MINISTRY OF THE ECONOMY, FINANCE AND THE RECOVERY

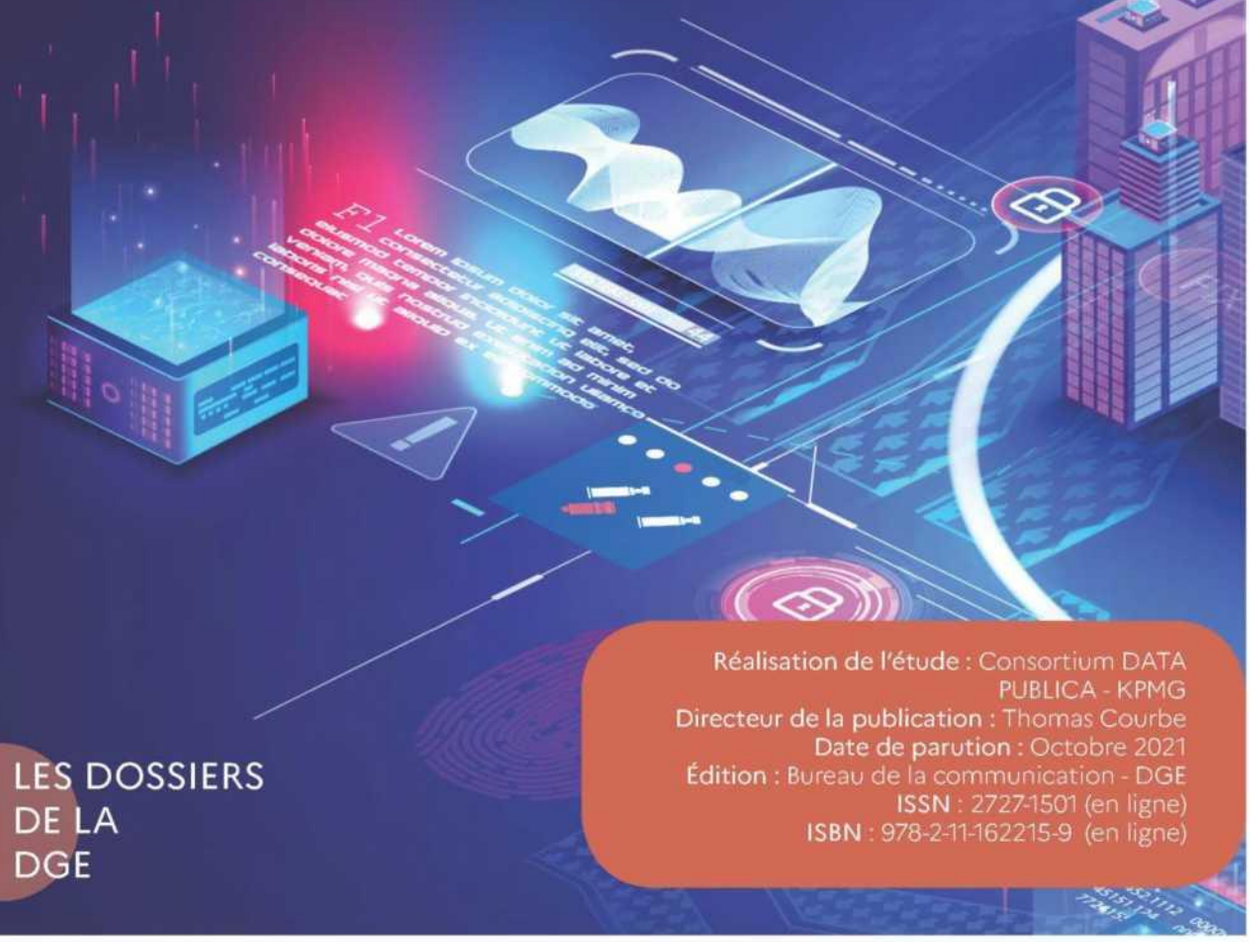
Freedom Equality Fraternity

ÉTUDE TERRITOIRE INTELLIGENT ET DONNÉE PUBLIQUE

SYNTHÈSE

DE LA SMART CITY À LA RÉALITÉ DES TERRITOIRES CONNECTÉS

L'émergence d'un modèle français ?



LES DOSSIERS DE LA DGE

Réalisation de l'étude : Consortium DATA PUBLICA - KPMG
Directeur de la publication : Thomas Courbe
Date de parution : Octobre 2021
Édition : Bureau de la communication - DGE
ISSN : 2727-1501 (en ligne)
ISBN : 978-2-11-162215-9 (en ligne)

Study by Civiteo — Datactivist — Innopublica — KPMG — Lawyers for the DGE account, FFTélécoms, Sycabel, InfraNum and AFNUM

NOTE

The translation of this document to English has been done automatically, thus it may present inconsistencies. A formal translation will be done at a later date.

WARNING

The methodology of this study and the results obtained, conclusions and recommendations are the responsibility of the Data Publica Consortium (CIVITEO, DATACTIVIST, INNOPUBLICA, PARME Avocats) and KPMG Public Sector. They do not commit the study's sponsors (Directorate-General for Enterprise, INFRANUM, AFNUM, FFT and Sycabel) or the other members of the Steering Committee.

STEERING COMMITTEE

LUCAS gravit	DGE, Pilot Mission
Olivier Rouxel	GIP, Head of Mission
Anh-Tuc NGUYEN	DGE, Project Manager
Christophe MEILHAC Ange	DGE, Head of Unit
MUCHIELLI Jugwal DOYEN	GIP, Head of Mission
Laurent GASCA	FFT, Mission Chargé Fixed and Mobile Networks
Mourad BOUNIF	Sycabel, Head of Staff Data Section
Stella Morabito	Sycabel, Member of the THD Working Group
Thomas FOPPIANI	AFNUM, General Delegate
Mathieu PROT	InfraNum, Vice-President Smart Territories Commission
Aymeric BUTHION	Bank of Territories, Investing Smart Cities and Territories/Smart City
	Bank of Territories, Marketing Pole Digital Transition Department

CONSULTANTS

DATA PUBLICA

CIVITEO	
Jacques Priol	Director and coordinator of the mission
Aurélie LEGRAND	Consultant
DATACTIVIST	
Joël GOMBIN	Mission Director
Guillaume MARTIN	Consultant
INNOPUBLICA	
Mathieu CAPS	Consultant
PARMA ATTORNEYS	
Schehrazade ABBOUB	Lawyer

KPMG

Erwan KERYER	Mission Director
Isami HAMOUMI	Consultant

THANKS FOR A LETTER OF GRATITUDE

The team of the DATA PUBLICA — KPMG consortium conducted over 70 hearings and interviews and ran around ten workshops between January and July 2021. In total, more than 150 people were interviewed and/or participated in collective working time. They represent local and regional authorities and elected representatives' associations, professional federations, institutions, companies (of all sizes) and strategic sectors and user associations.

We would like to thank each of these people for their availability and commitment through the formulation of rich and varied proposals and analyses (the full list is at the end of the study).

We would also like to thank the members of the Steering Committee and the representatives of the sponsors of this study. They have accompanied and guided this work and the production of this relationship in a rigorous and benevolent manner. They have helped to enrich it with many content because they are also part of the smart territories ecosystem.

We also thank Jean-Noé LANDRY and Samuel KOHN from the Canadian organisation OpenNorth - NordOuvert for their contribution and insights into the smart city in Canada, which is the subject of a detailed international presentation.

Finally, we would like to thank Mr Luc Belot, author in 2017 of an official report on Smart Territories [1], who agreed to take part in the work of the final seminar of this study.

[1] **Luc Belot, From SmartCity to Intelligence Territories, April 2017.**

SUMMARY

SUMMARY

This study responds to expectations. At the end of 2020, the State (the **Directorate-General for Enterprise** — Ministère de l'Economie, des Finances et de la Relance), the Fédération Française des Télécoms (**FFT**), the Syndicat professionnel des fils et de cables Electric et de Communication (Sycabel**)**, the Alliance française des industries du numérique (AFNUM**)**and the Fédération INFRANUM **(** which brings together businesses and territories) called for a major study to be carried out on the reality of the deployment of smart territory tools and methods in France. This study is a continuation of the work undertaken, following the signing of the sectoral contract, between the industrialists and the State within the framework of the Strategic Committee of Filira Digital Infrastructures.

The aim was twofold: **contribute to the definition of a possible French smart territory model and produce recommendations to promote its definition**.

The challenge was significant. The sponsors of the study were well aware of this: while a few highly exhibited projects occupy the spotlight and sometimes feature possible models, the concepts of *smart city* or smart territory today overlap with very different realities in France. Local and regional authorities carry out their own projects, sometimes vigorously promoting them. The companies that accompany them also contribute to this diversity. Despite the existence of many places of exchange and valorisation, there is little room for capitalisation and consolidation of experience and it is difficult to structure collective cooperation initiatives involving, at national level, the State, associations of local authorities and the economic world. Worse, the blurring of approaches contributes to disrupting the representation of initiatives. Because some digital innovations cause concern to our citizens, there is a risk of fuelling controversy.

In short, it is difficult to identify a common understanding of what smart territory projects in France are today, and even more difficult to identify what a model for the future could be shared by many stakeholders and deserves the attention, support and commitment of public partners, especially the state.

Methodological Benchmarks

50 interviews, 17 hearings, 9 workshops and 1 seminar took place between 3 March and 12 July 2021. More than 150 people were involved, of course representatives of local and regional authorities of different sizes and many representatives of elected representatives' associations; small, medium-sized and large enterprises operating in these territories; representatives of professional federations and several strategic sectoral committees (CSF Eau, Security Industries, Building Industries, New Energy Systems, Transformation and Waste Recovery); ministries and national institutions; associations representing users and citizens, end-users of digital services deployed in smart territories.

These exchanges were prepared and moderated by a consortium of companies specialising in local public issues and their governance, experts on topics related to public data management and digital innovation. The consortium of companies producing this report brings together the **Data Publica Alliance (CIVITEO, DATACTIVIST, INNOPUBLICA and PARME Avocats) and KPMG Public Sector**. The Canadian non-profit organisation OpenNorth **also** contributed to its production. The work was coordinated by Jacques Priol, President of CIVITEO.

They took place in two main phases. The first was to identify the perimeter and characteristics of smart territories. The second was aimed at deepening the challenges and challenges facing territories engaged in digital transition projects that characterise smart territories. The full report, and this executive summary, cover most of this work. **A first step is to define what is meant by "smart territory". Not in theory, but in practical and real terms.** There is a "bigger common denominator" for the few dozens of projects currently deployed in France. It is all the more interesting to detail this because it contradicts some ideas received (and some theoretical speeches). **The description and analysis of use cases, selected technologies, business models, data management, pooling, interoperability, norms and standards and the use of***open source* **are then further** developed. This stage also includes a very detailed presentation of the legal challenges facing smart territories: contracts and

public procurement, data law, possible forms of mutualisation and questions on the use of ethical charters. An international dimension may be of interest to the reader, through a wide detour in Canada and in particular in Montreal, but also through other sources of inspiration chosen and targeted at specific points in Seoul, Chicago, Boston, San Francisco, Barcelona, Amsterdam and Helsinki.

The third stage is the definition of a possible French model. This definition involves analysing the trajectories of pioneering territories, which explains why the model of a global smart city project*, supported* by Dijon and Angers in particular, will certainly remain an exception. **The proposed French model is bold in terms of its objectives and tools, its methodology for the design and implementation of local projects and also its values.** It will support certain actors, public or private, in their choices and strategies. It will frustrate others. However, it is useful to respond to the initial expectation of this study: it is likely to be a widely shared vision of smart territories.

53 recommendations are proposed to implement it. They are addressed to local and regional authorities, businesses accompanying them, institutions that design support and pooling tools. They also concern local stakeholders involved in projects, in particular citizens. The choice has been made to include 21 in the body of this summary. Readers who wish to discover all of them are referred to the full report.

Looking for a definition

Of all the vocables offered to speak about territories that rely heavily on digital and data to manage their public services, the "smart territory" is the least contested. 'Territory' and not 'ville' is aimed at everyone, and thus encompasses the numerous initiatives taken in France for 2 or 3 years in small and medium-sized municipalities and in a few rural areas. 'Intelligent' rather than *smart*, it avoids anglicism, approximate translation of the concept and the ensuing clashes at the beginning of each meeting or colloquium on the subject.

The "smart territory" remains to be defined.

The starting point for this study was a minimalist definition that serves as the lowest common denominator: "smart territory is a territory where, through various digital tools, public services and policies are driven by data".

During the interviews and hearings, it became apparent that the way these digital tools are designed and deployed varies considerably from one territory to another. It has also become apparent that stakeholders involved in several flagship projects share principles and options that are not necessarily the most obvious.

The issue of digital sobriety, for example, in 2021 seems to be a priority shared by many territories regardless of the political direction of their executives, and by many companies (some by making a competitive advantage and a real argument of sovereignty by limiting data flows). Beyond the overall objectives and beyond the words, the coherence of the project means translating these objectives into principles applicable to the tools (production and lifespan of the tools, energy efficiency, hosting and data flow, etc.). This is, moreover, one of the first recommendations of the report.

Recommendation No 3

Systematically integrate the objectives of the green transition into the smart territory project, ensuring that they are translated into the scheme itself through the choice of responsible digital tools.

More broadly, **there is a consensus that smart territorial projects in France today have as a common** objective the use of new digital tools and data-driven public services to:

- **A comprehensive political project** that works on universal principles of progress by integrating addressing the challenges of ecological transitions
- **A local political project** that contributes to the best life of the inhabitants by improving quality; the efficiency and effectiveness of the services rendered to them, taking into account the political priorities and specificities of each territory
- **A democratic project** involving citizens in project governance by ensuring that digital use does not create

new divides

- **An economic project** that contributes to the image and attractiveness of the area for the benefit of all its stakeholders.

To this end, it is also shared that smart territories must:

- Thinking about the use of digital tools in a manner consistent with the general objectives and aiming in particular at **digital sobriety**
- **Involve new actors**, or make possible new forms of involvement of public and private actors in the region (without a priori predefined perimeter of new stakeholder communities)
- Consider opportunities for **pooling** and **alliance of territories**
- Focus on **agile methods** in each phase of their projects
- Ensure public control over governance, digital tools and **data** used.
- Integrate the principles of **sovereignty** more broadly into the choice of technologies and tools chosen
- **Strict protection of residents' personal data**
- Integrating responses to new **cybersecurity** challenges

On the **other hand, some of the principles and images *of the smart city*, which are very present in speeches and taken by many people accompanying the regions, are beaten down.** The best example is the quasi-dogma of transversal. Today, many regions have embarked on digital innovation and data-driven projects in a single job, usually with the help of a company when renewing a delegation or a concession contract, for example in the fields of lighting, water or waste management. In 2020, almost 200 territories had taken such steps2. Extension to other professions involves the gradual construction of transverse approaches, but this is not (or no longer) a prerequisite.

More broadly, there is no shared design for the construction of a smart territory project, which can be incremental or holistic. In favour of experimentation, there are very disparate methods of implementation (making collective capitalisation difficult). There is no consensus on technological choices, including the most structural ones. The way in which citizens are involved or the organisation of data management is the subject of different responses, without a model emerging.

At this stage of the study, a finding must be made: there is no French smart territory model.

Smart territories in France today make very different choices:

- Project design may be based on an incremental step-by-step approach in limited fields or a holistic multi-year and cross-cutting strategy.
- The choice of priority themes and occupations is very broad, although some occupations dominate (energy, water, mobility, waste, environment, management of user relations) and there is a specific political challenge on the subject of safety.
- The concrete use cases are even more varied.
- However, the use of experimentation remains largely uncodified and multiple models co-exist (making mutualised capitalisation difficult).
- The structuring technological choices are very diverse, involving networks, sensors, data storage and processing.
- The construction of a hypervisor, a territorial data platform or a digital twin are highly publicised but not widely disseminated.
- The ways in which citizens are genuinely involved in the design and steering of new forms of public action guided by digital tools remain experimental and differ greatly from one region to another.
- The issues of both the territorial governance of the data and the internal management of the data are also

2Source: Data Publica Observatory.

the subject of specific responses, without any preferential model emerging.

Well-identified components and challenges

In order to understand the diversity of approaches deployed in France, many points have been further developed.

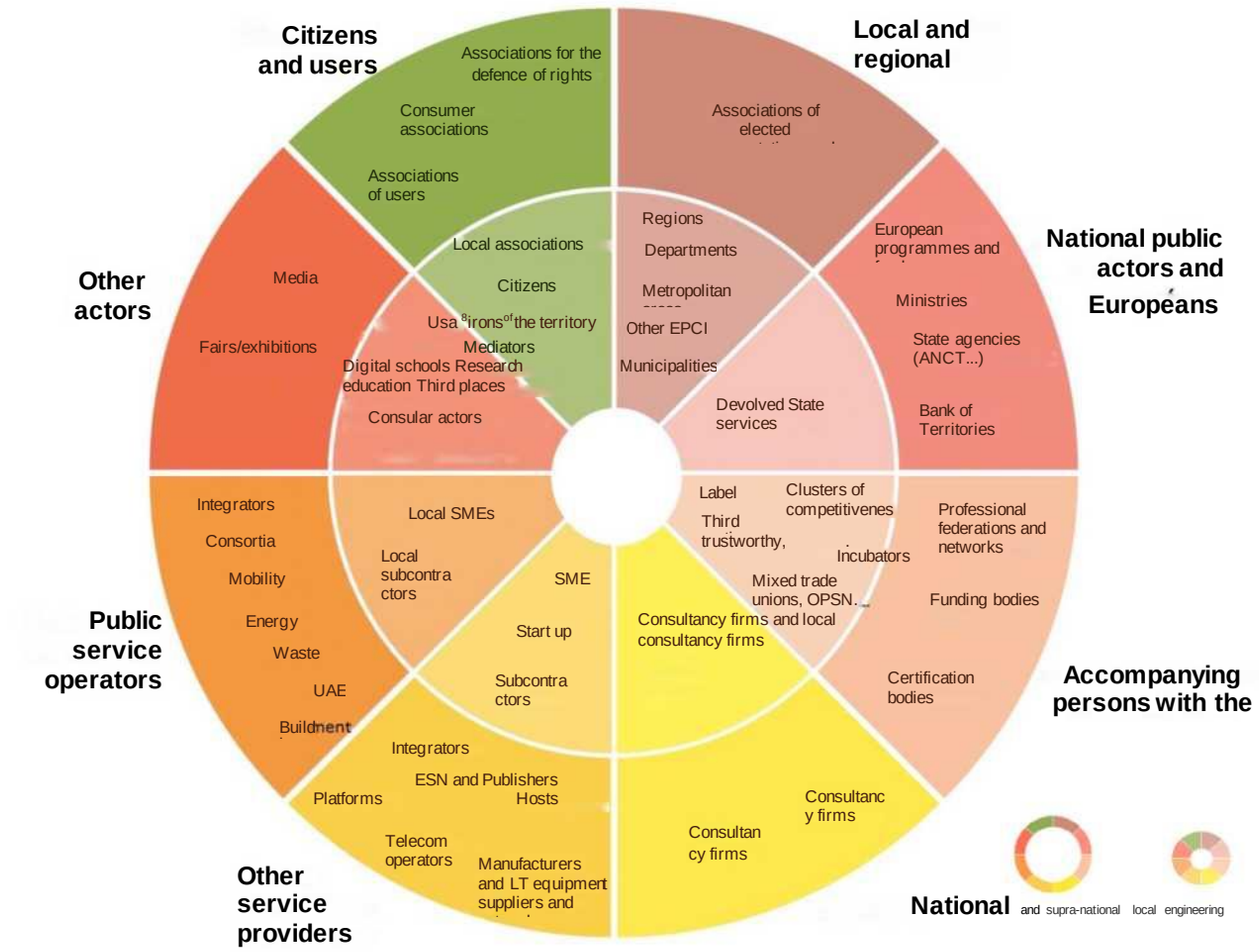
Stakeholders

The principle seems to be accepted: smart territory is a territory with diverse stakeholders. They may be mobilised in an innovative way. Present in the territory but not very committed, the following are responsible for the deployment of a public service. The study details the possible role of local authorities themselves, national (sometimes European) actors and the institutions that accompany them. It segmented the role and place of private companies, sometimes in consultancy and project management assistance, sometimes service providers, sometimes directly operating public services. The study also highlights the new dynamics, and sometimes tensions, which arise in the face of new forms of public-private cooperation, in particular as a result of the circulation and innovative use of data. The

regulation of these new cooperation, and in particular the question of public sovereignty over data, is set out in detail with specific proposals in the legal part of the study.

The study also points out that, beyond the stated principles, the question of citizen involvement is not straightforward. There is a real fear of controversy and rejection of digital innovations. There are few responses.

Mapping of smart territory stakeholders



Source: DATAPUBLICA — KPMG

Several recommendations of the report concern stakeholders. In particular the first two.

Recommendation No 1

Involve citizens in the design of projects, taking care, in particular, to debate the issues surrounding trust in digital tools and the conditions for using data.

Recommendation No 2

Involve the local eco-system at the various stages of project design, ensuring the diversity of stakeholders to enrich proposals and identify new resources.

Governance and strategy

Building a smart territory strategy is not an easy thing. The options are multiple and some choices arduous. The local anchoring of the project is a necessity, recalled by many interlocutors. But then several methods are possible. **The global approach, embodied by Dijon since 2015 and Angers more recently**, is interested or intrigue. However, few regions opt for this model, which requires the construction of an overall vision of smart territory, a strong political portrayal over time and the concomitant mobilisation of resources and expertise, both technical and legal, managerial, economic and budgetary. For many, walking is too high and this point will be strongly apparent from the conclusions of the study when it comes to defining a possible model.

In terms of methodology and governance, **the use of experimentation appears to** be essential. But not all experiments are similar. There are prototypes, or *Proof of Concept* (POCs), whose promoters, both industrialists and start-ups, expect them to validate innovative technological choices. The partner community then usually offers its 'playground' with the aim of contributing to the effectiveness of tools which will then be deployed. The legal part of the study shows that this important dimension of smart territories gives rise to new challenges, in particular relating to the exploitation of data but also to the sharing of intellectual property of innovations. The main problem of these experiments is the weakness (and often the absence) of accessible and mutualised documentation. Successful**prototypes are the subject of numerous communications, but very rarely documented and detailed sharing. And** let's not talk about chess, quickly buried so as not to harm the territory or the company.

This is a key point of the study. **The lack of capitalisation and pooling of** experiences (with very few exceptions) **seriously undermines the overall understanding** of what works well or not and does not in any way help local executives to choose between the structuring technologies and the many digital tools they are offered.

A number of recommendations are made to improve the way in which experiments are organised, piloted and shared in smart territories to prevent the same POCs from being tested in different places as highly innovative projects when they are mature technologies. This in no way prevents each territory from building its own experiments, particularly for teaching purposes (for elected representatives, teams and users) and for collective learning. But these experiments must then be designed more simply and above all on the basis of the achievements of other territories. And if they receive funding, they will have to be limited in percentage and time. Public support should focus on industrialisation and scaling up prototypes that have proven to be efficient and useful.

Recommendation No 6

Document throughout the process and share feedback from the prototypes of smart territories, both successes and failures, within a benchmark defined upstream of the experiments.

Recommendation No 45

Reduce public funding of COPs, prototypes and experiments of already mature technologies to all levels and direct credits towards real innovations or scaling up.

Another subject agrees, in its wording at least: smart territorial projects must include a " **digital inclusion**" component. The health crisis has served as a telling for the existence of new digital divides. These divides have long been identified by many local actors, denounced with noise by the Defender of Rights in 2019 and taken over by various private and public schemes, and are no longer just those of access to the network, but of access to usage.

The health crisis, successive lockdowns, forced teleworking and the remote management of public services have speeded up the awareness of the existence of these divides. In the context of accelerated dematerialisation, the deployment of smart territories must take this into account.

But the question to be asked ahead of the deployment of new digital tools is whether these tools will not themselves create new divides for different audiences. The practice of impact assessments, in theory systematic for the protection of personal data and compliance with the GDPR, must be extended to include inclusion issues and targeted at the most vulnerable groups (depending on age, gender, precariousness, etc.). And whenever there is a risk, common sense should make it necessary to maintain forms of access to the public service other than digital means alone. **Smart territory is a hybrid territory**.

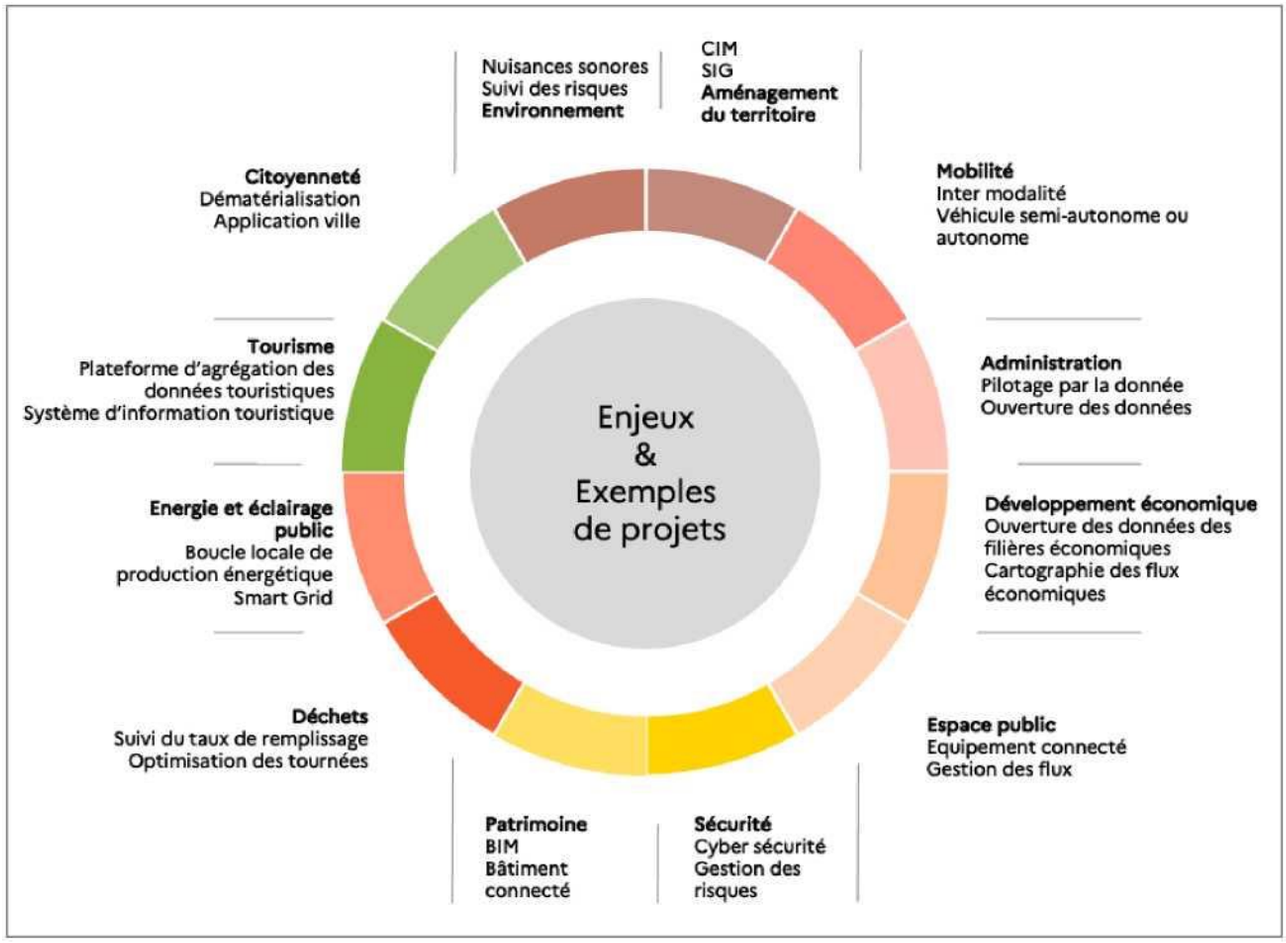
Recommendation No 4

Extend the principle of impact assessments, which are compulsory for the protection of personal data, to include digital inclusion issues. In the absence of certainty as to the impact of the proposed devices (risk of unfair access to services, exclusion, discrimination, etc.), hybrid approaches that maintain direct human services alongside digitised or dematerialised processes are systematic.

Cases of use

Smart and hybrid territories are still technological. Digital services are deployed in many areas and the study proposes **a mapping of use cases** by major domains. **More than 70 examples are detailed in 12 main areas**. This comprehensive analysis shows that a few major areas are the priority of smart territories today in France: **mobility**,**energy**,**water** and **waste** management are at the forefront. These are the flow management professions that build on existing networks and produce a lot of data. **E-administration** is also an important focus. Just like **security**, even if the *safe city* topic is often specifically managed (and often more politically worn by the executives).

The main areas of deployment of smart territories and some examples of use cases



Source: DATAPUBLICA — KPMG

In the vast majority of identified use cases, the objectives pursued are relatively homogeneous. The priority is to optimise and enhance the efficiency of service management by optimising the management of budgetary or human resources. However, many cases of use also aim to optimise (and thus reduce) the consumption of natural resources. The challenges of the green transition are of major importance here, as are the resilience of regions to the hazards (climate or health following the COVID-19 pandemic).

Of the 70 detailed use cases, some are not applicable in the same way in mass caterers of all sizes. The challenges of mobility are not the same at the level of a metropolitan basin or in rural areas. The tools for identifying and managing heat islands concern only the urban world. However, innovative tools for managing urban lighting or communal buildings are currently of interest to rural municipalities or their EPCI, or to departmental trade unions that can offer sophisticated and affordable solutions (because they are pooled) to modest areas.

Technology

The variety of technologies offered by industrialists, public service operators and service providers (global giants, French digital service companies or start-ups) is huge. It concerns all infrastructure starting with networks (low speed, fibre, 5G, Wi-Fi, etc.) and sensors whose different characteristics are described in the study. Data hosting is also a challenge, with the proposal of territorial data platforms and/or the possible use of a data lake, *datalake* for algorithmic uses of big data. The question of physical accommodation was also raised, noting interest in the development of *local* datacenters. The shared local hosting of smart territories' tools and data provides guarantees in terms of public and national sovereignty, but also in terms of moderation by limiting flows, and in terms of the performance of systems by reducing latency. Pooling is also an asset in addressing cybersecurity challenges. This is why one of the recommendations of the study relates to the development of initiatives at regional level.

Recommendation No 19

Adopt a hosting strategy tailored to the sensitivity of data, ensuring the public sovereignty of smart territories through the use of local hosting solutions, including regional *public* datacenters and/or the use of a *cloud* trusted offer.

After infrastructure choices, smart territories use many data exploitation systems. A **number of emerging and highly structuring technologies are at the centre of the attention of public and private actors**. First of all, **hypervision systems** can bring together in a single tool (and sometimes physically in a single site, as illustrated by the centralised command post in Dijon launched in 2019) all data and tools for piloting several urban functions. Criticised by some (too heavy, too expensive, too *big brother*), the hypervision logic is embraced by others (crosscutting and fluidity of piloting, management efficiency). The use of **digital twin** is also the subject of questions. Digital twin allows you to replicate a building, a neighbourhood, a city. It makes it possible to simulate decisions digitally and to view 3D arrangements. Again, the opinions diverge. Communication tool for one, digital twin, though still very costly, greatly facilitates the work of others.

Technological choices are a matter for local authorities and their elected representatives. Among the representatives of the business community heard, some have been able to see elected representatives hesitate to engage their communities in the choice of a particular technological solution, which is advanced in terms of maturity and certain demonstrable deployments. However, elected representatives are also justified in saying that each company is offering competing technologies which are not clearly shared in the short, medium or long term. This is the case for networks. Who allegedly talked about the uses of fibre deployment 5 years ago? Who today knows with certainty those of 5 G for smart territories?

In the face of rapid technological developments combined with sometimes short cycles of obsolescence, technological choices must be informed and consistent with the intended uses and impacts or the possible depreciation period. Technological innovations must serve a political project; they do not act as a project. A cautious idea would also be to 'not put all eggs in the same basket'.

Recommendation No 11

Integrate in the development of the smart territory project a mix of technologies adapted to their use, timing and strategic importance.

Cybersecurity

The issue of cybersecurity became a visible and abrupt issue in 2020 and 2021 among the concerns of local and regional decision-makers and their accompanying businesses. Until now, local and regional authorities have been hit hard by numerous attacks. The processes to be put in place and the investments to be made in cybersecurity are all the more important given that many territories suffer from chronic under-investment in information systems. The study details these issues and emphasises the role of the National Agency for the Security of Information Systems (ANSSI), which increases the number of alerts but also of accompanying measures for local and regional authorities. The study highlights the increasing risks for smart territories, which would neglect this essential dimension.

Recommendation No 20

Systematically conduct a cybersecurity audit prior to the large-scale deployment of new smart territory use cases and systematise basic protection measures in all other cases.

Companies, national public actors and territories could find an advantage that, among the huge variety of technology offers, some decision-making tools are emerging. One of the recommendations relates to this issue.

Recommendation No 48

Support the creation of a label for smart territorial technologies that meet a number of requirements (cybersecurity, transparency, digital economy, etc.) that constitute a sustainable and ethical model for smart territories.

A value chain and business models

The study proposes a definition of the smart territory value chain. It is based on a schematic overview of all relations between stakeholders, an analysis of their interactions and the integration of their economic and social and environmental objectives. It includes both the expression and rise of needs, the production of goods and services and the evaluation of results.

This value chain does not allow the definition of a comprehensive business model of the smart territory, which may not exist as evidenced by the failure of the Google led Sidewalk Toronto project in Canada. On **the other hand, the study shows that there are several business models that co-exist, depending on the actors involved and also on the use cases**. Economic models are dependent on well-identified factors: cost structures (distinguishing between operating expenditure and investments) and income structures (integrating the different forms of revenue possible according to the public services and their modes of operation, the possible remuneration for performance but also the share of public subsidies).

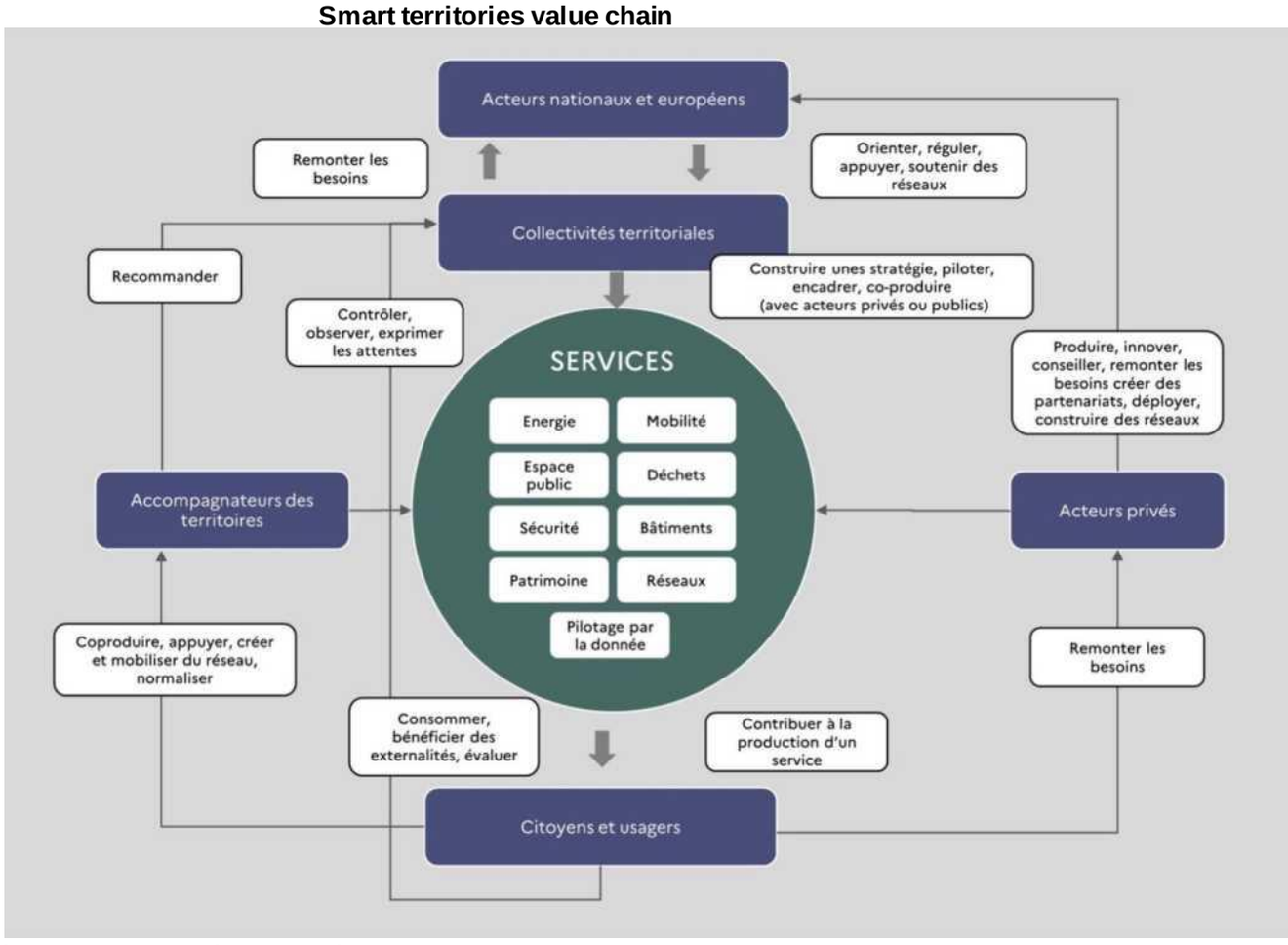
Depending on the use and processes chosen, the economic model will be based on value creation (e.g. by generating new services) or on cost reduction (e.g. through direct savings or by limiting the capacity needed by curbing “peaks”, for example in terms of energy or mobility). But these business models do not say everything. **The construction of the public service is based on an overall offer, the impact of which is measured by the intended uses and benefits for users and residents**. The study shows that smart territory decision-making based solely on a return on investment (ROI) is an illusion. With the exception of cases of effective use of the control of street lighting and the energy management of municipal buildings, very few cases of use are not justified by the inclusion of a single economic indicator. And none of the analyses submitted by territories or companies during this study proves otherwise. The

question is therefore to understand what technological solutions deployed can provide, or not, in terms of usage, service, public policies and quality of life for people.

Recommendation No 36

Evaluate smart territorial projects by including quantitative indicators (measuring costs, savings achieved, etc.) and qualitative indicators (estimate of all positive and negative impacts of the projects carried out).

Smart territories value chain



Source: DATAPUBLICA — KPMG

Data management

Data management is at the heart of smart territory stewardship. Its challenges are numerous and new. They are legal, ethical, technical, environmental, managerial, but also democratic and political.

The**legal challenges** are important, and all the more difficult to identify as the relevant texts are recent and, on the one hand, still incomplete. The Law for a Digital Republic of 7 October 2016, essentially known for having introduced an '*open data* by default' obligation, sketches out the concept of data in the general interest, which concerns very directly the data produced by undertakings when they act on behalf of local authorities in many professions in smart territories. However, it does not provide a framework for managing data produced by other actors with a significant impact on public policies (e.g. Waze or other operators for mobility policies). These issues have been extensively addressed in a recent parliamentary report and partly addressed by the Circular of 27 April 2021 on public data policy, algorithms and source codes.

In this context, the focus on data management deals with several topics. The first is that of public ownership of data resulting from the exploitation of services in smart territories. Guaranteed by law, this property is not always self-evident. However, it is at the heart of a principle of public sovereignty and is the only one capable of ensuring that the data produced can be a common good. The second key point is the protection of personal data and the application of the GDPR by the territories and by the companies accompanying them. In a context of increased mistrust in the face of digital innovations, it is important to guarantee uses that are strictly in line with the texts. The third point concerns transparency requirements. They concern data with*open data*. But they also concern processes with algorithmic transparency requirements.

These transparency obligations, which currently apply to communities with more than 3 500 inhabitants, are largely ignored. Considering that the deployment of tools with massive use of data and algorithms to steer public policies must be accompanied by a strengthening of these transparency obligations (and, where appropriate, controls), a specific recommendation is made.

Recommendation No 33

Making public funding for smart territory projects conditional on compliance with legal obligations regarding open public data and algorithmic transparency.

And in all cases, on all these subjects, it is recommended to provide a legal framework for practices in smart territory contracts.

Recommendation No 17

Systematically include data management clauses in smart territory management contracts.

The challenges of data management are also ethical and some examples of ethical charters are detailed, with an in-depth development on their legal scope and how to gradually strengthen their binding character by including some of their articles in public procurement, delegations or concession contracts.

Managerial challenges are not thin. They concern the local authority and the internal management of the data. They also concern companies and partners, producers and users of public or private data of general interest. There is a distinction between internal and external governance. Sometimes both are managed in a common way, particularly when a general data administrator or chiefdata *officer is* appointed. However, this is not always the case and several organisational options are detailed. However, whatever the option, the structuring of the data function appears to be essential.

Recommendation No 30

Organise the data function within the community.

Environmental issues also need to be taken into account. Several studies show that smart territories' data management (flows, storage and processing) weighs only to a limited extent of their overall digital footprint. But the principles of digital sobriety obviously also concern data.

The study also **explores the economic challenges** of data management in smart territories, by describing the multiple possible impacts of data flows (in particular open data), but also through the emergence of a new data-sharing economy, allowing public and private actors to pool data for projects of territorial interest.

Democratic and political issues are also essential. Through a number of examples, the study shows both the difficulty and the importance of informing and involving citizens in the increasingly massive data exploitation processes. It also shows that local and regional authorities have an interest in having a real territorial data strategy in the face of all these challenges.

Stronger to more than one

Pooling of funds

The**public and private stakeholders heard regret the fact that smart territorial projects are too poorly poorly shared**. This applies to various scales. At national level, there is a lack of capitalisation of experiences. Few of the pioneering territories have developed the innovative digital services they build across their living areas. In rural areas, some interesting experiences show that pooling can make innovative digital services accessible to all, but they remain isolated. Local and regional authorities, which often go to communicating and promoting projects, do not devote sufficient time to collective work or to the construction of common tools. Undertakings are equally involved. They devote more resources and time to the promotion of their own showcase contracts than to the joint construction of demonstrators.

The study shows two things. Firstly, there are many advantages of pooling: easier start-up for starting regions, economies of scale, better service to as many people as possible, better environmental impact and greater sovereignty. Pooling can involve the simple pooling of specifications and the construction of shared territorial strategies. It may relate upstream to bundled purchases, or downstream to the pooling of infrastructure (e.g. a network or data platform).

In all cases, **appropriate legal tools** are available. This is one of the main thrust of the legal part of this study. Different forms of mutualisation are detailed. They may involve the creation of a legal structure (the advantages and disadvantages of several formulas are shown), the use of a central purchasing body or the setting up of an order grouping, the anticipation of a spin-off strategy or the formation of a consortium.

The**challenges of pooling also apply to businesses**. Local innovative companies are often involved in experimentation but find it difficult to remain involved in subsequent deployments. This can be addressed by a combination of public interventions (aid, access to incubators or accelerators) and support from large companies.

A number of recommendations have been made to promote this pooling, which all call for, but which is struggling to organise themselves. One concerns local and regional authorities, the others involve the initiative of national institutions. Others will be brought by companies. All of them will build on existing structures and arrangements (associations of elected representatives, thematic associations, France Ville durable, professional sectors and federations, etc.).

Recommendation No 23

Identify, together with elected representatives' associations, the main "common challenges" on which to work together groups of smart territories of different sizes and levels of maturity.

Recommendation No 39

Create a shared resource centre in smart territories for local and regional authorities and their operators, bringing together technical, legal and operational elements.

Recommendation No 49

Building and promoting a scheme to support and integrate local *start-ups* into smart territorial projects combining

public initiatives and support for large companies in order to ensure their continued participation.

Interoperability

The issue of interoperability complements the question of pooling. Sharing and pooling, ease of deployments and collective efficiency will be enhanced if systems are interoperable. The study details different levels of interoperability: infrastructure, data platforms (and data) and services. It shows that a significant part of the interoperability of smart territories will depend on the ability of stakeholders to generate data standards, a common semantic and shared benchmarks.

The study also details some solutions that promote interoperability of infrastructure: the multiplication of data exchange interfaces (APIs), the adoption of data schemas and the creation of data bookshops for smart territories. Through various examples, it also shows that the technological choices made by local and regional authorities and the companies accompanying them are not neutral: some favour interoperability, others are brakes.

With little awareness of these issues, and less engaged than US or Canadian actors, for example in the production of common benchmarks, French public and private stakeholders call for a national initiative to advance the production of norms and standards. The recommendation made here is partly inspired by the Canadian example (detailed in the full report) and should be linked to ongoing European initiatives.

Recommendation No 47

Install a national data council competent for data standards, diagrams or semantic data for smart territories

The*open source*

Sharing, pooling and interoperability can be achieved through the use of *open source* software tools and solutions. Promoted by Europe for many years for public actors and especially smart territories, enshrined in various French texts and reproduced in the circular of 27 April 2021 on public data policy, algorithms and source codes, the priority over the use of open code tools is justified by a number of reasons, including the independence and sovereignty of public actors.

The*open source* priority is a principle shared by many stakeholders heard for this study, both public and private. Some territories are engaged in European programmes that carry open and interoperable digital platform projects. French companies contribute to consortia or foundations for the development of open software bricks. **However, open solutions are not the most common in smart territories in France. The study** sets out two main reasons. The first relates to the skills to be mobilised to find and integrate tools that are often more complex to qualify than 'shelf products'. The second relates to the cost, not of licences, since by definition access to technology is free, but subsequent developments. And few territories can afford to develop tools for their own use, even if they are then freely available to everyone.

Smart territories contracts

The full report contains a very thorough legal part. It focuses in particular on data law and the tools for successful pooling, already mentioned in this summary. But it focuses on **the multiple forms of contracts that currently allow the invention, deployment and management of smart territorial projects**. This analysis also responds to a recurring question during the interviews and hearings: provided that all possibilities are exploited, **the current legal framework for public procurement is sufficient to safeguard the interests of the public buyer and to allow or promote many innovations**. The right tools still need to be used for the right projects.

The study first recalls **the French tradition of delegation and public service concession**. It should be noted that these traditional urban management contracts may include (from the outset or by means of an addendum) multiple clauses that make it possible to build innovative smart territorial projects. These clauses can be political (e.g. on the principle of digital sobriety), technical (specifying innovation challenges), economic (by introducing new clauses on the valorisation of innovative projects) or even ethical (e.g. data management).

This point concerning traditional contracts for the management of public services is the subject of a recommendation.

Recommendation No 16

Include clauses in smart territorial management contracts that facilitate and frame innovation.

In**addition, several formulas allow experiments to be carried out**. The study details the conditions for using **the research and development market**, **calls** for projects, **innovative market** or **innovation partnership**. A few less codified ways are also presented to give companies access to an experimental space with no financial relationship to the community.

Two forms of contracts are then presented to manage and implement a smart territory project. These are the two most widely used formulas in recent years by pioneering communities: the **overall public performance** procurement and **innovation partnership**.

The interested reader will find in the full report numerous insights on the principles, procedural rules, procedures, limits and risks of all these solutions.

International inspiration

The dissemination of smart territories tools and methods is global. Many studies have been carried out on “models” or “pioneering territories”. Names regularly come back to the centre of the scene: Singapore, Toronto, Seoul, Helsinki, Boston, Shenzen, Medellin, Barcelona, Rio de Janeiro... The objective of the international strand of the study was to propose useful and inspiring elements that could help French territories, the companies that accompany them and the institutional actors in charge of supporting them. The choice has therefore been made to first disregard models which the French public stakeholders consider to be neither desirable nor, moreover, acceptable to the public and the inhabitants of the regions.

Neither surveillance nor algorithmic consumerism

Two models come to mind immediately. The first is the Chinese model. It is based on a logic inwhich all of them technologies deployed (for the fight against pollution, optimisation travel, the regulation essential services, the management of spaces public...) make available the data collected in support of an overall monitoring logic which leads in particular to the extremely shocking system of “social credit”. Deployed on a large scale, the devices are interconnected with those of the police and security services. The law requires this, and Chinese technology companies have close links with these institutions. Indeed, China*’s smart* city is above all a *safe city* whose export, both model and technology, raises many oppositions.

The second model serving as a push back is an American model (and initially a Californian inspiration) in which technologies are used to maximise the profitability of territorial management and meeting individual needs. The famous example of the “Google city” in Toronto in Canada illustrates the logic at work. By optimising urban functions one by one and responding directly to individual needs, Sidewalk Labs offered an automated way of producing common goods and living together. Algorithms are responsible for automatically defining the general interest as the sum of individual interests to be satisfied, without any democratic regulation. Abandoned in May 2020, the project faced strong local and also national oppositions.

Smart city in Canada

In response to Google's Toronto project, the Canadian authorities engaged in various reflections at national, provincial or municipal level on smart territories. The Canadian initiatives are of interest to French territories. Cooperation exists in particular with the cities of Québec and Montreal, involving, for example, Paris, Lyon, Nantes and Nevers. Both close to and under influence of major US companies, Canada is now promoting its own smart territory model. This experience is inspiring.

The study presents in detail the Canadian context and explains the genesis of the federal 'Smart Cities Challenge' programme, launched in 2017 and endowed with USD 75 million. The specifications proposed a definition of smart city based on four principles: transparency (based on open data), integration of innovations into existing public policies, transferability through an *open source* priority, collaboration with local Eco-systems. A guide sets out a number of key points in terms of ethics and governance, civic participation, quantitative and qualitative evaluation and cooperation between authorities.

The study then details the Smart City project " **Montreal** in common", winner of the Smart Cities Challenge and presented by some as the "anti-Toronto". At the forefront of many issues, such as data management or the conditions for using artificial intelligence, the case of Montreal is already inspiring French cities.

Some other inspiration

Other territories were presented, selected for some interesting achievements: **Seoul** for its very advanced technology deployment strategy, **Chicago** for its " *Array of things*" citizen programme, **Boston** for the deployment of a pioneer community information system on the location of sensors and the use of data. This initiative, paradoxically born in Toronto, is included in one of the recommendations.

Recommendation No 38

Establish mechanisms for informing the public about the presence of sensors, the nature of the data collected, the purpose of the collection and the sources of additional information.

San Francisco is also cited as a pioneering territory and a real inventor of innovative technologies, which now decides to regulate certain uses such as facial recognition. In Europe, the governance of the smart territory of **Barcelona** is detailed with a highly developed civic component, while for **Amsterdam** the public/private innovation platform Amsterdam Smart City is presented. Finally, the Kalasatama pilot district in **Helsinki** illustrates how experimental logic can be structured on a large scale.

Towards a smart territory model

In the absence of a shared model, and based on all these very detailed supplements, the question raised at the start of the study was to create a possible and desirable model and to accompany its development. An important topic had not been detailed: what are the overall trajectories used by the territories concerned? How do they relate and when are important decisions taken? The aim is **to create not a fixed model of smart territory in France, but a framework and an itinerary**. The material collected during all these works may, for the first time on this scale, be used to sketch out an analysis which will be leveraged.

Two possible trajectories

The study details **two possible trajectories**. The first is a **comprehensive strategy**. At the same time, several professions are embarking on a broad digital transition. This strategy is embodied by Dijon and Angers, but also by the Pays Haut Val-d'Alzette or to some extent and with less progress by La Rochelle, Reims or Caux Val-de-Seine. It is based on a strong political will and medium-term vision. It makes it possible to anticipate interoperability or cybersecurity challenges. It involves the construction of a complex legal framework and multiannual investment

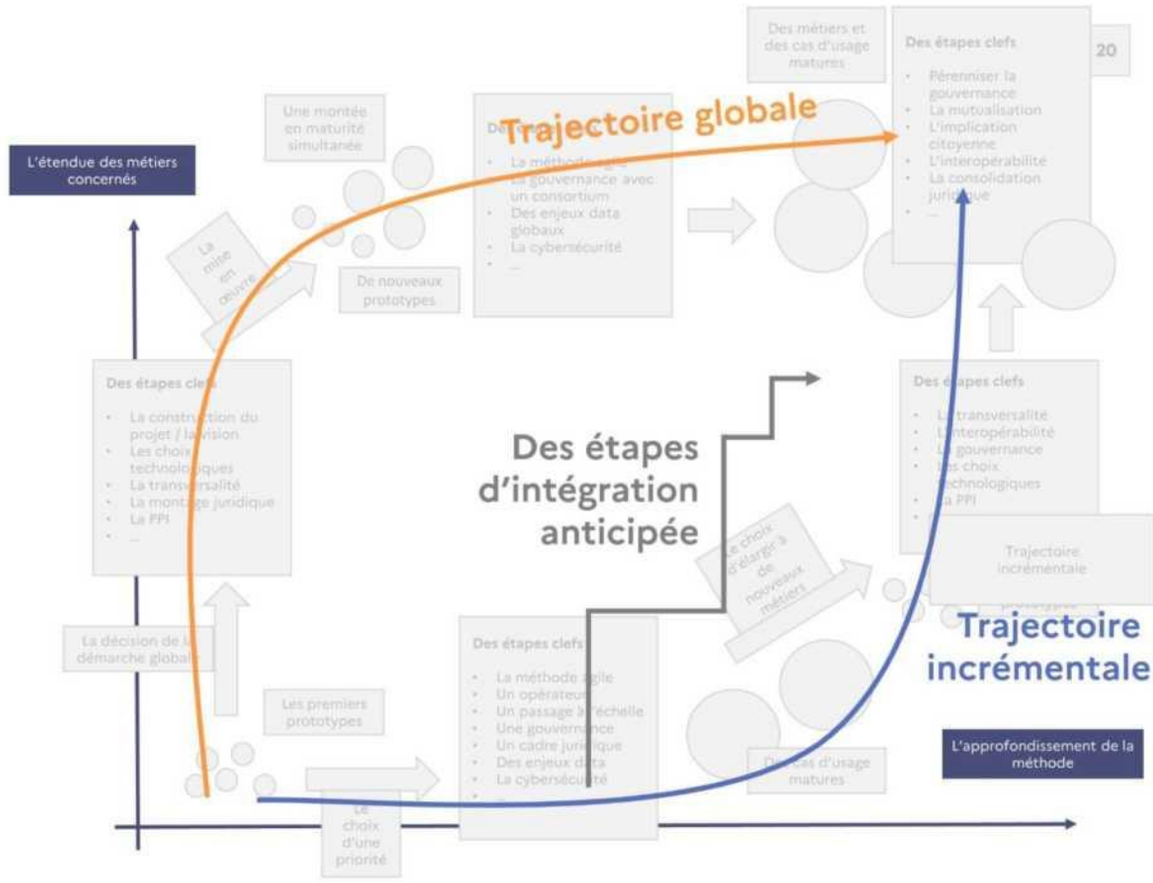
programming. The first step is high. The following require consistency and a cross-cutting and highly organised governance (both internally and also to steer the relationship with the firms of the consortium carrying out the contract).

Proactive and ambitious, this path is difficult. The main challenge is to maintain the multiple timetables and bring together legal, financial, technical and managerial responses. Internal transformation is not an objective but a condition for deployment. Once the contracts have been notified, there is no break or a possible reversal (or it is the failure of the project).

The second path is incremental. It does not prohibit either proactive or vision. But it is organised very differently and can start with small-scale tests and prototypes. The start-up often involves a single job. The decision to innovate can be the result of political reflection, a technical proposal or an opportunity taken up thanks to unsolicited contributions from a company. There is a step-by-step approach. When new projects become more complex, they benefit from the experience gained. Governance issues emerge. New levers need to be mobilised, which had not been anticipated.

The key challenge for the incremental trajectory is to create and maintain a transformation momentum. There is a real risk of stopping, sometimes very early, on the scale of prototypes that have never been scaled up. Or accumulating prototypes, perhaps caring for the image of the territory and its attractiveness, but ultimately changing little in people's daily lives. There is also a real risk of lack of consistency in tools and methods, which will have to be corrected late. **Obviously, the incremental trajectory is now preferred.**

A possible representation of both trajectories



Source: DATAPUBLICA — KPMG

The paradoxical possibility of a French model

In view of the 'models' which French society certainly does not want to see, given the major obstacles and difficulties which have been detailed throughout the study for the design and implementation of various projects, bearing in mind, of course, the many inspiring and successful examples in pioneering regions with the support of French companies, even pioneers, it is still possible to design the contours of a French model.

Today, there is no such thing. But precisely because the experiences in France have been diverse and have sometimes taken opposite paths, because there have been successes and failures, because there are controversy and difficulties, it is possible to build a vision that will not be unanimous but could be widely shared. It summarises many lessons from this study and underpins this French model.

A French smart territory model

The French smart territory model is primarily a political and democratic model. It is protective, ethical, open and transparent. It is solidarity-based and shared, mutualised and interoperable. It uses the most innovative digital technologies with discernment. It builds a new hybrid public service model that prevents new digital divides rather than corrects them. It favours local or national, weak and sovereign solutions. Its governance is based on learning that does not pass on pre-established model injunctions.

FOR A FRENCH SMART TERRITORY MODELE

A POLITICAL MODELE

The use of digital innovations to steer public policies must serve as a policy guidance service. These guidelines are comprehensive, first and foremost to contribute to the green transition. They are also, and above all, local. Digital

innovation must be an aid, business by profession, to the policies specific to each territory and carried out by local executives.

OPEN AND DEMOCRATIC

The French smart territory truly places the citizen at the heart of the scheme, both through concerted practices on the project and methods, and through transparency of governance (open data and algorithmic transparency). It gives priority to the opening of source codes.

It is based on the construction of new partnerships between public and private actors, building on a strong tradition and French expertise of the public service delegation, while introducing new regulations.

SHARING AND SOLIDARITY

The French smart territory breaks with the logic of competition and marketing in France. It is a shared player by dedicating time and means to the emergence of interoperability (systems and data). It is solidarity-based by taking part in collective work, between public actors, between private actors, between public and private actors, in order to pool experience and know-how. It organises this pooling at different scales.

GUARD AND HYBRID

The French smart territory is protective. It fits without hesitation in the demanding implementation of the GDPR as it rejects the generalised surveillance model such as the algorithmic consumerism model. It also ensures that public actors control and control public data which are a common good.

It favours hybrid solutions that allow no-one to be excluded when deploying digital solutions. It thus reserves digital inclusion strategies to the most vulnerable people without exacerbating existing divides through its own actions.

SOBRE AND TECHNOLOGICAL

The French smart territory uses technological innovations. It carefully organises and pilots the digital transition of the local public service, without undergoing it. Both local and regional authorities and businesses opt for a real digital economy (in the choice of equipment, its renewal, the management of flows and data).

SOVEREIGN

The French smart territory favours local, national or European solutions. It makes cybersecurity a systematic component of projects.

GOVERNABLE

The French smart territory is part of a global process of digital transition for local and regional authorities for certain professions. Its steering is therefore a transformation process involving gradual support and steps. It avoids injunctions from a theoretical model which wishes to lay down preliminary steps.

Its evaluation combines measuring the effectiveness of the schemes with measuring the impact on policies and quality of life of residents.

A model to be promoted

In addition to the various existing schemes, a specific call for projects incorporating the challenges of sustainable digital technology could usefully promote some of the recommendations that make up this open, transparent, solidarity-based, sovereign and sustainable model of smart territory. It could usefully give priority to small and medium-sized areas (where appropriate bringing together and pooling their projects). It will include requirements for documentation and capitalisation of experience. In particular, it will focus on compliance with strong obligations in terms of openness of public data and algorithmic transparency.

Recommendation No 46

Launch a national call for projects promoting an open, transparent and sustainable smart territory model.

PRESENTATION OF THE CABINETS OF CONSULTANTS

CIVITEO is a consultancy firm set up in Nantes in 2016 and operates in France and abroad with public actors developing innovative uses of data (territorial data strategy, smart territories, public/private data hubs, etc.). CIVITEO coordinated this study as the representative of the group.

OPENNORTH — NORD OUVERT is a leading Canadian global organisation for public data management. It contributed to this study in collaboration with CIVITEO under the aegis of the Consulate General of France in Quebec and Franco-Quebeise cooperation.

DATACTIVIST

The cooperative society **DATACTIVIST** opens the data and makes it useful and used since 2016. Its mission is to reduce information asymmetries and to enable everyone to take ownership of the data, without naivety but without pessimism.

INNOPUBLICA is a consultancy firm founded in 2018 which offers organisations tailor-made support in order to exploit the full potential of data for innovation of general interest.

PARMA
LAWYERS

Since 1998 **PARME Avocats have** been involved in all sectors of activity of local and regional authorities. In particular, its transversal skills enabled it to develop specific expertise in the field of smart city and to create specialisation in public data law.

CIVITEO, DATACTIVIST, INNOPUBLICA and PARME Avocats are the founders of **DATA Publica**, an alliance of public data experts built in the service of the general interest.

KPMG Public Sector supports public actors in all their transformations: strategic, digital, organisational, environmental and financial. Combining sectoral expertise (technical services or services to the population) and a business approach (support for change, GPEC, etc.), KPMG is currently deploying an offer dedicated to smart territorial strategies for communities of all sizes and for private operators wishing to change their positioning.

Direction générale des Entreprises
61, Boulevard Vincent Auriol
75013 Paris

www.entreprises.gouv.fr