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DIGITAL SOVEREIGNTY: A COMPARISON OF PUBLIC DATA MANAGEMENT STRATEGIES BETWEEN FRANCE AND BELGIUM IN A CROSS-BORDER CONTEXT

SOUVERAINETÉ NUMERIQUE : UNE COMPARAISON DES STRATÉGIES DE GESTION DE LA DONNÉE PUBLIQUE ENTRE FRANCE ET BELGIQUE DANS UN CONTEXTE TRANSFRONTALIER

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Abstract - *The sovereignty challenges of public data in the face of the private sector lead local authorities to implement data management strategies. The study is based on a comparative analysis of the digital strategies of four urban local authorities between France and Belgium. These two countries are characterized by two distinct territorial organization models: a unitary system and a federal system. The results reveal an awareness of sovereignty issues by the actors who develop strategies to address them. In Belgium, the Walloon Region benefits from a great capacity for action visible through several regional initiatives, while in France, the region has limited autonomy. The comparative analysis highlights a different distribution of management, regulatory, and facilitator roles among the territorial levels of each country, which raises the question of the relevant scope for the management of public data, supported by a European legal framework. Finally, the cross-border context of the study raises the question of sharing cross-border public data. This constitutes a major challenge whose lack of response is likely to be exploited by large digital companies.*

Key-words - *public data sovereignty, data management, regional autonomy, digital ecosystem, cross-border coopération*

Résumé - *Les enjeux de souveraineté des données publiques face au secteur privé conduisent les collectivités territoriales à mettre en place des stratégies de gestion de la donnée. L'étude repose sur une analyse comparative des stratégies numériques de quatre collectivités urbaines entre France et Belgique. Ces deux pays se caractérisent par deux modèles d'organisation territoriale distincts : un système unitaire et un système fédéral. Les résultats révèlent une prise de conscience des enjeux de souveraineté par les acteurs qui élaborent des stratégies pour y répondre. En Belgique, la région wallonne bénéficie d'une grande capacité d'action visible à travers plusieurs initiatives régionales, tandis qu'en France, la région Grand Est dispose d'une autonomie limitée. L'analyse comparative met en évidence une répartition différente des rôles gestionnaire, régulateur et facilitateur entre les échelons territoriaux de chaque pays, ce qui soulève la question du périmètre pertinent pour la gestion des données publiques, soutenue par un cadre juridique européen. Enfin, le contexte transfrontalier de l'étude pose la question du partage de la donnée publique transfrontalière. Ceci constitue un défi majeur dont l'absence de réponse est susceptible d'être exploitée par les grandes entreprises du numérique.*

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Mots clés - *souveraineté de la donnée publique, gestion de la donnée, autonomie régionale, écosystème numérique, coopération transfrontalière.*

INTRODUCTION

Faced with the dominance of the private sector, local authorities are confronted with challenges related to public data sovereignty. These challenges are intensified by the growing integration of digital platforms into daily practices, a trend that evolving regulatory frameworks are attempting to address (Cluzel-Métayer, 2017 ; Courmont et Guimbail, 2024). As a result, local authorities must address these issues by managing their public data, often with limited resources (Marchand, 2022). The aim of this article is to examine the room for maneuver available to local authorities operating within two distinct organizational systems:

- A unitary organizational model, characterized by legislative power exercised uniformly across the entire territory. In this framework, regions typically have limited autonomy, with their powers defined by the central government.
- A federal organizational model, where power is shared between a central government and multiple political entities known as federated states. These states possess their own parliaments, executive branches, and constitutions (Wollmann, 2009).

The opposition between these two models should be qualified, as it obscures the wide range of possible variations and intermediate arrangements, particularly in transitional states, where new forms of so-called "regionalized states" have emerged[3] (De Bruycker and Nihoul, 1996). A comparative analysis of these two systems nevertheless makes it possible to examine various approaches to public data management and responses to sovereignty challenges, with a focus on the levers currently used and potentially mobilizable by different tiers of government. Consequently, this study also aims to identify the advantages of such levers for local levels (municipalities or intermunicipal cooperation[4]), which frequently serve as the operational scale for so-called "smart city" policies.

The proposed hypothesis is that a territorial organizational system granting significant autonomy to supra-municipal tiers enables these entities to play a pivotal role in managing, developing, and safeguarding the local digital ecosystem[5]. Such autonomy allows them to establish regulations and implement policies that foster an environment conducive to public data sovereignty in the face of private sector dominance.

The analysis is conducted in light of the territorial reconfiguration processes attributable to multiple factors, reflecting contemporary technological, socio-economic, and political dynamics. Among other effects, these factors have contributed to strengthening and valorizing the regional level, as recognized by European Union (EU) policies (Baudelle et Bihan, 2024).

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[3] Example of Italy or Spain.

[4] Alternative local governance structures to municipal mergers during local territorial reforms (Wollmann, 2009).

[5] In the case of France: report by *Data et territoires* Mission - §1-3: *la relation entre l'Etat et les collectivités, en matière de données, génère une certaine frustration de la part des collectivités* (Hennion, Altounian et Monthubert, 2023). https://www.transformation.gouv.fr/files/ressource/Rapport_Mission_Data_Territoires.pdf

The methodology involves examining the digital strategies of several urban local authorities. The rationale is that platform capitalism is fundamentally an urban phenomenon (Artioli, 2018). These authorities implement their strategies within two distinct institutional systems characterized by highly unequal levels of regional autonomy. On the one hand, France continues to restrict the autonomy of supra-municipal tiers despite decentralization policies (Desjardins et Estèbe, 2018). On the other hand, Belgium, through a process of federalization[6], has granted its regions extensive powers (Faniel and al., 2021 ; Vandermotten et Vandeburie, 2005).

The study focuses on the Walloon Region (Belgium) and the Grand Est Region (France). These two neighboring regions share a common language, which facilitates the conduct of semi-structured interviews. Both regions are located within a cross-border cooperation area, enabling an examination of the capacity of a european grouping of territorial cooperation (EGTC) to strengthen a cross-border digital ecosystem[7]. Such an ecosystem could address the challenges of public data management and sovereignty, particularly in the context of data sharing across borders.

The article is structured into four sections. A brief introductory paragraph defines the concepts of public data management, data sovereignty, and digital platforms. The methodological section outlines the interview grid design and the selection of surveyed actors. This is followed by a presentation of the findings, highlighting the varying degrees of autonomy held by local authorities. The final section interprets the results through the lens of role distribution across governance tiers in both countries, contextualized by the underlying dynamics of territorial reconfiguration in Europe.

1 KEY CONCEPTS

The exploitation and protection of local public data rely on two complementary concepts: data sovereignty and data governance. Data sovereignty refers to the storage of data in cloud infrastructures and its processing by global platforms dominated by major private actors (Baezner and Robin, 2018). It can be defined as the determination of states or local authorities to subject data flows generated within or passing through their territory to their own legislation (Hummel et al., 2021 ; Polatin-Reuben and Wright, 2014). In this sense, public data sovereignty is a variant of digital sovereignty[8] which may be viewed as an extension of the principle of state[9] sovereignty into cyberspace (Baezner and Robin, 2018).

[6] Belgium has been officially a federal state since 1993 (Constitutional Reform of May 5, 1970). This new organization of the state meets four legal criteria characteristic of federalism: 1- autonomous regions with state powers; 2- equal treatment between the different regions (or federated entities); 3- the possibility of cooperation between regions and with the central state; 4- representation and participation of the regions at the federal level through the Senate (bicameralism) (Faniel et al., 2021).

[7] The Greater Region comprises the Walloon Region (Belgium), Luxembourg, the former Lorraine region (France), and the German states of Saarland and Rhineland-Palatinate.

[8] The concept of digital sovereignty has very different uses depending on the actors who invoke it (Couture et Toupin, 2019). It is rarely used in official documents, which tend to refer more to the notion of strategic autonomy (Baezner et Robin, 2018). Strategic autonomy is a more operational concept that supports a strategy of autonomy and control over data (Danet et Desforges, 2020). Data sovereignty thus lies between the concepts of digital sovereignty and strategic autonomy (Polatin-Reuben et Wright, 2014).

[9] State sovereignty as established by the Treaty of Westphalia (1648) is defined as the right of each state to exercise exclusive and supreme power over its territory and population without external interference (Valaskakis, 2010).

Public data management encompasses the practices, processes, and strategies implemented by an organization for the collection, storage, and processing of data (Banque des Territoires, 2020 ; Marchand, 2022). Given the strategic importance of public data for local authorities[10], data management is embedded within a broader governance framework. This framework includes both the internal organization of administrations, particularly in terms of financial and human resources, and the coordination of a multi-level data ecosystem. This ecosystem connects the local territory, neighboring authorities, and supra-municipal tiers. This includes, for example, pooling existing platforms and fostering joint initiatives (Marchand, 2022). It is at this level of so-called "external[11]" governance that certain territorial tiers can play a pivotal role.

In response to data sovereignty challenges, national and European regulations have progressively established a legal framework, culminating in the General Data Protection Regulation (GDPR)[12]. The GDPR reaffirms and strengthens pre-existing rights[13] and applies to all private actors processing data of European citizens, even beyond the territory of the EU[14] (Oberdorff, 2018). In France, the management of local public data is supported by legislative frameworks[15], notably the 2016 Digital Republic Act (*Loi pour une République numérique*), which aims to address the digital transformation of society and enhance the security of data ecosystems (Cluzel-Métayer, 2017 ; Oberdorff, 2018). This law also establishes Open Data as a default rule[16]. Additionally, it introduces the legal concept of a "public data service," which governs reference data[17] and data of general interest[18] areas where the state exercises full control[19]. French legislation asserts oversight over these essential datasets, reinforced by the legal notion of "return assets" (*biens de retour*): private actors, including concessionaires and social media platforms, are thus obligated to return essential data in a reusable format (Marchand, 2022)[20].

In Belgium, the protection of personal data is governed by the framework law of July 30, 2018, which transposes and supplements the GDPR into Belgian law. The legal framework

[10] These challenges and opportunities concern economic development, local democracy, infrastructure management, and public policy evaluation (Marchand, 2022). Public data management covers a wide range of topics associated with numerous issues such as economic value, the choice of technological tools, and legal obligations. In our case, it also involves issues relating to data sovereignty that may apply within the territory of each local authority (Banque des Territoires, 2020).

[11] (Banque des Territoires, 2020).

[12] Implemented in 2018 (EUR-Lex, 2018).

[13] Rights to information, access, complaint, rectification, erasure of data, withdrawal of consent, and objection to the processing of their data within the limits of public service missions and security issues (Oberdorff, 2018).

[14] Added to this is the Digital Services Act (DSA) and the Digital Markets Act (DMA).
https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-services-act_fr
https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_fr

[15] These legislative frameworks enable the transposition of various European directives (Cluzel-Métayer, 2017).

[16] https://guides.data.gouv.fr/guides-open-data/guide-juridique/producteurs-de-donnees/quelles-sont-les-obligations (data.gouv, 2024).

[17] 9 public datasets : https://www.data.gouv.fr/pages/spd/reference

[18] Data essential to the functioning of public services (Marchand, 2022).

[19] Local authorities "*contribute to the public data service*" by transmitting data to the State (Marchand, 2022).

[20] To this end, data sovereignty clauses are one of the legal instruments that local authorities can use to access data of public interest. Applying them to data from digital platforms can be more complex, but initiatives have shown that such an approach is possible (Micheli et al., 2024). Data sovereignty clauses (DSCs) refer to legal data sharing obligations that local governments impose in their contracts to guarantee access to data of public interest (Micheli et al., 2024).

for Open Data is based on several texts, including the European Directive 2019/1024 (known as the "PSI Directive"), which was transposed into federal law (May 4, 2016) and regional law (Brussels, Wallonia, and Flanders) through decrees. The 2022 "Open Data" decree[21] thus establishes the current legal framework for Open Data and public data in Wallonia[22] (Data.gov.be, 2025).

A distinction must also be established between urban governance platforms and private platforms. Digital platforms are defined as technical devices that facilitate interactions between two or more actors. Their rise occurs within a context marked by the increasing digitization of social, economic, and political activities, which transforms modes of production, consumption, and interaction (De Bandt, 2002). This new paradigm rests on three pillars: the use of algorithms, ecosystemic thinking, and the sharing economy (Haveri et Anttiroiko, 2023). The platforms of major private actors (e.g., *Airbnb*, *Uber*, *Waze*) are distinguished by their ability to capture, analyze, and monetize the data they generate, primarily through peer-to-peer exchanges[23]. Thus, digital platforms act as intermediaries between users and service providers (Artioli, 2018 ; Dujarier, 2019). This dynamic raises critical questions about public data sovereignty, prompting public authorities to develop regulatory frameworks that enhance their expertise in data governance (Courmont, 2015 ; Dodard, 2020). Such expertise is increasingly essential, as open data initiatives reshape governance models and align with the smart city[24] strategies of local governments (Courmont, 2016).

To address these challenges, municipal authorities have developed their own platforms, focusing on public service delivery and citizen participation. These platforms aim to collect, share, and analyze data, while also facilitating coordination among local stakeholders to implement public policies and enable collective action (Courmont, 2015 ; Haveri et Anttiroiko, 2023). While managed by public administrations, the development of these

[21] Decree on the reuse of public sector information and establishing an open data policy (Data.gov.be, 2025).

[22] In association with the Wallonia-Brussels Federation.

[23] The distinction between commercial and non-commercial entities is widely accepted in scientific literature. The commercial group includes digital platforms that are a cause for concern in terms of public data sovereignty and on which regulations have been implemented by local authorities (Artioli, 2018). While private platforms remain dominated by a commercial logic, city management platforms are distinguished by their non-profit nature and their public interest purpose.

[24] The term “smart city” emerged in the 2000s in the context of the growing use of digital technologies in city management. The term is accompanied by a discourse on cities that is not without its share of fantasies, inspiring policies aimed at boosting the attractiveness and economic development of territories (Eveno, 2018). This notion is underpinned by a form of technological solutionism, whereby digital technology is seen as the answer to all problems, from infrastructure management to the well-being of residents (Rozestraten, 2016). However, beyond this narrative, the smart city is rooted in concrete transformations: those of the growing integration of digital technologies into urban spaces, which is redefining the dynamics of governance and interactions between actors (Greiner, 2024). Nam and Pardo propose a systemic conceptualization of the notion of the smart city by highlighting the interdependencies between technology, human actors, and institutions (Nam et Pardo, 2011). Their approach sheds light on the socio-technical environment in which urban data, and in particular open data, are inserted (Courmont, 2015). These interdependencies revolve around strategic objectives set by local authorities (Nguyen et al., 2017). However, they require a renewal of urban governance, the performance of which depends on the ability of local authorities to mobilize the various stakeholders in the area using digital technologies (Meijer et Rodríguez Bolívar, 2016). Peer-to-peer exchange platforms and city-managed platforms are part of the digital layer of the smart city (Artioli, 2018). The data produced and exchanged by these platforms contribute to our understanding of how cities function, as well as citizens' practices and local needs. Ultimately, the development of platforms, open data policies, and multiple information access mechanisms, combined with governance issues and emerging practices, form the common socio-technical pillars of the urban data ecosystem (Dymytrova et al. dans Verdi, 2023). An urban data ecosystem that overlaps with various concepts and notions related to the permeation of digital technology within urban spaces.

platforms requires overcoming barriers related to the reuse and accessibility of public data**.** The intermediary role, however, is often delegated to private actors (Dodard, 2020). This intermediary position is now being challenged by large private platforms, raising concerns about public data sovereignty and the risk of public sector dependency on private entities (Courmont, 2015). The growing competition between public and private intermediaries underscores the need for robust governance mechanisms to safeguard public interests in the digital age.

2 METHODOLOGY

2.1 A representative sample of urban territories from the study area

The methodology involves examining the policy levers of each region through an analysis of the digital strategies of four urban authorities. Their selection is based on a typology designed to ensure a representative sample of urban areas across the regions under study. The sample includes, on the one hand, Metz and Liège, two regional cities of comparable size located near a national border. On the other hand, it features Aubange and the *Communauté de Communes*[25] *du Pays Haut Val d'Alzette* (CCPHVA), both of which share a common industrial heritage rooted in steel and mining and experienced a major economic crisis beginning in the 1970s. These two territories have similar demographic profiles and exhibit a post-industrial residential function, further intensified by their immediate proximity to Luxembourg. By including these smaller urban areas, the study broadens its analysis of public data governance and sovereignty challenges, extending beyond major cities to encompass mid-sized and peripheral urban contexts. This comparative approach allows for a nuanced understanding of how digital strategies are deployed across diverse territorial scales

	Authority (Country)	Type of structure	Urban and regional typology	Population (2021)[26]
Local (level)	Aubange (Be)	Municipality (commune)	Industrial-urban area	17 093
	Pays Haut Val d'Alzette (Fr) (CCPHVA)	Intercommunal cooperation (EPCI)	Industrial-urban area	29 195
	Liège (Be)	Municipality (commune)	Major regional city	223 845
	Metz Métropole (Fr)	Intercommunal cooperation (EPCI)	Major regional city	197 327
Regional (level)	Wallonia (Be)	Region	Federated entity with significant legislative and executive autonomy	3 645 243
	Grand Est (Fr)	Region	Region with limited competencies defined by the central state	5 561 300

[25] A *Communauté de Communes* is one of the public establishments for intermunicipal cooperation (EPCI) that are not local authorities within the meaning of Article 72 of the French Constitution but result from local-level rationalization policies that are alternatives to municipal mergers (Wollmann, 2009).
[26] Year in which the semi-structured interviews were conducted.

Table 1 - Administrative and demographic data of local and regional authorities in the study area (Greiner, 2024).

It is important to note that the scope of this analysis is limited to the Lorraine area within the Grand Est Region, as this territory, formerly an administrative region[27], constitutes a basic unit (NUTS 2 level) [28] for the European Union's regional policies (see Figure 1).

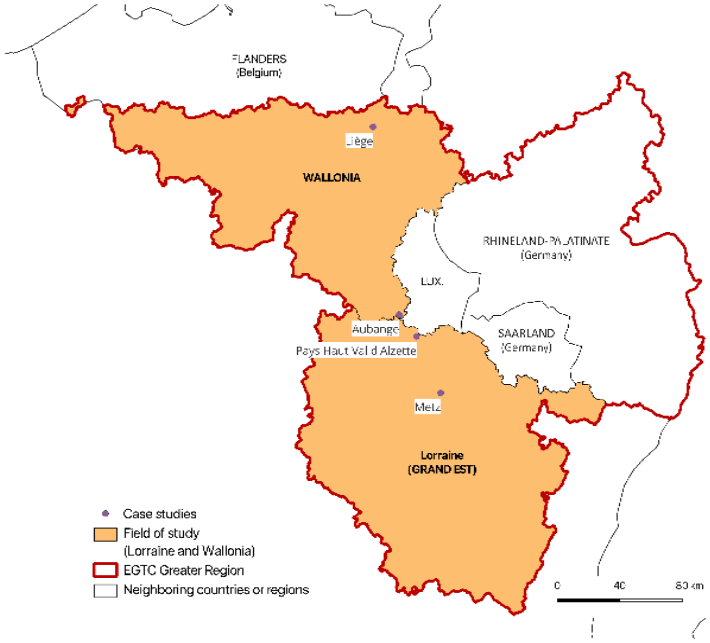

Figure 1 : location map of the four case studies within the Greater Region (EGTC). Produced by Nicolas Greiner (2025).

2.2 An interview framework for assessing digital strategies in local and regional authorities

The digital strategies of local and regional authorities engage a diversity of actors who influence and shape the local and regional digital ecosystem. Semi-structured interviews enable us to grasp these complex dynamics as well as the implicit tensions at play. This exploratory method is therefore particularly well-suited to studying the issues related to public data governance. To compensate for the absence of stakeholders from the Grand Est Region, an alternative approach based on documentary sources has been adopted.

The digital strategies of local and regional authorities were explored using a structured interview framework organized into five key themes (Table 2). A deliberate research strategy involved examining policies related to digital integration within these authorities without directly addressing the issue of data sovereignty. This approach allowed us to assess whether this concern, and its associated challenges, were spontaneously raised by stakeholders, and whether corrective or protective measures had been implemented. Additional questions

[27] Regional scope prior to the 2016 territorial reform (Legifrance, 2015).
[28] https://ec.europa.eu/eurostat/fr/web/nuts/overview

focused on the institutional frameworks of each country, enabling an analysis of the various modes of interaction between territorial authorities, as well as their relationships with private actors. Finally, questions pertaining to border dynamics sought to evaluate the extent of collaboration between local and regional authorities on either side of the border, particularly within the framework of the EGTC (european grouping of territorial cooperation). These inquiries helped identify potential areas for cross-border cooperation, including issues related to data sovereignty.

Interview themes	Explored aspects
Digital strategies	Capacity to implement a digital strategy, including human, organizational, and technological resources.
Social media and digital platforms	Perceptions and use of social media and digital platforms by local and regional authorities.
Economic context	Assessment of strategies and resources that actors can deploy based on the economic dynamics of each authority.
Institutional organization	• Autonomy of the regional level • Relationships between local authorities within a specific territorial structure • Public-private partnerships and interactions between public authorities and private actors.
Cross-border cooperation	Evaluation of the degree of collaboration established across borders in the context of digital strategies and/or responses to associated challenges.

Table 2 – Interview framework: five key themes (Greiner, 2024).

2.3 Diversity of actors involved in local public data management

The actors were selected based on their roles that may directly or indirectly influence the digital strategies of the studied territories. These include the political and administrative leaders of the four local authorities, actors operating within their respective regional levels, as well as additional supra-municipal tiers. The investigation was also extended to private-sector actors providing digital services or advisory support to local authorities. Members of civil society, including associations and economic interest representatives potentially influencing the digital strategies of local authorities, were likewise incorporated. Additionally, two academics who have collaborated with at least one of the two local authorities in each country on urban projects leveraging digital tools were included. A total of 19 actors were interviewed (see Table 3).

Type of actors	Category	Belgium		France	
		Aubange	Liège	CCPHVA	Metz-Métropole
Elected officials	Political actors	Mayor	Alderman (digital affairs)	President of the council community	Vice-president and elected officials

<table>
<tr><td rowspan="2">Smart city managers, service directors</td><td rowspan="4">Institutional actors</td><td rowspan="2">General Director</td><td rowspan="2">No actor[29]</td><td rowspan="2">General Director</td><td rowspan="2">Director of digital department</td></tr>
<tr></tr>
<tr><td rowspan="2">Regional or national agencies, public services</td><td colspan="2">Wallon Digital Agency (AdN)</td><td colspan="2">Cerema[30] (Smart Cities and Territories mission)</td></tr>
<tr><td>Inter-municipal agency[31] (digital expert)</td><td>N/A[32]</td><td colspan="2">N/A</td></tr>
<tr><td>Associations, civil society</td><td>Associative actors, group representatives</td><td>No actor[33]</td><td>Association member</td><td colspan="2">Representative of a consular chamber</td></tr>
<tr><td rowspan="2">Companies specializing in digital services or consulting</td><td rowspan="2">Economic actors</td><td rowspan="2">Company (Management sofwares)</td><td>Company 1 (Lighting)</td><td colspan="2">Company 1 (IT system)</td></tr>
<tr><td>Company 2 (Mobility)</td><td colspan="2">Company 2 (Consulting)</td></tr>
<tr><td>Academics, researchers</td><td>Scientific actors</td><td colspan="2">Academic (University of Liège)</td><td colspan="2">Academic (University of Lorraine)</td></tr>
</table>

Table 3 - Actors interviewed by type, category and territory (Greiner, 2024).

3 RESULTS

The respondents discussed various public policies implemented for the deployment of digital technologies within their respective local authorities. The findings presented in this section pertain specifically to public data governance. Notably, concerns regarding data sovereignty featured prominently in the actors' discourse, indicating an increased awareness of this issue amid the growing power of the private sector and global digital platforms. This suggests that territorial stakeholders are increasingly attuned to the challenges posed by the dominance of private actors in the digital landscape.

3.1 The digital strategies of Aubange and CCPHVA: stakeholders aware of the challenges associated with data sovereignty

The scope of digital strategies in major regional cities such as Metz and Liège is more difficult to define due to the multitude of departments and sub-departments potentially involved in digital policy-making. Infrastructure modernization stands out as a primary entry point for their digital strategies. In contrast, the contours of digital strategies in Aubange and the CCPHVA are more clearly identifiable, as the political and administrative bodies engaged in local digital initiatives are often limited to the interviewed actors. Participatory democracy objectives are frequently mentioned, particularly in Aubange, where this theme is a cornerstone of the municipality's smart city policies, exemplified by the use of an online participation platform. In both cases, the immediate proximity to the Luxembourg border appears to foster competitive emulation in leveraging digital tools for local development.

[29] Unavailability of the General Director or Digital Manager for the municipality of Liège.
[30] Center for Studies and Expertise on Risks, the Environment, Mobility and Developpement.
[31] Intermunicipal associations in Belgium (*intercommunales*) are equivalent to joint associations in France (*syndicat mixte*).
[32] Only the IDELUX intermunicipal association operating in the province of Luxembourg and BEP (Namur) have developed a digital hub.
[33] No response from the various representatives of civil society (associations) contacted who work in the municipality of Aubange.

This cross-border dynamic may accelerate innovation and the adoption of digital solutions in these smaller territories. It is within this context that the CCPHVA developed a data management platform project[34]. This platform aims to centralize data collected from sensors distributed across the territory[35]. Its purpose is to facilitate data sharing among all stakeholders to promote economic development, mobility management, and energy efficiency (CCPHVA, 2021b). For the elected officials of Aubange and the CCPHVA, data represents both an engine for economic development and a lever for territorial growth. As the mayor of Aubange stated: *"the primary objective is not to develop digital technology for its own sake, but rather to achieve broader development goals."*

Concerns regarding data sovereignty quickly emerged in the discussions. In Aubange, the general director acknowledged certain issues with the citizen participation software[36]. She noted limited access to the municipality's confidential data and that of its residents: *"For surveys, we don't have access to respondents' email addresses or their private information."* Additionally, data interoperability is not possible, and automatic data flow was not enabled by the company. This issue is also recognized by the IDELUX intermunicipal agent, who described a *"rather peculiar case"* involving a platform to which the municipality has been contractually bound since 2017: *"initially, the startup was very responsive, but over time, they became less available and unwilling to make modifications."*

The challenges faced in Aubange stand in stark contrast to the principles underpinning the CCPHVA's data management platform project (Figure 2). The CCPHVA's platform is designed in accordance with core principles that the local elected official has consistently upheld: public ownership of data, interoperability of solutions, open-source code, open solutions, and a central role for the local ecosystem. As the CCPHVA official emphasized: *"The tool must belong to us from the outset*[37]*."*

[34] ECLOR platform. The ECLOR platform project is financially supported by the Investments for the Future Program via the City of Tomorrow Fund, which is operated by Banque des Territoires on behalf of the French government and the Moselle department (Capgemini, 2018 ; Gouvernement.fr, 2018). The cost of the project is estimated at €1 million (Golini, 2024). The CCPHVA is the only public entity within which the project is being implemented.

[35] In the case of early applications such as street lighting, the project relies on partnerships with local start-ups (CCPHVA, 2021a).

[36] The software is not linked to the digital service company investigated as part of the study

[37] These principles are reaffirmed on the EPCI website: "*The CCPHVA has made a very clear choice to exercise control and public sovereignty over this data. It decides on the format and uses of the data produced for its services and guarantees respect for the protection of its residents' personal data. An ethical charter and control tools will be developed in parallel with the technological developments of the project*" (translated from French) (CCPHVA, 2021b).

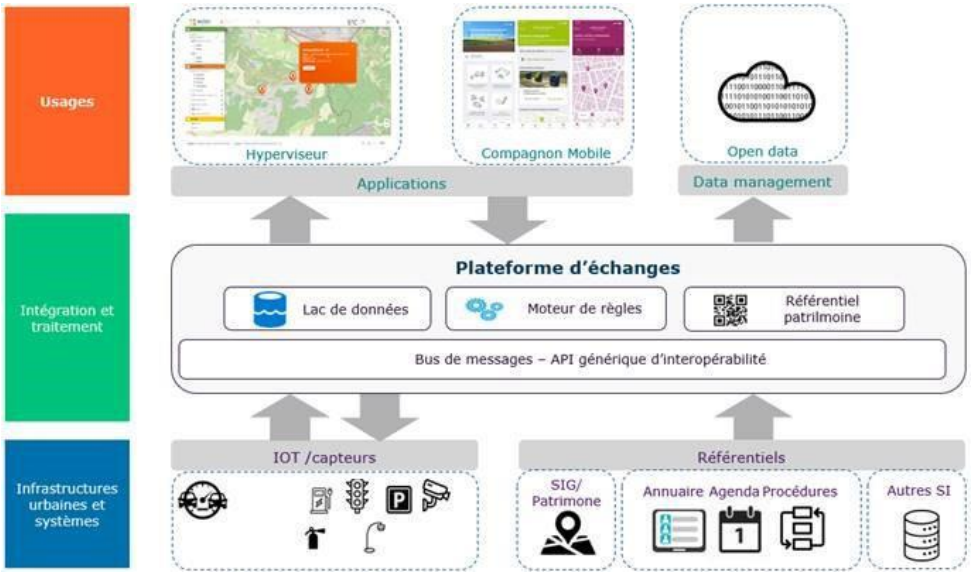

Figure 2 : the ECLOR platform architecture, as presented on the CCPHVA's official website (CCPHVA, 2021b), represents the technical framework of a data exchange platform within a local authority. It illustrates how data is collected, processed, and shared among stakeholders, adhering to interoperability and security standards to address the challenges of public data governance and sovereignty. This architecture reflects the political, institutional, and technical commitments that underpin a territory's digital sovereignty. In the case of the CCPHVA, it involves collaboration among municipalities within the same intercommunal structure, as well as public-private partnerships. By explicitly outlining these choices, the authority ensures operational transparency in data management and valorization, while strengthening its autonomy in relation to dominant global digital actors.

The elected official had a clear vision from the outset: establishing public governance of data that would enable the territory to collaborate with Luxembourg and other local authorities in France. This objective was, in fact, part of the state's mandate. The president and the general director emphasize the importance of robust tools, which were defined well in advance of the project, with the innovation partnership[38] playing a key role. Additionally, they highlight the involvement of *"highly skilled lawyers"* who effectively safeguarded the territory's interests in negotiations with the private-sector groups involved in the collaboration. This strategic approach ensured that the project aligned with the territory's long-term goals while protecting its autonomy.

3.2 Wallonia: capacity for action in digital strategies

Within its areas of competence, the Walloon Region relies on the Digital Agency (AdN) to support its digital transition. The Digital Wallonia strategy[39], structured around 58 measures,

[38] Legal framework established by the government that "*aims to facilitate innovative public procurement and help public purchasers make better strategic use of their markets to stimulate innovation*" (Ministère de l'économie, 2023b).

[39] At the time of the interviews, the digital strategy included in the Walloon government's General Policy Declaration (DPR) (2019-2024) was broken down into five "major ambitions" for the "digital transformation" of the Walloon region. These are digital uses (1), smart territory (2), the digital economy (3), digital innovation (4), and digital administration (5) (Digital Wallonia, 2024a). The digital strategy (2024-2029), known as the "digital transition," is a continuation of this approach and aims to strengthen support for digital transformation and its challenges under the leadership of the Digital Agency.

is operationalized through 7 thematic hubs[40], including the Foresight and Territorial Intelligence hub, where one of the interviewees is employed (Digital Wallonia, 2024b). The strategy's core themes include digital economy, corporate digital literacy, public administration digitization, and citizen services. The AdN representative highlights several concrete actions that demonstrate the region's significant capacity for intervention, such as the regional connectivity observatory tool[41] (Digital Wallonia, 2024c): *"While operators retain control over their investments, the region has a say."* Regarding public data sovereignty, the Walloon Region has chosen to regulate contracts between businesses and municipalities through the Smart Region Charter (Rawart, 2023). Although non-binding, this charter aims to protect the interests of Walloon local authorities by enabling them to identify companies that adhere to the principles and values set by the regional level[42]. Notably, the management software company interviewed for this study complied with the charter in its contract with the municipality of Aubange.

https://www.digitalwallonia.be/fr/publications/strategie-digital-wallonia-dpr-2024-2029/

[40] According to the official website there are six hubs in 2023 (Agence du Numérique (AdN), 2023)

[41] The Walloon Region's capacity for action can also be seen in the agreements signed with operators: *"The Walloon government has committed to no longer taxing telecommunications towers, in exchange for which operators will invest the money saved in connecting white areas"* (Adn agent). The results are considered positive: *"In the 39 municipalities in the white zone, connectivity has increased from 0% to over 89%"* (Adn agent)

[42] This type of initiative can be seen in France in cities such as Nantes, with its Metropolitan Data Charter concerning the collection, processing, and storage of data deemed to be of *"metropolitan interest"* which has been signed by around 50 private partners (Banque des Territoires, 2020 ; Marchand, 2022).

Aider à la transformation numérique de nos villes et communes

Cette charte s'inscrit dans l'objectif général de transformation numérique des villes et communes wallonnes, notamment au moyen d'applications mobiles multi-services et ouvertes à destination des citoyens. Elle doit également servir les intérêts des villes et communes wallonnes en facilitant l'identification des acteurs du marché qui adhèrent à ses principes et valeurs.

Avec cette charte, Digital Wallonia entend pousser les acteurs du marché à s'engager à respecter, sur une base volontaire, un ensemble de principes et de valeurs s'inscrivant dans le développement de la Smart Région au service du citoyen wallon, définie par la Stratégie Numérique Digital Wallonia.

Principes et valeurs de la Charte "Smart Region"

Les principes et valeurs essentiels de la présente charte sont les suivants :

- Le respect par ses signataires de l'état de l'art, des standards technologiques et des principes d'accessibilité, de sécurité, d'ouverture et l'interopérabilité des solutions proposées, ainsi que des réglementations en vigueur aux niveaux régional, national et européen.
- Le respect du principe de la concurrence du marché, pour offrir un service optimal aux utilisateurs et un libre choix aux communes wallonnes.
- Le respect de la gouvernance collaborative mise en place pour favoriser la pluralité et l'évolutivité des solutions proposées.
- La sécurité et la protection des données personnelles.

La charte définit également les engagements de la Wallonie envers les signataires afin de rencontrer les objectifs précités.

Les signataires de cette charte s'engagent, dans la mesure du possible, à s'y conformer. Un bilan de conformité régulier, présenté au sein du comité de suivi de la Charte, traduira la mise en œuvre de cette intention.

Figure 3 : The objective of Wallonia's Smart Region Charter[43] is to guide Walloon municipalities in their digital transformation by facilitating the identification of market actors that respect ethical, legal, and technical principles related to data sovereignty and public data management. These digital charters have become an increasingly adopted tool by local and regional authorities to frame their digital transformation.

In terms of data sovereignty, the Walloon Region has enabled a number of corrective actions in Aubange. The general director of Aubange acknowledges that the citizen participation platform[44] has begun to adapt to the municipality's requests thanks to regional intervention: *"We added a module so that people can log in with their national ID. They [the company] are required to provide us with responses in this framework."*

The Walloon Region also relies on belgian intermunicipal bodies (*intercommunales*), which are seen as intermediaries between the region and municipalities: *« They play a very important role and act as a relay for us. »* (AdN agent). Some intermunicipal bodies in Belgium are perceived as key drivers of digital tool deployment: *« IDELUX and BEP[45] in Namur are two leading forces among the seven Walloon intermunicipal bodies. »* (AdN agent). These intercommunal bodies are subsidized by the region to support digital deployment, with upcoming funding allocated for connectivity initiatives. In the context of this study, IDELUX serves as a support structure for municipalities in the province, assisting with data management through smart solutions (including cybersecurity tools), the

[43] https://www.digitalwallonia.be/fr/publications/charte-smartregion/
[44] To date, the contract between the municipality of Aubange and the company has been terminated.
[45] *Bureau Économique de la Province de Namur* (Economic Office of the Province of Namur).

development of smart city strategies, and the digitization of public administrations (IDELUX, 2023)[46].

3.3 The Grand Est Region: financial support, projects, and limited autonomy

Due to the absence of interviewees, an analysis of official sources[47] provided insight into the actions undertaken by the Grand Est Region within its areas of responsibility (Grandest.fr, 2024). This analysis revealed funding programs aimed at supporting the digital transformation of businesses and local authorities, many of which are financed through European funds. Digital development is one of the 30 objectives[48] outlined in the region's development strategy[49]. Key themes include broadband coverage across the territory and the adoption of digital tools by local governments[50] (Grand Est, 2019). The digital transition is further supported by the Grand Est Développement agency[51], which focuses on environmental, digital, and industrial transformations in the region. Its mission is to promote innovative solutions, assist businesses, and support local territories through innovation and investment projects, with the goal of enhancing the region's competitiveness and attractiveness (Grand Est Développement, 2025).

Additionally, media reports mention a regional cloud infrastructure project[52]. As part of its economic recovery plan[53], the Grand Est Region aims to provide public and private actors with a local data storage infrastructure operated by regional data centers. The stated objective is to reduce dependence on major digital corporations, particularly American ones. This strategy aligns with similar initiatives undertaken by other local authorities across France[54].

According to the representative of the chamber of commerce, the Grand Est Region provides *"significant financial support"*, but its limited competencies only allow for *"minor adjustments."* The Cerema agent views French regions as an important lever, given their

[46] As part of its support for municipalities in the province of Luxembourg, Idelux offers assistance with digital transition. The intermunicipal association manages contracts through a central purchasing body and acts as an intermediary between local authorities and service providers. Its services cover areas related to the deployment of digital technology in local authorities and public administrations: cybersecurity, smart solutions (e-services, mobile applications, etc.), mobility management (sensors, parking, etc.), computerization of administrations, and energy projects (IDELUX, 2023).

[47] Official website of the region https://www.grandest.fr/ and the regional processing agency https://www.grandestdeveloppement.fr/

[48] Objective 18: « accélérer la révolution numérique pour tous » (Accelerate the digital revolution for all) (Grand Est, 2019).

[49] *Schéma régional d'Aménagement, de Développement Durable et d'Égalité des Territoires (SRADDET)* (Regional Plan for Development, Sustainable Development, and Territorial Equality) currently being amended https://www.grandest.fr/wp-content/uploads/2025/01/rapport-du-12-decembre-2024-projet-de-sraddet-modifie.pdf

[50] A support plan for municipalities promoting video surveillance and assistance for rural areas have been identified. The region's role is to identify issues, provide advice, and support the operational rollout of local authority projects. https://www.grandest.fr/soutien-collectivites-usages-numeriques/?highlight=num%C3%A9rique
https://www.grandest.fr/actualites/le-numerique-transforme-nos-ruralites/?highlight=num%C3%A9rique

[51] Formerly Grand E-Nov+

[52] https://www.usine-digitale.fr/article/la-region-grand-est-lance-son-propre-cloud-souverain-pour-securiser-ses-donnees.N2234720

[53] 2021-2027 plan based on regional recovery and energy transition pacts, providing assistance to individuals, businesses, and local authorities https://www.grandest.fr/grands-projets/environnement/pactes-territoriaux-de-relance-et-de-transition-ecologique/

[54] This is the case in the Bourgogne-Franche-Comté Region for the creation of local clouds, as well as other local authorities that have developed open-source strategies, such as Lyon and smaller municipalities such as Ville-la-Grand (Hubert, 2024).
https://www.lyon.fr/actualite/action-municipale/la-ville-de-lyon-renforce-sa-souverainete-numerique
https://www.ledauphine.com/politique/2025/06/14/la-municipalite-ouvre-la-voie-de-l-independance-numerique

management of European funds and their ability to act within their areas of responsibility, particularly when driven by local stakeholders[55]. However, they face political constraints: *"The difficulty is that regions do not make laws; they can facilitate cooperation and drive initiatives, but they cannot change regulations"* (Cerema agent). While regions hold economic influence, they lack *"legislative power to impose constraints on markets"*. This situation is further complicated by the State's failure to act as a regulator: *"A more ambitious policy is needed […] Today, the State is absent, has sidestepped its responsibilities, and has delegated all highly strategic sovereignty issues to local authorities."* Decentralization has thus allowed the State to shift digital governance responsibilities to local governments, but many municipalities lag behind due to the absence of higher-level planning or local leadership: *"Some are completely behind because there are no plans or local champions"* (Cerema agent).

This perspective is shared by the chamber of commerce representative: *"Regions have economic competencies but lack the means because the State has always retained control over resources from above, making it complicated."* The interviewee contrasts this with Germany: *"In Germany, the Länder implement full-fledged economic policies, and the (French) State will have to accept relinquishing some fiscal control so that our regions can take the lead."* For the representative, decentralization should entail greater trust, and the limits of the French model have been reached: *"We haven't gone further when we expanded the regions[56], we didn't give them the necessary resources."* These remarks align with the findings of the report *AI, Territories, and Proximity*, which highlights the gap between, on the one hand, Open Data obligations and the opportunities they present, and on the other, the technical and financial challenges that smaller local authorities face in complying with them (Gacquerre and Michau, 2025).

The interviews reveal that relationships between major digital corporations and local authorities often materialize through data purchasing and consumption : *"We buy data from everyone, operators like Orange, Free, Google […] This raises questions about reliability, data governance, and processing, as the data isn't always in the same format"* (Elected official from Metz). The official also mentions abuses by platforms like *Airbnb*, but the most significant challenges arise with *Waze*. The app's routing algorithms, which prioritize the shortest paths, often direct traffic onto roads unsuitable for heavy circulation, creating disruptions. Such issues push local officials toward collaboration with these platforms.

At the time of the study, the city of Liège was encouraging residents to use *Waze* during tram construction works (Figure 4). The alderman took a pragmatic stance, acknowledging that the city lacked the capacity to develop a comparable platform: *"I support collaboration because we wouldn't be able to develop a platform like theirs."*

[55] The agent cites the example of Brittany, which attempted to coordinate existing systems around a territorial cooperation structure in order to avoid data being scattered across a multitude of platforms (Mégalis Bretagne, 2023) https://www.megalis.bretagne.bzh/a-propos/

[56] Territorial reform initiated in 2014

Figure 4 : Excerpt from the flyer regarding tram construction works in Liège (TEC Wallonie, 2021). This serves as a concrete example of the tensions that may arise between the efficiency of digital tools developed by major private corporations and concerns over public data sovereignty.

For the alderman, *Waze* possesses proprietary algorithms and operational procedures that the municipality cannot influence. For a city like Liège, the priority is to understand how such platforms function and leverage them effectively. Collaboration is thus seen as inevitable due to the platform's dominance: *"We know that Waze controls the data one way or another, so we might as well try to refine it and provide direct services to citizens."* (Figure 5)

Figure 5 : Excerpt from a local press article discussing the collaboration between the municipality of Liège and Waze (Wolff, 2019). The city of Liège relies on Waze, a private platform, to disseminate public information such as detours related to tram construction works. This collaboration represents a strategic advantage for Waze, as it allows the platform to obtain information not typically provided by its user community, including local events, official visits, and, most importantly, short- and medium-term public works plans communicated by local authorities (Courmont, 2018).

For the Cerema agent in France, collaboration with major digital corporations is often constrained: *"Has any local authority collaborated with Waze to prevent the app from routing cars through narrow streets? Well, I think all municipalities are compelled to do so."* The agent expresses pessimism about the situation: *"They have no choice […] Waze captures mobility data that only municipalities possess."* This dynamic reflects Waze's strategic leverage, exploiting driver needs and monopolizing emerging markets (Figure 6). For local governments, this raises critical concerns about dependency on private platforms, algorithmic transparency and data sovereignty[57] (Delbos et Capo Chichi, 2024).

[57] https://franceurbaine.org/actualites/les-villes-face-aux-grandes-plateformes-avons-nous-encore-la-main/

Figure 6 : Excerpt from the local press article "La Meuse", republished on the official Waze Belgium website (Halbardier, 2017). Waze frequently collaborates with local authorities. While such partnerships may appear to legitimize the company's role in local governance, they primarily facilitate the capture of public data and information (Courmont and Guimbail, 2024).

3.3.1 Regional digital platforms: a local alternative to big tech ?

The AdN agent asserts that the Walloon Region is aware of the strategies employed by major digital corporations to exploit data: *"We know very well why these platforms are expanding, it's to acquire data and resell it. That's why some municipalities enter agreements with Waze, to access its mobility data for their own planning."* Beyond the *Waze* example, the Walloon Region seeks to regulate such practices to ensure local authorities retain data sovereignty. The Digital Wallonia strategy[58] aims to strengthen digital autonomy through multiple mechanisms, including the AdN's active involvement in creating regulated data-sharing frameworks (e.g., Data Spaces[59]), the development of the Wallonia-Brussels Open Data Platform (ODWB) which provides public administration data in reusable formats, and mapping the regional digital ecosystem including local data centers like the Wallonia Data Center[60] (WDC).

At the regional level, other concrete actions have been implemented, such as the launch of the Wallonie-en-Poche[61] regional platform. This local platform, born from a public-private

[58] 2024-2029 (https://www.digitalwallonia.be/fr/publications/strategie-digital-wallonia-dpr-2024-2029/)

[59] A data space is a digital environment in which different organizations can share, exchange, and use data in a secure and interoperable manner. Data spaces are not physical locations but regulated spaces for data management and exchange. As such, the Digital Agency is a member of dataspacealliance.be, which is *"a unifying initiative that aims to represent Belgian stakeholders in European data space projects, stimulate the participation of Belgian ecosystems in these projects, and ensure consistency between European standards and local initiatives"* (translated from French) https://www.digitalwallonia.be/fr/publications/data-spaces-levier-strategique-wallonie-numerique/

[60] https://www.waldc.be/fr

[61] *Wallonie-en-poche* seems to be an example of a relatively well-developed regional platform that is well known among Walloon stakeholders. One respondent from the non-profit sector described it as follows: *"In Liège, we have*

partnership, enables each Walloon municipality to access a unified urban services platform (Figure 7): *"The aim is to prevent each municipality from developing its own applications, which would result in a lack of regional coherence in both data and projects"* (adN representative).

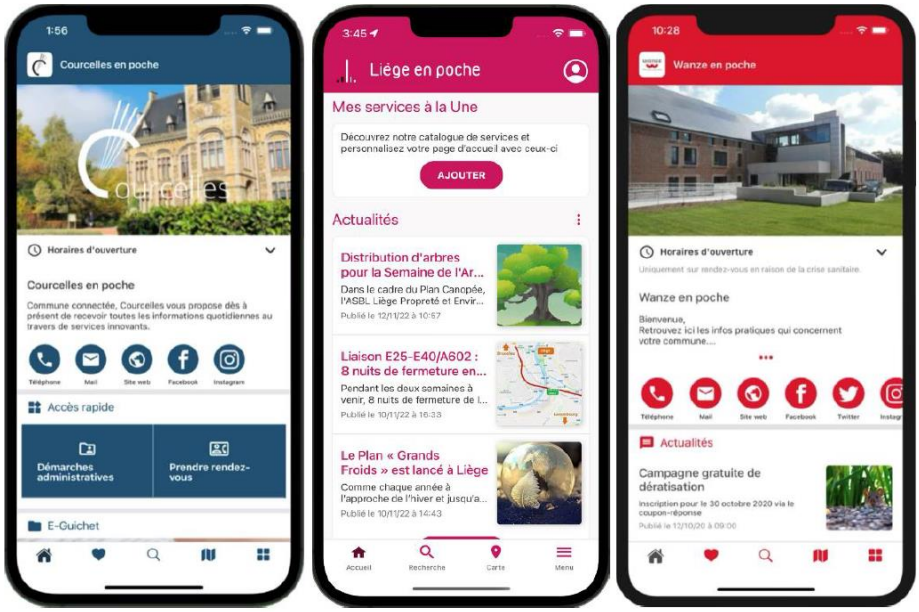

Figure 7 : "Courcelles en poche", "Liège en poche", and "Wanze en poche" are examples of the platform's municipal-level adaptations for municipalities that have adopted the system. This initiative illustrates how a region can reclaim a digital tool. By separating the roles of host (private company) and publisher (public body), the collected data remain under the control of local authorities, thereby mitigating the risks of data capture or commercial exploitation by private actors.

This project, which appeared to have stalled at the time of the interviews[62], was revitalized by the Walloon Region, which now oversees it through a public agency[63]. This regional takeover reflects a specific focus on supporting smaller municipalities in data management and sovereignty issues: *"It is our regional responsibility to provide a solution that serves as a regional framework. Many small municipalities lack the resources to develop their own initiatives"* (adN representative).

a really interesting app called Liège en poche." The CEO of a Liège-based company referred to it as *"a stakeholder that wants to be local."*

[62] Interviews conducted in 2021.

[63] *Furocité* (Futurocité.be, 2024). *Furocité* becomes the platform's publisher, while the private company participating in the project remains its host (Digital Wallonia, 2022b).

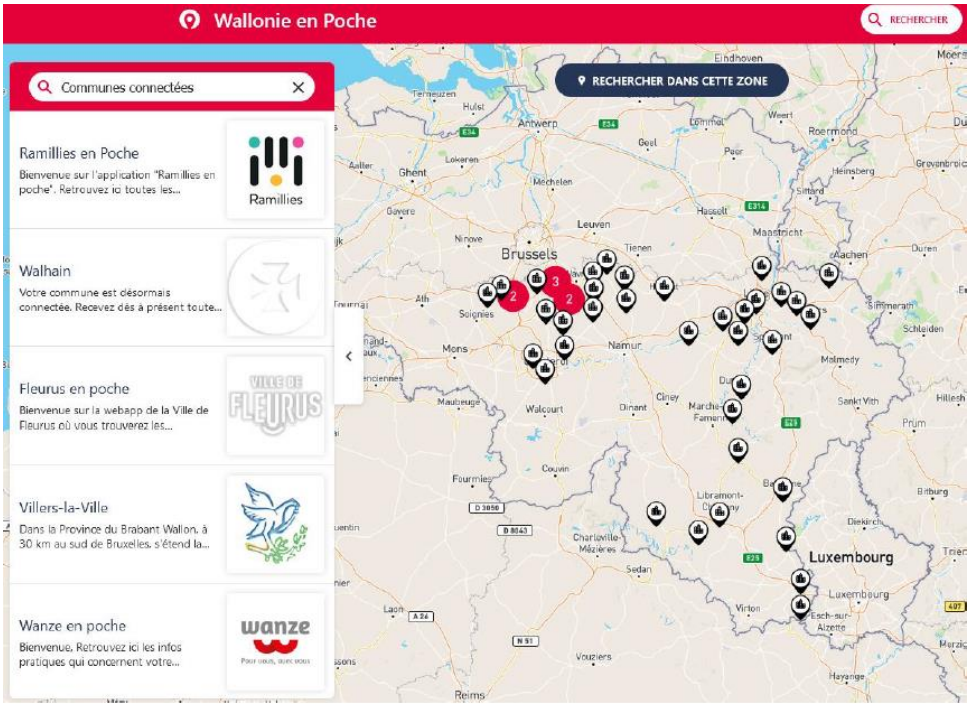

Figure 8 : Online map of municipalities connected to the "Wallonie en Poche" system (Wallonie en Poche, 2023). One of the ongoing challenges for this type of initiative is achieving widespread adoption among both local authorities and citizens. Addressing such challenges may require regular updates and innovations to remain competitive compared to private-sector alternatives.

At a more local level, the Walloon Region and the Belgian Province of Luxembourg[64] are seeking to develop alternative platforms to ensure a form of *"local sovereignty"* (intermunicipal agency representative). For instance, the mayor of Aubange mentioned a secure hitchhiking project[65]. Developed in collaboration with a French service provider[66], this free application[67], now competing with *Blablacar Daily*[68], addresses the need for short, spontaneous trips across 12 municipalities in the southern part of the province.

Across the border, the *Simplicités* card serves as a more or less accomplished example of what a French region can implement within its regulatory framework. This multimodal card allows users to recharge transport passes online for multiple urban areas in the Grand Est Region, including its rail network[69]. This harmonization simplifies the use of public transportation across cities within the region, helping to reduce the frictions that private companies might otherwise exploit to offer closed commercial solutions and capture user data.

[64] One of the five provinces of Wallonia (the province corresponds to an intermediate level between municipalities and regions).
[65] https://mobisudlux.be/
[66] SCIC : Société coopérative d'intérêt collectif (*Cooperative society of collective interest*) under French law.
[67] https://www.rezopouce.fr/
[68] In 2024, Blablacar has now launched a new carpooling app for daily commutes. https://newsroom.blablacar.fr/news/blablacar-lance-zen-une-nouvelle-appli-pour-developper-le-covoiturage-sur-les-trajets-courts-occasionnels
[69] https://www.fluo.grandest.fr/carte-simplicites/

4 DISCUSSION

The various approaches to public data management observed in our investigations and the responses to sovereignty challenges, raise questions about the competencies assigned to each territorial level. In a regulatory context that requires strengthening, local authorities appear to act empirically while relying on preexisting legal frameworks. As a result, roles are redistributed differently across governance levels, depending on the territorial organization of the country in question. In light of contemporary territorial reconfigurations, this redistribution prompts reflection on the most appropriate scope of action for each role. Furthermore, the cross-border nature of the study area highlights the challenges faced by a european grouping of territorial cooperation (EGTC) in managing cross-border public data exchanges. The difficulties in fostering cooperation reveal blind spots that may inadvertently advantage digital multinationals.

4.1 Variation in role distribution between France and Belgium

The concept of role is theorized in sociology and management science. Katz and Kahn (1966) propose a theoretical model of role-taking within organizations[70], distinguishing between the sender (who holds expectations regarding actions) and the receiver (who interprets and understands these expectations) . The role performed by the receiver influences the sender's expectations, depending on whether the interpretation aligns with the initial expectations. In this dynamic cycle, several factors, particularly the organizational framework, shape the distribution of roles which adapt and evolve based on interactions and emerging tensions (Calvo-Ryba, 2004 ; Royal and Brassard, 2010). It is through these tensions that a facilitator role may emerge (Urasadettan and Glémain, 2023). These concepts can be applied to the roles assigned to local authorities, where the organizational factor is paramount (Fort, 2018). Case studies have identified three key roles assumed by public actors: managerial, regulatory, and facilitator roles. These roles may overlap, and a single authority can fulfill multiple roles depending on its assigned competencies.

The managerial role of local authorities has evolved over time, incorporating private-sector management methods to enhance the efficiency of public services, particularly in the context of competency transfers (Laoukili, 2009). This role is also tied to the autonomy of local governments, where greater flexibility enables more responsive solutions to various challenges (Goldsmith as cited in Keuffer, 2016). In theory, Belgian municipalities enjoy broader autonomy than their French counterparts, as local autonomy is a fundamental principle of federalism (Blairon, 2022 ; INET, 2021). However, comparative studies offer more nuanced findings. While Belgian local authorities enjoy greater organizational autonomy than their French counterparts, French municipalities possess stronger legal autonomy (Keuffer, 2016). This distinction arises because, in France, relationships between local authorities are characterized by the absence of hierarchical subordination (Rihal, 2003). In Belgium, by contrast, municipalities operate under the supervision of regional governments (Faniel et al., 2021). Additionally, local governance structures differ between the two countries. Belgium has significantly reduced the number of municipalities through mergers[71], whereas France has pursued intermunicipal cooperation (Schmitz, 2004 ;

[70] (Royal et Brassard, 2010)
[71] Act of 1971.

Wollmann, 2009). This shift has led to the transfer of many competencies, including territorial planning, to French intercommunalities which now assume a managerial role over individual municipalities. Fieldwork reveals that in France, intercommunalities like the CCPHVA have effectively replaced municipalities in managing public data. Their scale enables them to pool resources, ensure compliance, and secure infrastructure, addressing limitations faced by smaller municipalities. Intermunicipal cooperation also helps mitigate the risks of fragmented governance, which could otherwise hinder the development of a cohesive data ecosystem, particularly at the metropolitan level (Kitchin et Moore-Cherry, 2021). In Belgium, this managerial role is fulfilled by the municipality of Aubange, which benefits from both local control and regional support from Wallonia. The Walloon Region itself can also take on a managerial role, as demonstrated by the *Wallonie-en-Poche* platform.
Amid the increasing complexity of management processes, the facilitator role has gained prominence within organizations as a means to foster collective intelligence. In Belgium, IDELUX, one of the few inter-municipal agencies[72] to actively address digital issues, plays a key facilitator role. It supports municipalities by providing technical solutions and direct engagement with economic operators. In France, this facilitator role is often fulfilled by regional directorates[73], such as Cerema, as well as regions, through mechanisms aimed at coordinating and uniting stakeholders (Gauthier, 2024 ; Marchand, 2022).
The regulatory role assigned to each governance level varies according to national laws and constitutions. In France, this role is exclusively reserved for the central state[74], which is frequently cited by French actors as the primary authority for addressing challenges. This reflects a state-centered problem-solving culture. In contrast, Belgian actors rarely reference the federal state, as Belgium's progressive shift toward federalism has diminished the federal government's prerogatives. Belgian regions now hold financial and administrative autonomy, reducing local expectations for federally directed policies (INET, 2021).
The Walloon Region, for instance, possesses prerogatives comparable to those of federated states in traditional federal systems. Its legislative, financial, and administrative autonomy enables it to manage initiatives like the *Wallonie-en-Poche* platform, whereas French regions can only adapt national regulations within legally defined domains. Belgian regions can oversee public contracts between municipalities and digital companies, exercising greater control over data from regional urban service platforms. French regions, however, have more limited competencies, making the management of such applications dependent on the state and other local authorities. In this context, Wallonia's role extends beyond mere policy impetus (Gauthier, 2024). Its broad autonomy allows it to simultaneously fulfill regulatory, managerial, and facilitator roles.
The distribution of roles identified in the fieldwork varies according to each country's organizational context, leading to significantly different scopes of action. For example, the

[72] In Belgium, cooperation between municipalities takes the form of intermunicipal associations that operate at the provincial level or within a more or less equivalent area. Belgian intermunicipal associations do not fall within the definition of municipal associations as established in certain European Union countries (Wollmann, 2009). This type of structure is more similar to joint associations in France.
[73] The French government has reaffirmed this role with local authorities for the implementation of increasingly complex standards (La Banque des Territoires, 2016 ; Sénat, 2016). For example, La Banque des Territoires offers standard contractual clauses concerning data sovereignty, protection, and transparency (Banque des Territoires, 2020).
[74] The French region has secondary regulatory power (*pouvoir réglementaire secondaire*) subordinate to the central authority (Vie publique, 2023b).

managerial role may be exercised at the level of an intermunicipal structure (such as the CCPHVA in France) or a region (such as Wallonia in Belgium). Similarly, the regulatory role can shift from a national state (France) to a regional government (Wallonia). These findings raise critical questions about the optimal scope for implementing a digital ecosystem capable of effectively managing public data and addressing sovereignty challenges.
Below is a summary table comparing the distribution of roles observed in the case studies between France and Belgium:

Role		Responsability	France	Belgium
Regulator[75]	Control	Oversight and corrective measures	European Union State	European Union State Region
	Compliance (projects, public contracts)			
Manager[76]	Administer	Strategic and operational decisions	Intermunicipality	Region Municipality
	Implementation of local public policies and digital strategies			
Facilitator	Coordinate	Implementation processes	Region General and territorial directorates *(e.g.,CEREMA)*	Intermunicipal agency *(e.g, IDELUX)* Region
	Stimulate[77] *the territorial ecosystem*			

Tableau 4: distribution of predominant roles in public data management, comparative case studies (France vs. Belgium).

4.2 Public data management: role distribution in the context of territorial reconfigurations

In the face of the inevitable expansion of digital scales, the nation-state remains the foundational unit of international relations in Europe (Dieckhoff and Jaffrelot, 1998). However, deregulation and the opening of borders have elevated the significance of regional and metropolitan levels, justifying the development of new political frameworks characterized by the Europe-Region relationship (Di Méo, 2018 ; Sassen, 2004). This shift is further influenced by European integration and state-specific factors, such as Belgium's politico-linguistic conflict (Vandermotten and Vandeburie, 2005). Additionally, the rise of digital platforms has contributed to the restructuring of spatial dynamics, enabling the expansion of markets through rapid and distant transactions (Kenney et Zysman, 2020).
In such a context, the regional level has been granted increasingly significant competencies, serving as an intermediate tier between Europe[78] and national central administrations. In decentralized unitary states, this intermediary role is also evident between the state and local authorities, as regions have reclaimed development mechanisms previously managed at other levels (Pasquier, 2004). Furthermore, fieldwork reveals that the regional level represents a sufficiently broad scope for implementing urban service platforms. This is because regions possess a demographic critical mass that ensures the sustainable operation of platforms developed at this scale. Consequently, the CCPHVA seeks to collaborate with other local authorities to extend the deployment of the ECLOR platform beyond its own agglomeration,

[75] Varies depending on the territorial organization of the country.
[76] (Fort, 2018 ; Laoukili, 2009).
[77] Role as a driving force on issues relating to public data (Gauthier, 2024).
[78] The regional level manages European funds (ERDF).

ensuring its long-term viability. While such collaboration currently appears unfeasible[79], it could potentially materialize at the regional level.

As a pivotal actor in the digital ecosystem, the regional level, through the three key roles identified, could design structures and regulatory frameworks that promote the management and preservation of public data sovereignty derived from local authorities and their citizens (Attour et Rallet, 2014). Such a position, however, depends on the administrative and regulatory autonomy granted by the state, as well as a legal framework established by the European Union. These two levels, the state and the EU, fulfill a regulatory role for public authority. Regarding data sovereignty, Europe is perceived as the sole institutional level capable of effectively counterbalancing major digital corporations, and through them, the United States and China. In response to these challenges, Europe is attempting to reassert its sovereignty. European regulations such as the Digital Services Act (DSA) and the Digital Markets Act (DMA) could help ensure the implementation of a secure digital ecosystem across the 27 member states (Serrat, 2019). Given that regions implement nearly 70% of European legislation[80] (Vie publique, 2023a), this dynamic suggests that the digital transition inherently carries the potential for territorial reorganization. Within this framework, regions and the EU could emerge as two key tiers structuring the anchoring of digital processes, as well as the management of public data and sovereignty challenges.

Such reorganization would require enhanced cooperation between territorial levels[81], as well as a redefinition of their roles within digital ecosystems. These ecosystems could serve as the foundation for independent digital platforms, free from the dominance of tech giants, developed and supported by regions with strong regulatory or legislative competencies. This implementation scale would enable the adaptation of digital tools to regional and local specificities (modalities), the enforcement of regional regulations (rules), and the provision of financial and technical assistance (support). This support would benefit local authorities lacking resources, as well as data-consuming territories, as fieldwork reveals in the case of major cities.

In such perspectives, the federal (or confederal) model could gain greater traction. It represents a potential evolution for nation-states within a territorial organization characterized by the interplay between regions, the state, and Europe (Di Méo, 2018). Belgium, albeit unintentionally, serves as a paradigmatic case of this dynamic.

In France, faced with increasing transfers of competencies, interviews revealed both the need and necessity to grant greater power to the regional level[82]. Despite a process of

[79] Press article from Le Républicain Lorrain dated March 2, 2024, entitled « *Cinq ans après son lancement, où en est le projet ECLOR ? »* (*"Five years after its launch, what is the status of the ECLOR project?"*) (Golini, 2024). The article is available in PDF format via the following link, in French language: https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://api.neopse.com/rest/site/files/download/1590177&ved=2ahUKEwielbbir_OOAxULXKQEHWSMKQwQFnoECC0QAQ&usg=AOvVaw2pQryurmCWvcccFspTTqNY

[80] According to the principle of subsidiarity, which organizes the powers of the different levels.

[81] Intermediate levels such as the department in France or the province in Belgium could benefit from these reconfigurations by implementing regional policies that take local specificities into account. These intermediate levels have seen their prerogatives diminish as the regional level has grown in power in both France and Belgium, where these two intermediate levels (department and province) are a legacy of Bonapartist traditions (De Bruycker et Nihoul, 1996).

[82] Since 2003, it has been possible to evaluate and assess experiments conducted by certain regions before rolling them out across the whole country, under certain exemptions. However, this possibility is rarely used. This reflects

decentralization that some consider incomplete, regions suffer from limited financial autonomy and genuine administrative freedom (Hernu, 2018). Paradoxically, the lack of regulatory authority over data has prompted local governments to develop their own mechanisms to retain control. Regional sovereign cloud initiatives serve as a tangible example: by creating their own tools, local authorities are compensating for institutional gaps and asserting themselves as key players in public data governance[83].

Within the European context, certain factors may enhance the political capacity of regional actors even within a unitary state[84] (Kernalegenn and Pasquier, 2018). The institutional weakness of the French regional level could thus be offset by strong resources and visions developed across various domains, which might be leveraged to build a regional digital ecosystem (Kernalegenn and Pasquier, 2018). The authors describe, in the case of Brittany, lobbying strategies and a regional identity that grant Brittany greater political capacity than other French regions, though this remains fragile compared to European regions with broader autonomy (Kernalegenn and Pasquier, 2018). These limited but existing opportunities for regional action in France were highlighted by respondents, particularly through frequent references made by the CEREMA agent regarding a territorial cooperation structure in Brittany[85], alongside numerous other examples documented in the literature.

4.3 Cross-border data : a blind spot for digital giants?

The cross-border area of the Greater Region (Figure 1), a european grouping of territorial cooperation (EGTC)[86], is characterized by strong and long-standing cooperation (Hamez and Defays, 2020). As such, it could serve as a framework for exchanging best practices in public data management and establishing a cross-border digital ecosystem. This ecosystem would span an area where numerous territories on both sides of the border share common challenges, particularly in terms of mobility.

In this regard, Luxembourg, frequently mentioned by stakeholders in Aubange and the CCPHVA, plays a key role in the digital strategies of both territories. Actors within the CCPHVA are attempting to extend the ECLOR platform to cover the broader cross-border agglomeration. However, fieldwork reveals that digital cooperation remains underdeveloped in cross-border initiatives, despite the European Cohesion Policy's stated goal of accelerating

a culture of development in France where the State imposes uniform management across the entire national territory on local authorities, combined with a weak culture of evaluation (Hernu, 2018).

[83] This situation reflects an ambiguity specific to the French context, where metropolitan areas seem to be the only entities to benefit from decentralization, acquiring a quasi-unique status within the French institutional landscape (Frinault, 2019). Unlike countries such as Italy, Spain, and Belgium, France does not have a federal tradition or such advanced regionalization. In this context, metropolitan areas have established themselves as major players, compared to politically weak regional entities. Reforms such as the Law on the Modernization of Territorial Public Action and the Affirmation of Metropolitan Areas (MAPTAM) of January 27, 2014, and the Law on New Territorial Organization (NOTRe) of August 7, 2015, have strengthened the position of metropolitan areas by granting them budgets comparable to those of regions, as well as a broader range of powers (Pinson, 2022). These financial and human resources give them the capacity to take action in a variety of areas, including the strategic issues of public data management and sovereignty.

[84] A comparison between Brittany and Scotland revealed that the establishment of regional power could be conditioned by a number of institutional or economic factors. These factors may include the ability to identify with a language or culture, the ability to develop a territorial narrative, and finally, a certain relationship with the central or federal state (Kernalegenn et Pasquier, 2018).

[85] *Mégalis* union (*Syndicat Mégalis*)

[86] An EGTC enables joint projects to be implemented, expertise to be exchanged, and coordination in the field of spatial planning to be improved (Parlement européen, 2023).

the digital transition by 2030 (Commission européenne, 2021a, 2021b). In the first INTERREG Greater Region 2021-2027 call for projects, there is no explicit reference to digital issues among the four priorities or three axes of cross-border cooperation (Grande Région, 2021a)[87]. Nevertheless, decision-makers in many cross-border cooperation areas appear to be recognizing the importance of data sharing across borders[88]. During a 2021 conference bringing together stakeholders from the Greater Region and the Franco-German-Swiss Upper Rhine Conference[89], the need to equip institutional decision-makers with data governance tools was emphasized, particularly by accelerating the mutualization of public data exploitation[90]. In this context, public data would serve as a foundation for effective governance, supporting decision-making, crisis management, and cross-border data as a lever for knowledge[91].

However, the idea of cross-border collaboration faces significant constraints. Spatial planning policies, closely linked to digital deployment, are shaped by the distinct cultural frameworks of each state (Knieling and Othengrafen in Pallagst, 2020). Compounding this are institutional, political, and technical barriers, which persist despite digital technology's inherent capacity to transcend borders (Scherrer, 2005). Challenges such as data comparability, legal and administrative obstacles, and linguistic differences further complicate cooperation[92]. In the case of the Greater Region, the asymmetry in relations between the Luxembourgish state and its EGTC partner regions poses an additional hurdle to collaboration on public data sovereignty (Sohn and Walther, 2009). This is particularly evident given the uneven autonomy of local authorities across countries, as previously discussed. Moreover, the Greater Region suffers from limited representativeness. It is primarily referenced by institutional and political actors in areas immediately adjacent to Luxembourg that is the core of the cross-border space where daily commuter flows occur (Pereira Carneiro Filho, 2012).

In light of these elements, the study area presents particular relevance for research on data management and sovereignty in cross-border contexts[93]. Within a EGTC, limited cross-border cooperation and the absence of regulatory, managerial, and facilitator frameworks for data use reveal a major gap in addressing data governance and sovereignty challenges. This

[87] The concept of transition is mentioned in the context of the circular economy (objective 2). Improving distance learning appears in objective 5 (Interreg, 2023). However, working groups have been set up, such as the Industrial and Digital Transitions Working Group, which succeeds the Economic Issues Working Group. The aim of this working group is to promote mutual understanding of the projects being carried out within the Greater Region and to feed back information to elected representatives. In addition, it connects the relevant players in an industrial and research ecosystem with the aim of improving international competitiveness (Grande Région, 2021b). This working group is linked to the European Digital Innovation Hubs and the one-stop shops that help businesses and public sector organizations with the challenges of digital transition (Commission européenne, 2023).

[88] Many cross-border cooperation areas are addressing this issue, such as the GOT-FWVL project between France and Belgium.

[89] https://www.sig-gr.eu/fr/actualites/2020/webinaire_Regards_croises_sur_donnee_transfrontaliere.html

[90] From remarks by Claudine Ganter, Chair of the Committee for International and Cross-Border Relations of the Grand Est Region (SIG-GR, 2021).

[91] https://www.sig-gr.eu/dam-assets/actualites/documents/webinaire-04-02-2021/Specificites-donnees-transfrontalieres-Rhin-superieur-Grande-Region.pdf

[92] The advanced solutions involve networking between national statistical offices and cross-border observatories, as well as cooperation with research stakeholders: https://www.sig-gr.eu/dam-assets/actualites/documents/webinaire-04-02-2021/Specificites-donnees-transfrontalieres-Rhin-superieur-Grande-Region.pdf

[93] In the context of our investigations, the concept of cross-border data is limited to the issue of public data generated and circulating within a European cross-border cooperation area. It differs from issues relating to cross-border data circulating globally in a context of fragmentation and geopolitical tension (Christakis, 2025).

situation highlights a critical blind spot in the exchange of cross-border public service data. The lack of interoperability[94] between public data systems on either side of borders creates an opportunity for digital platforms to fill these gaps with their own technological solutions. These platforms, equipped with substantial technological and financial resources, can exploit data more effectively than EGTC actors, who are nonetheless striving to develop tools to regain control over such data[95]. This issue impacts strategic domains, including mobility and public health. Beyond technical and legal aspects, the success of cross-border data sharing ultimately depends on the commitment of political decision-makers. Thus, the very principle of governance may serve as the cornerstone of such systems (Hermand, 2022).

CONCLUSION

This study sheds light on local and regional authorities' room for maneuver in managing public data, comparing two models of state organization. It also highlights sovereignty challenges in a context dominated by private platforms. By focusing on a cross-border perspective, the research explores a less-examined dimension of public data sovereignty and governance. The findings reveal that local and regional digital strategies are shaped by country-specific organizational and structural factors. Belgian regions demonstrate greater capacity and autonomy in digital data management, whereas French regions, despite their engagement, face administrative and regulatory constraints that question the effectiveness of their decentralized powers. The study underscores the importance of managerial, regulatory, and facilitator roles in digital data governance and their distribution across relevant territorial scopes, reshaped by globalization and European integration in recent decades. While cross-border cooperation is identified as a key element for effective data management, it remains a major challenge due to institutional and technical disparities between countries and their respective governance levels. Strengthening role coordination could enhance cross-border public data management and reduce opportunities for large tech companies to dominate this space.

However, this research has several limitations. The sample is restricted to four urban authorities, including the specific category of former industrialized urban areas (Greiner, 2025). Additionally, the absence of stakeholders from the Grand Est Region limits the study's scope. These factors call for caution in generalizing the results, which remain exploratory. A broader investigation, encompassing a more diverse range of territories and public data governance practices, would help validate and refine these conclusions.

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[94] Since 2024, the Interoperable Europe Regulation has sought to establish a framework for cooperation on the exchange and accounting of public data between member countries.
https://www.espaces-transfrontaliers.org/lechange-transfrontalier-des-donnees-de-services-publics-facilite-dans-lensemble-de-lue/

[95] https://interreg-gr.eu/project/mmust-fr-2/

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