Location unknown: bridging offline and online infrastructures in policymaking

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Universiteit Leiden

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Mevrouw de Rector Magnificus, geacht faculteitsbestuur, beste collega's, lieve familie en vrienden, zeer gewaardeerde toehoorders.

It is good to see all of you here and also a warm welcome to those that are joining via the livestream. I will give this inaugural lecture in English so that my family, colleagues in the audience as well as international colleagues online are able to understand – or at least listen in – on what I have to say.

Let's get into it!

The Oratie builds on different puzzle pieces that I have witnessed over the last couple of years both in research and in practice. It's one of those puzzles that has a lot of pieces to it and that sits on your kitchen table for a while and you come back to it over and over again. In fact, it's a puzzle that requires a joint effort – you start looking at it with people in your household, maybe you even invite guests to help you piece it together. And that is exactly what happened with this puzzle, starting out with public policy and public administration colleagues and adding colleagues from other disciplines, such as data science or anthropology, as well practitioners from different government entities to make sense of the pieces and where they fit.

The picture that emerged as we put the pieces together is that governments worldwide are actively developing digitalization and data strategies at both national and local levels. These strategies encompass advanced technologies such as large-scale data storage, process automation, smart city initiatives, and artificial intelligence. They focus on enhancing efficiency and effectiveness, often adopting a 'digital-by-default' approach—meaning digital options become the standard mode of interaction, with an emphasis on providing services and information online. This shift aims to use evidence and data to inform policies and improve government processes,

while also addressing financial aspects like investing in digital infrastructure, data storage, and potentially hiring external providers for certain services (Lindgren et al. 2019). With all these developments, the key question that remained—at least for me—was: *How does this emphasis on data and digital applications impact the experience of citizens accessing public services? Does it truly make services easier, faster, and more accessible?*

You would think it would, given that much more information is now on government websites, there are search bars, chat functions, and online ways to make an appointment. But, when putting the puzzle together, there was increasing evidence that this turn towards data and digital applications was affecting citizens in different ways (Veiga et al. 2016). For some, they could indeed sit on their couch at 11pm on their phone, making an appointment with the city for a new passport and talking to the chatbot to get a list of what documents to bring. But, this looks very different for anyone that is slightly outside of this norm in terms of owning a phone with an unlimited data plan, having a Wi-Fi connection, speaking the language in which the appointment is being made, being able to navigate bureaucratic procedures or being able to read and write without much effort.

Digitalization or rather automation of the allocation of government benefits also has had a huge impact on citizens. There are several Dutch examples where digital systems disadvantaged certain groups. For example, benefits were not allocated or even retracted due to a system error – a system that was automated or partially powered by artificial intelligence. This then disadvantaged largely the most vulnerable citizens or parents, mostly those with the highest household debt and lowest incomes as in the example of the Dutch Childcare Allowance case (Giest and Klievink 2022).

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And the implications of this are much wider. Given the increasing complexity of government, by introducing new technologies and – of course – the experience of or hearing about such instances, there is also a decrease in trust (Grimmelikhuijsen 2012). Citizens understand less of how services are provided, why certain payments are made in a certain way and which information is being collected and bundled behind the scenes. But, the examples do not need to include complicated systems at all. The fact that a service is mainly provided online poses an additional hurdle for certain citizens, because they might feel more comfortable speaking to someone face-to-face or are unfamiliar and need to learn a new system or are afraid to enter wrong information (Linos et al. 2021). Citizens seem to rely less on apps or websites, but rather use their personal and neighborhood networks to access government services online. They frequent community centers, libraries, call their kids and grandkids or check with their neighbor.

This is part of what I call an 'offline or social infrastructure' in neighborhoods. This infrastructure is under pressure financially, but also is hard to count or datafy. It is hard to measure who walks into a community center and whether this helped them figure out a government service or has long-term benefits for their social network, which ultimately enabled them to find a job. This lack of insight makes it harder for the government to tailor policies towards certain neighborhoods and groups of people making use of these services.

These developments show the challenge of parallel developments going on in the online and the offline realm. As citizens face new challenges accessing government services, these struggles often go unrecorded in official data, as they predominantly occur offline. This gap makes it difficult for governments to address location-specific challenges effectively and exacerbates the disconnect between online government services and citizens' offline experiences. The result is what I refer to as a 'location unknown' – a lack of complete

information and awareness about the issues citizens face. This highlights the need to connect offline and online structures to mitigate these challenges.

I will further illustrate this point by describing the experiences of Hans, Soraya, and Sylke. Each person encounters different obstacles when accessing public services. Drawing from real-life experiences, I will highlight key obstacles and resources that they tapped into.

I. Citizens

Hans
Hans, who is approaching retirement age and has spent his life working in manual labor, is a well-known figure in his Dutch neighborhood. Having lived in the same area for over 35 years, he is a familiar face to many. Imagine him sitting outside his apartment, greeting everyone who passes by, chatting with the neighbor walking their dog, and exchanging pleasantries with those on their way to Albert Heijn. Despite his strong ties to the community, Hans faces significant challenges.

Hans has struggled with literacy throughout his life, a consequence of his blue-collar career as a carpenter where reading and writing were not really relevant. This struggle has made dealing with bureaucratic tasks and paperwork particularly difficult. The recent passing of his wife, who managed all their household administration, has left Hans in a tough spot. He now needs to handle tasks like filing taxes and updating the government on income changes on his own.

Hans is concerned about the transition to digital communication for government services. He dreads government letters, now only available digitally, and worries about missing important information. His situation is compounded by the difficulty he has with navigating online systems.

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To cope, Hans frequently visits the community center in his neighborhood. Here, he not only participates in social activities like bingo but also receives practical assistance from volunteers. These volunteers have helped Hans fill out forms, understand the process of securing housing benefits, and navigate digital government services. They guided him through obtaining a digital identifier (DigiD), finding the government inbox (Mijn Overheid), and even called the government hotline with him to ensure he had the correct information to update his rent support following his wife's death.

The community center serves as a vital hub, offering a space where residents, regardless of their economic background, can come together for casual interactions and support. It fosters friendships and provides a safety net for those who might otherwise feel isolated or marginalized. A dedicated volunteer organizes communal meals and activities, strengthening social bonds and offering relief to those in need.

When the community center is closed, Hans turns to the 'Listening Line' (Luisterlijn). This service, available 24/7 and funded by the Ministry of Health, Welfare, and Sport, offers confidential conversations with trained volunteers. It provides Hans with emotional support when he feels isolated or overwhelmed by his worries and grief.

In summary, despite the challenges Hans faces, he remains deeply connected to his neighborhood and is aware of the services available to him. The support he receives from the community center and the Listening Line has been crucial in helping him navigate this difficult period in his life.

Soraya
Soraya fled her home country with her young child, leaving behind her career as a dentist. Upon arriving in the Netherlands, she encountered a series of obstacles: a language barrier, uncertain legal residency status, unstable housing, and

a lack of stable income. Her limited Dutch made it challenging to connect with neighbors beyond the refugee community and for her daughter to socialize with Dutch-speaking children. Although Soraya is highly educated and tech-savvy, navigating Dutch bureaucracy was frustrating due to unfamiliar procedures and language barriers.

Fortunately, Soraya learned about a local community initiative through word-of-mouth. This initiative aimed to integrate newcomers and address local issues by providing a space for residents to connect and support one another in their own neighborhood. It proved invaluable to Soraya, offering practical assistance with acquiring furniture and information about local services, including pointing her towards the closest library. The initiative also provided crucial legal aid. A lawyer affiliated with the organization helped Soraya secure legal residency under a provision for parents of minors, allowing her to remain in the country at least until her child turns 18.

Soraya now regularly visits the library, which offers free programs such as the 'Reading Hour' for children, where volunteers read to kids. This program has been instrumental in helping Soraya and her daughter improve their Dutch. The library also runs an 'Information Point for Digital Government' (Informatiepunt digitale overheid, IDO), which assists Soraya in understanding and managing her interactions with Dutch government systems. This service has been particularly helpful for navigating the Dutch school system and securing housing. Given her pending legal status, Soraya was concerned about making mistakes on online forms that could affect her residency application. At the library, she participated in a program where she could practice filling out various government forms without impacting her personal file or alerting officials.

Today, Soraya has a 'taal maatje' (language buddy), a Dutch volunteer who meets with her weekly to practice Dutch. She

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now possesses a digital ID and manages most government interactions online, though her credentials are still under review. Her daughter is enrolled in school.

Soraya's experience underscores the critical need for tailored support services that come from different sources, but are all located in the same neighborhood. This includes help with steps to access government services, but also language support, professional credentials as well as practicing bureaucratic procedures.

Sylke
Sylke is a dedicated member of her neighborhood, spearheading an initiative to combat heat in her community. Her goal is to secure local government support to fund a project aimed at reducing heat, including planting trees, creating shaded areas, and providing social support for vulnerable groups. Despite the urgent need for these measures, Sylke encounters numerous obstacles in accessing the necessary government services.

Specifically, Sylke seeks municipal support for two benches along a route in her neighborhood. These benches would provide resting spots for elderly residents and foster social connections among neighbors. She is also interested in the 'Tegelwippen' initiative[1], which encourages residents to replace paving tiles with plants to reduce heat and combat 'heat islands'—areas in cities that experience significantly higher temperatures than their surroundings. Additionally, Sylke wants to distribute flyers to promote rooftop greenery and tree planting among homeowners, using these materials as conversation starters to identify and support vulnerable neighbors, such as the elderly or socially isolated individuals (RIVM 2024).

1   https://www.nk-tegelwippen.nl

However, securing funding, obtaining flyers, and navigating municipal support have proven more complex than anticipated. Sylke's attempts to gain access to these resources have been thwarted by bureaucratic hurdles and a lack of clear communication channels within government agencies. When she visited the municipality to make an appointment, she discovered that what she needed was not a meeting but an online form. Moreover, she had to gather signatures from three neighbors to support her initiative. While finding neighbors willing to support her was straightforward, obtaining and submitting the signed form posed additional challenges, including locating a neighbor with a printer and figuring out how to re-submit the completed form. After posting in her street-WhatsApp group, she found a neighbor with a printer, but after having the signature, she also needed to figure out how to get the signed form back into the system. The benches are a separate administrative procedure, facilitated by a Dutch-wide initiative called 'Buurtbankjes' (Neighborhood benches)[2]. What about the flyer you might ask? That Sylke made herself, adding relevant links from the municipality.

The experiences of Hans, Soraya, and Sylke highlight the pivotal role that neighborhood resources play in supporting residents facing various challenges. Hans relies on his community center for both practical assistance with administrative tasks and social engagement, demonstrating how local hubs can bridge gaps in government service access and foster a sense of belonging. Soraya's journey underscores the importance of targeted support services for immigrants, revealing how tailored initiatives like language programs and digital assistance are crucial for integrating newcomers and leveraging their skills. Both Hans and Soraya face a dependency relationship with the government, which adds an *extra layer of digital stress* as they navigate complex systems for essential support like benefits and residency status. Sylke's

2   https://de-buurt.nl/buurtbankjes-voor-gemeenten

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efforts illustrate the complexity of accessing municipal support for community-driven projects, highlighting the need for streamlined processes and clear communication channels. Collectively, these stories emphasize the critical function of neighborhood resources in addressing diverse needs, from personal support to community development, and the necessity for effective systems that alleviate the additional digital burdens faced by residents in need.

II. Government

What also becomes very apparent in the stories of Hans, Soraya, and Sylke is the crucial role of place—their locations and the mix of services they use. The devices, connectivity, and apps they interact with play a secondary role. Instead, they initially seek human interaction to understand how to approach government services and what steps are required to obtain support. This may seem obvious after hearing these examples, but from a government perspective, it is less apparent.

Governments often focus on digitizing and datafying processes to capture current needs and project future demands. The goal is to provide a standardized structure that ensures everyone can access the same services in a similar manner, typically through various communication channels like phone numbers, websites, and sometimes email addresses. Responsibilities are divided across different levels of government—for example, local governments manage community centers and social benefits, while national governments oversee digital infrastructure such as joint hotlines, digital identifiers, and libraries. *However, much of the support described here cannot be easily digitized or quantified*. For instance, volunteer work, with its variety and frequency, is difficult to capture. This includes volunteers assisting at community centers, libraries, neighborhood organizations, the Luister Lijn, or as language partners.

The challenge lies in reconciling the government's push for standardized, data-driven solutions with the nuanced, individualized support that local resources provide, highlighting a gap between digital efficiency and real-world effectiveness.

To address this disconnect between the government's perspective and the support structure in neighborhoods, I want to propose the idea of understanding this as layered infrastructures, which are governed differently and often do not fall under a single governmental level. There are three layers:

- Data infrastructure: This includes the data that governments collect. It involves the metrics on which policies and decisions are based. This infrastructure is largely invisible, as we don't always see or know the details of this data collection.
- Digital or online infrastructure: This includes all the digital applications implemented by the government, such as DigiD, online forms, chat functions on government websites, and so on.
- Social or offline infrastructure: This encompasses places where people gather in their neighborhoods for networking and seeking help. It includes, for example, community centers, parks, swimming pools, and libraries.

By unraveling these layers, we can better understand the gap between the government's digital perspective and the tangible, offline support structures in communities.

First, the data infrastructure.

III. Data infrastructure

Let's delve into the data side of this issue, which I refer to as the 'invisible infrastructure'. This term describes the data framework that, although not visible to most citizens and

bureaucrats, forms the foundation for decision-making in government regarding public services and policies.

In the realm of data-driven policymaking, *there is an expectation that increased data will help governments identify gaps, detect fraud, and deliver more tailored and effective services.* However, this reliance on data brings several challenges that merit careful examination. As demonstrated by the examples, converting these activities into meaningful metrics is complex. Beyond merely counting the number of people entering a community center or the volunteers required, there are broader concerns associated with the data focus.

These challenges are encapsulated in what is known as the power paradox (Hansen and Porter 2017). This concept highlights that while data can empower administrations to act more decisively and responsively, it also raises issues related to the concentration of power and potential surveillance, which may undermine democratic values.

One major concern is the potential for governments to become excessively focused on achieving quantitative metrics. This focus can inadvertently lead to prioritizing resource allocation toward measurable outcomes, potentially at the expense of substantive equity and quality in public service delivery (Bader and Bleischwitz 2009; Hughes et al. 2020). This approach can either involve citizens indirectly or bypass democratic processes entirely. Additionally, an over-reliance on extensive data metrics may centralize decision-making authority, concentrating control in the hands of a few and diminishing transparency and public accountability (Kitchin 2014).

Consider, for example, the challenge of tracking citizens who seek help at libraries. Accurately counting these individuals and assessing whether they received assistance is difficult. Currently, employees and volunteers at digital service info

points count help-seekers, sometimes noting their age and gender and whether they received a solution. This method, however, offers a rudimentary snapshot of the service provided.

The shift in the literature reflects this complexity. We have transitioned from optimistic titles like *Big Data: A Revolution That Will Transform How We Live, Work, and Think* (Mayer-Schönberger and Cukier, 2013) and *The Fourth Industrial Revolution* (Schwab, 2016) to critical works such as *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (O'Neil, 2016) and *Everybody lies: Big data, new data, and what the Internet can tell us about who we really are* (Stephens-Davidowitz 2017).

The move towards data-driven policymaking and digital services aims to make governance more efficient. However, this shift may inadvertently create a disconnect between government operations and citizen experiences. To address this challenge, recent conceptual and methodological advancements offer valuable insights and tools.

The concept of administrative burden examines the difficulties and complexities citizens face when interacting with government services (Moynihan et al. 2014). Understanding and accounting for this burden is crucial for designing policies that simplify interactions rather than complicating them. Additionally, research emphasizes the importance of social support mechanisms in bridging the gap between digital services and the needs of less digitally literate citizens, ensuring that no one is excluded from online platforms (Asmar et al. 2020).

New indicators and benchmarking tools, explored by researchers like Davis et al. (2015) and Madsen (2018), provide refined methods for measuring policy effectiveness and reach. These tools are essential for evaluating whether digital

services meet their intended goals and include larger social impacts or benchmarking tools that enable policymakers to compare performance across different regions or time periods. Ethnographic and observational studies further enrich our understanding by offering ground-level insights into how policies impact daily life, revealing unintended consequences and helping tailor government actions to better serve communities.

In conclusion, while the shift towards digital governance holds the promise of enhancing public service delivery by collecting more data of online activity, it is crucial to remain vigilant about the potential for increased distance between government and its citizens. By integrating advanced research methodologies and emphasizing human-centered design, policymakers can ensure that digital advancements enhance, rather than hinder, their connection to the public they serve.

IV. Digital or online infrastructure

Now, to the second layer: the digital or online infrastructure. The data collection I described often translates into the available digital infrastructure. Digital infrastructure, more generally speaking, serves as the backbone of our interconnected world, encompassing the technology-driven networks, services, and physical components such as servers and data centers that facilitate the flow of information and support our daily digital interactions. This infrastructure also includes the software and protocols that underpin the internet and telecommunications systems (Castells 1996).

The shift to online public services has intensified government focus on digital inclusion—ensuring all citizens can access and effectively use digital resources, regardless of their background (Aleixo et al. 2012; European Commission 2022). This focus includes strategies to monitor, evaluate, and enhance digital

inclusivity, digital skills, and efforts to close the digital divide (van den Berg et al. 2020).

This emphasis on *digital* inclusion targets specific gaps affecting accessibility and effectiveness. The technological divide highlights disparities in access to and the quality of technology, such as internet connections and devices. Variations in device quality can affect how effectively citizens use government platforms, necessitating evaluations across different devices (Hargittai 2002; van Deursen and van Dijk, 2019). The skills divide pertains to differences in digital skills needed to navigate online platforms and evaluate information, underscoring the need for digital services to accommodate varying skill levels to ensure broad accessibility (van Deursen and van Dijk 2011). This often manifests in government projects through language considerations on websites or the use of symbols instead of text. The usage divide differentiates between various types of internet use, such as social media versus work-related tasks. This divide illustrates how users interact with government platforms and suggests that design considerations should account for users' diverse internet usage patterns (van den Berg et al. 2022).

To give an example, governments are increasingly pushing for 'digital-by-default' services, meaning that digital interactions are prioritized, with other forms of access available as secondary options. This approach aims to enhance the efficiency and effectiveness of public services, with the goal of making them more accessible and user-friendly, and potentially increasing citizen satisfaction and engagement (in the words of government). This is often accompanied by skills courses and a focus on the divides just mentioned.

However, significant challenges accompany the implementation of such strategies. The 'digital-by-default' policy, which mandates digital interactions for accessing public services, may limit the availability of communication channels, potentially

excluding other groups to which these divides do not apply (Linos et al., 2021). For instance, people might not know how to write a formal email to a bureaucrat, struggle with the language and don't want to call or struggle to navigate online platforms, leading to frustration and exclusion from essential services.

Moreover, *the effectiveness of such a digital-first approach relies heavily on the underlying social infrastructure.* From a government perspective, this would require a closer look at the places or groups of people that lag behind or seem to experience accessibility issues and figure out place-specific challenges potentially preventing access. As Giest and Samuels (2023) highlight, there is often a lack of infrastructure to address the digital access challenges many face. Without adequate support systems, such as public internet access points, training programs, and help desks, the shift to digital can exacerbate existing disparities rather than mitigate them. This is particularly evident when considering the experiences of citizens who might not be 'administratively literate', so not having experience with or understanding bureaucratic processes in general (Döring 2021) or experience life circumstances, such as financial stress, that limit their ability to function (Christensen et al. 2020).

From a citizen's perspective, this emphasis on digital services can then lead to a sense of detachment from public institutions. The stories about Hans, Soraya and Sylke could have gone in a very different direction if the local resources were not available. Without the local resources available to them, Hans, Soraya, and Sylke would have faced significant challenges. Hans would struggle alone with bureaucratic tasks and feel isolated, potentially missing critical government communications. Soraya might have remained stuck in legal limbo and struggled with integrating into Dutch society without support for her language and legal issues. Sylke's initiative to improve her neighborhood's heat management

could have stalled, lacking crucial community support and government funding. This can result in *a lack of engagement or trust in the government, further widening the gap between public officials and the populations they serve.*

In essence, policy attention towards and investments in social infrastructure are as crucial as the development of the data and digital infrastructure to ensure that the benefits of digital public services are distributed equitably.

V. Social or offline infrastructure

As we have seen in the three stories, local resources are largely offline. They also involve a social component. This is captured in the idea of 'social infrastructure'. This idea refers to the foundational elements that support the smooth functioning of society and the well-being of its members. This concept includes physical spaces such as libraries and schools, as well as the organizational frameworks that underpin social services and community programs. These elements are vital for fostering social interactions and meeting community needs. They play a crucial role in promoting social sustainability—enhancing quality of life and encouraging community development.

The definition of social infrastructure, however, remains a topic of active debate, particularly concerning its implementation through policy. Some definitions narrowly focus on physical spaces like buildings and parks, potentially overlooking critical services such as healthcare and education. Others adopt a broader perspective, incorporating local public services, housing, and the built environment. This expansive view, while inclusive, risks emphasizing large-scale regeneration projects, which may not always achieve genuine community interaction.

This ongoing debate suggests that the definition of social infrastructure should be flexible, tailored to the specific needs

of different communities. A one-size-fits-all approach to policy is inadequate; instead, solutions should be customized to address the unique characteristics and requirements of each locality. *Social infrastructure is not solely about physical spaces; it encompasses the dynamic and less tangible aspects of our social environment.* Consider places where people congregate not only for specific events but as part of their daily lives—libraries, parks, playgrounds, and even local cafés. These settings, often referred to as 'third places', are neither home nor work but are crucial for fostering a sense of community and encouraging informal social interactions.

Klinenberg (2018) highlights that social infrastructure includes the physical places and organizations that shape human interactions—ranging from libraries to community gardens, sidewalks to churches. These spaces facilitate vital social encounters that build social capital, an essential component of strong, supportive communities. Research focused on communities that are often overlooked or 'left behind' underscores the significance of social infrastructure in creating strong place attachments and enhancing overall human welfare. Whether through planned community centers or spontaneous gatherings in public squares, well-designed social infrastructures can profoundly impact the quality of life in various locales.

In summary, *social infrastructure encompasses more than just the buildings and services provided by a city. It involves creating environments that foster connections, support well-being, and enhance collective quality of life, ultimately making communities more resilient and inclusive.*

VI. Bridging offline and online in public policies

When we look at this interplay between data, digital, and social infrastructure, a crucial insight emerges: *the nature of these infrastructures often leads to a separation from the specific needs of places.* This separation becomes evident when we look at digital services. These services are designed to be uniform and accessible across various locations, which means they function in a standardized manner regardless of the local context.

For example, an online government portal or a national app is developed to offer the same functionality and user experience whether accessed from a bustling city or a remote village. The goal here is consistency and broad accessibility, ensuring that every user encounters the same interface and service quality.

In contrast, location-specific or need-specific services are deeply embedded in their local contexts. These services are tailored to address the unique needs of specific neighborhoods or communities, reflecting their distinct characteristics and requirements. Examples include local community centers, neighborhood health clinics, and localized public transportation options. These services are designed with a deep understanding of the local environment and its particular challenges, aiming to provide targeted support that aligns with the community's needs.

The challenge for government is to navigate the balance between these two: the uniformity of digital services and the specificity of place-based services. This requires a flexible and nuanced approach to policy. Governments must be adept at crafting aspatial policies—those that function independently of geographic location—while also being responsive to the needs of specific places. The key is to ensure that digital advancements do not overshadow the importance of localized, context-sensitive services.

Moreover, bridging the online and offline worlds is essential. It involves integrating the efficiencies of digital infrastructure with the tailored support provided by local services. For instance, a digital service that allows citizens to schedule appointments with local community centers must also

consider the unique needs of different neighborhoods to ensure that the system is effective and inclusive.

In summary, while digital services benefit from uniformity and standardization, place-specific services thrive on local relevance and customization. The challenge for policymakers is to design and implement policies that respect the strengths of both approaches, ensuring that digital innovations and local needs are seamlessly integrated to provide comprehensive and effective support to all citizens.

VII. Bridging the (interdisciplinary) gap

As we integrate data, digital and social infrastructures, several points emerge. Bridging the gap between techno-logical advancements and real-world experiences is essential for creating a public service landscape that is both inclusive and effective. Social capital – the trust, relationships, and networks within neighborhoods – plays a crucial role in how well residents can access and use digital public services. Communities with strong social ties are better positioned to support each other in navigating digital platforms, whereas those with weaker social capital face greater challenges. This highlights the need for social infrastructure to complement different government channels for public services.

The primary challenge now is to integrate structures that foster social capital linked to public services in a way that addresses both online and offline realities. By strengthening governance structures and balancing broad policies with localized strategies, we can more effectively address complex sustainability issues and ensure equitable access to digital services. The challenge lies in determining the effectiveness of a service – whether it is when someone receives a DigiD through a library or benefits from government assistance. We need to shift from evaluating the effectiveness of digital services alone to understanding the value of a service, whether

online or offline, to a neighborhood. This includes examining if the service aligns with existing services, if it needs to be available but requires additional access layers, and if lower utilization indicates a successful strategy due to reduced need or alternative support.

Moreover, the integration of data, digital and social infrastructures must enhance rather than overshadow local community interactions. It is essential not only to bridge digital divides but also to understand their impact on social equity. *So, addressing inclusion more generally rather than digital inclusion specifically.* Policies should be flexible and responsive, reflecting the unique characteristics of each community to achieve both effectiveness and fairness. As technological advancements continue, we must remain conscious of the intersection between online and offline worlds.

In fact, insights often get lost at the online-offline juncture, affecting both citizens and government initiatives. At this juncture, several research lines emerge:

One research line addresses the *role of social capital*, so the idea that shared networks, relationships, and norms facilitate cooperation and collective action within a community. Based on the points that were highlighted, this raises questions on: How does social capital in neighborhoods affect residents' ability to access and effectively use digital public services? What is the role of key figures and contact points within neighborhoods? Different disciplinary perspectives can help unravel this issue. In addition to focusing on policy implementation, place-based policymaking, and public service delivery within public administration, insights from other disciplines are also crucial. Anthropology offers insights into cultural norms and social structures within neighborhoods. Architecture sheds light on how physical spaces are used to foster social connections. Meanwhile, communication studies

can investigate how information about public services is disseminated and received within local communities.

Another research line is on the *question of responsibility*: Who is responsible for bridging the online-offline gap? Currently, much of this work falls to volunteers and local community members who support their neighbors. The challenge is determining how much citizens should be expected to manage this gap and what role government should play in closing it. But also understanding split responsibilities *within* government in terms of different departments and governmental levels. There is a legal dimension to this, in terms of who is legally responsible and what rights do citizens have when they lack access or have trouble accessing services. But this also includes more philosophical questions on who carries the moral responsibility of making sure everyone has access to a service and what is fair in this context.

Finally, a *data research line* raising questions on: What are we missing in terms of data insights in this space between offline and online that is unaccounted for? How can we integrate existing metrics with lived experiences in neighborhoods? How do we measure the value of a service? How can insights into neighborhood data empower local residents to advocate for their community in terms of public service delivery? This is where neighborhood-level data could play a role to identify patterns of social infrastructure in relation to visible access and invisible hurdles. This is something where data science, but also citizen science aspects play a role.

You can see how answering these questions requires a collaborative approach across multiple disciplines (also beyond those that were explicitly mentioned) as well as continued conversations with policymakers and organizations working in different neighborhoods. I look forward to working on these topics with colleagues, practitioners, and also exchange thoughts with students.

Ultimately, by addressing these multifaceted challenges and fostering a seamless integration of data, digital and social infrastructures, I want to raise academic and practical awareness around the challenges of the public service environment and whether it meets the diverse needs of all citizens in an increasingly digital world.

VIII. Word of thanks

I want to extend my heartfelt thanks to everyone who has been a part of this journey. While it may appear that academics work in isolation, the truth is that I have been supported by an incredible network of people, far beyond what I could have imagined.

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Sarah Giest earned her PhD with distinction in Political Science from Simon Fraser University in Canada, focusing on local government initiatives for innovation clusters. She also holds two Master's degrees: one in Political Science from Bonn University in Germany, and another in Society, Science, and Technology Studies from Aalborg University in Denmark and Lund University in Sweden. In September 2014, she joined the Institute of Public Administration at Leiden University as an Assistant Professor and later became an Associate Professor. On August 1, 2023, Sarah was appointed as Professor of Public Policy at the institute, with a focus on innovation and sustainability. Sarah is actively involved in several national and international committees that contribute to both academic and public policy landscapes. In the Netherlands, she serves on the Board of the Dutch Network of Women Professors (LNVH) and the Leiden-Delft-Erasmus BOLD Cities Centre. She was the Vice-Chair and Chair of the Young Academy Leiden (YAL) from 2021 to 2023. Internationally, Sarah chairs the Data-driven Transformations in Policy and Governance Committee of Data and Policy and is on the Editorial Boards of Government Information Quarterly (GIQ) and Policy Design and Practice. Since the summer of 2019, she has been an elected member of the International Public Policy Association (IPPA) College and serves as Vice-President of its Executive Committee since 2023. Her book, 'The Capacity to Innovate' based on her PhD research, was published in 2021.

In her inaugural lecture, Sarah examines how the government's emphasis on data and digital applications affects citizens' experiences with public services, questioning whether these strategies truly make services easier, faster, and more accessible. Through the real-life experiences of citizens like Hans, Soraya, and Sylke, she highlights the challenges governments face in reconciling the push for standardized, data-driven solutions with the need for nuanced, individualized support provided by local resources. This tension underscores a gap between digital efficiency and real-world effectiveness. Sarah argues that integrating three infrastructures – data, digital, and social – is essential for bridging these divides. Neighborhood resources and social infrastructure play a crucial role in ensuring that all citizens benefit from digital public services. To create a more inclusive public service landscape, Sarah highlights research areas around understanding the role of social capital in accessing digital services, defining responsibility for bridging online-offline gaps and integrating data-driven approaches with lived experiences. She also advocates for interdisciplinary research and calls for a collaborative effort between government and community stakeholders to bridge the gap between online and offline realities.

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