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EPISTEMIC COMMUNITIES MEET COMMUNITIES OF PRACTICE

In the age of deep and wide digital transformation disrupting both democratic accountabilities and the administration-citizens nexus, there is a need for a methodological approach that allows for the establishment of trust between all the platform actors, and that can adapt to each particular context. It is also a question of integrating the legal and democratic issues inherent in the sustainable deployment of territorial digital trusted third parties. The objective is to propose, evaluate and experiment with a process of creation and sustainable operation of a trusted third party, i.e., the definition of a scientifically validated process of governance and the use of the platform, and the integration of specific modules into its digital architecture. It is a method that acts as a permanent catalyst for trust-in-context, going beyond abstract modeling and keeping the necessary transversality to consider applications that go beyond them.

KEYWORDS *Augmented Governance, Trust, Community of Practice, Epistemic Community, Digital Democracy.*

1. Introduction

Digital format transfigures semantic contents and makes them up into an immense, homogeneously structured set of big data. Out of context, polished from cultural connotations, and deprived of pragmatic deployment, big data may be subjected to data mining and analysis to end up with new significant content. The added value of this cyclic process of transformation – which is syntactical and linguistic before being social or technological – takes many different forms, ranging from the rapidity of the information flowing – stemming from the data mining – to the high density of synthetic rationality – arising from a quasi-exhaustive, or pretended to be, analysis of the information

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– to finally the immediate shareable information that can easily cross borders and bridge actors and agents (human and nonhuman) situated in a potentially infinite variety of contexts.

This portrait is not hyperbolic. It takes a realistic and reasonably acceptable picture of a deep and vast phenomenology whose compelling nature is out of any possible doubt.

And yet, once this general overview is embedded into the real life of institutions and, consequently, is related to the requirements that we all have as to the quality public institutions must meet, a complex matrix of conundrum drops on the agenda of social scientists and policymakers.

Firstly, how this cycle – data-information-knowledge – can be revitalized once situated actors handle the information from the big data to make decisions and make sense of what they are doing. Epistemic soundness is a requirement of all public institutions, incredibly bureaucratic and administration actions stemming from technical discretionary power.

Secondly, despite the everyday basis represented by data, the originated meaning is necessarily related to the use of context. In other words, algorithms may extract *patterns* from a vast data set. Still, the way these *patterns* become regulative guiding lines and normative tools shaping and steering decisions and actions emerges in context. Therefore, knowledge is – also in the digital age – a complex combination of quid of information associated with meaningful values and practices where the know-how and the know-what are interlaced deeply and unavoidably. Last but not least, the generality of the type of knowledge meets the particularity of the practice of use. Horizontal learning and practices' sharing are consequently essential to ensure de facto the quality of the augmented public institutions.

In the pages that follow, relying on three case studies, the notion of learning is reappraised to be then applied to the packages of policies and strategies that national governments are adopting to ensure accountability and compliance with the European standards, and the well-functioning of what is today called «augmented» public governance.

Before proceeding with our analysis, we need to take a step back, to link our reflections to the literature on these topics.

In 1992, Peter Haas defined the notion of «epistemic community» as: «a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area» (1992, 3). The author's vision was based on the idea that it was necessary to highlight the role of these communities, i.e., to study the structure of power of these networks of professionals who, thanks to their expert authority, can influence both policymakers and the functioning of

institutions and public systems, as a whole (Ruggie 1972; Kelley 1989; Adler and Haas 1992; Radaelli 1999; Zito 2001; Cross 2013).

As clarified by Haas, despite their different disciplinary origins, these communities have four common characteristics (1992; 2015, 5):

- shared principled beliefs. Such beliefs provide a value-based rationale for social action by the members of the community;
- shared causal beliefs or professional judgment. Such beliefs provide analytic reasons and explanations of behavior, offering causal explanations for the multiple linkages among possible policy actions and desired outcomes;
- common notions of validity: intersubjective, internally defined criteria for validating knowledge;
- a common policy enterprise: a set of practices associated with a central set of problems that have to be tackled, presumably out of a conviction that human welfare will be enhanced as a consequence.

Over time, the concept of epistemic community has been criticized in literature for three connected aspects: the difficulty of defining who is part of these communities and who is not; the idea that political decisions follow, or in any case consider, the empirical evidence on which the experts' judgment is based and justified; and the fact that it is focused only on the influence on public policymakers, without considering, instead, all the other possible social actors (users, stakeholders, other epistemic communities, etc.) (Cross 2013; Löblová 2017).

However, despite these criticisms, the notion is still a particularly effective conceptual label for analyzing the social and political dynamics that underlie the process of technological innovation. Since its origins, in fact, the debate around the concept of epistemic community has developed in parallel with that on the impact of technologies both in private and public organizations (Cowhey 1990; Palladino 2021; Deane *et al.* 2022).

Yet, despite the breadth of this debate, there are no studies that dealt with critically analyzing the relationships between epistemic communities and communities of practice – to be understood as: «groups of people who share an interest in a domain of human endeavour and engage in a process of collective learning that creates bonds between them» (Wenger 1999).

This article aims to fill this gap and it is based on a general awareness: an involvement of their own user is essential to guarantee that digital technologies – like all other technologies – can be effectively integrated into the practices that characterize any social and organizational context. In this sense, organizational literature very often uses the expression of «socio-technical co-construction of technology», to underline that technological innovation are built on the social interactions between actors with different knowledge, skills, and

experiences. This idea challenges the myth of the necessity to deploy technology from a top-down perspective. Digital technologies are much more than hardware or software to be installed, but instated they represent something «co-constructed»: not a «technology-in-itself» but vice versa a «technology-in-use». Technologies can be defined as non-human actors operating in a social context, being influenced by it and at the same time, influencing it. This «practical mediation» can also lead to a radical transformation of the initial characteristics of the technology itself (Suchman 1987; Gherardi 2001).

2. Digital innovation meets communities of practices. Lessons from three contexts

If the public policies of the Nineties were strongly marked by governance based on standards, the dominant mark of the implementation of decisions that fall within the fabric of public services and public goods is, without a doubt, their link with data. Several reasons make this possible: the availability of massive databases resulting from the dematerialization of documents, the exponential growth of the circulation of information on the net, and finally, the penetration into the public and private life of digital technology. Of course, digitization consists of a macro-transformation process that is not reduced to dematerialization. Still, the translation and structuring of «content» is a common and universal language such as that made available by the binary mathematics of «0» and «1» is undoubtedly a distinctive mark. Moreover, several reasons make the foundation of the decisions that fall within the fabric of public services and public goods on the data necessary and «saying» desirable: in the face of the defects of traditional public administrations tainted by present to citizens as inefficient and ineffective mechanisms for responding to citizens' needs, the idea of having at their disposal a logical device capable of correcting any form of managerial and organizational distortion and, ultimately, of giving citizens an objectively based response, devoid of any form of arbitrariness, and confident in the measure that it is drawn from the contents expressed in a universal language, appears as the balm long desired and fortunately spotted in technique and science.

Nevertheless, this promise of objectivity and universality, which would link with the disappearance of an essential dimension of the decision – the agency – appears as very biased and unsustainable in a slightly more detailed view. In data-driven governance, actors move throughout the data factory chain to reach the decision making process. Actors carry capacities, visions, references, narratives, and skills and enter into interaction paths at the micro-

level that cross the different arenas where data is built, analyzed, stored, and governed. Next to it – where better said nested with – from data-driven governance, data governance is made by data lords and digital-based control.

The advancements in computation and data sciences expanded far beyond all expectations the possibilities for human beings to engage in the analysis, the diagnosis, and the governance of amazingly complex phenomena. The promise rising from these advancements is, in fact, to elaborate from massive datasets better expert decisions. The consequences of this comparative advantage of artificial intelligence in complex computation, extensive data analysis, and *pattern* recognition deeply touch our lives. Therefore, Ai growth and its widespread expectations are compelling reasons to acknowledge Ai's potential to change all dimensions of our world. Yet, more data and information do not automatically turn into better policies and decisions. If the quality of decisions impinging upon the lives of citizens is more than a robust mathematical method, then making data-driven tools' design and use consistent with principles of fairness, transparency and non-discrimination become a vital quest for all societies and governments.

The subject of infusing better knowledge into better decisions does not come new to scholars and policymakers, nor do the issues related to the growth of the data-driven policies in socially sensitive view, one of the fundamental scientific puzzles since the first decades of the XX century. Over the Nineties, the dimensions of the complex puzzle of information and governance took a new glamour. Today, the several facets of the data-driven policies' transformative potential for the social and institutional systems stand at the crossroads of three fundamental research fields. First, cognition and technological impacts on organizations have gained the highest ranked position in the social and political agenda for decades, both from academics' and practitioners' perspectives. This research field is primarily influenced by two different and still interlaced puzzles: the interaction between humans and objects – notably between intentionality and machinery – and the interaction between material and immaterial. Two ideas have been afterward influential: the notion of hybrid agent – pulling into a conceptual dimension of humans and dimension of instruments handled by humans to act – and the idea of socio-technology – where Ict is conceived as a sociological phenomenon. The nexus focused on the convergence of social media, mobile computing, cloud-based Ict, and information stemming from massive datasets available on worldwide services, intermediations, and storage platforms.

Furthermore, in the field of public governance, the glamour of Ict stretches the hand to the call for a new season in the interplay between citizens and governments. The attraction of the Ict to regain efficiency tuned up into

the ongoing stream of public administrative reforms launched already far back in the late Eighties as one of the significant outcomes of the new general manager. International scholarship developed since then reframes the subject of the citizens/public governance interplay in terms of efficiency, accountability, transparency, and effectiveness. It puts on these criteria the burden of the quality of the public goods using which governments and local authorities meet the needs of citizens in vital areas: justice, health, education, utilities, infrastructures, and administrative procedures for the business.

The points raised above are differently appraised within the scholarship developed on the quality of democracy and quality of government. It is related to the legitimacy of the decisions taken by rulers in three respects: 1) more pluralistic information and more accessible data create more favorable conditions to hold institutions and rulers accountable to citizens and stakeholders; 2) technology decrease the costs to access institutional spaces, to read and to understand institutional decisions; 3) technology and automation trigger modernization within the public professionals and the bureaucratic bodies, by embedding into traditional and old fashion methods of governance new expert systems of decision making. The role of expertise is then acknowledged by the scholarly works that have analyzed the regulative institutions, such as the independent oversighting bodies.

Taking a few steps back from this narrative allows detecting a common discursive strategy: elimination of cultural dimensions, exclusion of democratic debates in favor of technocratic dominance, shifting of the stakes of the powers of decision making to the validation of mathematical machines of calculation, the transformation of the decision into an analysis. Today, a diffuse quest for a more inclusive, culturally sensitive, and people-centric narrative exists: governance by data requires a framework of checks and balances mechanisms of a democratic and plural type, not only based on science and technology, combining the rationalities that intervene in the choices of hidden values below a reassuring layer of aseptic and technocratic universal objectivity. To translate this approach into an accurate model of data-driven governance, a groundbreaking scientific approach to data-driven governance is necessary. This entails meeting two interlaced challenges: a truly speaking interdisciplinary understanding of data-integrating decision making processes unfolded by public service institutions; an integrated and participatory method to make data-driven design and use – the two altogether – accountable and responsive to societies' notions of fairness.

3. Engaging in a platform policy centered on human intelligences

For a few moments, we thought we'd get there with the law, indeed with that particular form of law that is regulation. Although, in some circumstances, the difficulty encountered first in fabricating the rule and then implementing it has convinced us to shift the center of gravity of regulatory expectations to soft law, for example, on standards and lines guide or white papers. But, in any case, without embarking on the venture destined to the shipwreck of the application discrepancy and the consequent dumping not only of the market but also and above all social, of regulating everything with the legally binding formalization. Next to this first impasse, another concerns the «who makes the rules» and, above all, the «who is committed to ensuring that these are respected». And it is here that the game between governments and companies, substantial companies that are characterized by a complex and institutionalized corporate governance, becomes strategic. In truth, it has been said that it is up to governments to make the rules, but the absolute truth, the one that is also on the side of scientific research, is that the rules are partly built by those who have the expertise to make the devices that need to be adjusted and that already in their architecture integrate forms of self-regulation. It is even good that it is so. In the world of computer engineering, physics, aerospace engineering, and bioengineering, just to give some examples of the immense universe that technological innovation has opened in recent years, the rules are in part already within the processes of engineering innovations with a high density of epistemic capital. The very high specialization acts as a barrier to the very possibility of making everything governable in a heteronomous way.

It would be unthinkable to regulate the implementation of large construction sites, such as that of the single network, putting the ratio decidendi only in the government's channel. And this is not the usual criticism of the country's administrative capacity. On the contrary, it is recognized that public governance is not the governance made only by public actors but a complex set of mechanisms for creating rules for their implementation, for the timely and ongoing verification of the results achieved and the problems encountered, and for communication to the public and for the involvement of civil society instances in a path that is never given, never acquire, it is always asymptotic, always in the making.

We should capitalize on past experiences and make it a compass for the government of what is, in effect, an instrument of production and distribution of public service, that is, that set of services that will be provided, guaranteed, explained, made accessibly – or more appropriately that must be guaranteed

made accessible and intelligible, or worthy of trust and reliability – to citizens, with a genuinely integrated and standardized network endowment. We do not want to deal with the question of the profiles, although they exist, of competition and competitiveness. Instead, we want to share what we have learned from past experiences and research. Neither law nor regulation alone can suffice. To ensure that infrastructure investments are geared towards creating a public good, which has a powerful impact on the guarantee of access rights to services, all actors with knowledge and observers of strategic, practical knowledge must be involved. Comparative empirical evidence shows us this not only by looking at different European countries but also at different areas of public policy.

One could then argue that there is nothing new in saying that the State is not enough, and even positive law is not enough. The public-private partnerships and the forms of soft law that we have experienced in recent decades are, in fact, a paradigm or the manifestations of a paradigm that tries to respond precisely to this. But the point is something else. The point is that we need a compass that considers not only the moment of design technology but also research and empirical knowledge of the use of technology, which «nourishes» governance in some way with the understanding that arises – in the literal sense of the term because it is discovery – from the encounter between a designed technology and its use in the context in which this happens. So, in the public governance of the single network, there must also be a moment that periodically integrates the monitoring of what happens when the network and the services that travel to the citizen meet citizens and businesses, from these «return» – in the form of experiential data analyzed in a structured and methodologically rigorous – to the actors who have regulatory powers. So, the unique network is an infrastructure that requires public governance, designed for the *res publica*, participated along the entire chain of knowledge construction from the technical to the organizational, economic, and social by the actors who are not only stakeholders but also knowledge-holders. This makes public governance a good government for a public space worthy of trust.

4. Three public systems with different trajectories

The paragraph will focus on three case studies, i.e., it will compare the digital innovation paths of three sectors of the Italian public administration: education, justice, and health. These systems are selected according to four reasons. Firstly, they are three crucial sectors of the public administration, which have a direct impact on the lives and well-being of the citizens. Secondly, they are systems in which the effective equality of treatment of people is at stake and

on which, therefore, also the same trust that citizens place in institutions depends. Thirdly, they are characterized by the high degree of independence and autonomy of the professionals who work within them (professors, magistrates, and doctors), i.e., they are «expert dependent organizations» (Etzioni 1959; Blackler 1995): structures designed to support, integrate, and coordinate the activities of the holders of specialist knowledge and skills. Finally, in the last few years, these three systems have been the subject of several reforms, aimed at introducing a high number of technological and digital innovations, of different types and ranges. Our analysis will focus on three connected aspects:

- the role played by the experts operating within the three systems;
- the *issue* of data governance;
- the relationships between the «center» and «peripheries» of the system.

Education

The education sector has only partially seized the opportunities associated with the digital transition (Wirsing and Frey 2021). This is demonstrated by two elements: on the one hand, digital technologies are used only sporadically in school teaching, especially in primary and secondary education (Dipa-ce 2013; Menabò *et al.* 2021) and, on the other, the governance of the education system is rarely based on reliable and comparable data. Regarding the first point, despite recent progress, according to the latest Desi report (2021), Italy is on the last European countries as regards the correlation between human capital and digital skills. In particular, the percentage of young Italians between 16 and 19 years with basic or higher computer skills is 20 points below the Eu average (Desi 2021). Although there is no correlation between the availability of hardware and software tools and students' performance (Oecd 2015), Italy suffers the effects of no forward-looking political choices (or maybe not-choices) and an average old teaching staff without adequate digital and technological competencies.

Until a few years ago, in the Italian education system, the epistemic community of experts on these issues did not seem willing to support technological innovation. Beyond the programmatic and political discourses, the innovation pressure was very weak and mostly left to the good will of individual actors, at the different levels of the system.

Nonetheless, the scenario changed during the Covid-19 lockdown. In the emergency phase, a series of solidarity networks have been created between schools and teachers to support the application of information technologies. Among others, it is necessary to remember «School for the school» and «Public research bodies for the school» (Mangione *et al.* 2020). These networks,

often born as informal, and then institutionalized, have contributed to spreading digital skills and creating a collective awareness, within the teachers' community, on technologies' potentials and limits. These communities of practice have filled a void, i.e., they supported individual professionals in a moment of unprecedented crisis, when the school service was interrupted due to Covid-19.

Furthermore, these communities did not dissolve after the end of the pandemic emergency, but they are still engaged in the development and implementation of the so-called Integrated digital teaching (Ddi), especially in primary and secondary schools (Mangione *et al.* 2020).

As regards to the *issue* of data governance, the Italian education system still suffers the effect of both institutional fragmentation and poor interoperability among digital tools and solutions. Also in this case, much has been done, but the political choices made in the past influence the actual functioning of the Italian educational system. For many decades, a certain way of understanding both the school autonomy and regional competence has created devastating effects, making impossible transparent and efficient governance of the Italian educational system.

As can be seen from the so-called School Data Portal (Portale unico dei dati della scuola), the national databases on these issues are very poor and with large territorial gaps. Some Italian regions, in fact, have invested a lot of resources to implement cutting-edge information systems and introducing some indicators for the governance of educational institutions. Vice versa, as the result of their autonomy, recognized by the Title V of the Italian Constitution, other Italian regions have chosen not to follow the same path. All this has limited the capacity of the Ministry of Education to exercise its coordination function and to introduce public policies based on comparable data.

However, it should be noted that the situation is somewhat different in the field of universities' governance. The creation in 1994 of the inter-university consortium AlmaLaurea represents a virtuous process, whose effects became visible only in the last years. The Consortium, which represents 78 universities and about 90% of Italian graduates, is today an authoritative reference for any political and public reflection on the Italian universities.

Unlike what happened with reference to primary and secondary schools, the epistemic communities involved in the universities' governance have metaphorically decided to open the institutional doors and to allow a public evaluation of their work. This path would have been impossible without the potential offered by digital technologies.

Justice

The interaction between technological innovations and the justice system is something now consolidated, especially among the justice operators (magistrates, lawyers, clerks, etc.). Over time, these professionals have transformed their working practices and learned how to exploit the advantages deriving from the application of digital and telematic technologies. Yet, the encounter between technologies and justice, which has always been full of expectations (Piana and Verzelloni 2019), cannot yet be considered as something taken for granted, especially as regards the processes of creation and dissemination of expert knowledge.

However, to understand the current events, it is necessary, once again, to take some steps backward. Before 2014, statistics on the functioning of the judicial offices were collected at the local level and then aggregated at the «center» of the justice system. There were essentially three collecting methods: insertion through web masks, transmission by fax, and sending a digital copy by email. All this generated a series of dysfunctions and diseconomies, including, in particular: poor comparability of data – recorded differently, even within the same judicial district – the impossibility of carrying out complex analysis on judicial flows, absence of reliable indicators to evaluate the system's performance and to introduce evidence-based policies, at the different levels of the justice system.

The idea of introducing a data warehouse, to automatically extract the data from the «center», dates to the early Twenties, with the establishment of the Directorate general for statistics of the Ministry of justice (Presidential decree 55/2001). The project was mentioned in the three-year plan for Icts 2010-2012, but it remained a dead letter until 2012 when the technical qualification is approved in the Ministerial decree 102/2012 (Piana and Verzelloni 2016).

The legacy of the public service system in terms of evidence-based policies is marked by ups and downs and failures and unprecedented efforts to create mechanisms for evaluating public policies. This dates back to the Nineties of the century, during the promotion made in the European arenas of the approaches of new general management and the consequent strategy of quantification of the expected results of projects and public actions on the territories and in the economic and social life.

Since that moment when the country experienced an innovative effort that, however, had been locked within the perimeters of ministerial administrations, each with its own evaluation mechanism and database, the link made between the actors and data governance is alive, above all on the empirical and factual level, and then in terms of regulation. It is based on this precondition

that in 2002 the Italian Ministry of justice freed itself into an unprecedented exercise, namely the creation of a strategy for the collection and analysis of data on the performance of the courts of the first instance, which has become the target of criticism from international bodies: – in particular, the Cepej, which had just been set up within the Council of Europe – and the origin of the sanctions coming from international courts – in particular the Echr, whose judgments on the sanction of Italy referred to the time limits for trials and violations of the right to a fair trial. He is the Director-general of statistics – a structure living within the perimeter of the Ministry of justice, which had not had the opportunity to gain visibility and importance – which, by being at the origin of the very idea of the Cepej – which became the policy entrepreneur of the first season of promotion of a policy of evaluation of the policies of organization of the courts which represents an entirely new institutional fact in the Italian panorama of the Twenties. The wave of actions to meet the functional needs generated by the Cepej's activity is already rich in promise. In 2004 the Directorate-general for statistics of the Ministry of justice worked on restructuring the database: a new door would open between the center of the system and the courts. The implementation of the inspiring idea of this recent activity, which consists above all in reviving data policy as an essential and vital tool for the good governance of justice, conceived as a corporate complex, comes up against objective and subjective barriers, even structural and cultural: the perception on the part of the courts of data policy as a form of indirect control and the intromission of politics within the scope of the jurisdiction; the lack of professional profiles with targeted training on judicial statistics in the jurisdictions of the courts of appeal, where the data are developed; the lack of a culture of collaboration between the Ministry and the decentralized administrative dimensions of the justice system.

The «Data, organization, governance» project is part of the broader context of the strategy launched by the Ministry of justice over the past five years to structure and systematize the various administrative and regulatory functions of the justice system. Among these, it is worth mentioning the development of a database on the conduct of procedures, the development of management devices for control and follow-up, the creation of specific actions to ensure that the administration is directed towards a performance plan, and, more generally, all the efforts undertaken in terms of staffing, qualification, and development of human resources. The first type of activity was strongly marked by the mapping of the database. This exercise allows you to master the kind of data available, the quality of the data, and how the data acquire empirical significance in the context of the organizational analysis of jurisdictions, their performance, and the quality of their governance. This was done to move

towards a data survey guided by diagnostic questions of the progress of the judicial organization both in macro-structural data – and in meso-key – forms of interaction in the jurisdictions between administration and jurisdiction, as deductible from plans, management control, and integrated into focus groups at headquarters.

The working hypothesis that inspired the activities concerns the relationship between, on the one hand, the information extracted from the data and the structuring of the databases, and on the other hand, the interaction that exists between the level of promotion of shared awareness of data sources and the construction of a standard methodological tool between the center and the courts for management control. This is the first phase, which is already taking in its scientific articulation to create tools that frame management and management control in the broader and more complete governance of the «justice» system (this is the subject of research in the planning of the following phases).

On a practical and operational level, research has seen the development of three types of action:

- the discussion of concepts, hypotheses, and pre-notions, or assumptions that are the basis of the Department's action for the judicial organization, specifically for management control and strategic staff policy;
- the study of data in a qualitative key;
- the study of data in a quantitative way.

These research actions were carried out through the organization of seminars and the discussion of intermediate results obtained through meetings weekly or brief remote briefings. The project's trajectory has seen an increase in the culture of mutual knowledge and the construction of a real team within the Department of judicial organization with a hybrid profile, partly composed of magistrates assigned to ministerial functions, partly written by technical officials with long-term knowledge of the Department. From this phase, a critical analysis exercise took place: screening the databases, sources, and depth of available data, based on a structured network – and knowledge of the structuring system – which considers human, technological, and structural resources. In particular, a study of administrative and judicial personnel data was carried out about human resources, starting from the first one. The grid with personnel data tended to cover: socio-demographic data, entry and career calendar, retraining, salary, diplomas, and target area, with the definition of the maximum degree of detail and depth, specifying whether the data exist or not. For technological resources: investments in the civil and criminal application, infrastructure. For structural resources: data on maintenance and

operating expenditure. A survey was carried out on the data, available or not, that are significant for each personnel unit, starting with administrative staff. Following a detailed analysis, wholly new and of great methodological value, carried out by the team of the Department on the available databases, it was possible to organize a research seminar to illustrate the maps of data relating to material resources and judicial personnel, as well as the map of technological resources. This meeting made it possible to identify the relevant data, nature, type, and availability for a quantitative, then qualitative – organizational analysis. To finalize the data mapping – called the Atlas of justice – we began to structure the material for a first meeting with the Ugg. At the same time, and with a solid scientific and methodological synergy, the Ministry experimented with the work of structuring the physical plant, at the end of which it was possible to combine the results and ideas of this structuring – which took place independently of the development of the Dog project – as the activities of the Dog project unfolded. The combination resulted in a very high potential for systemic institutional cognition. The results obtained in this first phase are illustrated in the attached presentations, which were presented and discussed at the event held on 17 February, at the headquarters of the Court of appeal in Rome, with the Ugg represented by both the administrative directorate and the heads of office a judicial governance entrepreneur with data.

The project «Organizational data and governance» aims to achieve the construction of a toolbox for Umugs and the construction of a shared culture on data quality and the importance of using standard grids to be able to read these given elements guidelines and heuristics to improve management – then governance, as will be seen in Phase 3 of the project. It represents a crucial shift from an approach to data that draws from the transition to a quantitative language on the lines of a policy to promote the performance of justice to a paradigm that is focused on the idea of quality as governance for and injustice through mastery of data and especially the ability of government. The professional profile of the institutional entrepreneur of this phase also makes a difference. If we had seen in the Italian context a hybridization of professional profiles in the Directorate-general for statistics with an experienced expert in the economics of management and statistics, we arrived at a stage where a magistrate from the jurisdiction of Florence, assigned to the cabinet of the former Minister of justice and experiencing the overwhelming experience of managing the functional needs assessment strategy of human resources in all jurisdictions as well as recruitment platforms since 2017 is the leader of a systemic vision of data governance that sees in the knowledge of the empirical and substantial qualities and meanings of data the asset to move to an integrated judicial organization center and territories together. This passage also links to

the Oecd's recent strand of international policies on «data re-use» a way of approaching the *issue* of big data that highlights its cognitive and informative potential and focuses on the actors and institutions that manage data instead of data as such. In addition, the developments in the justice sector have just been outlined. The main features are related to two additional elements: phenomenological aspects of a strong trend of changes in the industry of public governance since the Nineties: «agentification» and juridification.

Agencies are a manifestation of the lean toward a form of technocracy that combines professional specialization with functional differentiation. Among these forms, the Italian agency for digital affairs (Agid) made its premiere in 2012, following the Italian strategy to rationalize public governance and as part of the normative measures to revive the country. Within the framework of the same system – which falls under the ordinance of the executive and which will then be transformed into law – we group the creation of the Agid and the financing of the Institute national statistics (Istat). Data policy, therefore, plays a dominant role. The last aspect that deserves the attention of our argument concerns the growing space given to the legal guardianship of private data. The creation of the privacy authority mirrors a more generalized wave tending towards independent sources seen as institutional instruments responding to the double need to make an area of public policy both governed by impersonal and non-political bodies in the sense of politics susceptible to electoral legitimation and by specific competences. This is once again the case in Italy, which is experiencing a transversal sense in the sectors of public governance; the creation of the authority for privacy (Garante per la privacy) by law in 1996 and restructured in 2018.

As regards data governance, especially with reference to the application of Ai tools, some unresolved problems should be noted, which could generate a series of critical issues at a systemic level. As clarified on several occasions by the Ministry of justice and by its Inspectorate, the Italian presidents of the courts are the data controllers and, consequently, they are responsible for ensuring compliance with the regulation's data protection principles, as defined by the European Gdpr. This interpretation, contested by a part of the Presidents of the courts, who would not want to carry out this task, risks hindering innovation and new technological solutions.

Given the fact that any Ai experimentation needs to process a large amount of data, this fragmentation could generate two perverse effects: on the one hand, tools «calibrated» on partial data, i.e., on the judicial proceedings coming only from some courts, and, on the other, different possibilities for the citizens that live and work in the different areas of the country, for example, in

terms of being able to know in advance whether or not to start a lawsuit or its possible length.

Although in experimental terms, this is already happening, as demonstrated, for example, by the Ai projects developed in collaboration with some Italian universities by the Court of appeal of Brescia, the Court of Pisa, and the Court of Genoa, and the Supreme Court of Cassation. Furthermore, digital innovation is one of the key points at the basis of the ongoing projects funded by the Pon «Governance and institutional capacity 2014-2020», which are involving many universities and judicial offices in different geographical areas. The research activities are focusing on three topics related to digital technologies: the definition of a dashboard of indicators for the governance of judicial offices, anonymization of judicial sentences, and the development of a predictive justice system to support the legal operators' activity, and to give citizens some reference information to decide whether or not to go to a court to protect their rights

Health

Italian healthcare is certainly the sector that first and most significantly grasped the possibilities offered by digital technology, on the one hand, in terms of diagnostic, intervention, and prevention, and, on the other, to support the governance of both hospitals and the system. Unlike what happened in education, the epistemic communities have been able to become protagonists in the process of technological innovation. This is demonstrated by the fact that for decades technologies have been at the center of the agendas of the various institutional bodies and professional bars of the health operators, as evidenced by the number of publications, conferences, and public initiatives on these topics (Ccs 2021).

Over time, medicine and technology have become, in fact, an indissoluble union. This is particularly evident in the Italian context. This connection was favored by at least five factors. Firstly, the pressure of international health protocols, which, especially in some medical fields, strictly require that doctors must found their diagnosis on a series of instrumental and laboratory tests – now accessible to many people, also thanks to digital technologies. Secondly, the success that digital technologies have had in the transmission and archiving of medical exams and tests, but also in their evaluation, analysis, and correlation with other factors and symptoms. Thirdly, the emergence of the phenomenon of the so-called «defensive medicine» (Forti *et al.* 2010), led healthcare structures, especially in Italy, to pay great attention to the filing of all documentation related to patients, to avoid the risk of judicial conse-

quences. Fourthly, the impact of the savings generated by digital technologies within the overall process of the corporatization of health structures.

And finally, the influence exercised by private companies providing tools and services to public health. The health supply chain has invested many resources to foster innovation. These actors have anticipated both legislation and medical protocols, becoming in many cases the frontrunners of the technological and digital innovation in the health sector.

However, the Covid-19 pandemic has called into question all the ancient certainties, even with respect to the support provided by digital technologies. The tsunami of cases of Covid-19 that hit the Italian hospitals has highlighted all the organizational and technological problems that characterize the healthcare structures. This unpredictable situation has highlighted two related aspects. On the one hand, the various governance choice made by the Italian regions, also in the field of technological solutions, had a direct impact on the capacity of the health structures to overcome the crisis situation and contain the damages. And, on the other, the ability of some professionals to support innovation from the bottom, i.e., to use digital tools to maintain the bond with patients even during the period of hard lockdown. In this sense, some Italian doctors became «agents of innovation», i.e., they created some networks and digital solutions, which have filled the inability of healthcare structures to provide a response to requests for care coming from citizens.

5. Learning and learnable: epistemic communities as working sites

The case study that we have just presented in its essential lines offers us avenues of observation and critical analysis that range from the singularity of a process of change – with all its components – to the general rise of points in common that deserve the attention of experts and the public. First, data governance mechanisms are not exclusively technical or technological; far from it. We see it in the Italian case with evidence revealing a profound dynamic: data is an instrument to build a new capacity to govern – Foucault would have spoken of governance, but others have instead addressed the subject. It is an instrument that is part of a normative and performative manufacturing process, impacting the «reality that can be considered significant about the management power of the courts».

It is also linked to a dynamic of redistribution of management power between the bodies of the judiciary and the levels of governance. In any case, the Ministry of justice invests in data policy on jurisdictions with European

and international leverage. Subsequently, data governance has just experienced a profound transformation moving towards the courts and especially the jurisdictions of the courts of appeal. Professional profiles become crucial.

TABLE 1. *Overview of the expertise dynamics in the augmented governance*

	Education	Justice	Health
Role played by experts	Embedded within the academic epistemic communities	Partnering within the framework of projects funded under (mostly) European programs or Europe-related structural reforms. Strong differentiation of communities of practices	Deep embeddedness of science-based epistemic communities Communities of practices incorporate data use practices
Data governance	Mostly centered on autonomy and local experiences	Multiple centered also at the center of the system. Today shifted toward a strong actor-centered approach and capacity-building orientation	Highly coordinated
Relationships center peripheries	Loosely coupled with pivoting coordination centers – such as the Crui Foundation	Loosely coupled with a center-driven strategy based on the soft law and standard to coordinate	Highly coordinated as to the medical science dimension Strongly centered on the region-autonomy

Source: own elaboration.

Once again, the shifts in the professionalism of the actors concerned offer us avenues of analysis. Firstly, it is professionalism linked to the sector, which is produced endogenously. This poses fewer problems of internal acceptability in a phase where data-driven politics is perceived as a potential danger to the autonomy of jurisdictions. Then, in need of technical extra-legitimacy, the step towards professionalism centered on data and management and not legal-judicial is taken. This is the phase of structuring the statistical database of data in the context of the management of justice and the creation of the agency for digital. Thirdly, there is a shift and a resumption of the governance of the jurisdiction data by the actors of the center of the system but with an internal profile to public governance and justice. However, there are still critical aspects. The gap between the presence of specific skills in data governance and data governance in the center of the system, where the territories see a lack of this type of professionalism, is the main one. In the jurisdictions of the courts of appeal, which are supposed to have a statistical service, the people specializing in data are very few. In any case, the importance acquired by this aspect of governance has opened a debate in the country on the need to build

specialized training courses on data governance in the public sector. The interplay between more accessible information, more transparent institutions, and more predictable decisions is at the center of the vision promoted at the international scale on the data-driven decision making (and consequently policy making). Aspects recalled above are fundamental reasons why data-driven decisions and applications of computational sciences in the public sector or in the production of public services rapidly gained the top rank position in the agenda of international and transnational fora. This holds in the setting of the United Nations and within the Council of Europe, the OECD, and the European Union, without leaving behind the most influential private actors and think tanks.

Three compelling failures of the traditional modes of governance praise for the adoption of an «augmented intelligence» in public governance: 1) discretionary power of public officers as a bug driving the public systems toward discrimination; 2) inefficiency and ineffectiveness as a need for transparency oriented public management; 3) opacity and lack of readability of expert-based decisions which calls for automated expert-systems where readability and accessibility may «simply» depend on laypeople digital literacy.

At the level of urban governance, a supplementary reason advocates in favor of adopting a data-driven system of policymaking. The complexity of the socio-economic, logistics, and organizational texture where individual trajectories of daily life intervene, interplay, and unfold, challenges unquestionably the capacity of local administrations to take the «right decision for everyone at the right time and with the right base of information». The chain that Calvino narrates with his genial vision, namely the reality-information-action-information-reality, is deployed within a complex system featuring a high degree of interdependence under conditions of temporal misfit and (more importantly) social tension. There is nothing in the information we have – nor in the way the data is elaborated, even if from the massive dataset and using powerful mathematical tools, nor in the way the information is used – ensuring the social responsiveness and the fairness of the policies that are delivered by institutions to meet the demands of the laypeople.

To this complexity, the pandemic adds a furthermore urge for governance which relates to the compelling demand for a resilient set of actions to ensure that urban living is going to remain sustainable also in situations of emergency, catastrophes, unpredictable events, and, in a word, the black swan event. Therefore, predictability and social legitimacy must coexist in a virtuous manner. If the dataset may strengthen the side of predictability, trust requires legitimacy and a legitimate process of policy revisions and adaptation.

As Table 1 shows policy sectors reacted differently to the exogenous inputs set up by the digital potential of transformation. The key variable, catalyzing inner processes of change, refers to the interplay between forms of expertise, those embedded into the epistemic communities – the reference groups for the three sectors – and the communities of practices. These latter are key players in experimenting with local, punctual, and front-running innovations. However, once the innovation is tried and tested, scaling up the results thereby achieved and extending the decision making rationale where digital rationalities and more traditional rationalities are combined, depend, both, on the *pattern* of validation of professionalism that is featured by each sector.

Table 1 highlights that the center-periphery relationship impacts deeply and widely on this *pattern* of validation. Once an innovative combination of multiple rationalities is tested locally, the extension country-wise depends on the *pattern* of interplay that links up the center to the territories. Moreover, it is extremely important to see the data governance strategy adopted or developed – not necessarily with a unique act of policy – by each sector.

The instruments deployed to respond to this functional need are many and differ in their rationale and effectiveness.

The first instrument worth mentioning consists of a legal response. Regulatory notions developed over the last decade, especially in the context of the European union, aim to meet this need and reframe, concomitantly, the data-driven decision making processes that impact citizens and laypeople in terms of human rights and fundamental freedoms respect. Therefore, legal compliance is the standard that fixes the benchmark for the acceptance or non-acceptable of data-driven governance systems. In the context of the regulative efforts, several instruments are at play. New legal notions, soft law standards, and new guidelines provide policymakers and leaders – at all levels of governance – with an azimuth – comprising a differentiated range of legally (quasi) binding norms – where to situate their actions. Regulative efforts to ensure that data-driven decisions are always respectful of key – and compelling – criteria incorporate a vision of normativity and a consequent concept of the normativity-trust nexus. Trust is increasingly mentioned in the regulative acts. Trust is deemed a cornerstone of a legitimate system. Without any pretension of exhaustivity, this direction goes the ideal of privacy, transparency by design, and safety by design. The awareness of the shortcoming nature of this approach has encouraged us to comprehend in the regulative framework the use-side of the data-driven decision making processes. The sandbox idea incorporated into the European regulative acts today on the top priority agenda in the legislative perspective of the Union wants patently offers a response to the weakness of a «by design» approach.

In the same vein, the entrenchment of the formal guarantees of quality – which means, in a way, the entrenchment of norms and standards – into the technical device that supports the data-driven governance system responds to a similar paradigm. The foundational assumption consists of associating the quality guarantee with the ex-ante, synoptic, and systemic setting – either legal or technocratic. Along this line of reasoning, the development of data trust in the context of innovative and fore-sighting urban governance – such as in the case of Toronto, New York, and Singapore – translates into concrete and operational terms the general idea that frames the objectivity, transparency, and privacy entrenched into a blockchain device the responses to the quest of quality in the case of a smart city's governance. Data shared by social and economic actors operating in the urban territory and citizens affected by the data-driven policies benefit, by that means, from a system of governance that is «trustworthy».

The weakness of either a purely legal or a technical approach originates from the same sociological reason. Laypeople and stakeholders do not grant trust because data-driven governance is designed according to the best possible legal principles. Nor do they do so because the data is made transparent and answerable using a highly performing blockchain device. These are pre-conditions that must be in place. However, they do not represent sufficient conditions to trigger virtuous processes of trust-building and trust consolidation. What makes trust rise is instead the existence of conditions ensuring the reliability of the answerability, the effectiveness of the learning and the revision mechanisms, and the *engagement* into the entire policy cycle, under conditions of a rationalized and differentiated *pattern* of participation (it would be rather unsustainable that all actors affected by the data-driven governance participate actively at any time to each punctual decision that must be taken).

A trusted method must tune up the data-driven governance with the scholarship on quality of democracy and quality of government to highlight the multi-dimensional nature of the notion of «quality» and draw from it the framework. By adopting a multi-dimensional perspective, this method takes distance firmly from most of the experiences nowadays prospected in the world as applications of data-driven policies to the public decision making processes as a mere manner to reduce costs and boost efficiency. This is to build upon the norms and practices elaborated by practitioners and stakeholders, act as developers and users of data-driven decisions and revisit the notion of accountability as it takes shape within the public sector. Building on these concepts and epistemologies, this method claims a new idea of trustworthiness to understand how and under which conditions citizens and stakeholders trust complex *patterns* of decision making where human and data-driven intelligen-

ce interplay. The trust method wants to develop new methodologies bridging policy analysis and scientific investigation and to create a participatory hub where research methods and epistemologies fuel monitoring and assessment tools using which the data-driven policies' design and uses are held accountable. This method aims at elaborating a groundbreaking research method, resulting in a vision of the data-driven approaches based on three components – the legal, the ethical, and technical ones – which is then mirrored into a three-faced model of governance.

The method takes distance from the notion of hybrid agent and works out an idea of multiple-agency, which refers to the recurrent and recursive interaction between actors and data-driven policies. This is to deal directly with the «human computation problem» and values the proposal put forth to speak of «augmented intelligence» in cases of complex decision making processes where human and artificial rationales are combined. Unlike the approaches that focus on the relationship between one cause of a decision and one norm, the project follows up alongside the method and endorses multiple notions of normativity. Norms and standards against which human and data-driven intelligence in the production and delivery of public service must be assessed are legal, ethical, and technical. This rich notion is used to design a method of governance that enables actors – businessmen, Ai designers, Ai client supporters, policymakers, legal experts, public officers, Ai users in the local institutions, and medical doctors – in both private and public organizations to adapt and to engage in a sound and effective public audit.

The method will work out a vision of the human/machine interplay, which qualifies as «hybrid», the *pattern* of normativity that inspires and orients actors in collective practices of actions. In this respect, data-driven intelligence, by impinging upon agency and by turning it into a performance inspired by a hybrid set of norms – mathematics, technological, ethical, professional, and legal – calls for a revisit of the notion of accountability. The trust method accepts multiple notions of normativity and therefore incorporates a multi-dimensional idea of accountability.

This reasoning leads the method applied to the cities' governance to develop a comprehensive understanding of data-driven-governance-related trust-building processes. Trust is herein considered an ongoing process linking citizens to policies and goods. Accordingly, trustworthiness is not the linear outcome of the compliance of the augmented intelligence applied to public service with one sole standard; on the opposite, trustworthiness results from a combination of different norms and standards against which Ai must be assessed, legal, ethical, and technical. The degree and the portion of the three within the combination depends on the society's culture where the public ser-

vices are enjoyed. The project hypothesizes that automation may gain more trust or potential trustworthiness in contexts where citizens do trustless procedures and institutions.

Taking stock of these ideas, data-driven governance is a methodology aiming at making the best of the data-information-knowledge chain to infuse a sustainable learning momentum in the governance of the local territories. It creates an integrated stream of actions unfolding into a recursive cycle linking up digging into data to foresight social and economic needs and ultimately fueling a credit-supply-development chain with a strong emphasis on the sustainability impact and the resilient capacity. This system of governance pivots on partnership and trust at first rather than injecting transparency by design through the technological or digital artifact. Digital platforms set up include the data lake but strongly and firmly bet on the trust-building process. However, economic players do not fully adhere to a data trust because they do not see it as necessarily a win-win game.

Moreover, to assure sustainability and durability of governance inspired by data and digital fingerprints analytics, a recursive social audit is necessary to ensure that social actors and economic actors always have a say on the potential uses' outcomes. The cycle is simple. The digital platform is built through a participated method where the stakeholders discuss the structure of the datasets and the feature engineering with the engineers. Then, data concerning social and economic needs of the target field where the stakeholders situate their business and their value chain are treated with a foresight method prospecting scenarios including the emergency scenarios – what we have learned is that we do need to know *ex-ante* a B plan, the emergency plan before the emergency hit us – and, afterward once the cycle data-driven policies and implementation is launched a permanent social audit board is set up to ensure that – using the research outcomes provided by independent scientific experts situated within the local universities – an *in itinere* learning and revising is assured.

The trust method outlines a data-driven governance system that incorporates a digital trust at the scale of urban territory, an approach based on interdisciplinarity between human and social sciences and digital sciences. The ambition of the digital city is to develop learning territories, able to adapt to the uses and needs of citizens and territorial actors, with an objective environmental and quality of life. The observation made today is that through its growing digital platforms, the digital city is weakly politicized and that issues of governance, democracy, transparency, and respect for privacy are addressed only on a case-by-case basis, often by the sole promise of good practices or trust given *a priori*. Trust is a crucial element for the future of digital for the city, and it is becoming vital to treat it scientifically and methodologically. The first

prospective studies conducted on the subject of digital trusted third parties show that they will not only be able to rely on a labeled digital toolbox, even those integrating blockchain-type technologies, and applicable to all contexts. So there is a need for an approach methodological allows the establishment of trust between all the platform actors, able to adapt to each particular context. It is also a question of integrating the legal and democratic issues inherent in the sustainable deployment of territorial digital trusted third parties. The objective is to propose, evaluate and experiment with a process of creation and sustainable operation of a trusted third party, i.e., the definition of a scientifically validated process of governance and the use of the platform, and the integration of specific modules into its digital architecture. It is a method that acts as a permanent catalyst for trust-in-context, going beyond abstract modeling and keeping the necessary transversality to consider applications that go beyond them.

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