

# Expert Knowledge and Smart City Administration\*

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**ABSTRACT** The essay aims at investigating the knowledge and skills that public administrations need to manage smart cities. The research offers a reflection on the expertise relevant to civil servant figures currently emerging in Italy. These figures are required in the municipal organisation to address the local and global challenges that smart cities face in the era of environmental and digital transition. The author argues that enhancing upskill and re-skill in the main areas of smart cities (environment, economy, living, mobility, governance, people) is an essential driver to make the smart transition possible and consistent with the democratic framework and the principles of good administration.

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## 1. Smart Cities, Crisis of Expert Knowledge and Complexity of Urban Administration

In the research conducted to date, scholars investigated the smart city as a new vision of urban contexts destined to be developed and applied with respect to six axiological dimensions<sup>1</sup> (environment, economy, living, mobility, governance, people) in an interdisciplinary perspective, regardless of whether they belong to traditional institutional schemes, such as metropolitan or municipal<sup>2</sup>.

Up to now, the doctrinal debate<sup>3</sup> arisen

among jurists has revolved around the problem of whether the concept is legally predictable<sup>4</sup> and, if so, analysed the phenomenon from a thematic perspective. Nevertheless, the growing application of the smart city formula in administrative practice makes it necessary to push forward the investigation by analyzing the fallout of the smart city in relation to the administrative action and its organization<sup>5</sup>. The present essay

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<sup>1</sup> R. Giffinger, C. Fertner, H. Kramar, R. Kalasek, N. Pichler Milanovic, and E. Meijers, *Smart cities - Ranking of European medium-sized cities*, Publication of The University of Technology, Wien, Centre of Regional Science (SRF), 2007, 11, available on [www.smart-cities.eu](http://www.smart-cities.eu) ("a Smart City is a city well performing in a forward-looking way in these six characteristics, built on the "smart" combination of endowments and activities of self-decisive, independent and aware citizens").

<sup>2</sup> See R. Cavallo Perin and A. Romano (eds.), *Commentario breve al testo unico sulle autonomie locali*, Padova, Cedam, 2006; R. Cavallo Perin, *Comuni e Province nella gestione dei servizi pubblici*, Napoli, Jovene, 1993. More recently, Id., *Beyond the municipality: the city, its rights and its rites*, in *The Italian Journal of Public Law*, II, 2, 2013, 226; Id., *L'ordinamento giuridico della città*, in *Munus*, 2, 2019, 365; M.C. Romano, *La città-regione quale figura interdisciplinare. Soluzioni istituzionali e nuovi livelli di governo delle città capitali e metropolitane nella prospettiva europea*, in *Diritto amministrativo*, 3, 2020, 677. See also L. Vandelli, *Città metropolitane*, in *Enciclopedia del Diritto*, Annali, Giuffrè, Milano, 2016, 81 in which the author highlights, in a diachronic perspective, how the centrality of the urban issue, and in particular the metropolitan one, has emerged since the late seventies together with the need to provide a distinct and peculiar discipline for the areas in which the country's major urban realities are located, based on the differentiation of their institutions, attributions, and modes of operation.

<sup>3</sup> R. Ferrara, *The smart city and the green economy: a critical approach*, in *Energies*, 8, 2015; A. Casinelli, *Le città e le comunità intelligenti*, in *Giornale di diritto*

*amministrativo*, 3, 2013, 240; E. Ferrero, *La smart city nell'ordinamento giuridico*, in *Foro amministrativo*, 4, 2015, 1267; A. Pensi, *L'inquadramento giuridico delle "città intelligenti"*, in *Giustamm*, 9, 2015; F. Fracchia and P. Pantalone, *Smart city: condividere per innovare (e con il rischio di escludere?)*, in *Federalismi*, 22, 2015; E. Carloni, *Città Intelligenti e agenda urbana*, in *Munus*, 2, 2016, 235; K.R. Kunzmann, *Smart cities: A new paradigm of urban development*, in *Crios*, 7, 2014, 9. See also the monographic issue of *Istituzioni del federalismo*, 2, 2016; the book edited by V. Falce and G. Olivieri, *Smart City e diritto dell'Innovazione*, Milano, Giuffrè, 2015; D. Ielo, *L'agenda digitale, Dalle parole ai fatti*, Torino, Giappichelli, 2014; E. Falconio and F. Caprioli (eds.), *Smart city: sostenibilità, efficienza e governance partecipata. Parole d'ordine per le città del futuro*, Milano, Il Sole 24 Ore, 2013; G.F. Ferrari (ed.), *La prossima città*, Milano, Mimesis, 2017; Id., *Smart City*, Milano, Mimesis, 2019; F. Gaspari, *Smart city, agenda urbana multilivello e nuova cittadinanza amministrativa*, Napoli, Editoriale Scientifica, 2018. On an international scale, see the collection of studies in *Fordham Urban Law Journal*, XLI, 2015, 1490 entitled *Smart Law for Smart Cities: Regulation, Technology, and the Future of Cities*; as well as the contributions contained in *Computers and Law*, 2, 2015; and those in *TeMa - Journal of Land Use, Mobility and Environment*, 1, 2013. More references in C. Lauri, *Smart City*, in *Digesto delle discipline pubblicistiche*, agg. VIII, Torino, Utet, 2021.

<sup>4</sup> Not unlike to what has happened in other areas under consideration in recent times. See the contributions in M. Renna and B. Marchetti (eds.), *La giuridificazione*, Firenze, Firenze University Press, 2015.

<sup>5</sup> As highlighted by J.-B. Auby, *Administrative Law Facing Digital Challenges*, in *European Review of Digital Administration & Law*, 1-2, 2020, 9. For the theoret-

addresses the last point.

The evolution of the social and institutional dimension is closely connected with the great urban challenges of our time<sup>6</sup>: the environmental emergency<sup>7</sup>, the transition to models of circular economy<sup>8</sup>, social marginalization, migration<sup>9</sup>, the massive spread of new technologies up to their predominance as a factor conditioning the development and activity of society and institutions<sup>10</sup>. And, last but not least, the worldwide spread of the Covid-19

ical background see S. Romano, *L'ordinamento giuridico*, Milano, Giuffrè, 1946. The author's sensitivity towards a conception of the State as a superior organizational structure "un'organizzazione superiore che unisca, contemperi e armonizzi le organizzazioni minori in cui la prima va specificandosi" emerges already from the early writing of the Author (*I diritti pubblici soggettivi*, in *Trattato Orlando*, Milano, Società Editrice Libreria, 1987). See the wide and recent reconstruction offered by F.G. Scoca, *Santi Romano: la produzione giovanile e i principi di diritto amministrativo*, in *Diritto amministrativo*, 2018, 2, 249; M. Fioravanti, "Stato giuridico" e diritto costituzionale negli scritti giovanili di Santi Romano (1897-1909), in M. Fioravanti (ed.), *La scienza del diritto pubblico*, Milano, Giuffrè, 2001, 304.

<sup>6</sup> Which are all summarized in the Un-Habitat, *New Urban Agenda*, 2019, available on <https://habitat3.org/the-new-urban-agenda/>.

<sup>7</sup> Think of how the exposure of cities to risk and emergencies can, on the one hand, disrupt the normal order of competencies (an example of this is the power to issue "orders") and, on the other, require additional knowledge and skills that are increasingly integrated into the system of public organization. See L. Giani, M. D'Orsogna, and A. Police (eds.), *Dal diritto dell'emergenza al diritto del rischio*, Napoli, Editoriale Scientifica, 2018; Associazione italiana dei professori di diritto amministrativo, *Anuario 2005, Il diritto amministrativo dell'emergenza*, Milano, Giuffrè, 2006, 31; F. Giglioni, *Amministrazione dell'emergenza*, in *Enciclopedia del Diritto*, Annali, VI, 2013, 44.

<sup>8</sup> F. de Leonardis, *Economia circolare: saggio sui suoi tre diversi aspetti giuridici: verso uno Stato circolare?*, in *Diritto amministrativo*, 1, 2017, 163; Id., (ed.), *Studi in tema di economia circolare*, Macerata, EUM, 2017.

<sup>9</sup> M. Savino, *Le libertà degli altri. La regolazione amministrativa dei flussi migratori*, Milano, Giuffrè, 2012; P. Morozzo della Rocca (ed.), *Immigrazione, asilo e cittadinanza*, Roma, Maggioli, 2021; C. Lauri, *Le "Agende Urbane" alla prova delle migrazioni*, in L. Salvadeo, M. Savino, and E. Scotti (eds.), *Migrazioni e vulnerabilità. La rotta del Mediterraneo centrale*, Torino, Giappichelli, 2021, 217. See also Organisation for Economic Co-operation and Development (OECD), *Working Together for Local Integration of Migrants and Refugees*, Paris, OECD Publishing, 2018, available on <http://dx.doi.org/10.1787/9789264085350-en>; UNESCO, *Global Education Monitoring Report, Defending the "right to the city": How cities include migrants and refugees in and through education*, 2019, available on <https://en.unesco.org/gem-report/righttothecity>.

<sup>10</sup> See A. Greenfield, *Radical Technologies*, Verso Books, 2018.

pandemic<sup>11</sup>.

These issues are now decisive factors outlining innovative paths which affect the traditional structures of administrative organization deeply<sup>12</sup>, including the

<sup>11</sup> As highlighted by the Un-Habitat, *UN-Habitat Report on Cities and Pandemics: towards a more just, green and healthy future*, 2021, available on <https://un-habitat.org/un-habitat-report-on-cities-and-pandemics-towards-a-more-just-green-and-healthy-future>. See also the works collected by [www.globalpandemicnetwork.org](http://www.globalpandemicnetwork.org).

<sup>12</sup> In order to study these paths, also with reference to the smart city, it seems essential to address the study of the organization itself, i.e., the organizational structures that constitute the necessary support for the performance of complex activities, such as those that are entrusted to the Public Administration; see F.G. Scoca, *I modelli organizzativi*, in L. Mazzaroli, G. Pericu, A. Romano, F.A. Roversi Monaco, and F.G. Scoca, *Diritto amministrativo*, vol. I, Milano, Monduzzi, 2005, 343. In general see A. De Valles, *Teoria giuridica dell'organizzazione dello Stato. Lo Stato – gli uffici*, vol. I, Padova, Cedam, 1931; G. Zanobini, *Amministrazione pubblica*, in *Enciclopedia del diritto*, vol. II, Milano, Giuffrè, 1958, 231; G. Marongiu, *La direzione nella teoria giuridica dell'organizzazione amministrativa*, Milano, Giuffrè, 1965; M. Nigro, *Studi sulla funzione organizzatrice della pubblica amministrazione*, Milano, Giuffrè, 1966; G. Marongiu, *Gerarchia*, in *Enciclopedia del diritto*, vol. XVIII, Milano, Giuffrè, 1969; Id., *L'attività direttiva nella teoria giuridica dell'organizzazione amministrativa*, Milano, Giuffrè, 1969; F. Benvenuti, *L'amministrazione oggettivata: un nuovo modello*, in *Rivista trimestrale di scienza dell'amministrazione*, 1978, 8; V. Bachelet, *L'amministrazione pubblica*, in *Scritti giuridici*, vol. I, Milano, Giuffrè, 1981; M.S. Giannini, *Organi (teoria generale)*, in *Enciclopedia del diritto*, XXXI, Milano, Giuffrè, 1981, 37; G. Marongiu, *L'ufficio come professione. Saggio sul rapporto di impiego con lo Stato*, Roma, 1981; G. Amato and G. Marongiu (eds.), *L'amministrazione nella società complessa, in ricordo di Vittorio Bachelet*, Bologna, Il Mulino, 1982; S. Cassese, *Il sistema amministrativo italiano*, Bologna, Il Mulino, 1983; U. Allegretti, *Pubblica amministrazione e ordinamento democratico*, in *Il Foro italiano*, 1984, 205; S. Cassese, *Le trasformazioni dell'organizzazione amministrativa*, in *Rivista trimestrale di diritto pubblico*, 1985, 382; G. Berti, *Il principio organizzativo del diritto pubblico*, Padova, Cedam, 1986; Id., *La pubblica amministrazione come organizzazione*, Padova, Cedam, 1986; A. Massera, *Contributo allo studio delle figure giuridiche soggettive nel diritto amministrativo. Stato persona ed organo amministrativo. Profili storico-dogmatici*, Milano, Giuffrè, 1986; F. Merusi, *La responsabilità dei pubblici dipendenti secondo la Costituzione: l'art. 28 rivisitato*, in *Rivista trimestrale di diritto pubblico*, 1986, 41; M. Nigro, *La pubblica amministrazione tra Costituzione formale e Costituzione materiale*, in *Studi in memoria di V. Bachelet*, vol. II, Milano, Giuffrè, 1987, 385; A. Romano, *Il cittadino e la pubblica amministrazione*, in *Il diritto amministrativo degli anni '80*, Milano, Giuffrè, 1987, 155; M.S. Giannini, *L'amministrazione pubblica nello Stato contemporaneo*, in G. Santaniello (ed.), *Trattato di diritto amministrativo*, vol. I, Padova, Cedam, 1988; G. Marongiu, *Funzione amministrativa*, in *Enciclopedia giuridica*, XIV,

knowledge that administrations need today<sup>13</sup>.

Often, indeed, innovation processes are held back by resistance linked to inadequate training or organization within the public administration<sup>14</sup>, determined both by economic and cultural constraints.

At present, this statement seems to be valid also for the many aspects that contribute to making a city “smart”, referring not only to knowledge linked to the use of communications and information technologies and to the digitalisation of activities, but also to the implications in terms of knowledge of environmental, social and economic issues in a perspective of mutual integration.

Given these challenges, public power is at a crossroads.

On the one hand, there may be a total shift toward forms of privatisation, as private actors appear armed with a kind of algorithmic objectivity<sup>15</sup> “that seems to be equal to or greater than the kind of legitimacy derived

from traditional forms of knowledge (based on science, public institutions, media)”<sup>16</sup>.

On the other hand, economy and social sciences<sup>17</sup> reveal an effort to push public powers to not abdicate their role in guiding innovation paths, as they result called to guide shared strategies and policies more than ever<sup>18</sup>.

The recent European recovery strategy, “Next Generation UE” mentions “reskill and upskill” among the challenges that Member States have to face in their National Recovery and Resilience Plans<sup>19</sup>.

However, these tasks become more complex when observed under the lens of the administrative legal order, where the role of public power is rooted in a dimension of public duty, deriving from the institutional

Roma, 1989; G. Di Gaspare, *Organizzazione amministrativa*, in *Digesto delle Discipline Pubblicistiche*, Torino, Utet, 1995, 514; C. Franchini, *L'organizzazione amministrativa italiana*, in M.P. Chiti and G. Greco (eds.), *Trattato di diritto amministrativo europeo*, vol. II, Milano, Giuffrè, 2007; C. Franchini, *L'organizzazione*, in S. Cassese (ed.), *Istituzioni di diritto amministrativo*, Milano, Giuffrè, 2009; C. Franchini and E. Chiti, *Le figure organizzative*, in G. Della Cananea (ed.), *Diritto amministrativo europeo. Principi e istituti*, Milano, Giuffrè; C. Franchini and G. Vesperini, *L'organizzazione*, in S. Cassese (ed.), *Istituzioni di diritto amministrativo*, Milano, Giuffrè, 2015.

<sup>13</sup> Recently see C. Feliziani, *Quanto costa non decidere? A proposito delle conseguenze delle mancate o tardive decisioni delle pubbliche amministrazioni*, in *Il Diritto dell'Economia*, 2, 2019, 155.

<sup>14</sup> These points were first highlighted by M.S. Giannini, *Rapporto sui principali problemi della amministrazione dello Stato*, 16 December 1979; and after decades, are recently faced by the *Italian National Plan for Recovery and Resilience (PNRR)*.

<sup>15</sup> About technology neutrality F. Costantino, *Autonomia dell'amministrazione e innovazione digitale*, 3, argues that there are two possible ways of thinking. There are those who think that technology is and remains neutral, and that human beings can model it as clay at will. On the other hand, there are those who consider this way of reasoning naive, and see in the relationship between people and things a relationship in which technology, having reached the point where it is, transforms humans, even though it may not appear easily understandable. See also L. Sartori, *Alla ricerca della smart citizenship*, in *Le istituzioni del federalismo*, 4, 2015, 931, who welcomes criticism of the optimistic vision of smart cities highlighting how it is reductive to focus attention on the technological dimension only. Sartori locates the cause of this trend of equating between smart cities and technological infrastructure in three factors: technological determinism; the influence of multinational corporations in the ICT sector; a neoliberal orientation.

<sup>16</sup> The trend of the digital world, according to which “private activity sometimes acquires a legitimacy equivalent to that traditionally associated with public intervention” is studied by J.-B. Auby, *Administrative Law Facing Digital Challenges*, 13, who takes the example of Google, where “search engines establish hierarchies of analysis and facts based on algorithms and impose these hierarchies on their clients”. The point is linked to the studies conducted by sociologist D. Boullier, *Sociologie du numérique*, Paris, Armand Colin, 2016, 149.

<sup>17</sup> M. Mazzucato, *The Entrepreneurial State: Debunking Public vs. Private Sector*, England, Anthem Press, 2013, according to which, in the absence of a clear understanding of the subjects involved in the processes of innovation, there is a danger of creating a parasitic system in which the private sector derives benefits from the public sector. See also L. Alteri, A. Cirulli, and L. Raffini, *L'innovazione sociale urbana tra sperimentazione di nuove forme di governance e disimpegno del welfare*, in *Italian Journal of Social Policy*, 1, 2019, 43-44.

<sup>18</sup> See COM(2020)456final, *Europe's moment: Repair and Prepare for the Next Generation*; all the documents related to the *Next Generation EU* strategy, including the *Recovery and Resilience Facility*, are available on <https://ec.europa.eu/info/strategy/recovery-plan-europe-it>. See, especially, Regulation (EU) 2021/241 of the European Parliament and of the Council of February 12, 2021, establishing the Recovery and Resilience Facility.

<sup>19</sup> Launching the 2021 European Semester, the Commission outlined a set of common challenges that Member States must address within their National Recovery and Resilience Plans. Member States are asked to provide information on which components of their Plan contribute to the seven European flagship programs (“Flagship Programs”): 1) Power up; 2) Renovate; 3) Recharge and refuel; 4) Connect; 5) Modernise; 6) Scale-up; e 7) Reskill and upskill. The text of the Italian PNRR is available on <https://www.governo.it/it/articolo/piano-nazionale-di-ripresa-e-resilienza/16782>. and, for its implementation, Decree-Law No. 59 of May 6, 2021, on urgent measures regarding the supplementary fund to the national recovery and resilience plan and Decree-Law No. 77 of May 31, 2021, on the governance of the national recovery and resilience plan and initial measures to strengthen administrative structures and accelerate and streamline procedures.

role of the public administration<sup>20</sup>.

In the absence of a governance of the smart city aware of both the opportunities and the risks for administrative action deriving from the use of new technologies, to whom would the political-administrative choices fall? To operators in the free market? To the citizens who, by their nature, are not always autonomous and aware subjects?

Indeed, it is hard to imagine that either could be the ones primarily called to determine the best policies or to govern the consequences of smart cities.

This is why the smart city's public administration has to enhance its expert knowledge skills.

Not only is it important to identify the mechanisms needed to combine the rules and principles of administrative action with the concrete needs of any smart urban context, but the identification of reliable experts becomes crucial also to prevent erosion of citizens' trust in them.

Furthermore, the above appears consistent with the smart city model adopted in Europe, which envisages a mixed version of top-down and bottom-up approaches<sup>21</sup>.

On the contrary, in practice smart cities processes often experience the withdrawal of the public primacy from its role. Among the reasons for this, the matter (of the inadequacy) of skills and related knowledge stands out. This makes it necessary to analyze the plurality of figures that make up the public administration in order to understand whether the current system of competencies and skills is adequate to satisfy public and individual needs in urban contexts.

This is crucial for the administration of cities, because of the many administrative functions they are called upon to perform in increasingly complex urban contexts<sup>22</sup>.

The very definition of smart city lays the groundwork for understanding what

knowledge and skills city administrations must retain in order to effectively create innovative urban environments.

Thus, first, concerning the use of information technology, the collective knowledge of public offices needs to acquire skills in data management, data protection and computer management of the city, because of the potential implications in terms of protecting the fundamental rights of the sphere of the individuals to whom those data belong or to whom the algorithmic decisions refer<sup>23</sup>.

Second, it emerges the need to create, within the public administration, offices qualified to negotiate with the economic players that act in the real estate, infrastructural and construction markets, aiming at maintaining public oversight on the development of the private and public spaces in the city<sup>24</sup>.

Third, sectoral knowledge is required in areas such as mobility or environment, in order to enforce the use of expertise in the direction of sustainability and resilience.

These preliminary remarks already reveal the need to reconcile multiple, conflicting and changing interests: what organizational tool to reach city enhancement? What skills and what knowledge are necessary for urban contexts that aim at becoming smart cities? To govern and satisfy what concrete needs? What are the implications for the organization of public administrations? And, furthermore, are there ordering principles that can guide this knowledge?

This research aims at offering answers to such questions.

## 2. Expert Knowledge, Public Interests and Integration

In order to critically analyse the knowledge available to public administration today, it is useful to consider the Italian traditional studies on the legal theory of administrative

<sup>20</sup> According to the methodological perspective of A. Romano, *Introduzione*, in L. Mazzarolli, G. Pericu, A. Romano, F.A. Roversi Monaco, and F.G. Scoca, *Diritto amministrativo*, vol. I, Milano, Monduzzi, 2005; Id., *Il cittadino e la pubblica amministrazione*, in *Il diritto amministrativo degli anni '80*, Milano, Giuffrè, 1987; A. Cioffi, *Dovere di provvedere e pubblica amministrazione*, Milano, Giuffrè, 2005.

<sup>21</sup> See E. Ferrero, *La smart city nell'ordinamento giuridico*, 1227; A. Casinelli, *Le città e le comunità intelligenti*, 242.

<sup>22</sup> On the theoretical level see A.M. Sandulli, *Società pluralistica e rinnovamento dello Stato*, in *Iustitia*, Milano, 1968.

<sup>23</sup> R. Kitchin, *The Promise and Perils of Smart Cities*, in *Computers and Law*, 2, 2015, 6; A. Greenfield, *Everyware: The dawning age of ubiquitous computing*, Berkeley, 2006; see also R. Bifulco, *Intelligenza Artificiale, internet e ordine spontaneo*, in F. Pizzetti (ed.), *Intelligenza artificiale, protezione dei dati personali e regolazione*, Torino, Giappichelli, 2018, 383 ss.

<sup>24</sup> See P. Urbani, *Urbanistica consensuale. La disciplina degli usi del territorio tra liberalizzazione e tutela*, Torino, Giappichelli, 2000. In this perspective, read, for example, the many innovations introduced into the urban fabric by start-ups.

organization<sup>25</sup>. These highlight how the institutions of our times are the result of the evolution from a subjective – state-centric, all-encompassing – to an objective vision of administration.

The result is that the knowledge needed today to govern interests of public importance is now allocated in a plurality of places, both internal and external to public institutions.

The shattering of the unitary subjectivity of the State into a plurality of public subjectivities has marked the passage to an articulated and diversified administration<sup>26</sup>, “star-shaped”, which translates into the generalized tendency to the organizational model of the network<sup>27</sup>.

This polycentric model does not apply to public subjects only, but attracts private subjects into the network who, in different ways, constitute ineliminable carriers of the knowledge that public authorities need<sup>28</sup>.

Polycentrism is specific to the administration of cities, as contexts in which

interests in constant evolution emerge. These interests are now essentially coinciding with the three pillars of sustainable development – environmental, economical, and social – as shown by the main urban policy documents drawn up in Europe and internationally<sup>29</sup>.

In this polycentric administrative context, a certain complexity of today’s public decision-making process arises<sup>30</sup>, which goes hand in hand with a progressive strengthening of autonomy.

The need to consider the connections between very different aspects of urban development has called for a further organizational effort than that offered by rigid schemes based on hierarchical relationships.

This has resulted in the creation of mechanisms capable of handling complexity, fragmentation of organization – also in a

<sup>25</sup> G. Di Gaspare, *Organizzazione amministrativa*, 514 highlights the tension between the “insufficienza esplicativa del tradizionale modello legalitario burocratico di amministrazione pubblica e la persistente egemonia del quadro teorico statocentrico che lo sostiene”.

<sup>26</sup> M.S. Giannini, *Il pubblico potere. Stati e amministrazioni pubbliche*, Bologna, Il Mulino, 1986, 74. See also M.C. Romano, *Autonomia Comunale e situazioni giuridiche soggettive. I regolamenti conformativi*, Napoli, Jovene, 2012.

<sup>27</sup> S. Cassese, *Le reti come figura organizzativa della collaborazione*, in S. Cassese (ed.), *Lo spazio giuridico globale*, Roma-Bari, Laterza, 2003, 21; Id. *Gamberetti, tartarughe e procedure. Standards globali per i diritti amministrativi nazionali*, in *Rivista trimestrale di diritto pubblico*, 2004, 1204; S. Amoroso, *Le funzioni dei pubblici poteri nazionali nell’era delle reti*, in S. Amoroso, G. Morbidelli, and M. Morisi (eds.), *Istituzioni, mercato e democrazia. Liber amicorum per gli ottanta anni di Alberto Predieri*, Torino, Giappichelli, 2002, 28; F. de Leonardis, *Le organizzazioni ambientali come paradigma delle strutture a rete*, in *Foro amministrativo*, CDS, 1, 2006, 273; Id., *Soggettività privata e azione amministrativa: cura dell’interesse generale e autonomia privata nei nuovi modelli di amministrazione*, Padova, Cedam, 2000; F. Di Porto, *La disciplina delle reti nel diritto dell’economia*, Padova, Cedam, 2008; L. Ammannati, *Governance e regolazione attraverso reti*, in L. Ammannati and P. Bilancia (eds.), *Governance dell’economia e integrazione europea. Governance multilivello regolazione reti*, Milano, Giuffrè, 2008.

<sup>28</sup> In this sense there emerges the passage from a basic normative fabric made up of the essential references in art. 97 Cost. dedicated to the organization of the PA and 98 Cost. referring to public employees, to a multi-level normative complexity. By enhancing art. 5 Cost., the idea of decentralization is being confused, with respect to some activities, with the transfer of some public functions to citizens, especially in the activities delivered to the public.

<sup>29</sup> See the 17 Sustainable Development Goals (SDGs) approved by the United Nations as part of the Global Agenda for Sustainable Development, as well as European, national, and local strategies for sustainable urban development. See M. Doyle and J. E. Stiglitz, *Eliminating Extreme Inequality. A Sustainable Development Goal, 2015–2030*, in *Ethics & International Affairs*, 2014, 5; H. Weber, *Politics of ‘Leaving No One Behind’: Contesting the 2030 Sustainable Development Goals Agenda*, Routledge Online, 2017; E. Scotti, *Poteri pubblici, sviluppo sostenibile ed economia circolare*, in *Il Diritto dell’Economia*, 2, 2019. More in general, F. Fracchia, *Lo sviluppo sostenibile. La voce flebile dell’altro tra protezione dell’ambiente e tutela della specie umana*, Napoli, Editoriale Scientifica, 2010; R. Bifulco, *Diritto e generazioni future. Problemi giuridici della responsabilità intergenerazionale*, Milano, Giuffrè, 2008; M.G. Della Scala, *Lo sviluppo urbano sostenibile e gli strumenti del governo territoriale tra prospettive di coesione e tutela dei diritti fondamentali*, in *Diritto amministrativo*, 2018, 4, 787; E. Carloni, *Città intelligenti e Agenda urbana: le città del futuro, il futuro delle città*, 235; G. De Giorgi Cezzi, *Territorial Policies and Urban Dimension*, in D. Sorace, L. Ferrara and I. Piazza (eds.), *The Changing Administrative Law of an EU Member State. The Italian Case*, Berlin, Springer, 2020, 323; C. Barbati, *Territori e interessi economici: le “politiche dei luoghi” per lo sviluppo locale*, in *Le Istituzioni del federalismo*, 2, 2009, 243. See also the contributions in G. De Giorgi Cezzi (ed.), *La coesione politico-territoriale*, vol. II, Firenze, Firenze University Press, 2016.

<sup>30</sup> G. Comporti, *Il coordinamento infrastrutturale. Tecniche e garanzie*, Milano, Giuffrè, 1996; F.G. Scoca, *Analisi giuridica della conferenza di servizi*, in *Diritto amministrativo*, 1999, 255; D. D’Orsogna, *Conferenza di servizi e amministrazione della complessità*, Torino, Giappichelli, 2002; S. Civitarese Matteucci, *Conferenza di servizi*, in *Enciclopedia giuridica*, Annali, vol. II, Roma, 2009, 271; E. Scotti, *La conferenza di servizi*, in A. Romano (ed.), *L’azione amministrativa*, Torino, Giappichelli, 2016; Id., *Semplificazioni ambientali tra politica e caos: la VIA e i procedimenti unificati*, in *Rivista giuridica dell’edilizia*, 2018, 353.

perspective of multilevel governance<sup>31</sup> – and specialization of competencies, known as institutional coordination procedures or substitution mechanisms<sup>32</sup>.

In the field of urban planning law, for example, this has translated into the construction of an integrated urban planning intended to flank the traditional planning tools with a strategic approach, summarized in the formula from “government” to “governance”<sup>33</sup>.

<sup>31</sup> See in this regard COM (2014) 490 final, *The Urban Dimension of EU Policies*; as well as the subsequent *Pact of Amsterdam* of May 30, 2016, approved in informal ministerial meetings, which establishes the EU Urban Agenda and defines its main principles. The Agenda envisages the development of 12 partnerships through which cities, states, EU institutions and stakeholders will be able to work together in developing common solutions for the improvement of EU urban areas.

<sup>32</sup> As explained in the PNRR, faced with increasing numerical, demographic and training constraints, the Italian PA finds itself managing a set of extremely articulated and complex rules and procedures that have gradually stratified over time in an uncoordinated and often conflicting manner on different administrative levels (national, regional, and local). In this framework, it is clear that a structural reform of the PA must take into account both internal constraints, linked to the necessary generational change and adaptation of skills, and external ones, due to delays in the regulatory and administrative simplification and digitisation of procedures. In particular, the Commission has stressed the need to define a strategy and an overall vision of the path to reform and organisational innovation; to focus on effective and rapid implementation and enforcement mechanisms; to structurally create administrative capacity through selection of the best skills and qualification of individuals; and to eliminate bottlenecks that could slow down implementation of the investments envisaged by the National Reform Programme.

<sup>33</sup> M.R. Ferrarese, *La governance tra politica e diritto*, Bologna, Il Mulino, 2010; C. Iaione, *La regolazione delle infrastrutture nel ciclo delle politiche pubbliche*, in *Studi in onore di Paolo Stella Richter*, vol. III, Napoli, Editoriale Scientifica, 2013, 1833. For an in-depth look at public policy assessment see S. Cassese, *La qualità delle politiche pubbliche, ovvero del metodo nel governare*, in *Il Mulino*, 3, 2013, 411; M. Di Benedetto, M. Martelli, and N. Rangone, *La qualità delle regole*, Bologna, Il Mulino, 2011; M. Mousmouti, *Effectiveness as an Aspect of Quality of EU Legislation: Is it Feasible?*, in *The Theory and Practice of Legislation*, 2014, 309; Id., *The “effectiveness test” as a tool for law reform*, in *IALS Student Law Review*, 2, 1, 2014; Id., *Operationalising Quality of Legislation through the Effectiveness Test*, in *Legisprudence*, 2014, 191. With specific reference to the urban matter see M. Glasser and S. Berrisford, *Urban Law: A Key to Accountable Urban Government and Effective Urban Service Delivery*, in *The World Bank Legal Review*, 6, 2015, 211; M. Mousmouti and G. Crispi, *“Good” Legislation as a Means of Ensuring Voice, Accountability, and the Delivery of Results in Urban Development*, in *Ibidem*, 257. On the quality of legislation see H. Xanthaki, *Quality of Legis-*

Today, this trend lies at the basis of a series of innovative practices and institutions, such as urban regeneration interventions<sup>34</sup>, the management of urban commons, the recovery of urban voids, as well as forms of partnership that assist in various ways in urban planning and building activities<sup>35</sup>. Each competence becomes a teleological element, which is concerned with urban management as an optimization of land use, because of its ability to act as a harmonizer of urban complexity and to create synergies<sup>36</sup>. These synergies that are expressed at a subjective level in the functions carried out by subjects of public relevance<sup>37</sup>.

This strategic approach entails micro-interventions in the organizational fabric of the administration, through the introduction of figures, as will be seen below, that are not

*lation: An Achievable Universal Concept or An Utopia Pursuit?*, in *Quality of Legislation: Principles and Instruments*, L. Mader and M. Tavres de Almeida (eds), Busto Arsizio, Nomos, 2011, 75.

<sup>34</sup> F. Di Lascio and F. Giglioni, *La rigenerazione di beni e spazi urbani: contributo al diritto delle città*, Bologna, 2017; B. Graziosi, *Il problema degli standard urbanistici «differenziati» e gli interventi di rigenerazione urbana nel territorio urbanizzato*, in *Rivista giuridica dell'edilizia*, 6, 2018, 529; A. Simonati, *Rigenerazione urbana, politiche di sicurezza e governo del territorio: quale ruolo per la cittadinanza?*, in *Rivista giuridica dell'edilizia*, 1, 2019; E. Boscolo, *La riqualificazione urbana: una lettura giuridica*, in [https://www.urbanit.it/wp-content/uploads/2017/10/BP\\_Boscolo.pdf](https://www.urbanit.it/wp-content/uploads/2017/10/BP_Boscolo.pdf); A. Giusti, *La rigenerazione urbana: temi, questioni e approcci nell'urbanistica di nuova generazione*, Napoli, Editoriale Scientifica, 2018; G.F. Cartei, *Rigenerazione urbana e governo del territorio*, in *Le Istituzioni del federalismo*, 3, 2017, 603; M. Passalacqua, A. Fioritto, and S. Rusci, *Ri-conoscere la Rigenerazione*, Milano, Maggioli, 2018.

<sup>35</sup> The trend is supported by administrative jurisprudence, where it has been highlighted as today the orderly planning of the territory is accompanied by the satisfaction of economic and social needs, in the pursuit of objectives directly related to the realization of constitutional values. See Consiglio di Stato no. 2710/2012 and 6040/2012.

<sup>36</sup> F. Salvia and C. Bevilacqua, *Manuale di diritto urbanistico*, Cedam, Padova, 2017; P. Stella Richter, *Profili funzionali dell'urbanistica*, Milano, Giuffrè, 1984, especially 44 and 64; P. Chirulli, *Urbanistica e interessi differenziati: dalle tutele parallele alla pianificazione integrata*, in *Diritto amministrativo*, 1, 2015, 51.

<sup>37</sup> It is not by chance that the governance of the territory is one of the elective sectors in which institutions of coordination such as the conference of services are carried out, in which the comparison of interests overcomes, in respect of the principle of competence, the rule of separateness and hierarchy in the exercise of powers. See F.G. Scoca, *Analisi giuridica della conferenza di servizi*, 255; D. D'Orsogna, *Conferenza di servizi e amministrazione della complessità*, 10; E. Scotti, *La conferenza di servizi*, 476; G.F. Cartei, *Servizi (conferenza di)*, 65.

always the result of linear and coordinated choices.

These general system indications provide the background for the smart city concept. In the smart city, the complexity of the public function is represented by the multiple uses of the territory compatible with one another in the context of digital and environmental transition.

In order to better manage these transitions, new competencies and new knowledge are added to the pre-existing network. Often, the public administrations of the cities go through a crisis of knowledge that can constitute a brake on innovation, which reflects a more general crisis of knowledge in public administrations<sup>38</sup>. To compensate for the lack of expert knowledge capable of carrying out public action efficiently, the most common solution is external counseling<sup>39</sup>, whose consequent risk is an inversion of roles: it is no longer the public administration that benefits from the help of experts, but the external experts end up by benefiting of public knowledge.

Due to the weakness of the administration, external consultants are often entrusted with strategic tasks, that should be carried out by the administration in the balancing of interests guaranteed by public procedural forms<sup>40</sup>. The result is that, on the one hand, the administration renounces to train personnel up to the challenges posed by innovation and to

acquire knowledge capable of governing new phenomena. On the other hand, companies, often large, well-organized internally and strong in the market, profit out of key information that are held by public administrations, generating competitive advantages.

If we look at smart cities, these advantages are not limited to the local level but concern global markets, which is the level in which technology knowledge operates. This is why there is a need for the public administration to hire the best talent through investments in people working in the public sector, as it can be a driver to generate public value<sup>41</sup>.

In the case of smart cities, the connection with the territory is fundamental. Cities are directly entrusted with the exercise of an increasingly complex administrative function, required to face challenges of global dimension. European legal systems are called upon to achieve a convergence of organization that enhances the value of data, including big data, as well as their accessibility in accordance with principles of transparency. IoT sensors and their networking are used by urban administration to collect data that

<sup>38</sup> In recent decades, the inefficiencies of the public sector have often been addressed through continuous reforms aimed at shrinking decision-making times or intervening in procedural arrangements. On the contrary, the problems of public administrations are often linked to the observance of prescribed deadlines, where delays are, in many cases, of years.

<sup>39</sup> In Italy the recovery during the post-war period has been entrusted to great public agencies such as Iri, Eni and Cassa del Mezzogiorno. Then, in the 1980s, the neo-liberal wave resulted in a freeze on recruitment and a brake on investment in human resources in the public administration, where external consultancies ended up to become very relevant and unbalanced in the face of a weak public administration. For a general overview on the Italian public labour system see M. Rusciano and D. Simeoli, *Il lavoro nelle pubbliche amministrazioni*, in *Digesto delle Discipline Pubblicistiche*, 2017, Torino, Utet, 414, where the Authors highlight that the retreat of the classic concept of competence, understood as a certain and stable predetermination of the rule of distribution of tasks, areas of intervention and powers of the organs, is justified by the fact that its setting with a regulatory act is felt as an obstacle to the performance of activities rather than as a guarantee of legality.

<sup>40</sup> Such as writing calls for tenders and setting criteria for public choices.

<sup>41</sup> The PNRR highlights that, over the last decade, the evolution of public spending, with the freeze on turnover, has generated a significant reduction in the number of public employees in Italy. The Italian Public Administration today has a lower number of employees (around 3.2 million in absolute value) than the OECD average (13.4 per cent of total employment, against 17.7 per cent of the OECD average, according to 2017 data). Generational turnover in the last decade has been slow and partial, with the exception of the school sector. Replacement of incumbent staff has amounted to only one new hire for every three terminations in central government and one hire for every two terminations in local government. Today the average age of civil servants is 50 (2019 data). 16.3 percent of the total are over 60 years old, while only 4.2 percent are under 30. This has contributed to a growing mismatch between the set of skills available and those required by the new economic and productive model designed for the new generations (digital, ecological, inclusive).

The shortage of new skills is also determined by the cut in education and training expenditures for public employees. In 10 years, investment in training has almost halved, from 262 million euros in 2008 to 164 million in 2019: an average of 48 euros per employee. Moreover, this limited training activity is also poorly targeted: in 2018, ICT training involved only 7.3 percent of local PA employees, a decrease of 0.4 percent compared to 2015. These problems are more severe in peripheral administrations. Indeed, regional and local administrations have particularly suffered from the spending restraint policies implemented during the years of economic crisis, and have experienced cuts of more than 26.6 billion euros in transfers between 2007 and 2015, a reduction of about 50 percent.

provide relevant information to conduct administrative action such as in the management of public transport, waste collection, for environmental and territorial monitoring or for city security<sup>42</sup>.

Addressing the weakness of expert knowledge within the Italian framework is one of the pillars of the National Recovery and Resilience Plan (PNRR)<sup>43</sup>, which entrusts the implementation of the reform and investment program to four main axes: “Access”, in order to streamline and make more effective and targeted the selection procedures and encourage generational turnover; “Good administration”, to simplify rules and procedures; “Skills”, to align knowledge and organisational skills with the new needs of the world of work and a modern administration; “Digitalisation”, as a cross-cutting tool to better achieve these reforms.

A great challenge, therefore, arises for public authorities: to aim for the shaping of competencies capable of governing, in a specialized manner, the multiplicity of functions involved in the smart city. This process seems to be to start through new figures introduced to deal with critical issues of contemporary cities’ administration.

### 3. The mixed top-down and bottom-up smart city approach in Italy

The search for new figures dedicated to urban development in keeping with contemporary reality is increasingly evident in

<sup>42</sup> See R. Cavallo Perin and I. Alberti, *Atti e procedimenti amministrativi digitali*, in R. Cavallo Perin and D.U. Galetta (eds.), *Il diritto dell’amministrazione pubblica digitale*, Torino, Giappichelli, 2020, 133.

<sup>43</sup> The PNRR specifies that learning new skills (reskilling) and upgrading existing ones to access more advanced jobs (upskilling) are critical to support green and digital transitions, enhance innovation and the growth potential of the economy, promote economic and social inclusion, and ensure quality employment. It is therefore necessary to improve digital and professional skills through investments in education and training. According to the Commission’s targets, by 2025, at least 70 percent of EU citizens in the 16-74 age group should have basic digital skills. Additional targets address the share of young people who do possess digital skills below the minimum threshold and the share of students in technical institutions who will find a job once they graduate and receive in-company education and training. It is specified that within the Public Administration, the reskilling and upskilling effort will include both a broad offering of massive open online courses (MOOCs, i.e. Massive Open Online Courses) and the introduction of “Community of Practice”. See <https://www.governo.it/it/articolo/piano-nazionale-di-ri-presa-e-resilienza/16782>

practice. A first path of analysis concerns the highly technical knowledge needed within the public organization to implement smart cities, designed to act according to a logic defined as “top-down”<sup>44</sup>. This trend is shown by those structures initially created at the national level to implement cross-cutting environmental and digital transition policies.

This can be understood by observing the Italian example, where the smart city was introduced by the legislator as part of the implementation of the Italian Digital Agenda<sup>45</sup>.

In this context, a technical agency, AGID, was given the task of defining and developing strategic projects. Although the original provision to create a “technical committee for smart communities” was subsequently dropped, the agency maintained a central role in accompanying the digital transition of the country and its cities<sup>46</sup>.

This reveals the legislative choice regarding industrial strategies for smartisation, in line with the provisions of art. 117, paragraph 2, letter r, of the Constitution, which appears to be firm in maintaining a strong role of coordination for the State. This continues today, on a political level, considering the recent introduction of a Ministry for Technological Innovation and Digitalization and one for Environmental Transition.

At the local level, there is, specularly, a number of cases in which departments are delegated to the smart city, but with heterogeneous functions throughout the

<sup>44</sup> See *supra*, footnote no. 3.

<sup>45</sup> First with paragraph 2 bis of art. 47 of Law Decree no. 5 of February 9, 2012, letter a); then with Law Decree no. 83 of June 22, 2012, establishing the Agency for Digital Italy (AgID). The reference regulatory text for the introduction of the concept of “smart cities” in Italy is the subsequent Decree Law no. 179 of October 18, 2012, as converted, with amendments, by Law no. 221 of December 17, 2012, whose section VII is about research, innovation and smart communities. The scope of art. 20 of the decree, “comunità intelligenti” was then voided by art. 64 of Legislative Decree no. 179 of August 26, 2016, even before it could produce noticeable results. See F. Cardarelli, *Amministrazione digitale, trasparenza e principio di legalità*, in *Il diritto dell’informazione e dell’informatica*, 2015, 2, 227; Id., *Codice dell’amministrazione digitale*, in R. Garofoli and T. Treu (eds.), *Libro dell’anno del diritto 2017*, Roma, Istituto della Enciclopedia Italiana Treccani, 2017, 211.

<sup>46</sup> In fact, a task force for the coordination of industrial policy measures to promote smart cities and municipalities was subsequently set up within the Ministry for Economic Development with study and monitoring functions.

country<sup>47</sup>. In general, they would be given the function of coordinating all those administrative spheres linked to the exercise of competencies identified in the context of innovation, simplification, and digitalisation on a municipal scale. These structures are, however, flanked by the practice of entrusting delegations sometimes not devoid of fantasy, with a value-emotional connotation, linked to human welfare rather than a technical-sector competency<sup>48</sup>. Beyond the creation of political-administrative structures shaped on the traditional system, at the local level there is no lack of experience in setting up multi-stakeholder bodies such as laboratories or working tables that operate with a multidisciplinary approach, which makes it possible to bring together in a single place the administration and the citizens, associations, businesses, universities and research centers, to support the implementation of smart city strategies and the development of future projects<sup>49</sup>. Such a synergy is also essential in

the perspective of fostering a “knowledge economy” that often originates from places outside the city’s public administration, such as universities and research centers.

Alongside administrative structures created ad hoc in recent years, individual figures with specific competencies have been introduced into public offices to work at the local level, in order to implement the digital and environmental transitions. These figures seem to have the necessary competence profiles to support smart cities. Indeed, further specific functions have been included in public administrations’ competencies for support and assurance purposes with the aim of governing public decision-making processes in smart cities and underpinning digitisation by screening transparency, traceability and protection of data and documents, as well as environmental sustainability.

#### **4. Expert Knowledge for Digital Transition. Smart city administration preparedness to address algorithmic decisions and transparency**

The first reason why it is important to reflect on knowledge in the public administration of smart cities concerns the central use of technology in public decision making<sup>50</sup>.

Italian administrative judges have already examined cases related to this, in order to offer answers to a series of questions: what are the criteria to which the public administration must comply when the public decision is entrusted to an algorithm created by a private company? Are the rules on administrative procedure in our legal system adequate?<sup>51</sup>

Municipality of Rome; “Pavement Management System”, created to have a mapping of the roads to be resurfaced, with the aim of optimizing expenses, planning interventions making them more efficient and saving up to three times in the long run; “Life-Diademe”, on the front of “sustainable” lighting, which introduces a new control system of street lighting, aimed at reducing energy consumption by 30% and, consequently, light and air pollution. In addition, a network of 1,000 sensors will acquire data on noise, traffic and air pollution and panels with Qr Code will be installed in the 100 sites of greatest historical and artistic interest in the city, for interactive tourist signage. See <https://www.comune.roma.it/eventi/it/roma-innovation-smart-city.page>.

<sup>50</sup> See A.G. Orofino and G. Gallone, *L'intelligenza artificiale al servizio delle funzioni amministrative: profili problematici e spunti di riflessione*, in *Giurisprudenza italiana*, 2020, 1738.

<sup>51</sup> A first hypothesis concerned measures of public administration determined by automatic decision-making systems guided by algorithms such as public evidence

<sup>47</sup> For example, the Roma Semplice Department, combines the following functions: Open Government (Democratic Participation; Transparency in the Capitoline Administration; Implementation of P.A. Reform; Open data); Smart City; Digital Agenda (Digitization of P.A.; Technological Innovation and Technological Infrastructure); Modernization of P.A.; Simplification of Citizen-P.A. relations. Strategies and coordination of the portal of Roma Capitale; Communication; Digital Competences; Definition and verification of the management guidelines of the Fondazione Mondo Digitale; Administrative Decentralization; Equal opportunities and gender policies; Enhancement of the statistical function, promotion of the detection, processing, dissemination, storage and analysis of statistical data; Relations with the statistical function of the Metropolitan City.

<sup>48</sup> Such as hope, cheerfulness, beauty, strength, sincerity.

<sup>49</sup> This is the experience of the *Smart City Laboratory* of Roma Capitale, which collaborated with the Roman municipal administration through a process of co-design for the elaboration of the *Roma Smart City Plan*. This is a programmatic document within which are described 81 projects already started, out of a total of 168, as well as the guidelines for the smart future of Roma Capitale. Each initiative is included within a specific sector, among the 10 areas of intervention considered as priorities (Security, Economic Development, Cultural Participation, Urban Transformation, Tourism, Education and Schools, Social, Energy, Environment and Mobility, Transversal). Among these are, for example, “Roma Data Platform” (a platform capable of collecting, open data related to Roma Capitale, having as its purpose the promotion of tourism and economic development, but also the increase of security and the introduction of new services to the community); “Star” (the platform Reporting and Tracking of Anomalies on the roads of Rome, created with the aim of managing in a more effective and efficient way the surveillance and emergency works on the roads of the Great Road System of the

The most significant lesson learned from jurisprudence on this point is precisely the importance of having public servants sensitive to the theme of algorithmic decision-making and capable of inserting these new decision-making processes within the scheme of legality provided by Law 241/1990<sup>52</sup>.

Among the prerequisites identified by the administrative judge there is the principle of non-exclusivity, such that the algorithm on which the decision is based should not be the sole reason<sup>53</sup>. In this sense, the Council of State has clarified that “there must in any case exist in the decision-making process a human contribution capable of controlling, validating or refuting the automatic decision. In mathematics and computer science, the model

procedures entrusted to fully telematic procedures. Here the jurisprudence has focused on exclusion measures adopted automatically by means of robotized decisions and on possible malfunctions of the system. A second hypothesis is the one originated in the field of school competitions, where Law No. 107 of July 13, 2015 had provided that the assignments of the service locations of teachers who won competitions or on mobility applications would be made by a software that would automatically draw up the rankings for assignments and transfers, based on the regulations, the competition results and the availability of service locations. The law has given rise to litigation aimed, on the one hand, at requesting access to the software’s source code and, on the other, at challenging the decisions made by the algorithm. Another relevant case is the “Compas” case, in which an American judge made use of a predictive algorithm to determine the penalty to be applied at the end of a criminal trial. See C. Coglianese and D. Lehr, *Regulating by Robot: Administrative Decision Making in the Machine-Learning Era*, in *The Georgetown Law Journal*, 105, 2016; D.U. Galetta and J.C. Corvalán, *Intelligenza Artificiale per una Pubblica Amministrazione 4.0? Potenzialità, rischi e sfide della rivoluzione tecnologica in atto*, in *Federalismi.it*, 2019, 9; M.C. Cavallaro and G. Smorto, *Decisione pubblica e responsabilità dell’amministrazione nella società dell’algoritmo*, in *Federalismi.it*, 2019; S. Tranquilli, *Rapporto pubblico-privato nell’adozione e nel controllo della decisione amministrativa “robotica”*, in *Diritto e Società*, 2, 2020, 281; A. Coiante, *Il Giudice amministrativo delinea le regole del (nuovo) procedimento algoritmico? Riflessioni a margine di Cons. Stato, n. 8472/2019*, in F.A. Bella, A. Carbone, and A. Zampetti (eds.), *Dialoghi di diritto amministrativo*, Roma, Roma Tre Press, 2020, 129.

<sup>52</sup> F. Costantino, *Public Officials and the Design of Algorithms. Lessons from the Italian Experience*, in *European Review of Digital Administration & Law*, 1-2, 2020, 143; A.G. Orofino, *The Implementation of the Transparency Principle in the Development of Electronic Administration*, in *European Review of Digital Administration & Law*, 1-2, 2020, esp. 127 and 138.

<sup>53</sup> Thus Article 22(1) of the European Union Data Protection Regulation (GDPR), April 27, 2016, no. 679, according to which “the data subject has the right not to be subjected to a decision based solely on automated processing”.

is defined as HITL (human in the loop), in which, in order to produce its result, it is necessary that the machine interacts with the human being”<sup>54</sup>.

There are, moreover, the principles of transparency and knowability, or explainability, of the automated procedure, also in order to allow the full syndication of the administrative judge, who must be able to evaluate “the correctness of the computer process in all its components, from its construction, to the insertion of data, to their validity, to their management”, as well as the principle of non-discrimination.

Even in the absence of a regulatory framework that defines the rules for the use of algorithms in administrative procedures, scholars have highlighted the need to bring decision-making processes back to a necessary democratic control<sup>55</sup>. In the organizational sphere, indeed, these principles are accompanied by the principle of responsibility and the relative criterion of imputation, i.e. identifying in what way the automated decision is attributable to the administration<sup>56</sup>.

The profile of expert knowledge is therefore crucial. Specifically, the person in charge of the procedure<sup>57</sup>, i.e. the person who,

<sup>54</sup> Consiglio di Stato, sec. VI, no. 881/2020. See M.C. Cavallaro, *Imputazione e responsabilità delle decisioni automatizzate*, in *European Review of Digital Administration & Law*, 1-2, 2020, 69; S. Civitarese Matteucci, *Umano troppo umano. Decisioni amministrative automatizzate e principio di legalità*, in *Diritto pubblico*, 5, 2019; A. Barone, *Amministrazione del rischio e intelligenza artificiale*, in *European Review of Digital Administration & Law*, 1-2, 2020, 63. See also R. Brauneis and E.P. Goodman, *Algorithmic Transparency for the Smart City*, in *Yale Journal of Law and Technology*, 2018, 103.

<sup>55</sup> In fact, this set of guarantees ensures adequate participation of the private individual in the algorithmic procedure. It must always be guaranteed to the private individual the faculty to intervene in the procedure to know the procedure and to dialogue with the responsible, to introduce memories and documents, in order to eventually orient the decision that concerns him and, above all, to anticipate in a procedural way their own expectations of protection. See M.C. Cavallaro and G. Smorto, *Decisione pubblica e responsabilità dell’amministrazione nella società dell’algoritmo*, 17.

<sup>56</sup> The point is highlighted by *Civil Law Rules on Robotics*, 2018/C 252/25 (“whereas in the scenario where a robot can take autonomous decisions, the traditional rules will not suffice to give rise to legal liability for damage caused by a robot, since they would not make it possible to identify the party responsible for providing compensation and to require that party to make good the damage it has caused”).

<sup>57</sup> P. Lazzara, *Responsabile del procedimento*, in A. Romano (ed.), *L’azione amministrativa*, Torino, Giap-

according to the general law on administrative procedure, should guarantee participation and dialogue with the private party, in compliance with the transparency and knowability of the procedure, will be called upon to take on the responsibility for the automated decision. The algorithm becomes the technical rule that serves as a prerequisite and tool for the final decision and ends up replacing the public decision. It is, therefore, fundamental that the person responsible for adopting the final decision has the skills and knowledge to be able to evaluate the outcome of the automated procedure and take responsibility for it, under the light of the current interpretation given by the Council of State.

A series of figures with specific tasks have been included in the public organization, including that of cities, in order to make public action more efficient by controlling data and information for different purposes<sup>58</sup>. So, for example, a person responsible for the prevention of corruption and transparency (RPCT) has been introduced, as a guarantee and protection for the knowability of

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pichelli, 2016, 261; M. Renna, *Il responsabile del procedimento a (quasi) dieci anni dall'entrata in vigore della legge n. 241*, in *Diritto amministrativo*, 3-4, 2000, 505. F. Fracchia and S. Vernile, *Una rilettura della figura del responsabile del procedimento dal punto di vista dell'illecito erariale*, in *PA Persona e Amministrazione*, 84; M. Immordino, N. Gullo, and M.C. Cavallaro, *Il responsabile del procedimento*, in M.A. Sandulli (ed.), *Il codice dell'azione amministrativa*, Milano, Giuffrè, 2017, 433; A.G. Orofino, *L'esternazione informatica degli atti amministrativi*, in S. Civitarese Matteucci and L. Torchia (eds.), *Studi per i 150 anni dall'unificazione amministrativa*, vol. IV, *La tecnificazione*, Firenze, Firenze University Press, 2016, 181; Id., *Forme elettroniche e procedimenti amministrativi*, Cacucci, Bari, 2008.

<sup>58</sup> With specific reference to artificial intelligence, see [www.bigdata4innovation.it/big-data/big-data-data-science-verso-data-driven-economy-data-monetization](http://www.bigdata4innovation.it/big-data/big-data-data-science-verso-data-driven-economy-data-monetization). F. Costantino, *Public Officials and the Design of Algorithms. Lessons from the Italian Experience*, 143, identifies the figures summarized in the document: the Data Governance Manager (who could also be the Chief Data Officer, who deals with Governance strategies and their implementation); the Data Owner, responsible for defining the specific business requirements of the data and how they must be addressed towards business actions; the Data System Owner, who follows the technical management of the data governance systems; the Data Quality Manager, who defines the reference framework for the company Data Quality; the Data Steward, who defines and controls the implementation of company policies and standards related to data quality; Data Users, who are called to work on data with different levels of authorization, with different tasks to achieve the objectives. The A. also highlights that “this simple list shows well how data analysis requires multiple and specialized skills”.

administrative action<sup>59</sup>. Identified among the managers in service, the RPCT prepares the three-year plan for the prevention of corruption and transparency (PTPC) and submits it to the governing body for the necessary approval; reports to the management body and to the independent assessment body (OIV) on the “dysfunctions” related to the implementation of the measures for the prevention of corruption and transparency and indicates the names of the employees who have not correctly implemented the measures for the prevention of corruption and transparency; verifies the effective implementation of the PTPC and its suitability and proposes amendments to the same when significant violations of the prescriptions are ascertained or even when changes occur in the organization or activity of the administration; draws up the annual report describing the results of the activity carried out, including the report on the implementation of the prevention measures defined in the PTPC; takes care of the dissemination of knowledge of the Codes of Conduct in the administration, the annual monitoring of their implementation, the publication on the institutional website and the communication to ANAC of the results of monitoring. All these tasks are relevant in terms of performance and quality of the administration for the citizens and should also increase the level of external trust in the work of the public administration<sup>60</sup>.

With reference to digitization specifically, other figures are envisioned: a person in

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<sup>59</sup> The figure of the RPCT was established by Law No. 190 of 2012, which states that each administration shall approve a three-year Plan for the Prevention of Corruption that assesses the level of exposure of offices to risk and indicates the organizational interventions necessary to mitigate it. The preparation and verification of the implementation of this Plan are attributed, in fact, to a Head of Prevention of Corruption and Transparency. See S. Villamena, *Inerzia amministrativa e nuove forme di tutela*, Torino, Giappichelli, 2020; A.G. Orofino, *Profili giuridici della trasparenza amministrativa*, Bari, Cacucci, 2013; Id., *La trasparenza oltre la crisi. Accesso, informatizzazione e controllo civico*, Bari, Cacucci, 2020.

<sup>60</sup> In this regard, is also relevant the role of the whistleblower; see S. Villamena, *Il whistleblowing pubblico*, in *Diritto e processo amministrativo*, 3-4, 2019, 841, especially 861-862, highlights that the figure of the whistleblower is capable of influencing “positively” the administrative performance; D.U. Galetta and P. Provenzano, *La disciplina italiana del whistleblowing come strumento di prevenzione della corruzione e dell'illegalità nella pubblica amministrazione: luci e (soprattutto) ombre*, in *Federalismi.it*, 2020, 112.

charge of document management<sup>61</sup> and one for the digital preservation of documents, controlling of the information flows of the institution<sup>62</sup>.

More recently, following the introduction of the GDPR, the figure of the Data Protection Officer has been introduced<sup>63</sup>, the holder of a delicate role in that – as highlighted in doctrine<sup>64</sup> – may influence public opinion, operate a democratic control over mechanisms potentially able to control the behavior of citizens, condition them and direct them from the outside<sup>65</sup>.

Renewed importance in the context of the PNRR is also given to the person in charge of the digital transition (RTD)<sup>66</sup>, the managerial

figure within the public administration who has among his main functions that of concretely guaranteeing the digital transformation of the administrative activities<sup>67</sup>. More in detail, this is an apical

in terms of negative assessment of performance. See the amendments made to the Digital Administration Code by the simplification decree-law no. 76 of 2020, converted into law no. 120 of 11 September 2020, and in line with the objectives and timelines dictated in the three-year plan for IT for the period 2020-2022, as well as art. 41 of Decree-Law no. 77 of 31 May 2021, which introduces art. 18 *bis*, on the violation of digital transition obligations, with the declared aim of ensuring the implementation of the Italian and European Digital Agenda, the digitalisation of citizens, public administrations and enterprises, with specific reference to the objectives set by the PNRR, as well as to ensure the coordination of information statistical and computerised data coordination of State, regional and local administration and the protection of the essential and social rights throughout the national territory. In detail, it specifies that AgID exercises powers of supervision, verification, control and monitoring of compliance with the provisions of the Code and of any other rule on technological innovation and digitalisation of the public administration, and proceeds, on its own initiative or upon report by the digital ombudsman, to ascertain the related violations.

<sup>67</sup> The figure was introduced by the Italian Code of Digital Administration, Legislative Decree no. 82 of 7 March 2005, art. 17, according to which each public administration entrusts to a single general managerial office, without prejudice to the total number of such offices, the transition to digital operations and the consequent reorganisation processes aimed at achieving a digital and open administration, easily usable and quality services, through greater efficiency and cost-effectiveness. This office is also assigned the tasks related to: a) strategic coordination of the development of the information, telecommunication and telephony systems, so as to also ensure consistency with the common technical and organisational standards; b) direction and coordination of the development of the services, both internal and external, provided by the administration's information, telecommunication and telephony systems; c) direction, planning, coordination and monitoring of IT security with regard to data, systems and infrastructures, also in relation to the public connectivity system d) access of disabled persons to IT tools and promotion of accessibility; e) periodic analysis of the consistency between the administration's organisation and the use of information and communication technologies, in order to improve user satisfaction and the quality of services as well as to reduce the time and costs of administrative action; f) cooperation in the review of the administration's reorganisation; g) direction, coordination and monitoring of the planning envisaged for the development and management of telecommunications and voice information systems; h) planning and coordinating the initiatives relevant to a more effective provision of networked services to citizens and enterprises through the tools of application cooperation between public administrations, including the preparation and implementation of service agreements between administrations for the implementation and sharing of cooperative information systems; i) promoting initiatives relating to the implementation of the directives issued by the President of

<sup>61</sup> See art. 3, DPCM December 3, 2013, Technical rules for the computer protocol pursuant to art. 40 bis, 41, 47, 57 *bis* and 71 of the CAD.

<sup>62</sup> Art. 6. For the requirements necessary to hold this role see also art. 44 of the Italian Digital Administration Code (CAD), in which accreditation mechanisms are also provided.

<sup>63</sup> The DPO pursuant to Article 37 of the Regulation "Designation of the Data Protection Officer" becomes a mandatory figure for public and private entities, with technical expertise in data management, as of May 25, 2018. See also art. 38 "Position of the Data Protection Officer"; art. 39 "Duties of the Data Protection Officer". See F. Pizzetti and R. Bifulco (eds.), *Intelligenza artificiale, protezione dei dati e regolazione*, Torino, Giappichelli, 2018; F. Pizzetti, *Privacy e il diritto europeo alla protezione dei dati personali. Dalla Direttiva al nuovo Regolamento europeo*, vol. I, Torino, Giappichelli, 2016; Id., *Il diritto europeo alla protezione dei dati personali. Il Regolamento europeo 2016/679, vol. II*, Torino, Giappichelli, 2016; A. Spina, *Alla ricerca di un modello di regolazione per l'economia dei dati. Commento al Regolamento (UE) 2016/679*, in *Rivista della regolazione dei mercati*, 1, 2016; Y. Padova and V. Mayer-Schonberger, *Regime change? Enabling Big Data through Europe's New Data Protection Regulation*, vol. XVII, in *Columbia Science and Technology Law Review*, Spring, 2016, 326.

<sup>64</sup> See A. Greco, *La nuova figura del Data Protection Officer nell'UE*, in *MediaLaws*, 1, 2021, 302.

<sup>65</sup> F. Pizzetti, *Prefazione*, XXIV-XXV. Jurisprudence has clarified the prohibition for the person in charge of data protection to be at the same time supervisor and supervised; it follows that the municipal secretary cannot play this role precisely because, having a coordinating function of the top figures of the body, a conflict of interest could potentially ensue. A similar reasoning may be carried out with reference to the person responsible for the prevention of Corruption and Transparency. In general see C. Meoli, *Segretario comunale e provinciale*, in *Digesto delle Discipline Pubblicistiche*, Torino, Utet, vol. XIV, Milano, Giuffrè, 1989, 1, in which the double role of the figure of the secretary is highlighted, on the one hand, as a state official with duties of guarantee and control and, on the other, as a local government official bound by a fiduciary relationship with the administrators.

<sup>66</sup> In particular, the unpreparedness of public administrations for the digital transition exposes them to sanctions

managerial figure within the administration with technological, it-legal and organizational skills and who has powers of impulse and coordination in the path of simplification and inclusive growth of public administrations, who coordinates the development of digital public services and the adoption of new models of transparent and open relationships with citizens<sup>68</sup>.

In the Three-Year Plan for Information Technology in Public Administration for the period 2020-2022, the need is highlighted to consolidate the role of the RTD, considered to be the interface between the Digital Italy Agency, the Department for Digital Transformation and the local administration, as an entity capable of promoting processes of change, sharing good practices and adapting them to its own context. In perspective, it will therefore be useful to strengthen the collaboration process between RTDs through a network model that can stimulate comparison, enhance the best experiences and the sharing of knowledge and planning. This will be done by promoting coordination processes between public administrations, both within the framework of the projects and actions of the Three-Year Plan for IT in Public Administration, but also on the impulse of initiatives coming from urban contexts and their specific needs.

### **5. Expert Knowledge for the Environmental Transition**

Besides the necessary high-level digital skills, some figures are created to impact on the management of urban issues with environmental relevance. Their objective relies on orienting administrative action in

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the Council of Ministers or the Minister delegated for innovation and technologies; j) planning and coordinating the process of disseminating, within the administration, the systems of digital identity and domicile, electronic mail, computer protocol, digital signature or qualified electronic signature and computer mandate, and the rules on accessibility and usability as well as the process of integration and interoperability between the administration's systems and services; j-bis) planning and coordinating the procurement of computer, telematic and telecommunications solutions and systems in order to ensure their compatibility with the objectives of implementing the digital agenda.

<sup>68</sup> Think of the digital transformation projects related to the exclusive use of electronic identity to identify citizens who access public services online, with the obligation to make them usable through smartphones by means of the "App IO" and the use of "PagoPA" for payments to the PA.

urban policies in an environmentally sustainable key.

Following a "managerial" vision of local authorities<sup>69</sup>, specific knowledge has been conceived in parallel with the emergence of critical issues in urban contexts, first of all, the impact of cities on environmental health and climate change.

This is the case of the mobility manager, the energy manager, the chief resilience officer.

#### **5.1. The Energy Manager**

The action of the energy manager is linked to the objectives of energy efficiency and has been introduced also for public bodies, including municipalities and provinces<sup>70</sup>.

By combining environmental and managerial knowledge, the energy manager is a key figure in the verification of energy consumption, in order to optimize it, to control energy consumption and costs, in the promotion of targeted interventions for the use of renewable energy as well as for the procedures of green procurement tenders and, again, for the management of innovative tools such as energy performance contracts<sup>71</sup>. They also deal with adherence to the Covenant of Mayors and adoption of guaranteed energy performance contracts<sup>72</sup>.

In Italy, Article 22 of Law 308/82 established a general obligation to appoint an official responsible for energy conservation<sup>73</sup>. Subsequently, with art. 19 of Law 10/91, was established the figure of "Responsible for the conservation and rational use of energy"<sup>74</sup>.

<sup>69</sup> The trend is described by F. Costantino, *Autonomia dell'amministrazione e innovazione digitale*, Napoli, Jovene, 2012.

<sup>70</sup> But also local health authorities, local authority housing institutes, special agencies of local authorities, etc.

<sup>71</sup> An example of this is the implementation of the Elena Project, in which municipalities and metropolitan cities are now participating in order to make their public property more energy efficient. See <https://www.eib.org/en/products/advising/elena/index.htm>

<sup>72</sup> See Italian Federation for the Rational Use of Energy (FIRE, [www.fire-italia.org](http://www.fire-italia.org)), from where it turns out that about 70% of energy managers have participated in a Sustainable Energy (and Climate) Action Plan (<https://www.covenantofmayors.eu/plans-and-actions/-action-plans.html>).

<sup>73</sup> Law 29 May 1982, no. 308, on the containment of energy consumption, the development of renewable energy sources and the operation of power plants fuelled by fuels other than hydrocarbons.

<sup>74</sup> Circolare del Ministero dello sviluppo economico, Direzione generale per il mercato elettrico, le rinnovabili e l'efficienza energetica, il nucleare, "Nomina del responsabile per la conservazione e l'uso razionale

Following the entry into force of Law 10/91<sup>75</sup>, the F.I.R.E.<sup>76</sup> was charged to carry out the support activities for the implementation of art. 19 of Law 10/91, including the registration and census of Energy Managers<sup>77</sup>. They can be internal to the company<sup>78</sup>, or external consultants<sup>79</sup>.

Legislative Decree 102/2014, which transposed European Directive 2012/27/EU on energy efficiency in Italy<sup>80</sup>, has defined obligations and tools to encourage the spread of energy efficiency. Among them, the timelines for certification as an expert in energy management of the energy manager for companies interested in direct access to the white certificate scheme or the implementation on their own of the energy diagnoses mandatory for large companies and energy-intensive businesses are clarified.

Additional skills are those featuring the EGE (Expert in Energy Management). This is a figure whose requirements are defined by the UNI CEI 11339 standard for which it is possible to use third-party certification by accredited certification bodies. The EGE collects the skills of the energy manager and experts active as professionals or employees of ESCOs and energy service companies and performs the function of energy auditor in

dell'energia di cui all'art. 19 della legge 9 gennaio 1991 n. 10 e all'articolo 7 comma 1, lettera e) del decreto ministeriale 28 dicembre 2012".

<sup>75</sup> Law 9 January 1991, no. 10, on the implementation of the National Energy Plan on the rational use of energy, energy saving and development of renewable energy sources.

<sup>76</sup> Italian Federation for the Rational Use of Energy; see [www.fire-italia.org](http://www.fire-italia.org).

<sup>77</sup> The nomination must be sent to FIRE, which manages it on behalf of the MISE, by the legal representative of the organisation every year and must be submitted by April 30 of each year with reference to consumption in primary sources for the previous year. The appointment of the energy manager is mandatory for subjects with annual consumption higher than 10,000 toe for industry and 1,000 toe for other sectors according to art. 19 of Law January 9, 1991 n. 10. However, it is also possible to appoint them voluntarily, for companies that consume less than 1,000 TEP/year, for example with the aim of enhancing the optimization of energy consumption in ecological and ethical terms in their strategic communication.

<sup>78</sup> According to FIRE, this is the preferable solution for medium-large companies, for which it is suggested a management type, in order to ensure a comparison with senior management and decision-makers.

<sup>79</sup> Then there is the local energy manager, optionally appointed in multi-site entities to deal with a particular plant or group of buildings in connection with the primary corporate energy manager.

<sup>80</sup> Amended and supplemented by Legislative Decree 14 July 2020 no. 73.

relation to the mandatory diagnoses referred to in art. 8 of Legislative Decree 102/2014. The certification is issued on the basis of a minimum experience in the field and the passing of an exam<sup>81</sup>.

Despite the growing relevance of the topic of energy poverty in cities, the latest FIRE report reveals that the normative system is being scarcely enforced<sup>82</sup>. From the data on the appointments of the obligated parties, emerges a certain percentage of non-compliance with the appointment, particularly in the Public Administration, although the presence of a competent and qualified energy manager would undoubtedly benefit the energy and economic balance of public structures, and is even more relevant if we consider the large number of entities that have signed the Covenant of Mayors and are engaged with the global climate change targets.

## 5.2. The Mobility Manager

The mobility manager is competent in the multifaced field of statistical and environmental analysis, logistics and transport management, as well as communication and

<sup>81</sup> See "Rapporto sugli energy manager in Italia. Indagine, evoluzione del ruolo e statistiche", 2019, available on <https://em.fire-italia.org/wp-content/uploads/2020/10/2020-09-rapporto-energy-manager-2019.pdf>. In the FIRE report are explained similarities and differences between the figure of the energy manager (i.e. a corporate role) and the qualification of EGE (i.e. a certificate of competence), certifiable according to UNI CEI 11339. In particular, in large organisations, for example, the energy manager - which are required managerial skills, knowledge of business decision-making processes and a broad vision on the value chain of the company and the resources that contribute to feed it - is internal and may not have in-depth technical skills of energy management. Obviously, these are necessary for an effective action, but they can be brought by one or more EGE among the collaborators of the energy manager or by external consultants EGE where the energy manager does not have the requirements for certification.

In the case of small-medium companies and in the case of external consultants, instead, it is desirable that the energy manager is an EGE, because of the more technical role required in these cases. In the tenders for the assignment of energy manager by a public administration - therefore of medium-large size - it is appropriate to look for subjects with third-party EGE certification. In particular, in public tenders for the appointment of energy managers, it may be appropriate to give an appropriate technical score to those with third-party EGE certification or to restrict the selection to certified EGEs.

<sup>82</sup> FIRE has the task of promoting the role of the energy manager among the non-compliant subjects and among those not obliged to start actions to improve the use of energy.

marketing. He is responsible for identifying mobility solutions for larger companies such as public offices and drawing up special plans<sup>83</sup>.

The mobility manager, the person in charge of company mobility, is also becoming increasingly important in the context of the new mobility imposed by the Covid-19, focused on compliance with the measures to contain viruses and on the reduction of home-work trips by employees<sup>84</sup>. In particular, the role of the mobility manager and of the plans drawn up with their support appears to be fundamental to avert the risk that the reduced use of public transport caused by the Covid-19 crisis translates into a massive use of private cars, with a prejudice for the decarbonization processes<sup>85</sup>.

In Italy, Law 28 December 2015, n. 221, art. 5, paragraph 6, established the figure of the school mobility manager in all educational institutions of all levels, with the task, among others, of organizing and coordinating the home-school travel of school staff and pupils.

More recently, art. 229, paragraph 4, of Decree-Law no. 34 of May 19, 2020, converted, with amendments, by Law no. 77 of July 17, 2020, provides that in order to encourage the decongestion of traffic in urban areas through the reduction of the use of the medium of individual private transport, the

companies and public administrations with single local unities with more than 100 employees located in a regional capital, in a metropolitan city, in a provincial capital or in a municipality with a population greater than 50,000 inhabitants are required to adopt<sup>86</sup> a plan for the home-work movements of their employees, aiming at the reduction of the use of individual private transport<sup>87</sup>.

To this end, a mobility manager is appointed with functions of continuous professional support to the activities' of decision, planning, programming, management and promotion of optimal solutions of sustainable mobility.

The figure responds to the need to pursue environmental and social objectives that ensure greater sustainability of urban areas through the adoption and implementation of plans that limit systematic movements made with private motorized vehicles having only the driver on board; at the same time, these plans should favour the modal shift towards modes of collective or shared transport, the reduction or elimination of the environmental impact<sup>88</sup>. For public administrations this figure is chosen among the staff in role.

A recent decree issued by the Minister of Ecological Transition, in agreement with the Minister of Infrastructure and Sustainable Mobility, defines the procedures for implementing the provisions laid down in the regulation<sup>89</sup>.

<sup>83</sup> This figure now coordinates with the provision for Sustainable Urban Mobility Plans, PUMS, set forth in Ministerial Decree of August 4, 2017. See C. Lauri, *Smart mobility. Regulatory challenges of urban mobility*, in *Rivista trimestrale di scienza dell'amministrazione*, 3, 2021.

<sup>84</sup> In Italy, the figure had already been inserted with the Ronchi decree of 1998, but it was limited to realities with more than 300 employees and, above all, its adoption by companies has remained mostly ineffective.

<sup>85</sup> The introduction of this figure is strongly linked with global and European environmental policies (Directive 2008/50/EC; the "2030 Framework for Energy and Climate Policies", agreed by the European Council of 23 and 24 October 2014, in which a 40% cut in greenhouse gas emissions compared to 1990 levels is envisaged; the Paris Agreement, adopted at the end of the COP21 held in Paris in December 2015; the European Commission's communication of December 11, 2019, entitled "The European Green Deal," by which the target is proposed to reduce greenhouse gas emissions by 2030 by between 50% and 55% compared to 1990 levels; the legislative decree of August 13, 2010, no. 155, implementing Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on air quality). See EPOMM, *the European Platform on Mobility Management*, a network of governments in European countries that are engaged in Mobility Management (MM). They are represented by the Ministries that are responsible for MM in their countries (<http://epomm.eu/>).

<sup>86</sup> Within 31 December of every year.

<sup>87</sup> According to art. 3 par. 3 of the decree, Companies and Public Administrations excluded can however proceed optional adoption of the PSCL of their own employees.

<sup>88</sup> With regard to the contents, the PSCL, aimed at reducing vehicular traffic private vehicles, identifies the measures useful to direct the movements home-work trips of employees towards forms of sustainable mobility alternative to the individual use of private motor vehicle, on the basis of an analysis of the home-work journeys of employees, their mobility needs and the state of the transportation offer present in the relevant territory. The PSCL defines, moreover, the benefits achievable with the implementation of measures provided for, evaluating the benefits for both the employees involved, in terms of travel time, transportation costs, and comfort of transport, both for the company or the public administration that adopts it, in economic terms and of productivity, as well as for the community, in environmental terms, social and economic terms. The decree will be completed by the "Guidelines for the drafting and implementation of home-work travel plans (PSCL)" to be adopted within 90 days of the decree.

<sup>89</sup> Ministero della Transizione Ecologica, Decree 12 May 2021, on how to implement the provisions relating to the figure of the mobility manager.

The decree identifies two types of mobility managers: the company mobility manager has functions of continuous professional support to the activities of decision-making, planning, programming, management, and promotion of optimal solutions of sustainable mobility for companies and public administrations<sup>90</sup>; the municipalities<sup>91</sup> appoint the mobility manager of the area, performing functions of connection between the corporate mobility managers with tasks of supporting the municipalities themselves in the definition and implementation of sustainable mobility policies<sup>92</sup>.

<sup>90</sup> The company mobility manager is assigned the following functions: a) promotion, through the elaboration of the PSCL, of the realization of interventions for the organization and management of the demand for mobility of employees, in order to allow the structural and permanent reduction of the environmental impact resulting from vehicular traffic in urban and metropolitan areas; b) support to the adoption of the PSCL; c) adaptation of the PSCL also on the basis of the indications received from the territorially competent municipality, elaborated with the support of the area mobility manager; d) verification of the implementation of the PSCL, also for the purposes of its possible updating, through the monitoring of the movements of the employees and the evaluation, through specific surveys, of their level of satisfaction. Also: a) care of the relationships with public and private entities directly involved in the management of employee travel; b) activation of initiatives of information, dissemination and awareness on the issue of sustainable mobility; c) promotion, together with the area mobility manager, of training and of training and guidance to encourage the use of mobility bicycle and pedestrian mobility, public transport services and services to complementary and integrative services, including innovative ones; d) support to the area mobility manager in the promotion of interventions on the territory useful to promote intermodality, the development in safety of bicycle and pedestrian routes, efficiency and effectiveness of transport services efficiency and effectiveness of public transport services, the development of services of shared mobility and infomobility services. The enterprises and the public administrations that do not re-enter between those referred to in art. 3, paragraph 1, can still proceed voluntarily to the appointment of the corporate mobility manager.

<sup>91</sup> Those referred to in art. 229, paragraph 4, of decree-law 19 May 19, 2020, no. 34.

<sup>92</sup> The area mobility manager is assigned the following functions: a) activities of connection between the company mobility managers of the territory of reference, in order to develop best practices and collaborative modules, also through convocation of meetings, a meetings, one-off or periodically, and organization of meetings and seminars, however seminars, however named, and the carrying out of any other activity useful to the improvement of practices for the drafting of the PSCL; b) support to the Municipality of reference in the definition and implementation of sustainable mobility policies; c) acquisition of data relating to the origin/destination and the destination and entry and exit times of employees and students provided by company and school mobility managers and transfer of the data of the data in question

The company mobility manager and the area mobility manager are appointed from among persons in possession of high and recognized professional competence and/or proven experience in the field of sustainable mobility, transport, or environmental protection.

Municipalities and the public administrations, identify the mobility manager of the area and the company mobility manager among the personnel having the technical requirements described<sup>93</sup>.

The municipality seems to take on a role of connection between the mobility manager and the territory in which it operates. In fact, it is foreseen that, in order to optimize local policies for sustainable mobility, the municipality, with the support of the area mobility manager, identifies, in agreement with the company mobility manager, any changes to the mobility plan itself, and may stipulate with the company or public administration that has adopted it, understandings and agreements for a better implementation of the plan.

The decree also provides for a bonus for those urban contexts that are particularly virtuous.

In particular, as part of the financing programs for the implementation of interventions of sustainable mobility promoted by the Ministry of Ecological Transition or the Ministry of Infrastructure and Sustainable Mobility, a financial bonus can be assigned to municipalities that submit a project resulting from the integration and coordination of more mobility plans relating to their territory.

### 5.3. The Resilience Officer

The Chief Resilience Officer (CRO)<sup>94</sup> was

to the planning bodies of the public transport services municipal and regional public transport services.

<sup>93</sup> The decree specifies that the functions and activities of the company mobility manager and the area mobility manager in public administrations comply with the provisions of national legislation on codes of conduct, incompatibility of public employees and anti-corruption. See Decree of the President of the Republic, 16 April 2013, no. 62; Law 6 November 2012, no. 190; Legislative Decree 8 April 2013, no. 39.

<sup>94</sup> The term resilience, although in increasing use in the political and legal landscape, especially thanks to the recent PNRR, found until recently very few references in the rules (in D. Lgs 1/2018 (Civil Protection Code) in which the promotion of resilient communities is mentioned; in a document of Arera - Regulatory Authority for Energy, Networks and Environment about the resilience of electricity distribution networks, which obliges

created with the evocative objective of transforming “risks” into “opportunities”<sup>95</sup>. This professional would be required to have a wide range of expertise that spans environmental, social and economic policies, aimed at the design and implementation of strategies to respond to changes and challenges in the urban environment as a whole and innovate processes with existing resources in local realities.

Some cities have equipped themselves with an office for Resilient Cities as a stable organ of the public administration. This office, with its transversal function, should “work as a system” between the various offices that operate in the municipality to develop synergies and avoid each unit proceeding independently, with the risk of replicating actions and work and losing an overall approach. The approach adopted by the office should enhance and concretize the principle of subsidiarity, that is, getting as close as possible to the various levels of public administration, but also to stakeholders and citizens, with the aim of intercepting the different points of view and giving voice to them. The office aims at adopting new models and new processes, through the contamination between different roles and skills. The objective is that to deepen and integrate what has already been put in the field by the public administration and possibly try to question rules, processes and more traditional languages that may need an update or a

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electricity grid operators to have a resilience plan for the energy infrastructure from the point of view of resilience to stresses arising from extreme weather events; as well as in some regional Laws).

<sup>95</sup> In the Italian organizational structure, the CRO has managerial functions pursuant to Article 110 “Contractual appointments”, paragraph 1, of Legislative Decree 267/2000. The figure originates from the resources made available by the Rockefeller Foundation in the International Project 100 Resilient Cities, which aims to develop urban strategies through co-design and networking of skills. The project supports 100 cities around the world to “become more resilient” against the social, economic, and physical challenges of the 21st century, through the funding of a Chief Resilience Officer and a Deputy Chief Resilience Officer, who lead the work for the drafting of a strategy with the support of Arup as a strategic partner in the development of the process. See: <http://www.100resilientcities.org/>; P. Mezzi and P. Pelizzaro, *La città resiliente*, Milano, Altreconomia, 2016. More in general about risk regulation see A. Barone, *Pianificazione territoriale e principio di precauzione*, in E. Picozza and P. dell’Anno (eds.), *Trattato di diritto dell’ambiente*, vol. III, Padova, Cedam, 2015; Id., *Governo del territorio e sicurezza sostenibile*, Bari, Cacucci, 2013.

greater integration with the contemporary urban scenario, trying to spread among all departments of the administration an operational approach that takes into account “resilience” as a paradigm of reading a complex system such as the city. In this scenario, the office tries to overcome a compartmentalised working approach, typical of the traditional administrative organisation, and to operate and guarantee transversal and collaborative interventions.

In this regard, one of the tasks is that to implement structured paths of listening and participation of the city to support the processes of review of plans, consensus building, design of new areas and definition of strategies. In particular, the aim is to adopt a methodology that allows to recognize and map risks, shocks and stresses that a city or a specific area or community must face, and against which it must build adaptation tools, according to the model related to the so-called Stakeholder Engagement Plan, which allows the working group to enjoy multiple perspectives and approaches, to understand in depth the dynamics of the city, to build an inclusive analytical-interpretative vision and, at the same time, to ensure maximum transparency with reference to the whole process.

In addition to being part of the local administrative structure, the CRO’s office is part of a wider framework that allows it to be part of an international network. The particularity of the CRO is seen by observing its relations with the outside world as the goal of this figure is to create networks with resilience managers in other cities through the exchange of best practices and the creation of a platform in which to share solutions and develop standards, indicators and business models on resilience<sup>96</sup>. Among the objectives there are: the establishment of a “Resilient Cities Directorate” in each city; the use of the methodology used by the Resilient Cities Directorate to identify areas of intervention and the main shocks and stresses present in urban contexts; the elaboration of a resilience strategy, systematization of existing actions

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<sup>96</sup> Although the results of this experience are still partial, what needs to be critically highlighted is the avoidance of the so-called “one size fits all” approach as a mere replication, potentially prejudicial to the specificities of urban contexts, and often criticized by studies on smart cities (see C. Lauri, *Smart City*, 393-394).

and identification of new projects<sup>97</sup>.

## 6. Concluding Remarks

Moving from the phase of profound transformation that cities are facing, this paper argues that smart cities cannot be implemented without strengthening the skills of their public administration.

As we have seen, a number of innovative figures are being introduced in public offices, although we are often still far from seeing them stabilized in the public sector. If we consider the area of transparency, we find a legislative strategy to empower public offices and provide them with specific roles and functions. Considering the algorithmic decision, we notice the jurisprudence's effort to give a path to interpret principles according to the still unknown possibilities offered by the new technologies. But if we move on to the environment, we find figures such as the energy or mobility manager, whose appointment is often still an ongoing process, as part of a flow of cultural change in the organization of the roles and skills of urban administrations. In addition, it is difficult to understand how these figures are called upon to interface with the traditional competencies and administrative offices. While we cannot deny their usefulness in the perspective of intervening in a strategic function on environmental transition paths, it seems rather that they are currently disconnected from the overall vision that should instead conform to the smart city, according to the definitions offered by scholars.

Identifying the knowledge, the smart city needs is the framework that is being gradually assembled. The administration of the smart city is, in fact, called upon to operate with respect to complex themes, where technology is the driver and the "holistic strategy" should be the method.

For urban administration, keeping up with the development of knowledge is as complex as it is difficult. On the one hand, knowledge is, for the most part, very expensive and in private hands; on the other, there is a lack of training courses, as well as any consolidated experience in such scenarios, that are, for the most part, unknown<sup>98</sup>.

Controlling training is also essential in order to choose to outsource tasks that risk undermining the very autonomy of public decision-makers when they are managed by private companies, which may be in conflict of interests, possibly leading to a loss of impartiality and transparency right from the moment of the acquisition of knowledge and cultural background, even before public functions are exercised<sup>99</sup>.

In other words, the tendencies outlined at the beginning, of an administration by now set on technical skills both internal and external to its organization, do not seem at all outdated even when looking at the smart city.

The phenomenon of the external search for skills, however, is destined to expand if not addressed. In this regard, consider, for example, the need for internal competencies within the public administration in order to master European projects and the related funding mechanisms. In fact, it is precisely Europlanning that today represents one of the main levers for urban development and for the activation of competitive mechanisms

<sup>98</sup> Critically, A. Greenfield, *Against the smart city*, argues that "the notion of smart city in its full contemporary form appears to have originated within these businesses rather than with any party, group or individual recognised for their contributions to the theory or practice of urban planning". See also R. Hollands, *Will the real Smart city stand up?*, in *City*, 12, 3, 2008, 303; E. Ferrero, *La smart city nell'ordinamento giuridico*, 1283.

<sup>99</sup> Some authors believe in the ability of networks across cities to circulate knowledge through informality and hybridity and alliances, deeming such networks cooperative institutions (see B. Barber, *If Mayors Ruled the World. Rising Cities, Declining Nation States*, New Haven, Yale University Press, 2013; S. Bouteligier, *Cities, Networks, and Global Environmental Governance. Spaces of Innovation, Places of Leadership*, London and New York, Routledge, 2013; S. Curtis (ed.), *The Power of Cities in International Relations*, London and New York, Routledge, 2014). Others instead, critically analyze the interconnections between these networks and private companies and foundations (see, Aust, *Shining cities on the hill? The global city, climate change, and international law*, 261, who analyzes the C40 network, underlining that "membership in C40 is based on the idea of exclusivity, of being a club of particularly virtuous cities which distinguishes it from city networks with a more open and wide-ranging membership, such as ICLEI").

<sup>97</sup> Milan is the only city in Italy that has a directorate dedicated to resilience. The resilience team has worked within the General Management and then under the Urban Planning Department, where it has contributed to the definition of the Plan of Rules of the new Territorial Government Plan, going to define and introduce within it an index of Climate Impact Reduction, through the realization, for example, of green roofs and green walls and depaving interventions, solutions to reduce phenomena such as heat islands. The direction also follows programs such as the ForestaMI Fund, of urban reforestation, whose goal is to plant three million trees by 2030, so as to improve air quality and reduce urban temperature, while also raising the quality of public space.

between cities.

At the same time, administrations could be supported by external professionals to eliminate procedural queues, without delegating decisions externally, but only obtaining support in the investigation and resolution of issues of a technical and/or legal nature.

However, it remains necessary to revise the bureaucratic apparatus in order to work on staff training, motivation, “soft skills” and organisational efficiency as well as on the skills needed to face the digital and environmental challenge rather than on the ever-ongoing, useless and (often) harmful rewriting of procedural rules<sup>100</sup>. It is to be expected that the public administration will continue to use external consultants to supplement its expertise, but this should be on an extraordinary basis and not as an ordinary method of administering public affairs, to reach the goal to create strong and resilient city governances with the ability to intervene autonomously on the legal issues that characterize a smart city. This point is critical, considering that the PNRR devotes considerable economic resources to the recruitment of many fixed-term figures, who will go on to build a sort of “highly specialised temporary public administration” to govern the recovery phase.

A number of scenarios therefore remain open as to what will be the geometry of knowledge and skills in city administrations after the implementation of the plan.

The picture we have tried to sketch out seems to bode well. In the Italian legal system, a number of government figures seem to be developing or strengthening, created for the purpose of understanding and guiding at the political level these processes of innovation and change in the city, although they still represent fragmented experiences lacking a contextualisation in a framework of strategic development of the organisation of public offices of cities.

However, two profiles deserve to be highlighted.

The first concerns the interaction between public action and individuals. Creating smart cities, i.e., cities that are highly efficient from

a technological point of view, must not make us lose sight of the role of the individual and their fragilities.

The challenge of achieving high levels of technological efficiency by leveraging the three pillars of sustainable development – environmental, economic and social – is not always concretely possible. One of the emergencies not to be underestimated is that of avoiding “Orwellian” scenarios in which the individual is lost, crushed by forces that operate above him, with no possibility of influencing the environment that surrounds him.

Alongside the technical knowledge of public bodies, the profile of collective knowledge emerges. As mentioned at the beginning, citizen trust is fundamental to build a smart city.

The new knowledge can permeate administrative activity also through forms of horizontal subsidiarity. In a first phase, studies have traced this requirement to the theoretical perspective of the exercise of sovereignty in a direct and disintermediate<sup>101</sup> manner with respect to the care of all those public interests that are presumed to be taken care of more effectively and efficiently through a direct exercise of functions by the communities living in urban contexts<sup>102</sup>. In other words, referring to a concrete exercise of the bottom-up approach<sup>103</sup>, in the spontaneous and widespread forms of fielding knowledge and know-how that are translated into administrative practices<sup>104</sup>.

<sup>101</sup> F. Benvenuti, *Il ruolo dell'amministrazione nello Stato democratico contemporaneo*, in Ius, 1987; G. Ber- ti, *La pubblica organizzazione come amministrazione*, 5.

<sup>102</sup> Examples of this are the most recent experiences of direct management of urban commons, temporary uses, administrative barter.

<sup>103</sup> A good example is the experience of LabGov, which aims to offer the administration expert knowledge from a design point of view in the management of urban commons. See, C. Iaione, *La regolazione delle infrastrutture nel ciclo delle politiche pubbliche*, in Vv.Aa., *Scritti in onore di Paolo Stella Richter*, Napoli, Editoriale Scientifica, 2013; C. Iaione and S. Foster, *The City as a Commons*, in *Yale Law and Policy Review*, 2016, 34, 2; G. De Giorgi Cezzi, *Pratiche di cittadinanza attiva e tutela del territorio. Partecipazione ed emersione degli interessi delle comunità locali e dei territori*, in L. Gianni, M. D'Orsogna, and A. Police (eds.), *Dal diritto dell'emergenza al diritto del rischio*, Napoli, Editoriale Scientifica, 2018, 171; F. Gigliani and F. Di Lascio, *La rigenerazione di beni e spazi urbani*.

<sup>104</sup> See, critically, E. Carloni, *Città intelligenti e agenda urbana*, 242 (where the Author argues that the rhetoric of urban smartness still risks hiding the retreat of the

<sup>100</sup> From this point of view, it is therefore to be welcomed that the Italian PNRR combines the enabling profile represented by the simplification and competition reforms with a rewriting of the organisation and competences of the public administration.

Today, however, the tendency seems to be that of the institutionalization of this “collective knowledge”, through the search for shared rules, methods, and the evaluation of experiences in view of replicability.

Moreover, as we have seen, in the PNRR the financing of citizen empowerment is one of the main lines. It cannot be left to episodic or totally spontaneous experiences, but it rather requires an institutional framework that can ensure its exercise and effectiveness in the long term.

Alongside the analysis of individual competencies, there is also a second aspect to consider, namely, the territorial and organisational articulation of knowledge and subjects destined to operate in the smart city.

Today, cities have acquired a central role in terms of action and organisation both from the point of view of external relevance<sup>105</sup>, insofar as they are increasingly capable of acting on an international level, creating organizational networks that transcend national and supranational boundaries, and of internal relevance, determining a potential destructive effect of constitutional symmetry through the creation of variable geometries with urban traction that create barycenters where there is an attractive capacity of the city.

These two characteristics combine to delineate real phenomena of competition between cities, which are exacerbated where there is recognition of the continuing centrality of the municipality in the power to plan and use the territory to create urban innovation and enhance sustainable development.

On the one hand, this constitutes a flourishing basis for the exchange of best practices and for the affirmation of the autonomy of individual cities, especially

public from carrying out its traditional functions due, in particular, to the emphasis placed on collaborative, public-private “governance” of services, or the shift of attention from material to immaterial infrastructure).

<sup>105</sup> C.E. Gallo, *Soggetti e posizioni soggettive nei confronti della Pubblica Amministrazione*, in *Digesto delle Discipline Pubblicistiche*, XIV, 284. With the aim of reconstructing a theory of subjectivity, interesting the theoretical perspective of international law for which G. Arangio Ruiz, L. Margherita, and E. Tau Arangio Ruiz, *Soggettività nel diritto internazionale*, in *Digesto delle Discipline Pubblicistiche*, vol. XIV, 299. Specifically on cities see H.P. Aust, *Shining cities on the hill? The global city, climate change, and international law*, in *The European Journal of International Law*, 1, 26, 261; R. Bifulco, *Il governo metropolitano in alcune esperienze straniere*, in V. Atripaldi (ed.), *Il governo metropolitano*, Napoli, ESI, 1993, 105.

where higher levels of government are unable to create transnational synergies. On the other, however, this could contribute to creating inequalities at the territorial level, widening the gap between smart cities and internal areas, with serious repercussions in terms of social inequality and loss of cohesion.

Looking at the legal system, the issues highlighted above lay the basis for reflection from a theoretical point of view, considering that strengthening the framework of knowledge and skills of urban administration is a prerequisite for the exercising of its autonomy both with respect to technology and companies (“private knowledge”) and with respect to other levels of government called upon to manage innovation. Additional knowledge will be needed in the future, so that smart city administrators can keep up with technological processes and be able to master and direct them without the risk of being captured, and no longer being able to look after the general interest.

As stated at the beginning, the goal of the smart city is to create urban environments in which there is a high level of quality of life for individuals. All the figures introduced so far in urban administrations aim at the goals of efficiency with respect to the digital and environmental transition, but, in a not-too-distant scenario, this will not be enough<sup>106</sup>. Re-engineering of administrative procedures and new models of knowledge recruitment will be indispensable for governing the smart city. Further skills will be called upon to manage these transitions and these will include, for example, ethics, neuroscience and philosophy<sup>107</sup>.

<sup>106</sup> J.-B. Auby, *Droit de la ville (Du fonctionnement juridique des villes au droit à la ville)*, Parigi, Lexis Nexis 2013; Id., *Per lo studio del diritto delle città*, in G. Della Cananea and C. Franchini (eds.), *Il diritto che cambia. Liber amicorum Mario Pilade Chiti*, Napoli, Editoriale Scientifica, 2016; F. Cortese, *Dentro il nuovo diritto delle città*, in *Munus*, VI, 2, 2016.

<sup>107</sup> See E. Picozza, *Neurodiritto e neuroscienze*, in E. Picozza (ed.), *Il diritto fra creazione e riflessione*, Ariccia, Aracne, 2019, 199.