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URBAN DATA SHARING FOR THE PUBLIC INTEREST

THE NEW HANSE APPROACH TO DATA SHARING

By Andreas Pawelke, 9 September 2022

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1. INTRODUCTION

Much of the data that is critical for addressing societal challenges sits with a very small number of organizations,[1] mostly private companies.

While there is higher public awareness of the opportunities that data sharing could unlock than only a few years ago, the debate has so far largely focused on abstract frameworks, models and structures.[2]

Practical applications, let alone institutionalized sharing arrangements, are rare—even at the city level, where data plays an increasingly central role in areas such as traffic flow management, infrastructure design, and sustainable mobility planning.

Various documents outline the pros and cons of different data sharing models,[3] but none provide a tested, proven and easy-to-use approach to share data in cities among actors from the private, public, and third sectors.

The New Hanse (TNH), an initiative of the Hamburg-based The New Institute (TNI), was launched in 2021 to fill this gap. The initiative seeks to generate a blueprint for urban data sharing that outlines the major legal, policy and technological building blocks needed for safe, secure, and responsible data sharing in cities.

To accomplish this goal, TNI has partnered with the city of Hamburg and its Chief Digital Office, the Urban Data Platform, and the Traffic and Mobility Transition Authority to develop, test, and refine a data-sharing arrangement that facilitates access to mobility data held by private companies.[4]

The overall guiding question of the initiative is: How might we make data held by private companies accessible to third parties to be used for the public interest? TNH is focusing on cities as the geographic unit and mobility data as the domain of interest.

This report presents the most-discussed data sharing models, along with insights from previous pilots and research into data sharing structures and processes. It also presents learnings from early engagements with TNH partners and collaborators. The report then describes the current approach of TNH, situating it within the wider data-sharing landscape. While the focus of TNH is on business-to-government data sharing, the initiative seeks to contribute to the wider debate on data sharing for the public interest, thereby investigating the challenge of bridging aspirations to share data for individual,

collective, and societal benefits with concerns about negative implications for privacy and competitiveness.[5]

2. CONTEXT

2.1. Data Governance vs. Data Sharing

The value of data can increase exponentially if it is shared and combined with other sources of data.[6] However, data held by the private sector is rarely accessible to governments and other organizations for use in addressing societal challenges.[7] The lack of effective, responsible data-sharing initiatives points to more-foundational challenges in the realm of data governance.

Data governance can be defined as the set of laws, policies, regulations, authorities, and decision-making structures and processes that guide how governments, companies and other actors collect, share and use data.[8] Data governance is sometimes referred to as the "second wave of the data revolution,"[8] with the first wave having focused more on the use of new types of digital data (sometimes referred to as big data or non-traditional data) by businesses than on questions of how data should be governed, managed, and made accessible to third parties.

In recent years, a flurry of models, approaches, and mechanisms have been proposed. These have been labeled as alternative data governance, data sharing models or data access mechanisms.[9, 3, 10] Currently, confusion and ambiguity abound regarding concepts like data commons, data cooperatives, and data trusts—leading to people using specific individual concepts in more than one way and with multiple meanings.[11]

Although clearing up that confusion is not the aim of this report, it is worth highlighting the growing awareness among experts that drives much of the development of these new approaches and models:[12] the need to look at the collective, rather than only the individual, level when conceptualizing better ways to govern (personal) data.

The relational nature of data—other people's data can affect us as much as the data we generate ourselves—requires rethinking individual consent as the dominant mechanism currently used to govern the use of the data we produce.[13] Certain forms of data trusts, for example, seek to address this problem by removing binary, often ill-informed consent mechanisms and the need to assert individual data rights through complex legal processes by

introducing data intermediaries or stewards, thereby removing the traditional link between data collection and control.[12]

A variety of models for data governance, sharing, and access have emerged during the past few years. The most prominent are described below.

A commons is a system to govern and use a shared or common-pool resource. In a **data commons**, a group of actors collectively manage data as a shared resource. Some data commons are openly shared, while others are kept private; some of the private types exist to generate revenue from selling (some of) the data or the insights generated from it. The concept of the commons when applied to data should be used as a metaphor rather than an analytical construct, because traditional commons concern tangible, rival goods, whereas data is intangible and non-rivalrous.[14]

The notion of a **data cooperative** refers to the voluntary collaborative pooling by individuals of their (personal) data for the benefit of the membership of a larger group or community.[15] Data cooperatives are based on contractual arrangements that make them easier to set up than other structures. They are well suited for the empowerment of groups of individuals,[16] because the pooling of participants' respective individual data provides them with collective (bargaining) power they would otherwise be unable to secure.

In a **data trust**, a third party is appointed as a fiduciary to govern, manage, and make decisions in the best interests of those providing the data. This requires that trustees act with undivided loyalty in pursuing the best interests of the trust's beneficiaries, with a fiduciary duty considered the highest level of obligation that one party can owe to another.[17]

The term "data trust" is currently used to describe multiple different approaches to data governance and data sharing. A narrow definition describes a data trust as "a mechanism for individuals to pool their data rights into an organization that: provides independent stewardship of those data rights; embeds fiduciary responsibilities in its ways of working; operates within a framework of institutional safeguards; and facilitates collective action."[18] A broader definition goes beyond the individual to include organizations as the central actors in data sharing, referring to data trusts as "repeatable framework of terms and mechanisms […] to facilitate the sharing of data between organizations holding data and organizations looking to use such data."[19]

Like the other models described above, **data collaboratives** are a new form of cross-sector, public-private partnership designed to leverage (often corporate)

data in ways that enable its use in addressing societal challenges. The term "data collaboratives" emphasizes the process of collaboration between parties, going beyond the mere sharing of data.[20] The focus of data collaboratives is on private-public data sharing, but the data in a collaborative may come from a range of sources, including nonprofit and academic organizations.

2.2.   The Rationale

Data has been described as the world's most valuable resource—but this is not due only to data's economic value.[21] In fact, several of society's greatest challenges require greater data access, more collaboration, and increased analytical abilities.[22]

Calculating the value of data is inherently difficult.[23] The extent to which data's value increases when it is shared is even more difficult to determine, as its value is largely unknown until it has been used for a particular purpose (data as an experience good). What's more, the value of data does not come from a single dataset, but from combining datasets that have different sources.[24] There are at least three different rationales for actors to share data:

Economic: Data is a key ingredient in businesses' value creation processes. Wider access to data through sharing arrangements can help advance business innovation and therefore drive economic growth. Some experts suggest making data sharing mandatory for large tech firms, to allow start-ups to use such data to build products and businesses, thereby increasing competition in certain markets.[25]

Public/Environmental/Social: The value of better access to data is not purely economic, but arises when "governments deliver more effective public services; when our environment is clean and diverse; and when people live happier and healthier lives."[26]

Fairness/Justice/Power: Power asymmetries embedded in our social relationships can be compounded through poorly governed use of data.[16] Making (user-generated) data more widely accessible so that it can be managed by intermediaries and/or trusts can help shift power away from data collectors (companies) and toward data subjects (citizens).[27]

2.3.   The (Policy) Debate around Data Sharing

The debate around data sharing (and data governance more generally) has shifted over the years, from being mostly focused on data philanthropy and the

voluntary sharing of data by companies,[28] to increasing calls for mandatory data sharing:[29] requiring companies to share some of their data with government and other actors that pursue public interest goals. In addition, as growing amounts of data are constantly collected while we go about our lives, we increasingly realize that we are connected by data and that we need collective governance arrangements to account for the ways in which other people's data affects us.[30]

Despite recent advances on the policy (and legal) front, barriers remain high for private-to-public data sharing. Reasons frequently highlighted in research,[2, 24, 31] and confirmed in discussions with potential data providers in Hamburg, include the following:

- A lack of trust, which is also due to the lack of viable operational models and secure technical systems that would enable safe and reliable data sharing.

- Unclear benefits, as data sharing collaborations often cannot be directly monetized by a data supplier.

- Perceived reputational, commercial, and legal risks, such as the fear that sharing data will cause companies to lose their competitive advantage.

- Public bodies lack knowledge, time, and human resources to either identify valuable datasets or find the capacity to process them.

- Ex ante financial costs (including costs associated with identifying appropriate data sharing partners, brokering contractual arrangements, reformatting data, and setting up sharing infrastructures). In our discussions, potential data providers often cited these costs as a reason for their hesitation to explore data-sharing opportunities.

- Fears that data sharing could interfere with a company's data-monetization strategy.

- Commercial confidentiality and the risk of information leaking to competitors.

- Lack of clarity regarding how shared data will actually be put to use and whether it will benefit citizens, customers, or the city.

- Data protection concerns.

The research shows that in many cases, data sharing is not enabled by philanthropy or corporate social responsibility (CSR) considerations, but is instead propelled by companies being required to share data because of procurement rules and regulations, licensing requirements, or some other (legal) obligation.

3. BUILDING BLOCKS

The choice of the right data-sharing model should not be the starting point of the scoping or inception phase of a data-sharing initiative. Rather than first asking whether a data trust, a data cooperative, a data collaborative, or any other model is most suited, a sharing initiative should consider using the following building blocks to find answers to questions about actors, access mechanisms, and governance, as well as legal and technological requirements.

3.1. Actors & Roles

The actors and their roles can vary greatly depending on the purpose of a data-sharing initiative and its specific embedded context. In business-to-government data sharing, there are two main types of actors: government and business. Although this may seem straightforward, it rarely is, given the different interests, cultures, and requirements of the different ministries, departments, and units involved on a government's part. The same is true on the business side. When more than one company become involved as data providers, the complexity of the legal, technical, and governance arrangements increases exponentially.

Not only the number of actors can vary from one data-sharing initiative to another, but also the roles they may take on. For example, in business-to-government data sharing, governments can 1) operate at the receiving end, making use of the provided data by the private sector to improve public services; 2) act as data intermediary, gathering, processing and distributing the data to users; 3) share data itself with users outside of government; and 4) any combination of all three. Moreover, governments can play various other roles as regulators and enablers that set the conditions for a data-sharing initiative.

Unlike businesses and other actors involved in data-sharing initiatives, governments are required to promote the public good by ensuring that data sharing, in whatever form, benefits society and not just a few players.
The role of companies in a business-to-government data-sharing initiative is more straightforward. In most scenarios, companies' sole task is to share data with public-sector entities. However, they can also be at the receiving end, getting access in exchange to government data, and/or access to data shared by other companies if more than one company is involved.

However, what drives companies to participate in a data-sharing initiative? How can businesses be incentivized to share data? Our findings and existing research point to the following reasons companies might be willing to do so:[24, 31]

- Bartering for data: Through the WAZE Connected Citizens Program,[32] the company engages in a two-way data exchange with cities, in which real-time traffic data is exchanged for private data.

- Fair compensation/tax incentives: Companies incur costs to make data available, including time and resources for preparing the data, adapting it to the specific request, and building the infrastructure necessary for its transmission (e.g., APIs). For business-to-government data sharing to become sustainable, these initiatives need to become mutually beneficial. These incentive types have also been highlighted in our discussions with companies.

- Improved government services and public infrastructure: Some micro-mobility data companies we spoke with have placed particular emphasis on this, arguing that they will share data if it helps improve, for example, the city's bicycle infrastructure to meet their customers' needs.

- CSR: Contributing to the common good can be part of a company's CSR program, and may be beneficial to its reputation.

- Gaining new insights: Opening up data informs research and decision-making; it can help generate and enhance products and services based on demands and real needs.

- Mandatory data sharing/procurement requirements: The city of Barcelona ties its licenses for shared mobility enterprises that operate in public spaces to the sharing of specific data regarding vehicle status, location, and so on.

- Building relationships: Increasing collaboration with the public administration, as well as improving prospects for procurement or subsidies.

3.2.   Data & Access

While the types of actors involved and their roles are somewhat limited, the kinds of data we generally refer to when we talk about data sharing—and the different ways of enabling access to data (or their analytical products)—are much broader.

The data types in data-sharing initiatives range from highly personal data to non-personal data, from big to small, from fully open data with no or very limited access restrictions, to data that is accessible to a very few actors only, and so on. Data may come from public, commercial, and private sources. Some data types are covered by contractual arrangements, whereas others are

governed by legal requirements or specific authorizations, such as medical data.

Depending on what data are shared, and how they are shared, there need to be appropriate models and mechanisms in place to protect privacy, IP rights, and/or the competitiveness of involved businesses.

Notably, in data-sharing initiatives, it is not necessarily the data itself that is shared, but it may also be the in-house data analysis that is shared with external actors.

For non-personal data and data not under IP rights, management may be best achieved through horizontal (or inter-organizational) agreements. In some cases, the most useful sharing may be achieved via a data commons framework, with appropriate access accreditation mechanisms. In such cases, there is no need to introduce complex intermediary models or data trust-like setups.[12]

3.3. Governance & Policy

The governance and policy dimension deals with the what, who and how of rule-setting and rule enforcement in data sharing initiatives. There are a number of ways to decide who gets access and under what terms, which are the defining criteria of the models introduced above e.g. delegated/ intermediated models like data trusts or collective decision-making like data cooperatives.

Even if actors and their roles are defined and the data to be shared is determined, a whole set of questions remain around the ways decisions are made about how stakeholders govern themselves, who can make decisions about data access, and under what conditions data are shared. A non-exhaustive list of decisions that need to be made is provided below:

- In what ways and for what purposes are users allowed to use the data?
- Who makes decisions about providing access to the data? On the basis of what rules and procedures do they make those decisions?
- Who controls the data (and deals with maintenance and quality assurance)?
- What are the expenses involved in managing the data? In addition, who pays for infrastructure, platforms, and maintenance?
- Are any of the responsibilities delegated?

- How can improper use of the data be sanctioned?
- Under what business model does the data-sharing initiative operate to ensure ongoing financial sustainability?
- How are the benefits that arise from the data sharing and use fairly distributed among the stakeholders?

3.4.   Legal Requirements & Regulatory Frameworks

Legal requirements and regulatory frameworks play important roles in data-sharing initiatives. They can restrict or even prohibit certain data-sharing arrangements, and provide general guidance on which data can be shared under what conditions. Both general legislation, such as the General Data Protection Regulation and Competition Law, and sector-specific rules, such as rules and regulation for the mobility sector, need to be taken into account.

Moreover, local-level regulations like the Hamburg Transparency Law that may prohibit special-access arrangements for data that otherwise would be made available as open data, as well as national and EU-level regulation like the Data Governance Act and data licensing requirements, will need to be analyzed based on the specific needs and requirements of a given data-sharing initiative.

A review of the legal and regulatory frameworks relevant to place (Hamburg), data (largely non-personal) and sector (shared mobility) is currently under way for TNH.

3.5.   Platforms, Processes, Privacy

An entire set of technology solutions are needed for data sharing to be safe and secure, while at the same time effective. These solutions are summarized below into platforms, processes, and mechanisms for data privacy and protection.

A **technology platform** is needed for data to be stored, maintained, and shared with users based on different access rights. Data can be shared in several ways: using a centralized approach where access is provided through a single platform; via a federated approach where the data remains with its data providers and is accessed using agreed and shared interfaces, standards and protocols; or through a decentralized approach where all parties involved hold parts of the data. Stakeholders also need to agree on who is in charge of the platform, who maintains it, and who pays for its operation.

Processes need to be in place for data production, sharing, and use, including ongoing validation and verification of data quality and integrity, along with monitoring access and use.

Solutions need to be implemented to preserve **privacy, IP rights, and competitiveness,** through aggregation and/or anonymization or varying types and levels of access. These differ based on the types of data being shared (see Data & Access). Data aggregation and anonymization can enable certain forms of analysis that otherwise might not be feasible due to privacy limitations. However, the risk of re-identification of individuals remains even for aggregated and/or anonymized data.

4. SHAPING THE NEW HANSE

There are no off-the-shelf solutions for the right data sharing model. Choosing and designing an appropriate model requires making a series of large and small decisions related to the dimensions outlined above (and potentially others). Rather than selecting a particular data sharing model and adjusting it to the context and the requirements, starting with the intended outcome (the why) and working through the individual building blocks will be more effective.

4.1.   Design

The New Hanse has identified and/or put in place a number of initial building blocks to implement a data-sharing initiative for micro-mobility data. Using the five dimensions provided above, the status quo of TNH can be described as follows:

Actors & Roles: The city of Hamburg wants companies operating in the city to share data with the municipal government, and potentially with third parties. The goal of such sharing is to serve the public interest and drive smart(er) regulation, such as carbon footprint assessments and moving toward zero-emissions city logistics. The different roles the city might take on (provider, intermediary, user) are yet to be determined. Working with the departments in charge of data governance and mobility, a minimum of two private companies (mobility service providers) will act as data providers; third parties, including NGOs and academic partners, might also form part of the data-sharing initiative. TNI takes the role of an advisor and enabler to help design, implement and document the initiative, and facilitate data sharing among the partners.

Data & Access: The focus of TNH is on business-to-government data sharing, with floating shared mobility services and bicycle data as the initial data of interest. Access mechanisms, rules, and arrangements are currently under investigation and in discussion with stakeholders.

Governance & Policy: Governance might be rather straightforward, given the limited number of actors involved, and given the horizontal rather than vertical sharing arrangement of the existing data.[16] The detailed governance and policy mechanisms are yet to be determined.

Legal Requirements & Regulatory Frameworks: A legal expert is currently reviewing and analyzing the applicable legal requirements and regulatory frameworks at the EU, national, and local levels.

Technology: A suitable data management and sharing platform (the Urban Data Platform) exists within the city government; relevant data production, sharing, and use processes, as well as privacy, IP rights, and competitiveness-preserving solutions are being discussed.

4.2. Process

The way in which a workable data sharing arrangement is achieved is as important as the ultimate choice and combination of its building blocks. The main components of the process behind the design and implementation at TNH are:

- Start small by focusing on horizontal, business-to-government sharing of non-personal data, with a limited number of data providers and users, while being able to increase the scope (and complexity) by potentially integrating personal data, additional data providers, and new users, along with other forms of (vertical) data sharing mechanisms.

- Integrate specialized expertise on legal, technological, and governance questions from both the stakeholders involved (city, TNI, and companies) and external experts.

- Leverage the knowledge and experience of the international data sharing (and data governance) community via a working-group format.

- Use the data innovation challenge method to attract a variety of data users to identify and apply shared mobility services and bicycle data in Hamburg.[33]

- Document the process and related findings to create a unified, scalable, and reproducible framework for urban data sharing.

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