
<td><strong>Sustainable Urban Mobility Plan (SUMP), Tallinn</strong></td>
<td><strong>Digitalstadt Darmstadt, Darmstadt</strong></td>
<td><strong>Bristol is Open (BiO), Bristol</strong></td>
</tr>
<tr>
<td>City size (population as of 2019) / structure</td>
<td>525 936 / monistic</td>
<td>27 877 (in the Copenhagen area) / monistic</td>
<td>434 562 / monistic</td>
<td>159 103 / dualistic</td>
<td>686 210 / monistic</td>
</tr>
<tr>
<td>Primary motives</td>
<td>Efficiency and quality improvement / voluntary</td>
<td>Energy efficiency / voluntary</td>
<td>Cost efficiency / voluntary</td>
<td>Quality improvement / voluntary</td>
<td>Quality improvement / voluntary</td>
</tr>
<tr>
<td>Main coordinator responsible</td>
<td>City council and IMEC</td>
<td>DOLL Living Lab</td>
<td>Transport Department and the Estonian Road Admin.</td>
<td>Digitalstadt GmbH</td>
<td>City council and the University of Bristol</td>
</tr>
</tbody>
</table>

#### 3.2 The relevance of collaboration

Given the speed and scope of digitalisation processes in governments, it is no longer possible for single organisations to implement new solutions on their own (Ku, Gil-Garcia, and Zhang 2016). In fact, scholars have long argued that the inclusion of multiple actors in addressing complex cross-cutting issues such as digitalisation will enhance both the quality and quantity of innovation projects. This is due to the diversity of ideas and expertise (Bommert, 2010), the potential for collective learning and development (Ansell and Gash, 2008), and that the technical capacity can be enhanced when all organisations develop similar standards of operation (Chen and Lee, 2018). Other studies have also shown that government collaboration can enhance the allocation of internal resources towards public value creation (Picazo-Vela et al., 2018).

The improvement of public services can be accelerated by bringing together diverse knowledges, capacities, and human resources in order to develop and realise innovative digital solutions. Interdisciplinarity and integration have proven to be an essential part of comprehensive digitalisation processes. To do so, it has been shown that it is crucial to
recognise and appreciate the differences in competences, skills, insights, power, and resources.

Digitalisation generally requires reorganising workflows and providing a consistent, across-the-board (or top-down) digital approach. Using these insights effectively requires that we not only identify the interdependent workflows in and between different public organisations, but that we also find solutions to address individual issues within the context of the overall digital strategy. The literature suggests that the impacts of collaboration increase with complexity i.e., *complex policies are more effectively put into practice if agencies collaborate* (Lundin, 2007, p. 629). Given the highly complex nature of the digital transformation process, actors need to transcend the boundaries of their ‘silos’ or single entities and form partnerships within and across organisations. This may necessitate a transition from traditional vertical based management approaches towards more horizontal ones (Luna-Reyes et al., 2007).

Within the context of the case studies in this report, central government bodies worked together horizontally as well as vertically to develop joint solutions and architectures to their platform development. The stakeholders in the Smart Cities cases worked together to develop multiple solutions under the umbrella of a joint programme, pushed by the guiding principle, as formulated in the Danish Smart City case, “collaboration as the ‘only way to get smarter’” p. 181).

### 3.3 Key challenges of collaboration

The case studies demonstrated that while the road to successful intergovernmental collaboration to drive digital transformation can be winding, the benefits do outweigh the efforts and costs. In fact, the actors of all the collaborative arrangements faced difficulties along the way that challenged the overall process or as in the case of the UK Smart City case, even led to the end of the collaboration. The key characteristics of the different challenges of collaboration in the cases are presented in Table 4. Difficulties arose, for example, from high political and technical complexity, deadlocks resulting from power imbalances, or a lack of incentives to participate in the collaboration. These challenges, can however, be seen as an integral part of the collaborative process, and effective measures are available to help to exert a positive influence on the events.
Table 4: Key challenges of platform and Smart City cases

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Germany</th>
<th>The United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Civil Registry</td>
<td>eIDas Regulation</td>
<td>Employment Registry</td>
<td>Online Access Act</td>
<td>Government as a Platform</td>
</tr>
<tr>
<td>Challenges</td>
<td>Struggles for competences / conflicts regarding giving up power</td>
<td>Lack of perceived utility of project</td>
<td>Different priorities / time pressure</td>
<td>Scope and federal fragmentation / lack of collaboration experience</td>
<td>Lack of legitimacy, financial insecurity</td>
</tr>
</tbody>
</table>

| Case     | Smart City policy, Antwerp | Danish Lighting Lab, Albertslund | Sustainable Urban Mobility Plan, Tallinn | Digitalstadt Darmstadt, Darmstadt | Bristol is Open, Bristol |
| Challenges | Different expectations / knowledge imbalances | Different working “languages” / difficulty motivating actors | Lack of centralised vision / underestimation of resources / unclear responsibilities | Lack of visibility and acceptance / dual roles difficult for actors to manage | Diverging interests between partners |

In our analysis, we illustrated potential challenges of intergovernmental collaboration by focusing on three intertwined forces that are considered to be present in every collaboration: complexity, risk and power imbalance (Ansell and Gash, 2008; Crosby and Bryson, 2010; Klijn and Koppenjan, 2014; Osborne and Brown, 2011). All the intergovernmental collaborations in the study showed varying degrees of complexity, risk, and power imbalance. The relevance of the challenges on a scale from low to very high is presented in Table 5 below. Interestingly enough, although all the interviewees perceived complexity to be relatively demanding, it was generally the challenge which was easiest to address by targeted interventions.
Table 5: Relevance of challenges in the platform and Smart City cases

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium</th>
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<tr>
<td>Case</td>
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<td>eIDas Regulation</td>
<td>Employment Registry</td>
<td>Online Access Act</td>
<td>Government as a Platform</td>
</tr>
<tr>
<td>Complexity</td>
<td>High</td>
<td>Medium to high</td>
<td>High</td>
<td>Very high</td>
<td>High</td>
</tr>
<tr>
<td>Risk</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
<td>Medium</td>
</tr>
<tr>
<td>Power imbalance</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

| Case          | Smart City policy, Antwerp | Danish Lighting Lab, Albertslund | Sustainable Urban Mobility Plan, Tallinn | Digitalstadt Darmstadt, Darmstadt | Bristol is Open, Bristol |
| Complexity    | High                     | Medium                     | High                      | High                     | High              |
| Risk          | High                     | Medium                     | Medium to high            | Medium                   | High              |
| Power imbalance | High to medium           | Low                        | Low                      | Low                     | Medium            |

**Complexity**

Klijn and Koppenjan (2014) distinguish between three types of complexity, each with their own causes and required solutions. The types of complexity are: Substantive (varying perceptions of the purpose of the collaboration), strategic (diversity in perceived strategies used to address issues), and institutional (the challenges related to the institutional frameworks that guide the collaborative networks). These three types of complexity reflect the nature of governance networks. Without specific interventions, this complexity can hinder the ability to anticipate participant behaviour and/or outcomes.

“You might start something that’s going to take two years and know who all the people are, and then, six months or ten months in, everyone’s moved. The key decision-makers have changed, the teams have been reallocated; budgets have been changed. That’s just a complexity that’s hard and difficult to manage” (Interviewee at the UK platform case).

All of the cases examined were primarily confronted with *substantive complexity* that arose from the different interests, priorities, or perception of the project’s purpose by the actors involved. The Belgian and the Estonian Smart City cases, and the German, the Belgian and the Danish platform cases are clear examples of substantive complexity. *Institutional complexity* was also mentioned by some of the cases, but it was considered less influential compared over
all. Examples of institutional complexity were the very high number and heterogeneity of the involved states and local governments in the German platform case, and the need to report to different entities in the Belgium Smart City case. The actors’ demanding dual roles in the German Smart City case and the changing personnel and inability to clearly ‘map’ all the stakeholders in the case of UK’s platform, also reflect institutional complexity. By contrast, strategic complexity, according to the research literature, often results from the indeterminate nature of networks and the unexpected strategic turns of its members, appeared to be of less relevance for all the cases included in the study.

Risk
Given that collaboration requires organisations to give up a certain level of control, engaging in collaborative networks may pose a substantial risk for public actors seeking to protect their organisation’s turf and reputation. At the same time, the pressure on government structures has continued to increase to show greater risk tolerance. In general, an organisation who is better at handling and managing risks, is more likely to actively engage in innovative behaviours (Brown and Osborne, 2013; Fleming et al., 2016). Hence, it might better align public service to the needs-based holism, i.e. re-unifying government services around user’s groups, instead of ‘business processes’ (Margetts and Dunleavy, 2013). There are, however, different understandings of these risks associated with collaboration. The first is the fear of risk of failure, loss of autonomy and loss of reputation. The other is the potential for risk diffusion across all stakeholders in the project (Brown and Osborne, 2013, Emerson et al., 2012).

All the cases analysed were associated with a variety of risk perceptions. These included turf issues, accountability issues, concerns that the projects’ goals would not be achievable due to time or budget constraints, or overly ambitious goals. A clear example of risk related to loss of power, influence and risk of failure include the coordination struggle of the Estonian National Register. Here particularly, the threat of having to give up power of the Civil Registry from one ministry to another in the modernisation process was evident. Similar struggles were presented in the German platform case.
Risks in connection with data security and technical uncertainties were also identified in some cases but were classified as less critical.

Despite the perception of risk among the actors involved, the actual risk was generally relatively low, or did not materialise at all. This may be because of the extensive use of lead organisations and/or coordinating bodies to handle risk. For example, in Estonia the lead organisation in the platform case (the ETCB) had the power and legitimacy to ‘take the blame’ in the event of failure. In the Danish Smart City case, the low risk of joining the collaboration was the result of the complete infrastructure being provided by the core institution, while in the German Smart City case the risk of failure was understood as a legitimate characteristic of any innovation project.

Power imbalances

Power imbalances are an additional factor that must be taken into consideration in organising collaborative innovation. According to Huxham and Vangen (2005, p. 175), there are three different approaches to understanding power imbalances, which are “power over (own gain), power to (mutual gain), and power for (altruistic gain)”. Based on this understanding, power itself may not necessarily be detrimental to the collaboration process. Power imbalances can result from unequally distributed capacity, infrastructure, knowledge, skills, or expertise and fluctuate with the actors’ goals, resources, positions, and opportunities (Ansell and Gash, 2008; Choi and Robertson, 2013; McGuire and Agranoff, 2011). Problems arise when the power in collaboration is perceived as asymmetric.

The results of the case studies indicate that power imbalances were a problem to a limited extent, with the exception of the German platform case, where the various power imbalances in the federal system had a strong impact. However, it should be noted that the interviewees in the study in some cases may have downplayed the role of power imbalances due to their ongoing employment in their particular organisations.

The identified asymmetries in power were often attributed to an unequal distribution of resources in terms of knowledge of technical issues. Examples of this were evident in the development of the Belgian platform case, the UK’s Smart City case and the local practices in
Denmark, but also with regard to financial capacity in the case of the UK’s platform or the German Smart City case. Furthermore, inequalities resulting from the higher power of those mandated to monitor the implementation were also considered influential in the collaboration in the Belgian, Danish, and German platform cases. However, this was not perceived as a threat, when roles and responsibilities were clearly delegated and there was a functioning feedback loop established. For example, the Estonian lead organisation of the platform case (ETCB) needed to maintain its reputation, which held their power in check.

Contrary to Huxham and Vangen’s (2005) notion of the positive outcomes of power balance, a lack of power imbalance did not necessarily appear to be beneficial in the studied cases. For example, the partial lack of power imbalances diminished the authority and legitimacy of the UK’s platform case and in its Smart City case it resulted in partnership fatigue and deadlocks, and ultimately the discontinuation of the collaboration.

3.4 Institutional design of collaboration

The examined cases all confirmed literature to the extent that established protocol and ground rules lay the foundation for any collaborative project (Agranoff, 2006; Ansell and Gash, 2008; O’Leary and Vij, 2012; Torfing, 2019). Institutional design reflects these established sets of formal and informal rules that structure interactions and seek to align them to the project’s purpose (Klijn and Koppenjan, 2006), which are critical for establishing project legitimacy (Ansell and Gash, 2008).

According to Luna-Reyes et al. (2016), institutions can have a strong influence on the constraining mechanisms within the implementation of information technologies. This is partly because IT implementations often have a very complex means of decision-making and inter-organisational interactions. The institutions themselves, however, will dictate to a large extent how these will be undertaken. For some, institutional design must balance flexibility and structure, as it may become unstable and risk having insufficient accountability mechanisms (Ansell and Gash, 2008; O’Leary and Vij, 2012).

Both in literature and in practice there is a strong debate on how institutions should be shaped to identify and motivate relevant stakeholders to actively engage, share knowledge and ideas
(Ansell and Gash, 2008; Torfing, 2019). This is assessed in the following by focusing on the institutional arrangements and types of coordination, stakeholder engagement approaches, and the coordination mechanisms applied in order to cope with collaborative challenges.

Within the research literature, hierarchy, market, and network-based structures are typically used to distinguish main types of governance (Ansell and Gash 2008; Meuleman, 2008; Torfing, 2019). We have analysed these formal measures of the structures of the collaborative projects to see if there was a trend towards more network-type horizontal coordination or whether novel linkages in the Digital Age supplement or accelerate vertical coordination (Cordella and Tempini, 2015; Fountain, 2001; 2006). Table 6 shows the main formal measures of the institutional design of the cases.

**Table 6: Main formal measures of platform and Smart City cases**

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Germany</th>
<th>The United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Civil Registry</td>
<td>eIDas Regulation</td>
<td>Employment Registry</td>
<td>Online Access Act</td>
<td>Government as a Platform</td>
</tr>
<tr>
<td>Institutional design</td>
<td>Hierarchy / network-based (emerged)</td>
<td>Hierarchy</td>
<td>Hierarchy / networked-based</td>
<td>Hierarchy / networked-based</td>
<td>Hierarchy / networked-based</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cases</th>
<th>Smart city policy, Antwerp</th>
<th>Danish Lighting Lab, Albertslund</th>
<th>Sustainable Urban Mobility Plan, Tallinn</th>
<th>Digitalstadt Darmstadt, Darmstadt</th>
<th>Bristol is Open, Bristol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional design</td>
<td>Hierarchy / network-based (depending on level)</td>
<td>Hierarchy / networked-based</td>
<td>(Attempt at) networked-based</td>
<td>Hierarchy / networked-based</td>
<td>Networked-based</td>
</tr>
</tbody>
</table>

Although the majority of cases reported hybrid forms of hierarchy and network, hierarchical approaches as structuring frameworks seemed to predominate (see Table 6). Hierarchical and bureaucratic mechanisms were applied from the political and executive management levels, wherever formally required. If responsibilities were not clearly defined, networked-based designs appeared to emerge. In the Belgian platform case, for instance, responsibilities between the various ministries and the administrative committee were not clearly delineated, which left everyone involved partially in charge and made network-like coordination inevitable. However, providing a clear division of roles and responsibilities underpinned by
rules and regulations proved essential to avoid deadlocks. The Estonian Smart City case provides a strong example of this. In most cases, hierarchical requirements were based on strictly formulated framework conditions, for example from the funding agency, a legal mandate, or formal project protocols. For the most part, this assisted with establishing legitimacy and setting the project’s agenda. This was even more successful if project strategies were aligned with a broader framework, such as the political agenda or the UN Sustainable Development Goals as was the case with the Smart City cases in Denmark and the UK. Interestingly, in the case of the Estonian platform, no rigid structure was claimed to be needed, as there was a lot of personnel stability.

With regard to the structure of each collaborative project, in most cases there was a centralisation of the coordination capacity, which was often situated in newly created arm’s length executive agencies. Examples of this include the Administrative Simplification Service in the Belgian platform case, and the Digitalstadt GmbH in the German Smart City case. For coordination, several cases established steering, operational or project committees or introduced expert working groups, as in Belgium’s platform and Smart City cases, which also helped to cope with the projects’ immanent complexities. A rather unique solution was the creation of a joint federal and state level political coordination body for all IT-related issues as shown in the German platform case.

A second component within the institutional design approach is getting the right stakeholders to the table, as inclusion is considered key to the success of many innovation projects (Ansell and Gash, 2008). For the most part, the cases undertook a variety of different approaches. These included undertaking formal scoping exercises that would identify all relevant stakeholders in the project and extend invitations to become a part of the formal project structure. This was most widely used when the digitalisation projects were backed by a legal mandate. In the cases of voluntary participation, the case studies revealed that coordinators relied heavily on wide scale inclusion tactics, including ministerial or municipal outreach and internal networks intended to encourage the stakeholder participation. In order to achieve this, Belgium, and Germany, for example, firmly anchored their Smart City projects in the Department for Urban Economics, as this was already well networked with the local economy and thus had access to relevant actors.
Finally, when examining the coordination mechanisms used across many of the cases, hierarchical design proved necessary and essential. It was a means of solving complex problems or deadlocks because project groups could bring their issues to a higher level for resolution when needed. At the same time, however, autonomy appeared to be beneficial in increasing the responsiveness and visibility of projects and to maintain the motivation of external partners. In the German and the UK Smart City cases, this took the form of a limited liability company legally and physically independent of the core administration and a formal project committee in the Estonian platform case. A clear separation of steering and operations within the project was a second design component utilised in many projects. This allowed for better focus within the groups and allowed for a wider participation of stakeholders by better assigning more active or passive planning or operational roles and responsibilities. Finally, many successful outcomes cited the importance of having clear, long-term funding arrangements.

Regardless of the prevailing hierarchical measures, network-based approaches appeared at the ‘frontline’ operational level of the projects. However, this design approach was primarily found in countries that were already inclined to adopt more egalitarian approaches in the past such as Denmark and Estonia. In the Danish Smart City case, this was supplemented by a comparatively market-liberal stance, as the DOLL project created a market to let private actors compete and shoulder some of the project’s financial burden. For most cases, however, it should be noted that there was also a lot of networking going on behind the scenes, to the point that many issues were already discussed informally before they came up in rather exclusive meetings. A case in point is the digitisation of the Employment Registry in the Estonian platform case. Though generally the case studies give reason to believe that quick and unconventional decisions required by agile approaches may have been limited, as in most cases the structural scope was introduced at the expense of organisational innovative capacity.

### 3.5 The role of leadership

Leadership proved essential in all the intergovernmental collaborations examined. Leadership sets the ground rules in the process, builds trust by upholding these rules, facilitates dialogue
and helps to identify areas of mutual gains (Ansell and Gash, 2008; 2012). Governing collaborative efforts is said to differ from other contexts, as leadership constantly has to deal with the discomforting, ambiguous and uncertain nature of collaboration (Sullivan et. al, 2012). In this sense, using the contingency approach, leaders must adapt to different situations within the collaborative process as each step presents its own unique challenges (Ansell and Gash, 2012). For many, leadership represents a driver separate from context and institutional design (Emerson et. al, 2012), as leaders must be able to connect information from a variety of different actors (Ricard et al., 2017), recognise problems within the particular situational context and develop the best way forward (Chen and Lee, 2018). From this perspective leaders play an important role in handling project complexities, defining the problem, navigating power imbalances, and tracking process and performance (Torfing, 2019).

Two general leadership approaches are commonly cited within the literature. The first is collaborative (Ansell and Gash, 2012; Hartley et al., 2013), and the second is transactional leadership (Lewis et al., 2018; Ricard et al., 2017; Van Wart, 2012). Collaborative leadership has frequently been viewed as pivotal in order to facilitate collaboration because of its emphasis on promoting and enticing active participation, maintaining influence and control and facilitating group dynamics (Lakser and Weiss, 2003). Within this context, common sub characteristics include convenors, facilitators, and catalysts (Torfing, 2019). By contrast, transactional leadership, where leaders are modelled as ‘negotiating agents’, with the goal of enticing followers to follow rules and regulations to achieve their expected results (Ruggieri and Abbate, 2013). In reality, we seldom find a dichotomy of one type or another. Instead, leaders need to adapt their leadership behaviours to the project’s individual circumstances, in particular when actions do not go as planned (Agger and Sorensen, 2018, Van Wart, 2014). This may especially hold true for leadership in digital environments, whose scope and impact have been highlighted as a current gap in public administration literature (Roman et. al, 2018). Table 7 presents the main leadership styles in the cases.
Table 7: Main leadership styles of platform and Smart City cases

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Germany</th>
<th>The United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Civil Registry</td>
<td>eIDas Regulation</td>
<td>Employment Registry</td>
<td>Online Access Act</td>
<td>Government as a Platform</td>
</tr>
<tr>
<td>Leadership</td>
<td>Transactional</td>
<td>Transactional</td>
<td>Transactional / collaborative</td>
<td>Collaborative</td>
<td>From transactional to collaborative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Smart City policy, Antwerp</th>
<th>Danish Lighting Lab, Albertslund</th>
<th>Sustainable Urban Mobility Plan, Tallinn</th>
<th>Digitalstadt Darmstadt, Darmstadt</th>
<th>Bristol is Open, Bristol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>Collaborative (although sometimes preferred transactional)</td>
<td>Collaborative</td>
<td>Collaborative</td>
<td>Transactional / collaborative</td>
<td>Collaborative</td>
</tr>
</tbody>
</table>

By placing institutional design and leadership at the centre of our conceptual framework, we have not only addressed this void but also reflected upon the longstanding scholarly discussion on “structure versus agency” (Hay, 1995). In light of this, our comparative analysis clearly showed the relevance of individual’s actions (agency) as compared to formal arrangements (structure) for the collaboration’s success. All studies stated that effective design was the basis for good progress, while compliance and constructive interpretation depended heavily on individual leadership within the collaboration. Most importantly, it seemed that leadership was largely considered legitimate. In all cases, this legitimacy rested upon previous success, a mandate, or a strong digital background. For instance, the Belgian and Danish ministries appeared to be more willing to comply because the coordinator was widely accepted. By contrast, the external project coordinator in the Estonian Smart City case could only exert a limited influence within the arrangement, as he had not come from any of the engaged organisations and suffered from a lack of legitimacy as a result.

In other cases, gaining legitimacy was established through the actions of the leaders themselves as they adapted their behaviours to suit the project phase. For example, in the UK’s platform case, the central coordinator of the GDS did have problems gaining legitimacy, which initially limited his impact until he began to utilise a more inclusive, client oriented and less authoritarian style of leadership. The central coordinator of the Civil Registry in the Belgian platform case ensured a participatory approach to the project implementation,
allowing all parties to voice their opinions, problems, and solutions. In doing so, he adapted his behaviours to reflect the circumstances at hand. This included moving from a facilitator to mediator role, while at the same time effectively pushing the project forward. In the Danish platform case, due to varying levels of engagement and interest, the Danish digitalisation agency decided to move to a bilateral stakeholder engagement in order to handle unique issues which did not require the whole network to be involved.

Within the context of the case studies, leadership was exercised by various individual government actors, mainly by a central coordinator or a senior official who was responsible for the overall delivery of the programme. A lack of formal leadership and strong steering made most of the collaborations less effective, which led to a ‘vacuum’ in the case of the second phase of the UK’s platform and ‘blame games’ in the case of the Estonian Smart City case. This may call into question whether or not ‘organic’ leaders, i.e. leaders that emerge from within the community of stakeholders, are appropriate in large scale digitalisation projects, or if professional facilitators would be more appropriate (Ansell and Gash, 2012). Decision-making on the inclusiveness of the collaboration has mostly been a task of leadership. Interestingly, in the Smart City cases, in order to increase their own legitimacy and satisfy time or budget constraints, leadership generally seemed to be inclined to consider only ‘strong’ stakeholders at the ‘(technological) forefront’ as suitable partners which had already proven themselves in prior joint collaboration. This often included the ‘usual suspects’, while unknown, though perhaps promising, high potential stakeholders were largely disregarded.

This considered, one similarity across all cases was that legitimate, central leaders made substantial use of transactional leadership based on their authority. However, to create more acceptance and engagement among the partners, the collaborative leadership relied upon managing the broader network or working groups at the operational level. This adaptive capability was seen in the German Smart City case as pertinent leadership quality not only to secure employee retention. This process of engaging and accepting usually called for different types of collaborative leadership in different phases of the projects, confirming the contingency theory (Ansell and Gash, 2008; Hartley et al., 2013). Overall, we identified the tendency that the catalyst was in charge of initiating, the convener for setting the agenda and keeping the project alive (in Smart Cities this was often the mayor), and the mediator for
managing the project along the way. These multiple roles were often performed by single individuals.

3.6 Reform outcomes

Due to the dynamic nature of the collaborative digital projects, it is difficult to evaluate their success. This is primarily because the actual implementation phase often took longer than expected, and the long-term impacts of the projects are yet to be evaluated. Despite this, it is possible to see some emerging outcomes across all the cases studies. Table 8 presents the reform outcomes of the cases.

Table 8: Reform outcomes of platform and Smart City cases

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Germany</th>
<th>The United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Civil Registry</td>
<td>eIDas Regulation</td>
<td>Employment Registry</td>
<td>Online Access Act</td>
<td>Government as a Platform</td>
</tr>
<tr>
<td>Type of innovation</td>
<td>Process / service / governance</td>
<td>Service</td>
<td>Service / process</td>
<td>Governance to process / service</td>
<td>Governance to process / Service</td>
</tr>
<tr>
<td>Degree of innovation</td>
<td>Disruptive</td>
<td>Incremental</td>
<td>Disruptive to incremental</td>
<td>Incremental</td>
<td>Disruptive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Smart City policy, Antwerp</th>
<th>Danish Lighting Lab, Albertslund</th>
<th>Sustainable Urban Mobility Plan, Tallinn</th>
<th>Digitalstadt Darmstadt, Darmstadt</th>
<th>Bristol is Open, Bristol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of innovation</td>
<td>Product to process</td>
<td>Product / service</td>
<td>Governance</td>
<td>Governance / service</td>
<td>1st phase product / 2nd phase service</td>
</tr>
<tr>
<td>Degree of innovation</td>
<td>Incremental</td>
<td>Incremental</td>
<td>Disruptive</td>
<td>Incremental</td>
<td>1st phase disruptive / 2nd phase incremental</td>
</tr>
</tbody>
</table>

For the most part, the starting conditions of each of the case studies sought to undertake some form of disruptive innovation, or a profound and transformative change to existing ways of working. This was very clear in almost all of the Smart City and platform cases. The Estonian Smart City case, for example, sought to introduce a cognitive shift by fundamentally changing existing mindsets from an organisation-centric towards a holistic approach in urban mobility planning. However, as some cases highlight, once the initial implementation phase was
completed, small scale changes and improvements continued to occur, signalling a shift from disruptive to incremental innovations (Harley, 2005). In addition, many that were originally intended to be disruptive product or service innovations (cf. De Vries et al, 2016) became incremental in the course of the project. With respect to the type of innovations, for the most part, many cases cite both governance and process innovations, which directly link to the intended disruptive nature of the projects. For example, in the Belgian platform case, for the digitalisation of the Civil Registry to take place, they not only had to change their existing work patterns, they also had to develop a new governance structure for the Registry itself. In other cases, there were hybrid outcomes. For example, in the Estonian platform case, users not only had to change the way employment was registered in the country (process), but also had to create a centralised Employment Registry (product) that could be used to better manage the country employment data (governance). This hybridity was also seen in the more centralised platform cases in Belgium and the UK. In the Danish platform case, they sought to introduce new products/services/gateways which first required a shift in the way that ministries operated to be able to use these products. In other cases, such as the Danish Smart City policy implementation, outcomes shifted from product or service (intended outcome) to governance or process innovations (actual outcome).

4. Conclusion: Success factors and recommendations

In order to unlock the full potential of ICT-related public sector innovation and digital transformation, many have claimed that governments must embrace collaborative working structures compared to unilateral approaches (Ferro and Sorrentino, 2010). However, little is known about how this works in government contexts often defined by hierarchy, silo cultures and procedural accountability.

This comparative case analysis has addressed this shortcoming and has provided valuable insight into effective intergovernmental collaborative management practices and leadership in the digital age. It has been guided by the following lead question: How do we successfully steer collaboration between and within public organisations towards digital transformation? The results of the ten case studies presented in this report revealed that governments have indeed begun to embrace collaborative approaches for the development and implementation
of new digital ways of service provision. It became evident that the implementation of new
digital solutions is complex, and collaboration is resource intensive, demanding and needs
continuous attention and investment. However, adequate approaches and experiences exist
on how to meet these challenges. Moreover, context shaped much of the starting conditions
and thus needs to be considered when looking for solutions to challenges connected to ICT-
related collaboration (see Fountain, 2001). As the examined cases utilised both horizontal and
vertical collaborative management approaches, one may not speak of a general shift towards
more lateral types of leading and organising digital transformation towards service
improvement. Rather, the projects were inclined to resort to more vertical measures for the
overall strategy and to more horizontal types for operations/implementation (see McGuire,
2006). By doing so, the cases’ scopes of action distinctly differed. It can be stated that despite
their dependence on rigid funding frameworks, actors in the intergovernmental Smart City
collaborations appeared to be significantly less restricted and more agile in their decision-
making and creative freedom compared to the collaborative digital platforms at the central
government levels. In most cases, this may certainly be due to a higher degree of autonomy
of local governments, whereas a decentralisation of state responsibilities in turn created
barriers to the implementation of the platform cases.

Considering this and previous literature, the challenges and public management interventions
analysed in this report seem to apply not only to the digital context but are similar to the key
principles of other collaborative management settings aimed at public service improvement.
In fact, these principles may also be applicable to business ecosystems in the private sector
(cf. De Stobbeleir et al., 2020), especially when faced with multi-stakeholder projects involving
unique missions and goals, different cultures, power imbalances and funding arrangements
(O’Learly and Vij, 2012). Regardless of whether they are ICT-related or not, collaborative
efforts primarily seek to enable and support collective action. The question of the extent to
which the various challenges of joint digitalisation projects differ from other public or private
sector collaborations is beyond the scope of this research. However, it serves as a promising
starting point for follow-up studies examining ICT-related collaboration and public service
improvements.
4.1 Success factors

Despite variations in projects and national context, the case studies reveal commonalities in both challenges and success factors of their collaborative arrangements. Regarding successes, the results show that many governments and cities have now developed structures, protocols and behaviours that enable more collaborative implementations of ICT-related projects. These include a central coordinator with sufficient legitimacy, implementation capacity, trust, a clear vision, and building a cohort of experienced leaders and experts fully committed to drive digitalisation forward. However, many also identified similar key challenges that emerged throughout the process. These include diverging interests of the partners involved, unclear role distributions and a lack of financial and political support. These factors will be discussed more in depth in the proceeding section.

First, many of the projects referred to the importance of sufficient coordination and implementation capacities in order to create the conditions for successful collaboration. Before the project could be substantiated, it was deemed necessary to ensure that the current workforce was able to bear the planned endeavour. If in doubt, it needed to be clarified at an early stage who had the potential and was willing and available to participate.

Some also mentioned that large scale inclusion and open participatory communications assisted with aligning the project to the users’ needs, which in turn favoured the project’s legitimacy and its broader acceptance. It appeared that establishing participatory working groups or digitalisation laboratories that included all relevant interest groups to develop a common vision, goals, and operations right from the start was crucial for any collaborative digitalisation project.

Following that idea, a shared vision helped to establish direction, frame the effort, and develop a joint understanding of the project. These are considered important ingredients to collective action. Additionally, the partners’ cognitive variety should be preserved to avoid inertia and increase creativity (Fountain, 2013; Hartley, et al., 2013; Skilton and Dooley, 2010). In order to shape and establish this common vision and further secure legitimacy, in several cases dedicated key personalities or institutions were engaged as indispensable ambassadors
of the collaborative project, especially for ongoing long-term digitalisation projects. They usually had a legal mandate, previous success, or a strong digital background.

Second, regarding collaborative successes, the institutional design of the projects themselves seemed to dictate much of their inner working dynamics. Mirroring the academic literature (Agranoff, 2006; Dawes and Pardo, 2002; Kwon, et al., 2009), most of the successful case studies point to the importance of a lead organisation, project manager, and/or central coordination body to manage a collaborative setting and behaviours. While this reflects traditional bureaucratic governance models (for example, hierarchy-based models), many of these organisations and bodies were created for the purpose of digital transformation and had built up technical and management expertise to gain legitimacy. In most cases, their technical and traditional project management skills were deemed essential to manage both the short- and long-term milestones. In order to secure this, several cases involved traditional project management to structure and monitor the project flow along the way. This project management was likely to find a higher level of acceptance if the managers were recruited from within one of the organisations involved in the collaboration (i.e. ‘organically’; Ansell and Gash, 2008).

“If you have a project manager, who constantly provides reminders and steers, that is important, and you could see it” (Interviewee in the Estonian platform case).

Having the legal authority and regulatory framework to make decisions also simplified and increased the speed in which decisions could be made.

Despite the success of having a more formal, central, coordinator, all the projects relied on the development of networks with formal and informal rules and regulations that were flexible enough to learn and adapt to the needs of partner organisations. This helped to ensure the smooth operation of working groups and to manage specific roadblocks that appeared. A clear demarcation of realms of responsibility assisted with this. This was particularly salient in many of the platform cases, where tailored solutions needed to be developed to address the specific needs of one ministry or another. As a result of a strong understanding of project rules, regulations and responsibilities, many projects relied upon a decentralisation of tasks,
which led to a stronger networked based modus operandi (using for example, subject matter working groups). While the decentralisation may have increased the fragmentation within the projects, it provided the ability for smaller groups of experts or essential stakeholders to work on different parts of the projects. To this end, a more centralised steering committee (chaired, for example, by the coordinator) assisted in ensuring cohesion among the working committees. In instances where this configuration was not maintained, ‘leadership vacuums’ emerged due to a lack of steering as well as too much authority on the part of the coordinator.

Third, there was a wide scale consensus that regardless of the institutional design of each of the projects, strong leadership capabilities remained essential. Moreover, successful leaders had to adapt their leadership styles to the specific needs and demands of each project stage. This element is also underscored in the academic literature (Ansell and Gash, 2012; Chen and Lee, 2018). In fact, most cases highlighted the importance of leaders being able to alternate between transactional and collaborative leadership approaches. Transactional responses appeared to have particular strength in situations aimed at gaining legitimacy, stability, and compliance. To build up trust, boost creativity, expand networks especially of strong professionals and engage in effective problem solving, more collaborative approaches were a better fit. This was deemed essential to retain all parties in the projects, especially those with voluntary participation.

“We want to have a good, collaborative style. We want to build relationships with departments, rather than tell them what to do” (Interviewee in the UK’s platform case).

This considered, in order to strengthen the capacity of political and administrative leadership to adapt, communicate, create shared meaning, resolve conflicts and overcome resistance to change, many cases mentioned the increased need to pay attention to the development of collaboration and networking skills, rather than of IT competences.

Fourth, it was evident that the financial backing of all of the projects impacted the behaviour of all stakeholders. This seems to hold particularly true when large sums of external funding were received and/or measures involving multiple stakeholders were implemented on a large scale.
“It always comes down to who has the funds in their budget and to what extent”
(Interviewee in the Estonian platform case).

In addition, clear funding for the project development and its future maintenance was both a clear motivator to engage or not engage in the project. For example, external funding schemes created time pressures and deadlines that many could not achieve. As a result, actors either dropped out of the projects or failed to fully engage in the first place. An additional example was related to demarcation between initial set up costs (task-oriented) versus long term funding and/or training (i.e. maintenance costs). There was wider stakeholder engagement for projects where these two components were clearly outlined. In cases where long-term funding was not clear, hesitation emerged.

“What might happen is the products might start to degrade, and a lot of people who are relying on them can no longer rely on them? There’s that risk, definitely. Has the government set things up to sustainably run each of these products?”
(Interviewee in the UK’s platform case)

In fact, a lack of stable funding hampered the ability to retain the required stability, purpose and continuity of practice (Pollitt, 2008). However, funding stress may also lead to faster outcomes (for example, due to immediate deadlines), and leverage creativity. Consequently, **funding arrangements need to be a part of the scoping exercises** in the initial project stages. However, there should be a demarcation between setup and running costs of the projects, especially in instances where there is less technical certainty on the part of the stakeholders.

Fifth, the projects all underscored the **importance of trust building**. Trust is found to be a key condition for successful intergovernmental collaboration. As trust emerges from interpersonal connections and repeated interactions over time, it is useful when initiating the collaboration to rely on some partners who have proven themselves in previous collaborative work (Fedorowicz, et al., 2014). However, this should not rule out the possibility of involving potentially less known yet highly promising stakeholders. Trust is further developed by clearly outlining the benefits and risks associated with the project, but also clear rules to remove scepticism (Luna-Reyes, et al., 2007). Mechanisms for feedback, consultation, and shared learning can be developed by establishing regular, mandatory but rather informal settings, and in turn spur the development of trust.
Establishing **clear and tangible short- and long-term goals** were additional success factors. Though it is crucial to first think in larger dimensions, ideas need to eventually be scaled down to actionable measures. This allows for groups to celebrate incremental successes, and/or adapt approaches to address emerging problems. Without clear goals, some projects struggled with unfeasible expectations, a decline in legitimacy and a lack of overall support of interested parties. We found that in that case, governments have the inclination to overpromise in order to attract sufficient immediate support from critical actors. Linked to the concept of trust, aligning strategies or ministries to the public value potential of the project or agenda was essential in order to maintain the focus and momentum within the project. However, as some cases pointed out, pursuing single outcomes was still on the agenda of some project partners. These fragmented approaches led to a lack of broader acceptance in the longer-term goals of the projects, or the focus of the projects shifted towards the use of technology for the sake of technology rather than a project to improve government efficiency and public value. This was in particularly underscored by the German Smart City and the Danish and Estonian platform cases.

Sixth, in addition to the widespread inclusion of all stakeholders, subsequent **wide-scale engagement and commitment from individual actors** were equally relevant. For many, scoping exercises, invitations to all interested parties, and wide scale communication dissemination were seen as key to establishing wide-scale engagement. Once interested parties were integrated into the projects, it became particularly clear in all cases that people mattered – the front-line worker as much as the managing director –, far more than many of the current funding frameworks for promoting digital innovative projects would suggest.

“It was a long list, but many of them were some who, when I was project manager, suddenly did not want to be a part of the gateway, because their solutions were not relevant in a cross-boundary context, or because they had not really understood it properly, or did not see any ‘great music’ in it” (Interviewee in the Danish platform case).

In this sense, as stakeholders are often motivated less by the innovative technology itself, but rather by the associated public value, it proved crucial for retaining partners to provide sufficient incentives, visualise past achievements and highlight opportunities. **Continuously**
communicating the benefits that collaboration brings in the context of government digitalisation thus further cultivated the motivation to work together. (Ansell and Gash, 2012).

The importance and reliance on the people in the projects highlights the networked nature of the projects themselves, as well as the importance of establishing clear, agreed-upon goals and group trust. However, despite this, some projects struggled with inertia, and while the initial interest seemed high, after the scoping exercises were completed, many actors chose to leave.

Although leaving collaborative frameworks may reflect a failure in institutional design and/or leadership, it may also reflect a natural culling of actors that results when large scale, open, consultations are used to initially attract project partners.

4.2 Recommendations

The overall experiences from the ten cases and especially the success factors presented in the previous chapter form the basis for eight practitioner recommendations:

1) A sequential or even circular approach to collaboration. As different phases of the project require different leadership and design measures, it is strongly recommended to use a sequential or even circular approach to intergovernmental collaboration. This ideally starts with collaborative actions to set the ground principles and establish a shared vision, and later makes use of increasingly transactional measures to further sustain the project flow (milestones, monitoring etc.).

2) Take time to establish the sufficient conditions for successful collaboration. It is essential to create and consistently re-establish the right conditions for collaboration, that is, a shared understanding and vision, legitimacy, and trust:

   - Common vision. A shared vision helps to establish direction, frame the effort, and develop a joint understanding of the project, while the partners’ cognitive variety should be preserved to avoid inertia and increase creativity.
- **Legitimacy of the project.** Securing the backing from those who have a legal mandate, had previous success, or a strong digital background is key to better legitimising the collaborative effort and gaining broader acceptance.

- **Trust-building.** Trust is an essential ingredient to successful collaboration. As trust emerges from interpersonal connections and repeated interactions over time, it is useful to initially rely on partners who have proven themselves in previous collaborative work. Trust is further developed by clearly outlining benefits and risks associated with the project, but also clear rules to remove scepticism.

3) **A certain set of ‘rules of the game’.** Once the foundations for a successful collaboration have been laid, some formal rules must be established regarding how to act in the collaborative arrangement. The rules should also foresee the clear allocation of roles and responsibilities. However, they should be seen as ‘rules of the game’ rather than procedural, stepwise guidance. This enhances the predictability of collaboration, and thus may increase the actors’ willingness to engage in the process beyond the initial stages.

4) **Aim for a consequent multi-stakeholder approach and broad scale inclusion.** Establishing participatory working groups that include all relevant interest groups right from the start to develop a common vision, goals and operations is crucial for any collaborative digitalisation project. Although it is relevant when initiating the collaboration to involve ‘strong’ stakeholders with mutual trust, in the spirit of innovation, it is critical to also think beyond the ‘usual suspects’ of established network partners. The most promising, high potential candidates might be overshadowed by existing structures, and it is thus fruitful to take a second look before deciding with whom it would be best to work.

5) **Develop and ensure sufficient implementation capacity.** Before the project can be substantiated, its funding arrangements need to be secured and the current workforce must have the capacity to actually implement it. If in doubt, one should clarify at an early stage who may be willing and able to do so, or training and capacity building needs to be integrated into the design of the collaboration.
6) Establish a single coordinator with legitimacy and sufficient coordination capacity. As public networks are complex and usually comprise a large number of actors with various interests, it is essential to assign a central coordinator who maintains an inclusive approach and gains legitimacy as a leader. This can be a person, a department, or a newly created entity.

7) Invest in collaborative competencies and methods. One needs to keep in mind that people are much more relevant to the collaboration’s success than formal structures. In order to strengthen the capacity of political and administrative leadership to adapt, communicate, create shared meaning, resolve conflicts and overcome resistance to change, more attention should be paid to the development of collaboration and networking skills, in particular amongst public sector managers. This needs to be adequately assisted by methods such as design thinking or collaborative digital tools.

8) Continuous communication on values and benefits. As stakeholders are motivated less by the innovative technology itself, but rather by its associated public value, it is crucial to provide sufficient incentives, visualise past achievements and identify opportunities. Continuously communicating the benefits that collaboration brings in the context of government digitalisation will cultivate the motivation to work together.

In spite of the promising developments in the examined cases, the situation surrounding the management of COVID-19 may accelerate their progress towards digital government. The current crisis and its consequences may uplift digital endeavours due to social distancing measures and the closing of physical government offices. The result of this is both the unprecedented need to increase investment in further digitalisation measures and the impetus to quickly implement them. However, despite the speed in which governments have to adapt to providing remote public service, contextual issues such as lengthy approval procedures or necessary legal changes limit their response capacity in addressing these acute problems. In addition, many key actors will increasingly be exposed to financial burdens, which could delay long-term investments into necessary digital infrastructures. This suggests that a critical window of opportunity for governments has opened to collaboratively think and test new, more flexible, and proactive digital public services, as well as the use of new technologies.
such as artificial intelligence. These may span from digital solutions to COVID-19-initiated problems, such as adapting the regulatory frameworks to allow for general online medical consultations, applying and managing financial assistance online, or larger scale service changes such as online birth or residence registrations. As it stands, building up intergovernmental collaborative capacity should put governments in a better position not only to improve digital public services, but also to drive the implementation of digitally enhanced pandemic-related programs and services.
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