GOVERNING WITH URBAN BIG DATA IN THE SMART CITY ENVIRONMENT: AN ITALIAN PERSPECTIVE

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7. BIBLIOGRAPHY

1. SMART CITIES AND THEIR DATA: A BRIEF INTRODUCTION

The COVID-19 crisis has highlighted how cities and local communities can be stable and resilient human environments even in difficult times. Moreover, a considerable part of this resiliency is closely connected to the impressive technological components that permeate people's daily lives and the places they live and work; their private dwellings and public spaces. Working from home, distance learning, telemedicine, and e-health services are simply the most immediate examples of the technological face of the urban experience. Nevertheless, the list could continue for much longer to include the plethora of apps that are now an essential part of daily life.

Albeit in different conditions, this new version of our cities has been investigated over the past decade; here, the urban studies devoted to smart city models[2] have converged. The lessons taught by the pandemic, however, further demonstrate the necessarily multidimensional nature of this ideal. Technological innovation as well as the digitization process, alone, are not enough to make a city or any other human environment authentically 'smart'[3]. The smart city paradigm is built upon the economic, social, governmental, and

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[2] R. CARLI, M. DOTOLI, R. PELLEGRINO AND L. RANIERI, *Measuring and Managing the Smartness of Cities: A Framework for Classifying Performance Indicators*, in *2013 IEEE International Conference on Systems, Man, and Cybernetics*, 2013, p. 1288-1293; A. CARAGLIU, C. DEL BO, *Smartness and European urban performance: assessing the local impacts of smart urban attributes*, in *Innovation: The European Journal of Social Science Research*, no. 25(2)/2012, p. 97-113; A. CARAGLIU, C. DEL BO, P. NIJKAMP, *Smart Cities in Europe*, in *Journal of Urban Technology*,18(2)/2011, p. 65-82; C. MARCIANO, *Smart city. Lo spazio sociale della convergenza*, Roma, Nuova Cultura, 2012; E. MOROZOV, F. BRIA, *Ripensare la Smart city*, Torino, Codice Ed., 2018; C. BUZZACCHI, *Le* smart cities *tra sicurezza delle tecnologie e incertezza dalla dimensione democratica*, in *Technopolis. La città sicura tra mediazione giuridica e profezia tecnologica* (C. Buzzacchi, P. Costa, F. Pizzolato, eds.) Milano, Giuffrè, 2019.

[3] G. F. FERRARI, *Smartness and the Cities*, in *Joint Public Procurement and Innovation - lessons across borders* (G.M. Racca, C.R. Yukins, eds.) Brussels, Bruylant 2019, p. 176-179.

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environmental dimensions of the urban settlement and the lives and needs of its inhabitants and guests[4].

On these premises, the further smartification of cities' interactions over the last two years has shed more light on an intrinsic feature of this urban scenario. In this evolving civic environment, more than ever before, all the interactions that people have with each other and their own digital devices – and those provided by the locally available service – generate a constant and pervasive flow of data[5]. Thanks to these precious informative resources, private and public actors can meticulously map their city's life through digital platforms, profiling and predicting the trends and evolutions of their projects and policies. Several case studies offer solid evidence on the success achieved by delivery services, home or vehicle sharing apps, and intelligent, local surveillance or environmental e-monitoring projects[6]. Of course, a detailed representation of preferences and habits may support a more target-oriented development of local business and a more informed public decision-making process. However, the access to and use of these extensive datasets often suffer from unclear and uncertain legal conditions, precluding the best exploitation of these assets for the public good[7]. The conditions imposed by data protection regulations, which are still-developing and one-way sharing models provided by the open data discipline, and particularly the secrecy

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[4] R. GIFFINGER, C. FERTNER, H. KRAMAR, N. PICHLER-MILANOVIC, E. MEIJERS, *Smart cities. Raking of European medium-sized cities*, Vienna, University of Technology, 2007; S. BOLOGNINI, *Dalla "smart city" alla "human smart city" e oltre*, Milano, Giuffrè, 2017, p. 54 ff.

[5] Beyond the general considerations of the Warsaw Declation on the 'appification' of the society (Warsaw, September 2012), see: E. VENTRELLA, *Privacy in emergency circumstances: data protection and the COVID-19 pandemic*, in *ERA Forum,* no. 21/2020, p. 379–393; A. ZWITTER, O.J. GSTREIN, *Big data, privacy and COVID-19 – learning from humanitarian expertise in data protection*, in *Int. J. Humanitarian Action,* no. 5(4)/2020.

[6] P. GORI, P.L. PARCU, M.L. STASI, *Smart Cities and Sharing Economy*, EUI Working Paper, RSCAS 2015/96, p. 5 ff.; E. MOROZOV, F. BRIA, *Ripensare la Smart city*, cit.

[7] D.U. GALETTA, J. G. CORVALAN, *Intelligenza Artificiale per una Pubblica Amministrazione 4.0? Potenzialità, rischi e sfide della rivoluzione tecnologica in atto,* in *federalismi.it,* no. 3/2019, 1-6; A. SALA, *Utilizzo di* big data *nelle decisioni pubbliche tra innovazione e tutela della privacy*, in *MediaLaws – Rivista di Diritto dei Media*, no. 3/2020, p. 197-217; M. FINCK, *Automated Decision-Making and Administrative Law,* in *Max Planck Institute for Innovation & Competition Research Paper* no. 19-10/2020, p. 2; G. CARULLO, *Big data e pubblica amministrazione*, in *Concorrenza e Mercato*, no 23/2016, p. 181-204.

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and property safeguards on the public use of private-collected data, significantly limit a democratic use of these common assets[8]. In other words, even though data have critical importance in the smart city paradigm, the current legal framework about data's use underscores the multidimensional attitude of this model, focusing more on the economic and governmental dimensions than on the civic and participatory dimensions.

This paper aims to analytically approach this gap, introducing and using the concept of urban data as a context-related key to interpreting the current legal framework. Accordingly, the following section aims to present a contextual understanding of urban data, explaining the value of this concept in light of the current state of data regulation. The paper then continues with a twofold case study addressing the legal issues emerging in the use of urban data in practice. On the one hand, legal attention is focused on the risk of the imprudent utilization of facial recognition technologies to maintain privacy and ensure personal data protection. This paper considers, on the other hand, the position of private commercial platforms operating in the urban environment. In particular, the research focuses on the lessons learned by some medium- and small-size Italian smart city projects, highlighting the role platforms and intermediaries play in collecting, using, and sharing urban data, including for public interest initiatives.

2. URBAN DATA: A CONTEXTUAL UNDERSTANDING OF INFORMATIVE LOCAL ASSETS

2.1 Urban data as a hypothesis within the EU legal framework

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[8] These concerns emerged over the EC consultations for the European strategy for data in 2020 (Brussels, 19.2.2020 COM(2020) 66 final) and, with a long term perspective, through the forthcoming Data Governance Act (Proposal for a regulation of the European Parliament and of the Council on European Data Governance).

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Concepts and models of smart cities are deeply influenced by the cultural experiences of people around the world and the core values that inform the lives of urban communities [9]. Unlike the liberalistic vision developed outside of Europe, especially in the US, the European approach interprets smart city issues through a more holistic and regulatory vision, making fundamental rights and the public good the pillar of its digital single market strategy[10].

This explains why the EU data strategy is traditionally grounded in the protection of personal data, a cornerstone of the European fundamental rights tradition[11]. The evolution of this legislation diachronically shows how the primary goal of the EU and its member states is to protect data to protect people and their rights[12]. This is why the EU's data protection regulation (reg. UE 2016/679[13]) is a cornerstone in the normative architecture about data and provides such a broad and pervasive notion of personal data.

However, the legal qualification of the enormous flow of data constantly generated by the myriad of devices connected today through the internet is a very demanding task[14].

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[9] E. MOROZOV, F. BRIA, *Ripensare la Smart city*, cit.

[10] C. BUZZACCHI, *Le* smart cities *tra sicurezza delle tecnologie e incertezza dalla dimensione democratica*, cit.; E. FERRERO, *Le smart city nell'ordinamento giuridico*, in *Il foro amministrativo*, no. 4/2015, p. 1267 ss.

[11] F.W. HONDIUS, *Emerging Data Protection in Europe*, Amsterdam, North-Holland Publishing Company, 1975; D.H. FLAHERTY, *Protecting Privacy in Surveillance Societies: The Federal Republic of Germany, Sweden, France, Canada and the United States*, Chapel Hill, University of North Carolina Press, 1989; C.J. BENNETT, *Regulating Privacy. Data Protection and Public Policy in Europe and the United States,* Ithaca-Londra, Cornell University Press, 1992; G. GONZÁLEZ FUSTER, *The emergence of data protection as a fundamental right of EU*, Cham-Heidelberg-New York-Dordrecht-Londra, Springer, 2014.

[12] V. MAYER-SCHÖNBERGER, *Generational Development of Data Protection in Europe*, in *Technology and Privacy: The New Landscape* (P.E. Agree, M. Rotenberg eds.) Cambridge (MA), MIT Press, 1997, p. 224 ff.

[13] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

[14] L.A. BYGRAVE, *Information Concepts in Law: Generic Dreams and Definitional Daylight,* in *Oxford Journal of Legal Studies,* 35(1)/2015, p. 102-104; N. PURTOVA, *The law of everything. Broad concept of personal data and future of EU data protection law,* in *Law, Innovation and Technology*, 2018, p. 49.

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Laws struggle to keep pace with digital innovation. Although legislators usually aim for dynamic and flexible definitions and rules, fast-evolving data-intensive technologies dramatically challenge the stability of current legal frameworks. One of the immediate shortcomings of this situation is an inadequate perception, among a broad audience, of the practical function of personal data protection and the real potential of the digital revolution for governors and citizens, beyond businesses. On the one hand, data protection is often conceived as a host of demanding and (sometimes) impeding compliance practices rather than a necessary guarantee. On the other hand, the explosion of big data and the possibility of manipulating the nature of informative content make this discipline ineffective and unworkable[15].

All these barriers and misunderstandings, in practice, tend to preclude the best use of common informative resources. The most disadvantaged categories of subjects are citizens and civil society organizations that lack the necessary economic and computational resources and usually remain in the margins of the most common data-sharing practices.

Within this complex scenario, the EU, over time, is providing valuable guidelines to tackle the many problems mentioned[16]. Beyond prioritizing the free flow of non-personal data[17], the new open data directive[18], at first glance, describes the value of an alternative approach to the sharing and civic use of data. This guideline, in particular, focuses on the contextual significance of data for the public good, including in the scope of its goal both for-profit and non-profit initiatives. Lacking prejudice for privacy and personal data protection, this approach thus aims for the best exploitation of national and local public

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[15] N. PURTOVA, *The law of everything,* cit., *passim*.

[16] For an overview about these issues see H.C.H. HOFMANN, *Digitalisation and European Public Law of Information,* in *Le Futur du Droit Administratif* (J.B. Auby, ed.), Paris, LexisNexis, 2019, p. 13-19.

[17] Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a framework for the free flow of non-personal data in the European Union.

[18] Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information.

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informative assets to promote a beneficial sharing of data and a more democratic approach to data-driven economic and social innovation.

However, the openness and context-related paradigms are intended to be one-way, focusing on the government to business flow of data-sharing practices and rarely the opposite. Of course, the data owned by public administrations have an intrinsic civic value, and thus, should be shared with citizens and private businesses for the common good[19]. Nevertheless, commercial players – on national and local bases – greatly benefit from collecting and using urban datasets, basing their business strategies on the full exploitation of their informative assets. Typically organized by public authorities, these resources have a crucial descriptive and predictive value for an urban fabric and its inhabitants. Moreover, the many kinds of data available are generated by citizens through their interactions with these economic actors. Nevertheless, unlike public regimes, this process is subject to a proprietary regime that stands in opposition to the openness ideal.

In this regard, the new EU data strategy – and particularly the future *Data Governance Act* – promises to pay attention to these asymmetries in the market for data, striking new balances between private and public interests about the use of big data and the fostering of business-to-government data-sharing for the public good. The perspective initiatives are numerous and diversified – from notifications for data-sharing service providers to the mechanisms for data altruism and the basic principles that apply to the reuse of public sector data[20] – and these are all aimed at fostering a more accessible and horizontal regime for the reuse of specific data categories.

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[19] D. GALETTA, *"Open Government", "Open Data" e azione amministrativa*, in *Istituzioni del Federalismo*, no. 3/2019, p. 663-683. G. CARULLO. *"Open Data" e partecipazione democratica*, in *Istituzioni del Federalismo*, no. 3/2019, p. 685-700; F. COSTANTINO, *Gli "open data" come strumento di legittimazione delle istituzioni pubbliche?*, in *Diritto e società,* no. 3/2019, p. 443-475.

[20] Proposal for a Regulation of the European Parliament and of the Council on European data governance (Data Governance Act), Brussels, 25.11.2020 COM(2020) 767 final, p. 3.

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However, this broad and innovative approach to data-sharing has to consider all the conditions and limitations imposed by the existing regulations about data (the GDPR, above all)[21]. Notoriously, the complexity of this normative framework is justified by the difficulties experienced in regulating and reconciling the many conflicting interests associated with the processing circle of data[22]. On the other hand, the increasing legal stratification in this field tends to marginalize the active participation of medium- and small-size organizations. Indeed, these subjects often lack the necessary technological, economic, and human resources required by existing data regulation[23]. This condition functions as a substantial obstacle to the full realization of a multidimensional and participative smart city experience.

Accordingly, a more tailored contextual approach, based on the characteristics and needs of these subjects, could substantially improve the participation and involvement of local actors in data-sharing practices and data-driven policy-making. The notion of urban data has been elaborated and used for these specific purposes.

2.2 Mapping the current definitions of urban data

Approaching the topic of data for the smart city, it could be a useful way to frame the subject to reconceptualize the wide field of big data in terms of urban data.

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[21] *Ibidem*, *Recital* 3, p. 10 and Article 5.

[22] This is a recurrent issue in all data regulation, in Europe as well overseas. Although the legal basis of the EU law in this field usually focuses on the tasks specified by the article 114 TFEU – i.e., promoting the single market – a number of competing interests exist, such as fundamental rights, property assets, and public interests at large (public security, national economy, etc.). These considerations are a priority approached by the new proposal, even in light of the complexities related to technological and security issues (see *Data Governance Act Proposal*, p. 5). The proposal thus aims at including data protected on the bases of commercial confidentiality; statistical confidentiality; the protection of intellectual property rights of third parties; and the protection of personal data (article 3(1)).

[23] N. PURTOVA, *The law of everything,* cit., passim.

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No proper definition of urban data exists at present; most of the limited references consist of examples or lists of the fundamental characteristics of this kind of data, which can be found mainly in the fields of technological and statistical research: some of these contributions, absolutely useful for identifying sources and possible achievements, will be further analysed, but first it is necessary to identify a juridic definition of urban data.

From this point of view, the main risk of adopting a descriptive definition is that of unduly limiting urban data's scope. Without any reference to further characteristics, we can define urban data simply as data collected or intended for use in the urban context.

The diriment characteristics of urban data, it could be observed, link data to the urban context, expressed not only in strictly spatial terms - while considering that a spatial bond, for almost all data collection, cannot be avoided - but also in functional terms.

Smart cities, which also lack a single definition, need to be considered as one with global cities: they are no longer simply local articulations of a national state; they have autonomous interests and connections beyond the state and thus, clearly, beyond the specific administrative boundaries and limited resources of a municipality.

The essential feature of an urban context, in conclusion, depends concretely on the specific needs of any singular urban environment, determined by social, economic and demographic matters, on which relies the possible use for urban data intended by public administrations and private actors.

A deeper understanding of the urban context, moreover, could be obtained by observing some examples of urban features and the facilities involved, as provided by certain studies: one of them, which offers a definition of urban data close to the one we are

proposing[24], discloses that, apart from the traditional characteristics of big data[25], "urban big data describes the real time status of various urban elements, including buildings, streets, pipelines, environments, enterprises, finance, commerce, products, markets, logistics, medicine, culture, education, traffic, public order, and population"[26].

According to another study, likewise, "the major research topics of big data-based UESS[27] research include urban mobility, urban land use and planning, environmental sustainability, public health and safety, social equity, tourism, resources and energy utilization, real estate, and retail, accommodation and catering"[28].

Given this broad scope of the various and wide-ranging topics included in the urban environment and to provide a more useful, but still accurate, definition of urban data, vis-a-vis the "strictly juridic one", to display their main and most common features, urban data can be described as an amount of static and dynamic data that is generated both from things and from human beings, processed by public or private subjects through information technologies within the urban environment.

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[24] Y. PAN - Y. TIAN - X. LIU - D. GU - G. HUA, *Urban Big Data and the Development of City Intelligence*, Engineering, 2.2, 2016, p. 172, https://www.sciencedirect.com/science/article/pii/S2095809916309456: "Urban big data is a massive amount of dynamic and static data generated from the subjects and objects including various urban facilities, organizations, and individuals, which have been being collected and collated by city governments, public institutions, enterprises, and individuals using a new generation information technologies".

[25] IBIDEM: volume, velocity, variety, veracity, and value. Although, recent research works have pointed out further characteristics: cfr. F. X. DIEBOLD, *On the Origin(s) and Development of the Term 'Big Data'*, PIER Working Paper No. 12-037, 21/09/2012, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2152421; P. GÉCZY, *Big Data Characteristics*, The Macrotheme Review, 3(6), 2014, https://macrotheme.com/yahoo_site_admin/assets/docs/8MR36Pe.97110806.pdf.

[26] IVI, p. 173. The authors categorize urban big data into five types: "sensor data on urban infrastructure and moving objects, user data on society and humans, governmental administration data, customer and transaction record data, and arts and humanities data".

[27] Urban Environment, Society, and Sustainability.

[28] L. KONG - Z. LIU - J. WU, *A systematic review of big data-based urban sustainability research: State-of-the-science and future directions*, Journal of Cleaner Production, 273, 2020, p. 1, https://www.sciencedirect.com/science/article/pii/S0959652620331875.

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Such a definition highlights the importance of assessing a large quantity of data, identifying the technological distinction between dynamic and static data and their different sources - as it could be observed that not only personal data, although personal and especially behavioural data are the most important, but also the rising technology of IoT are included – and correctly processing the data - as defined, in the EU, by the GDPR[29] - both for public and private purposes and finally, again, the urban environment.

3. URBAN DATA FOR SOCIAL RIGHTS AND DEMOCRATIC PARTICIPATION: THE ROLE OF SMALL- AND MEDIUM-SIZED CITIES

Urban data are typically able to produce a public or private utility, at least in the context of a city: while not all data necessarily lend themselves to a commercial purpose, they collectively constitute an important information asset for the purpose of perfecting public policies.

"Big data - as referred to by Pan et al. - can be shared, integrated, analysed, and mined to give people a deeper understanding of the status of urban operations and help them make more informed decisions on urban administration with a more scientific approach, thereby optimizing the allocation of urban resources, reducing the operating costs of the

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[29] Art. 4.2 of REGULATION 2016/679 EU: "'processing' means any operation or set of operations which is performed on personal data or on sets of personal data, whether or not by automated means, such as collection, recording, organization, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction".

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urban system, and promoting the safe, efficient, green, harmonious, and intelligent development of the cities as a whole"[30].

First, then, data are intended to be shared with a community, whereby citizens are able to participate in the decision-making process, both by the selections of and discussions with administrators and by directly promoting civic and popular initiatives.

Urban big data, furthermore - according to Kong, Ziu and Wu - "benefit UESS research by proving a people-oriented perspective, timely and real time information, and fine-resolution spatial dynamics"[31]. Apart from this research, a clearly identical utility is also offered by urban data to city administration: from the perspective of smart cities, research based on this kind of data is the most relevant to calibrate public actions on the real needs of people and territories.

Apart from the informative function of the data, which allows citizens to participate consciously in the public life of their city, urban data, in fact, make it possible to pursue the objectives that are the most important for a smart city[32].

The potential of urban data increases exponentially in critical situations such as the COVID-19 pandemic. Knowledge of a quantity of accurate and complete data relating to the use of public and private transport services, for example, as well as of every commercial

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[30] Y. PAN - Y. TIAN - X. LIU - D. GU - G. HUA, *Urban Big Data and the Development of City Intelligence*, Engineering, cit., p. 172.

[31] L. KONG - Z. LIU - J. WU, *A systematic review of big data-based urban sustainability research: State-of-the-science and future directions*, cit., p. 1.

[32] According to R. CAVALLO PERIN – G. M. RACCA, *Smart Cities for an Intelligent Way of Meeting Social Needs*, in *Le Futur Du Droit Administratif* (J-B. Auby ed), Paris, Lexisnexis, 2019: "there are three main changing governance paradigms that shape the landscape of citizen-administration relationships. Firstly, the bureaucratic paradigm concerning the impartial application of rules and regulations by the public administration. Secondly, the consumerist paradigm related to the provisions on public services oriented to fulfilling the citizens' needs. Finally, the participation paradigm as a means of sharing responsibility between citizens and public administration for policy and service processes". Furthermore, with regard to the need of use the data for increasing democratic participation of citizens, the authors highlight that "the democratic legitimacy of municipalities requires redesigning the participatory processes in order to foster community engagement and make citizenry the architect of collective life".

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establishment or category of exercise, could have allowed for the differentiated and likely less drastic management of the restrictive measures adopted to combat the pandemic.

The data in the possession of businesses, public administrations and private citizens - who, among other functions, through the GPS integrated in their smart phones are able to share their positions - are susceptible to be used by a public administration to detect and control the density and traffic of citizens in any place or time, and even to trace the movements of each citizen, as long as in compliance with the provisions of privacy legislation.

It is therefore understandable how similar mass tracking, available to any local public administration to promote improvements in common living, also thanks to appropriate digital platforms capable of acquiring data and, consequently, directing the flow of people and consumers to any service or commercial exercise, would have allowed for a more orderly, simple and open regulation of the freedom of movement of citizens.

Occasionally, private interests coincide or nearly intersect with the aims pursued by local public administrations: this is the case for most urban services - an example could be the management of urban transport services - the improvement of which, through the processing of data, brings benefits to citizens and to their urban community, on the one hand, and to businesses and companies, on the other.

The aim of an Italian city as part of a constitutional republic is not only to provide services - these are the outcomes of local and municipal policies - but instead to guarantee the fullness and, in cases of conflict, the balance, between constitutional rights, which in the Italian Constitution also include the fundamental principles[33].

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[33] In the Italian Constitution the fundamental principles comprise the untouchable core of the constitution, to the point of being considered as limitations for constitutional revisions, together with the republican form of government, according to art. 139 (C. MORTATI, *La Costituzione in senso materiale*, Milano, Giuffrè, 1940). A notable reading stresses that the Italian Constitution would lose all validity if the fundamental values and the social

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In other words, for the city and for its administrators, the role urban data plays is not a matters of simply offering and optimizing urban services, but rather a matter of welfare, and therefore urban data closely involve the entire system of social rights that need to be ensured[34]. The implementation, condivision and use of urban data, in fact, do not guarantee the best pursuit of the aforementioned rights on their own; conversely, the offers of goods and services provided by private companies through the market tend to be based only on the satisfaction of the most consumers. This tends to create two kinds of problems: first, social rights are not automatically guaranteed to every citizen, and neither are the services they need, but rather only those services involving the most consumers to produce the highest profits; second, through this shift a republic founded on work[35] and provided with a strong social constitution, akin to the Italian one, tends to witness the focus of constitutional rights move from the worker - and, therefore, from the citizen - to the consumer[36].

The construction of a smart city through the use of urban data that are handed over to companies operating based on the context and logic of the market risks creating an urban service system that may appear efficient but is unequal, oriented towards the companies' profits and limited to the needs and comforts of the majority[37]. It is necessary, consequently, that local administrations, having the access to data and the capacity to analyse and use them,

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structure on which the state is founded were questioned by the dominant forces (L. CARLASSARE, *Conversazioni sulla Costituzione*, Padova, Cedam, 2013, pp. 20-21).

[34] F. PIZZOLATO, La città come dimensione del diritto e della democrazia, in La città e la partecipazione tra diritto e politica (F. Pizzolato - A. Scalone - F. Corvaja eds.), Torino, Giappichelli, 2019, p. 37: the technological evolution of cities, in fact, "requires to be governed in a democratic key" (unauthorized translation).

[35] Art. 1 of the Italian Constitution.

[36] R. BIN, *Lavoro e Costituzione: le radici comuni di una crisi*, in *Diritti e lavoro nell'Italia repubblicana* (G. G. Balandi - G. Cazzetta eds.), Milano, Giuffrè, 2008.

[37] P. COSTA, *La sicurezza della global city. Prassi globale e critica costituzionale*, Costituzionalismo.it, 2, 2018, p. 102: the global city, according to the author, "hardly tolerates any instance of social equity, unless perhaps in the aspiration to improve the quality of some public services, which, however, seems to be more properly placed in the logic of comfort" (unauthorized translation).

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exploit the features of urban data to be adaptable to the actual needs of citizens and to develop better public welfare strategies.

To determine the relationship between the processing of urban data and privacy rules, besides, at least when the data are processed for public purposes, it is necessary to reconceptualize this connection in terms of social rights and the different rights related to the protection of personal data.

An obvious observation is that data protection and privacy laws are designed to limit the possibility of exploiting most features of urban data: it has been suggested, on the other hand, that "the bulk of the urban data will be the personal information of users (including city residents, workers, and visitors). Societies around the world have now established the principle that personal information can be entrusted to reliable organizations and individuals, which will use the data to identify ways to improve and optimize urban services. This principle has been put into practice with schemes such as personal information banks and personal data stores, but these schemes have met with difficulties. The reason they struggle is related to the irrecoverability of losses from personal information accidents, such as when the data are leaked. If we have technology that can enable organizations to use personal information without compromising data privacy, data principals will be much more inclined to give their consent to the use of their data, which will open up many new possibilities for using data"[38].

The quoted authors emphasize the technological factor; however, a political vision is also needed. Given the conflict, to some extent unavoidable, between urban data processing and privacy rules, the only solution is some form of balancing the rights involved. The amount of social rights connected to welfare policies has already been concretely exemplified but, on a more theoretical level, when connected to the provisions of the Constitution of the

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[38] R. SHIBASAKI - S. HORI - S. KAWAMURA - S. TANI, *Integrating Urban Data with Urban Services*, in *Society 5.0. A People-centric Super-smart Society* (HITACHI-UTOKYO LABORATORY ed.), Tokyo, Springer Open, 2020, p. 71.

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Italian Republic, the adequacy of living conditions in a city, including its housing solutions and working conditions, for the development of men and women, both as individuals and in social formations, should be evaluated[39] in addition to the principle of equality, which entails the removal of economic and social obstacles that prevent the full development of the human person and the effective participation of all workers in the political, economic and social organization of the country[40].

In an emergency situation akin to the COVID-19 pandemic, however, it is understood that even the personal rights traditionally connected to privacy, primarily personal freedoms, would benefit from a different approach to data management[41].

What is needed, therefore, is a new approach based on balancing the protection of privacy and freedom of citizens with the numerous and equally important social rights involved without pushing the protection of personal data to supersede important welfare policies[42].

Until now, moreover, digitalization and the monopoly of digital technologies have been in the hands of large, often transnational, private companies: they have been developed and used according to the logics of the market and profits; technological paradigms, it has been argued, could instead be used to balance emerging monopolies[43]. This entails a great

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[39] Art. 2 of the Italian Constitution.

[40] Art. 3 of the Italian Constitution.

[41] *Infra*, see par. 4 about the possible utility of AI technologies for detecting social distancing and crowds in urban places during the Covid-19 pandemic.

[42] M. HILDEBRANDT, A vision of Ambient Law, in Regulating Technologies (R. Brownsword - K. Yeung eds.), London, Bloomsbury, 2008, p. 188. The author highlights the failure of data protection legislation, proposing instead to "reinvent the balance between [...] legal opacity tools and legal transparency tools". In transposing this vision to the local, we can also look at Nissembaum, according to whose theory of contextual integrity, "privacy prescriptions, now shaped to a significant degree by local factors, are likely to vary across culture, historical period, locale, and so on" (H. NISSEMBAUM, *Privacy as contextual integrity*, Washington Law Review, 79, 2004, p. 156). Fundamental to her theory is Michael Walzer's pluralist theory of justice, which, theorizing the distribution of social goods based on this context, is strongly oriented towards equity.

[43] M. HILDEBRANDT, *A vision of Ambient Law*, cit., p. 186.

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responsibility of and, at the same time, offers an equally great opportunity to the cities where urban data can be applied, which, thanks to technologies based on the reuse of data, could discover innovative methods to pursue the well-being of their citizens; again, in contrast with the typical rules of mere profit.

"Facing life in a digitalised world," writes Hildebrandt, "in intelligent environments with hybrid multi-agent systems, with real time monitoring and real time adaptation to one's inferred preferences, legal normativity will have to be reinvented"[44]. This is true also and especially at a local level. Additionally, "[...] citizens who suffer or enjoy the effects of new technological infrastructures, like for instance Ambient Intelligence (AmI), should be able to influence decisions regarding the funding, designing and marketing of such emerging technologies. Instead of endorsing a paralysing technological determinism [...] civil society and its government should realize that technologies are neither good nor bad but never neutral, acknowledging that technologies can be constructed in different ways, with different normative implications"[45].

The technological development of cities and the availability of large sets of urban data, in fact, open up great possibilities for the development of smart cities capable of guaranteeing social rights in the best possible way and maximizing the participation of citizens, who must be protagonists, in every dimensional level: not only, therefore, in large cities which attract capital and innovative technologies but also and above all in small- and medium-sized cities, which equally demand equity, social justice and participation[46].

The state bears the responsibility for the realization of this ambitious plan to pursue a socially and constitutionally oriented perspective of city government through data: Italy, indeed, has already taken initiative through the programme Smarter Italy, born in 2019 with

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[44] IVI, p. 185.

[45] IVI, p. 176.

[46] *Infra*, par. 4.4: as an example of this approach, the social platforms developed by the municipality of Turin could be considered.

the Decree of the Ministry of Economic Development[47] and made operational with the agreement between Mise[48] and AgID[49].

Smarter Italy, which is founded on the instrument of innovative procurements through which the state stimulates solutions based on emerging technologies to concretely respond to the needs of services expressed by urban and local realities, today comprises 23 selected municipalities, including 11 "smart cities" and 12 "villages of the future", which have between 3,000 and 60,000 inhabitants[50].

This initiative of the Italian government is part of the three-year Plan for information technology in the Public Administration 2020-2022 - which provides for the programme mentioned and its initial development in terms of intelligent mobility, cultural heritage and citizen well-being and health, offering a progressive extension into environments, infrastructures and education systems[51] - and is only a first step in the direction suggested in this contribution.

Most importantly, local governors ultimately select how to use urban data, which is also the decisive factor in assessing compliance with legislation and, from a renewed protective perspective, the balance of this use with the fundamental rights and the need for the democratic participation of citizens who must guide governors' commitments.

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[47] Decree of the Ministry of Economic Development, January 31, 2019.

[48] Ministry of Economic Development.

[49] Agency for Digital Italy. In the spring of 2020, the Ministry of University and Research and the Minister for Technological Innovation and Digitization also became part of the Program.

[50] AGID, *Smarter Italy*, https://appaltinnovativi.gov.it/smarter-italy.

[51] AGID, *Plan for information technology in the Public Administration 2020-2022*, 49-50. About the advantages offered by Smarter Italy for recovery after the health emergency, with particular reference to the transport sector, see: G. RUGGIERO, *Appalti innovativi, la smart mobility per la ripresa dopo l'emergenza sanitaria*, Agenda Digitale, 23/06/2020, https://www.agendadigitale.eu/smart-city/appalti-innovativi-la-smart-mobility-per-la-ripresa-dopo-lemergenza-sanitaria/.

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4. ARTIFICIAL FACIAL RECOGNITION AND IMAGE AND VIDEO ACQUISITION TECHNOLOGIES

In the smart city paradigm, the collection of urban data is essential: in this respect, image and video acquisition systems installed in a municipal territory, such as video surveillance, play a very significant role. These technologies can be employed for a variety of purposes, such as the protection of public property, traffic control, the monitoring of high-security risk areas, and the prevention of crime and vandalism, and can contribute to the creation of an efficient smart urban environment.

The rapid evolution of technology in recent years has enabled the development of sophisticated artificial intelligence algorithms, allowing for the extraction of useful information by public operators and law enforcement authorities.

Ostensible "loitering detection[52]", for example, facilitates the verification of suspicious behaviour carried out by persons or vehicles in specific, predetermined contexts[53]. There are also "digital signage" techniques, which allow for the detection and counting of individuals present in a specific area through a system called "face detection", for which the Italian Data Protection Authority has stated its support on several occasions[54]. Unlike face

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[52] R.NAYAK ET AL., *Deep Learning based Loitering Detection System using Multi-camera Video Surveillance Network*, in 2019 IEEE International Symposium on Smart Electronic Systems: "Loitering can be defined as the act of staying in a sensitive or public place for a protracted duration or for a period of time longer than a given time threshold*"*, p. 215.

[53] Italian Data Protection Authority, 22/02/2018, *Verifica Preliminare. Installazione di un Sistema di Videosorveglianza.*

[54] Italian Data Protection Authority, 21/12/2017, *Installazione di apparati promozionali del tipo "digital signage" (definiti anche Totem) presso una stazione ferroviaria;* Italian Data Protection Authority, 15/03/2018. *Verifica preliminare. Sistema di rilevazione delle immagini dotato di un software che permette il riconoscimento della persona (morfologia del volto).*

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detection, "Artificial Face Recognition[55]" techniques are more invasive and can undermine the rights and freedoms of individuals. Face recognition consists of the automated processing of digital images containing people's faces, which enables the identity of one or more individuals to be uniquely tracked. This processing consists of several phases[56]:

- *image acquisition:* the digital capture and conversion of the face of an individual;

- *face identification:* the moment in which the presence of a face is distinguished within an image and isolated from the background;

- *normalization*: the process of attenuating variations within the facial regions due to, for instance, position or illumination;

- *feature extraction*: the process of isolating and extracting the distinctive and reproducible biometric features of a person's digital facial image;

- *registration*: the retention of the biometric image or pattern, which is stored for later comparison;

- *comparison*: the process of measuring similarities between the characteristics or biometric features of a reference model and other reference models already registered in the system.

AFR can be used for both one-to-one comparisons (e.g., Apple's Face ID) and one-to-many comparisons. The latter technique is used, for instance, by authorities to track down a wanted person and is precisely the one that creates the most problems, from the point of view of protecting the rights and fundamental freedoms of citizens.

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[55] G. MOBILIO, *Tecnologie di Riconoscimento Facciale. Rischi per i diritti fondamentali e sfide regolative,* Napoli, Editoriale Scientifica, 2021.

[56] *IVI,* pp. 32-33

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Indeed, from the standpoint of personal data protection, AFR falls within the definition of biometric data under Article 4.14 of the GDPR: "personal data resulting from specific technical processing relating to the physical, physiological or behavioural characteristics of a natural person, which allow or confirm the unique identification of that natural person, such as facial images or dactyloscopic data" and, according to art. 9 of the GDPR, must be processed under a specific legal basis[57]. From the combined provisions of Art. 9 of the GDPR and Art. 7 of Legislative Decree 51/2018, the use of face recognition algorithms is only allowed if provided for by law in the presence of "*adequate safeguards for rights and freedoms of data subjects*" and "*if necessary to safeguard a vital interest of the data subject or of another natural person*". Additionally, enshrined in Article 8 of Legislative Decree 51/2018 is the prohibition to base, solely on automated processing, decisions that produce "adverse effects on the data subject, unless authorized by EU law or specific legal provisions".

The leading player in this technology on the Italian scene is SARI[58], an AFR technology used by the police that operates in two variants: SARI Enterprise and SARI Real Time[59].

The former allows a police officer to compare an image with other images stored in an automated fingerprint identification system, which contains approximately ten million mugshots with related biographical and descriptive information. The latter allows for control operations within a territory during events; the images are compared in real time with watchlists created for the event in place, generating alerts in case of any possible matches.

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[57] On 21 April 2021, the European Commission presented a draft Regulation on Artificial Intelligence, which articulates, in Article 5, a series of prohibitions on processing operations involving biometric data.

[58] Sistema Automatico Riconoscimento Immagini (Automatic Image Recognition System).

[59] G. MOBILIO, *Tecnologie di Riconoscimento Facciale. Rischi per i diritti fondamentali e sfide regolative,* Napoli, Editoriale Scientifica, 2021, pp. 240 ss.

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SARI Enterprise has been judged to be in line with data protection legislation: the Italian Data Protection Authority[60] considers that under the numerous statutory provisions concerning the prevention, investigation, detection and prosecution of criminal offences or the execution of criminal convictions, the conditions set out in Article 7 of Legislative Decree 51/2018 are met. In addition, the necessity of image processing, which is also set out in Article 7, is confirmed "because of the functionality of this system concerning the identification activities carried out by the police forces".

The Italian Data Protection Authority[61] has recently taken a different view regarding SARI Real Time: the technology is now considered too invasive since it could lead to the evolution of surveillance activity from the "targeted" to the "universal", with a non-negligible impact on the rights and freedoms of the data subjects.

Accordingly, the question arises as to how municipalities can install video surveillance and AFR systems in their territories in full compliance with current legislation. On the one hand, the use of this technology could lead to an improvement in citizens' quality of life: AFR could turn out to be essential in fighting crime and thus enable the renewal of certain neighbourhoods with high crime rates. On the other hand, if not properly used, AFR could be seriously invasive to citizens: for example, an eventuality where the algorithm mistakenly turns a stranger into a wanted person. Such risks are quite real since the algorithm can be biased: recent studies show that Black men and women are strongly underrepresented in the construction of datasets, to the extent that Black women give rise to facial recognition error rates of up to 34.7%, compared with White men at 0.8%[62]. Municipalities, therefore, have to be very cautious when installing and using these systems, both to avoid sanctions

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[60] Italian Data Protection Authority, 26/07/2018, *Sistema automatico di ricerca dell'identità di un volto.*

[61] Italian Data Protection Authority, 25/03/2021, *Parere sul sistema SARI Real Time.*

[62] G. MOBILIO, *Tecnologie di Riconoscimento Facciale. Rischi per i diritti fondamentali e sfide regolative,* Napoli, Editoriale Scientifica, 2021*,* pp. 221

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from the authorities and to avoid undermining the relationship of police and citizens, who may feel threatened by an improper use of AFR.

An emblematic use of an AFR system in Italy is the case of the municipality of Como, which in a programmatic document[63] referred to a project for the experimentation of innovative functions such as face recognition, loitering detection and the automatic detection of abandoned or stolen objects. This system, installed near Tokamakhi Park, close to a railway station, was judged non-compliant with the legislation by the Italian Data Protection Authority[64]. The authority's decision states that the functioning of this system, which processes biometric data, is not legitimate on any legal basis, ordering the municipality to comply with the law by deactivating the device.

At present, therefore, the use of AFR is subject to numerous and justified restrictions aimed at protecting the fundamental rights of citizens. On 28 January 2021, the Council of Europe pushed for the implementation of strict rules to protect the privacy and fundamental rights of data subjects. Secretary General Marija Pejčinović Burić stated that "at its best, facial recognition can be convenient, helping us to navigate obstacles in our everyday lives. At its worst, it threatens our essential human rights[...]"[65]. We are therefore still in the embryonic stage of the large-scale use of AFR technologies and their implementation in a smart city environment.

In contrast, face detection techniques are less invasive; indeed, they merely detect the presence of one or more human faces without identifying them. In Italy, there are numerous examples of the application of this technology: an illustrative case is the

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[63] Comune di Como, *Documento Unico di programmazione per il triennio 2020/2022*, available here: https://www.comune.como.it/export/sites/default/it/comune/bilanci-documenti-piani/documento-unico-programmazione/DUP-2020-2022.pdf

[64] Italian Data Protection Authority, 26/02/2020, *Provvedimento del 26 febbraio 2020*.

[65] Council of Europe, Facial recognition: strict regulation is needed to prevent human rights violations, available at

https://www.coe.int/en/web/tbilisi/council-of-europe-news/-/asset_publisher/zsGQOJsjjHjv/content/facial-recognition-strict-regulation-is-needed-to-prevent-human-rights-violations

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installation of advertising totems at the Milano Centrale railway station. These totems can measure their audience of viewers, collecting information on age, gender, time spent in front of the screen, facial expressions and so on. The technology has been judged compliant with the data protection legislation[66]: although the system does not carry out a processing operation capable of uniquely identifying data subjects, there is nevertheless a processing of personal data, as images containing faces are recorded. Indeed, albeit for a few moments, the images are stored in the volatile memory of a device (RAM - Random Access Memory): the Italian Data Protection Authority considers that the processing is fully compliant because this storage takes place for a few tenths of seconds; only the time necessary for the algorithm to carry out the appropriate analysis. The images are then overwritten by subsequent ones.

This technology, which started out as a system for targeting advertising, has subsequently found new applications that are also useful for the development of a smart city: from a system for detecting social distancing and crowds in urban places[67], to systems capable of monitoring the flow of vehicles and generating reports on urban mobility[68].

However, even in this case, a further step must be taken to make GDPR compliant with the relevant processing operations: anonymization, which is a process by which certain techniques are applied to a set of personal data to irreversibly prevent the identification of data subjects. Anonymization techniques are described in Opinion 05/2014 of Article 29 Working Party, and they must be carried out by eliminating the risks of detection (the possibility of isolating some or all of the data identifying a person), correlation (the possibility of correlating at least two data items concerning the same person) and inference (the possibility of deducing, with a high degree of probability, the value of an attribute from

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[66] Italian Data Protection Authority, 21/12/2017, *Installazione di apparati promozionali del tipo "digital signage" (definiti anche Totem) presso una stazione ferroviaria*.

[67] *Pininfarina con Blimp per misurare distanza sociale*, Ansa, 16 giugno 2020, https://www.ansa.it/osservatorio_intelligenza_artificiale/notizie/salute/2020/06/08/pininfarina-con-blimp-per-misurare-distanza-sociale_34b2a139-d897-4537-a405-bb002307b1b7.html

[68] Report Mobilità della Città Metropolitana di Milano, Blimp, https://blimp.ai/wp-content/uploads/2020/09/Blimp-Report-mobilità-di-Milano-e-Roma-01-07-2021.pdf

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the values of a set of other attributes). These techniques can be divided into two groups: generalization, which consists of a series of techniques aimed at diluting or generalizing the attributes of data subjects by modifying their scales or orders of magnitude; and randomization, which modifies the veracity of data to eliminate the strong correlation that exists between them and data subjects. In light of the above, it is therefore clear that the role data protection plays is essential in the field of smart cities: it enables citizens to be protected from abuses and serious violations of their freedoms by public authorities.

5. THE PLATFORM ECONOMY AND THE SMART CITY

4.1 Smart cities in the service of the platform economy

Among the key elements of the smart city are platforms, both private and public. Platforms are now - and will increasingly be - the tools of urban economic exchanges. The world economy and capitalism have acquired a "new spirit" in the digital dimension[69]. Digital tools have enabled a rapid transformation of economic relations based on three main elements: the spatial redefinition of exchanges, the dematerialization of goods and the dematerialization of financial flows[70]. Digital capitalism became firmly established at the start of the new millennium, when some of the largest transnational platforms became widespread. Platforms represent a qualitative leap in the economy, conveyed through the internet and digital tools: through platforms, the internet enters into the daily reality of economic relations, filters them and orients them. Therefore, platforms create new

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[69] È. CHIAPELLO, L. BOLTANSKI, *The New Spirit of Capitalism*, New York, Verso Books, 2007.

[70] N. SRNICEK, *Capitalismo digitale. Google, Facebook, Amazon e la nuova economia del web*, Roma, LUISS University Press, 2017, p. 11.

behaviours in the microeconomic dimension and are able to affect a territory constantly. This transformation is enabled by the digital tools that each person wears and uses.

Platforms operate in different market fields[71]. There are advertising platforms that create online marketplaces, search engines, social media, platforms for the collaborative economy and the distribution of applications, communication services, payment systems, and others that sell creative content[72]. There are also public platforms that innovate services for citizens, such as the ostensible enabling platforms, which make it possible to offer certain and accessible data to all citizens and a public administration (such as a digital registry where citizens' residence data are recorded). These platforms can facilitate the objective of good performance by a P.A. - which the Italian Constitution requires - and, moreover, at a local level, they can contribute to creating spaces for sharing and democracy from below as well as collaborative practices between public authorities and citizens[73].

Two types of platforms have the greatest impact on cities: product platforms, which provide goods or offer them for hire but treat them as services, and lean platforms, which are those offering a communication tool intended to be a mere interface between service providers and consumers (such as Uber or Airbnb). These platforms are able to create new markets, transform existing markets, replace public services, or even create services that are organized beyond city regulation. For example, the spread of COVID-19 ensured an unprecedented deployment of platforms to provide services without physical contact that were only possible through the intermediation of digital platforms.

Cities have been centres of information and exchange throughout human history. Thus, digital platforms, which base their success on the collection and processing of data,

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[71] L. AMMANNATI, *Per una "nuova" regolazione delle piattaforme digitali*, Astrid Rassegna, 10/2021, in http://www.astrid-online.it/.

[72] EU Commission, *Online Platforms and the Digital Single Market Opportunities and Challenges for Europe,* COM(2016) 288, May 2016.

[73] S. PROFETI, V. TARDITI, *Le pratiche collaborative per la co-produzione di beni e servizi: quale ruolo per gli Enti locali?*, Istituzioni del Federalismo, 4, 2019, p. 861 e ss.

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have found cities to be the ideal places to expand. In particular, the smart city concept has encouraged the expansion of private platforms.

It is no coincidence that the most widespread private platforms have arisen in and spread through the United States, a country in which smart city innovation was created through a bottom-up process, with a retraction of public powers that promoted a regulatory framework favourable to new technologies, according to an "enabling state" model[74]. In this way, smart cities - conceived as cities comprising an ICT framework capable of offering services adapted to the needs of citizens in various fields (transport, waste management, health, welfare, etc.) - have become the prerequisite for the accumulation of data by private companies and for the ongoing expansion of platforms[75].

Accordingly, in the new millennium, smart cities have become the city paradigm of the new economic model of platforms and, in this context, private platforms have become widespread.

4.2 Regulating digital platforms

Given the impact (globally and locally) of digital platforms, the international debate today focuses on how to regulate them.

Regulation by European and national authorities has been carried out through soft law measures, encouraging forms of self-regulation. The first initiative of the EU was

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[74] The European model is characterized by a different vision, where public authorities play a more active role in shaping development, innovation strategies and objectives: F. GASPERI, *Città intelligenti e intervento pubblico*, Il diritto dell'economia, 1, 2019, p. 76.

[75] S. SASSEN, *La città nell'economia globale*, Bologna, Il Mulino, 2010, p. 86.

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launched in 2015 with the Communication on the "Strategy for the Digital Single Market"[76]. Subsequently, in 2016, the European Commission sent a Communication on "Online Platforms and the Digital Single Market. Opportunities and Challenges for Europe"[77].

With these acts, the EU Commission intended to pursue a regulation with two characteristics. First, it pursued the self-regulation of platforms: platforms would have to take steps to self-regulate according to reputational, transparency and monitoring criteria. In addition, the commission advocated a centralized harmonization approach with a view to uniform and coordinated regulation by the EU. The commission's overall approach was intended to prevent state legislation from imposing overly rigid rules on innovation that would have prevented the expansion of the collaborative economy, which in Europe is less competitive than on other continents.

Recently, the Commission has profoundly revised its approach. First, by introducing transparency obligations for platforms with EU Regulation 2019/1150[78], then with a Communication on "Shaping Europe's digital future"[79]; through two proposals for regulations on digital services (Digital services act; proposal for a regulation COM(2020)825) and on digital markets (Digital market act) that will be discussed in the course of 2021, the EU intends to make the regulation of online services equal to that of offline services. The aim is to overcome the regime of competitive privilege that platforms have previously enjoyed. In addition, to clearly redefine the liability of digital intermediaries, the two newly proposed regulations invite state authorities to create ongoing supervision of the platform market and legitimise ex ante antitrust intervention.

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[76] EU Commission, *A Digital Single Market Strategy for Europe,* COM(2015) 192, May 2015.

[77] EU Commission, *Online Platforms and the Digital Single Market Opportunities and Challenges for Europe,* COM(2016) 288, May 2016.

[78] REGULATION (EU) 2019/1150, of the *European Parliament And Of The Council of 20 June 2019on promoting fairness and transparency for business users of online intermediation service*.

[79] EU Commission, *Shaping Europe's digital future*, COM(2020) 67, February 2020.

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The limit of European regulation is the lack of involvement by local authorities in the effects of the platforms on the territories. This limitation of the perspective of European regulation is also present in Italian order. In fact, as discussed below, the matter of 'IT coordination' (article 117.2, l. r) has been entrusted exclusively to the Italian state. Thus, both the innovative projects for the development of the smart city and the possibility of regulating the platforms all pass through the Digital Italy Agency (Agenzia per l'Italia Digitale).

Indeed, as the European Committee of the Regions pointed out in March 2020, "the continuous development and expansion of economic activities where digital platforms are making inroads have an impact at local and regional level, and therefore also have to be regulated at the level of local and regional authorities, within the bounds of their powers, notably with regard to taxation and urban planning"[80].

4.3 Cities and platforms: The regulatory approach of Italian cities

In their initial expansion phase, platforms were welcomed by cities, with the aim of disseminating new collaborative services via an accumulation of data concerning urban life that administrations were unable to process. Local authorities recognized the potential of the internet and new digital technologies to increase the provision and quality of services and resorted to new public-private partnerships with strong emphases on the skills and technologies of private companies to set up new technical systems of urban governance[81].

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[80] European Committee of the Regions, *Platform work – local and regional regulatory challenges*, C 79/36, March 2020.

[81] A. DI BELLA, *Smart city e geografie della mediazione aziendale*, Bollettino della Società Geografica Italiana, 8, 2015.

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The intermediation of platforms in the urban context was, therefore, for a decade, a market in which demand, supply and mediation moved freely. The outcome of this decade of platform expansion was the consolidation of a few companies within certain sectors of city life to such an extent that they influenced urban change [82].

A group of European cities have promoted coordination to achieve a different regulatory approach to platforms: the result of this process was a document signed by more than fifty cities worldwide in 2018. With the Barcelona Declaration[83] - which has the nature of a charter of commitment - these cities, confronted by the attempts of some platforms to circumvent laws, advocated the right of citizens to determine the rules of urban life and the duty of platforms to respect them.

The declaration highlights how cities should have digital 'sovereignty' over private platforms that intermediate trade, goods and services in their territories. Regarding digital governance, cities asked to (a) establish negotiation frameworks between cities and platforms to ensure compliance with legality and local regulations; (b) ensure transparency of operations and transactions in relation to the transfer of data from platforms; (c) work together among cities to encourage changes in regulatory and framing policies in the digital sphere to facilitate compatible economic activity and protect users' rights; d) promote digital protocols to ensure compliance with the regulations of each city; e) share tools, mechanisms and techniques of control between cities; f) make digital platforms accountable for their infringements; g) require platforms to seek permission before operating in any city; and h) compel platforms to agree with a city on the appropriate way to operate in each context and involve district institutions. The declaration offers an articulated perspective of rethinking the relationship between cities and platforms, inspired by a movement of the re-appropriation of a territory as a space for pluralism. In particular, with regard to the regulation of platforms,

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[82] F. ARTIOLI, *Digital platforms and cities: a literature review for urban research. Cities are back in town*, Sciences Po Urban School, Working Paper n. 1/2018, in http://blogs.sciences-po.fr/recherche-villes/

[83] *Sharing cities declaration: cities' common principles and commitments for city sovereignty regarding the platform economy*, Barcelona, 13/11/2018, in https://www.sharingcitiesaction.net/declaration/

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the need is expressed for cities to have greater competences and administrative functions to manage the local impact of platforms according to a preventive regulatory model and not simply ex post containment.

In Italy, in particular, the most populous municipalities have chosen to pursue an inclusive and collaborative approach to policy design[84]: an approach that has been effective for social service platforms and has been made possible by public-private agreements[85]. Agreements have also been reached with commercial platforms, especially in the tourism sector, and for the promotion of agreed upon and fair rents. Three cases can be cited that highlight possible approaches to regulation and collaboration with digital platforms that have been tested in the urban context and could represent paradigms for the future.

The efforts of the metropolitan city of Rome to reach agreements with the major private platforms that have spread throughout the city should be underlined. Certainly, the largest agreement was with Airbnb since Rome is a city with heavy tourist flows. The agreement aims to regulate the economic-fiscal aspects of the platform's use within the framework of regional provisions on tourism. However, the agreement has serious shortcomings, including the absence of mechanisms for reporting illegal rentals, the lack of monitoring and inspection of abusive behaviour in cooperation with the tax agency, and, finally, the lack of data scraping mechanisms[86].

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[84] I. PAIS, E. POLIZZI, T. VITALE, *Governare l'economia collaborativa per produrre inclusione: attori, strumenti, stili di relazione e problemi di implementazione* / *Governare Milano nel nuovo millennio* (A. Andreotti eds.), Bologna, Il Mulino, 2019, p. 222.

[85] IVI, 224 e ss.

[86] I. PAIS, E. POLIZZI, T. VITALE, *Governare l'economia collaborativa per produrre inclusione: attori, strumenti, stili di relazione e problemi di implementazione* / *Governare Milano nel nuovo millennio* (A. Andreotti eds.), Bologna, Il Mulino, 2019, p. 227.

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The approach of the city of Turin has been different[87]. From the beginning, the smart city was designed around the needs of the most marginalized people. Therefore, several 'social' platforms were designed by the municipality in cooperation with private actors. An example is the MiraMap platform that has emerged for the detection and analysis of needs, programming of interventions, valorization of resources, designation of services and governance by the government[88]. The project was initiated by the Politecnico di Torino and focused on the Mirafiori Sud area. The citizens of that neighbourhood were involved - through interviews, assemblies and focus groups - and defined a number of essential actions to improve the life of the neighbourhood. Citizen involvement was made possible via the Ushaidi platform: a platform using free open source software, created in Kenya after the 2007 elections with the aim of activating the processes of popular participation. After the collection of recommendations from citizens on the interventions that the neighbourhood considered a priority, a stable dialogue was set up with the public administration: in this phase, a public-private partnership was created between the university, the municipality, and other cultural and social foundations. The most innovative element was the stable integration of MiraMap within the administrative procedures of the municipality; capable of creating a model of shared, effective and efficient administration.

Finally, the municipality of Milan has promoted agreements, adopting an approach of the gradual regulation of platforms, which began in 2014 with the Milano Sharing City guidelines: at first, the administration monitored platforms; then, it held co-design meetings and stakeholder hearings; finally, it adopted soft regulations through agreements. The city of Milan has also introduced the Catalogue of Collaborative Economy Services, which, at present, has the purpose of maintaining stable interactions between the subjects of the sharing economy but may instead become a stable register of platform activities.

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[87] *L'amministrazione pubblica con i big data: da Torino un dibattito sull'intelligenza artificiale* (R. CAVALLO PERIN eds.), Torino, Università degli Studi di Torino, 2021.

[88] C. COSCIA, F. DE FILIPPI, *L'uso di piattaforme digitali collaborative nella prospettiva di un'amministrazione condivisa. Il progetto Miramap a Torino*, Territorio Italia, 2016.

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4.4 A smart city capable of coordinating digital innovations

In recent years, as the cases of Milan, Turin and Rome show, cities have brought to light the phenomenon of platforms and created institutionalized spaces for dialogue.

From the Italian experiences presented and the Barcelona Declaration, it emerges that cities are calling for the coordination of the use of urban data for economic and social development. The digital sovereignty that cities are claiming and progressively exercising moves in four directions.

The first aspect concerns the division of competences between the supranational, national and local levels. In this sense, a division of competences that entrusts the European Union and states with the regulation of competition and taxation should be preferred. Cities, on the other hand, should be allowed to regulate the impact of platforms on their territories. As Article 5 of the Italian Constitution states, the distribution of competences - also in data governance - must be conceived "by adapting the principles and methods of legislation to the requirements of autonomy and decentralization".

Second, cities' interventions aim to distinguish between platforms that are truly 'collaborative' and have positive social effects and those that conceal essentially commercial interests. The Barcelona Declaration offers criteria for defining "collaborative" platforms, which must "predominantly host peer-to-peer relationships; based on fair economic and remuneration models". They must also "foster participatory community governance, openness and transparency of technology and data, and inclusion, providing equal services to different segments of the city's inhabitants and avoiding any discrimination"[89].

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[89] *Sharing cities declaration: cities' common principles and commitments for city sovereignty regarding the platform economy*, Barcelona, 13/11/2018, in https://www.sharingcitiesaction.net/declaration/

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Third, the forms of partnership and collaboration agreements between municipalities and platforms can certainly be tools for uncovering what drives digital economic relations. However, these instruments are not sufficient to establish effective control, which, given the very nature of platforms, will have to be increasingly preventive and authorization-based. Moreover, consolidating the Milanese experience of the municipal register of platforms could foster the approval of a general plan for the use and governance of data in a smart city; a genuine, flexible regulatory plan to be superimposed on urban planning changes that are imbued with technological devices[90]. A master plan or register of activities would make it possible to trace the ecosystems of the platforms and their impact on a territory; it would also make the smart city environment more integrated.

Finally, in addition to tracking, platforms should be required to return their information assets to cities. Indeed, as stated in the Barcelona Declaration, it is advisable to "ensure that cities are able to access a privacy-preserving manner relevant data from firms operating in their territories (such as information about transportation, safety, labour, and all potential public interest information)", thereby elevating these data to a "common good to solve urban challenges"[91].

These prospects for regulating data and platforms are a challenge to local democracy. Indeed, the lack of expertise in cities on the platform market - or at least on its territorial effects – implies the risk of increasingly weakening self-government, abandoning citizens to an unregulated market[92]. Indeed, platform mediation tends to replace social mediation and make the smart city an increasingly smaller community of users rather than of citizens. Local public decisions are becoming increasingly data-driven, based on and

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[90] A. VENANZONI, *Smart cities e capitalismo di sorveglianza: una prospettiva costituzionale*, Forum di Quaderni costituzionali, 20/10/2019, p. 14.

[91] *Sharing cities declaration: cities' common principles and commitments for city sovereignty regarding the platform economy*, Barcelona, 13/11/2018, in https://www.sharingcitiesaction.net/declaration/

[92] F. PIZZOLATO, *Il consumatore, sovrano della technopolis / Technopolis. La città sicura tra mediazione giuridica e profezia tecnologica* (C. Buzzacchi, P. Costa, F. Pizzolato eds.) Milano, Giuffrè, 2019, p. 109.

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influenced by the aggregation of data collected and processed by companies. Today, after the first wave of expansion of the large platforms, the methods for regulation of this new form of capitalism - which will increasingly develop globally with local spillovers - are in question. The method of regulation proposed by Italian cities, we suggest, aids conceiving of cities not simply as spaces in which platforms 'dig up' urban data but as institutions democratically legitimized to coordinate digital development.

5. CONCLUSION

The path followed by this research shows how the idea of a smart city is far more than a mere digital transformation of processes and services. The smartness paradigm substantially includes a multidimensional and democratic reading of the different models and experiments implemented. This approach to smart cities aims to include all of the many factors – technological or not – that can influence the evolution of these civic experiences and, above all, the availability of informative local resources.

In this connection, the existing legal framework about data in some cases risks excluding or marginalizing medium and small municipalities, imposing standards and conditions that could dissuade them from undertaking new smart experiments at the local level. However, a context-related reading of this legislation could foster a more realistic approach to the needs of local communities, facilitating their balancing of competing interests in their use of informative territorial assets. Data generated by public administrations, private and commercial platforms, and, above all, citizens can indeed be qualified not only with the personal-nonpersonal data dichotomy but also on the basis of a contextual understanding of their informative and social value.

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The use of data in the urban context is multiple and moves along two contiguous trajectories: from administration to citizens - according to the already existing open data paradigm - and from citizens and businesses to public administration. By giving attention to the complex issues related to data security and reconsidering privacy as balanced with other constitutional rights, a local administration can draw powerful resources from urban data to foster better welfare policies and territorial governance, guaranteeing of social rights for citizens.

On the path to actualized smartness, it is the task of every city and even small villages to orient their policies in accordance with the constitutional principles and the core values of the constitutional charters. This is more important than ever in the case of constitutions with a very solid social structure such as the Italian one: every city actively participates in the aims pursued by the republic. It is up to them, therefore, on a local basis, to bring the protection of data and individual freedoms back into a correct balance with the prescribed social rights and to guide urban services through a logic of collective interest that can be achieved with the additional tool of urban data.

Even in light of AFR technologies, in regard to smart cities, the challenge is more than open. While on the one hand the use of AFR is limited to cases expressly provided for by law, it cannot be excluded that, in the near future, subject to due considerations of the risks, these cases may expand. The recent pronouncements of the Data Protection Authority highlight the fact that we are engaging with a new technology which, while awaiting a regulation by the legislators, must be used with all the necessary caution. This translates into special attention that municipalities must give to the implementation of these systems, such as the aforementioned crowd detection or traffic control systems. If it is true that the core element for the successful functioning of a smart city is data, these data must be "clean"; processed according to the GDPR standards and anonymized to interfere as little as possible with the rights and freedoms of citizens.

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Finally, it has been highlighted how platforms are a key component for the use and connection of data in the smart city of the future. Indeed, platforms - both public and private - are the phenomena that produce and share the most urban data. However, there are some critical issues that stem mainly from two factors: the lack of a uniform regulatory framework and the absence of specific competencies within cities to manage platforms and their impact on the urban territories. Some Italian cities have taken steps to fill this lack of legislation and have introduced agreements with private platforms, set up public-private collaboration platforms for detecting and solving social problems, and created registers in which the platforms' intermediation services are made public. These regulatory tools have made it possible to return - at least in part - digital "sovereignty" to cities and ensure that citizens can determine - also via the urban data collected by the platforms - a more democratic governance of their smart cities.

In the near future, the use of urban data will change many city services and the ways citizens use them. The idea of the smart city helps guide efforts to create more sustainable urban environments and a dynamic relationship between public administrations and private actors aimed at promoting the economic and social development of cities. The most important challenge is to succeed in restoring to local self-governments the ability to rule "with" data and not be governed "by" them.

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Abstract. *A smart city is more than its mere technological components. From a legal standpoint, smartness means a civic-enabling regulatory environment, access to technological resources, and openness to the political decision-making process. No doubt, the core asset of this socio-technical revolution is the data generated within the urban contest. However, national and EU law does not provide a specific regulation for using this data. Indeed, the next EU data strategy, with the open data and non-personal data legislation and the forthcoming Data Act, aims to promote a more profitable use of urban and local big data. Nonetheless, at present, this latter still misses a consistent approach to this issue.*

A thorough understanding of the smart city requires, first of all, the reconceptualization of big data in terms of urban data. Existing definitions and studies about this topic converge on the metropolises of East Asia and, sometimes, the USA. Instead, we approach the issues experienced in medium-size cities, focusing on the main Italian ones. Especially in this specific urban environment, data can help provide better services, automatize administrations, and further democratization only if they are understood holistically - as urban data. Cities, moreover, are a comprehensive source of data themselves, both collected from citizens and urban things.

Among the various types of data that can be gathered, surveillance recordings play a crucial role. On the one hand, video surveillance is essential for many purposes, such as protecting public property, monitoring traffic, controlling high-security risk areas, and preventing crime and vandalism. From another standpoint, these systems can be invasive towards citizens' rights and freedoms: in this regard, urban data collected from video surveillance systems may be shared with public administrations or other interested entities, only afterward they have been anonymized. Even this process needs to be aligned with the transparency and participation values that inform the city's democracy. Thus, the

anonymization process must be fully compliant with data protection legislation, looking for the most appropriate legal basis and assessing all the possible sources of risks to the rights and freedoms of people (DPIA).

Urban data, indeed, is a matter of local democracy. The availability of data and the economy of platforms can significantly transform a city's services and geography as well as citizens' lifestyles. However, the participation of citizens to express their views on both the use of urban data for public policy and the regulation of the digital economy is still a challenge. The paper aims to analyze the projects of some Italian cities - including Milan, Rome, and Turin - which have tried to introduce participatory urban data management tools and to highlight the possible challenges of a democratic management of service platforms and data transfer for social and economic development.