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Policy labs as arenas for boundary spanning: inside the digital transformation in Germany

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ABSTRACT
The recently adopted German Online Access Act triggered the creation of *digitalization labs* for designing digital services, bringing together federal, state, and local authorities; end-users; and private-sector actors. These labs provide opportunities for boundary spanning due to organizational field and lab features. Our comparative case studies on three digitalization labs show variations in boundary spanning and reveal lab members de-coupling from their parent organizations to a varying extent. We have concluded labs offer boundary spanning that supports safeguarding the legitimacy of innovative policy designs but also raise concerns over public accountability.

Introduction

The German Online Access Act (OZG) was adopted in 2017 and obliges the federal government, states, and municipalities to deliver all public services online in a joint digital portal by the end of 2022. The act has been regarded as an ambitious attempt to promote the digital transformation of the multi-level German public sector, harmonizing and integrating a highly fragmented digital landscape (see Mergel 2019; Wegrich 2020). Most public services in Germany are delivered by the states and municipalities, whereas policy design resides primarily in the federal bureaucracy. In contrast to this general pattern of executive federalism, a crucial part of the policy design related to the OZG has been put into a novel arrangement in the German administrative system, departing from this distribution of competencies in policy formulation.

Digitalization labs have been established as temporary arenas to bring together representatives from administrative authorities of all levels – end-users and external actor, such as private tech companies and consultancies. These labs are tasked to design the digital solutions for pre-selected, prioritized services across a wide range of policy areas.

Digitalization labs are very similar to policy (innovation) labs, which proliferated across many countries over the last decade (Williamson 2015a, 2015b; Tõnurist, Kattel, and Lember 2017; McGann, Wells, and Blomkamp 2019; Hjelmar 2021). These labs are

regarded as suitable vehicles to support policy design and service delivery, partly because they explicitly neglect existing formal authorities in bureaucratic decision making (McGann, Blomkamp, and Lewis 2018; McGann, Wells, and Blomkamp 2019; Peters 2020). They are mandated to design new solutions to pressing policy problems, while largely neglecting lab members' formal affiliations and corresponding authorities, instead prioritizing individual capabilities. Nevertheless, lab members' parent organizations are relevant, as lab members are expected to give feedback and communicate labs' results accordingly (Romero Frías and Machado 2018; Olejniczak et al. 2020). Despite the labs' unorthodox nature, which may challenge traditional forms and means of bureaucratic decision making, their internal dynamics and effects on policy design as novel collaborative arrangements are rarely assessed when focusing on their role in the digital transformation of the public sector (see Williamson 2015b; Picazo-Vela et al. 2018). However, digitalization labs may show features that differ from those more traditional policy labs, because they focus on issues emerging from the digital transformation of public sectors. Hence, these labs may implicitly require the inclusion of external lab members capable to provide technological or rather digital expertise. At the same time, they are arguably tasked to address novel problems that lack pre-existing solutions. As a consequence, digitalization labs may be deemed as particularly innovative regarding their internal organization and results and may also face these expectations from lab members' parent organizations as well as other actors in the organizational field.

We discuss the relevance of digitalization labs for policy design and ask: Which determinants shape the boundary spanning activities in digitalization labs? We applied the boundary spanning perspective (e.g., Tushman and Scanlan 1981; Leifer and Delbecq 1978; Rosenkopf and Nerkar 2001) to study the relevance of the distinct organizational field as well as actor constellations and capabilities for understanding boundary spanning in these labs and the shaping of policy design. A closer analysis of the conditions influencing the role of policy labs and their effects for policy design broadens the perspective of public management research on laboratories, linking their internal features with their functioning as arenas for boundary spanning. For public administration research on policy design, this study is an examination of a novel and increasingly popular organizational arrangement, which is oftentimes regarded as unconventional when compared to traditional bureaucratic arenas of policy formulation. As these labs are created to formulate policies on the digitalization of public services, we extended the existing literature on the digital transformation of public sectors, often criticized for the focus on technology rather than applying theoretical approaches (Hu 2018; Heeks and Bailur 2007; Yıldız 2012). We advocate for a theoretical perspective to capture the peculiarities of organizational elements in central governments, yet with an explicit orientation towards external actors relevant to this digital transformation, including companies in the tech and consultancy business but also end-users.

Our empirical analysis is based on comparative case studies of three digitalization labs in Germany that run in the areas (a) immigration and emigration and (b) building and housing for a period of four to six months in the years of 2018 and 2019. The case of Germany is suitable to study the relevance of labs for boundary spanning, as its state structure distributes competencies across three administrative levels and thereby contributes to a complex multi-level setting, and its bureaucracy is widely regarded as following Weberian-ideal principles of internal structural and procedural organization.

The areas have been selected because they differ for their organizational field and actor constellations. Whereas immigration is a highly salient policy field, primarily with actors from inside the government engaged in policy design, building and housing is a less salient policy area, in which external actors are comparatively stronger involved in policy design.

Our empirical analysis combines extensive document analyses and semi-structured expert interviews with lab members from all three administrative levels, consultancies, and private tech companies. We show field-level characteristics, most notably complexity and salience, shape boundary spanning as much as the labs' internal organization, particularly their composition and members' capabilities to generate expertise and reduce uncertainty in fast-moving issues such as the digitalization of public services.

The remainder of the article is structured as follows. The next section introduces our theoretical argument on boundary spanning, which is followed by a section describing the set-up of digitalization labs in the German multi-level administrative setting. The subsequent empirical section analyzes and compares the boundary spanning in three digitalization labs. We conclude with a discussion of our findings and a plea for a stronger theoretical grounding of empirical research on the digital transformation of public sectors as well as for a stronger scholarly notion of the role of external actors in such dynamics, most notably private tech companies and consultancies.

Theoretical framework: boundary spanning in digitalization labs

The concept of *boundary spanning*, which originated in the contingency theory debate during the 1960s and early 1970s, stipulates that an organization's performance depends on the *goodness of fit* between its structure and its environment (Selznick 1949; Stinchcombe 1959; Pugh et al. 1963; Hickson, Pugh, and Pheysey 1969; Child 1972). Accordingly, information about environmental contingencies and their transitions have been regarded as crucial to organizational decision makers so that they may take decisions in light of these environmental contingencies (see Katz and Kahn 1966). Hence, this literature has identified boundary spanners as actors that engage in transmission dynamics and act as *information exchange agents* between an organization and its environment, thus transferring environmental dynamics into their organization (Whetten and Aldrich 1979; Tushman and Scanlan 1981; Leifer and Delbecq 1978; Rosenkopf and Nerkar 2001; Van Dorp 2018). Boundary spanning activities include processing and transmitting of information and externally oriented gatekeeping: the acquirement and maintenance of resources and legitimacy (Adams 1976; Aldrich and Herker 1977; see also Williams 2002, 2013; Van Dorp 2018). Following the new institutionalist turn in organization research, boundary spanners were later characterized as 'conduit[s] to disseminate ideas and innovations throughout an organizational field' (Galaskiewicz and Wasserman 1989: 456; see also Guarneros-Meza and Martin 2016). This stronger orientation of boundary spanning towards an organizational field extended the reach of boundary spanners from their own organizations and immediate environments towards sets of organizations engaged to accomplish the same purpose (see DiMaggio and Powell 1983). At the same time, boundary spanning extended toward the explanatory relevance of field-level characteristics and actor capabilities (Langan-Fox and Cooper 2013), including to manage and exploit the

information they obtain and to communicate across organizational boundaries. Although not necessarily theorized in the initial contributions to the debate, boundary spanning may include possibilities for interpreting information and evidence according to the needs of boundary spanners and their parent organizations, as they are gatekeepers and may exploit this crucial position.

Many empirical analyses have stressed the importance of organizational fields as contextual conditions for boundary spanning as well as of characteristics of boundary spanners themselves and their particular skills and capabilities to engage in the exchange of information and external gatekeeping and thus eventually to generate resources and legitimacy for their parent organizations (Nederhand, Van Der Steen, and Van Twist 2019; Van Dorp 2018; Van Meerkerk and Edelenbos 2018; Guarneros-Meza and Martin 2016; Korinek and Veit 2015; Zietsma and Lawrence 2010; Rao and Sivakumar 1999; Fennell and Alexander 1987). In addition, empirical researchers have discussed the effects and consequences of boundary spanning beyond their particular parent organizations (e.g., on trust and public sector performance; Ancona and Caldwell 1992; Van Meerkerk and Edelenbos 2014).

Following this explanatory perspective, we argue digitalization labs are arenas for boundary spanning, bringing together lab members from inside and outside governments, with the explicit aim and mandate to exchange information and enable gatekeeping, which may involve some interpretation of evidence and signals and may thus result in the purposeful inclusion *and* exclusion of information. Eventually, boundary spanning generates resources for governments and supports the legitimacy of these labs and their results. Accordingly, boundary spanning in these labs is shaped by the distinct organizational field and actor constellations, which differ in nature, fragmentation, and seniority (DiMaggio and Powell 1983). Labs in organizational fields primarily bringing together government actors (e.g., those addressing public services in core responsibilities of the state such as security, borders and citizenship) are rather similar to arenas of traditional bureaucratic decision making. In these labs, boundary spanning as the exchange of information and as external gatekeeping is very likely to resemble well-known bureaucratic interactions such as 'turf wars,' in which bureaucratic actors dispute over formal authority to manage a policy issue (Wilson 1989; Dunleavy 1991), or 'blind spots', in which executive actors overlook a policy problem and avoid taking authority to deal with it (see Bach and Wegrich 2018; Wegrich 2019). As a side effect, these labs are also more likely to result in less innovative results, as they echo traditional arbitration in policy design, thus expressing the functional specialization of government organizations that resembles departmental policy preferences and objectives. In contrast, labs in organizational fields involving external actors more strongly are more likely to incorporate external expertise and evidence (Jasanoff 2003; Craft and Howlett 2012; Clarke and Craft 2017; Haelg, Sewerin, and Schmidt 2020). Therefore, these labs may also exploit traditional experiences with information exchange and gatekeeping, yet they offer more discretion on all lab members to engage in boundary spanning.

Labs are oftentimes mandated with less formal authority than traditional arenas for bureaucratic decision making. We assume that this lowering of formal authority increases the acceptance by all actors – lab members but also their counterparts in their parent organizations – as it ensures that labs complement rather than replace traditional bureaucratic decision making. More importantly, this lowering of formal authority may support boundary spanning. On the one hand, lowered formal authority

especially of governmental lab members may decrease expectations on how strongly they will represent their parent organizations' preferences and engage in potential bargains over these preferences. On the other hand, the explicit selection and inclusion of external actors, disregard the service and policy area in question, may strengthen the intake of external evidence and advice and thus allow for boundary spanning across organizational boundaries.

In sum, we argue digitalization labs are arenas for boundary spanning, shaped by the distinct organizational field, labs' internal organization and composition, and corresponding lab members' skills and capabilities.

Methods and data

To answer our research question, we conducted comparative case studies of three digitalization labs in the subject areas (a) immigration and emigration and (b) building and housing. Our empirical analysis was based on extensive document analysis of official government papers and internal written materials and 15 semi-structured expert interviews with members from the three labs. To get a comprehensive picture of the different tasks, objectives, capabilities, and boundary spanning activities of the different actors, a multi-actor approach was chosen for the selection of the interviewed experts. Therefore, in addition to the interviews with laboratory participants, interviews were conducted with involved consultants and an expert from the federal Ministry of the Interior (BMI), which is responsible for the overall coordination of the digitalization labs. More specifically, seven experts from the state ministries of the responsible federal states, two experts from the responsible federal ministries, one expert from the BMI, two representatives of municipal umbrella organizations, two consultants, and one representative of an IT provider were interviewed. Interviews were recorded, transcribed, and coded using MAXQDA. To identify and analyse patterns in the interview data, we conducted a thematic analysis focused on the determinants shaping boundary spanning in the digitalization labs.

Case description: online access act and digitalization labs

Germany follows the notion of executive federalism, and therefore, the majority of policy design authority resides with federal ministries, whereas state and local authorities are primarily responsible for service delivery. The OZG departs slightly from this notion because it links all three administrative levels in the policy design process in digitalization labs but, at the same time, focuses the design on policy delivery – though labs may likewise suggest policy changes as their work on the ideal digital public service. In total, the act requires the digitalization of 575 public services by the end of 2022, 115 of which are primarily delivered at the federal level and 460 by state and local authorities (BMI 2019, 11). The OZG does not specify how to determine if a public service is successfully digitalized. Therefore, the EU Commission's maturity model for measuring the online availability of administrative services in the EU is applied, and a public service is considered to be digitalized if the application, including all necessary supporting documents, can be processed online (BMI 2019, 14). As of July 2020, only 27 services covered by the OZG met this requirement, amounting to 5% of all public services that need to be digitalized (BMI 2020).

To organize the digitalization of OZG services, they were summarized into 14 major subject areas. The number of services per area differs (e.g. the area *mobility and travelling* is comprised of 89 services, whereas the area *immigration and emigration* is comprised of 19 services; BMI 2020). The allocation of services to each major subject area followed the end-user perspective, ignored formal policy authority horizontally – between different ministerial departments or administrative authorities – and vertically – across different administrative levels (BMI 2019, 15). Each of the 14 major subject areas is co-managed by one federal ministry and one of the German states. Additional support is provided by other federal ministries, states, and municipalities on a voluntary basis and thus varies considerably (BMI 2018a, 4). As a result, the OZG has brought together, for the first time, federal, state, and local administrations to engage in policy formulation, focused on identifying and formulating solutions to design digital services. All digital services are made available to all administrative authorities across the different levels for subsequent use. However, both the participation in the major subject areas and the subsequent use of any services are voluntary.

Some public services have been prioritized because of the total number of services to be delivered. In total, 52 digitalization labs were set up, differing across the major subject areas. While the area *family and child* has eight digitalization labs and 37 public services to be digitalized, the area *environment* has run with only two labs, though the area hosts 46 public services to be digitalized (BMI 2020).

The BMI is responsible for the overall coordination, program management and financing of the laboratories, while the respective subject area leaders are responsible for the results of the labs in terms of content (BMI 2019, 24–26). All labs are organized similarly and are comprised of roughly ten members. The small size supports the application of agile methods, such as design thinking. There are only few guidelines for the concrete setup of the labs; instead, external consultancies were hired by the BMI to organize and moderate the labs, providing these external actors with wide-ranging autonomy and considerable influence (I-08; I-11).

Consultants decide on the composition of the laboratories. Bureaucratic actors involved in the subject area (federal ministries, states, and municipalities) draw up lists of interested candidates from which consultants select participants. Consultants also decide how many people per organization can participate in the labs; contact external actors, such as IT providers; and recruit users from private environments via social media channels or calls on the Internet. Users receive financial compensation for participation in the labs (I-08; I-09).

To design an ideal digital public service in the labs, the current state of the distinct public service is identified, based on end-user interviews and direct work experiences of all other lab members. In a second step, lab members identify a target for the ideal digital process. Private consultancies moderate these ideas and organize the development of a digital prototype for the front-end solution (i.e., a 'click dummy'). More importantly, the ideal service, and thereby also the corresponding click-dummy and roll-out strategy, are explicitly ideal (i.e., lab members are always asked to try to neglect current obstacles, such as formal authority, resources, and legal frameworks, as much as possible). Final products are therefore user-friendly target processes in the form of detailed process models with an identification of all relevant actors involved in delivering the digital public service and their tasks, click dummies, and detailed plans for the rollout of the digital public services.

Labs are set up for a limited period, about three to six months, and then closed again (I-08; I-09). After the lab has completed its work, their products are processed by the formal administrative actors to procure the conversion of the click dummy into a full software solution and allow wide-range piloting and rollout (BMI 2020, 26–34).

Empirical analysis: comparing digitalization labs as arenas for boundary spanning

To study the relevance of digitalization labs for boundary spanning, we selected three labs that ran for between four to six months in the years 2018 and 2019. More precisely, we compared labs on residence permits for the purpose of gainful employment; formal obligations, with which German hosts of visa holders make a formal pledge to cover any potential costs as part of a visa application; and building permits. All three labs were tasked to create the ideal digital service and ignore legal concerns, necessary resources, or other challenges, thus adjustments for practical rollout were expected and accepted. Following our theoretical argument, we assessed how these labs varied as arenas for boundary spanning and analysed the importance of their organizational fields, internal organizations and compositions, and dynamics of internal arbitration.

Two organizational fields of different complexity and salience

Labs in the immigration and emigration area operate in an organizational field with strong interests in legal and civil liberties, though migrants are not well represented in the traditional policy design process. At the federal level, the policy area has been horizontally fragmented between several ministries and agencies. Across levels, the policy area is vertically fragmented between various authorities involved in processing immigration and emigration services at state and local levels (summarized henceforth as *migration administration*). For the overall coordination of the digitalization of all OZG services in this area, the Foreign Office and the state of Brandenburg took the lead, supported by the BMI and the state of Bavaria. This setup is rather puzzling because the BMI has more formal responsibilities than the Foreign Office in this particular policy issue, and the state of Brandenburg is not among the states with the highest share of immigrants or emigrants, nor does it host a key border access point for migration (I-01; I-05). Brandenburg decided to cohost because of the assumed stronger political and public attention to the area and because at state level, this area resides mainly with the Ministry of Interior and can be linked to other state-level digitalization initiatives (I-03).

> It was a few months ago, and perhaps still is today, a political subject area, which is very much in focus. And I think that this also requires a great deal of courage to push ahead with this perhaps politically relatively difficult subject area. I think that this might be seen as a challenge and also as an opportunity to perhaps position oneself on the topic. And of course, this topic resides in the main responsibility of the Ministry of the Interior of Brandenburg. (I-03).

In contrast, the lab in the building and housing area is in an organizational field with strong external actors engaged in the policy design process. There has been less horizontal fragmentation of the policy area, with fewer federal ministries and agencies involved. Vertical fragmentation, however, is more complex because local authorities

act as primary service deliverers but apply a plethora of different state and local regulations and guidelines across Germany, as building and housing policy has followed regional traditions and conditions. For the coordination of the digitalization of all OZG services in this area, the BMI and the state of Mecklenburg-West Pomerania took the lead. The latter volunteered to engage in this area because of former piloting activities in one of its own counties for a fully digitalized local building authority. Administrative actors across all levels; external interest groups, especially the various federal umbrella organizations for architects, building owners, landlords, etc.; and private sector actors, such as real estate market actors, partake in policy design in this organizational field.

The complexity of the two organizational fields and corresponding participation of administrative authorities and external actors are reflected in the boundary spanning within the digitalization labs. The immigration and emigration labs focused on designing a digital solution that supports the combination, integration, and streamlining of available information from different authorities in the larger migration administration complex (I-01; I-05). The cross-boundary nature of the service involves diplomatic missions and a large number of bureaucratic actors participating in delivering these public services. As a consequence, the labs networked with various administrative authorities, most notably local migration administrations (I-05). Lab members identified novel means of collaboration to be mirrored in the ideal digital processes, contributing to a greater acceptance of newly designed residence permits as well as visa services among bureaucratic actors, particularly local administrations.

The lab on building permits focused heavily on digital access and interfaces to facilitate the use of the service for different end-user groups, such as architects, engineers, and private citizens. Lab members built on pre-existing digital data sharing standards and platforms for building and planning in Germany and were also interested in increasing the voluntary adoption of its final results by state- and local-level actors (I-08; I-11). Boundary spanning activities in this lab included exchanges of information and levelling of pre-existing initial digital components. More importantly, the external actors in the lab represented their interests and strongly emphasized their roles in providing expertise and supporting the acceptance of the novel digital service across various external actors in the organizational field (I-08).

Boundary spanning in these labs was linked to the political salience of the distinct organizational and policy field: Migration policy is highly salient in Germany, especially since the 2015 European refugee crisis, whereas building and housing policy is less salient, although affordable rent have re-entered the public agenda lately (BMI 2018b). This distinct variation in salience became manifest in the labs' awareness of potential obstacles for the rollout of their final results, which implicitly influenced the design of the ideal digital service.

The immigration and emigration labs, which focused on facilitating and streamlining of the exchange of information and data, actively aimed at neglecting political concerns for and against easier digital services – despite being very much aware of it (I-03; I-08; I-11).

> And I could imagine […] that conflicts of interest might be negotiated in public, but certainly within and between the departments. In the case of immigration and emigration, for example, one aim is to simplify the process of applying for a visa. And this can also be considered politically as wrong. (I-08)

As a result, lab members were less inclined to strive for progressive results for the ideal digital services and regularly referred to these political conditions despite the overall lab's mandate to ignore current challenges as much as possible (I-08). In addition, lab members feared they would be held accountable by peers in their parent organization once the labs' results were communicated (I-01; I-03). In contrast, the building permit lab members did not raise concerns about potential political challenges for the rollout of the final product and regarded the design process as mostly non-political (I-05). Instead, lab members aimed to be as progressive as possible and to push the digital ideal solution towards the best digital practice technically possible and feasible.

Differences in awareness of political rollout obstacles, related to the salience of the organizational and policy field and corresponding variations in progressive ambitions, are directly linked with boundary spanning. On the one hand, less ambitious services required less information exchange and external gatekeeping, and thus less safeguarding of the acceptance and legitimacy of the labs' final results: If lab members took political obstacles into account due to the salience of the service at hand, it was more likely they would engage in boundary spanning much less. On the other hand, lowered ambitions towards the final product also lowered the necessity to gather additional expertise and span across functional boundaries, restricting these labs as arenas for boundary spanning.

Composition of labs: reducing uncertainty and exploiting networks

All three digitalization labs had a similar internal organization: They were small and comprised members from all administrative levels, consultancies, private tech companies, and end-users. Similarly, they were organized and moderated by consultancies, which determined the lab size and selection of lab members (I-09). There was no overall framework guide for labs' internal rules, instead labs' internal procedures were mainly designed by consultancies and lab members (I-04; I-11). For administrative lab members, this unregulated approach for the labs' internal procedural organization supported innovative working methods, such as design thinking, and allowed to departing from traditional bureaucratic decision making (I-01; I-03; I-09). For external members, fewer rules and guidelines of bureaucratic decision-making facilitated participation, as they did not have to follow rules unknown to them (I-01; I-08; I-10).

> Digitalization labs were also completely new to us. [...] There was a more relaxed atmosphere, not a conference table atmosphere. And there were users, the federal government, federal representatives, state representatives, representatives of the local foreigners' authorities and they all worked together in small groups in a wildly mixed-up way. (I-01)

Variations in labs' composition shaped the boundary spanning therein. The immigration and emigration labs were dominated by administrative actors, and boundary spanning in these arenas included the exchange of information and experience, rather than external gatekeeping. This exchange applied to the services at hand and, more importantly, to general insights on how to manage digitalization in the German public sector. More precisely, lab members from the federal ministries valued the direct access to experiences on immigration and emigration services from other administrative levels (I-04; I-05). Likewise, lab members from state and local administrations obtained knowledge of distinct public services from other administrative levels and added their front-level experiences to the policy design process. In the German executive

federalism, local officials usually have no direct contacts with federal ministry officials. Therefore, local lab members regarded the labs as unique arenas to exchange and proliferate local knowledge directly to the federal level (I-01; I-04). More importantly, state- and local-level administrative members in both labs used these arenas for exchanging general insights into the digitalization of public services, benefitting from the dominance of administrative actors in these labs. For state representatives from Brandenburg, which is regularly portrayed as a laggard in the digital transformation of the public sector in Germany, these labs provided valuable opportunities for supporting the state's own digitalization policies (I-03):

> Brandenburg is smart enough to know that they will never manage to digitalize all public services on their own. So, they are dependent on this division of labor [...] and on these tandem partners on the federal level (I-01).

External actors in these two labs were primarily end-users and focused on uncovering problems in the practical use of the designed digital services (I-01; I-08; I-09). Hence, these lab members engaged in boundary spanning through the exchange of (personal) experiences, yet with limited external gatekeeping, because the corresponding organizational field is mostly populated by internal governmental actors (see above). In sum, administrative and external actors in these two labs focused more on information exchange than external gatekeeping or extending networks.

In contrast, the building permit lab involved external actors more strongly while evaluating the pre-existing digital options available across various local authorities in seeking 'to learn from them and to possibly apply some [of their used] elements' (BT 2018, 4). Consequently, this lab provided local administrative actors with unique, direct access to policy design processes at federal level, as noted above. It also allowed for a voluntary display and overview over the variation of local solutions for distinct elements of the future digital public service (I-04; I-05; I-14). Moreover, local lab members provided crucial links to organized interests, such as municipal umbrella organizations (I-07; I-12). The boundary spanning by administrative actors in this lab was therefore about the exchange of information and best practices and about external gatekeeping (e.g., towards other local authorities and organized interests in the organizational field).

Given the plethora of pre-existing digital tools for building permits and the variation iin local conditions for streamlining this digital public service, the end-user perspective was emphasized. In this lab, end-users such as building owners and architects participated, thus representing strong organized interests from the organizational field. The success of this representation was expressed in the accelerated adoption of the lab's final results afterwards: The federal chamber of architects created a reference process for digital building permit applications following the digital service solution established in the lab (Pfeifer, Kraushaar, and Lintz 2020). These external lab members also engaged in designing the digital target process and envisioning digital interfaces to data registries, complying with and following up on existing digital data sharing standards and platforms for building and planning (BAnz 2018; I-05; I-12). They engaged in boundary spanning as an exchange of information and experience and as external gatekeeping. In addition, these external actors used the lab to discuss potential needs for legislative changes in order to achieve simplifications in the future (I-10; I-11).

The three labs show similarities regarding the consequences of their composition for boundary spanning. The consultancy members in all labs acted as crucial moderators and organizers, selecting how many members from each parent organization would participate, setting the agenda for lab meetings, and overseeing the technical development of click dummies (I-08; I-09). As much as they provided experience and consultation, they were least engaged in boundary spanning, that is in the exchange of service-oriented information and in external gatekeeping. Following a private sector logic of increasing returns, these lab members may rather use the labs for generating knowledge in order to conduct future consultancy projects in the public sector (I-09).

> The implementation is only a topic for the future, but my company of course hopes to play a certain role there. [...] As a commercial enterprise, you would naturally like to position yourself during an open and exciting consulting project, with an eye to possible implementations later on. (I-09).

Similarly, lab members from private tech companies provided crucial technical expertise but did not engage strongly in gatekeeping. Instead, the labs provided options to restrict the access of competitors to potential future procurement processes.

State- and local-level members of all labs acknowledged a lack of capacity at their own parent authorities to digitalize all OZG services separately and therefore welcomed an integrated approach, linking services in and across major subject areas (I-05; I-11). They also stressed the lack of resources to organize such labs themselves and were satisfied with the moderation by external consultancies (I-01). These lab members regarded the digitalization labs as blueprints that could be established in their own parent organizations for other purposes (I-03; I-06; I-07).

Dynamics inside the labs: capabilities and conflicts

In addition to the organizational field and its actor constellations, the individual skills and capabilities of lab members shaped the boundary spanning activities in the digitalization labs. The skills of members are important in terms of the provision, processing, and interpretation of information and its transmission to their parent organizations. While some members focused their roles on one of these tasks, representatives from local levels and external actors played dual roles: They provided expertise from their front-level experiences and uncovered problems in the practical use of the services, and they carried information from the labs back to their organization and beyond into the field (e.g., via municipal umbrella organizations) and thus created acceptance for the novel digital services. In contrast, the focus of the federal and state level members was on receiving and processing information and learning from the practical expertise of the other members to feed it back into their ministries, which are later responsible for drafting necessary legislative changes (I-01; I-03; I-04). The labs were designed to ensure the skills and capabilities of members complemented each other, thereby promoting policy design processes and the development of innovative digital services. For example, the limited number of participants was meant to encourage all actors to actively contribute their skills to the laboratories and to promote the exchange of information (I-08; I-09):

> We have to make sure that there are not too many participants. [...] Everyone has to actively participate; they have to respond to each other, and they have to stay with each other the whole

time. [...] They should have the feeling: You are there, it's up to you and content can only be created in cooperation. (I-08)

The willingness to engage in boundary spanning depended on the individual skills and attitudes of lab members. Particularly noteworthy is the openness to technical innovations and the unorthodox methods of the labs among these lab participants. Although all three labs were reported to be mostly harmonious in designing digital public services, some minor conflicts were identified, not necessarily due to affiliations and backgrounds of lab members, but rather based on their individual attitudes and capabilities. The first line of conflict distinguished between those lab members seeking to *change the procedural status quo* from those lab members who aimed to maintain the current situation as much as possible (I-03; I-10). This struggle was related to the distinct service at hand and to the ways and means by which its digitalization comes about. Some lab members were very open to *making mistakes*, thereby adopting a novel logic of action that departed from classic Weberian principles; others rejected such internal management and behaviour in the lab and sought to rely more strongly on traditional rules of bureaucratic decision making. Across the labs examined in our analysis, these two groups of lab members did not align with their distinct affiliations (e.g., as administrative versus external actors). Instead, several administrative actors were highly motivated to depart from traditional bureaucratic decision-making routines and make mistakes and learn from these experiences (I-01; I-05; I-10). It was therefore seen as individual skills and attitudes shaping the extent to which lab members aimed for changing or maintaining the status quo or departed from traditional means of bureaucratic decision making (I-02; I-05).

The second line of conflict appeared between lab members with stronger and weaker orientations towards the technological and digital aspects of the lab's purpose and work (I-10). The lines were rather clear between external actors, primarily advocating for and focusing on technical aspects – partly because private tech companies and end-users strongly considered user experience and friendliness – and administrative lab members, although some of them engaged also in digital aspects(I-01).

The last line of conflict unfolded between primarilylab members oriented towards representing their parent organizations and those departing from this role. Although all administrative lab members aimed to introduce their professional and bureaucratic expertise into the labs – expertise linked to the parent organization at which they gathered this expertise – some interpreted the overall goal of designing user-friendly digital public service as incongruent with satisfying their parent organizations:

[...] the question of which department you come from, whether you are from the federal level, federal states or municipalities, is totally unimportant compared to the question of how we do it. (I-05)

Especially for administrative lab members, these conflicts reveal varying departures from rule-bounded procedures and neglect of formal affiliations, which may indicate some sort of 'decoupling' of administrative lab members from their parent organizations' interests and objectives, yet also facilitating boundary spanning across the organizational field.

Discussion

Our comparative case studies on digitalization labs in the German multi-level administrative system show variations in their roles as arenas for boundary spanning. First, the distinct organizational fields are characterized by specific actor constellations, especially regarding the dominance of administrative actors and necessity for exchanging information and gatekeeping with external actors in the field. Correspondingly, the immigration and emigration labs were more involved in the transfer of information and knowledge, including generic insights into the digitalization of the public sector in Germany, than the building permit lab, where lab members engaged more frequently in external gatekeeping.

Second, the labs brought together administrative and external lab members, contributing to the avoidance of classic challenges of bureaucratic decision making in policy design based on functional differentiation and specialization, most notably turf wars and blind spots. The composition also added a novel coordination pattern to German executive federalism by offering local authorities direct access to and interactions with lab members from federal ministries in policy design. At the same time, the mixed composition of governmental and external actors shaped the boundary spanning: Labs with more administrative actors were more focused on the exchange of information, beyond the distinct public service, whereas labs with more and stronger external actors were engaged in more external gatekeeping across actors in the organizational field. Moreover, lab members' skills and networking capabilities were crucial for boundary spanning, especially for external gatekeeping and acquiring legitimacy vis-à-vis their own parent organization and other organizational actors in the field. Novel methods and the unorthodox actors' constellations inside the labs enhanced the importance of individual skills, abilities, and attitudes in the provision, interpretation, and transmission of information.

Lastly, the internal dynamics of arbitration in the three labs under scrutiny showed some minor lines of conflict, yet not linked to members' formal affiliations but rather to individual skills and attitudes. Therefore, they do not resemble pre-existing conflicts between their parent organizations. These conflicts revealed also that administrative lab members varied in how much they neglected formal affiliations and authority, which eventually limited or supported their boundary spanning activities.

Conclusion

In this paper, we examined digitalization labs in the German multi-level administrative system as arenas for boundary spanning. We demonstrate that field-level characteristics as well as the internal organization and arbitration dynamics matter in understanding how labs shape the exchange of information and external gatekeeping, thereby affecting policy design. Applying the boundary spanning perspective is a suitable explanation to understand how novel arrangements to organize the digitalization of the public sector operate and their consequences for policy design. The labs offer novel means to exchange information across organizational boundaries, they contribute to the generation and expansion of networks, and external gatekeeping, which supports their own legitimacy and the legitimacy of their final results in policy design.

Our comparative findings on digitalization labs in Germany provide general conclusions on the conditions for boundary spanning in such lab-like arenas, disregarding the institutional and task contexts, also beyond policy design. Put differently, when focusing on boundary spanning, digitalization labs are rather similar to policy labs engaged in other policy fields. For public management research, we demonstrated the importance of actor constellations and capabilities for the results of such labs, and more generally, the interplay between internal organizational features and the boundary spanning role of such temporal arrangements. Digitalization labs may indeed bring forward if not demand the inclusion of external expertise from tech companies or consultancies engaged in digitalization and organizational development. These external actors also raise issues of accountability (see below), which is also raised by management scholars studying policy labs (McGann, Wells, and Blomkamp 2019; Hjelmar 2021). The public administration study of policy design may find inspiration for a stronger recognition of temporary organizational arrangements that are formally tasked with a limited mandate, which yet contribute to the legitimacy of governmental action more broadly. From this perspective, digitalization labs are rather similar to policy labs although they oftentimes come with a more limited scope, focused on the technological components of the policy issue at hand, whereas policy labs are oftentimes mandated to tackle cross-cutting policy problems.

Moreover, the digitalization of public sectors attracts and arguably requires the engagement of various external actors, contributing to governmental digitalization programs and procurements, and digitalization labs with temporary roles may be regarded as suitable vehicles to accomplish certain tasks, also taking tight deadlines and definable products into account. However, digitalization labs may also raise concerns, especially about accountability. They are mandated to create prototypes open for adoption by other actors, which leaves the corresponding (hard) decisions about resources and potential policy changes to make digital public services work (better) to other arenas; these arenas are arguably more driven by traditional bureaucratic decision making and more clearly situated in a distinct accountability setting. In contrast, the labs under scrutiny are explicitly put under no accountability regime, neglecting formal affiliations and lacking overall guidelines. Instead, external actors, most notably private consultancies, gain considerable influence over the labs' organization, composition, and internal dynamics. More research is warranted about the role and influence of such and other external actors in labs and other organizational arrangements involved in the digital transformation of public sectors (see Lindgren et al. 2019). How do temporary organizational arrangements, such as digitalization labs, influence policy design processes in terms of efficiency and legitimacy? How does the inclusion of actors without a democratically legitimate mandate in the policy design process, such as end-users or private companies, influence the democratic accountability of these government arrangements and their results? To what extent do novel methods of collaboration and the rejection of traditional bureaucratic means of decision-making lead to more innovative outputs in the policy design process?

Likewise, future researchers may study distinct mechanisms to keep bureaucratic and political actors accountable in such arrangements, especially those engaged in digitalization policy, as the field of public policy and management is fast moving and strongly reliant on outside (technical) expertise. What mechanisms can ensure the

accountability of bureaucratic and political actors in organizational arrangements characterized by unorthodox decision-making structures and the inclusion of various democratically not legitimized actors? The greater boundary spanning activities enabled in digitalization labs, compared to traditional bureaucratic decision-making arrangements, may add legitimacy via external gatekeeping, yet this does not exempt such arenas from future closer empirical research into accountability dynamics.

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