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Digital Administration

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The radical changes brought about by digital technologies in the commercial sectors are also affecting public services. It is an excellent opportunity to heighten the efficiency of administrative services and of public services more generally, by combining aspects of process and product innovation. Process innovation enables new or significantly improved production and distribution methods to be adopted. Product innovation brings about the creation of new services using digital technologies which take advantage of contributions from the many. In other words, collecting information, provided on platforms by numerous users through a decentralized manner, then using this information to offer new forms of services.

For these new technologies to lead to greater efficiency, they need to be accompanied by organisational changes, significant transparency in terms of their use and a massive use of digital public services by citizens and companies. France is already at advantage in the digital administration sector as it has a significant offer of digital administrative services and a proactive open data policy. However, it is possible to go further in order to make France a leading country in e-administration.

Firstly, efforts must continue to open data, possibilities for data matching and conditions of access to this data whilst ensuring the protection of users-"data providers". This is a key role for the State to play. At the same time, we advise strengthening transparency in the use of these new tools and allowing the many to improve these tools. The way in which public services are produced must be rethought by encouraging the use of "agile" methods and experimentation within public services and by involving users in the co-production of these services through participative processes. The spread of a culture of experimentation must be accompanied by systematic evaluations of the economic and social efficiency of online services. In order to fully commit to digital administration, it is of course vital to teach the public how to use it and to encourage them to use it extensively. Additionally, the State services and administrations must equip themselves with the necessary skills by hiring more programmers, coders, data scientists and data analysts. Finally, we recommend launching a public and political debate to discuss the types of public service and the scope of the public action that will need to develop. A clear position on the key issues raised by digital technology is needed in order to adapt the social contract between the citizens and the State to this new era.

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Public administration will not be spared by the revolution caused by the arrival of digital technologies. As was the case with the changes resulting from digital technologies in the market services sector, these technologies were at first restricted to office tasks and communication, before having a significant impact on a growing number of administrative services, and public services more generally. With regard to tax administration in France, only 4,500 taxpayers declared their tax online in the year 2000 whilst a third of them did so in 2014.[1] In parallel with this development, the staff of the Ministry of Finance, dwindling in number each year, was supposed to decrease even further (by 2,500 people) in 2016. In Quebec, a study estimated a saving of 1.56 dollars per declaration linked to changing to online tax filing, the reduction in the cost amounting to 97%.[2] Moreover, digital technologies help to increase transaction volumes (increase the speed of file processing and reduce the number of errors). Dematerialisation makes it possible to abolish operations: no more paper, no more inputting, no more handling and no more physical handover from one service to another which was costly in terms of time and labour.

These technologies can be expected to replace the former methods of production for each type of service carried out by the administration (for example land registry, health insurance and veterinary inspections). As with the case of online tax filing, the upsurge in these new technologies will speed up and simplify the service for the user and lower production costs. Here we are talking about *process innovation* : technology helps to lower the production costs of public services and to improve their quality without changing their nature, at least in the short term.[3]

However, digital technologies also enable *product innovations.* In the commercial sector, smartphones allowing users to be located using GPS have given rise to many other services (such as the applications *Waze*, which provides real-time guidance for drivers so that they can avoid traffic jams, and *Yelp* which identifies nearby restaurants and companies using a scoring system based on users' reviews).

Digital technologies are also facilitating product innovation in the administrative services sector. Apart from dematerialisation, which helps to lower administrative costs, digitisation has led to a shift in administration towards the use of platforms on which citizens and public services interact. The fundamental reason for this transformation is the fact that platforms are able to collect data in bulk and to exploit it in order to offer users new services. Supplying data does not cost the individual much (leaving aside aspects related to the protection of personal data and privacy for the moment, even though these are vital) and allows the administration to offer new services based on bulk data on the one hand, and on the other hand, to produce these services in radically different conditions, involving co-production with users. In this vein, the municipality of Boston has made an app available to motorists with smartphones which, when they drive along, helps to identify and locate potholes on the road using GPS and sends the information to the municipal services who then save the costs associated with detecting the locations in need of repair.

This "co-production" of a service is characteristic of what will be referred to in the rest of this *Note* as the "*Government platform*". The administration plays a central role in making the most out of the interactions between services provided and the mass of users. Numerous apps relating to transport, security or health, can help users to contribute to the provision of services, which were previously provided in a centralised manner, by providing information or even direct services. The boundary between what constitutes centralised public production and private production has shifted. For example, if private companies would consent to make user data they have collected available in exchange for monetary or non-monetary advantages, the administration could produce new services based on this data.

The question remains as to the uses which could be made of personal data conveyed by individuals. Agreeing to contribute to the local public good for the maintenance of the roadway does not mean also agreeing that this data can be used for other purposes (advertising or the production of another type of service, etc.). The French Data Protection Authority (*Commission nationale de l'informatique et des libertés*, CNIL) has long been drawing the authorities' attention to the question of consent in the reuse of personal data: it is the *purpose principle* –an individual accepts to transmit data for a specific purpose, which must be theoretically precisely defined. The *Government platform* is thus caught between the "accelerator" of innovation, and the necessary "brake" linked to the protection of personal data and privacy (even if of course not all of the data that the State could have hold of and exploit is personal). The State must find its crucial place in the articulation of these two forces.

[1] In 2016, online declaration should become mandatory for taxpayers whose income is above a certain threshold, before being extended for all taxpayers.

[2] Boudreau C. (2009): "Qualité, efficience et efficacité de l'administration numérique à l'ère des réseaux : l'exemple Québécois", *Revue Française d'Administration Publique*, no 131, pp. 527-539, March.

[3] Even if process innovations do not bring about new products or uses, they can radically change the provision arrangement by removing from the market stakeholders who do not opt for the efficient technology.

Digital technology as process innovation

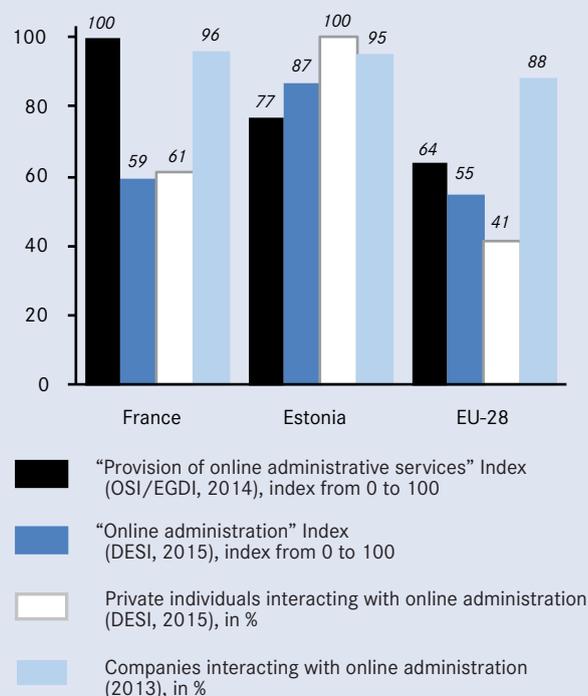## Digital administration in France

The first ministerial websites appeared in 1996 but mainly served to promote the government's activities and were therefore essentially tools for political communication. The first real online public services start in 1997, the year of the Jospin plan "Internet, a challenge for France". In 1998 the first administrative website was launched, "AdmiFrance", which not only provided information but also allowed users to download administrative forms. The "service-public.fr" portal, which followed in 2000, allowed users access all public services online.

Generally, France is very well placed international rankings for e-administration. In 2014, it was ranked first in Europe and fourth in the world (behind South Korea, Australia and Singapore) according to the E-Government Development Index (EGDI) set up in 2003 by the United Nations (see Figure 1).[4] This composite indicator is based on the weighted average of the standardized scores of the three following measures: provision of online services (Online Service Index, OSI), telecommunication infrastructure, and human capital. France is the world leader for the provision of online services category. Nevertheless, this ranking must be qualified as the evaluation method for dematerialized public services does not enable documenting their quality or their actual use.[5]

The analysis should therefore not be limited to the provision of dematerialized services; the uses of online administration, without which this provision would be of no effect, need to be integrated as well. The Digital Economy and Society Index (DESI), developed by the European Commission in 2015, incorporates this dimension more carefully and takes the use of online administration by private individuals as well as by companies into consideration. The digital profile of the Member States is established by 30 indicators spanning five sectors: connectivity (cover, speed and cost of high-speed broadband), digital skills, activities carried out online (banking, purchases, reading newspapers, etc.), integration of digital technologies by companies and digital public services (online administrative and healthservices).

With a DESI score of 51, slightly below the European average (52), France is now only ranked 17th in Europe. France performs better in DESI's "digital public services" category with a score of 59, as shown in Figure 1, ranking 14th in Europe; higher than the European average but a long way below Estonia, the leading country in digital administration. This

1. Digitization and uses of public services in Europe

Legend:
- "Provision of online administrative services" Index (OSI/EGDI, 2014), index from 0 to 100
- "Online administration" Index (DESI, 2015), index from 0 to 100
- Private individuals interacting with online administration (DESI, 2015), in %
- Companies interacting with online administration (2013), in %

Lecture: OSI/EGDI: *Online Service Index/E-Government Development Index* (United Nations); DESI: *Digital Economy and Society Index* (European Commission).
Sources: United Nations (2014): *E-Government Survey 2014*; Eurostat (2014): *Digital Agenda Scoreboard Dataset*; Eurostat (2013): *ICT Enterprises Survey*.

figure is based on four indicators: the percentage of users who interact with public authorities online, the forms which are pre-filled by the administration, the extent to which administration can be carried out online and open public data. In France, 61% of private individuals (in 2015) and 96% of companies (in 2013) used Internet to connect with the administration, but only 42% (of private individuals) and 90% (of companies) sent completed forms in electronic format. Therefore, there seems to be a discrepancy between the provision and the use of digital administration.

Observation 1. France provides a significant amount of digital administration but could make progress in terms of its use by private individuals and companies.

[4] United Nations (2014): *E-Government Survey 2014*.

[5] Cour des Comptes (2016): *Relations aux usagers et modernisation de l'État : vers une généralisation des services publics numériques*, January.

Digital administration and productivity

The time spent on administrative processes is a cost for all stakeholders (private individuals, companies and the administration). A substantial gain is expected from dematerialization and the simplification which goes alongside. A good example of this is the time spent by companies on tax procedures: with 137 hours per year, France is in a better position than the average European country, far behind Estonia or the United Kingdom, but ahead of Germany (cf. Figure 2). The "savings" made allow companies to reallocate their resources (time and workforce). Another example of the possible productivity gains is the simplified public procurement (MPS) procedure (see Box 1): the Secretariat-General for Government Modernisation (SGMAP) has estimated that a business using the procedure saves two hours per procurement and estimates that, if the procedure was used for the 300,000 annual public procurements, the potential savings would amount to 60 million euros (which does not take into account the beneficial effects related to competition and the transparency of public procurement).[6] Digital technologies also enable public action to be more effective in terms of control, as shown by *Redditometro*, the Italian programme for tax collection, established in 2013[7] or by the development of datamining techniques at the National Family Allowance Fund (CNAF). These programmes, based on cross-referencing data, make fraud detection and conducting *ad hoc* checks easier.

There are still few sound studies on the impact, in terms of productivity, of digital technologies on public services in general and on administrative services in particular. However, a few correlations drawn from previous data help illustrate

2. Time needed by companies to pay taxes
in hours per year, 2014
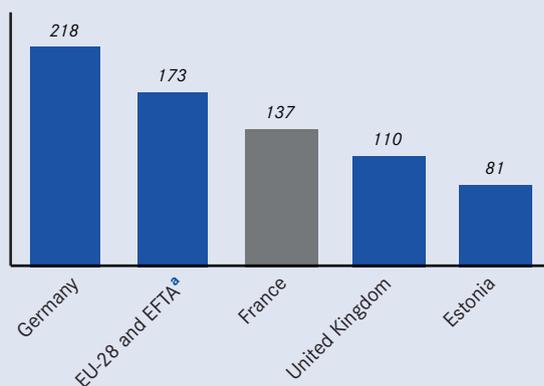
Note: [a] Average of the 28 European Union member States and the member States of the European Free Trade Association.
Source: PriceWaterhouseCoopers/World Bank (2016): *Paying Taxes*.

1. The simplified public procurement

The simplified public procurement procedure (*marchés publics simplifiés*, MPS), the pilot project for the "Dites-le nous une fois" program ("Let us hear it once and for all"), perfectly illustrates how digital technologies can completely change the way in which certain administrative procedures work, resulting in greater efficiency.

Although the first legal documents regarding dematerialization appeared in 2001, a IPSOS/SGMAP survey in 2014 revealed that carrying out public procurement was considered "complicated" by 60% of the companies surveyed, a level that remained stable despite several revisions of the legislative measures.[a] According to the *Observatoire économique de l'achat public* (Economic Observatory for Public Purchase), dematerialization only relates to 11% of procurement in France, whilst the European directive stipulates the objective of total dematerialization by 2018.[b] The MPS procedure is based on the assessment that 74% of the information provided by companies when applying for public call for tenders exists elsewhere.[c] The MPS procedure now allows companies to make public procurement applications using only their SIRET ID number. The application programming interface (API) at the heart of the project allows different administrative bodies to communicate with each other and to directly share the redundant information requested from companies. The first feedback is positive: between January 2015 and April 2016, the average number of MPS applications per procurement went from 2 to 4.4 and 50% of candidate companies were very small ones. The project was carried out over only six months from initial development to deployment, including a trial period and, thanks to the same API, around 50 other processes involving several administrations were simplified in the following year.

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[a] 2001, 2007 and 2009.

[b] Moreover, this level of 11% accounts for records where at least one of the processes necessary for the procedure was dematerialized. As a result, the percentage of records which were entirely dematerialized is definitely much lower.

[c] In consultation documents (23%), with INSEE (17%), with INPI/INFOGREFFE (15%) and in the business account on an online marketplace (14%), cf. SGMAP.

the impact of e-government on entrepreneurial activity. For example, there is a negative correlation (– 0.46) between the time a business needs to pay its taxes and charges each year and the DESI Index set up by the European Commission. A positive correlation (0.22) can be seen between setting up a new business (number of companies started per 1,000 people of working age), which reflects entrepreneurial enthusiasm, and the DESI Indicator measuring the degree of

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[6] See Saussier S. and J. Tirole (2015): "Strengthening the Efficiency of Public Procurement", *Note du CAE*, n° 22, April.

[7] *Redditometro* is a computing robot which uses about one hundred indicators to recreate virtually the amounts spent and compare them with the amounts declared (electronic tax declaration is now mandatory in Italy). In cases where there is more than a 20% difference between the amounts declared and the amounts spent, a tax inspection is immediately carried out.

dematerialization in the administrative procedures needed to launch a new business.

Nevertheless, technologies are even more efficient when they go hand in hand with other reforms which make administrations more flexible and reactive. A study comparing Australia and New Zealand[8] shows that, even if Australia is in a better position in terms of online services, it is less efficient than New Zealand: the administration's response time to requests/claims made by email is much longer. The impact of digital technology on productivity also depends on other factors such as the available budget, the sharpness of the bureaucracy, the social demand and the resistance or willingness of the government officials in charge of the transformation. Therefore, it is difficult to identify one specific impact of digital technology.

> **Observation 2.** Digital technologies have great potential to increase productivity provided that they coincide with organisational changes.

Digital administration and skills

It is difficult to measure the specialized workforce in the information and communication systems sector. According to the information documents produced by the Directorate for Research, Studies and Statistics (DARES) regarding professions, programmers, whatever their employment level (employee, technician or engineer), are extensively employed in the private sector: less than 1% of computer engineers are employed in public administrations when government employment represents 20% of total employment.[9] The need for programmers may have been underestimated until now due to sub-contracting; the State only has a supervisory role.[10] In addition, recruiting programmers to contract positions has been made more difficult due to the low pay offered relative to the private sector. Apart from computer skills, the digital transition means qualified people are needed to be able to carry out digital projects within the administration. Despite their quality, the French teams in the Interministerial Directorate for Digital Information and Communication Systems (DINSIC) seem less developed than their American and British counterparts (see Box 2), even if direct comparisons between countries of different sizes with different administrative organisations should be interpreted carefully.

> **Observation 3.** In France, the cross-disciplinary teams in charge of digital transition are less developed than those in the leading countries for e-administration and there are fewer IT specialists in the public than in the private sector.

Digital administration and quality of public services

The introduction of digital technologies can improve the quality of the service carried out. The aforementioned Quebec study reports a number of examples related to improving the quality of public service such as halving the time taken for the tax authorities to reimburse an overpayment. Online services can also introduce substantive equality in terms of the treatment of citizens (replacing formal equality). Indeed, putting public services online radically changes the relationship between the citizen and the State. The disappearance of the physical counter in favour of online requests reduces the possibility of discriminating between users. A study on the differentiated access between men and women to unemployment benefits[11] in this way showed that changing to online attribution increased women's submission rate: the automatic application of the allocation rule, and the indemnity calculation which followed, reduced the impact of selection or self-censorship linked to the fear of discriminatory treatment at the counter.

Digital technology also improves the quality of services through the transparency of public action. Andersen (2009)[12] measured the impact of an e-administration indicator on a corruption indicator for 140 countries between 1996 and 2006: when a country moves from the last to the first decile with regard to e-administration, it will gain, on average, two deciles in terms of lack of corruption. Likewise, a positive, and statistically significant, correlation of 0.46 between the users of online administration and transparency indicators can be highlighted (see Figure 3).

The link seen between the introduction of digital technologies and the reduction in corruption could stem from the intervention of a third variable such as the quality of democratic institutions or the level of development. However, more advanced econometric work highlights a genuine causal connection, across large samples of countries[13] as well as within the same country.[14] Indeed, the social demand for transparency

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[8] Gauld R., A. Gray and S. McComb (2009): "How Responsive Is E-Government? Evidence from Australia and New Zealand", *Government Information Quarterly*, no 26, pp. 69-74.

[9] See http://dares.travail-emploi.gouv.fr/dares-etudes-et-statistiques/etudes-et-syntheses/synthese-stat-synthese-eval/article/portraits-statistiques-des-metiers-1982-2014

[10] Cour des comptes (2016), *op. cit.*, indicates, however, very varied situations according to the public administrations involved.

[11] Wenger J. and V. Wilkins (2009): "At the Discretion of Rogue Agents: How Automation Improves Women's Outcomes in Unemployment Insurance", *Journal of Public Administration Research and Theory*, vol. 19, no 2, pp. 313-333.

[12] Andersen T. (2009): "E-Government as an Anti-Corruption Strategy", *Information Economics and Policy*, no 21, pp. 201-210.

[13] Elbhanasawy N. (2014): "E-Government, Internet Adoption, and Corruption: An Empirical Investigation", *World Development*, vol. 57, pp. 114-126.

[14] For a study across US states, see Andersen T., J. Bentzen, C. Dalgaard and P. Selaya (2011): "Does the Internet Reduce Corruption? Evidence from US States and Across Countries", *World Bank Economic Review*, vol. 25, no 3.

2. The cross-government services in charge of digital transformation

In France

One of the Prime Minister's services, the Secretariat-General for Government Modernisation (*Secrétariat général à la modernisation de l'action publique*, SGMAP) is helping the Government to reform the State and supporting administrations in their modernisation projects, supplementing the work being carried out by the ministries. Within SGMAP, the Cross-governmental Directorate for Data and Communication and Information Systems (*Direction interministérielle du numérique et des systèmes d'information et de communication*, DINSIC)[a] is responsible for the reuse of public data, the dematerialization of administrative procedures and the development of digital services for citizens. DINSIC has a digital services' incubator. In total, there are currently around 80 people in charge of the State's digital transformation as well as the DISNIC services responsible for the State's information systems.[b]

Foreign models

United Kingdom

The Government Digital Service (GDS) was created in 2011 and has more than 500 people, working from London or remotely from other areas in the country. Its assignments include a mix of open data and data science. Today, a specific cross-government team of 70 people works on data with three objectives:
– Use data for public benefit;
– Modernise data infrastructure;
– Create a data governance.[c]

United States

The Technology Transformation Service[d] consists of around 200 people, and aims to grow to 500 by the end of 2016. A team attached to the chief data scientist is focusing on very precise objectives, including using data science for precision medicine. Another team, within the US Digital Service, manages the "www.data.gov" portal and the administrations' open data policy. A number of human resources initiatives have been put in place, for example the creation of programmes including the Presidential Innovation Fellowship (PIF)[e] and headhunting talents from the GAFA (Google, Amazon, Facebook and AirBnB).

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[a] Resulting from the merger in September 2015 between the State's Directorate for Information Systems, Etalab's open data mission and SGMAP's innovation and user services centre.

[b] DINSIC (2016).

[c] https://data.blog.gov.uk/2015/09/24/work-of-prog/

[d] Strengthening the Office of Sciences and Technology Policy (OSTP), creating the US Digital Service and 18F. A merger is currently underway between 18F, the Office of Citizen Services and Innovative Technologies and the Presidential Innovation Fellowship within the General Service Administration (GSA).

[e] www.whitehouse.gov/innovationfellows

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is even more significant as some of the harmful effects of digital technologies can also be feared. For example, the risk that decision algorithms could be discriminatory has become a key question, as shown by the debates surrounding the criteria used by the post-baccalaureate admission system (APB) for assigning students to higher education institutions.

Even though digital technology improves the quality of administrative services, the disappearance of the counter or the complete transition to online services may create a "digital divide" between connected individuals and others. The accessibility of public services is essential for users' substantive equality before public service. Eurostat data on the use of online public services by Internet users, broken down by income level and age category, shows that comparatively more Internet users belonging to the highest income quartiles and those from the 25-45 age group use more digital public services. France is distinguishable from other European countries due to a greater differential between the highest-income and the lowest-income households (see Figure 4). However, this inequality could conceal the difficulties associated with internet access in general which are not specific to e-administration. A study on personal French data from 2005[15] showed that income does not have a particular impact on the use of e-administration with respect to the Internet in general. On the contrary, amongst Internet users, those who use administrative websites most are those who benefit the most from social transfers. These results indicate that the digital divide does not coincide with a divide linked to income in the use of e-administration. On the other hand, the study shows that there is a divide linked to computer skills and the level of training; users of e-administration, in relation to Internet users, have more developed skills and use of the Internet and computers.

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[15] Bacache M., D. Bounie and A. François (2011): "Existe-t-il une fracture numérique dans l'usage de l'administration en ligne ?", *Revue Économique*, vol. 62, no 2, pp. 215-235.

3. Digital administration and transparency
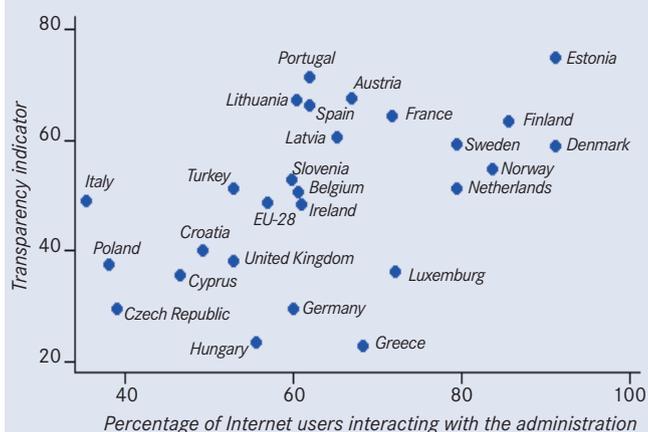
Sources: Eurostat (2015): *Database, Information Society*; E-Government (2012–2014): *Benchmarking Reports*.

4. Use of online public services by income category, 2015, in %

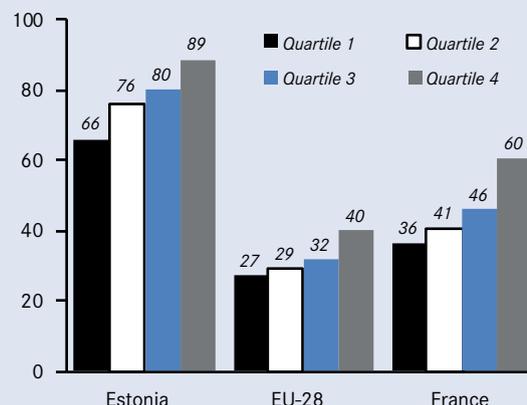*Source*: Eurostat (2015): *Database, Information Society*.

Observation 4. Digital technologies can improve the quality of public services, provided that their use is transparent and they are easily accessible.

Digital technology as product innovation: towards the *Government platform*?

Towards a re-examination of the scope of the public services sector

Digital technology is reshaping the administration's traditional tasks. On the one hand, the scope of public action is getting smaller: the administration is not in the best position, due to the way it is organized and the skills of its staff, to be the champion of innovation in digital technology. It is not formed like a start-up – without a business model but knowing how to combine commercial and technical innovation and operating by trying things out and seeing if they are a success or a failure. The administration has inherited entirely conflicting characteristics which are a hindrance for adaptation to the digital age. The French State has in part assessed this obstacle to innovation by creating structures such as Etalab and DINSIC (see Box 2) in order to reproduce the start-up way of operating: minor projects, recruitment of suitable staff, and open data. On the other hand, the redefinition of the administrative services sector comes from the digital economy's ability to make good use of platform structures. The creation of platforms itself will not lead to particularly significant fixed costs: a few developers could quickly propose a useful and functional innovation. The development potential of digital services is therefore very significant for both the public and private sectors.

Even though the boundary between the public and private sectors is shifting, the administration should be playing a key role in the organisation of data. Indeed, data has characteristics which make it similar to public goods. Firstly, as a joint report made by the French and German Competition Authorities (*Autorité de la concurrence* and *Bundeskartellamt*)[16] revealed, data is a "non rival" good: the fact that one economic entity is using some data does not prevent another from doing so as well (using data does not exhaust its value). Up to a certain threshold, the value of data demonstrates growing productivity: additional data reinforces the value of previously collected data as it improves the statistical reliability and is better matching with existing data. In order to categorically class data as a public good, "non-exclusivity" would have to be added to its characteristics: no economic entity should be able to monopolize it. This is where the State has a key role to play. As the core of the platforms is made of data provided by the "many", the State can organise the collection of a large amount of data and ensure communication between the databases and access to them for private individuals and companies, in particular to promote product innovation which is fostered by triangulating data. As part of the law *Pour une République numérique* (*For a Digital Republic)*, known as "Loi Lemaire" (promulgated in October 2016), access to public data will be free without exception (the law creates default principles for open data [art. 4] and a public data service [art. 9]). The law also anticipates the possibility for academic researchers to match existing databases for scientific purposes [art. 18] even if it does not go as far as offering the same option to companies who would offer new services. For other data, price conditions would have to prohibit, in our judgement, all obstacles to innovators' access.

The changing role of the State in the digital era can therefore be seen as part of the continuation in the trends experienced

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[16] *Competition Law and Data*, 10 May 2016, *Autorité de la concurrence* and *Bundeskartellamt*.

by particular sectors historically, in particular telecommunications. Initially, the State provided the postal and telecommunications service itself. Then, technical progress meant that it became more efficient to draw on the market to innovate and provide for consumers (the sector was opened to competition in 1996). Regulation authorities for telecommunications were created at the same time (Telecommunications Regulation Authority, *Autorité de régulation des télécommunications*, ART, then E-communication and Postal Regulation Authority, *Autorité de régulation des communications électroniques et des postes*, ARCEP, when the regulation of the postal sector was added to that of telecommunications). In the same way, data (and not the service itself) could be placed at the core of public action, if the State reorganises itself into a platform which collects data provided by citizens and delegates the service to companies.

Such a change is in tune with the fundamentals of public economy. First of all, it is optimal that the public authority intervenes on the market's behalf when positive or negative externalities are in play. To be precise, data is at the root of externalities: when an individual agrees that his/her health data can be made available to the community (anonymously of course), he/she improves the quality of statistical information. For example, he/she enables earlier detection of epidemics, provides information on a medicine's side effects or gives information about the frequency of post-operative complications in a particular healthcare establishment. The availability of this statistical information has significant positive external effects on the rest of the population. Consequently, the State and regional authorities have a role to play in encouraging citizens to participate in data collection (by means of financial incentives or by guaranteeing the quality of service) and in handling the processing and dissemination of data.

In return, the State must assure individuals as to how their personal data will be used. Even if the services which the State is likely to offer in the digital era will not rely solely on processing personal data,[17] the State has a key role in guaranteeing privacy protection. As soon as citizens contribute to the construction of new public services with the data they allow to create, they are transmitting information about their movements, health, and their family and professional lives, which must be protected from unwanted use. So that users are able to benefit fully from the advantages of digital administration, different services must be able to communicate with one another. Yet this requires unique, anonymous identification numbers, the applications to be compatible, and a certain amount of coordination in the data format. Finally, the organisation and communication of data creates coordination costs which a centralized service would be better placed to minimize, even if digital technology aids decentralisation,

for example through distributed architecture networks and coordination between peers. Of course, the debate is still open to determine if all governments, to a greater or lesser degree democratic, are the best positioned stakeholders to guarantee the respect of individual liberties. The creation of independent authorities is likely to limit the power of the administration in this sector.

Recommendation 1. Enhance the coordinating role of the State in the collection of general interest data and make it available to innovators under affordable price conditions. At the same time, guarantee the protection of user privacy (i.e. data "providers").

Open data and open gov

Open data responds to a twofold objective of efficiency and transparency: as well as the improvement in service linked to sharing data, citizens have the right to know precise statistics regarding their public area including security or the quality of schools. Data transparency also encourages stakeholders to make better decisions and guides them in their choices thanks to opportune positioning of carefully chosen little stimuli (nudges). Finally, data can be a source of positive externality if it is shared between administrations.[18] This concern about transparency and efficiency also relates to the algorithms used by the administration to calculate and attribute public services (open gov). Not only do citizens have the right to know the rules of attribution[19], but they can also contribute to improving the source code of the administration's algorithms. Even if France only entered into the open data movement two years after the United States, it did so with real openness to citizens' contributions, thanks to a portal for data which can be reused by all citizens. It was also the first country in the world to instate a chief data officer, several months before the United Kingdom and the United States. The open data platform, "data.gouv.fr", allows administrations to make public data available[20] and civil society to expand upon it, or change it, or interpret it with a view of co-producing information of general interest. The "data.gouv.fr" platform does not accept personal data or data which would contravene the law if published. The creation of value by the private sector for commercial services is also one of the merits of open data. A business can improve its market studies in this way thanks to a national directory of companies (SIRENE) (access to this directory is free since 1st January 2017). Likewise, the "commoprices.com" website provides services regarding the prices of raw materials particularly from customs' data.

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[17] On the one hand, the *Government platform* unites the involvement of the many and not just only data and, on the other hand, it also collects non-personal data.

[18] Even so they can also be a source of negative externality if, for instance, they result in geographic segregation between academic or hospital services.

[19] The law 'Pour une République numérique' (For a Digital Republic) creates a specific access right for the algorithms that form the basis of individual decisions (Art. 2).

[20] Public data is the data produced and received as part of a public service assignment.

Finally, in order to have a genuine co-production of new services, a two-way exchange between public and private sectors is needed. In this way, the idea that private companies make some data available to the State, under conditions still to be defined, could be envisaged. The law *For a Digital Republic* created the beginnings of a category of "general interest data". Ultimately, and even if this *Note* is not responsible for defining the extension given to this notion, this category should bring together the data produced and owned by the private sector but which brings about positive externalities for all citizens (for instance, Waze's data for cities and the creation of services linked to a smart city) or data which has a direct impact on public policies (for instance, AirBnB for tourism and housing policies and Uber for managing taxis).

Recommendation 2. Increase transparency in the use of data and algorithms forming the basis of public decision. Facilitate their reuse when improvements can be made by private initiatives, as well as the reuse of private data of general interest.

"Agile" methods and Government start-ups

The Etalab initiatives (see below) demonstrate the importance of implementing "agile" methods based on experimentation. In the digital economy, down-sized teams are able to carry out super-fast developments directly with users, based on trials and prototypes.[21] These methods, which fit the concept of the new Government start-ups, mean we can move away from traditional development methods which too often lead, after years of development and investment, to a service which no longer responds to users' expectations. The "beta.gouv.fr" platform enables new platforms' efficiency to be demonstrated in "beta" version. It responds to this bottom up approach where the interest and efficiency of a tool is proved first, before its possible application on a wider scale. The *France-expérimentation* platform launched in June 2016 by the Ministry of the Economy, Industry and Digital Affairs for companies could also be expanded to public projects. Inversely, the Personal Medical File (DMP) is an example of the failure of the top down approach. 250 million euros were needed, between 2005 and 2011, to create the DMP which did not end up being used by doctors.[22] The DMP would not have necessarily worked better if it had been introduced using an experimental bottom up approach, but its inefficiency would have been detected earlier and at a lower cost. The main thing is therefore to ensure that there is a function and a social demand for the public service created. Abroad, the American Presidential Innovation Fellowship (PIF), crea-

ted during Obama's presidency, is an interesting illustration of the way in which digital innovation can be promoted within administrations. Groups of between one and four people are invited to spend one year in government agencies or ministries to propose innovative digital solutions to problems which the administration services are already aware of. A member of the chief technical officer (CTO) team supports them during their assignment by opening doors, helping to point them in the right direction in the administrative maze, providing them with the support of the presidency and where necessary, granting them financial and technological resources. After their assignment, around 50% of "PIF" fellows go back to "18F", one of the government's federal, information technology administration services. According to the head of Etalab,[23] the most important thing is that these "PIF" fellows are integrated within the administration and supported by members of the CTO team who give them the power to make decisions and changes, rather than simply having a consultative role. Having innovative ideas is not enough; these projects need to then be "taken on" and picked up by the administration, which means that high-ranking officials are also fully involved in these projects.

Recommendation 3. Faster the use of "agile" methods and experimentation with temporary dispensations for innovative purposes within public services. Ensure that new services are only generalised if their interest and their efficiency are at least partly confirmed.

Co-producing public services

The *Government platform* is above all the ability to use the many (civil society and companies) to mobilise citizens as "assistants" to officials in a "co-production" of public services. San Francisco is a good example of this: in order to optimize the way in which assignments for restaurant health inspections were planned, the city took advantage of the reviews given by customers on a number of sites including TripAdvisor and Yelp. A semantic analysis of the comments brought the establishments which often had negative remarks about their hygiene to the fore, and in this way gave clues to map the hazards that warrant attention.[24] In the same vein, applications or telephone numbers which allow citizens to report faulty traffic lights speed up repairs. The *Government platform* can also be predictive by exploiting high-frequency bulk data, which also includes GPS locations, to provide guidance for its public policies. The large cities in the United States have been pioneers in this area. In

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[21] In a year time, a dozen projects lasting less than six months have been carried out and launched by Etalab.

[22] *Cour des Comptes* Report dated 19 February 2013: www.ccomptes.fr/Actualites/Archives/Le-cout-du-dossier-medical-personnel-depuis-sa-mise-en-place

[23] Meeting with Laure Lucchesi in July 2016.

[24] https://hbr.org/2015/02/city-governments-are-using-yelp-to-tell-you-where-not-to-eat

2011, the Mayor of New York, Michael Bloomberg, entrusted Michael Flowers with the task of bringing together a group of statisticians and computer engineers to create the Mayor's Office of Data Analytics (MODA), which remains a model to be followed to this day. For example, collaboration with the New York City Police Department enabled the development of more efficient tools for allocating the police forces temporally and spatially. These pioneering municipal actions were rolled out across the majority of large American cities which innovate and work in a way which is geared towards local priorities and needs with regard to traffic, security or the allocation of public services.[25]

In France, two emblematic examples of social innovations sparked by the *Government platform* related to taxation and employment can be put forward. In April 2016, Etalab organized a hacking contest together with the General Directorate of Public Finances (*Direction générale des Finances publiques*, DGFiP). This latter opens the source code of the "tax calculator" (forum.openfisca.fr). It was the first time an administrative body had made the source code of one of its algorithms public. Making the source code for tax authorities available, with 280 tax datasets freely accessible on "data.gouv.fr", brought about a number of projects suggesting improvements to, not only transparency and accessibility, but also the efficiency of the tax authorities. For example the "Performance" group, made up of engineers and data scientists, suggested a new way of optimizing the tax calculation time. This project helped to significantly reduce the calculation time for a national simulation.[26] In July 2016, the "data.gouv.fr" dashboard showed how much traffic this site experienced – with 18,814 data records and 14,749 users. The algorithms and data were reused 1,472 times and there were more than a million user visits to the different services.

The *Government platform* also offers innovations with regard to employment. *Pôle emploi* (the French administration for jobseekers), set up an open and partnership-based website, l'*Emploi Store*, which incorporates job offers collected from third-parties and innovative services developed by employees or partners. A concrete example of l'*Emploi Store* is *La bonne boîte* ("*the right company*") initiative, "labonneboite.pole-emploi.fr", invented by two *Pôle emploi* employees, with the encouragement of the management, and developed thanks to Etalab's support. While *Pôle emploi* traditionally worked using job offers sent to it, three quarters of recruitment today happens as a result of spontaneous applications involving networks of acquaintances without prior publication of the offer. However, *Pôle emploi* is in a good position to reproduce network mechanisms and identify which companies are likely to be recruiting as it has prior hiring declarations. *La bonne boîte* therefore helps jobseekers to write spontaneous appli-

cations to companies in their region and whose likelihood of hiring in the next six months is 80%. This represents both a new strategy for data use and a profound transformation in *Pôle emploi*'s vision –the service is accepting to enter into a less controlled universe in order to develop new services for jobseekers

> **Recommendation 4.** Involve users in co-producing public services and increase participative approaches. Teach the public how to use digital administration and encourage them to use it. Evaluate online public services based on user experience.

Encouraging users can be done in different ways:
- *Help and training*: we suggest redeploying part of the savings made from the dematerialization of services, for example, online tax declaration, to train the citizens who are least prepared for this type of system; this could be done by developing a remote help service and implementing mobile public services for the most isolated populations;[27]
- *Monetary incentives*: by giving back some of the savings made solely to citizens who use digital services;
- *Legal obligation*: following the example of the obligation, which has been in place since 2016, for those with incomes higher than 40,000 euros to use the online tax declaration service;
- *Qualitative incentives*: by improving online services. Scientific methods to analyse the user experience are cropping up in a number of countries with much more considerable means at their disposal than in France.

The need for talents

The administration needs staff with skills adapted to the digital world: developers, agile programmers, data scientists and designers. The challenge is to bring know-how and digital culture into the administration and ensure the progressive transfer of skills. As an example, the *Autorité de la concurrence* (the French competition authority) has developed a special service of digital investigation which allows digital searches –now operated by computer engineers rather than by officials, who used to come and obtain physical documents like bailiffs. Public officials will soon be assisted by robots, automations, algorithms and other tools of artificial intelligence. New skills are needed to make the best use of these assistance tools and to organise volunteers' participation in public service. In 2015, a recruitment competition involving around 40 SIC (Information and Communication Systems)

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[25] *See Beyond Transparency* published in 2013 and available for download online. Coordinated by Brett Goldstein, the founder of this Chicago think tank, this book brings together contributions from different stakeholders of the innovative movement which aims to take advantage of the massive collection of data in order to resolve operational problems, in particular within municipal administrations.

[26] www.etalab.gouv.fr/en/retour-sur-le-hackathon-codeimpot

[27] Mobile public services are being trialled in several French regions in the second half of 2016.

engineers fitted into this trend. This initiative modernises the former body of SIC engineers and makes it more attractive with increased pay scales and smoother career transitions between ministries. Recruiting staff with skills adapted to the digital age is especially important since digital public service is massively at risk of programming errors, breakdowns, hacking and other cyberattacks. As part of its new assignment, the State must guarantee and protect fundamental freedoms regarding data ownership and anonymity but also ensure the services are secure. For that, a pool of skilled professionals must be created, in particular professionals with new skills such as coders and developers. This involves the management of human resources in the information and communication systems sector at a cross-governmental level and facilitating the recruitment of these staff within the administration. Recruitment methods could take several forms: for example refocusing training in existing large technical bodies to concentrate on digital technologies and also making contract recruitment easier for jobs which are constantly changing, with attractive remuneration. It might also be worth considering signing students up during their studies.

> **Recommendation 5.** Ease the recruiting of computer engineers, coders, designers, data scientists and data analysts, with competitive salaries and career paths to attract those with the best skills to the public sector.

Towards a new social contract between the State and citizens

Apart from organisational problems, digital technologies raise issues related to the principles on which public service is based and to the social contract between government and citizens.

What will happen to the major historical principles on which public service was founded if it becomes more personalized and better adapted to the distinctive features of each situation? The legitimacy of public action, founded historically in France on the values of universality, is becoming more and more based on the principles of efficiency and performance culture. Will this personalisation logic, to the detriment of the principle of universality, lead to more or less equality? If public service becomes more participatory then it will no

longer be entirely defined by institutions of the Republic but by the citizens who are co-producing the service. The quality of services could vary with the local involvement of citizens. The public good, now a common good, may become unequal depending on the key principles but also individual and/or local initiatives.

Likewise, what role will elected representatives and policy play in the production and allocation of public services? Reinventing public action is much more than a technical project; it is a political project to redesign the social contract between the State and the citizens. Even though Estonia leads the e-administration indicators, it is at the price of collaboration between the public and private sectors[28] and above all as a result of having an organisation which does not give any choice to individuals: no opting-in (which offers individuals the chance to participate in an initiative), nor opting-out (which gives individuals the choice to not participate) with regard to data collection (all of the services are digital). France must clearly decide between the opt-in strategy (which slows innovation down but ensures data is well protected by making it impossible to network or share data as a default), and the opt-out strategy (which makes sharing data the default option and helps to maximise innovation and positive externalities but raises questions about privacy protection). It must be a conscious choice and the debate must be informed by an evaluation of the advantages and disadvantages of each option. It would be useful to establish a trustworthy third-party body which would help to give citizens the guarantee that their data was being managed in a way which protects their private life and their freedom. This seems to be a necessary condition to encourage stakeholders to share their data and to make the emergence of an e-society easier.[29]

According to the French *Cour des Comptes*,[30] the most advanced countries in terms of digital public services offer users a unique personal administrative account, accessible through a unique user name and password. Through a digital letter box and/or a single online portal to the administration, users receive official messages from the administration and make requests, declarations and payments. The unique account means that users will be recognised by all of the administrations involved. Thus, the administration can ensure the correct identity of the user when their information is being circulated, and the user can have control over the data when it is being exchanged.[31] France recently became

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[28] Estonia began creating an entirely digital government in 2001. All services have been digitalised: e-ID card, e-vote, e-taxes, e-education which directly interacts with schools, e-health to get prescriptions or fill in any forms, e-services for water, gas and electricity, etc. Moreover, everyone who is part of society is involved in the development and use of digital platforms. E-ID cards, the basis for the Estonian digital government, are the fruit of the cooperation between the State and telecommunications companies.

[29] The European regulation of 27 April 2016 decided in favour of *opting-in* for consent for private services to use personal data (art. 7), but public services rely more on the discretion of the state (art. 6). See http://eur-lex.europa.eu/legal-content/FR/TXT/PDF/?uri=CELEX:32016R0679&from=FR

[30] *Cour des Comptes* (2016), *op. cit.*

[31] This method is used in Spain (Cl@ve service), in the United Kingdom (gov.uk digital platform) and in Denmark (borger.dk portal). Having a personal digital account can be made mandatory: this is the situation in Denmark for citizens over 15 years old. This model is also being implemented in Germany.

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involved in this area through *France Connect* (an online government identification and authentication system which was commissioned at the start of 2016, under the opt-in principle).[32]

Recommendation 6. Open a public and political debate about the forms of public service and the perimeter of public action. Debate the fundamental choice between opting-in and opting-out for transmission of personal data.

Finally, it is useful to highlight that, when writing this *Note*, a lack of assessment was encountered in France with regard to the effects of introducing digital technology into administration in terms of cost, employment, efficiency and quality. Experimentation and assessment must extend to private companies and new digital stakeholders. A number of administrative processes and regulations are unsuitable for digital innovation. Areas of temporary dispensation for innovation should be given priority, coupled with systematic evaluation.

Recommendation 7. Systematically evaluate the economic efficiency of the various online public services.

The digital revolution is not a simple technological revolution but an economic, political and social transformation which requires a new contract between the State, citizens and companies. Institutions and the State must be thoroughly rethought in order to become compatible with this new age. ●

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[32] Three months after being created, there were 100,000 users, see www.modernisation.gouv.fr/ladministration-change-avec-le-numerique/par-son-systeme-dinformation/franceconnect-deja-100-000-utilisateurs-vingtaine-services.