Group work summary

DIGITAL TECHNOLOGIES

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"Transforming our cities for a better urban future"

PFVT

Editorial

Ten or twenty years ago, to the question "Is digital a priority for cities?", the answer seemed obvious: yes! We were looking to develop networks and access, we were digitizing urban services, we were competing to attract new digital jobs. The "smart city" presented itself as the bright future of cities.

Today, these goals have not disappeared, but the question and the answer have both become complicated. The workshop organized by the PFVT at the end of 2021 shed light on the possibilities such as the risks associated with digital technology, the dilemmas and the choices that will have to be made, regardless of the urban territories concerned. These choices are organized around two major questions.

First, what digital? The one who shares information, who decompartmentalizes, who equips local initiatives, who opens up horizons? Or the one who monitors, fractures, opaques and places local actors under the control of global platforms?

Secondly, a digital at the service, but also perhaps to the detriment of what objectives? Because digital technology as it is is linked to the development model at the origin of ecological disruptions and social crises that will mark everywhere the decades to come.

Digital technology can be put at the service of urban strategies oriented towards an ambitious and just ecological transition. But not under any conditions. The following pages try to shed light on some possible paths.

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SUMMARY

Introduction

Digital technologies have such a great impact on our territories and daily life that we sometimes talk about the "digital transition", the same way we talk about a much needed environmental transition. The recent health crisis reminded us the importance and the potential of digital technologies. They kept our societies going by enabling remote work and enabling a lot of services online. During this time, digital technologies also made it possible for some people to move away from big cities, probably never to return. In the meantime, more and more conversations arise about the negative impacts of the digital world on our societies. Among other criticism, some say that digital technology can be a cause and a factor of increasing dependency from local companies to bigger platforms; that automatization fosters growth without creating jobs and without reducing greenhouse emissions; that private life deteriorates, along with the protections it is meant to offer; that democracy deteriorates as well and that many countries are taking authoritarian turns; that essential services are being dehumanized in many places; that some urban policies are being hijacked, such as with tourism (AirBnB) or transportation (Waze, bikes, scooters, free range). The list could go on. The development and expansion of 5G in North America and Europe, especially, sparked heated debates, moratorium and negotiations with phone network providers. This conversation wouldn't have triggered significant oppositions 10 year ago though. And although smart city projects were seen as the symbol of modernity not so long ago, many of those have now resulted in failures and disputes. On another hand, other cities suffer from insufficient, fragmented or fragile digital infrastructure networks. The situation hampers infrastructure development, which limits the development of populations. In such contexts, digital technologies do no help to reduce inequalities. What will be of it in 2050? On the one hand we can imagine that the digital transformation will be further enhanced and that technologies like virtual or augmented realities, AI and the "Internet of Things" will emerge or return. On another hand, the social and environmental crisis will for sure change the conditions of development of digital technologies, and they will impact the conditions of possibilities to develop those technologies and to develop an economic system relying increasingly on them. With this in mind, what role can we expect the digital world to play in and on our cities? What should cities expect from digital technologies, what actions will need to be taken? Will digital technologies remain an urban priority or will we have to question what kind of digital technologies we want? If this is the case, what priorities will and should come first to steer the development of digital technologies into other directions?

Daniel Kaplan, Cofounder, Plurality University Network

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CHALLENGES

Digital technologies are already transforming cities

Though actors of the digital world tend to use the future tense a lot, the digital world isn't really "emerging" anymore. It even has a fairly long past: microcomputers and the first online services appeared more than 40 years ago. People have been able to access the Internet since 1995. The first GSM generation (what we now know as mobile phones) first appeared in the 90s. Such developments obviously didn't happen everywhere evenly but services and practices related to digital technologies brought a lot of significant changes to all cities around the world.

• When it comes to individuals, those changes relate to the use of inboxes (text messages, voicemails, emails) and of social networks, to new habits like online ordering and remote work (mainly in rich countries), to using mobile phones to navigate, to using technologies to pay and transfer money (especially in Africa), and of course, to coordinate social movements. Many other examples exist of how digital technologies influence the way we experience the city.

• When it comes to organizations (public and private), transformations came with "information systems", which impacted work management processes and world scale value chains; changes also have to do with the digitalization of services through clients-users interfaces, a situation which often (though not always) decreased in-person interactions; changes have also had to do with the increased use of data as a knowledge, debate and decision-making tool; lastly, changes happened through the increasingly important role played by "platforms" (such as Amazon, Booking, Alibaba, business-to-business platforms), because these platforms have become mandatory intermediaries for many local businesses to reach their clients.

Words and room lack to list the diversity and plurality of urban practices redefined or impacted by digital technologies – knowing as well that these practices vary from countries to countries. Still, we can point at two main trends:

• The main impact that digital technologies have had on urban practices weren't triggered by traditional actors of the urban field, meaning public authorities and private urban service providers. They rather result from a mix between private service offer (communication, guidance, short term rentals, payment, etc.) and usages that have their own dynamics. Also, it must

be said that private actors causing the biggest urban changes (at least changes we can notice) are almost never a part of "smart city" projects that have been unfolding over the past fifteen years. Physical infrastructures needed to support digital technologies are beyond the control of city authorities, as revealed by the recent debates that took place in several European cities about the development of 5G.

• Digital technologies are and have always been a tension point between actors of the field and the population. Put simply, this issue comes down to who's empowered and who's not. Global networks challenge national sovereignty, the same way big companies do, given that they are sometimes wealthier than some states. Local authorities seek political leeway and competences to remain able to regulate. Digital technologies change the conditions of competitiveness and redefine market powers. Though digital technologies increase organizations' control capacity over their processes and their workers, the same workers use digital tools themselves to emancipate. Overall, individuals can use digital technologies as a mean of self-expression and one to get organized, but their actions are \ more controlled by new sets of systems and rules, explicit or concealed, public or private. Even the idea of a digital divide can be understood through this lens. The digitalization of public services for instance can facilitate those who are familiar with the digital world, but this process can make it very difficult for those who don't know how to use such technologies to use these services, even when these people do have an Internet access. This is why the European Commission (followed then by the French National Council) gave a definition of "digital inclusion" as "social inclusion in a society and an economy where digital technologies play a crucial role.". Inclusion is understood here as the capacity to take action independently and to be a part of society.

The great challenges that territories face ahead for 2050 won't be primarily digital

Based on the observations above, it seems that cities shouldn't make developing digital technologies a goal as such. They should instead question what positive or negative impact technologies can have on their urban strategy. Some countries and cities of course lack digital infrastructures – but is this then a reason (to use only that example) for blindly and heavily rely on philanthropy offers done by companies like Google or Facebook to bring network access where it lacks?
Likewise, we need to be careful about using mottos that present digital technologies as an end rather than a mean. This is for instance the case with "digital transition". If transition means shifting from a present to a future state, the end goal of the digital transition should then be... digitalization. But is there only one way to "digitalize"? If there are many, what way can be the most suitable way, to apply to a specific territory, at a specific time? The same applies to "smart cities", a naming which even some industry leaders such as IBM stopped using due to the many failures related to this concept. Even though the digital world has significantly transformed cities and will keep on doing so, is this approach the right entry to define urban planning strategies?

This is why we write that the main challenges cities will face in the coming decades won't be primarily digital. Below are three of those challenges, which we decided to focus on to illustrate our idea.
- Environmental crisis (climate change, biodiversity destruction, etc.) will have a tangible impact by 2050. In many cases, this will transform life as we know it inside some cities and maybe transform some cities themselves: heath waves and other extreme meteorologic events, lack of water, territories fighting each other to access resources, domestic and international migrations, etc. Climate change will highlight and confront urban fragilities. These effects will be very different from one place to the other, and they will even be different inside one same territory, likely to create divides between those who will and those will not have the means to prepare against catastrophes (or to produce what they will need to do so). This new situation will most likely not happen in one day. It will take time, and it won't happen everywhere evenly. Yet this situation will call for a stronger social cohesion and for collective and public actions, even if their implementation will likely become more difficult. With this context in mind, to what extend and in what way could digital technologies be an answer?

• Social cohesion and solidarity are other challenges that cities face. Income and estate inequalities are particularly visible in urban areas and they create risks of division – violence, segregation, even secession (something even the rich do with privatized, guarded neighborhood). Public services are being fragilized everywhere and are becoming harder to access, particularly for the most vulnerable populations.
Cities used to be a melting pot. This melting pot was never perfect, but at least it existed, and the opportunities it allowed made cities attractive. Given the way things happen now, how can digital technologies maintain or restore the situation?

• The competitiveness of cities is a complex question already, and it will grow more complex in the years to come. Can cities attract, generate or maintain enough economic activities to answer the needs of their population? This would mean building infrastructures first (digital infrastructures included). Yet even after they built infrastructures, the only thing that local authorities (or companies) actually achieved is to level up with their competitors. Their "competitive position" remains unchanged. The fast changing pace of digital innovation and technologies raises other questions. If a territory readjusts entirely to one specific "generation" of technology, will this territory then become obsolete as soon as this generation of technology is taken over by the next, more advanced one? Sustainability brings other, deeper challenges to the table, if for instance it ends up decreasing long distance movements of people and goods or of it ends up weakening

globalized supply chains (vulnerable because globalized) that urban populations heavenly rely on for their daily needs.

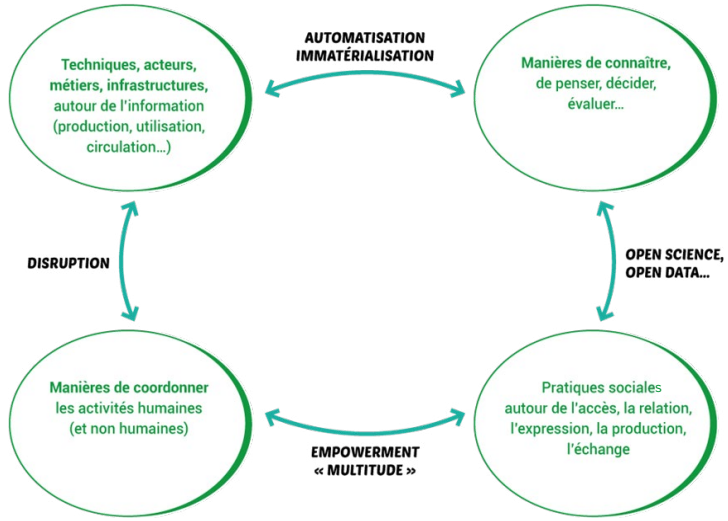
Digital technologies: a strength, a challenge, a fragility factor and a resilience factor

To discuss the role that digital technologies play for various actors from different fields, we must first understand the broad range of meanings that this appellation encompasses. The diagram below was created by FING (New Generation Internet Foundation), an organization that supports dialogue between people who work in the digital world and people who don't.

Diagram: technologies, actors, jobs, infrastructure, about information (production, use, circulation, etc.)

The digital world and digital technologies (we've only recently started using those terms on a regular basis) started with IT and "information systems" that organizations used. They enabled process automation and helped organize activities more efficiently. They've become a new way to understand and represent our reality through data. On the users' side, the digital world defines many individual and collective practices, often happening spontaneously, without requiring mediation or facilitation. More recently, the digital world and its "platforms" have proved to be a great coordination tool between intermediaries and independent activities (weren't stock exchanges already a good illustration of that?).
These four aspects are interconnected: data automation isn't well received by information systems' leaders; system users often take the system designers by surprise, and the spontaneous, unplanned usages that users sometimes make of platforms make it difficult for information systems to regulate these platforms, etc.
Let us not forget that the digital world is a thriving and dynamic sector but that his boundaries remain blurry: would a start-up wanting to compete with Amazon be considered to be a digital business, a distribution business, or a logistics business?

Could various uses of digital technologies then be combined to help bring a positive answer to some challenges which cities face? Currently, this help can be envisioned as presented in the table below – though acknowledging that some of the positive aspects can have negative flipsides and vice-versa.



Que désigne "le numérique" ?
source : Fing, programme Transitions[2]

The digital world in the face of tomorrow's urban needs

The digital world as a strength	• Making urban services more efficient and more available • Facilitating knowledge sharing • Facilitating the coordination of public organizations, of public and private sectors, of individuals and collective organizations • Enabling individual practices and collective initiatives in the city at an affordable price • Enabling alternative solutions (citizen mobilization, digital commons)
The digital world as a challenge	• Dehumanizing professional services and organizations (see criticism on new public management methods and on the excessive digitalization of the access to public services) • Accelerating the deterioration of collective structures at the sole interest of commercial endeavors • Dividing and fragmenting the political world into "tribes" which do not share the same value framework anymore • Enabling new authoritarian means (such as social credits in China)
The digital world as a fragility factor	• Making essential services entirely dependent on complex chains, interdependent because interconnected worldwide • Making actors rely on data sources, systems and communication devices that may freeze more and more often due to natural events or attacks. • Causing urban technology infrastructures to become obsolete quickly although they were designed to last very long
The digital world as a resilience factor	• Creating technical and human resources to prevent catastrophes or to take action to face them • Connecting citizens and actors of the field • Supporting knowledge, experience and practice exchanges, and fostering the development of a "crisis culture"

PROJECTIONS

Sharing out urban aspirations

The workshop organized by FNAU to prepare for WUF11 used some of the Future Literacy methods championed by UNESCO to collect some wishes and needs about the city of today and tomorrow.

Cities of opportunity and sociability

Cities are generally open-minded places where people, communities and heterogeneous activities come in, come out and co-live, making cities one of the most long-lasting social construction that exist – explaining maybe why cities tend to last longer than nations. Cities can also be difficult to govern because they are places where innovation and sometimes revolutions happen. Lastly, cities are places where people live mostly anonymously, something that can be both freeing and alienating.

The functionalist type of governance that smart cities target might go against cities' capacity to self-generate themselves. Yet the workshop shed a light on a shared wish for cities to become (again) places where we live and experience things together – as a remedy or complement to more and more interactions happening online. The main quality we'd look for would be "urbanity", meaning all at once the capacity to care for each other, to have valuable interactions, and to create collective experiences starting from individual needs and from a broad diversity of activities.

Autonomous action and decision-making processes

Everywhere, urban actors speak out to increase their strategic and tactical means to regulate their territory. This applies to places of collective life, infrastructures, services, crisis anticipation, crisis responses, etc. The same goes for the digital world, which raises questions related to sovereignty, to infrastructure regulation and data, to the use of open software, etc.

This call for autonomy isn't necessarily a synonym of city divide, but it reveals three main points:

• A city's administrative organization isn't always accurate in regard to its actual perimeters and connections, whether we talk about living areas, proximity with production sources (farming), interactions needed to implement the 'circular economy', or complementary cities network.

• The power of Internet-based global companies calls for solid resources, competences and frameworks.

• Hazards and uncertainties related to climate change are such that the local scale must prove resilient so it can react and take action quickly in the face of potential crisis, without relying on technical and institutional infrastructures and systems.

Empowering cities

Institutions aren't the only ones claiming the need to be able to regulate their territory. This claim is shared by those who, collectively and individually, want to be empowered to be able to project themselves into their own future, to design, make, prepare and react to situations. Such a territory is conceived as "contributive" because all actors can take part to creating the common good, and all contributions are acknowledged and valued. One of the recommendations would then be to reconsider the hyper-specialization of some activity sectors and places and prefer instead spaces that bring several services and activities together (such as for public services, health, etc.). Another recommendation would be to develop commons and manage them as such, starting with digital commons, by encouraging complementary exchanges systems like currencies.

Digital technologies can help make this participative ambition happen. But it can also be an obstacle if used exclusively to serve commercial interests and to facilitate even more the application of business management practices to the public field.

Three projections

These three prospective projections spring from a fairly simple "decision-making tree":

• Can territories regain even partial control over digital technologies?

• How can territories organize their political response to climate risks and social challenges?

Projection 1 : An unsustainable digital world in an unsustainable city

In this scenario, territories remain focused on their economic development within the global economy even if this economy shows more and more signs of failure. Cities grow increasingly competitive, especially to access resources. Territories are managed to serve business interests, especially those of the biggest companies that can choose to settle some place or not, to provide services or not. Public institutions lack resources, competence and independence to impose other priorities. Inequalities between big cities and small cities grow bigger.

In this context, digital technologies are a priority, both to ensure the best possible network connection and to provide cheap and efficient urban services thanks to a collaboration between public and private actors. Smart cities target efficiency, safety and service quality, with a level of technicality that makes it impossible for citizens (even for elected representatives) to be a part of the decision-making process.

Inequalities remain or grow bigger, in a world becoming increasingly harsh and insecure. The efficiency allowed by digital technologies has now "rebound effects": it increases product production and consumption. Territories are hit hard by climate change and rely on their technical resources and specialists to react, even though this strategy doesn't always prove effective.

Projection 2 : Digital technologies used to build a society that keeps climate change under control

Here, public authorities and companies join forces to prepare and answer upcoming climate crisis and they rely on digital technology to do so. This "eco-modernist" scenario aims to preserve the current technical-economic system while trying to find new tools.
Data is a crucial element in this scenario. Everything is measured, collected, modelized: climate, hazards, energy and flux of matter and of population. Data is open. Citizens and field actors can access representations.
Infrastructures, services and economic activities are managed by information systems. These systems are as interconnected as possible, to improve their efficiency, to encourage the circular economy, to transform physical service production as much as possible (function-based economy, service-based economy).
Digital platforms enable the sharing economy, which limits the amount of products that people own and buy – although with limited success.
Farming lands neighboring cities are managed and organized to serve cities and they are thought about as food factories. Urban farming develops through what is now called "vertical farms", which use technologies such as aquaponics and hydroponics.

In such densely organized cities, individual behaviors are highly regulated. Recycling is mandatory and monitored. Working remote becomes the norm and long distance travels are strongly discouraged.

Projection 3 : Digital technologies used to build a new urbanity

Drawing from the idea of "cities' transition", this scenario sees the anticipation of climate crisis as an opportunity to change our model : "To strongly reduce greenhouse emissions and fossil-based energy consumption, individually and collectively; to strengthen the resilience of territories as well as their ability to absorb future chocs through resettling and re-establishing their once delocalized economy; to strengthen social cohesion and strengthen cooperation between actors of one same territory; to acquire competences that territories will need to be more self-sufficient."
In this situation, cities are more participative and contributive. People's working time includes both their job if they have one and their participation to various community services: helping vulnerable populations, helping grow and supply food, recycling, repairing, preparing for crisis or answering them, etc. Tasks, neighborhoods and spaces aren't as specialized as they used tp be anymore. Goods and places are more and more designed to be shared, even the ones that are privately owned. The pace slows down thanks to motorized transportation being less used.
The economy focusses on repairing, reusing and "upcycling" goods that already exist, instead of focusing on producing new ones.
To serve this contributive city, digital infrastructures get organized to function locally while remaining connected globally. They rely on free and reliable technologies and on open data. Digital interactions work hand in hand with physical interactions, they're not meant to replace them, even though working remote remains strongly encouraged. In this situation, few things depend entirely on digital technologies: just like it may happen with activities relying on electricity, activities relying on digital technology may temporarily be out of service due to wind or sun shortage that can last several days.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TRAJECTORIES

With a fairly distant 2050 horizon in mind, we understand "trajectories" below as a set of principles and routes likely to be implemented today to converge in one collective direction.

Departure point, control point

Departure point: the transitions we must achieve are social and environmental and digital technologies are only a mean

If we think about the transitions that we have to achieve by 2050, the environmental and social transitions must come first. They will be the instrument to build a sustainable city, tailored to meet new climate conditions and the related uncertainties. Digital technologies can be a mean to achieve this transition, not an end. To contribute to this transition, digital technologies must change as well.

Control point: agreeing on the main values of the digital world

Digital technologies are and will remain a constitutive component of urban life and public authorities will never have full control over them. To achieve the environmental and social transitions, we shouldn't wonder about whether to use digital technologies or not. We should wonder about which of those technologies we should use and why. With this in mind, reminding ourselves of the positive impact that the digital world can have on cities (and elsewhere) seems important. These benefits haven't mainly been technical; positive effects have been noticeable moistly at three levels:

- Digital technologies have transformed innovation dynamics, which became less linear, more fluid, more open, and more often than not less capitalistic.
- They've empowered new actors who, with digital technologies, found new means to speak out, self-organize, innovate and be a part of collective projects, giving us maybe a hint of what "network governance" could be, knowing that this type of governance is one of the favored perspectives in sight to achieve the environmental and social transitions.
- A new and refreshed take on what "commons" are, to now take into consideration open source, public data, free content licensing, etc.

Focus

Open Street Map in rural areas

The rural town of Razimet (Lot-et-Garonne, south of France) paired up with the collaborative mapping platform Open Street Map to enjoy a greatly detailed map of its territory. This map includes house names, street numbers, etc.
https://www.mairiederazimet.fr/p/plan-et-carte-de-la-commune.html

Focus

Free software action plan and digital commons

Started by the French government in November 2021, this free software action plan aims to make public services more digital with three goals ahead: improve the use and knowledge about free software and digital commons within the administration, develop and help with the creation of source codes, and rely on open software and open sources.

Two perspectives twists

Drawing from the observations above, it seems important to take a different look on two aspects that describe the way we usually talk about cities relating to the digital transition.

From an offer perspective to a political perspective: from the "intelligence city" to the "intelligence of cities"

The idea of "smart city" (intelligent city) comes most of the time from putting offer first. It came about under the influence of big actors of the digital world (Cisco, IBM historically), not under the influence of cities. In this perspective, digital technologies find themselves at the crossroad of solutions meant to solve seemingly invariable urban challenges, although the core idea of the environmental and social transition isn't to shift challenges but to shift solutions. This perspective roots what in fact needs to change. It homogenizes what we need to differentiate if we hope to be able to embrace the broadly diverse realities that are specific to each territory.

If we now switch this perspective, we can talk instead of "urban intelligence". The idea is to use digital technologies to answer political priorities defined by cities, their field actors and their citizens. Given the uncertain times ahead, this perspective should be fostered and supported by knowledge and competence exchange to enable the ongoing adaptations that we know will be needed.

From a management perspective to an empowerment perspective

Public actors like big urban service managers think about digital technologies first and foremost as a mean to manage. They see them as a way to improve service quality, to make services more effective and time-efficient, to limits costs, to interconnect processes. This goal would make sense wasn't it to result in the constant decrease of physical contact with users (although the most vulnerable populations need this in-person contact). This goal would make sense, also, wasn't it to result in a new kind of bureaucratization, meaning

machine-made decisions which are harder to discuss and to contest, even for public officers.
The ways in which citizens experience the digital world's tools and services vary widely. If we accept instead the perspective of an "empowering city", we should advocate instead for this experience: using digital technologies to share both information and power in order to empower all actors (including public officers), enable them to take action themselves, initiate things, arbitrate collective conversations and prepare for hazards.

Five routes to explore

Route 1: Making the digital world ready for the future

Today, the digital world is not ready for the future nor for the climate crisis and uncertainties that will come with it. This world is too fragile, too hungry for energy and for other rarefying resources. Moreover, it grows rapidly obsolescent, centered as it is on a model of productivity.

To help with the transition towards sustainable cities, the digital world needs itself to change first.

- Calling out for a low tech digital world that uses energy and land responsibly: the Low-Tech lab7 uses this designation to define technologies that "help people fulfill their needs in a healthier way, an in way that uses land and energy more responsibly'; improve communities' autonomy and resilience; and preserve or regenerate ecosystems". A low-tech digital world allowing for a responsible use of energy and land would rely on equipment that do not require to many rare resources (minerals, water, etc.), nor too much energy; it would rely on sustainable, repairable, reusable and recyclable energies; on open source technologies that have been tested and proved to be efficient, and that are skillfully used by a big number of users and easy to maintain; and on apps and eco-services designed for everyone to access them.

- Calling out for digital technology to be "resilient by design", able to keep working and keep providing basic services even during crisis. On top of being repairable by design and of using land and energy moderately, these technologies would also be sufficiently well-researched for people to easily be able to fix them in case they break.

Focus

EONEF

EONEF is an aerial platform that is energetically self-sufficient. It facilitates the setup and expansion of communication networks or aerial observation networks within less than an hour, in isolated areas.
http://eonef.com

The digital world thought as such is meant to be modular and replaceable: each link of the chain can function even when others don't and actors of the field can keep working without needing to rely on digital infrastructures. The digital world thought as such is thus resilient; communities that rely on it can function even with an intermittent energy supply or with an intermittent connection.

- Calling out for digital technologies to be local (yet interconnected). Initially, the architecture of the Internet relied on interconnected local networks without epicenters nor hierarchies (in theory at least). For environmental reasons, as well as reasons related to safety and sovereignty, going back to this initial design seems relevant, if we make sure though that networks remain open and interconnected. This would require communication networks that can function independently; local networks hosting essential data and services; and copies of applications and data saved on the cloud so we can still access it even in times of crisis.

Route 2 : For digital innovation to be dynamic and governed

Digital innovation owes its strength to its daringness, its rapidity and its adaptability. It deeply transformed and activated innovation in all fields, most of the time for the best. But "disruptions" created by digital innovation have also had negative impacts. Profound systemic transformations are needed to achieve the environmental and social transitions, implying to push forward jointly several city components: infrastructures, services, practices, regulations, incentives, etc. To do so, we need innovation. But the switch of priorities suggested above calls for a new type of innovation governance, where innovation is shared.
By "shared", we mean that it must be arbitrated by public authorities while innovators must have the freedom and leeway to create, surprise and experiment. Such governance would rely on different pillars:
- A dynamic ecosystem that encourages various shapes and sources of innovation: technical, service-oriented, economic, social, etc.;
- Public officers who know their goals and criteria very clearly and who are ready and eager to use any available mean to push forward the innovations needed to answer

their goals: direct and indirect funding, public commissioning, facilitation and regulation of the ecosystem, etc.;
- Debates organized to bring citizens, social and economic actors, public officers and researchers together to discuss innovation. The fact that governance is shared between them won't necessarily lead to consensus. It will call for places, agoras, to express opinions and find common grounds or acknowledge divisions. Among other things, why not think about a participative budget for innovation, one that would allow citizens to choose what projects will receive public money allocated to innovation?

La force de l'innovation numérique réside dans à la fois dans son audace, sa rapidité et son agilité. Elle a transformé les dynamiques d'innovation et leur a donné un élan dans tous les domaines et c'est, dans une large mesure, une bonne chose. Mais la « disruption » qu'elle produit a également des effets délétères. Réaliser la transition écologique et sociale passe par une transformation systémique qui nécessite de faire évoluer conjointement plusieurs composantes des villes : infrastructures, services, pratiques, règles et incitations, etc. Pour y parvenir, il y a bien sûr besoin d'innover. Cependant, le retournement des priorités proposé plus haut doit s'accompagner d'une nouvelle gouvernance, partagée, de l'innovation.
Cette gouvernance est « partagée » parce que, si les acteurs publics doivent l'orienter, il faut aussi que les innovateurs disposent de la latitude et de la liberté pour inventer, surprendre et expérimenter. Cette gouvernance partagée devrait donc reposer sur :

- un écosystème dynamique, favorisant la diversité des formes et des sources d'innovation : technique et servicielle, économique et sociale… ;
- des acteurs publics clairs sur leurs objectifs et leurs critères, et prêts à utiliser tous les moyens à leur disposition pour faire émerger l'innovation qui y répond : aides directes et indirectes, commande publique, animation de l'écosystème, réglementation, etc. ;
- une mise en débat de l'innovation impliquant à la fois les citoyens, les acteurs économiques et sociaux du territoire, les institutions et la recherche. Une gouvernance partagée n'est pas nécessairement consensuelle. Elle a besoin d'agoras où s'expriment les positions et, soit se créent des convergences, soit se tranchent des oppositions. Et pourquoi pas, aussi, d'un « budget participatif de l'innovation », permettant aux citoyens de choisir à quels projets ira une partie des moyens publics de soutien à l'innovation ?

Focus

Local authorities' manifesto for digitally responsible territories – France

"Les Interconnectés" is an organization that gathers public authorities and created to promote the development of inclusive digital technologies allowing everyone to access public services, with eco-friendly technologies that support intelligent and sustainable territory projects. .
https://franceurbaine.org/sites/franceurbaine.org/files/images/franceurbaine_org/web-manifeste-final.pdf

Focus

100 climate-neutral and smart cities by 2030 – European Union

The EU connects the environmental transition (Green Deal) and digital strategies very tightly. It put out an open call for the end of 2030, for European cities to voice their interest if they wish to achieve carbon-neutral goals and develop smart cities concepts.
https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/missions-horizon-europe/climate-neutral-and-smart-cities_fr

People-focused smart cities – UN Habitat

During the 2020 World Urban Forum (WUF10), UN-Habitat started a flagship program to promote inclusive smart cities. The program aims for the deployment of digital technologies to achieve sustainability, inclusivity, prosperity and human rights.

Route 3 : Sharing digital sovereignty

In cities, digital infrastructures, digital equipment, software, data, digital services and usage combine a complex mix of components, public and private, remote and local, controlled by various kinds of organizations and sometimes various kinds of people. This intricate web of actors cannot be governed by one single and absolute instance, and local authorities should want to be a part of this shared networked governance.
Who is this governance shared with?
- States and confederations (such as the EU): regulation, great infrastructures, innovation policies, etc.;
- Other local authorities at different scales (for instance regions, Länder), and other cities to share the efforts and infrastructures with
- Local citizens, businesses and community organizations
- Actors of the digital world, big and small, who often are in the position to innovate and create.

This shared sovereignty would have to do with:
- Physical infrastructure (networks, hubs, servers, measuring devices): right to surveillance, right to interfere (access, coverage, security)
- "infostructures", for both software and information: essential data (public, common interest, co-produced), representations, tools, standards. These components should be organized and managed as "commons".
- Private and personal data and algorithms, in an idea of "informational symmetry", meaning being able to know what others knows, sharing and/or controlling the ability to deal with such knowledge, and being able to understand and comment on decisions, etc.
- access condition to public spaces to set up measuring devices, equipment, screens, services, etc.

Route 4 : Technological innovation to empower citizens

Digital technologies are, as we said, a tool of both emancipation (through connectivity, or through access to means of information and expression) and alienation (control, dehumanization of many services, disinformation). Knowing that the transition will call for citizens to be active, connected and united, the digital strategies that territories will implement will have to empower local actors individually and collectively.

- Digital empowerment: offering independent access to digital technologies and to essential services; reclaiming stakes related to the workings of the digital world to understand these stakes and discuss them
- Political empowerment: using digital technologies to better involve citizens in public debates and in the collective decision-making process; co-designing and co-supplying services; making it possible for them to discuss the data, digital representations (maps, etc.), infrastructure choices or algorithms that impact decisions
- Collective empowerment: thinking and designing the city as a "common" and involving communities in a city's management process

Route 5 : The digital world to serve the emergence of alternative models

The idea here is to use digital technologies to activate knowledge and resources, to support the emergence of sustainable alternative models that would otherwise struggle in an exclusively commercial context.

Many examples can be listed.
- "Commons" (see above): those upon which the environmental and social transitions (amongst other things) can rely, meaning digital commons (data, maps, software), immaterial (knowledge, methodologies) or on the contrary, physical: energy, rare resources (water), public space, etc.
- Energy co-ops: we will need digital information systems to manage decentralized renewable energy production, distribution and consumption.
- Local sharing platforms, to reclaim products, goods and services.

Focus

Entourage, communauté d'entraide

L'application Entourage favorise les relations de proximité avec les personnes exclues et isolées, et met en lien les personnes qui proposent de l'aide et des ressources.

https://entourage.social

Hubcité, a concrete African urban utopia

Started in 2012, this program supports low-income populations living in neighborhoods on the border between Lomé and Ghana to reclaim their power to transform their cities and their lives. #WoeLab (first African space for Technology Democracy) is an illustration of it. Through collaborative production (co-design and co-making processes), the goal is to build the African neighborhood of tomorrow, responsible and virtuous. Open-source spaces were born to drive the making of the city; their creation sparks from the encounter between digital technologies and experimental architecture that use improved local materials; all of it meant to think, design and implement local projects for Africa.

HubCités Africaines

- Circular economy structure: we can hardly think of circulating information without digital support.
- Complementary local currencies to promote and encourage shorter supply chains, strengthen local economies, and root for social, sustainable, ethical and fair values while reclaiming non speculative monetary systems. Digital innovation can help greatly in this regard.

CONTROVERSIES

Can digital technologies contribute to the environmental transition?

For many years now, actors of the digital field have been talking about the digital world as an accelerator of economic growth on the one hand, but on the other, as the cause of increasing greenhouse emissions and of increasing consumption of rare resources, triggered by the dematerialization process, by process efficiency (to produce more with less), by distanced interactions replacing in-person meetings, by the organization of the circular economy, of the sharing process, of functionality, and by the role played by data to measure climate change or other phenomenon such as deforestation.

Yet this planned acceleration still didn't happen, and the possibility that it will happen remains uncertain. We can hardly deny, indeed, that the development of digital technologies over the past forty years happened in parallel of increasing greenhouse emissions. This development also occurred simultaneously with decreasing productivity gains which, at least since the middle of the years 2000, have applied to all sectors, including the industry sector. The fact that these situations are related doesn't necessarily mean that one is the cause for the other: digital innovation isn't probably the sole cause of such negative evolutions; but it sure is related.

The environmental impact that digital technologies have is becoming bigger and greater (on energies, water, rare resources).

Given this situation, digital technologies appear more like a problem than a solution. Could this be otherwise? If it can, would the change depend on investing more in more advanced technologies or would it depend on steering digital innovation in different directions, some that would use energy and land more respectfully and carefully?

Do Northern cities face the same challenges as cities from the South? Do big cities face the same challenges as small and mid-size cities?

Absolutely not. Big metropolis from the North enjoy great mobile networks and land lines coverage. Their populations are very well equipped and use digital technologies intensively. Local authorities have the means to invest, they have competences, they can even influence to a certain extend big international actors of the digital world – like we saw with their reactions to regulate Uber or Airbnb.

Small and mid-size cities from the North are also very well connected even though often with delay. Yet they enjoy less means, less domestic competence, and they don't have the same negotiation power; all the more reasons for them to join forces and lean more heavily on energies and competences that are available on their own territories.

As to the cities of the South, they are likely to come across difficulties with local networks and international connections. They lack a lot of means and private actors aren't often willing to invest locally due to low incomes and to the fact that populations have low purchasing power.

That being said, digital technologies are used in all big cities of the world and they have transformed cities in thousands of ways. Even in places where infrastructures or individual skills are lacking, or aren't generalized, other collective solutions came to compensate (internet cafés and other similar shared spaces, collective mobile phones).

Lastly, the challenges that relate to digital technologies are somewhat the same from one city to the next. Though some cities must first answer their lack of digital infrastructures, all of them will at one point face the same question of strategic independence toward digital actors and organizations. And all of them will have to prepare for the potential impact that digital technologies may or will have on the action capacity of their citizens, local communities and local businesse.

Is it the city scale an accurate scale to regulate digital technologies?

Today, networks are global and most of the international companies that build and structure them (from equipment makers to service platforms or network builders) have their HQ mainly in the United States or in China, more rarely in Europe. These companies usually do not define their targets and strategies based on the specific expectations of the countries and territories where they operate, and we know for instance how familiar they are with tax evasion.

Regulating the digital world implies to act at the national scale, in some cases at the supranational scale, as we saw with the General Data Protection Regulation (GDPR) which had a great impact in Europe.

However, territories and especially metropolitan areas also have the means to act. They can invest in infrastructures considered to be of "general interest" (networks, data centers, data lake) in order to encourage or limit certain activities (access to public spaces to develop networks, short-term rental, etc.), or to influence public acquisitions, and support some innovations more than others.

Some of these actions come at a cost and call for these territories and metropolitan areas to bring together their resources, knowledge and competences, both internally and between them (meaning between public administrations, businesses or community organizations)

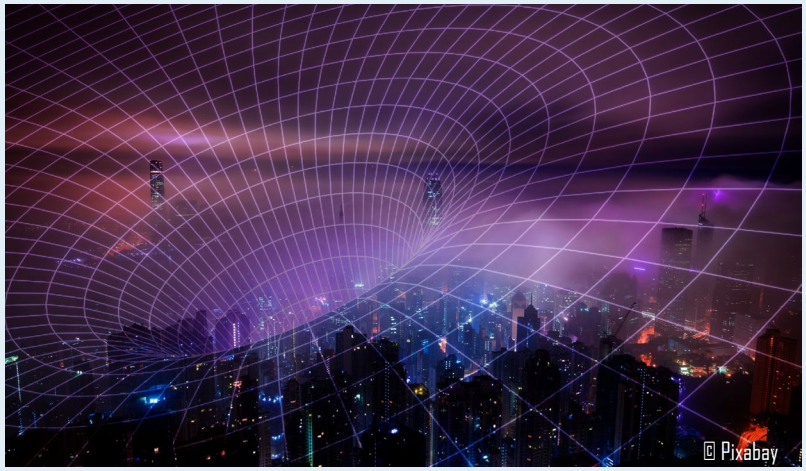
Is it the city scale an accurate scale to regulate digital technologies?

One of the reasons that explains the significant urban developments of the past decades is to be found in the capacities that cities have to concentrate many kinds of populations, knowledge, competences, resources, opportunities. However, digital technologies can significantly reduce the comparative advantages of cities through the dematerialization of many services that encourage social distancing. The COVID-19 pandemic and health crisis, followed by the massive implementation of remote work (a change that was announced for many years but never happened until then) led many inhabitants of big European cities to relocate to smaller towns, even to the country.

In a less positive way, digital technologies are often accused of "virtualizing" a lot of social interactions, thereby to weaken social cohesion. Yet, even though online access to public and private services has a negative impact on sociability because it limits in-person interactions, sociological studies haven't proved nor confirmed to this day the hypothesis saying that in-person meet-ups are being replaced by virtual interactions.

What these studies show instead are strengthening effects: those who enjoyed a strong social capital before are the same who enjoy the biggest amounts of interactions online; those who lived isolated in the cities are the most isolated online.

That being said, we haven't yet witnessed a massive urban exodus. Cities didn't lose their comparative advantage. Even from an environmental perspective, a lot of urban planners (although not all of them) advocate for the added values of urban density. Some even call to push further in that direction.



Conclusion

Digital technologies today are "unsustainable technologies serving unsustainable cities". To contribute to the vital and most needed social and environmental transitions, the digital world must change in many ways. It must be able to use land and energy responsibly and be more resilient. More importantly, it must support other development models.

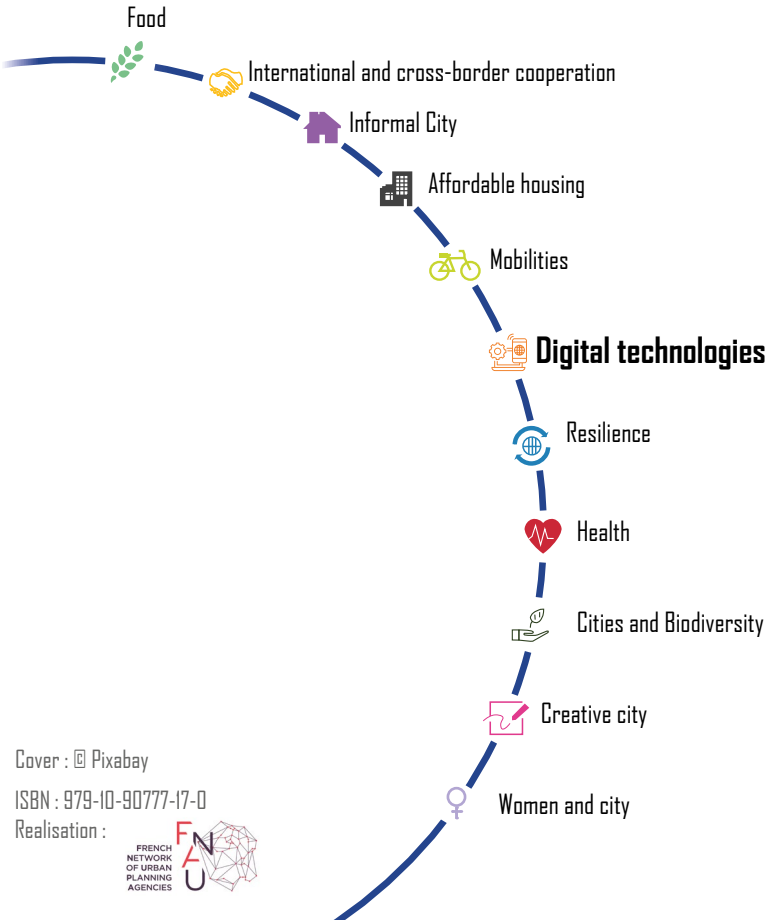
Leading actors of the field aren't probably ready to implement such changes. But because cities are the place where most clients of the digital world live, they have the means to push for that change, if they show the will power to do so and if they join forces to work together.

This will start with municipalities reclaiming their own agenda. The digital transition isn't the main priority; the social and environmental transitions are – of which digital technologies should and can be an instrument. "Smart cities" aren't meant to become massive urban information systems that even city managers can't control; they are meant to be places of "collective intelligence" that empower all actors to take action, contribute to the general interest, prepare for crisis and answer them together.

To get there, political leeway needs to be reclaimed for public policies to be implemented, namely by gathering resources and fostering collaborations between public authorities, community organizations, local business and citizens.

Once this change gets operated, other perspectives can become possible. There is and always will be another "digital world" possible, one that's decentralized, open, promotes sharing practices and enables citizens to emancipate, one that can serve alternative models, social and economic. This is the kind of digital world we must promote and implement, in order to transition toward sustainable cities where life can be enjoyable, with and without digital technologies.

Started in 2011, the **French partnership for cities and territories (PFVT – Partenariat Français pour la Ville et les Territoires)** is a platform meant for the exchange and valorization of the French urban actor's expertise at the international level. It is a multi-actor partnership headed by Hubert JulienLaferrière, Member of Parliament, supported by the Ministry of Europe and of foreign affairs, the Ministry of territorial cohesion, the Ministry of the ecologic and fair transition, and the Ministry of culture. It brings together close to 200 organizations representing the diversity of the French expertise, contributing to the construction of a shared French vision based on a capitalization of exchanges and of innovative and sustainable experiences.
https://www.pfvt.fr/



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