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Neither Surveillance Nor Algorithm-driven Consumerism Toward an Alternative European Model for Smart Cities



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Executive Summary

Smart city projects take many forms, ranging from the installation of connected street lights to total initiatives such as The Line – the gargantuan and futuristic project carried out by Saudi Arabia. In one form or another, these initiatives are multiplying, guided by the objectives of efficiency and the improvement of public policies. What they have in common is that they mobilize various digital tools and use data to develop and manage public services. As they are exported, these projects also become levers for international influence. Where does Europe stand on this spectrum? While many smart territory projects have already been implemented on the continent, Europe is still looking for its own model.

Two models are unanimously rejected: the one promoted by China, and the one implemented by certain North American cities. The first subordinates the smart city to security and social control imperatives and contributes to the constant surveillance of the population. In contrast to this model, which is primarily concerned with control and surveillance on behalf of the State, the Californian-inspired North American model is criticized for its massive use of personal data, which is collected and used by private actors. Users are alarmed by the potential use of this data for commercial purposes and denounce the replacement of democratic decision-making by automated tools.

From there, developing a European model requires taking these pitfalls into account and respecting both the issues related to privacy protection and the maintenance of open and democratic procedures. Europe can rely on an ambitious regulatory framework, capable of encouraging the development of smart cities in its territory. This framework can also be a real asset for exporting its model to other continents. European initiatives in the field of smart cities are also part of efforts to promote digital sovereignty. In this respect, matters of standardization, interoperability and infrastructure are at the heart of the debate and must be fully integrated into the projects implemented. They are also subject to intense international competition.

Résumé

Les projets de villes intelligentes ou « *smart cities* » prennent des formes diverses, allant de l'installation d'éclairages urbains connectés à des initiatives totales telles que *The Line* – le projet gargantuesque et futuriste porté par l'Arabie Saoudite. Sous une forme ou une autre, ces initiatives se multiplient, notamment guidées par des objectifs d'efficacité et d'amélioration des politiques publiques. Elles ont en commun de mobiliser de nombreux outils numériques et de faire usage de la donnée pour élaborer et piloter des services publics. En s'exportant, ces projets deviennent aussi des leviers d'influence internationale. Où se situe l'Europe sur ce spectre ? Si de nombreux projets de territoires intelligents ont déjà été mis en œuvre sur le continent, l'Europe cherche encore son propre modèle.

Deux modèles font l'unanimité contre eux : celui porté par la Chine et celui mis en œuvre par certaines villes nord-américaines. Le premier subordonne la *smart city* à des impératifs de sécurité et de contrôle social. Il contribue à une surveillance de tous les instants de la population. À l'opposé de ce modèle répondant avant tout à des objectifs de contrôle et de surveillance au nom de l'État, le modèle nord-américain d'inspiration californienne est, lui, décrié pour son usage massif de données personnelles, récoltées et exploitées par des acteurs privés. Les habitants s'alarment d'une utilisation potentielle de ces données à des fins commerciales et déplorent le remplacement des délibérations démocratiques par des outils automatisés.

Partant, élaborer un modèle européen nécessite de prendre en compte ces écueils et de respecter tant les enjeux liés à la protection de la vie privée que le maintien de procédures ouvertes et démocratiques. L'Europe peut s'appuyer sur un cadre réglementaire ambitieux, capable de favoriser le développement de *smart cities* dans son territoire. Ce cadre peut aussi constituer un véritable atout pour l'exportation de son modèle vers d'autres continents. Les initiatives européennes dans le domaine des *smart cities* s'inscrivent aussi dans le cadre des efforts en matière de souveraineté numérique. À ce titre, les enjeux de standardisation, d'interopérabilité ainsi que les infrastructures sont au cœur des débats et s'ils doivent être pleinement intégrés dans les projets mis en œuvre, ils sont aussi l'objet de vives concurrences internationales.

Introduction

In October 2021, a report entitled *De la smart city à la réalité des territoires connectés* (From the smart city to the reality of connected territories), to which the authors of the present study contributed, was submitted to the French government.¹ It provides an unprecedented and extensive overview of what “smart cities” are—and what they are not—in France. It identified two hundred projects, which deployed not only in metropolitan areas but also in small- and medium-sized towns, and even in rural areas. The report outlines the reasons why elected representatives opt for innovative technologies that lead to digitally driven management systems for energy, public lighting, water, waste, journeys and parking, public transport, and many other domains. Smart regions are also innovating in the areas of economic development, health, social welfare, and education.²

The questions that the commissioning bodies of the French study really wanted answers to went unspoken: Do the specific implementations that are being deployed in France have common characteristics that might amount to a discernible model? Might this model be typified, for example, by specific choices in terms of data protection? By new technologies that other countries might be interested in? By governance-related know-how that could be exported and serve as a reference? At the risk of disappointing the bodies that commissioned their work, the authors concluded their report with a no: such a French model does not exist—not yet, at least. The projects are very different from one another, and the methods for rolling them out are just as much so. One thing is certain: French cities’ ambitions are nowhere near as big as those behind Masdar City, currently under construction in Abu Dhabi,³ or The Line, a huge Saudi project that NEOM is undertaking on the shores of the Red Sea.⁴

Another observation was that a smart city model cannot be uniquely French. Promoting (or defending) a potential European model of smart cities is taking place within a high-stakes economic context. The global market for investments connected to smart cities is forecast to be valued at over two trillion dollars by 2026.⁵ While North America and part of Asia

1. *De la smart city à la réalité des territoires connectés. L'émergence d'un modèle français ?*, Paris: Ministère de l'Économie, des Finances et de la Relance, 2021, available at: www.entreprises.gouv.fr. The report was coordinated and coauthored by CIVITEO, in conjunction with Dataactivist, Innopublica, KPMG, OpenNorth-NordOuvert, and Parme Avocats.

2. The report identifies seventy cases of use across twelve major public policy areas.

3. S. Roger, “Au milieu du désert, le mirage de Masdar”, *Le Monde*, February 29, 2016.

4. E. Heathcote, “Saudi’s Neom Is Dystopia Portrayed as Utopia”, *Financial Times*, August 1, 2022.

5. *Marché des villes intelligentes : Croissance, tendances, impact du Covid-19 et prévisions (2023–2028)*, Hyderabad: Mordor Intelligence, 2022, available at: www.mordorintelligence.com.

seem to have reference models, Europe is looking for its own. And it will also want to export it, particularly to Africa. For if Europe is in a fight for its sovereignty, it is also involved in a struggle for global influence over digital technology. The use of such technology in cities is one of the battlegrounds.

The contours of a regional model are emerging. Under the leadership of the European Commission, and in particular the Directorate-General for Communications Networks, Content and Technology (DG CONNECT), multiple collaborations are taking place between European cities: they are undertaking exchanges, building common tools, and developing systems for local governance. The French report's conclusions are shared by experts from many European countries. And because no equivalent to the French study has been produced elsewhere in Europe as yet, we use it here to sketch out the contours of a potential (and desirable?) European model.

The first part of the present study is a reminder that models do already exist. In particular, there is the Chinese model that uses the smart city for surveillance, and then there is the model that has arisen from Silicon Valley's vision of optimized cities controlled by algorithms. Spreading particular urban models is a tool for influence, soft power, and economic development. A geopolitics of urban development and smart cities is being configured. Several regions, particularly ones in Africa, are at the center of everyone's attention.

The second part of this study will examine in detail some of the observations from the French study by placing them in this global context. We will see how French experiences could stimulate, along with others such as those of Montreal, Seoul, and Helsinki, the emergence of another approach that protects fundamental freedoms and uses technological tools more carefully. And we will look at the conditions for deploying such a model.

Influence and economic stakes are also being contested through a battle over the rules and standards of the cities of the future. With its legislation protecting personal data and a digital regulation strategy, Europe would like to believe, as would some other countries around the globe, that a city model will emerge in which the smart dimension goes hand in hand with the public interest, residents' well-being, technological sovereignty, and the generation of common goods. This will require greater mastery and control of the smart city's tools.

Surveillance and Consumerism: At the Heart of Export-Oriented Smart City Models

The Chinese Surveillance Model

In 2011, China's twelfth five-year plan set out for the first time the Chinese Communist Party's (CCP) desire to develop digital cities.⁶ There was a dedicated section on this objective in the fourteenth plan, which covers the 2021-2025 period.⁷ It gave rise to a centralized impetus for smart cities and led to massive investment in more than eight hundred such projects in the country.⁸

The Chinese model's structural focus is surveillance. Although projects cover various domains, from waste management to firefighting, security is the predominant aspect. Through various initiatives facilitating mass surveillance (Skynet, Sharp Eyes, and Police Cloud), China has developed its model for a "safe city". This term, used extensively by the government, has now been replaced by "smart city".⁹ China is trying to export the model, including to Europe, through initiatives such as the Huawei Online Smart City Tour, which passed through France in 2020.

This model has been described many times. It is based on a vast system of identification and recognition that includes facial recognition in the public space and allows social credit to be introduced. Such a dystopian¹⁰ model is socially unacceptable, and it is incompatible with the principles of democratic societies, not least because these have laws to ensure privacy and personal data are protected.

The California-inspired Consumerist Model

Another model is primarily promoted by American companies (especially ones from California). Implemented in many US cities (including Los

6. 12th Five-Year Plan (2011–2015) for National Economic and Social Development, March 2011, available at: <https://policy.asiapacificenergy.org>.

7. This plan was officially adopted by the National People's Congress on March 11, 2021. A translation of it is available at: <https://cset.georgetown.edu>.

8. K. Atha et al., *China's Smart Cities Development: Research Report Prepared on Behalf of the U.S.-China Economic and Security Review Commission*, Vienna: SOS International, 2020, available at: www.uscc.gov.

9. For a broader account of the history and geopolitical dimensions of Chinese smart cities, see A. Ekman, "China's Smart Cities: The New Geopolitical Battleground", *Études de l'Ifri*, Ifri, 2019.

10. F. Lemaître, "Les smart cities chinoises passent de l'utopie à la dystopie", *Le Monde*, June 7, 2022.

Angeles, San Francisco, Santa Cruz, Seattle, and Austin), it combines algorithmic modeling and optimized management of major urban functions, as well as predictive policing, the wholesale opening of the public space to exploitation by private sector services, the emergence of new actors, and the “Uberization” of services—that is, a fragmented management of services by multiple private actors.

This model was inspired by a few early experiments undertaken in California that made use of technology, and especially data science and now artificial intelligence (AI), to optimize the management of public services on two levels. The algorithms aim, on the one hand, to improve management performance (by detecting compliance variances and defects by adjusting processes via automation) and, on the other hand, to model the needs of individuals, by implementing in the public sector those models that have proven successful in the commercial sector.

The most emblematic example of this model is probably the Waterfront Toronto¹¹ project. In 2017, the City of Toronto launched a request for proposals to entrust a “developer” with building a city of the future on a large brownfield site just outside the business district on the Lake Ontario shoreline. Google, or more precisely Sidewalk Labs, its sister subsidiary within the Alphabet group, won the tender. The American giant invested nearly fifty million dollars in research and development in preparation for a project that proved to be highly innovative. With optimized energy management, low-carbon construction, separate waste management, modular roads that would adapt to the needs of the time of day, and a management system for adapting infrastructure to weather conditions, Sidewalk Labs imagined a city driven entirely by data.

It did not take long for the project to spark debates and opposition. Data management in particular prompted controversies. The first of these was Google’s refusal to anonymize data, which raised suspicions that, in spite of commitments and denials, data would be exploited for commercial purposes in the future.¹² Another concerned data hosting: the American company wanted to transfer this to the United States, which would have allowed it to evade local privacy protection rules. Rocked by these controversies, Sidewalk Labs’ teams made multiple proposals to correct the early-stage difficulties they encountered. The Waterfront Toronto project was ultimately canceled in May 2020, officially because the pandemic had made its economic model unsustainable.¹³ Google’s

11. For an account of the Quayside Toronto project, see J. Priol, *Ne laissez pas Google gérer nos villes !* La Tour d’Aigues, France: Éditions de l’Aube, 2020.

12. Opposition to the project was expressed in particular by the #BlockSidewalk collective. Bianca Wylie, one of its founders, posted many times about it on her Twitter account @biancawylie. See also C. Legros, “À Toronto, Bianca Wylie défie Google et sa ville connectée”, *Le Monde*, December 23, 2019. Sidewalk Labs CEO Dan Doctoroff’s appearance before the House of Commons of Canada also makes it possible to map out the opposition that Sidewalk Labs’ teams had to face and address. See the appearance of Dan Doctoroff before the Standing Committee on Access to Information, Privacy and Ethics, House of Commons of Canada, April 2, 2019.

13. L. Cecco, “Google Affiliate Sidewalk Labs Abruptly Abandons Toronto Smart City Project”, *Guardian*, May 7, 2020.

abandonment of the project prompted surprise and substantial comment from many observers. Little information was given on the announcement, made the same day, that a new entity called Sidewalk Infrastructure Partners would be set up,¹⁴ with an initial fund of 400 million dollars, to acquire companies developing urban infrastructure. The Alphabet group gave up on a city management project, but it has not given up on managing cities' data.

However, a close reading of the motivations of the project's opponents reveals that the main stumbling block was the algorithm-based design of city management. A plethora of sensors (there were plans to use more than twenty-five different types, as well as future residents' smartphones) and the systematic collection of data on the use of services and the public space would have turned each citizen into a consumer of the city. By seeking to meet everyone's needs in a targeted and optimized way, Google's vision for a city run on algorithms effectively takes the public interest to be the immediate sum of personal needs. What we have here is a private stakeholder creating the illusion that everyone's needs would be considered, at the risk of depriving individuals of their free will.¹⁵ It would replace political actors and the process of democratic deliberation with automatic tools.¹⁶

As a counterpoint to the Toronto project, in 2018 the Canadian federal government launched a "smart cities challenge", which aimed to stimulate democratic alternative models. Its specifications set out ambitious principles in terms of transparency, administrative governance, and technology transferability.¹⁷

The Smart City, a Focus of Geopolitical Struggles

A Fierce Battle that Has Already Begun

The choice of a management model for smart cities and the question of a possible third way are at the core of a set of global issues, which are digital and geopolitical. City management is a soft-power tool, while smart cities, as Alice Ekman points out,¹⁸ are a significant geopolitical battleground. To deploy cutting-edge technologies produced by flagship industrial firms and to put them to use in what can sometimes be grand urban projects is to demonstrate an ability to build tomorrow's world and to influence urban life's social standards.¹⁹

14. "The Future of Infrastructure", Sidewalk Infrastructure Partners, available at: <https://sidewalkinfra.com>.

15. G. Koenig, *La Fin de l'individu. Voyage d'un philosophe au pays de l'intelligence artificielle*, Paris:  ditions de l'Observatoire, 2019.

16. Priol, *Ne laissez pas Google g rer nos villes !*, op. cit.

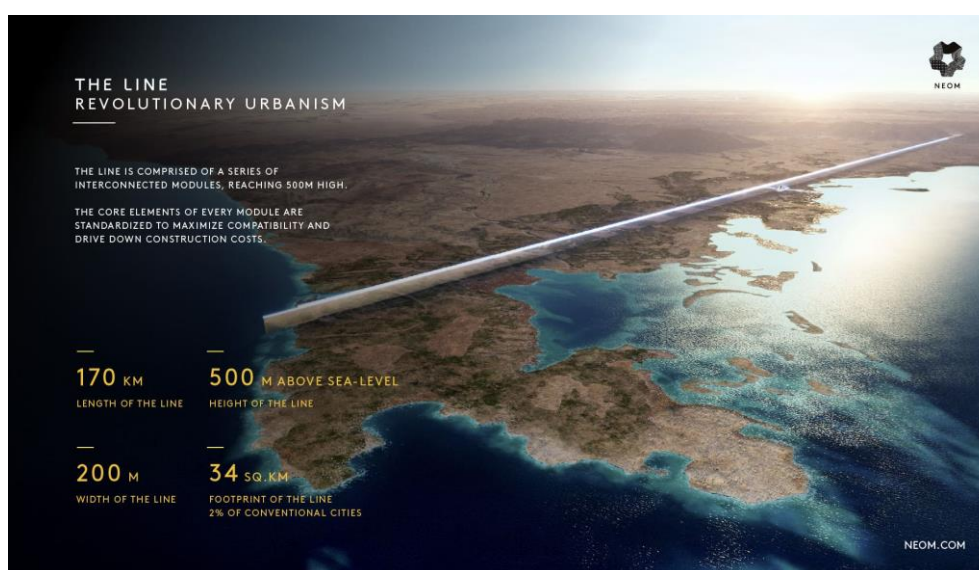
17. Information on this program can be found at: <https://impact.canada.ca>.

18. Ekman, *China's Smart Cities*, op. cit.

19. H. B roche, "Do Smart Cities Have Geopolitics?", *Medium*, October 27, 2022.

The PR campaign for NEOM’s The Line project, launched by Saudi Arabia in the summer of 2022, is a perfect illustration of this. The kingdom announced the construction of a vertical city (five hundred meters high and two hundred meters wide) that will extend over 170 kilometers at a total cost of over five hundred billion euros. The presentation videos for it have been viewed around the world (see Figure 1).²⁰ The Line will be an energy-efficient city, its inhabitants will have every service they could want at their fingertips, there will be optimized management, there will be nature conservation, and so on. The message is clear: not only is the city of the future being invented in Saudi Arabia, but it is making all other smart city projects around the world obsolete. Whether or not the project sees the light of day, companies from all over the world are being sought out to contribute to its design anyway. And they are piling in. What does it matter that local opponents to it might be sentenced to death?²¹

Figure 1: “The Line: Revolutionary Urbanism”



Source: Neom.com.

Before Saudi Arabia, China had made its smart and “safe” cities a tool for influence. Its Digital Silk Road has led to significant investment, particularly in Africa. China musters undeniable expertise in digital infrastructure. Mastering urban data platforms and the networks that carry them is an asset that few European companies possess on the same scale.

20. For example, “What is THE LINE?”, Neom, available at: www.neom.com.

21. L.-M. Gaveriaux, “Arabie Saoudite : Peines de mort pour des opposants   la ville futuriste Neom”, *Les  chos*, October 13, 2022.

The geopolitical struggle to impose a smart city model has already begun. Chinese industrial groups benefit from an important advantage: they have been able to develop and test their technologies because of unparalleled state investments. They are already ahead in many areas, in particular AI,²² and Chinese urban infrastructure is now spreading all over the world. It sometimes has to contend with cautious opposition or coordinated global strategies, as was the case for tech giant Huawei's 5G technologies, which were banned in the United States and then in many countries allied with the latter.²³

Other groups are more discreet than Huawei, such as Hikvision. Created in 2001, this subsidiary of a Chinese national group offers surveillance solutions for public authorities, businesses, and individuals. Its technologies are at the heart of the Skynet and Sharp Eyes surveillance projects, as demonstrated by the 125 million dollar contract signed in 2018 with the city of Xi'an to install forty-five thousand cameras there.²⁴ With export sales of three billion dollars in 2021, Hikvision has a particularly strong international presence. It operates 4.8 million cameras in 191 countries. Hikvision's prying into local surveillance policies is seen as a threat. In 2021, the company was banned from the United States under the Secure Equipment Act. It is also banned from South Korea and India. The Chinese government's use of Hikvision's tools for its crackdown on Uyghur Muslims may result in it being added to the United States' Specially Designated Nationals and Blocked Persons List—which would impose unprecedented financial, civil, and even criminal penalties on the firm—and cause it to be banned in the United Kingdom.²⁵

Africa: Where Models Face Off

Africa is one of the major spaces where smart city models are facing off. Alice Ekman has highlighted how smart cities have been an area of cooperation within China's strategic plan for Africa since 2019. This objective has been revived by the Dakar Action Plan 2022-2024²⁶ and, following that, by the China-Africa Partnership Plan on Digital Innovation.²⁷ These cooperation initiatives take the form of large investments from major Chinese groups across the continent. Huawei has had a presence there for more than twenty years.

22. K.-F. Lee, *AI Superpowers: China, Silicon Valley, and the New World Order*, New York: Harper Business, 2018.

23. There are many articles dedicated to that episode. See, for example, J. Nocetti, "Europe and the Geopolitics of 5G: Walking a Technological Tightrope", *Études de l'Ifri*, Ifri, 2022.

24. Z. Yang, "The World's Biggest Surveillance Company You've Never Heard of", *MIT Technology Review*, June 2022.

25. "Sanctions Against a Chinese Surveillance Firm Would Answer a Real Threat", *The Washington Post*, May 11, 2022.

26. "Forum sur la Coopération sino-africaine – Plan d'Action de Dakar (2022–2024)", Ministry of Foreign Affairs of the People's Republic of China, December 2, 2021, available at: www.fmprc.gov.cn.

27. "La Chine et l'Afrique vont élaborer et mettre en œuvre un plan de partenariat Chine-Afrique sur l'innovation numérique", Ministry of Foreign Affairs of the People's Republic of China, August 24, 2021, available at: www.fmprc.gov.cn.

In Africa, the surveillance-society model promoted by China is coming up against a smart city model that serves sustainability. This model is being promoted especially by the French state as part of the Smart Africa Alliance, a cooperation initiative bringing together thirty-two African countries around development objectives that are based on the opportunities offered by digital technologies. The French development agency AFD signed a partnership with Tactis (a consulting firm specializing in digital development) and the Democratic Republic of the Congo (DRC) to undertake a master plan for DRC's digital development, as well as one with Dakar, Senegal, to establish Diamniadio as an urban center. More broadly, AFD financed the creation of the African Smart Towns Network (ASToN), which comprises twelve African towns hoping to develop a smart project. In May 2021, when Emmanuel Macron traveled to Kigali, he was accompanied by a delegation of firms, including Tactis, which has a major role in the "Green City Kigali" project.

Although Africa is the theater where competition between models is playing out, its urban development nevertheless poses contrasting realities that undermine some projects. On the one hand, Africa is sometimes considered the only continent that offers spaces for building entirely new cities driven by digital tools. But the reality of its land situation, in particular because of the development of large commercial agricultural projects, is not so simple. In addition, implementing these projects requires long-term strategies, stable conditions, and projections. That so many new city projects are abandoned highlights the big difference between how many projects are announced and how many cities are actually built. However, among the countries that have deployed digital infrastructure in some of their cities, we should mention Egypt, South Africa, Senegal, and Rwanda.

In Europe and Across the World: The Need For a Third Way

Lessons From French Smart Cities

A Groundbreaking Study Conducted in France in 2021

Before we present some of the conclusions from the *De la smart city à la réalité des territoires connectés* report²⁸ in detail, clarity on an important point is required: the study was sponsored by the Directorate-General of the French Ministry of Economics and Finance and by industry bodies. It was co-funded by the French telecoms federation, the Syndicat professionnel des fabricants de fils et de câbles électriques et de communication (SYCABEL) (Professional Union of Manufacturers of Electrical and Communication Wires and Cables), the Alliance française des industries du numérique (AFNUM) (French Alliance of Digital Industries), and the InfraNum Federation (which brings together companies and local authorities). Their involvement was not a matter of chance. In 2020, the government and firms alike were making the same observation: the promises of “smart cities”, as they had been formulated for several years, had not materialized.²⁹ Despite some spectacular implementations that received a lot of media attention, the number of large-scale projects remained low. Worse still, from the point of view of those promoting smart cities, some local authorities seemed to be turning away from or even opposing these new methods of managing local public services.

The work carried out in 2021 mobilized significant resources and involved not only companies but also and above all multiple associations of elected representatives, local-authority federations, and user associations.³⁰ The results of the study have left a lasting impression. Groundbreaking in many respects, they are based on a detailed analysis of the implementations actually completed across many regions, and they call into question some of the certainties surrounding “smart city” projects, including their definition, their scope, their implications, and, perhaps even more so, the method for deploying digital tools for use within local public policies. It was as though

28. *De la smart city à la réalité des territoires connectés*, *op. cit.*

29. For example, the parliamentary report *De la smart city au territoire d'intelligence(s)*, led by Luc Belot in 2017, and *Vers un modèle français de villes intelligentes partagées*, a report led by Akim Oural in 2018.

30. This was the context in which the authors of the French study conducted their work, hearing over 150 people and organizing many exploratory seminars and workshops over the course of eight months.

local elected representatives' choices in real life were leading to the emergence of a model that was different not only from that advanced by the industrial firms tasked with rolling out smart city projects but also from that of the consultants involved in them—and different, even, from what elected officials said when promoting their own projects.

To understand and measure these discrepancies, it is necessary to reflect on the notion of a “smart city”. The French report offers a minimalist definition, which had the advantage of creating consensus among all the partners involved in producing it. A basic common denominator between the projects of the urban areas studied could be put as follows: “A smart urban area is an area in which, through various digital tools, public services and public policies are driven by data”.³¹

Data is the crux of the matter. Decision-makers have long been interested in it, and France, incidentally, pioneered official statistics.³² Local public services use and produce mass data: management data, observation and measurement data, technical data, geographic data, user data, statistical data. At the start of the twenty-first century, some players in the digital sphere believed that this data, as a whole, could be brought together in centralized systems. This is where the idea of “smart cities” emerged. Convinced they could simplify and optimize city management, several companies, IBM and Cisco among them, worked on unifying local information systems.

This technological vision collided with a very concrete reality that is familiar to elected representatives and local civil servants and is often summed up in the saying: “A city brings together four hundred functions!” None of those urban functions is carried out or organized in a comparable way, and there is no uniform way of managing them. Some of them, mainly those focused on technical management, produce a lot of data as a matter of course. This is the case of endeavors that deal with flows: energy management and public lighting, water supply, waste collection and processing, and transportation. While it was undoubtedly possible from the start of the twenty-first century to use automated digital tools to reduce consumption and optimize the operation of services, no system could systematically squeeze productivity from many other endeavors involved in running cities—for example, those in areas such as local education policies, sport, culture, children, young people, social welfare, community life, and citizenship.

In 2010, the term “big data” entered dictionaries. What IBM and Cisco had been unable to build through systems began to emerge through data, sometimes without the knowledge of public actors. Data sources proliferated—and so did the actors able to use (and produce) them.

31. *De la smart city à la r alit  des territoires connect s*, *op. cit.*

32. Marcel Reinhard, “La statistique de la population sous le Consulat et l'Empire. Le Bureau de statistique”, *Population*, Vol. 5, No. 1, 1950, available at: www.persee.fr.

Booking.com and Airbnb did not only change the world of hotel operators, vacation rentals, and campsites. They also changed public tourist offices' endeavors and made the work of regional committees and local observatories difficult, because these were deprived of essential data that platforms now monopolized. Waze has done more than change the way in which French people move about;³³ it has disrupted patiently constructed traffic plans and sometimes jeopardized developments that local authorities, in consultation with residents, hoped to build.

These are just two examples among many others. For the past ten years, data produced by a host of actors has supplemented the tools that can be called on to prepare and implement public policies. In France, there are many examples, including data from the Institut national de la statistique et des études économiques (INSEE) (National Institute of Statistics and Economic Studies), which is very widely accessible as open data at increasingly fine-grain levels; data from the Institut national de l'information géographique et forestière (IGN) (National Institute of Geographic and Forest Information); land and tax data;³⁴ health data; data from wireless service providers; and environmental data produced by the Associations agréées de surveillance de la qualité de l'air (AASQA) (Chartered Air Quality Monitoring Associations)³⁵ or by private actors. Public services themselves and the companies to which these are outsourced produce increasingly voluminous quantities of data.

The Reality of French Smart Cities

In France, nearly 200 urban areas are now deploying innovative data-driven public policy management systems. They rely on a range of digital tools. Sensors of varying degrees of sophistication make it possible to collect environmental data, produce measurements and counts, and automatically adjust systems for managing energy, water, and waste collection and treatment. They provide data for traffic-management systems but also encourage beneficial multimodal practices. They are used to analyze, understand, and model users' needs and behaviors so as to anticipate and optimize, sometimes automatically, the operation of public services.

Data is carried on networks: low-frequency radio, 3G, 4G, and sometimes 5G, as well as Wi-Fi, Bluetooth, and, of course, fiber optics. Sometimes decision-makers struggle to keep their bearings. Hosting and data-processing issues are no less ubiquitous. In many cases, the

33. With seventeen million users, France is the world's top Waze user, ahead of the United States and Brazil. In France, one car driver in two uses Waze, making this Google subsidiary the leading expert on French car-journey habits.

34. See in particular the *demandes de valeurs foncières* ("real estate value requests") dataset available on the www.data.gouv.fr portal.

35. The Associations agréées de surveillance de la qualité de l'air (AASQA) (Chartered Air Quality Monitoring Associations) publish continuous open data on air quality in each region.

technological dimension is complemented by human involvement and partnerships. The report provides a map of the stakeholders involved in particular projects. To be sure, the official discourse surrounding smart cities affords a major role to citizens and users. But in practical terms, most projects are rolled out with little publicity. Acknowledging the complexity of the issues involved (and perhaps anticipating the risk that certain technologies will be rejected), many regions test and deploy tools before advertising them. Moreover, some regions make the explicit choice to subsequently involve citizens by setting up consultations on use cases rather than on tools.

Local public decision-makers are conducting more and more experiments and making large investments. French local authorities' total spending on so-called "smart" infrastructure for services between 2010 and 2020 is estimated at 4.4 billion euros. The pace is accelerating, and for the forty largest French cities alone, this spending could reach 1.1 billion euros in the three years between 2020 and 2023.³⁶ This spending is supported by regional, national, or European subsidy programs. It falls within a context of budgetary constraints that is making efficiency programs more appealing.

Therefore, in terms of the objectives and motivations behind investments, some projects directly and explicitly aim to reduce costs. At one point or another in the long term, "smart" public lighting delivers a return on investment. However, contrary to certain statements made by firms, most projects are primarily motivated by the aim of improving and adapting the services provided to the population.³⁷ Such choices are shared by a growing number of local authorities. In 2017, when Luc Belot's parliamentary report was published,³⁸ fewer than twenty-five cities were involved in initiatives of this type, and these were almost exclusively metropolitan areas. Four years later, urban areas of all sizes are innovating, albeit disparately so. Sometimes the impetus is a municipal majority, sometimes it is a proposal made by a public service delegate, and more rarely it is a citizen-led initiative.

However, the many hearings conducted in France for the study show that notable similarities are emerging. First of all, there are objectives that most projects have in common: contributing to an overall political vision of progress and responding to environmental issues; supporting a local political project to improve the efficiency of public policies; and a desire not to increase digital exclusion. However, implementation requires distinct local choices, particularly in terms of methods and management. Classifying projects led the report's authors to distinguish two routes that regions follow: an overarching route and an incremental route.

36. *Le renouveau de la smart city en France*, Paris: XERFI, 2020.

37. On this point, see the survey *Les collectivit s territoriales et la donn e*, Observatoire Data Publica, 2022.

38. L. Belot, *De la smart city au territoire d'intelligence(s)*, *op. cit.*

The overarching route presupposes the formulation of an overall project, such as the pioneering one that the city of Dijon has been implementing with the help of a consortium comprising the companies Bouygues, SUEZ, Citelum, and Capgemini since 2018. Massive investment is necessary (105 million euros in Dijon over ten years) to deploy tools throughout the area: connected streetlights, connected transport, smart parking lots and parking spaces, connected buildings, and so on. Such projects require a transformation in how the main urban functions are led, as well as a process for undertaking transversal and methodical change within services. They are based on proactive, long-term political backing at the level of local public services. The incremental route is usually embarked on without any real strategic vision. It begins with proof-of-concept experiments in one or two endeavors. If these first steps are successful, then the list of endeavors involved grows, the digital infrastructure put in place becomes more ambitious, and investment gradually increases.

Lessons Learned from The French Experiences

The authors of the report demonstrated that local actors in fact prefer the incremental route. A small-steps strategy allows for gradual change management, trial and error, and even pauses in projects. It sometimes leads to impasses, especially when prototypes do not move on to being “scaled up” because not enough resources are mobilized to do so. Very seldom used, highly demanding, and risky in the view of some, the overarching approach has been confined to a handful of communities that have made their smart city strategy a strategy for the whole city. In addition to Dijon, this is the case of Angers. The twelve-year, 178 million euros project that the city has entrusted to a consortium led by ENGIE is of a scope that goes far beyond traditional urban functions. It encompasses, for example, the environment and health, the plan being to use data to make connections between health and the environment and influence residents’ well-being. One peculiarity of the Angers case is that the VYV mutual society is a stakeholder, as is La Poste, which will be a trusted third party for data management.

Quite understandably, the overarching model is the one that most branches of industry would like to be encouraged: its investments are guaranteed. It also appeals to the many consulting firms that support elected representatives and their teams: the ideal smart city project ought to entail multiyear planning, a transversal approach, and profound transformation of public services. The facts indicate that French local authorities are actually handling the progressive dissemination of the digital tools guiding public policies in an entirely different way. There is a process of continuous transformation. Public services do not exist in a bubble: smart cities are, in many respects, simply the digitalization of the whole of society transposed to the level of cities’ endeavors.

The central question local authorities are being asked is whether they will endure this transformation or master it, and whether their public actors have the capacity to steer it toward certain priorities that have been defined or approved by voters, which presupposes a form of public sovereignty, particularly over data. Indeed, there is a risk that smart cities will become automatic cities.³⁹ Some private actors assert they would be able to optimize urban management if the public sector were depoliticized, bringing about de facto privatization via algorithm-based governance. Some go even further and are comfortable with wanting to “subjugate” the public sector to protect it from the uncertainties involved in city management.⁴⁰

The French report showed that public actors have identified these questions and risks. The interviews conducted highlighted how there is sometimes serious misunderstanding between economic actors and the local political world, in particular because local elected representatives forcefully assert that deploying technological innovations can only be done to serve local projects. Just because a technology is mature (and even profitable) does not mean it can or should be deployed everywhere. One city’s priorities are not another’s. French local actors are advocating a political model of smart cities. They are also advocating an open and democratic model, even if much remains to be done, including in terms of simply meeting legal obligations vis-à-vis publishing of data and transparency.⁴¹ And they want to facilitate the flow of data and allow certain policies to be collectively managed (transport and energy, for example). But they are being held up by a lack of a strategy or excessively weak interoperability strategies. It is interesting to note that at present the French local authorities most strongly involved in these projects are part of working groups at the European level (see below).

The actors involved in French smart cities also advocate taking a protective approach to citizens. More than two-thirds of French people (69 %) trust how local authorities use their data.⁴² And they are quite right to. Complying with the General Data Protection Regulation (GDPR) and making additional commitments by adopting an ethics charter or establishing a committee on data ethics are among the common integrated prerequisites of a potential French or European model. This model is also intended to be sovereign, since local authorities are organizing themselves to keep control of their data by using increasingly sophisticated legal tools or open source software, even if this option is still quite uncommon. Finally, for many, it will be a hybrid model. The implemented digital solutions cannot

39. J. Priol, “Ville intelligente ou ville automatique ?”, *La Gazette des Communes*, April 23, 2018.

40. M. Nohet, “La Data City et les fusées : Comment asservir les politiques publiques”, *Manty*, March 23, 2018, available at: www.manty.eu.

41. On this point, see the work of the Observatoire opendata des territoires (available at: www.observatoire-opendata.fr). Only 14 % of French communities with more than 3,500 inhabitants are fulfilling their obligations (March 2022).

42. Ipsos survey carried out in August 2022 for Observatoire Data Publica with a representative sample of the French population aged eighteen and over. See: <https://observatoire.data-publica.eu/nos-publications>.

simply replace human contact. The excesses of digitization have been denounced in various places in recent years, in particular by France's Ombudsman.⁴³

These concerns are shared by many. They are found in many European initiatives, as well as in ones from further afield—Montreal and Seoul, for example. They may constitute a basis for a smart city that represents a “third way” and would correspond neither to the Chinese model nor to the California-inspired North American model.

Other Examples for a European Model: Montreal, Helsinki, And Seoul

Montreal

Since winning the Canadian government's “smart cities challenge” in 2018, the city of Montreal has been implementing a project explicitly conceived of as “the anti-Toronto”. It has substantial resources to do so. The grant awarded by the federal infrastructure ministry (Infrastructure Canada) provides 50 million dollars over five years. Initially focused on transport and food issues, the Montreal project was very quick to integrate an innovative component on data management, which is based in particular on an ethics charter that gives paramount importance to protecting privacy—Canada being a country that does not have GDPR-type legislation.⁴⁴ Bold partnership-based governance has been established under the banner “Montréal in Common”. Several groups of actors (representing associations and citizens, businesses, and communities) have been set up to define objectives and guide initiatives. The city of Montreal has positioned itself as one actor among others, leading it on occasions to be called to account by the communities supporting the project. Everything takes place within practices and a context that are firmly established. The municipal open data policy has been particularly successful: Montreal has been a global pioneer of open data since 2010.⁴⁵ Open source solutions are frequently adopted for municipal services, and the municipal government officially asserts the notion of “common good” as a focus of the smart city.⁴⁶

43. Défenseur des droits, *Dématérialisation et inégalités d'accès aux services publics*, Paris: Défenseur des droits, 2019.

44. Quebec has subsequently adopted provincial legislation inspired by the European General Data Protection Regulation: An Act to Modernize Legislative Provisions as Regards the Protection of Personal Information, known as Law 25, which was given assent on September 22, 2021.

45. Montreal's platform for publishing open data serves as a reference because of the quality and volume of data that is made public. See: <https://donnees.montreal.ca>.

46. The digital data charter published by Montreal in October 2020 establishes a series of principles intended to “strengthen the transparency, accountability, flexibility and efficiency of its digital data management”. It is available at: <https://laburbain.montreal.ca>.

Seoul

A switch of continent takes us now to South Korea. Seoul is regularly presented as a pioneering and leading city in terms of innovation and the implementation of digital technologies. Its smart city master plan rests on a massive digital investment program (of several billion euros since 2012⁴⁷). Many major Korean company groups, as well as some foreign players such as Cisco and Microsoft, are or have been stakeholders in it. Numerous topics fall within the plan, including transportation, air quality, energy, and online administration. Data management is at the heart of the systems deployed. Different big data use cases—for instance, analysis and modeling tools focused on collective issues, predictive modeling and AI, personalization and tracking of front-line services, and security and monitoring—have become commonplace.

The local authorities use multiple data sources: data from their services, data from tens of thousands of sensors of various types, and data from mobile phones and public Wi-Fi. Open data is the rule, with more than seven thousand data sets and around 5,500 application programming interfaces (APIs) accessible online.⁴⁸ Another interesting detail is that this deployment is taking place in a country that ensures a high level of protection for personal data, as the European Union in particular has recognized. In September 2021, the European Data Protection Board added South Korea to the (very restrictive) list of countries that benefit from an adequacy agreement because European data transferred to them is guaranteed protection at least equivalent to that provided by the GDPR. The Seoul project is also forestalling the risks of a digital divide through an impressive household equipment plan funded by a tax-break mechanism. Through it, the lowest-income families as well as the elderly and immigrants are encouraged to obtain personal computers and training.⁴⁹

Helsinki

An example closer to France is Helsinki. Regularly ranked among the top smart cities in the world by various organizations, the Finnish capital is undertaking numerous projects aligned with two priorities: achieving carbon neutrality and improving residents' quality of life by making the city as easy to use and functional as possible. To achieve this second objective, Helsinki has very much expanded on the logic of living labs, which are innovation laboratories that include users in the design and testing of projects. Its version comprises an entire neighborhood that is currently under construction and which, serving as a pilot space for the smart urban area, will accommodate twenty-five thousand people across 175 hectares by 2030.

47. *De la smart city à la réalité des territoires connectés, op. cit.*

48. See <https://data.seoul.go.kr>.

49. *De la smart city à la réalité des territoires connectés, op.cit.*

The team in charge of the smart city bills it as a “public-private-population partnership”. Residents of the Kalasatama district are involved in a vast experimental program covering multiple topics: transportation, carpooling, energy and heating, medical monitoring via connected tools, community life, and management of shared spaces. They have digital tools to monitor what is going on in the neighborhood as well as some of its public services (via screens in people’s homes and shared tablets). The principle behind this prototyping is clearly spelled out: innovations that are validated in Kalasatama can be deployed in the rest of the city.

The observations made in France and these examples from Quebec, Korea, and Finland show that deploying technological tools to serve the public interest can be envisioned without falling into a dangerous logic of surveillance or algorithm-driven consumerism. The giving of a place to citizens (and therefore to elected representatives) in the decision-making process, support for users, a logic of testing, the chance to reject a headlong rush toward technological solutionism, and the protection of privacy are some of these projects’ distinguishing features. The question is how to bring out, consolidate, and spread a model that draws on them. Europe would benefit from it. And European actors are working on it.

Configuring a European Model

Continuing to Harmonize Europe’s Legal Framework for Data

“Join, Boost, Sustain”: These three words are the title of a declaration made by European actors who gathered in Porto in 2020 to promote the emergence of a new path for digitalizing cities. The signatories undertook to support and develop—but also to oversee and guide—the digitalization of public services. The declaration promotes including citizens in the choices that concern them, developing an ethical framework for data management, and using digital tools that are interoperable with open models (i.e., those whose code is public and freely reusable). Launched by Eurocities, OASC (Open & Agile Smart Cities),⁵⁰ and the Europe Network of Living Labs,⁵¹ the declaration is also supported by the European Committee of the Regions, and its principles have support within the European Commission.⁵² The movement has led to the creation of the “living-in.eu” platform, which now implements cooperation projects that integrate common standards and principles.

The European model is also taking shape, primarily, through its regulatory framework, and through privacy-protection legislation in

50. Open & Agile Smart Cities official website: www.oascities.org.

51. European Network of Living Labs official website: www.enoll.org.

52. To find out more, see “Declaration on Joining Forces to Boost Sustainable Digital Transformation in Cities And Communities in the EU”, Living-in.eu, 2020, available at: <https://living-in.eu/declaration>.

particular. In Europe, implementation of smart local projects must be compliant with the GDPR.⁵³ One of the GDPR's founding principles is consent to the collection of personal data. However, many smart city data management devices require data to be continuously collected from the public space. Therefore, in Europe these projects must by default incorporate either notification and transparency processes or immediate anonymization. When this is not the case, the supervisory authorities can intervene. This has happened, for example, in Nice, when the Commission nationale de l'informatique et des libertés (CNIL) (National Commission on Information Technology and Civil Liberties) publicly condemned as unlawful the experimentation with facial recognition conducted, with great media fanfare, on the Promenade des Anglais by the municipality.⁵⁴

A new European legislative package should soon take effect. It includes the Data Act (submitted by the European Commission in February 2022) and the Data Governance Act (adopted in May 2022 and applicable from September 2023). These will impact the management of urban data and, more broadly, use of public or private data in endeavors serving the public interest. The EU is wasting no time in seeking to establish a model and encouraging it to spread. It is financing and supporting pioneering initiatives as well as promoting cooperation and pooling through several programs. Multiple projects driven and facilitated by DG CONNECT aim to encourage the emergence of a third way: a smart city whose governance is efficient, democratic, and transparent; where choices about technology are made in an open—and therefore sovereign—fashion; and where data is managed ethically. DG CONNECT also closely monitors EU members' national programs.

Following the recommendations made in the 2021 report, France allocated 30 million euros to a support fund for smart and sustainable urban projects, the specifications for which encourage sharing and dissemination of beneficial, sovereign tools. It should be noted that local initiatives also exist in France, focusing in particular on helping to spread these tools and methods among small- and medium-sized municipalities. For instance, the Bourgogne-Franche-Comté region has launched its own call for proposals, backed by a dedicated fund of ten million euros. Portugal is drawing up a national smart city strategy.⁵⁵ With the EU's support, Finland has decided to extend the Helsinki project to five other cities.⁵⁶

53. General Data Protection Regulation of April 27, 2016, known as GDPR.

54. J. Priol, "La reconnaissance faciale, dernier avatar de la *safe city* ?", *La Gazette des Communes*, January 2022.

55. Portugal Digital, "National Smart City Strategy", *Portugal Digital*, June 20, 2022, available at: <https://portugaldigital.gov.pt>.

56. "Six Cities", 6Aika, available at: <https://6aika.fi>.

A Legal Framework for an Exportable Model

When it comes to digital technology, the EU now has serious legal firepower. Since it came into force in 2018, the GDPR has been a major breakthrough in terms of protecting citizens' data. To be sure, Germany (since 1977) and France (since 1978) already had very protective laws. However, by bringing about harmonization "from above", the GDPR has had two major effects. First, it has given citizens of many European countries safeguards that they did not previously have. Second, it has created an economic space that cannot be accessed by those who do not comply with the regulations (and it has given the independent authorities responsible for applying it very significant sanctioning powers). Better still, the GDPR is being replicated elsewhere, its adoption having prompted some countries and local authorities to enact similar regulations. California has passed its own version of the GDPR,⁵⁷ and so has the province of Quebec.⁵⁸ Digital giants who develop products internationally and are reluctant to offer different versions of them for different regions are considering rolling out GDPR-compliant solutions on a worldwide basis, insofar as these will have been designed for the European market and the 450 million people who live there. Some—Apple, for instance—have turned the approach into a marketing argument.⁵⁹ Others, having had record fines imposed on them, have threatened to withdraw certain services from Europe. The Meta group is one such example.⁶⁰

Some countries (for example, South Korea, Norway, Iceland, Switzerland, Canada, and New Zealand) guarantee protections similar to those of the GDPR when data is transferred from the EU to them, and so they enjoy the benefit of an adequacy decision. The United States does not. The GDPR has made it possible for the EU to assert its regulatory power in the digital sphere. The European Court of Justice's Schrems II judgment, which invalidated the Privacy Shield governing data transfers between the EU and the United States, demonstrated that European justice was capable of imposing its rules and therefore of protecting EU citizens' data.⁶¹ Many European cities now prefer turning to European operators and hosts for their smart city tools, and require data to be hosted in sovereign data centers.

European legislation also has very concrete effects on the smart city tools that can be deployed in Europe. Despite the announcements made and experiments conducted by some cities in collaboration with European

57. California Consumer Privacy Act, effective from January 1, 2020.

58. An Act to Modernize Legislative Provisions as Regards the Protection of Personal Information, known as Law 25, given assent on September 22, 2021

59. D. Soulas-Gesson, "Apple en campagne sur la protection des donn es personnelles", *Strat gies*, May 20, 2022.

60. "En difficult  sur les donn es personnelles, Facebook fait planer une menace fictive de fermeture en Europe", *Le Monde*, February 7, 2022.

61. The executive decree concerning the transfer of data from the EU to the United States, signed in October 2022 by President Biden, may provide a new framework for protecting EU citizens' data, but it will have to be ratified by the EU first.

companies (but also Chinese, American, and Israeli ones⁶²), it is interesting to note that the use of facial recognition in public spaces is prohibited outright within the EU. The European regulator has made it known on many occasions that biometric data (which is required for facial recognition) cannot be collected on a massive and ongoing basis without residents' knowledge and consent. Better yet, the regulator is asking for this ban arising from the GDPR to be explicitly formalized in the legislation on AI that is currently being drawn up.⁶³ A majority in the European Parliament could act on this request in the coming months and in doing so draw a bright red line around the European smart city model.⁶⁴

Following along the same lines is the European Commission's Digital Decade action plan, which aims to secure Europe's digital sovereignty by 2030. Giving Europe a data strategy, this initiative will create new opportunities for cities. The first pillar of the strategy was introduced in May 2022 via the Data Governance Act. It aims particularly to facilitate data sharing between public and private actors for the benefit of the public interest. This "data altruism" will strengthen local authorities' ability to guide public policies in areas such as the environment and energy transition.⁶⁵ To this end, data-sharing mechanisms will be created, which will pave the way for certification of trusted third parties. These will have an essential role at the heart of a third way. In the Chinese model, the authorities capture data. In Toronto, Sidewalk Labs wanted sole control over data collection and management. Faced with an outcry, the American company proposed the creation of an urban data trust, which might ultimately have been guided by the local authorities. But the project's abandonment meant that this innovative approach to governance was never tried out.

Three basic elements of a European model could spread across the world. First, there are the tools for trust: trust around public actors and their use of data that has been made open (which must not be used for purposes that go against the general interest); trust around "altruistic" companies (which want to ensure that the data they make available will only serve the common good); and trust around citizens (who want to protect their privacy). The European legal framework currently being finalized will allow new tools for use in the governance of cities to be developed and funded. A data-sharing economy serving the common good will emerge, and it will feature new actors and new services that could be offered elsewhere in the world.

62. See, for example, these facial recognition experiments or projects (which were stopped by the CNIL): Nice's use of the technology of the Israeli start-up Anyvision (2019); the Provence-Alpes-Côte d'Azur region's use of the American firm Cisco's security gates at entrances to high schools (2019); and Metz Football Club's use of the French company Two-I's solution at the entrances to its stadium (2020).

63. "Artificial Intelligence Act: A Welcomed Initiative, But Ban on Remote Biometric Identification in Public Space Is Necessary", European Data Protection Supervisor, April 23, 2021, available at: <https://edps.europa.eu>.

64. C. Goujard, "Europe Edges Closer to a Ban on Facial Recognition", *Politico*, September 20, 2022.

65. A. Legrand and J. Priol, "Données, intérêt général & territoires : La construction d'un cadre de confiance", *Les Cahiers de l'Observatoire Data Publica*, No. 1, 2022.

The European Commission has proposed a regulation on AI whose objective is to foster “trustworthy AI”.⁶⁶ Data is once again an issue here, but so too are transparency, explainability, and accountability. This regulation will specifically regulate the use of AI in public services. Controls, efforts to combat bias, and transparency obligations will be required. There will be a place for ethical and trusted AI of this kind in smart cities. The tools developed in this context will compete with models that are perceived, rightly or not, as opaque and untrustworthy.⁶⁷

Finally, the Data Act, presented as the second pillar of the European data strategy, will also include provisions that will impact local authorities’ choices. The text aims especially to promote the interoperability of data management tools (and of data itself). This new framework will strengthen cooperation, encourage new standards (ones likely to spread beyond Europe) to emerge, and promote the development of open source tools.

Promoting European Standardization

It is important to have the capacity to configure, deploy, and test a model on a large scale before promoting it. To increase its influence elsewhere, its internal coherence must also be strengthened. Two essential areas whose coherence is yet to be developed have been identified: the infrastructure of smart cities and the standardization of tools and data.

Infrastructure

Infrastructure is crucial to digital technology in general, and to smart cities in particular. *Smart City Versus Stupid Village*,⁶⁸ a report published in 2016 by the Groupe Caisse des dépôts, put forward an interpretative framework for technologies that makes it possible to understand why smart cities have struggled to emerge: a lack of control, a lack of clarity in terms of the cost-benefit ratio, and a lack of interoperability. This framework also makes it possible to understand the stakes involved for providers of infrastructure and technological solutions: once these three issues have been resolved, they will be able to seek a leading position in a huge market. Infrastructure primarily refers to networks and the Internet of Things (IoT). In the value chain for smart cities put forward in the *De la smart city à la réalité des territoires connectés* report,⁶⁹ these forms of infrastructure are an essential first layer.

66. “Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts”, 2021/0106(COD), European Commission, April 21, 2021.

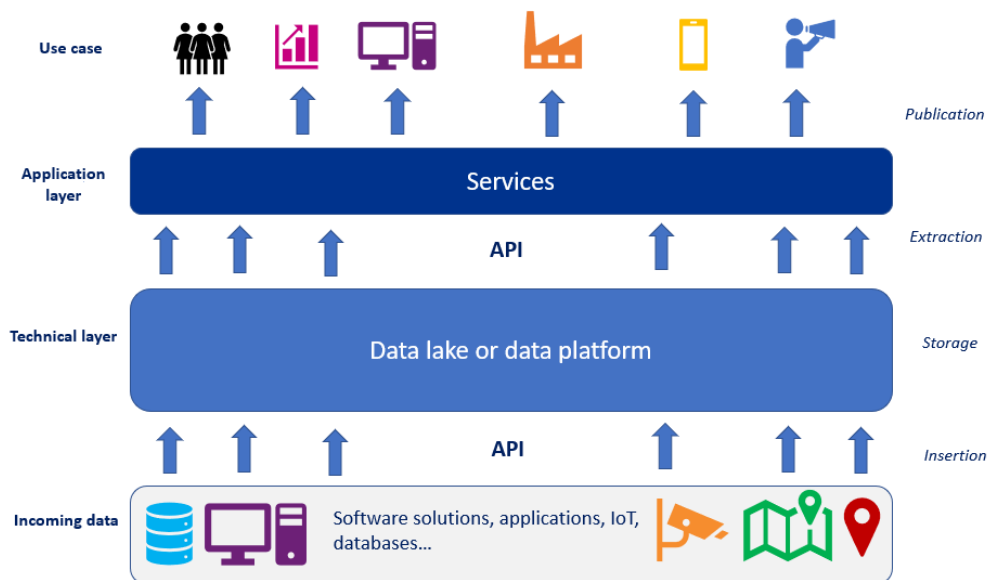
67. J. Chiaroni and A. Pons, *IA de confiance, opportunité stratégique pour une souveraineté industrielle et numérique*, Paris: Digital New Deal, 2022, available at: www.thedigitalnewdeal.org.

68. *Smart City versus Stupid Village*, Paris: Groupe Caisse des dépôts, 2016, available at: www.banquedesterritoires.fr.

69. *De la smart city à la réalité des territoires connectés*, *op. cit.*

Next come data transformation tools, hosting (including urban data platforms), and data analysis and presentation tools (including digital twins).

Figure 2: Smart City infrastructure



Source: CIVITEO.

Each layer entails standardization issues. But whoever imposes their standard(s) within the first layers will be in a dominant position that will help them with exporting. There are many network types nowadays. Cities therefore have many possible choices for transporting data, from low-speed ones (or LPWAN; low-power wide area network), to very high-speed ones (5G or fiber). Some urban areas are now opting for low-speed networks—for example, the city of Rennes, an advanced smart city. Other actors prefer real-time transmission of huge data volumes so that they can prioritize endeavors such as video surveillance, and therefore use fiber or 5G. While the use of 5G is rare in France, it is the primary method in other countries, such as in China. The development of these networks is based on complex trade-offs: suitability for particular uses, health risks and environmental impacts, and social acceptability. However, it is also a response to sovereignty issues—or, more explicitly, to commercial ones. The most striking case is 5G. As Julien Nocetti has shown,⁷⁰ the very broad uses and the major commercial implications of 5G have put this technology at the heart of an intense geopolitical struggle over whose national flagship companies, standards, and ways of using the technology will dominate.

70. J. Nocetti, “L’Europe dans la g opolitique de la 5G”, *op. cit.* See also M. Velliet, “‘Open’ Telecom Networks (Open RAN): Towards a Reconfiguration of International Competition in 5G?”, *Notes de l’Ifri*, October 2022.

Standardization and interoperability

The other battlefield where it seems necessary for Europe to assert itself is standardization—that is, the issuing of technical and data standards, especially for interoperability purposes. At present, interoperability, “the capability of two or more networks, systems, devices, applications, or components to exchange and readily use information—securely, effectively, and with little or no inconvenience to the user”,⁷¹ is far from being guaranteed, either between cities or within them. So, to make a smart city work, proper functioning of communication protocols between the three layers of infrastructure—the lower or device zone (IoT, software solutions, etc.), the intermediate or data zone (data lake, data platform, cloud, etc.), and the upper or application zone (visualization and analysis tools, etc.)—is required.

There is also therefore a need for data and metadata standards. Being able to shape the definition of standards is essential. The GTFS (General Transit Feed Specification) standard for transport data is an important example here. This standard was initially the result of a collaboration undertaken in 2005 between the public transport agency of the American city of Portland, Oregon (TriMet), and teams from Google. TriMet wanted to integrate public transport planning data into the new Google Transit navigation app. A few months later, other American public transport agencies joined them, and a standard called the Google Transit Feed Specification was born.⁷² Soon, faced with a reluctance—first from certain communities and then from some governments—to use a standard tailor-made for a Google app, the standard’s name was changed, with the “G” for Google coming to stand for “general”. Ultimately, though, it is really a Google standard that is being used worldwide (and even imposed by the French government on French transport authorities when they upload their data to the national portal transport.data.gouv.fr). This is not merely a symbolic issue. Local authorities fear that companies such as Google (or its subsidiary Waze) will use public data for commercial purposes that could conflict with the framework of local public services.⁷³ Using their standard makes their own work easier.

Standardization should therefore not exclusively be companies’ business. The United States and China fully understand this. The smart city is one of the areas of standardization that China deems crucial.⁷⁴ It intends to impose its standards not only by taking up a visible place within the organizations in charge of standardization—for example, the International Organization for Standardization (ISO)—but also by investing in local

71. G. Locke and P. Gallagher, *NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0*, Gaithersburg, MD: National Institute of Standards and Technology, 2010.

72. B. McHugh, “Pioneering Open Data Standards: The GTFS Story”, *Beyond Transparency*, 2013, available at: <https://beyondtransparency.org>.

73. A. Courmont, “Flux de données contre-pouvoirs publics”, *LVSL*, April 7, 2021.

74. J. Kynge and N. Liu, “From AI to Facial Recognition: How China Is Setting the Rules in New Tech”, *Financial Times*, October 6, 2020.

projects via the Digital Silk Road initiative and having its industrial flagships act in concert. Chinese standards are now a reference point in terms of video surveillance and, of course, facial recognition.⁷⁵ In other areas—for example, smart lighting—American standards prevail.⁷⁶

It therefore seems essential for Europe to grow stronger and be capable of asserting its desire for standardization. The starting point here is the EU: it is one of the objectives of the “Join, Boost, Sustain” movement, and the European Commission has taken steps toward it by establishing the European Innovation Partnership on Smart Cities and Communities. This partnership has brought together multiple stakeholders to produce an action plan and launch a series of calls for smart city projects. Its achievements include the development and promotion of the SAREF standard for the Internet of Things, which was created by the European Telecommunications Standards Institute and the oneM2M initiative.⁷⁷ Multiple practical measures are also being launched through a proposed interoperability framework for smart cities involving regions from several European countries.⁷⁸ It is therefore up to the EU, as well as to the cities involved in Open & Agile Smart Cities, to exert a broader influence on the development of global standards.

75. J. Kynge and N. Liu, “From AI to Facial Recognition: How China Is Setting the Rules in New Tech”, *op. cit.*

76. James Kynge’s article prompted this response letter from Ben Gardner, president of Northeast Group, a business intelligence firm specializing in the global smart infrastructure industry: B. Gardner, “Letter: In Smart Cities Stakes, US and Europe Are Still Ahead”, *Financial Times*, October 13, 2020.

77. The European Telecommunication Standards Institute is an independent, nonprofit standards body. It is one of the three standardization bodies recognized by the EU. The global partnership project, oneM2M, brings together eight global standards organizations, including ETSI. The SAREF (Smart Application REference) standard allows smart devices to communicate.

78. “Proposal for a European Interoperability Framework for Smart Cities and Communities (EIF4SCC)”, European Commission, July 27, 2021.

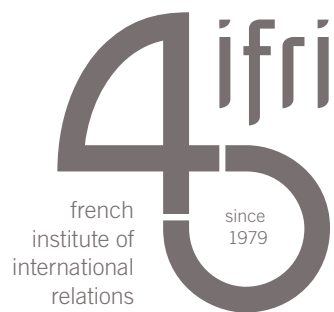
Conclusion: The contours of a European Model

Building on a French study that made some groundbreaking observations, here we have shown that important city management issues will not be resolved by depending on technological solutionism, let alone through antidemocratic models. Although overarching large-scale projects that combine simultaneous investments in several sectors receive the most media attention (Dijon's and Angers's flagship projects come to mind as examples), they are the exception. Most projects in France and Europe are rolled out discreetly. They are far from the talismanic and sometimes exaggerated projects for cities built on tech and algorithms. Far, too, from the models developed in China, which are alerting us to the implications and risks of making data serve surveillance policies. And far from a project of the kind that Google attempted in Toronto, a symbol of a desire to control and optimize cities' daily life through sanitized and commercially driven management by algorithms.

However, these models are spreading and are at the heart of international strategies—particularly those of China and the United States. Within this scenario, Europe can make herself heard, by advocating a city model that makes large-scale use of digital technology but does so within a democratic, sovereign, and open framework. This model's value and potential have been confirmed by many local projects, including French ones. An interesting way to conclude here would be to clearly define the contours of this third model that is partly inspired by Europe. Throughout this study, we have identified the characteristics of this potential European model. If it emerges, its cornerstone will be privacy, and it will be based on a strict application of the GDPR in urban management. The values, principles, methods, and tools that local elected representatives favor today are intersecting with multiple European initiatives under development, and in particular the Data Act, the Data Governance Act, and the Artificial Intelligence Act. The overall legislative package on digital services and the execution of the European data strategy represent a new framework for regions, and will orient the models implemented toward transparency, preservation of common goods, and the protection of sovereign spaces. These many issues are all of interest to local executives.

This model for smart regions affords an important place to digital tools, but it intends these tools to be shared through mass use of open source to ensure interoperability, transparency, and sovereignty. It makes public and private actors' altruism a data source, as well as—and above all—a pillar of

citizen trust. It is hybrid—that is, it preserves traditional ways of delivering public services—and it maintains human relations while preventing new digital divides among citizens from developing. It is sustainable, because it is measured (including in terms of its data management), and it prioritizes endeavors by ascertaining which ones will have a high impact that will support transitions. In short, this model's name is not misleading; it really is smart.



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