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Why we need Info –Ethics ?

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Why we need Info –Ethics? Which Ethical values and how to apply them in the context of the fight against COVID 19?

Three-Day Online International Conference on "Access to Information in Time of Crisis - The UNESCO Information For All Programme Priorities and The COVID-19 Pandemic"

Hyderabad, 26-28 August, 2020

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1. Thanks Mr the Chairman to give me the floor. I am very glad to be among you at least virtually. Just two words as regards myself. I am an academic people, lawyer and living close to Brussels, the headquarter of the European Union. That explains my point of view but also its limits.

My speech tries to answer to the three following questions. The first one considers: 'Why do we need Info-ethics?'. The second one analyses the ethical values we have to assert and to translate adequately in our digital age. Finally, the third one takes into consideration the way by which Ai and other emerging technologies might be used in the context of the fight against COVID 19 and ethically.

The first question: Why do we need Info-ethics?

2. At our digital age with AI, big data and other emerging technologies, the question becomes every day more important. The ethical and legal issues raised by the societal impact of the development of artificial intelligence are drawing the attention of international organizations¹. The Council of Ministers of the OECD was the first to adopt on May 22, 2019 a 'Recommendation on artificial intelligence'². At the international level, we pinpoint also the work of the African Union's Working Group on AI; and the work of the Arab League's Working Group on AI,

¹ We refer to our book published recently : *Ethique et droits de l'Homme dans notre société numérique*, Mémoires de l'académie royale de Belgique, March 2020

² 'OECD Principles on AI' available at: <https://www.oecd.org/going-digital/ai/principles/> . The OECD AI Principles were the first such principles signed up to by governments. Beyond OECD members, other countries including Argentina, Brazil, Costa Rica, Malta, Peru, Romania and Ukraine have already adhered to the AI Principles, with further adherents welcomed. The OECD Principles have broadly inspired the G.20 and its Ministerial Declaration on Trade and digital Economy

At the European level, on September 11, 2019, the Committee of Ministers of the Council of Europe³ created an Ad hoc Committee on Artificial Intelligence (CAHAI)⁴. It is therefore not surprising that the European Union should also take initiatives in this area. The Commission announced on February 19, 2020 various initiatives⁵ and above all affirmed the desire to follow a third development path for AI, properly based on European values and ‘human-centered’⁶. This EU approach is asserted as a third way, at a distance from both Chinese and United States models. In this spirit, the Commission submitted for consultation: a "White Paper on Artificial Intelligence"⁷ and "Ethical Guidelines for Trustworthy AI" prepared by a Group of High Level Experts⁸ and endorsed by the EU Commission. The European Parliament's initiative: “*Proposition containing recommendations to the Commission on a framework of ethical aspects in artificial intelligence, robotics and related technologies*. still in discussion was published on April 2, 2020⁹ and is in direct line with the work undertaken by the Commission. The Parliament has also taken into account the important work carried out by the Committee for the Future

³ Among the already existing regulatory initiatives taken by the Council of Europe, see notably the documents adopted by the Council of Ministers: the [‘Declaration Decl\(13/02/2019\)1](#) on the manipulative capabilities of algorithmic processes’ and the [Recommendation CM/Rec\(2020\)1](#) of the Committee of Ministers to member States on the human rights impacts of algorithmic systems’ and overall, the [‘Recommendation n°2102\(2017\) about Technological convergence, artificial intelligence and human rights’ adopted by the Parliamentary Assembly.](#)

⁴ The Committee (CAHAI) will examine the feasibility and potential elements on the basis of broad multi-stakeholder consultations, of a legal framework for the development, design and application of artificial intelligence, based on Council of Europe’s standards on **human rights, democracy** and the **rule of law**. On the activities of Cahai and its mission and tasks, read: <https://www.coe.int/en/web/artificial-intelligence/cahai>

⁵ About these different EU initiatives and the EU Commission Agenda, see the four documents ‘Shaping Europe’s digital future’; ‘Excellence and trust in AI’; European Data Strategy’ and ‘European industrial strategy’ presented by the EU Commission, the 19th of February 2020 : ‘A Europe fit for the digital age - Empowering people with a new generation of technologies’, available at : https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_en.

⁶ “*In my first 100 days in office, I will put forward legislation for a coordinated European approach on the human and ethical implications of Artificial Intelligence.*” (U. van der LEYEN, ‘*A Union that strives for more – My agenda for Europe - Political Guidelines for the next European Commission 2019-2024*’, available at https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf).

⁷ ‘WHITE PAPER On Artificial Intelligence - A European approach to excellence and trust’, Brussels, 19.2.2020 COM(2020) 65 final available at: <https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence->

⁸ The ‘Ethics Guidelines for trustworthy AI’ have been published on 8 April 2019. The text is available at : <https://ec.europa.eu/.../en/news/ethics-guidelines-trustworthy-ai>. The main principles are the following: ‘*Trustworthy AI has three components, which should be met throughout the system's entire life cycle: 1. it should be lawful, complying with all applicable laws and regulations; 2. it should be ethical, ensuring adherence to ethical principles and values; and 3. it should be robust, both from a technical and social perspective, since, even with good intentions, AI systems can cause unintentional harm.*’. See also, the famous formula developed by the HILGE: ‘*Human –in the loop; Human under the loop*’

⁹ The text is available at https://www.europarl.europa.eu/doceo/document/JURI-PR-650508_EN.pdf.

of Science and Technology (STOA) managed by the Scientific Prospective Unit of the European Parliament's Research Service¹⁰.

It is also as chairman of the IFAP WG on Info Ethics a honor to mention the setting up by UNESCO of an Ad Hoc Expert Group on Ethics and Artificial Intelligence. UNESCO¹¹ convened 20 experts from all continents to develop a draft 'International Recommendation on the Ethics and Artificial Intelligence' and the first outcomes of the Expert Group work seem very encouraging

The private sector and other civil associations have developed the same efforts. We quote here the first draft of the WG Recommendation: « *Conscious as well of the many initiatives and frameworks related to the ethics of AI developed by the private sector, professional organizations, and non-governmental organizations, such as the IEEE's Global Initiative on Ethics of Autonomous and Intelligent Systems and its work on Ethically Aligned Design; the World Economic Forum's 'Global Technology Governance: A Multistakeholder Approach'; the UNI Global Union's 'Top 10 Principles for Ethical Artificial Intelligence'; the Montreal Declaration for a Responsible Development of AI; the Harmonious Artificial Intelligence Principles (HAIP); and the Tenets of the Partnership on AI,*»

3. Why that common and internationally recognized concern about Ethics? We are 'embedded' within a digital society: I mean that digital is everywhere ubiquitous: definitively not only in our office but from now on in our autonomous cars, in our walls through connected loudspeakers, in our clothes, in our pockets, in our bodies. We are surrounded both by networks' infrastructure with an infinite capacity still increasing as regards their capacity of storage, of processing and of transmission, and, in the same time, by nano terminals, connected to the infrastructure, collecting data at each moment of our life including our blood pressure, our hesitation in front of a product in a supermarket. It is forecast that, in 2025, each European people per day will be in contact with 4.800 connected devices or terminals.

Even if Digital brings many benefits to our lives and frees us from many constraints, in the same time, certain risks must be underlined and avoided¹². First, all these systems,

¹⁰ Especially, the report presented by T.METZINGER et alii, « *Should we fear Artificial intelligence ?* », PE 614-547, mars 2018, https://www.europarl.europa.eu/RegData/etudes/IDAN/2018/614547/EPRS_IDA%282018%29614547_EN.pdf

¹¹ UNESCO has initiated a two-year process to elaborate the first global standard-setting instrument on the ethics of artificial intelligence in the form of a Recommendation, following the decision of UNESCO's General Conference at its 40th session in November 2019. A draft text for the Recommendation is prepared by an Ad Hoc Expert Group. On that initiative and the present state of the work, see: 'Elaboration of a Recommendation on the ethics of artificial intelligence' at <https://en.unesco.org/artificial-intelligence/ethics>

¹² « *AI can bring important benefits, but that achieving them can also be under tension of innovation debt, asymmetric access to knowledge, barriers of rights to information and gaps in capacity of creativity in developing cycles, human and institutional capacities, barriers to access technological innovation, and a lack of adequate infrastructure and regulations regarding data,*» (Ad Hoc Expert Group of the UNESCO, Preamble of the FIRST VERSION OF A DRAFT TEXT OF A RECOMMENDATION ON THE ETHICS OF ARTIFICIAL INTELLIGENCE, July 2020)

the terminals, the data flows, the algorithms processing the data are working opaque and I never know where my data are flowing, for whom and for which usage? Second point, Robots are invading our daily life and definitively seem endowed with human capacity like speech, thoughts and capacity for decision and action, according to 'rules' I ignore. Third point, the AI systems functioning, sometimes with errors or bias, through complex statistical aggregation continuously evolving, working on huge 'BIG data' and connecting different neural networks, are able to predict the future not only for each of us but also for our societies (what we call the algorithmic governmentality). In the same time, fourth point, these AI systems have the capacity to manipulate our minds (the famous nudges or the fake news) and, even, our beings (genetic manipulation is henceforth a reality thanks to the NBIC and generates the myth of the 'augmented man'). All these risks are all the more important as the informational power is concentrated in the hands of increasingly powerful companies (the famous US. GAFAM and their Chinese sisters: the BATX) which impose on states their global regulation.

So, the ethical question is pregnant and central. It might be summarized as follows: IF Digital might be considered as "the" building block of our societies (social, economic, political), of our lives, of our identities, how can we, individually as human and collectively as a democratic society, keep control of such a fast, complex, protean, ubiquitous innovation with unpredictable applications? : *"Human in the loop, human under the loop, human on the loop"*, asserted recently the EU HLGE on AI. I am convinced with them that it is fundamental that we, as human individually but also collectively in our democratic society, we must keep the mastership of the development of our digital society. *'Any artificial intelligence, robotics and related technologies, including software, algorithms and data used or produced by such technologies, shall be developed, deployed and used in a human-centric manner with the aim of contributing to the existence of a democratic, pluralistic and equitable society by safeguarding human autonomy and decision-making and ensuring human agency.*

4. Two reflections before analyzing more in depth the ethical values we have to promote and their significance in our digital societies.
 - First, we might not reduce Ethics to moral values, as ethics refers to an individual and collective pragmatic reflection. That reflection requires that each of us, facing concrete situation and its challenges, reflects in a clearly situated context on what the 'Good and the Just' means and acts according to his or her judgment, while taking into account those around us.
 - Second, the risks linked by the development of our digital societies especially with AI are not only risks to be supported by individuals, like threats to our privacy or limits to our freedom of expression as regards this first category of risks, we have good answer notably with data Protection legislations, if at least they are effective. But more and more, we have to consider collective risks, since AI functioning might affect directly groups of individuals but also the functioning of our local, ethnic, philosophical communities, of our markets and of our democracy. I take two examples. In schools, it would be possible with AI systems to predict the intellectual

capacity of pupils and thus to discriminate high potential pupils and others. As regards social security, the analysis of genetic data might lead to prediction as regards the future of the health of certain populations and thus to take decisions about the social security systems. It is quite clear that we must pay attention to these collective risks and find appropriate solution to face them. I will come back on that issue in my recommendations.

Second question Which Ethical values?

5. Which ethical values? UNESCO Convention on Bioethics might be a good source of inspiration for different reasons. The aim of the Convention has to be recalled since it is the same aim that we must pursue today with the idea of a UNESCO global convention on info-ethics. *"Convinced that it is necessary and that it is time for the international community to set out universal principles on which humanity can respond to the growing dilemmas and controversies that science and technology pose to humanity and the environment"*.

Secondly, the Bioethics Convention is based on four fundamental ethical values universally recognized – I mean common to all the nations around the world – These ethical values are deeply affected by the development of our digital society. I quote: Dignity, Autonomy (or self development), Social Justice (or Diversity and non-discrimination) and finally ‘Do Good and no harm’

6. First **the dignity**: according to E. Kant the famous German philosopher, respect of human dignity implies that you never have to consider an individual as a tool but always as a target. That value has to be recalled at a time where more and more people are reduced to data and consider as such and at a moment where through their data and their profiles build up on the basis of the data collected on people, they might be manipulated as indicated above. It is important also that we clearly assert that robots are not human people and that human people are always liable for what robots are doing.
7. Second, **the autonomy**: Autonomy is another word for self-determination or self-development, enacted by the legal term of Privacy, which is more than data protection and covers what your Nobel Prize, A. SEN, has developed with the concept of “capabilities” The concept refers to the obligation for the state to put at the disposal of each individuals the reasonable means for developing his or her own personality in a peculiar society. Applying this concept to our digital society, it means to give education to people in order to understand the main features of our digital society. It means the possibility to disconnect the terminals surrounding me. It means, above all, the transparency of the digital flows and the processing about the data and, definitively, the right to have a human explanation about the decision taken by the machine and the possibility of human recourse. As expressed by the EU Parliament¹³, *‘Explainability is essential to ensuring that citizens trust these (AI) technologies, even if the degree of explainability is relative to the complexity of the technologies, and that it should be complemented by auditability and traceability’* Finally,

¹³ See the EU parliament resolution quoted footnote 9

autonomy presupposes that you have even if limited a possibility of choice. Are you free if for accessing to a web page or a service, you are forced to accept cookies and all the end-purposes imposed by the operator.

8. Thirdly, **the social justice**: Social Justice implies that all the actors evolved in the development or deployment of Ai systems pay attention to avoid bias and errors, which lead to discrimination between groups of people. It might be the age or the sex of candidates to an employment, it might be the distrust vis-à-vis certain communities suspected of future criminal offences. It might be the fact that certain people according to their common profiles will have to pay more than others do for the same service or will be excluded as regards houses' or apartments' rentals. Any software, algorithm or data used or produced by artificial intelligence, robotics and related technologies developed, deployed or used shall be unbiased and shall not discriminate on grounds such as race, gender, sexual orientation, pregnancy, disability, physical or genetic features, age, national minority, ethnic or social origin, language, religion or belief, political views or civic participation, citizenship, civil or economic status, education, or criminal record. In the same time, AI has to pay attention to maintain the diversity not only cultural, according to the different nations but also as regards the opinions. AI might be a tool for normalization of opinions and behaviors AI might not be a way for any cultural and social stereotyping including notably local customs and religious traditions and AI actors have to ensure that training data sets for AI systems should not foster cultural and social inequalities.

Another point is definitively the absolute need to extend the scope of the concept of universal digital service accessible to everyone to all services, to services like access to social networks, access to search engines platforms, which are considered as vital in our modern digital society and have to be regulated as such, e.g. as regards the quality of the information and the absence of false information, even Fake news.

9. The last principle is expressed as follows: **“Do good and do not harm”**. The design of the technology must be value sensitive. All the actors evolved in the conception, deployment and use of the systems (AI systems, robots or other IT technologies) have to assume their social responsibility. They have to ensure that their technologies comply with ethical values, bring optimal social, environmental and economic outcomes and that does not result in injury or harm of any kind to being caused to individuals or society. The design of the technology has to be done under human scrutiny and audited not only from a technical point of view but also as regards the social and human impacts of their implementation. The most risky technological developments would have to be assessed by an external and independent body.
10. This last reflection leads us to the two recommendations asked by the organizers: I quote them.

“Beyond protection of individual interests, there is a need to consider seriously the collective challenges (competition, democracy, discrimination, ...) our digital societies are facing.”

“In order to help companies and administrations to assume their social responsibilities, it would be necessary to set up national and international Data Ethics Agencies. They must be interdisciplinary, multistakeholders (joining together representatives of the diverse interests concerned (HR associations, consumer protection agencies, IT companies, administration, ...). They have to work transparently and be open to public debates and especially to evaluate, themselves or through labelled institutions, the risks caused by AI systems, robots and emerging technologies and to raise public awareness. “

Info-Ethics is too important for not being taken seriously. Please, no Ethics bashing.

Third Question: How to apply ethical principles as regards the use of AI and emerging technologies in the fight against COVID 19¹⁴

11. AI and other IT technologies are used to fight against the COVID-19. A diversity of digital solutions are developed at the national, sometimes international level but also at a local level (especially within companies and administrations). All these solutions are pursuing a common challenge trace the local, regional, national and international transmission and spread of the virus in populations in order to contain infections, find a way to get back to normal living and avoid a second wave. Certain are using our mobiles, electronic bracelets or other Internet of things devices, other are implemented to calculate the number of people present within a specific local area. Mobile tracing applications are developed both by private companies (Apple and Google for instance) and by public research institutions and deployed at a broad scale, with problems of compatibility, safety and reliability. Research institutions are working on big data in order to understand the virus functioning and to elaborate the adequate vaccine. Governments are using AI technologies to fix their strategies. It is obvious that all these developments are a source of hope, as the use of innovative medical technologies and public health tools could provide effective means of combating the pandemic.

In the same time, these technologies might be misused for excessive controls by police or employees or for restricting excessively our freedoms of moving. The insurers might use the data for monitoring their customers and all people have not access to the tools needed for ensuring their protection. Even in my country, more than 11 % of the population have no mobile and the number of citizens unable to use correctly the applications proposed is greater. Therefore, it must be clear that all these misuse and potential discrimination are jeopardizing people confidence and the needed social solidarity essential to combat the pandemic. Stronger guarantees and a right balance between the imperatives of public health and our freedoms must be established through a legal and ethical framework. In adopting that compromise, we need a broader view of ethics about the different technological measures. It is not only a question of fair communication to explain the well-founded of the use of these technologies to the public (as individuals, but also as groups or communities

¹⁴ See the extended Belgian- Canadian and French report (we have contributed to that report precisely on the ethical issues, p. 42 and ff.): “ *Governance of Technology in a period of crisis- COVID 19 related decision support*”, E. SALOBIR (ed.), Human Technology Foundation, Paris, May, 2020

but overall an effort to discuss with the public through adequate public debates the compromise. *“The public must not be seen as mere users of digital tools: they are jointly responsible for the solutions to be implemented since they all share in creating the risk. A practical approach to ethics, without advocating any particular moral code must be understood as a thoughtful, open and hands-on initiative based on a genuine discussion of the values we wish for our society, for assessing, selecting and governing technological solutions to exit the health crisis”*¹⁵. Based on that principle and recognizing the difficulty of the exercise due to the emergency we face, we advocate for adopting the following ethical principles of digital solutions governance founded on the ethical values enumerated above.

12. **Added value from both a collective and individual points of view** is beyond doubt the first criterion to be considered, although the meaning of the term covers a variety of ideas as to the expected benefit of the technology-based system. It is important not to favor one point of view over another, at least initially, but to consider all of them before taking any decision. Firstly, added value is measured in terms of public health and presupposes the comparison of various technology-based as well as non technology-based methods. Then, their contributions — separately or in combination — to combating new contaminations must be considered; added value is also assessed in economic terms in respect of the direct or indirect costs associated with implementing and operating tracing, as well as when calculating the impact of persistent pandemic on economic activity; added value is also assessed in terms of the population’s psychological well-being. Added value from both a collective and individual point of view is beyond doubt the first criterion to be considered, although the meaning of the term covers a variety of ideas as to the expected benefit of the technology-based system. It is important not to favor one point of view over another, at least initially, but to consider all of them before taking any decision. Firstly, added value is measured in terms of public health and presupposes the comparison of various technology-based as well as non technology-based methods. Then, their contributions — separately or in combination — to combating new contaminations must be considered; added value is also assessed in economic terms in respect of the direct or indirect costs associated with implementing and operating tracing, as well as when calculating the impact of persistent pandemic on economic activity; added value is also assessed in terms of the population’s psychological well-being.

Let us take an example. Do we need a COVI app tracing the population if we know that only a limited percent of the population will adopt that application. The question has been studied at length before the adoption of the COVI Canada App¹⁶. After public discussions, it has been accepted that the social benefits drawn from the use of the application even by 10% of the population justify the adoption by the government of that technology.

13. **Transparency** is essential to debates around ethics. How do you discuss what might be right and good if you fail to understand the pros and cons involved in the discussions. In the case at hand, this means educating citizens, the public, around the issues in a debate that is certainly technical but ultimately political, involving citizen behaviour. What are the

¹⁵ Idem, p. 4.

¹⁶ COVID Canada App a decentralized contact tracing and risk assessment mobile application developed by a consortium led by the Montreal Institute of Learning Algorithms (“MILA”). The application is designed to provide contact tracing among users, to assess their risk of COVID-19 infection and provide them with recommendations in relation to current behavior or changes in risk level. It also aims at providing governmental authorities with aggregated information about contagion risks to assist them in designing more effective responses to the pandemic.

technology-based solutions? What are the alternatives? Who are the actors behind each solution? Who manages the system, with what data and how? So, in discussing a Bluetooth solution, it is important to know which population the solution is suitable for or which population will be excluded from it? With what risks of error? INRIA's (The French public research institution in charge of defining a digital solution for tracing people affected by the virus) efforts to give an open access description of the specifics of its technology system are commendable¹⁷. It is the duty of the state, or rather of an independent commission of experts from various disciplines, to provide this information — not to make decisions but to respond to requests from all sides. Definitely the transparency is also the best way to fight against the rumor, disinformation and other Fake News circulating within social networks.

In the same time, a fair information must be given to the potential adopters of the technological tools. When I wear an electronic bracelet or use a mobile application, I must know exactly the data I am transferring, to whom and for which usages.

14. **Autonomy** and, therefore, respect for personal choice must be affirmed. Expressed in law through the concept of privacy, this ethical value must not mean the single-minded pursuit of self-centred choice but rather the pursuit of the capacity for self-development. A democratic society has a duty to guarantee this ability such that this development constitutes a guarantee for everyone of full participation in democratic life. This view of autonomy thus prohibits pitting individual and collective interests against each other, but sees each as linked to other, in a dynamic relationship. Autonomy underlies the responsibility of every individual to work for the common good. We might add that pursuit of the common good cannot stop at national borders but must extend into a global solidarity imposed by the disease. Concretely, that means the solidarity of the different nations in the fight against crisis and definitively assistance and financial aids for disadvantaged populations.

Having said that, autonomy means also that individual choices must be respected. It is commonly accepted that the implementation of tracing application must be decided voluntary on the basis of fair information (see, n°12) and that, at any moment, the adopters might disconnect their application. Autonomy means that even if the adoption of a technological means is recommended, it might never be mandatory. Furthermore, proportionality principle is a core principle of our data protection legislation must guide the choice of technology-based systems, if that option is selected. We must emphasize the minimization of data collected as a principle to be applied across the content and quality of data

¹⁷ Another example might be given as regards the importance to have open-source applications: “*The Aarogya Setu App is a mobile application developed by the Indian government with private partnership to provide health related information and carry out contact-tracing based on the users’ Bluetooth and GPS location data. Responding to pressure from citizens, researchers and civil society groups, the government recently changed its position on two controversial features of the app. The first was the lack of transparency arising from the fact that the app was not open source. In the past, there had been news reports of ethical hackers pointing out security issues in the solution, which had been disputed by the solution’s developers. However, it was difficult to comment on the veracity of the claims of either side without the solution’s code being audited by multiple independent researchers. The government has now initiated the process of trying to fix this, starting with the release of the app’s client-side code for the Android platform and launch of a bug bounty program to encourage improvements to the code. It has also announced that the iOS version and the server code will be released subsequently. Further, the terms of use of the solution have also been modified to remove the prohibition on reverse engineering of the solution. Complete openness in the solution’s code is necessary to facilitate audits by independent third parties so as to assess whether the data is indeed being processed in the exact manner stated by the government.*” (Human technology Foundation Report, already quoted, p. 45)

collected and processed as well as the duration of the processing operations. The temptation to preserve the technology-based systems implemented to confront the urgency of the moment is great; the longevity of the solutions devised in the heat of crisis (the September 2001 terrorist attacks of may be cited here) is often justified in the interests of innovation and the considerable effectiveness that technology can offer legislation. Care should also be taken to ensure that the implementation of a tracing application is acceptable only for a strictly limited period. It is imperative that not only the data recorded must be automatically erased as soon as their usefulness (which is agreed to be set at two weeks) has elapsed, but also that the application itself should be uninstalled from the device as soon as the epidemic declared by the health authorities is over. The need for strict compliance with the purpose for which systems are set up must be guaranteed. This implies that the management of health crisis systems exploiting personal health data should be entrusted to bodies bringing together health professionals and stakeholders (e.g., patient groups). Compliance with these principles can be ensured only by giving citizens the right to check it.

In order to strike a fair balance between social and individual interests, we cannot overlook a careful analysis of the contribution of technology, especially at a time when this technology can save lives. This is not to say that the right to privacy should automatically be erased in the face of the health imperative associated with the Covid19. Indeed, it is essential to carry out a careful prior analysis of the interests to be weighed in the balance and embed the outcome of this analysis in the technological solutions. For instance, when deciding whether to use a contact tracing application to combat the development or resurgence of the epidemic, the concern to reduce interference to what is truly necessary and proportionate leads to a preference for systems that record proximity data (based on Bluetooth rather than location data (GPS). Location data are not necessary for the purpose of contact tracing, as the aim is not to track the movements of individuals or to monitor compliance with social distancing or the concept of bubble. Moreover, the processing of localization data in the context of contact tracing would be difficult to justify in the light of the data minimization principle contained in data protection legislation as GDPR. Furthermore, this processing would unduly infringe upon the freedoms of individuals. When deciding whether to use a contact tracing application to combat the development or resurgence of the epidemic, the concern to reduce interference to what is truly necessary and proportionate leads to a preference for systems that record only proximity data¹⁸.

15. **Social justice** must not be set aside at a time when, in the face of disease, vulnerability is not the same for everyone, demanding that technology be made accessible to all and, first and foremost, to the most disadvantaged. Furthermore, the use of predictive artificial intelligence systems can lead to the stigmatization of certain categories of people suspected of having the virus or certain neighbourhoods where infected people live. The

¹⁸ It is quite interesting to underline that it is the choice proposed by the Apple/Google mobile tracing solution) “*To strengthen privacy, this protocol (based on Bluetooth Apple/Google Contact Tracing API”, in short “Apple/Google API”), leverages a new concept: “Bluetooth pseudorandom identifiers”, referred to as Rolling Proximity Identifiers. Each Rolling Proximity Identifier is derived from a Rolling Proximity Identifier Key, which is in turn derived from a Temporary Exposure Key and a discretized representation of time. The Rolling Proximity Identifier changes at the same frequency as the Bluetooth randomized address, to prevent linkability and wireless tracking. Non-user identifying Associated Encrypted Metadata are associated with Rolling Proximity Identifiers. The broadcast metadata from a user can only be decrypted later when the user tests positive.* “ (Human Technology Foundation Report, already quoted, p. 47.

aim must not be simply to protect individuals' data but to avoid discrimination against groups of people.

To take an example, the Indian government's contact tracing tool, Aarogya Setu, already mentioned, has more than 114 million registered users. It means less than 9 % of the Indian population. The government recently announced that adoption of the app would have to be on a "best effort basis" for private workplaces, except for certain workplaces where the use of the application is mandatory. The number of people affected by that obligation alone exceeds the number of inhabitants of France and Singapore, taken together. This is a risk of discrimination since certain employees or individuals have no access for financial or education reasons to the use of this application and, therefore, would have no choice but to install the solution or stand the chance of losing an employment opportunity.

16. Finally, the value of **dignity** disallows constant surveillance and public targeting of people with the disease (the coloured QR codes used in China). These values must be taken into consideration from the outset in designing technology-based solutions and throughout their lives (ethics by design)
17. All these considerations lead to the necessity to develop from procedural and institutional points of view, Assessing what finally is in the public interest must be **inclusive and involve all stakeholders**. It is important that room should be made for public discussion in a forum that brings together all stakeholders: the medical profession, representatives of civil society (especially vulnerable groups), business, education, etc. Decisions around choosing one system over another cannot be left to experts alone, but rather choices must be open for discussion and the choices assessed at both the technical level (ethics by design) and other levels (psychological, socio-economic, etc.). In the end, it falls to the constitutionally designated competent political authority, after hearing the opinions of the required "independent" bodies, to determine and set the parameters and mode of operation of any technology-based tool. To achieve (and maintain) full transparency and gain public confidence, the public authority must explain, in accessible terms, the reasons behind the choices made and the details of the decisions, including any AI algorithm models used. In this regard, we must not accept technology choices dictated by actors who might not operate transparently and have no interest in assessing issues of ethics.