Séminaire « Soutenabilités »

« Digital: new uses, new questions »

Although the social, economic, political and geopolitical consequences of the health crisis are only partially visible today, the latter has already highlighted the weaknesses and vulnerabilities of our societies.

Beyond the immediate management of the crisis, which has legitimately been the subject of attention to date, the challenge is now to design a new model of sustainable society, economically, socially, ecologically and also democratically, in particular with regard to the various vulnerabilities that the epidemic has revealed. This is the frame of reference framework for our public policies, which must therefore be overhauled to enable it to take all these dimensions into account.

Thus, the France Strategy team in charge of the seminar *Sustainability* launched, during the first period of lockdown in France (March 17 to May 11, 2020), a public participation platform to collect information and proposals to prepare the way out of the crisis. The platform was open on the France Strategy website from April 1 to May 31. The call focused on 7 issues: what expectations towards public authorities in the face of risks? - What social model to "face" our vulnerabilities? - What human-nature interaction in the context of globalization and pandemic? - What kind of relationships between knowledge, power and opinions? - Digital technologies: new uses, new questions - What interdependencies and what forms of autonomy at different territorial scales? - What path for a sustainable economy?

To illustrate the Webinar *The Covid-19 Crisis and Digital Dependence - Crossroads between the Netherlands and France*, we present here a summary of the elements devoted to digital, extracted from the platform with a presentation of the main issues identified by France Stratégie and a summary of the contributions and proposals resulting from the consultation.

Practically from one day to another, millions of employees or self-employed people switched to teleworking, millions of people went into distance learning or teleconsultation: never such a transformation would have occurred so quickly and on such an extend without the lockdown. In a very short period of time, a multitude of forms of online sociability has also developed. All this, not without inequalities: in terms of digital skills, equipment and access to networks. What will remain from all this?

These major changes in social life could only happen because the infrastructure has generally held up. However, this situation also makes it necessary to re-examine its robustness, its ability to support extremely increased business volumes, and to resist technical

risks and deliberate attacks. It is indeed a question of creating the conditions for a true digital sovereignty and of reassessing our uses of the large globalized platforms.

Since then, a new question has acutely arisen: the adoption of techniques for monitoring contaminated or fragile people through applications on their mobile phones. The stakes in terms of civil liberties are considerable.

Digital: new uses, new questions - call for contribution

Findings in the crisis: digital technology, a social compensation of the crisis but accelerating new inequalities

Digital technology has kept its promises: continuity of services and social acceptance of the lockdown...

The Internet has held up. Since the introduction of containment measures, the increase in the use of networks by the general public has been unprecedented. In France, teleworking has increased sevenfold, Whatsapp traffic fivefold[1] and videoconferencing has doubled. At the same time, the networks have made it possible to maintain the functioning of infrastructures (transport, energy), the main logistics circuits, the access to emergency services, telemedicine, delivery services, and have contributed to educational continuity for children out of school.

In order to maintain the infrastructures, the digital sector authorities have recalled the need to keep the Internet open[2] and have committed the responsibility of users to the networks. The European Commission and BEREC made a joint statement[3] encouraging applications and content providers to "temporarily adapt the speed of video streaming", users to reduce their data consumption and operators to keep networks open. Also for the attention of users, Sébastien Soriano, Chairman of the french telecom regulator (ARCEP), recalled in an interview[4] the keys to responsible use of the Internet, which are rarely highlighted in other perspectives than IT security. In particular, he pointed out the fact that while a fixed connection is specific to a household, the mobile network is common, and therefore should be used in a responsible way. Other stakeholders have committed themselves accordingly. Platforms on the one hand: Netflix has reduced its speeds in Europe (-25%) and Youtube now broadcasts its videos by default in standard quality. On the other hand, network maintenance operations are multiplying, simplified by the state of health emergency provisions, which facilitate, among other things, the modification or installation of radio stations.

We can therefore draw a general positive conclusion from the crisis we are experiencing. Communication infrastructures have been able to withstand an unprecedented increase in traffic and this full-scale *crash test* has demonstrated their robustness. Fixed and mobile

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[1] Marie Benoît, «Coronavirus : avec un trafic décuplé en temps de confinement, risquons-nous une panne d'Internet ?», Sciences et Avenir, 20th March 2020.

[2] An open Internet ensures equal and non-discriminatory treatment of traffic by Internet service providers.

[3] Joint Statement from the Commission and the Body of European Regulators for Electronic Communications (BEREC) on coping with the increased demand for network connectivity due to the Covid-19 pandemic

[4] « Confinement et évolution du trafic internet : « internet est un bien commun qui nécessite un usage responsable de chacun », Interview of Sébastien Soriano, President of the Arcep on France Inter the 21st March 2020, transcribed on the Arcep website

networks, although they have reached their upper limits, have not fallen and have largely enabled the maintenance of a high level of quality services.

... But the digital divide increases exclusion

Deprived of freedom of movement, without access to public space, most French people have increased their bandwidth consumption. The Internet and social networks have become essential for the lockdown daily life, giving the illusion of an almost "normal" life.

However, the crisis shows us that French citizens do not have the same access to these services. Depending on where they were confined, the difference in access to quality networks proves to be highly discriminatory. The digital crisis is above all highlighting territorial inequalities. People who do not have a sufficient connection (good speed > 8 Mbit/s) or suitable terminals are deprived of access to essential telemedicine services, teleworking or monitoring their children's schooling[5].

Today, less than 60% of the French population has very high-speed access (i.e. more than 30Mbit/s), putting our country at the bottom of the European rankings.[6]

... The difficult access to public services raises questions about digitization policies...

Access inequality in the use of digital tools is revealed by the Covid-19 crisis. Not all French people have the same ability to use online services, whatever the reasons (age, level of education, disability or simply reading difficulties).

The government's initiative to extend and accelerate the operation against digital divide, *Solidarité Numérique [7],* during the crisis tried to respond to the needs and illustrates a paradoxical situation: the digitization of public services is both a necessity and a barrier to access to the service itself when no physical service could be maintained.

Access to the digital public service of education is the clearest example of all these difficulties. At a time when all schools in France are closed, "pedagogical continuity" should enable the majority of French schoolchildren, middle school and high school students to continue their education. The mandatory period of containment accelerates the digital transition in education and raises questions about the educational digital strategy of the Ministry of Education. But we also see the emergence of limits that had not yet been fully measured. Thus, the different levels of home digitals equipments in the households (devices or connectivity), the central main role of parental support in the implementation of these new learning conditions are added to the pre-existing socio-cultural inequalities responsible for a high degree of educational inequality in France. In the short term, the government has indicated that 5 to 8% of pupils had already dropped out at the end of March (i.e. 620 000 to 992 000 pupils)[8]. Drop-outs could be even higher in "vocational" courses, whose curricula are not always adapted to distance education. There is no specific estimates but there is a concern that an even higher drop-out rate

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[5] A good broadband, down to 8 Mbit/s makes it possible, for example, to: *download a web page from a site (250 kb) in 0.3 seconds, but to download a film in DVD quality (4GB), in about 75 minutes*, Source: Belgian Institute for Postal Services and Telecommunications.
In France, in 2019, 6.7% of households have access below 3Mbit/s and 5.6% have access at less than 8Mbit/s. Source: https://www.zoneadsl.com/couverture.
[6] Digital Economy and Society Index Report 2019 https://ec.europa.eu/digital-single-market/en/desi.
[7] https://solidarite-numerique.fr/.
[8] Pascal Plantard, « Ecole à la maison : Qui sont les 800 000 élèves "perdus" ? » Le Monde, 7th april 2020.

could be expected, which would not be without consequences for the career paths of many students..

... Increasing discriminations in the world of work

In terms of work, the general shift to digital technology only underlines the precarious situations that the world of work has seen developing over the last ten years.

In France, teleworking, which was a limited practice that affected less than 10% of the French employees (against 15 to 20% in some European States) is far from being a homogeneous practice. It primarily concerns employees of large companies, less those from SMEs, and can only be practiced under very limited conditions in administrations[9]. The causes of this delay are multiple and have been identified by the ANACT for a long time: legal, insurance and above all managerial obstacles. The Covid-19 crisis has enabled to show that these limits are not real ones and to recognize the advantages of telework to the eyes of the least convinced.

But here again, the lessons of the crisis are irrefutable. Many organisations found that their information systems were quite unsuitable for telework. We can deplore security flaws, which could be dramatic on a large scale (e.g the attack on the AP-HP on 22 March[10]) but above all a lack of suitable working tools.

This crisis also confirms the profound increase in inequalities between employees and self-employed workers, occasional or not, depending on whether they have an employment contract, social security cover and the possibility or not to physically protect themselves while they work. Today, teleworking protects. It physically protects from the virus and guarantees the maintenance of a payment and a position. However, employees who cannot continue their activity from home are caught in "accelerated professional instability". Whether because of the type of the job they hold, or because of their dependence on exceptional and transitional arrangements (partial unemployment), they are forced to go to work despite the risks this may represent. However, it would be too simple to analyse this phenomenon by making a strict distinction between low-skilled and high-skilled workers

... Challenged information systems

For both State and local autorities, the crisis has revealed the strengths but also the weaknesses of the collaborative tools available to agents. Some tools have offered good data protection guarantees, sometimes after a period of adaptation in order to scale-up[11]. These may be free or proprietary tools hosted in France[12]. However, due to the absence of offers that satisfy their expectations, many agents have switched to tools, which store data on servers subject to foreign legislation (cf. *Patriot act* and the *Cloud act,* to mention only the most emblematic texts). The crisis highlights the progress that needs to be made so that the offer of trusted tools avoids our administration's over-dependence on foreign platforms that are not very attentive to the application of our legislation[13], but the adoption of these tools must be intensified in all departments.

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[9] Source : https://teletravailler.fr.
[10] See in particular the Interpol website for alerts on attacks targeting in particular hospitals and health institutions.
[11] https://www.acteurspublics.fr/articles/la-doctrine-de-letat-sur-les-outils-numeriqueschamboulee-par-le-confinement et https://sill.etalab.gouv.fr/fr/software
[12] https://www.acteurspublics.fr/evenement/nadi-bou-hanna-cette-crise-revele-les-faiblessesde-certaines-infrastructures-de-letat-mais-egalement-leurs-forces
[13] https://sill.etalab.gouv.fr/fr/software

Particularly in the world of SMEs, recourse to software solutions or foreign platforms that have little regard for the application of our legislation is frequent[14]. Data storage across the Atlantic - in France, "80% of the Internet traffic generated goes to the United States"[15]- makes us dependent on submarine cables that are subject to risks of sectioning and espionage[16]. Moreover, a recent Senate report[17] has underlined the urgency of the sovereignty issues, which need to be better taken into account on the French and European scale.

... The protection of strategic data is under threat

This crisis also underlines the stakes that weigh on strategic governance and data regulation. Although Europe and France have an enforceable legal framework for the protection of personal data (the RGPD), the urgency of the health crisis is likely to call into question the conditions for exercising this protection.

The reactions raised[18] by the possibility of setting up a "StopCovid" individual tracking application, which aims to limit the spread of the virus by identifying the chains of transmission between individuals[19], are a clear illustration of this. It shows the extent of the debate on this issue[20]. Yes, public health issues may justify a temporary and partial damage of the right to privacy[21]. Yes, the industry sector is able to quickly implement these devices[22], as confirmed by the recent announcement by Google and Apple to jointly develop an application of this type, which will benefit from the networks effects that could enable it to become the reference application and disqualify any other platform, including those promoted by States.

It is also necessary to assess the danger that could represent the power of some international actors who, during the crisis, promote their "turnkey" solution to governments deprived of technical capacity to respond to the demands of the situation. For instance, this is the case of the Californian company Palantir[23], which has just offered its data analysis and artificial intelligence tools for pandemic surveillance to the United Kingdom and other European countries (Germany, Switzerland, Austria, France). This company, which specialises in surveillance and intelligence, is worth more than 20 billion dollars and has recently been the subject of several investigations by the American press for predictive analysis and surveillance applications[24]. Long before the crisis, several French personalities worried about the dangers

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[14] https://www.francenum.gouv.fr/comprendre-le-numerique/transformation-numerique-destpe-et-pme-quelles-conditions-de-succes-et

[15] Jean-Luc Vuillemin's interview, Director of International Networks in Orange, by Annabelle Laurent, « Câbles sous-marins d'Internet : « Les risques de tension sont extrêmement réels » » on Usbek et Rica website.

[16] Camille Morel, « Stratégie Maritime, Le réseau mondial de câbles sous-marins : une toile dans la Toile »

[17] Montaugé Report

[18] https://www.usine-digitale.fr/article/covid-19-la-cnil-s-inquiete-du-pistage-massif-de-la-population.N946491.

[19] https://www.lemonde.fr/planete/article/2020/04/08/stopcovid-l-application-sur-laquelle-travaille-legouvernement-pour-contrer-l-epidemie_6035927_3244.html.

[20] We are referring here to current events, but there are other examples in the health sector that raise identical questions. Amazon has just created Amazon Comprehend Medical, which is positioned on the analysis of patient records, a form of Personal Medical Record (PMR). The solution combines machine learning and text analysis to extract data to help researchers, pharmaceutical companies or healthcare providers make informed decisions. Meanwhile, Amazon has invested in a drug sales startup (for $1bn) and partnered with JPMorgan Chase to experiment an offer to improve the health care of the bank's employees. It is clear that without regulation this type of vertical integration could very quickly It is clear how, without regulation, this type of vertical integration could very quickly pose serious difficulties for our socialised health system.

[21] https://www.usine-digitale.fr/article/covid-19-la-cnil-s-inquiete-du-pistage-massif-de-lapopulation.N946491.

[22] Ibid.

[23] https://www.usine-digitale.fr/article/covid-19-des-pays-europeens-dont-la-france-se-rapprochent-de-palantir-pour-traquer-le-virus.N949346.

[24] https://www.theverge.com/search?q=palantir+

that the participation of this company in some regalian missions could represent[25]. These actions should at the very least alert us on the medium-term strategy of these multinational firms which will take advantage of the States' weaknesses during the crisis but especially after the crisis is over.

...And yet, algorithms benefiting everyone are possible

It is therefore a two-fold observation that can be drawn from this first month of confinement: until now, digital technology has been a guarantee that our society will continue to function, certainly in "degraded" mode, as computer specialists say, but it has made it possible to maintain strategic infrastructures (transport, energy, etc.), the main logistics chains, telemedicine, delivery services...By enabling out-of-school children to maintain a link with their teachers and with social networks, it has significantly reduced the societal shock of the lockdown for nearly 70 million people.

However, we also have to face the fact that the crisis reveals a dangerous dependence of all sectors of the economy and administration on foreign technologies, software solutions and private platforms. This situation could constitute a risk for the sustainability of our social and political institutions.

In his latest work, Daniel Cohen[26] warns on the inherent dangers of the uncontrolled omnipresence of digital technology and artificial intelligence, particularly in the fields of care, health, education and justice. But he claims that a responsible and protective digital environment is possible "*in which nurses or teachers become again, thanks to AI, nodes of knowledge and skills [...] that can thus refocus on their primary vocation, which is to support others. It is really a societal choice, and everything will depend on where you place the cursor in these areas. We have to fight against uberisation, which is not a stable mode of existence, and against this dehumanising algorithmic society that is being prepared for us, and, on the contrary, seize all these unprecedented opportunities offered by technology to avoid reliving, in a much worse way, the ravages caused by industrial society*"[27]

What next? Tools and policies for a sustainable way out of the crisis

An important fringe of civil society is expressing the wish for a transformation of our development model after the crisis. What role will digital technology have to play in this desirable transformation? How can digital technology contribute to preparing a more sustainable, more sober and more durable world afterwards? The way out of the crisis will have to deal with many problems, but it will also be necessary to "recompile the programme" of our public digital policies. And if we cannot achieve this, what would be the cost to pay for our public liberty in terms of sovereignty, environmental impact, financial and economic dependence?

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[25] Senator Catherine Morin-Desailly and Serge Abiteboul, member of the Arcep College, statement to France Inter, Sept. 2018.
[26] Il faut dire que les temps ont changé… Chronique (fiévreuse) d'une mutation qui inquiète, Seuil 2020.
[27] Interview of Daniel Cohen, 27th sept. 2018, Libération

Several French initiatives have already produced proposals for building a more sustainable, inclusive and respectful digital world [28],[29],[30],[31],[32],[33]. The call for contributions does not ignore them and the expected contributions will be added to these initiatives in order to build concrete proposals and identify structuring measures. We propose to firstly initiate the consideration on the following questions as a matter of priority:

How to reduce the environmental footprint of digital technology? To make digital technology more environmentally friendly[34], joint actions between public authorities, sector stakeholders and users could be considered. For instance, it could be to rethink the dimensioning of networks, terminals and tools in relation to the needs and, where possible, give priority to the use of fixed network, which consumes less electricity than the mobile network[35]. Stricter rules could be applied to equipment from the time of manufacture (from the extraction of raw materials) and throughout its lifetime (until it is recycled); and greater efficiency in energy consumption throughout the digital products should be required. Solutions to reduce the impact of data storage should be strongly encouraged. Finally, the role of the consumer in this virtuous approach must be organized. While they must be better informed about the environmental impact of the equipment they use, they must also be aware of the ecological footprint of their own Internet and digital use in general. It is a question of making our equipment more energy efficient but also of reducing its ecological footprint through greater sobriety in our practices.

How to continue the deployment of digital infrastructures? The continuation of a public support access to roll out fixed networks for all and throughout France seems obvious and will require a high level of investments. Can the coverage of the entire territory by very ultra fast broadband be accelerated? As fibre roll-out is given to a wide variety of players and as it is destined to become the reference infrastructure, replacing the copper network, how can its maintenance be organized during the operational phase and its resistance in the case of a major natural disaster or a massive attack for example? In terms of mobile technology, should the deployment of 5G remain a priority? We know that the questions of technological dependence and the hegemonic position of Huawei strongly question the conditions for the deployment of this technology in Europe. However, regarding the current crisis, health and environmental issues are added to these initial reasons for mistrust. Many voices are being raised against the deployment of 5G on behalf of the precautionary principle[36], for the sake of human health and biodiversity. In many respects, this technology seems to be imposed against the will of many users. Inhabitants in areas not yet covered by 4G or by a recent fixed technology are questioning the priority of investing in a technology that will first benefit the densest areas[37]. In addition to the direct effects of this technology on the environment, its rebound effects are massive: multiplication of the waste associated with compatible terminals (smartphones and

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[28] https://www.arcep.fr/uploads/tx_gspublication/reseaux-du-futur-empreinte-carbone-numeriquejuillet2019.pdf.
[29] The European Commission's White Paper for A European approach based on excellence and trust https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_fr.pdf.
[30] Referral on digital technologies and environment, https://cnnumerique.fr/saisine-sur-le-numeriqueet-lenvironnement.
[31] Fing's initiative #Reset https://reset.fing.org/.
[32] Report for a digital sobriety of the Shift project https://theshiftproject.org/wp-content/uploads/2018/11/Rapport-final-v8-WEB.pdf.
[33] The work of the parliamentary fact-finding mission on the environmental footprint of the digital http://www.senat.fr/commission/dvpt_durable/mission_dinformation_sur_lempreinte_environnementale_du_numerique.html.
[34] Ibid 29, 31, 32.
[35] Ibid
[36] « Pour une planète viable, arrêtons la 5G », Reporterre website, 8th April 2019.
[37] Plateform "le jour d'après", Paula Forteza (deputy FDE), Mathilde Bras (FING) and Sébastien Soriano (ARCEP).

connected objects)[38], of the energy consumption of the new antennas and the associated uses which will strongly request the bandwidth and new storage equipment. These issues, in the core of the current crisis, only make the social acceptance of this technology more difficult, even though these uses are still largely unknown.

How to be less vulnerable to cyber-attacks? Large-scale cyber-attacks are a growing threat around the world. In France, the French Digital Security Agency (ANSSI) regularly alerts and supports companies and public actors to face risks of all kinds that threaten information systems and which, like the health risks and the crisis we are experiencing, would cause a profound disruption of our society. While there is a consensus on the need to deploy preventive security strategies, the ANSSI stresses that these strategies have shown some limits in regards to the nature and extent of current threats. How can we better prepare ourselves for coordinated attacks, which would simultaneously impact the most critical sectors (transport, energy, logistics, health, banking)? How to inform and train companies and individual citizens to "barrier gestures", which are essential in case of a crisis? How can we raise awareness of the legal and economic risks in the event of cyber-attacks?

How to base a strategy on data? Do the European states still have suitable tools to regulate and control the use that will be made of our data? At the end of the crisis, won't it be necessary to better control the reuse of data, from the processing algorithms to the computing infrastructures that make it possible to use them? Europe seemed to have adopted ambitious regulatory frameworks[39] but will they be enough? How can we reconcile the imperatives of security and the protection of our private life, a dilemma illustrated by the debates on tracing applications? Well before the Covid-19 crisis, several attempts showed the limits of legislative tools (*Fake News* Act, Directive on copyright in the Digital Single Market) and European initiatives were not more conclusive (financial penalties that are difficult to apply). And yet the technological domination and the capture of essential resources such as data by a small number of actors, present a strong systemic risk. How can the capacity of public authorities to act be strengthened in order to respond to this drift? Should the regulators' toolbox be strengthened (with more *ex-ante* regulation)? Should the expertise and technical skills of regulators be pooled? Should legal deposits or systematic audits of sensitive algorithms be created ? Should the penalties applicable in the event of non-compliance with the regulatory framework be more dissuasive?

How to develop a more sustainable digital economy? The economic model for the development of the digital economy presents strong risks of disruption and seems incompatible with a sustainable development model. By limiting market access to new entrants and by accumulating large cash reserves, the digital giants represent a serious threat to the ability of States to finance their public policies independently. Can we change the rules of competition law, as recommended by Thierry Breton, and engage ourselves in a major European tax reform that will enable multinationals, particularly digital ones, to contribute to financing the public policies of the States in which they make their profits?

Reinventing, democratising uses and digitising democracy? Finally, in terms of social ties, the crisis seems to offer us an opportunity to reinvent our uses. What impacts for democratic life, what future for traditional forms of collective actions: meetings, public demonstrations, elections, work of assemblies? What role should be assigned to digital technology and digital political actions in the democratic life? How can we ensure that digital tools will be facilitators and not limits to the exercise of freedom of expression? How can

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[38] Laury-Anne Cholez « La 5G ignore les enjeux écologiques », Reporterre website, 25th June 2019.
[39] Adoption of the GDRP and regulation on the free movement of non-personal data (Nov 2018).

we ensure that digital will no longer be a barrier to access to rights? That all citizens will be able to benefit from access to public services such as education, health, but also commercial services: banks, shops, transport, energy, all equally essential, whatever their degree of autonomy with regard to tools, their age or their level of training?

With this crisis, citizens are generally calling for a greater role for public authorities, particularly in economic and social matters. How to think the digital field in this renegotiated framework? Is it possible to think that some digital hard or soft ware should become common goods for the benefits of general interest? Can we establish more balanced playing rules for the global actors in the digital economy? Is it still possible to improve the tools for governing and controlling public power? This crisis could be an opportunity to raise public awareness on the fact that technology and its uses are political choices that reflect the choices of society. It is to these questions, among others, that your contributions will be able to provide answers.

Digital: new uses, new questions - Main themes addressed by the public contributions

Resilient digital in all territories

The crisis has highlighted territorial digital divides and the inequalities between citizens that they contribute to accentuate. Several contributors recall the need to cover the whole territory with good quality networks while underlining a mistrust towards the deployment of 5G, which risks obstructing the deployment of other technologies, still often absent from the territory. In the perspective of better infrastructures, it is also important to anticipate the organisation of the networks' resilience face to the multiplying risks (cyber-attacks, natural risks).

Unexpectedly, several contributors highlighted the role that maker places (manufacture of visors using 3D printers or creation of citizen solidarity networks) played during the crisis while they are little known to the general public. Often active in the militant sphere of free software, they have emerged as resourceful actors in some territories and have contributed, thanks to digital tools, to the setting up of solidarity and mutual aid networks.

Combining digital and work in the future

The massive use of teleworking has increased the need to redesign work teams and relations between work communities. Among other things, the desire for more autonomy for employees and, consequently, the need to transform management methods, but also to change working hours, for a better articulation between professional and personal life, has been expressed. More generally, digital technology highlights a greater need for dialogue and democracy within the company. As a transformer of work, digital technology also brings new professions and, with the emphasis of *maker spaces*, the need to encourage the repair and reuse of equipment. It has become apparent that the dichotomy between "manual" and "intellectual" professions must be overcome, as the emerging digital professions testify.

Digital and "*high",* "*low*" or "*right*" *tech* environment?

Numerous contributions pointed out the environmental risks of digital technology (consumption of resources, energy, pollution, technical obsolescence) and many made concrete proposals for a more sustainable digital environment: systematic recycling, reuse

of terminals, environmental quality labelling of hardware and software, creation of new professions (from repair to coding). The more virtuous behaviour of users is also a lever for transformation (reduction of data or hardware consumption, incentive system of tariffs for virtuous consumers, etc.). Beyond the *low-* or *high-tech* debate, for a more responsible and sustainable use of digital tools, we must move towards what some contributors have called "*right tech",* the right technology for the right use.

Citizenship and digital

The contributions testify to some concerns about the increased risks of surveillance of individuals, the misuse of our personal data (especially health data) and the dangers that connected objects can present.

Many stress the need for a digital transformation of the administration, easier and more citizen-friendly (Estonian model). Other contributions focus on the role of public authorities and question their ability to guarantee a secure digital environment that respects individual freedoms. Several contributions stress the need to develop a digital identity. Finally, for many, the need to fight against the digital divide, particularly for the most vulnerable French people, remains a priority.

Digital transformation of the state

Many contributors stress the incentive role that public authorities should play in the choice and development of open and sovereign systems and in regulating the development and use of algorithms. One of the ways to achieve this is to recognize "digital commons", whether in terms of infrastructure, data or applications. This requires a renewed legal framework that allows the products and people involved in the development of these commons to be valued (e.g. how can a contributor to free software be "compensated"?). More broadly, many contributors report a desire to see the emergence of institutional and technical frameworks that allow collaboration, co-construction and experimentation.

Economy and digital, other possible alliances

The economic development model carried by the digital giants has generated few comments. Above all, the contributions on the opportunity to create new forms of exchanges and new models of development have been the richest.

In order to reduce dependence on foreign technologies and relocate value chains to Europe while guaranteeing the security of our systems, the contributions specifically mentioned the need to develop French industrial sectors in the software field with specific ecological and environmental ambitions. To achieve this, the academic and industrial world must be brought closer together. Some have proposed revising the intellectual property regime, which in the digital field is rather an obstacle on innovation and open solutions development, and even increases the technological locking of some markets. Finally, the new forms of exchanges and development models made possible by digital technology, especially with the *blockchain* and the creation of local currencies, have often been quoted as potential contributors to the local development of territories.

For a digital Europe

The European level appears to be the right level for the development of viable digital infrastructures, whether for a sovereign *Operating System* (OS), a European *cloud* or service access platforms. The idea of a European digital currency has been proposed.

Points of consensus... and dissent

✓ There seems to be a consensus on the need to have digital solutions that are less dependent on foreign technology or supplies and to have sovereign infrastructures, software and digital services. However, there is disagreement on how to achieve this. To those who advocate the need to develop *ab initio* solutions (*cloud*, applications, terminals, etc.), including by mobilizing public investment, others reply that these solutions are economically and technically inefficient and that it is preferable to rely on market tools by imposing regulatory frameworks that could guarantee the objectives of independence and sovereignty. Furthermore, others stress the need to limit the role of the State in the development of digital solutions, as this could present a risk of increased surveillance and control, and ultimately threaten our individual freedoms.

✓ There seems to be a consensus on the fact that digital technology will be necessary to prepare for and overcome the coming transition phases. However, disagreement exists (as in other industrial sectors) on the orientations that will be chosen by the sector to take these transitions into account. Is it a question of building a less efficient, but more resilient and more sustainable digital environment or should we develop technologies that are increasingly efficient and innovative, but also greater consumer of resources and energy and potentially less respectful of citizens' rights? The question of the opportunity of deploying 5G is a great illustration of the debate.

Some remarkable proposals

Resilient digital in all territories

✓ Revise the foundations of the telecommunications universal service so that the guaranteed speeds allow access to a base of minimum services (teleworking, telemedicine, *e-learning,* tele-procedures, *e-commerce*);

✓ Establish an indicator at a territorial scale, such as the energy performance of a building, like the CAN ("capacité d'accès au Numérique" for "digital access capacity"), independent of any technology;

✓ Adopt smart city regulations to equally distribute the benefits among all actors (local authorities, inhabitants and local companies, industrialists).

✓ Mobilise research actors so that at least 15% of their time is devoted to projects of priority and/or operational interest (land use planning, local development, etc.), aimed at creating resilient cities and territories.

Digital and changing work culture

✓ Set up, *via France Compétences,* a training plan for employees in the digitization of their activities in order to encourage distance working.

Reducing the environmental footprint of digital technology

For a more reasonable consumption of content and a slowing down of the pace of technical improvements:

- ✓ Reduce video streams by 80% by 2030; increase the use of compression (disappearance of UHD and higher formats); and generally limit the increase in capacity;

- ✓ Reduce the volume of data exchanges; limit the size of screens;

- ✓ Legislate on technical and programmed obsolescence;

- ✓ Encourage companies and administrations to purchase the most energy-efficient equipment; limit the number of employees terminals; encourage the reuse of equipment.

Digital citizenship and digital transformation of the State

- ✓ Add to the algorithms (especially decisional) used in sensitive applications, a *smart-contract* (digital contracts based on *blockchain* technology which makes it possible to control the commitments of each party to the contract and to describe the program's intentions), "under the auspices of an Authority for Accounting and Digital Standards";

- ✓ Create within the State *an investor of general interest,* encouraging the development of new forms of public service (with digital solutions but not only) by promoting the impact assessment culture and multiple experimentations locally;

- ✓ Earmark public fundings for open and shareable sofware developments;

- ✓ Create and administer by public authorities open infrastructures for the pooling of development and encourage the co-development of software solutions.

Digital and economy

- ✓ Develop training courses for a more sober digital environment, including for developing so-called "manual" jobs (repair, recycling, but also eco-design and coding);

- ✓ Revise intellectual property law;

- ✓ Enable the creation of digital currencies that promote the development of local economies.

EU-wide digital sovereignty

- ✓ Develop under European law the status of company enabling the production of sovereign solutions while limiting administrative complexities;

- ✓ Promote European digital sovereignty and create a European digital space (*OS, clouds,* marketplaces, electronic money, European data community, search engines, etc.) by encouraging closer links between the *industrial and the academic world.*