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Promoting “Smart Bureaucracies” for our Intelligent Cities:

Unleashing the Potential and Skills of Public Servants in the Digital Era

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There are few social revolutions that have changed our habits and our institutions like the Internet has done so far. We frequently hear the comparisons with the industrial revolution, or even with Gutenberg’s invention of the printing press. In less than three decades, digital communication has fundamentally disrupted our means of working, interacting, and consuming information. We communicate in real time, regardless of geographical location, regardless of language, and regardless of political or religious beliefs. We communicate reading, hearing and seeing our interlocutors. We post information on the web, –very much information!– regarding commerce, news, leisure and even about our social life. There is no doubt: we have changed our habits dramatically because of the Internet.



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The speed of the change, however, seems to hinder the possibility of reflecting upon the impact on our social structures and institutions. In other words, those aspects of social behaviour that endure across time and are more or less embedded into our understanding of social and political life. Family, labour relations, and education are only some examples of stable settings that give structure to our society. They usually change in a very slow pace, if they change at all.

The speed of technological change, on the other hand, especially information and communications technology (ICT) is breath-taking. In the case of the Internet, the spread has been rampant, albeit uneven. Therefore, many observers suggest that there have been waves of Internet penetration; from the origins as a military Arpanet project and later the linkage between university campuses, until the emergence of the commercial Internet, Web 1.0 and Web 2.0. Currently, we seem to be experiencing a phase with disruptive potential. Some refer to the current phase as Digital Governance Era; other say it is the time Big Data or Smart Data; and finally, other suggest this is the time of the Internet of Thing. New terms will probably appear in the weeks and months to come, because our bedazzlement about the digital improvements increases as the industry announces one innovation after another.



It is a good idea, therefore, to turn our eyes away from the technological breakthroughs and focus –for a moment– on the impact of the latest wave of ICT penetration on our social and political institutions. How is society changing thanks (or due) to the Internet? Are we able to understand these changes because they remind us to past challenges from the time before the Internet? Or is it the case that the Internet is such a unique development that it is different to any transformation we know so far?

I would like to invite the reader to reflect upon this issue. I will do so in the light of an example on how political institutions are facing new challenges. Concretely, I will highlight the pressures, challenges and chances that the public administrations are facing nowadays due to the irruption of intelligent networks and smart cities. Our understandable fascination with the new digital possibilities should be matched with close attention to what is happening within public entities. We should not forget that digital innovation will unleash its social benefits only if we equally care about the women and men that constitute the muscles of our administrative state: our public servants. Hardly any public policy will be successful if it does not take these people into consideration. This is especially true for public policies that aim to reap the benefits of internet-driven innovations in the cities. An intelligent city requires a motivated, educated, pluralistic bureaucracy. In other words, there is no smart city without a smart bureaucracy.

The Challenge of Ubiquitous Data



Visions of a digital future are fascinating; and even more enticing are those technological improvements that make our daily life easier. The ICT industry has been very active in providing scenarios of a very near future, where we live in cities that are optimized thanks to the introduction of machines that can communicate with other machines and share data about several aspects of human routines. This ability of machines to communicate between each other, mostly through the Internet, would not have the massive impact on society if there would not be the oceans of data that we produce every day, every hour, and every minute. We produce data even if we don't know it. We produce data when we walk with our smartphone. We produce data when we use our customer cards at the supermarket, we produce data when we switch on our smart TV, we produce data when we drive a modern car, and we produce data whenever we walk in front of a public surveillance camera. We are flooding our networks and our cities with data on our behaviour, our tastes and our preferences. Our cars also communicate between each other, telling where we are driving to, at what speed, our fuel level, and whether we are in optimal physical conditions to drive; or even if we are feeling sleepy so as to endanger the streets. Should we be unfortunate enough to have an accident, then, cars can share this information and suggest that other drivers pick alternative routes while alarming the police and the ambulance. This is today possible not only due to the smartphone we usually carry with us, but also because of the



multiple in-vehicle sensors that produce this data. Additionally consider that traffic lights, bridges and other road constructions are increasingly holding similar sensors. Even your own house is able to interpret the data coming from your car. When you arrive at night, your home might recognize the data sent by your smartphone or your car, and it can automatically switch on the lights, turn up the heat, etc. This is the concept behind intelligent networks and smart cities. The technology is already here.

However, we are also probably changing the way we understand our social priorities. In a talk held before the South American ICT community, the chairman of a leading Spanish telecommunication firm shared an interesting idea that was certainly spot on. He suggested that if we leave our house and we notice afterwards that we forgot our wallet, we might doubt whether it is worth the time to return home and grab it. Unless we have to use our driver licence, we probably won't. Conversely, if we forget our smartphone, we will not hesitate one minute and go back home. This way, we clearly contribute to the evolution of new ways of digital life in symbiosis with technological breakthroughs. Thus, the vision of a smart city based on data intensive analytics requires not only the technology capable of interpreting and channelling the data; it requires that we, ordinary human beings, adopt the technology at least in a minimal degree. And precisely because we use the technology in both, our public as well as our private life, we face necessary issues of privacy, data protection,



and data security. Technology is not an end in itself; it is a means to improve our standards of living, always respecting human dignity.

Much has been written and debated about the tensions between digital innovation and data protection. And yet, in the conversations about the smart cities project there is an important element still missing, which is crucial to its successful concretization: the State and its administration. There is hardly a smart city project that will succeed and endure without the commitment, involvement, and skills of the public administration and its public servants.

Don't Underestimate Bureaucracies

Reforming and modernizing the State and its administration is a recurring issue. Few entities have been subjected to as many modernizing efforts as the administration of the state. Public administration is normally perceived as one of the least modern organizations of nowadays. There have been numerous approaches to modernize public administration in several geographic setting, be it new scientific management, new public management, new steering approach, e-government, etc. And yet, as soon as one approach has been declared as dead a new approach lures, of course, bearing the term "new" in its label.

It does not seem, however, that modernization of the state be an issue of modern times. In 18th century Germany, in times of the Prussian King, reformers like Karl vom Stein or Wilhelm von



Humboldt took considerable efforts to train a comprehensive squad of educated civil servants. The foundation of the *Humboldt Universität zu Berlin* is closely linked to that endeavour. In the early 20th century, Max Weber postulated an ideal bureaucracy that could impersonate a rationally crafted squad of public officials. Hierarchy, responsibility and adherence to highly formalized procedures would be the pillars of a modern bureaucracy. It is, therefore, incomprehensible that we command only minimal attention to the personnel charged with the task of carrying out most of public policies and articulate the actions of the State. Although most of the visions of smart cities that come from IT developers consider the crucial role of government in general,¹ they rarely address the role of people within the government.

In terms of digital modernization most efforts have focused on the budgeting, setting of institutional goals, stringent project-management and procurement of infrastructure. The intelligence, however, has increasingly been left to private experts. Probably under the assumption that the private industry can attract the best talents, public agencies are increasingly outsourcing their most important ICT improvements. There are fine examples of this like the

¹ For instance Telefonica's description at www.visionesdetelefonica.cl, or IBM's concept at http://www.ibm.com/smarterplanet/us/en/public_safety/ideas/index.html?re=sph

migration of American public agencies' data into the cloud,² or the creation of an IT-system to assess and process data for the maintenance of public streets in Switzerland showing that even though private firms have the know how and agility to develop the necessary tools, the projects run the risk of failing if the adoption is not orchestrated in coordination with the administration. Especially the Swiss example shows that.

Neglecting the human dimension within organization can hamper major technological innovations within the public sector. The Swiss governmental IT-project MISTRA provides a fine basis for discussing the importance of a qualified and motivated bureaucracy. Although this project was not conceived under the label of "smart cities", it represents the essence of administrative intelligence driven by real-time data analytics. The project consists of an IT system operated by the federal government and its member federated states (*Kantone*). It is currently still developing and its core objective is to collect data about streets and pathways within the country. By locating sensors and sharing data with local administrations the system is supposed to manage the maintenance of every single street in country. Therefore, if there are damages or perils that might affect the normal means of transportation, the system should know and alert authorities. It should also contain a cadastre of every construction site or new construction that could

² See the American "Cloud First" Policy. Report by the former Federal Chief Information Officer Vivek Kundra, "State of Public Sector Cloud Computing": https://cio.gov/wp-content/uploads/2012/09/StateOfCloudComputingReport-FINALv3_508.pdf

hamper the normal flow of vehicles transiting across the country. It should also alert about car accidents and other impediments to efficient transportation. Unfortunately, the endeavour has progressed with difficulty. Although the government outsourced most of the development of the IT; even though it can resort to an efficient squad of public administrators; and despite deploying reasonable tools of project-management, the costs exploded and the responsible management failed to meet one deadline after another. The project was running the risk of total failure and it gained an unfortunate prominence in the Swiss media. A federal comptrolling committee had to intervene and review almost ten years of project history. The report pointed to inexistent quality controls and an absent sense of priorities regarding the progression of the different IT applications that had to be delivered by the private firms. Lacking such a technical judgement within the administration, the project began to rapidly advance in strands that were irrelevant, and to stagger in fundamental deliverables. Even a fairly good project management –for which the Swiss are usually well noted– could not prevent what was subsequently labelled by the national press as a “major national IT disaster”.

The report was unemotional and factual; and yet it implicitly reveals that the administration simply lacked –or failed to engage– the necessary IT skills that could orchestrate



symbiotic efforts coming from the private sector (development) and the public sector (project management). Talents and skills within the public administration become even more relevant considering the innovative character of smart cities. The same MISTRA project envisions a subsequent stage involving video and 3-Dimensional images of the streets. These 3D images of every Swiss street should be available not only to spot holes on the road, but also to ignite a creative process on the side of public officials, where they should be expected to propose innovative tasks based on these visual data. For instance, the images of the roads could be of interest for environmental agencies, because they might capture migratory movements of birds. Or maybe the Public Health Ministry could use the data on air pollution to ignite preventive measures and coordinate efforts with the transport authorities. To be sure, there are hundreds of secondary uses for such public data. The missing link is the innovative bureaucracy.

So, what now? Focus on the innovative bureaucracy

It is clear that public administration, especially bureaucracy is a critical resource for any major modernizing project that strives for intelligent cities to make our lives easier. As the case of MISTRA suggests, only an innovative and skilful bureaucracy will be able to extract the whole array of potentials of IT projects that involve



public services and public goods. The problem, I believe, does not lie in our public servants. The problem is our tendency to over-emphasize two important dimensions of public administration: as an executor of the higher political will and as the organization responsible of providing public services, notions that frequently discounts public administration as innovation-resistant. This comes at the cost of neglecting the dimension of public administration as a shaper of social reality.

The German scholarship has coined three terms for describing the main functions of public administration. The first is that of the executing administration or *Vollzugsverwaltung*, which is trusted with the task of executing the higher mandates of political leaders. It usually entails a notion of a hierarchical bureaucracy that commits to following the procedures and rules within the state apparatus. The second notion is that of the administration of public services or *Leistungsverwaltung*, which highlights the provisions of services to the community. For instance, social security benefits, running public schools, providing public medical aid and treatment are all actions that belong to this dimension of public administration. Today, most digital innovations are focusing on these two dimensions. E-health, e-learning, fighting crime with the help of predictive algorithms (predictive policing) are some applications that were conceived to fit either the executing administration or the administration of public services.



By focusing dominantly on these two dimensions, public administration becomes a net adopter of technology. I suggest, however, that if we shifted our focus towards the administration as shaper of social reality, we would boost the innovative potential already existing within the squad of public servants. German scholarship refers to this as *gestaltende Verwaltung*, meaning the administration that is able to shape and give meaning in all those spaces where the central law-maker has established no more than a general program, hoping that the administration fills in the gaps with concrete actions. There are many of these areas in public life; we just tend to skip them or discount them as irrelevant for political life. For instance, when a public servant helps a citizen to fill out a form; or when a police officer gives a recommendation to the neighbours on how to improve the safety of private homes. The German Professor Eberhard Schmidt-Assman suggested metaphorically that in those heights, where the density of governmental regulations is at its lowest, where there is only a broad governmental program available, the creative public administration tends to appear. These are precisely the arenas where we should encourage public servants to be creative; the paradox is that these are also the spaces that we tend to neglect or choke. To find innovative solutions for everyday life because the lawmaker cannot –and should not– regulate every single aspect of human life. These are areas of action, where public servants can contribute

with their insights, creativity and innovative solutions for a better life. And yet, these spaces are not free from law. To be sure, every activity of our bureaucracy ought to be under the control of some higher instance. I am not advocating for an unbounded State. I am rather claiming that there is an inherent potential for administrative creativity that we are ignoring. Peter Drucker acknowledged in his seminal *"Innovation and Entrepreneurship"* the necessity of corporations to include the "creative destruction" of employees, whose normal attitude towards the firm was not status quo but change. Fortunately, there are many ways to unleash this potential in the public administration too, and politicians can certainly think of several measures. In this article I will offer policy-makers only the most basic one: start by acknowledging this potential by knowing your bureaucracy. Reward them for every innovative solution; team them up according to their potential in order to start a virtuous spill-over effect; recruit them according to their innovative ideas instead of political partisanship; give them some healthy distance or autonomy in regard to the ordinary tasks of the public agency, and encourage them to constantly pursue creative alternatives and solutions with a view to enhancing the quality of life of citizens. All of this with an important constraint: respect for the rule of law and human dignity.

The Swiss experience with MISTRA tells that the big jump into smart cities can only be achieved if our public administration is capable of contribute to the development of innovative



technological solutions. Technology provider should not see public sector should not see as a client that ignores what it needs; they should instead rely on the hidden potential of public administration in developing new tasks for information and communications technology; propose alternative uses for data analytics; think in terms of networks so as to attract colleagues from other public institutions to engage in joint digitization within the public sector; come up with new services based on digital innovation; guide the experts of the private industry in order to develop digital solutions with a sense of future-thinking. In few words: the project of smart cities cannot be done without an innovative bureaucracy!

