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Digital contact tracing for the Covid-19 epidemic: a business and human rights perspective*

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* This article has benefited from the insightful comments of **Sara Carnegie**, Director, Legal Projects at the International Bar Association's Legal Policy and Research Unit.

Introduction

On 11 March 2020, with over 294,000 cases worldwide, Covid-19 was declared a pandemic by the World Health Organization (WHO).¹ The world is facing a global health and socio-economic crisis with governments adopting unprecedented measures to deal with this emergency. In order to reduce the contagion, and following WHO recommendations,² states have implemented non-pharmaceutical measures³ and conducted outbreak investigations, including contact tracing and management, surveillance and visualisation of chains of transmission.⁴

These activities have been supported by new technologies, such as geolocalisation apps, facial recognition and AI-based software for the enforcement of quarantine. Many of these actions have been enabled by emergency legislation⁵ and may have significant impacts on human rights and fundamental freedoms.⁶ These are data-intensive tools and, while the right to privacy is clearly being restricted, all human rights could potentially be affected. In order to limit governments' abuses, these restrictions must respect the rule of law and fulfil the conditions set by human rights law.⁷ The WHO itself has acknowledged that human rights provide a crucial framework for ensuring the responses are effective and proportionate.⁸

Restrictions and limitations can be placed on some human rights, including the right to privacy. Such 'ordinary' limitations are permitted if specific conditions are met. Emergency powers and derogation measures are allowed only where the 'ordinary' limitations are not sufficient to attain the stated objectives. States are thereby authorised to derogate from certain rights as long as specific conditions are satisfied. These conditions include the need for measures to be legal, necessary and proportionate to address a national emergency. In addition, they shall not be discriminatory and are not applicable to non-derogable rights, such as the right to life, the prohibition against torture, inhuman and degrading treatment and punishment.

This paper looks at three different technologies to support contact tracing and surveillance:

- an app based on a Quick Response (QR) code, adopted in China;
- an app based on geolocalisation, adopted in South Korea; and
- an app based on Bluetooth, adopted in Singapore and similar models currently considered in the European Union.

1 Dr Tedros Adhanom Ghebreyesus, Director General of the WHO, 'Opening Remarks at Media Briefing on Covid-19', speech on 11 March 2020, available at: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19-11-march-2020>, last accessed 23 May 2020.

2 World Health Organization, *The First Few X (FFX) Cases and contact investigation protocol for 2019-novel coronavirus (2019-nCoV)infection*, 29 January 2020, available at [https://www.who.int/publications-detail/the-first-few-x-\(ffx\)-cases-and-contact-investigation-protocol-for-2019-novel-coronavirus-\(2019-ncov\)-infection](https://www.who.int/publications-detail/the-first-few-x-(ffx)-cases-and-contact-investigation-protocol-for-2019-novel-coronavirus-(2019-ncov)-infection), last accessed 23 May 2020.

3 M W Fong et al, 'Nonpharmaceutical Measures for Pandemic Influenza in Nonhealthcare Settings – Social Distancing Measures', (2020) 26(5) *Emerg Infect Dis* 976-984, available at: <https://dx.doi.org/10.3201/eid2605.190995>, last accessed 7 May 2020.

4 World Health Organization, *Managing epidemics: key facts about major deadly diseases*, 2018, available at: <https://apps.who.int/iris/handle/10665/272442>, last accessed 21 May 2020.

5 The International Center for Not-For-Profit Law's 'COVID-19 Civic Freedom Tracker' monitors government responses to the pandemic that affect civic freedoms and human rights, focusing on emergency laws, available at: <https://www.icnl.org/covid19tracker/>, last accessed on 23 May 2020.

6 The most significant general sources of international human rights law are the 1948 Universal Declaration of Human Rights and the twin 1976 international covenants (treaties), on Civil and Political Rights and Economic, Social and Cultural Rights.

7 United Nations Office of High Commission of Human Rights, *Emergency Measures and Covid-19: Guidance*, 27 April 2020, available at: https://www.ohchr.org/Documents/Events/EmergencyMeasures_COVID19.pdf, last accessed 23 May 2020.

8 World Health Organization, *Addressing Human Rights as Key to the COVID-19 Response*, 21 April 2020, available at: <https://www.who.int/publications-detail/addressing-human-rights-as-key-to-the-covid-19-response>, last accessed 23 May 2020.

These measures will be assessed in accordance with human rights and specifically applying the principles of legality, necessity and proportionality, in order to identify the steps necessary to protect the rule of law. In particular, the role of the business sector in reducing and addressing the risks of adverse human rights impacts associated with the use of these technologies will be discussed through the perspective of the United Nations Guiding Principles on Business and Human Rights (UNGPs).⁹

Limitations and derogations of human rights under state of emergency

Detailed guidance continues to be published on restrictions of human rights as a result of the Covid-19 public health emergency. This paper aims to highlight key elements in order to assist in the assessment of contact tracing technologies.¹⁰

Absolute rights are rights which cannot be interfered with under any circumstances.¹¹ A separate group of rights, known as qualified rights, can be interfered with under certain conditions. The right to private life (privacy) is one such right. The right to privacy is protected under Article 17 of the International Covenant on Civil and Political Rights (ICCPR)¹² and any interference needs to be lawful and not arbitrary. In other words an interference must satisfy the condition of legality (prescribed by law) and be in pursuit of a legitimate aim.¹³ Interferences should be no more than what is necessary and in accordance with the principle of proportionality.¹⁴

If rights permit interference, including on the basis of public health, why are emergency laws absolutely necessary?

During a state of emergency, these ordinary limitations may not be sufficient for the state to attain its objectives, and as a consequence, it may be able to derogate from certain rights, including the right to privacy. Legality, necessity and proportionality continue to be the key principles.

According to Article 4 of the ICCPR, '[I]n time of public emergency which threatens the life of the nation', states parties can exceptionally and temporarily limit certain rights recognised in the ICCPR. There are six conditions which need to be met in order for a state to derogate. These are:

- the existence of a public emergency threatening the life of the nation;
- the measures adopted must be strictly necessary by the exigencies of the situation;
- the measures must not be discriminatory;
- derogating measures are only permissible if not inconsistent with other international obligations;

9 United Nations Human Rights Office of the High Commissioner, *Implementing the United Nations 'Protect, Respect and Remedy' Framework*, 2011, available at: https://www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf, last accessed 23 May 2020.

10 Among others, see the United Nations Human Rights Office of the High Commissioner (n7).

11 The non-derogable rights, listed under s2 of art 4 are the following: right to life (art 6); prohibition of torture, cruel, inhuman and degrading treatment (art 7); prohibition of medical or scientific experimentation without consent (art 7); prohibition of slavery, slave trade and servitude (art 8); prohibition of imprisonment because of inability to fulfil contractual obligation (art 11); principle of legality in criminal law (art 15); recognition everywhere as a person before the law (art 16); freedom of thought, conscience and religion (art 18).

12 International Covenant on Civil and Political Rights, (adopted by General Assembly resolution 2200A (XXI) of 16 December 1966) 999 UNTS171 (ICCPR).

13 Human Rights Commission, 'General Comment No 16, The Right to Respect of Privacy, Family, Home and Correspondence, and Protection of Honour and Reputation', adopted on 8 April 1988, art 17.

14 UN Commission on Human Rights, 'The Siracusa Principles on the Limitation and Derogation Provisions in the International Covenant on Civil and Political Rights', 28 September 1984, E/CN.4/1985/4, available at: <https://www.refworld.org/docid/4672bc122.html>, last accessed 23 May 2020, s A, paras 1-14.

- it cannot be justified for non-derogable rights; and finally
- these derogations also require that states formally declare a state of emergency, and in the case of the ICCPR, formally notify the UN Secretary-General.

The possibility to derogate certain rights in times of public emergency that threatens the life of nations is, similarly, found in the European Convention of Human Rights (Article 15, Derogation in time of emergency)¹⁵ and the American Convention of Human Rights (Article 27, Suspension of Guarantees).¹⁶ The African Charter on Human and People's Rights and Duties is silent on derogations, however the African Commission on Human and Peoples' Rights has made it clear that derogations are not permitted and a state of emergency cannot justify the violation of any human rights.¹⁷

In 1984, the UN Economic and Social Council adopted The Siracusa Principles on the Limitation and Derogation Provisions in the International Covenant on Civil and Political Rights (the 'Siracusa Principles').¹⁸ Together with the General Comments of the UN Human Rights Committee on freedom of movements¹⁹ and state of emergency,²⁰ the Siracusa Principles provide authoritative guidance on the restriction of human rights for reasons of national emergency (including for reasons of public health), in order to limit governments' abuses and to protect the rule of law.

In particular, according to this guidance, any government limitation on the rights recognised by the ICCPR shall be consistent with the principles of legality, necessity, proportionality and non-discrimination.²¹ The objective of these conditions is to limit the risk of arbitrary actions taken by the state and to protect the rule of law.

The legality principle is at the very heart of the rule of law and mandates that any interference with human rights shall have a clear legal basis.²² The national legislation introducing these restrictions shall explicitly confer the power to enforcement authorities and these provisions must be challengeable in front of an independent and impartial tribunal.²³

The necessity of human rights restrictions should be based on objective considerations. In particular, they should be justified by 'an actual, clear, present, or imminent danger',²⁴ which could not be dealt with by ordinary measures. The laws providing these limitations should review the necessity requirement on a periodic basis and effective remedies shall be available to those who claim this standard is not satisfied.²⁵ In some circumstances, the final assessment on the necessity of these restrictions carried out by national authorities, may not be sufficient.²⁶

15 European Court of Human Rights, *Guide on Article 15 of the European Convention on Human Rights*, updated 31 December 2019, available at: https://www.echr.coe.int/Documents/Guide_Art_15_ENG.pdf, last accessed 23 May 2020.

16 Organization of American States (OAS), American Convention on Human Rights, 'Pact of San Jose', adopted 22 November 1969, available at: <https://www.cidh.oas.org/Basicos/English/Basic3.American%20Convention.htm>, last accessed 23 May 2020.

17 Communication 74/92, *Commission Nationale des Droits de l'Homme et des Libertés v Chad*, 11 October 1995. See Rachel Murray, 'The African Charter on Human and Peoples' Rights: A Commentary', OUP, 2019.

18 UN Commission on Human Rights (n 14).

19 UN Human Rights Committee (HRC), 'CCPR General Comment No 27: Article 12 (Freedom of Movement)', 2 November 1999, CCPR/C/21/Rev.1/Add.9, available at: <https://www.refworld.org/docid/45139c394.html> last accessed 1 April 2020.

20 UN Human Rights Committee (HRC), *CCPR General Comment No. 29: Article 4: Derogations during a State of Emergency*, 31 August 2001, CCPR/C/21/Rev.1/Add.11, available at: <https://undocs.org/pdf?symbol=en/CCPR/C/21/Rev.1/Add.11>, last accessed 23 May 2020.

21 United Nations Commission on Human Rights (n14) s 10.

22 *Amuur v France*, Application No 19776/92, ECtHR Judgment, 25 June 1996, available at: <http://hudoc.echr.coe.int/sites/eng/pages/search.aspx?i=001-57988>, last accessed 23 May 2020.

23 *Gillan v UK*, on the legality test: foreseeability, accessibility and precise laws.

24 United Nations Commission on Human Rights (n14) s 53 and 54.

25 *Ibid*, s 55 and 56.

26 *Ibid*, s 57.

The proportionality of human rights restrictions can be inferred from the reasonable relationship between the means employed and the aims. A state may derogate from human rights only to the extent that is strictly required by the urgency of the emergency, in the present case the public health emergency.²⁷ This standard is satisfied when the governments adopt the least restrictive method to attain its objectives. The measures must be limited in time (duration), space (geographic scope) and material scope.²⁸ In particular, these measures should be terminated at the end of the emergency and shall not impose an excessive or unreasonable burden on certain individuals, especially minorities and vulnerable communities.²⁹

On 30 April, the UN Human Rights Committee issued a ‘Statement on derogations from the Covenant in connection with the Covid-19 pandemic’.³⁰ In this document, the Committee highlighted that a number of state parties to the ICCPR have resorted to emergency measures severely restricting fundamental rights and freedoms, without notifying them to the UN Secretary-General.³¹ These countries were urged to comply with their obligations and to restore ‘a state of normalcy, where full respect for the Covenant can again be secured.’³²

Technologies to support contact tracing in the context of Covid-19 crisis outbreak

During a public health crisis, it is evident that any human rights derogation or restriction ‘must be specifically aimed at preventing disease or injury or providing care for the sick and injured’.³³ In the context of contagious diseases, scientists have proven that, in absence of a specific vaccine and antiviral agents, non-pharmaceutical measures are the only instrument.³⁴ In particular, restricting the movement, interaction and autonomy by way of contact tracing, surveillance, social distancing, isolation, quarantine and lockdowns, are regarded as the most effective tools to limit epidemics.³⁵

Since the outbreak of the Covid-19 pandemic, states have adopted these measures with the support of emerging technologies.³⁶ This is the first pandemic during which technology has been widely adopted to understand and control the contagion. However, together with benefits come challenges.³⁷

In this section, we will focus on the measures to support contact tracing and surveillance, adopted in China, Singapore, South Korea and some European countries. The WHO defines contact tracing as ‘the identification and follow-up of persons who may have come into contact with a person infected with a contagious disease, to help the contact to get relevant care and treatment.’³⁸

These measures will be benchmarked under the existing international public law framework, to

33 United Nations Human Rights Commission (n 14), s 25.

34 Institute of Medicine (US) Forum on Microbial Threats, *Ethical and Legal Considerations in Mitigating Pandemic Disease: Workshop Summary Washington (DC)*, National Academies Press (US) 2007, <https://www.ncbi.nlm.nih.gov/books/NBK54157/> last accessed on 23 May 2020.

35 *Ibid.* Until a vaccine is rolled out, social distancing is the only solution. See Gideon Lichfield ‘We are not going back to normal’, *MIT Technology Review*, 17 March 2020, available at: <https://www.technologyreview.com/2020/03/17/905264/coronavirus-pandemic-social-distancing-18-months/>, last accessed 23 May 2020.

36 For a collection of the different measures adopted worldwide, see Privacy International ‘Tracking the Global Response to COVID-19, 2020’, available at: <https://privacyinternational.org/examples/tracking-global-response-covid-19>, last accessed 23 May 2020.

37 ‘COVID-19: How mobile phone contact tracing can save lives – and preserve privacy’, *International Telecommunication Union (ITU) News*, 6 April 2020, available at: <https://news.itu.int/covid-19-how-mobile-phone-contact-tracing-can-save-lives-and-preserve-privacy/>, last accessed 22 April 2020; ITU-WHO Joint Statement, ‘Unleashing information technology to defeat COVID-19’, 20 April 2020, available at: <https://www.who.int/news-room/detail/20-04-2020-itu-who-joint-statement-unleashing-information-technology-to-defeat-covid-19>, last accessed 23 May 2020.

38 World Health Organization, ‘Emergencies preparedness, response: Contact tracing’, available at: <https://www.who.int/csr/resources/publications/ebola/contact-tracing-guidelines/en/>, last accessed 23 May 2020.

assess how governments are balancing this public health emergency with other fundamental rights. According to the Siracusa Principles, this analysis should rely on scientific evidence and, in particular, shall consider the WHO's recommendations.³⁹

In accordance with the legality principle, contact tracing measures shall be based on transparent and predictable standards, whose legitimacy may be contested in front of a tribunal. Safeguarding the transparency and accountability of these measures is particularly complex, when looking at contact tracing apps. These tools are based on software, whose technical specifications may not always be published, for intellectual property considerations. Moreover, when available, this information may not be easily understood by unskilled users. These challenges can be mitigated if apps are based on open-source software and users are informed about the ways in which their personal data is collected, processed and stored.⁴⁰

The necessity test shall be based on objective considerations, showing that ordinary measures were not sufficient to protect a public interest. In the context of Covid-19, the use of technology to support contact tracing has been justified by scientific evidence. Research conducted by Oxford University has shown that between one third and half of transmissions occur before the symptoms are manifested.⁴¹ In this context, manual contact tracing is too slow and limited to contain the contagion but the use of mobile phone apps could reduce the epidemic growth rate.⁴²

The effectiveness of contact tracing apps (and, therefore, their necessity) may be realised by the number of users and by the additional public health measures complementing these tools. Estimates show that, if the epidemic control mechanisms were exclusively based on case isolation and quarantine of traced contacts, nearly universal usage and full compliance would be necessary. However, if additional preventive measures (such as physical distancing, enhanced hand-washing and respiratory hygiene) were in place, an adoption by 60 per cent of the population could be sufficient to stop the epidemic.⁴³

The proportionality of contact tracing apps should be assessed on the basis of the safeguards adopted to limit the material, territorial and temporal scope of the restrictions. In order to satisfy the principle of proportionality, in the first instance, the cohort of users should not be unreasonably narrow (at the expenses of minorities and vulnerable communities),⁴⁴ nor excessively broad (eg, including those who have already developed antibodies). Similarly, the nature of the data collected (eg, geolocalisation v proximity data), the way in which it is stored (eg, anonymisation; centralisation v decentralisation) and processed (eg, one or more functions) shall be the least restrictive options. In this age of globalisation, it is reasonable to assume that the territorial scope of contact tracing apps goes beyond national borders.⁴⁵ Finally, the functionality of these tools shall depend on the duration of the public health emergency and the data collected shall afterwards be deleted.

39 United Nations Human Rights Commission (n14), s 25 and 26.

40 'Joint civil society statement: States use of digital surveillance technologies to fight pandemic must respect human rights', 2 April 2020, available at: <https://www.amnesty.org/download/Documents/POL3020812020ENGLISH.pdf>, last accessed 23 May 2020.

41 Luca Ferretti et al, 'Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing', 8 May 2020, *Science* 368, available at: <https://science.sciencemag.org/content/368/6491/eabb6936/tab-pdf>, last accessed 19 May 2020.

42 *Ibid.*

43 *Ibid.*

44 Human Rights Watch, 'Mobile Location Data and Covid-19 Q&A', 13 May 2020, available at: <https://www.hrw.org/news/2020/05/13/mobile-location-data-and-covid-19-qa>, last accessed 23 May 2020; *see also* Joint civil society Statement (n 40).

45 European Data Protection Board, 'Guidelines 04/2020 on the use of location data and contact tracing tools in the context of the COVID-19 outbreak', adopted 21 April 2020, available at: https://edpb.europa.eu/sites/edpb/files/files/file1/edpb_guidelines_20200420_contact_tracing_covid_with_annex_en.pdf, last accessed 23 May 2020.

China

On 20 January 2020, the National Health Commission of the People's Republic of China (PRC) stated that the Covid-19 pandemic had to be regulated as a Class A infectious disease under the Law of the PRC on the Prevention and Treatment of Infectious Diseases (PTID).⁴⁶ This declaration empowered both state and local authorities to take the necessary actions to fight the pandemic, including pre-emptive contact tracing measures.⁴⁷

Since then, the Chinese Center for Disease Control and Prevention ('China CDC'),⁴⁸ the authority monitoring the Covid-19 crisis, has published several documents referring to protocols and guidelines for the people. There is one such guidance titled 'Guidelines for Investigation and Management of Close Contacts of Covid-19 Cases Training Kit' but there is no specific mention of contact tracing techniques. A list of main control measures has been described in the Report of the WHO-China Joint Mission on Coronavirus Disease 2019.⁴⁹ The report suggests that the measures must fully incorporate immediate case detection and isolation, rigorous close contact tracing and monitoring/quarantine, and direct population/community engagement.

From February 2020, new app-based technologies, using Big Data and artificial intelligence (AI), have been applied to strengthen contact tracing and for the management of priority populations.⁵⁰ In particular, government departments and the China Electronics Technology Group Corporation have developed an app (the Close Contact Detector App) to identify those who have been in close contact with an infected person.⁵¹

Tencent Holdings Ltd is one of the technology companies enlisted by the Chinese government that owns the popular messaging app WeChat. It has also enlisted Ant Financial, a subsidiary of Alibaba, which runs the payments app Alipay. On both WeChat and Alipay, users can access the Close Contact Detector App. Once this is registered with a phone number, users are asked to enter their name and Chinese ID number.

To make an enquiry, users will need to scan a QR code. This code will be affixed to venues where close contacts are likely to happen, such as subway stations, railway carriages, public transport, taxis, etc). Every time users enter these locations, they need to scan the QR codes and their data will be uploaded onto a private server and encrypted.⁵² The codes can be used to notify people in buildings about a person's recent movements, such as within an office or apartment block.⁵³ People identified as being at risk would, then, be advised to quarantine and to inform the health authorities.

46 Announcement of the National Health Commission of the People's Republic of China [2020] No.1', *The State Council of the People's Republic of China*, 21 January 2020 <http://www.gov.cn/xinwen/2020-01/21/content_5471158.htm> accessed 14 May 2020.

47 Mark Findlay et al, 'Ethics, AI, Mass Data and Pandemic Challenges: Responsible Data Use and Infrastructure Application for Surveillance and Pre-emptive Tracing Post-crisis', *SMU Centre for AI & Data Governance Research*, Paper No 2020/02, 4 May 2020, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3592283##, last accessed 23 May 2020.

48 Chinese Center for Disease Control and Prevention (China CDC), available at: <http://www.chinacdc.cn/en/COVID19/>, last 23 May 2020.

49 Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) 16-24 February 2020, available at: <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>, last accessed 23 May 2020.

50 'China launches coronavirus close contact detector app', *BBC News*, 11 February 2020, available at: <https://www.bbc.co.uk/news/technology-51439401>, last accessed 23 May 2020.

51 *Ibid.*

52 Mark Findlay (n 47).

53 Arjun Kharpal, 'Coronavirus could be a "catalyst" for China to boost its mass surveillance machine, experts say' *CNBC*, 24 February 2020, available at: <https://www.cnbc.com/2020/02/25/coronavirus-china-to-boost-mass-surveillance-machine-experts-say.html>, last accessed 23 May 2020.

This mechanism has raised concerns over the protection of privacy rights.⁵⁴ In particular, the pre-emptive, daily tracking of people's movements and the centralised storage of personal data on a private server have appeared not to be the least restrictive (and, therefore, necessary and proportionate) options to protect public health.⁵⁵ In addition, the lack of transparency regarding the algorithm used to assess the level of risk associated with users may expose minorities and vulnerable groups to arbitrary decisions.⁵⁶

However, the deployment of data-intensive surveillance mechanisms is not a novelty in China. For instance, a social credit system is in the process of being fully rolled out in 2020, although most of it has already been piloted. The State Council of the People's Republic of China has outlined the details of the entire system in a 2014 circular.⁵⁷ It is a socio-economic model governance system based on trustworthiness and integrity of the citizens and businesses. The businesses are provided with a social credit code and the citizens with an identity number, all linked to a permanent record which is primarily centralised.

It involves public-private collaborations for developing and implementing the platform and the process. There is continuous collection of data needed for accurately running the system for credit score assessment purposes. There is no specific information available on the algorithmic construction which is required for the AI-powered coding process to run for analysing the different types of datasets collected. This information is vital to secure transparency and for ensuring necessary safeguards are in place.

South Korea

Korea Centers for Disease Control and Prevention ('KCDC')⁵⁸ is the entity monitoring public health under the Ministry of Welfare and Health in South Korea. According to the KCDC,⁵⁹ contact tracing is largely divided into four stages: investigation; exposure risk assessment; contact classification and contact management. This is meant for epidemiological investigations.

During the investigation phase, basic information including whereabouts of the patient for a certain period of time is collected through the process of interviewing patients. Family or healthcare workers may also be interviewed if needed. If supplementary information is required (eg, due to memory omission or inconsistencies), more objective information (such as medical records, mobile phone GPS data, credit card transactions and CCTV footage) may be collected during the risk assessment stage. Based on the collected information, any contacts identified are subject to self-quarantine (home quarantine) along with health education and symptom monitoring.

Information, in the form of personal data, required for epidemiological investigation can be collected and/or used within the scope permitted by the Infectious Disease Control and Prevention Act.

54 *Ibid.*

55 Human Rights Watch (n 44).

56 *Ibid.*, and Paul Mozur et al, 'In Coronavirus Fight China gives Citizens a Color Code, with Red Flags', *New York Times*, 1 March 2020, available at: <https://www.nytimes.com/2020/03/01/business/china-coronavirus-surveillance.html>, last accessed 23 May 2020.

57 State Council of the People's Republic of China Circular (2014), available at: http://www.gov.cn/zhengce/content/2014-06/27/content_8913.htm, last accessed 23 May 2020 (in Chinese).

58 Korea Center for Disease Control and Prevention (KCDC), available at: http://www.cdc.go.kr/cdc_eng/, last accessed 23 May 2020.

59 Korea Center for Disease Control and Prevention, 'Frequently Asked Questions for KCDC on COVID-19' (as of 30 March 2020), available at: <https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030> last accessed 23 May 2020.

The collection of the personal data of infected patients became possible after the outbreak of MERS in 2015. The Act was revised and now health officials can access patients' personal information in exceptional cases such as containment of infectious disease.

Article 76-2 (Request to provide information etc) empowers the Ministry of Health or the Director of KCDC to collect the necessary information from the relevant institutions of patients infected with infectious diseases and of persons likely to be infected by infectious diseases, such as:

- personal information – names, resident registration numbers, addresses, phone numbers;
- records of medical treatment;
- records of immigration;
- movement paths; and
- location information from service providers.

Such information can be shared with relevant central administrative agencies, heads of local governments, health agencies, medical institutions and medical agencies. However, this will only be limited to the extent it is relevant to the tasks of the assigned agencies.

On 26 March 2020, a new enhanced tool, powered by the City Data Hub, was launched by the government to help track patients even more closely in close to real time, to see where the disease was moving and spreading. This is a data platform⁶⁰ developed in collaboration between the KCDC, the Ministry of Land, Infrastructure and Transport (MOLIT) and the Ministry of Science and ICT (MSIT).⁶¹

This new platform automates the contact tracing work required under the Infectious Disease Control and Prevention Act. Health officials are able to trace their patient's movements and correlate interview results with the data uploaded on the platform by the patient. Real-time data feeds on patients, including their whereabouts and the time spent at each location, will be traceable by officials. From these multiple data points, the platform can detect incidents of cluster infection and show the source of transmission.⁶²

The City Data Hub that powers the Covid-19 data platform is an invention of the national smart city R&D program.⁶³ As a tool for Big Data analysis, the platform produces insights for cities which would like to launch new smart services based on its analysis of the data on traffic, energy use, environment and safety. The results of tracking are not only used by public health authorities, but are also shared with citizens via national and local government websites, free smartphone apps that show the locations of infections and text message updates about new local cases.

60 'MOLIT, MSIT and KCDC launch the COVID 19 data platform', 26 March 2020, available at: <http://www.molit.go.kr/english/USR/BORD0201/m_28286/DTL.jsp?id=eng0301&cate=&mode=view&idx=2931&key=&search=&search_regdate_s=&search_regdate_e=&order=&desc=asc&srch_prc_sts=&item_num=0&search_dept_id=&search_dept_nm=&srch_usr_nm=N&srch_usr_titl=N&srch_usr_cntnt=N&srch_mng_nm=N&old_dept_nm=&search_gbn=&search_section=&source=&search1=&lcmspage=1> accessed 20 May 2020.

61 MOLIT will transfer operation of the system to KCDC, which will run the system in close coordination with the National Police Agency, Credit Finance Association of Korea, three telecom companies and 22 credit card companies.

62 A detailed explanation on the platform's functionality is available at: <http://www.molit.go.kr/LCMS/DWN.jsp?fold=/eng0301/&fileName=200326%20MOLIT_MSIT%20and%20KCDC%20launch%20the%20COVID%2019%20data%20platform.pdf> accessed 20 May 2020.

63 South Korean Ministry of Land, Infrastructure and Transport 'Korean Smart Cities Brochure', available at: <https://smartcity.go.kr/wp-content/uploads/2019/08/Smart-city-broschureENGLISH.pdf> last accessed 23 May 2020.

The first app (named Corona 100m) was launched on 11 February 2020. It uses government data and sends users an alert when they come within 100 metres of a location visited by an infected person. The person using the app can see the date that a coronavirus patient was confirmed to have the disease, along with that patient's nationality, gender and age.⁶⁴

Although contact tracing apps are not mandatory, they have been widely adopted by the population. For instance, a little over a month after its launch, the Corona 100m app had been installed more than one million times.⁶⁵ These systems are provided for free by private developers and, even though they are based on data collected and already made available by the government, their adoption provides a more visual and interactive use.⁶⁶

To limit the impact of contact tracing apps on privacy and to comply with the principle of proportionality, the scope of data collected is kept to a minimum, with a due procedure to be followed when acquiring the data. According to the website, an epidemiological surveyor will need to decide whether additional collection of personal information is necessary. If the answer is yes, the official will need to seek approval from relevant authorities to gain access to the data. For example, separate permission from the National Police Agency is required for the location information.

Access to the platform is only granted to limited personnel and the level of access is differentiated according to the requirements of their duties. Under the current arrangement, KCDC officials and local government officials in charge of contact tracing have the necessary security clearance but other government agencies will be denied access to the platform. The platform runs on a private network to shield the system from hacking and adopts advanced security technologies such as double firewalls as well as the thorough log-in management system. With every user's activities put under strict surveillance, abuse of personal information can be prevented.

Finally, in compliance with the necessity and legality principles, the platform will be operated on interim basis and all personal data will be deleted once the official response to Covid-19 comes to an end. While in operation, the platform will be constantly monitored by computer security experts and the security regime for data protection will also be updated.

Notwithstanding the safeguards in place, the use of geolocation data may raise concerns over privacy rights protection. For instance, on 11 May 2020, a second wave of infections emerged, after the country had efficiently contained the contagion for months.⁶⁷ The majority of the 35 newly-reported cases appeared to be linked with several LGBTQ nightclubs and bars in Seoul. Public health authorities have tested more than 2,450 people potentially at risk, but they are still trying to identify about 3,000 more. The fear of discrimination and stigmatisation has had an impact on the number of people willing to come forward to be tested. This episode clearly shows the importance of protecting human rights and minorities, in order to strengthen the effectiveness of technologies supporting contact tracing.

64 Ivan Watson and Sophie Jeong, 'Coronavirus Mobile Apps are Surging in Popularity' *CNN Business*, 28 February 2020, available at: <https://edition.cnn.com/2020/02/28/tech/korea-coronavirus-tracking-apps/index.html>, last accessed 23 May 2020.

65 Jurica Dujmovic, 'Wildly Popular Coronavirus-tracker app helps South Koreans steer clear of outbreak areas' *Market Watch*, 18 March 2020, available at: <https://www.marketwatch.com/story/wildly-popular-coronavirus-tracker-app-helps-south-koreans-steer-clear-of-outbreak-areas-2020-03-18>, last accessed 23 May 2020.

66 Zaki Abdullah and Hidayah Salamat, 'Singapore Confirms first case of Wuhan Virus' *CNA International Edition*, 23 January 2020, available at: <https://www.channelnewsasia.com/news/singapore/wuhan-virus-pneumonia-singapore-confirms-first-case-12312860>, last accessed 23 May 2020.

67 Hynohhee Shin and Josh Smith, 'South Korea Scrambles to contain nightclub coronavirus outbreak' *Reuters*, 11 May 2020, available at: <https://uk.reuters.com/article/us-health-coronavirus-southkorea/south-korea-scrambles-to-contain-nightclub-coronavirus-outbreak-idUKKBN22N0DA>, last accessed 25 May 2020.

Singapore

A multi-ministerial committee was formed on 22 January 2020 to address Singapore's Covid-19 crisis, the day after the first case was officially confirmed in the country. It consists of the Minister for National Development, the Minister for Health, the Prime Minister, the Deputy Prime Minister and the Minister of Finance.⁶⁸

For weeks, Singapore has managed to contain the contagion through travel restrictions, passenger screenings, rapid contact tracing and stringent quarantine measures.⁶⁹ In addition, on 20 March 2020, the Ministry of Health (MOH), together with the Government Technology Agency (GovTech), launched an app for contact tracing, named TraceTogether.⁷⁰

This community-driven tool is based on Bluetooth technology and represents the first of this kind launched nationwide.⁷¹ When users download the app and activate Bluetooth, they are able to exchange anonymised IDs, with people in close proximity who have installed the app. This encrypted information regards the proximity and duration of an encounter between two users. If someone contracts Covid-19, they can transfer their proximity data to the MOH. The MOH will contact those who have been in close contact with an infected person and will be able to treat these contacts promptly.

This system is based on a hybrid centralised-decentralised model. In particular, before an infection is confirmed, the proximity data is stored on the users' phone for 21 days and, on a rolling basis, anything beyond that will be deleted. However, once someone is diagnosed with a Covid-19 infection, the data stored on their device is transferred to the MOH to alert their contacts. The use of proximity data, rather than geolocation data, is regarded as more compliant with the principle of proportionality.⁷²

However, this benefit needs to be balanced against the risk of error. In particular, Bluetooth-based apps appear to be exposed to the risk of false positives and false negatives.⁷³ For instance, if people are separated by paper-thin apartment walls, their phones could still capture each other's signals, as if they were at risk of contagion. The accuracy of these tools may also be affected by the software adopted (whether iOS or Android). Moreover, TraceTogether is based on a centralised system for the storage of proximity data, which has raised concerns over the risks for privacy rights.⁷⁴

The instalment of the app is voluntary. To promote trust among citizens and its adoption by other countries, the government has published the protocol underpinning TraceTogether (Blue Trace), as well as a reference implementation (Open Trace).⁷⁵ Even though Singapore managed to keep the epidemic under control for many weeks, with partial lockdown measures, at the beginning

68 Multi-Ministry Taskforce on Wuhan Coronavirus, available at: <https://www.moh.gov.sg/docs/librariesprovider5/default-document-library/multi-ministry-taskforce-on-wuhan-coronavirus-and-tor-final.pdf>, last accessed 25 May 2020.

69 Mary Hui 'Singapore wants all its citizens to download contact tracing apps to fight the Coronavirus' *QUARTZ*, 22 April 2020, available at: <https://qz.com/1842200/singapore-wants-everyone-to-download-covid-19-contact-tracing-apps/>, last accessed 25 May 2020.

70 Dean Koh 'Singapore government launches new app for contact tracing to combat spread of COVID-19' *Mobihealth news*, 20 March 2020, available at: <https://www.mobihealthnews.com/news/asia-pacific/singapore-government-launches-new-app-contact-tracing-combat-spread-covid-19>, last accessed 25 May 2020. See also Mary Hui (n 70).

71 Jason Bay et al, 'BlueTrace: A privacy-preserving protocol for community-driven contact tracing across borders', available at: https://bluetrace.io/static/bluetrace_whitepaper-938063656596c104632def383eb33b3c.pdf, last accessed 25 May 2020.

72 Joint civil society statement (n 40) and Human Rights Watch (n 44).

73 Patrick Howell O'Neil, 'Bluetooth contract tracing needs bigger, better data' *MIT Technology Review*, 22 April 2020, available at: <https://www.technologyreview.com/2020/04/22/1000353/bluetooth-contact-tracing-needs-bigger-better-data/>, last accessed 25 May 2020.

74 'Joint Statement on Contact Tracing', 19 April 2020, available at: <https://drive.google.com/file/d/1OQg2dxPu-xRZzETlpV3lFa259NrpKlJ/view>, last accessed 25 May 2020.

75 Jason Bay (n 71).

of April the number of infections increased.⁷⁶ The new cases appear to be connected with several clusters at foreign workers' dormitories, where social distancing and hygiene standards could not be maintained.⁷⁷ This episode confirms that the deployment of sophisticated technologies, in the absence of complementary measures, is not sufficient to control the epidemic and may lead to an unjustified restriction of fundamental rights.

Europe and future global trends

On 12 March, the WHO considered Europe the active centre of the Covid-19 epidemic, with 20,000 confirmed cases and almost 1,000 deaths in the region.⁷⁸ Although there is no 'one-size-fits-all' approach and countries had to follow the disease's trajectory, social distancing and quarantine measures had been largely implemented across the European Union.⁷⁹ One month later, more than half of the EU's Member States proclaimed a state of emergency and all of them prohibited public gatherings, totally or partially closed schools and introduced border/travel restrictions.⁸⁰

As countries have started to plan the lifting of the lockdown measures, the European Commission has suggested a coordinated approach.⁸¹ In particular, the adoption, by Member States, of a common tool incorporating the following dimensions was recommended: a common EU approach for the use of mobile applications to support social distancing and contact tracing; and a common approach for the use of anonymised and aggregated mobile location data to support modelling to predict the evolution of the contagion.⁸²

Following this recommendation, a week later, the Commission issued a 'Common EU Toolbox' ('Toolbox') for Member States,⁸³ and a 'Guidance on Apps supporting the fight against Covid-19 pandemic in relation to data protection' ('EU Guidance').⁸⁴ These documents, developed in consultation with the European Data Protection Board (EDPB), are aimed at identifying the essential requirements for contact tracing apps deployed by Member States, in order to protect personal data and fundamental rights.⁸⁵ Further guidance on this was then provided by the EDPB in a separate document adopted on 21 April.⁸⁶

76 PM Lee Hsien Loong, 'Remarks on the Coronavirus Disease 2019 (COVID-19) situation in Singapore', delivered on 3 April 2020, available at: <https://www.pmo.gov.sg/Newsroom/PM-Lee-Hsien-Loong-on-the-COVID19-situation-in-Singapore-on-3-April-2020>, last accessed 25 May 2020.

77 Sophia Ankel, 'How Singapore went from being applauded for its coronavirus response to facing an alarming second wave with thousands of new cases' *Business Insider*, 22 April 2020, available at: <https://www.businessinsider.com/coronavirus-singapore-lost-control-second-wave-2020-4?r=US&IR=T>, last accessed 25 May 2020.

78 World Health Organization, 'WHO announces Covid-19 outbreak a pandemic', 12 March 2020, available at: <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>, last accessed 25 May 2020.

79 European Commission, 'Joint European Roadmap towards lifting COVID-19 containment measures', available at: https://ec.europa.eu/info/sites/info/files/communication_-_a_european_roadmap_to_lifting_coronavirus_containment_measures_0.pdf, last accessed 25 May 2020.

80 Seth Flaxman et al, 'Estimating the number of infections and the impact of non-pharmaceutical interventions on COVID-19 in 11 European countries', Imperial College London, 2020.

81 European Commission, 'Coronavirus: Commission adopts Recommendations to support exit strategies through mobile data and apps' 8 April 2020, available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_626, last accessed 25 May 2020.

82 *Ibid.*

83 eHealth Network 'Mobile Applications to support contact tracing in the EU's fight against COVID-19: Common EU Toolbox for Member States', Version 1, 15 April 2020, available at: https://ec.europa.eu/health/sites/health/files/ehealth/docs/covid-19_apps_en.pdf, last accessed 25 May 2020.

84 European Commission 'Communication from the Commission: Guidance on Apps supporting the fight against COVID 19 pandemic in relation to data protection' OJEU, 2020, available at: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XC0417\(08\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XC0417(08)&from=EN), last accessed 25 May 2020.

85 European Commission, 'Coronavirus: Guidance to ensure full data protection standards of apps fighting the pandemic', 16 April 2020, available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_669, last accessed 25 May 2020.

86 European Data Protection Board, (n 45).

Contact tracing apps are based on data-intensive models and are, therefore, regarded as significantly interfering with the right to privacy and the right to protection of personal data. In the context of the European Union, the General Data Protection Regulation (GDPR) and the e-Privacy Directive provide strong safeguards for the protection of users' privacy and fundamental rights.⁸⁷ In particular, the following requirements have been identified:⁸⁸

a. Voluntary approach

The EDPB has clarified that 'the systematic and large scale monitoring of location and/or contacts between natural persons is a grave intrusion into their privacy'.⁸⁹ Consequently, the deployment of the app can only be legitimate if it is the result of a voluntary choice. Moreover, since mobile apps may have multiple functions (eg, symptom checker functionality and contact tracing functionality), explicit consent should be granted by users for each of these deployments.⁹⁰

b. Purpose limitation

The purpose of the app shall be narrow enough to exclude further processing for purposes unrelated to Covid-19, such as law enforcement and commercial reasons. In accordance with GDPR, health data can also be processed for the purpose of scientific research.⁹¹ The EDPB has published specific guidelines on this use.⁹²

c. Data minimisation and time limitation

The app shall not collect unrelated or unnecessary information. To this end, contact tracing apps based on proximity data (such as those using Bluetooth technology) are regarded as less intrusive than apps based on geolocation data.

d. Transparency

A high level of transparency should be respected with regard to the following information: the source code of the application and its technical specifications; the storage and processing of personal data and the human rights impact assessment.⁹³ This requirement is necessary to favour social acceptance and trust, especially when considering that contact tracing apps should be adopted on a voluntary basis.⁹⁴

e. Accountability

The controller of contact tracing apps shall be clearly defined. Public health authorities, in charge of the health crisis, appear to be the most suitable entities for the processing of this data. If more actors are involved in the deployment of contact tracing apps, their role and responsibilities should be clearly specified.

87 European Commission (n 84).

88 Dr Gabriela Zanfir-Fortuna, 'European Union's Data Based Policy Against the Pandemic, Explained' *Future of Privacy Forum*, 30 April 2020, available at: <https://fpf.org/2020/04/30/european-unions-data-based-policy-against-the-pandemic-explained/>, last accessed 25 May 2020.

89 European Data Protection Board, (n 45).

90 *Ibid.*

91 *Ibid.*, s 34.

92 European Data Protection Board, 'Guidelines 03/2020 on the processing of data concerning health for the purpose of scientific research in the context of the COVID-19 outbreak', adopted 21 April 2020, available at: https://edpb.europa.eu/sites/edpb/files/files/file1/edpb_guidelines_20200420_contact_tracing_covid_with_annex_en.pdf, last accessed 25 May 2020.

93 European Data Protection Board (n 45).

94 *Ibid.*

f. Interoperability

When an infected person is in contact with the user of an app from another Member State, cross-border transmission of personal data of that user to health authorities of its Member State should be possible to the extent strictly necessary. Even though Member States have different degrees of contagion, the virus does not respect borders and cannot be contained in isolation.

The requirements discussed above appear to be consistent with the principles of legality, necessity and proportionality, as defined by international human rights standards. Moreover, in an open letter to the European Commission, the EDPB has clarified a further distinction between decentralised and centralised systems, depending on where the data is primarily stored.⁹⁵

In the first case, anonymised proximity data is stored on the users' devices and, when someone tests positive for Covid-19, they will upload their encrypted IDs from their phone to a central server (often managed by public health authorities). Users will connect to this server and will be able to see whether the IDs published are present on their phone. This tool relies on users' initiative to then contact public health authorities and to get tested for Covid-19.

In a centralised system, infected users will transfer to the central servers their IDs, as well as the anonymised IDs of those they have been in contact with. In this case, public health authorities will be able to access these IDs and will contact the associated users to verify whether they have been infected. The EDPB has clarified that, with the adequate security measures in place, both systems are suitable options. However, the decentralised model is less intrusive and may be more in line with the minimisation principle.

On 10 April, Apple and Google announced a partnership to build a platform to support contact tracing apps worldwide. The partnership launched the exposure notification application programming interface (API) on 20 May to enable public health agencies to release their apps.⁹⁶ This initiative aims to favour the interoperability between iOS and Android devices using contact tracing apps and to minimise privacy and human rights risks associated with them.⁹⁷ Their systems will support apps based on Bluetooth technology and functioning on the basis of a decentralised system.⁹⁸ This decision has been praised as a more rights-compatible option, in an open letter signed by a group of scientists from across the world.⁹⁹ In the EU, Member States are planning to adopt contact tracing apps based on a Bluetooth system but appear divided between centralised and decentralised models, as reported below.¹⁰⁰

On 31 January 2020, **Italy's** Council of Ministers declared a six-month state of emergency,¹⁰¹ to address the health risks of the Covid-19 outbreak, after two Chinese tourists tested positive for the

95 European Data Protection Board, 'Letter concerning the European Commission's draft Guidance on apps supporting the fight against the COVID-19 pandemic', 14 April 2020, available at https://edpb.europa.eu/our-work-tools/our-documents/letters/edpb-letter-concerning-european-commissions-draft-guidance-apps_en, last accessed 25 May 2020.

96 Google Company Announcements 'Exposure Notification API launches to support public health agencies', 20 May 2020, available at: <https://blog.google/inside-google/company-announcements/apple-google-exposure-notification-api-launches>, last accessed 25 May 2020.

97 Apple Newsroom 'Apple and Google partner on COVID-19 contact tracing technology', 10 April 2020, available at: <https://www.apple.com/newsroom/2020/04/apple-and-google-partner-on-covid-19-contact-tracing-technology/>, last accessed 25 May 2020.

98 *Ibid.*

99 Joint Statement on Contact Tracing (n 74).

100 Miles Johnson et al, 'Europe split over approach to virus contact tracing app' *Financial Times*, 5 May 2020, available at: <https://www.ft.com/content/10f87eb3-87f9-46ea-88ab-8706adefe72d>, last accessed 25 May 2020.

101 Italian Civil Protection Department, 'Coronavirus Emergency: The National response', available at: <http://www.protezionecivile.gov.it/en/risk-activities/health-risk/emergencies/coronavirus>, last accessed 25 May 2020.

virus in Rome.¹⁰² On 21 February, the first Italian citizen was diagnosed with Covid-19¹⁰³ and, at the beginning of March, the contagion had spread to all regions of Italy.¹⁰⁴

From the outset of this crisis, unprecedented measures have been adopted by the Italian government. In particular, direct flights to and from China were immediately suspended when the first two cases were identified in January and, on 9 March, the entire country was put on lockdown.¹⁰⁵ As the country planned to ease some of these restrictions, the government looked into the steps necessary to manage the epidemic in the next phase.¹⁰⁶

On 31 March, a working group was established by the Ministry of Technological Innovation and Digitalisation (MTID), in accordance with the Ministry of Health (MOH), to identify and propose technological solutions to limit the spread of Covid-19.¹⁰⁷ In particular, the development of an app to support and facilitate contact tracing and management has been a key priority for the working group since its inception. A three-day call for contributions was launched on 23 March to identify ‘best available digital solutions and technologies’.¹⁰⁸

Out of the 319 proposals received for a contact tracing app, on 16 April, the Italian Government selected a Bluetooth-based technology.¹⁰⁹ This app, called *Immuni*, was developed free of charge by a private company based in Italy and the source code of the app will be released with an open source MPL 2.0 licence.¹¹⁰ This tool has similar characteristics of TraceTogether deployed in Singapore. In particular, users would exchange anonymised IDs with people they have been in close proximity with. When someone is diagnosed with Covid-19, their phone can transfer the proximity data stored on their device to public health authorities, facilitating contact tracing and testing.¹¹¹

Following the Apple and Google announcement in April, the Italian government has clarified that *Immuni* will be based on the decentralised model¹¹² and has set the following standards:¹¹³

- the platform shall be exclusively managed by public entities, based in the national territory;
- users shall be informed about the terms and conditions of the app, before activating it on their phone;

102 Chiara Severgnini, ‘Coronavirus, primi due casi in Italia «Sono due cinesi in vacanza a Roma» Sono arrivati a Milano il 23 gennaio’, *Corriere della Sera*, 30 January 2020, available at: https://www.corriere.it/cronache/20_gennaio_30/coronavirus-italia-corona-9d6dc436-4343-11ea-bdc8-faf1f56f19b7.shtml, last accessed 25 May 2020 (in Italian).

103 Giampaolo Visetti, ‘Coronavirus, una task force per Mattia, 38 anni: “Non deve morire”’, *la Repubblica*, 29 February 2020, available at: https://www.repubblica.it/cronaca/2020/02/29/news/la_missione_mattia_non_deve_morire_-249838417/, last accessed 25 May 2020 (in Italian).

104 ‘Coronavirus. Colpite tutte le regioni. La Protezione civile: ecco i numeri aggiornati’, online editorial, *Avvenire*, 5 March 2020, available at: <https://www.avvenire.it/attualita/pagine/coronavirus-aggiornamento-5-marzo-2020>, last accessed 25 May 2020 (in Italian).

105 Ajay Nair, ‘Coronavirus: Italy deaths jump to 463, with 300 in just one region’, *Sky News*, 10 March 2020, available at: <https://news.sky.com/story/coronavirus-italy-sees-largest-daily-rise-in-deaths-and-confirmed-cases-11953192>, last accessed 25 May 2020.

106 Italian Prime Minister, ‘Press Conference with regard to COVID-19 Phase 2’, *Italian Government website*, 26 April 2020, available at: <http://www.governo.it/node/14518>, last accessed 25 May 2020.

107 Italian Minister for the Technological Innovation and Digitalisation, update ‘Un aggiornamento sull’applicazione di contact tracing digitale per l’emergenza coronavirus’, 21 April 2020, available at: <https://innovazione.gov.it/un-aggiornamento-sull-applicazione-di-contact-tracing-digitale-per-l-emergenza-coronavirus/>, last accessed 25 May 2020 (in Italian).

108 The call was launched by the Italian MOH and by the Higher Institute for Health, in collaboration with the WHO. See <https://innovazione.gov.it/tele-medicine-and-monitoring-systems-a-call-for-technologies-to-contrast-the-spread-of-covid-19/>.

109 Italian Minister for the Technological Innovation and Digitalisation (n 107).

110 ‘Mozilla Public License Version 2.0’, available at: <https://www.mozilla.org/en-US/MPL/2.0/>, last accessed 25 May 2020.

111 *Ibid.*

112 Miles Johnson et al (n 100).

113 Urgent measures for the functionality of the interception systems of conversations and communications, further urgent measures regarding the penitentiary system, as well as supplementary and coordination provisions on civil, administrative and accounting justice and urgent measures for the introduction of the system warning, *Covid-19 2020*, Decree law No 28/30, April 2020.

- users shall receive an alert exclusively regarding their proximity with an infected person;
- collected data shall not be processed for purposes, other than contact tracing, aggregated data may be used for public health and statistical reasons;
- proximity data shall be anonymised and geolocalisation data shall not be collected;
- data storage, even on users' devices, shall be limited in time; and
- app usage shall be based on a voluntary choice of citizens and their decision not to install the app shall not have any consequence on their fundamental freedoms.

The functioning of the app and the processing of personal data shall terminate at the end of the state of emergency and, in any case, not beyond 31 December 2020. After this date, personal data shall be deleted or irreversibly and effectively anonymised. From 1 June, Immuni can be downloaded from Apple and Google stores and, from 8 June, will be tested by the public health authorities of three Italian regions.¹¹⁴

The governmental decision to opt for a decentralised system and the standards set out above appear to be consistent with the principles of legality, necessity and proportionality. A similar U-turn in favour of a less intrusive, decentralised system was made by **Germany's** government at the end of April.¹¹⁵ In both circumstances, the effectiveness of this technology (and, therefore, its necessity) will also depend on the adequate investment in complementary public health measures eg, testing and treatment.¹¹⁶

In contrast, the **United Kingdom**¹¹⁷ and **France**¹¹⁸ have decided to opt for centralised apps, named 'NHS COVID-19 App' and 'StopCOVID', respectively. In both systems, when users test positive for Covid-19, their proximity data will be transferred from their devices to a central server. This encrypted data will then be processed by their respective national health authorities so that an alert can be sent to those who have been exposed to the virus. In addition, public health authorities could process this data for statistical and research purposes.¹¹⁹

In the UK, the NHSX, which is the digital innovation unit of the National Health Service (NHS), has open sourced and published the app's code¹²⁰ and states that the app does not collect personally identifiable data from its users. Users will always remain anonymous and can delete the app whenever they wish. In addition, the UK Information Commissioner's Office (ICO) has released a very comprehensive document,¹²¹ clarifying that the NHSX app should be developed in line with the principles of data protection by design and default, including a series of best practice recommendations. Finally, the NHSX has clarified that the app automates the process of contact tracing as a part of a wider approach, based on manual and web-based contact tracing and virology swab testing.¹²²

114 Italian Minister for the Technological Innovation and Digitalisation, update 'App Immuni: available from today on Apple and Google stores', 1 June 2020, available at: <https://innovazione.gov.it/app-immuni-disponibile-da-oggi/>, last accessed 2 June 2020 (in Italian)

115 Miles Johnson et al (n 100).

116 'Testing, tracing, and when to lift restrictions: WHO's latest advice' *UN News*, 13 April 2020, available at: <https://news.un.org/en/story/2020/04/1061642>, last accessed 25 May 2020.

117 NHSX, 'NHS COVID-19 App', <<https://www.nhsx.nhs.uk/blogs/code-behind-nhs-covid-19-app/>> accessed 20 May 2020.

118 CNIL, 'Publication of the CNIL's opinion on the "StopCovid" mobile application project', 30 April 2020, available at: <https://www.cnil.fr/en/publication-cnil-opinion-stopcovid-mobile-application-project>, last accessed 25 May 2020.

119 Terence Eden, 'The code behind the NHS Covid-19 App', NHSX, 8 May 2020, available at: <https://www.nhsx.nhs.uk/blogs/code-behind-nhs-covid-19-app/>, last accessed 25 May 2020.

120 *Ibid.*

121 United Kingdom Information Commissioner's Office Statement, 'COVID-19 Contact tracing: data protection expectations on app development', 4 May 2020, available at: <https://ico.org.uk/media/for-organisations/documents/2617676/ico-contact-tracing-recommendations.pdf>, last accessed 25 May 2020.

122 NHSX (n 116).

In France, the app has been approved by the French national data protection authority, CNIL (National Commission on Informatics and Liberty), subject to civil liberty guarantees and regular oversight. The authority has provided its opinion¹²³ and identified necessary safeguards. In particular, it has clarified that the use of the app should be voluntary and there should be no negative consequence for those who do not wish to use it. The app should also be subject to the GDPR requirements and the publication of the Data Protection Impact Assessment (DPIA) is recommended for transparency purposes. Finally, the server responsible for storing and processing proximity data should use enhanced security measures such as encryption keys allowing access to the identifiers of the persons concerned.

Both the NHS COVID-19 App and StopCOVID appear to be incompatible with the exposure notification platform created by Apple and Google. This difference may prevent the apps from working properly on almost all smartphones, hampering their ability to pass the legality, necessity and proportionality tests.¹²⁴ To address these challenges, the UK government is continuing to consult Apple and Google to refine the development of the app and understand the compatibility and interoperability issues between centralised and decentralised systems. However, a similar attempt to find a compromise failed in France, where the French Minister for Digital Affairs criticised the companies, saying that ‘[...] it should be up to governments, not companies, to determine what’s best to protect citizens from the global pandemic.’¹²⁵ StopCOVID is available for download from 2 June, while its counterpart in the UK is currently being tested in the Isle of Wight and has not met the delayed official launch date of 1 June.¹²⁶

Business and human rights implications

Technology can and should play a fundamental role in the fight against Covid-19. In particular, if complementing other measures, contact tracing apps may reduce the spread of the disease and support public health authorities in their activities.¹²⁷ However, as stated by a group of UN human rights experts, ‘[t]he Covid-19 crisis cannot be solved with public health and emergency measures only; all other human rights must be addressed too.’¹²⁸ Not only the right to privacy and freedom of movement, but likely all rights could in fact be affected by these tools.¹²⁹

Contact tracing apps are the result of a public-private partnership in which governmental agencies (often public health authorities) outsource to private companies (primarily developers and operating systems) the development of this technology.¹³⁰ The UNGPs, together with the OECD Guidelines for

123 CNIL (n 117).

124 Mark Scott et al, ‘How Google and Apple outflanked governments in the race to build coronavirus apps’ *Politico*, 15 May 2020, available at: <https://www.politico.eu/article/google-apple-coronavirus-app-privacy-uk-france-germany/>, last accessed 25 May 2020.

125 *Ibid.*

126 Daphne Leprince-Ringuet, ‘Contact-tracing: France gets ready to launch its own app, rejects Apple and Google option’ *ZDNet*, 1 June 2020, available at: <https://www.zdnet.com/article/contact-tracing-france-gets-ready-to-launch-its-own-app-rejects-apple-and-google-option/>, last accessed 2 June 2020.

127 Human Rights Watch, ‘Joint Civil Society Statement: States use of digital surveillance technologies to fight pandemic must respect human rights’, 2 April 2020, available at: <https://www.hrw.org/news/2020/04/02/joint-civil-society-statement-states-use-digital-surveillance-technologies-fight>, last accessed 25 May 2020.

128 United Nations Human Rights Office of the High Commissioner, ‘No exceptions with COVID-19: “Everyone has the right to life-saving interventions” – UN experts say’, 26 March 2020, available at: <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25746&LangID=E>, last accessed 25 May 2020.

129 *Ibid.*

130 Accessnow.org, ‘Recommendations on privacy and data protection in the fight against Covid-19’, March 2020, available at: <https://www.accessnow.org/cms/assets/uploads/2020/03/Access-Now-recommendations-on-Covid-and-data-protection-and-privacy.pdf>, last accessed 25 May 2020.

Multinational Enterprises, represent the authoritative framework to address states' and businesses' responsibility to protect and respect human rights, including in states of emergencies.¹³¹

As stated in Principle 1 of the UNGP, states may violate their obligations under international human rights law, when these abuses can be directly attributed to them or when they have failed 'to take appropriate steps to prevent, investigate, punish and redress private actors' abuses.'¹³² This implies that governments deploying contact tracing apps not only have obligations to limit these tools for legal, necessary and proportionate purposes but, in addition, to reduce the risks of human rights abuses by the private actors involved in their deployment.

However, according to Principle 11 of the UNGP, the businesses' responsibility to respect human rights exists independently of states' ability to fulfil these obligations and 'over and above compliance with national laws and regulations protecting human rights.'¹³³ In particular, business entities have the responsibility to respect internationally recognised human rights, as defined by the International Bill of Human Rights¹³⁴ and by the ILO Declaration on Fundamental Principles and Rights at Work.¹³⁵

Companies should take the following steps to comply with these obligations:¹³⁶

- '(a) A policy commitment to meet their responsibility to respect human rights;
- (b) A human rights due diligence process to identify, prevent, mitigate and account for how they address their impacts on human rights;
- (c) Processes to enable the remediation of any adverse human rights impacts they cause or to which they contribute.'

The UNGPs do not specifically address the role of business entities during emergency regulation, however these principles clarify that companies' efforts should be heightened for those rights more at risk than others in particular industries or contexts.¹³⁷ As discussed above, apart from the right to privacy, contact tracing apps could potentially affect all rights.¹³⁸ In particular, these technologies may facilitate state or private sector mass or targeted digital surveillance, via mission creep.¹³⁹ This would severely undermine human rights and, in particular, those of already marginalised communities.

Given the human rights risks potentially associated with unlawful or arbitrary surveillance, on 18 May 2019, the UN Special Rapporteur on the Promotion and the Protection of the Right to Freedom of Opinion and Expression issued a report on Surveillance and Human Rights. ('UN Surveillance Report').¹⁴⁰

131 United Nations Human Rights Office of the High Commissioner, 'Ensuring that business respects human rights during the Covid-19 crisis and beyond: The relevance of the UN Guiding Principles on Business and Human Rights', available at: <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25837&LangID=E>, last accessed 25 May 2020. and Organisation for Economic Cooperation and Development (OECD), OECD Guidelines for Multinational Enterprises, 27 June 2000, available at: <https://www.refworld.org/docid/425bd34c.html>, last accessed 1 June 2020.

132 United Nations Human Rights Office of the High Commissioner (n 9) UNGP 1, commentary.

133 *Ibid*, UNGP 11, Commentary.

134 Consisting of the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights.

135 United Nations Human Rights Office of the High Commissioner (n 9) 12, Commentary.

136 *Ibid*, UNGP 15.

137 *Ibid*, UNGP 12, Commentary.

138 Human Rights Watch (n 125).

139 'Joint Statement to the NHSX on Contact Tracing Apps', 29 April 2020, available at: <https://drive.google.com/file/d/1uB4LcQHMPV-oLzIIHA9SjKj1uMd3erGu/view>, last accessed 25 May 2020.

140 David Kaye, UN Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, 'Report on Surveillance and Human Rights', 28 May 2019, available at: <https://www.ohchr.org/EN/Issues/FreedomOpinion/Pages/SR2019ReporttoHRC.aspx>, last accessed 25 May 2020.

The rapporteur proposes a legal and policy framework for regulating private surveillance, clarifying the obligations for states and the private sector. In both circumstances, this document refers to the UNGPs and to its ‘Protect, Respect, Remedy’ framework.¹⁴¹

Similarly, in September 2019, the US State Department published guidance for the export of surveillance technology.¹⁴² The effectiveness of this document is unclear, given that it is not mandatory and it is not meant to supercede existing export control regulations. However, together with the UN Surveillance Report, with the guidelines issued by the European Commission on Artificial Intelligence¹⁴³ and with the OECD Guidelines on Artificial Intelligence and Responsible Business Conduct,¹⁴⁴ it represents an important step towards the incorporation of the UNGPs in the context of surveillance technologies¹⁴⁵. These standards can similarly be applicable to contact tracing apps, as highlighted below:

a. Policy commitments

Companies should have clear internal policies to protect human rights and should train their employees accordingly. They should also communicate transparently and continuously the human rights risks associated with their activities, the actions adopted to limit these risks and the effects of these actions.

b. Human rights due diligence

Companies should conduct a human rights risk assessment to identify the human rights risks associated with their technologies. In the first instance, they should verify the legitimacy of the use of surveillance technologies. In the case of contact tracing apps, this evaluation should be subject to public health considerations and to the principles of legality, necessity and proportionality as defined by international human rights law.

These requirements must be evaluated on a continual basis. In the first instance, the private sector would need to consider whether the evolution of the public health crisis still justifies the deployment of contact tracing apps. In addition, to prevent their misuse for unlawful or arbitrary objectives, the socio-economic and political situation in the countries in which these technologies are deployed shall be monitored.

Human rights risks should be assessed on the basis of their severity, likelihood and ability to be remedied. More significant risks should be prioritised and companies should put adequate measures in place to prevent them. In particular, they should consider contractual and procedural safeguards, such as:¹⁴⁶

141 *Ibid.*

142 US Department of State, ‘Draft US Government guidance for the export of surveillance technology’, Bureau of Democracy, Human Rights, and Labor, 4 September 2019, available at: <https://www.eff.org/files/2019/10/29/draft-guidance-for-the-export-of-hardware-software-and-technology-with-surveillance-capabilities.pdf>, last accessed 25 May 2020.

143 For an updated list of recent initiatives and publications, see <https://ec.europa.eu/digital-single-market/en/artificial-intelligence>, last accessed 25 May 2020.

144 OECD Center for Responsible Business Conduct, *Artificial Intelligence and Responsible Business Conduct* (2019), <https://mneguidelines.oecd.org/RBC-and-artificial-intelligence.pdf>, accessed 27 May 2020.

145 Business and Human Rights Lawyers Network Japan, ‘COVID-19 Impacts on Human Rights and Guidance on Japanese Business Response’, BHR Lawyers Network Japan Working Paper (2020), available at: <https://protect-eu.mimecast.com/s/IQAKCqYWfp34NuZrlwR?domain=bhrlawyers.org> <https://www.bhrlawyers.org/en-covid19>, last accessed 1 June 2020.

146 US Department of State, ‘Draft US Government guidance for the export of hardware, software and technology with surveillance capabilities and/or parts/know-how’, available at: <https://www.eff.org/files/2019/10/29/draft-guidance-for-the-export-of-hardware-software-and-technology-with-surveillance-capabilities.pdf>, last accessed 25 May 2020.

- clauses requiring end-users to limit the deployment of contact tracing apps for addressing the public health crisis and in compliance with international human rights standards;
- limitations on how the app can/cannot be used;
- clarifications on how the data can be collected, processed, analysed and shared;
- companies' rights to terminate access to technology, deny software updates and unilaterally terminate the contract in case of misuse;
- human rights due diligence training to all employees involved in the transaction;
- human rights audits;
- internal processes that allow the detection of misuses; and
- the termination of the technology in these circumstances.

c. Stakeholders' engagement

Companies should regularly engage with affected rights holders, civil society groups and digital rights organisations to assess the potential impact of these apps on human rights and, in particular, on marginalised groups. Stakeholders should be consulted, in order to conduct the ongoing risk assessment and to mitigate and remediate adverse impacts on human rights.

d. Grievance mechanisms

Companies should identify adequate notification processes to report the misuse of these technologies. In line with Principle 31 of the UNGPs, these mechanisms should be consistent with the effectiveness criteria. In particular, they should allow a legitimate, accessible, predictable, transparent and rights-compatible mechanism that enable complaints and facilitate access to an equitable compensation. These mechanisms should prevent harm from escalating and should be a source of continuous learning, as to prevent the reiteration of future violations.

Special consideration should be given to the deployment of contact tracing apps in the context of workplace settings.¹⁴⁷ On the one hand, these tools could support employers in their effort to comply with obligations relating to health and safety standards at work.¹⁴⁸ On the other, their adoption in a private sector context would not exonerate companies from their duty to assess the legality, necessity and proportionality of this choice.¹⁴⁹

In particular, employers would need to have transparent policies and safeguards in place regarding the collection, processing and storage of their employees' personal data (especially health data).¹⁵⁰

147 Konrad Putzier and Chip Cutter, 'Welcome Back to the Office. Your Every Move Will Be Watched. Employers plan new tools to measure office interactions and track workers' health' *Wall Street Journal*, 5 May 2020, available at: <https://www.wsj.com/articles/lockdown-reopen-office-coronavirus-privacy-11588689725>, last accessed 25 May 2020.

148 Shift project.org, 'Making rights-respecting business decisions in a Covid-19 world', available at: https://www.shiftproject.org/media/resources/docs/Shift_Covid19_RightsRespectingDecisions_May11.pdf, last accessed 25 May 2020.

149 European Data Protection Board, 'Statement on the processing of personal data in the context of the COVID-19 outbreak', adopted on 19 March 2020, available at: https://edpb.europa.eu/sites/edpb/files/files/file1/edpb_statement_2020_processingpersonaldataandcovid-19_en.pdf, last accessed 25 May 2020.

150 *Ibid.*

These tools should also be complemented by additional measures (eg, PPEs¹⁵¹ and social distancing) and rolled-back at the end of the public health emergency. They should also prevent discrimination or marginalisation of specific groups when, for example, imposing the requirement to install the (voluntary) app in order to be admitted to the workplace. Beyond this, these apps may have an impact on human rights in society at large, such as restaurants and bars, theatres and sports facilities potentially requiring people to install the app for admittance. This may result in discrimination or marginalisation of vulnerable groups too. The UNGPs (and the steps identified above) would represent an important framework to guide the private sector in its effort to balance this trade-off.

Conclusions

Non-pharmaceutical measures such as contact tracing, surveillance, and social distancing are the only instruments for fighting contagious diseases, in the absence of a specific vaccine and anti-viral agents.¹⁵² The impact of these measures on human rights and fundamental freedoms must be *legal, necessary and proportionate* in order to protect the right to health.¹⁵³ The Covid-19 crisis is the first pandemic in which technology can support the containment and mitigation of the contagion and its deployment presents new challenges, together with great opportunities.

In this paper, we have looked at contact tracing apps adopted in Asia and Europe and assessed these tools on the basis of international human rights standards. Any surveillance or monitoring which takes place under these measures should be clearly prescribed by law (legality) and limited in their scope, namely to fulfil the aims of public health protection (necessity). They should also be limited temporally, as required by the public health emergency. Safeguards must be a feature of any such measures to protect against any misuse of the technology by either governments or companies who may use the data for other purposes (proportionality).

Bluetooth-based, decentralised technologies appear to be less invasive and, therefore, more proportionate measures.¹⁵⁴ However, the evaluation of these technologies is a complex exercise and shall consider several factors. For instance, more intrusive tools based on a centralised data storage may still be regarded as appropriate, with sufficient safeguards in place.¹⁵⁵ Similarly, decentralised technologies should complement additional public health measures (eg, tests and treatment) as to be effective (and necessary).¹⁵⁶

Human rights standards strengthen the effectiveness of global efforts to address the Covid-19 pandemic.¹⁵⁷ The trade-off between the right to health and the protection of fundamental rights

151 World Health Organization, 'Ration use of Personal protective equipment (PPE) for Coronavirus Disease', 19 March 2020, available at: https://apps.who.int/iris/bitstream/handle/10665/331498/WHO-2019-nCoV-IPCPPE_use-2020.2-eng.pdf, last accessed 25 May 2020.

152 Institute of Medicine (US) Forum on Microbial Threats (n 34).

153 UN Commission on Human Rights, (n 14).

154 Joint Statement on Contact Tracing (n 74).

155 European Data Protection Board (n 95).

156 UN News (n 115).

157 World Health Organization (n 8).

and freedoms is a false dilemma. These objectives are, in fact, intertwined.¹⁵⁸ As shown by our analysis, the greater the human rights safeguards in place, the higher users' trust and the ability of contact tracing apps to support public health authorities.¹⁵⁹

These tools are often the result of a public-private partnership¹⁶⁰ and the private sector can and should play a fundamental role in achieving this balance.¹⁶¹ In particular, the UNGPs provide an authoritative framework for preventing, mitigating and addressing the risks of adverse impacts on human rights associated with contact tracing apps. In carrying out these activities, companies should go 'over and above compliance with national laws and regulations'¹⁶² and, when appropriate, should exercise leverage with their partners, including governments.¹⁶³ This function will be even more necessary at the end of the public health emergency, when these technologies should be phased out and the risks of surveillance inertia, via mission creep, will be heightened.¹⁶⁴

158 Wojciech Wiewiórowski, 'Carrying the torch in times of darkness', *EDPS* press release, 30 April 2020, available at: https://edps.europa.eu/press-publications/press-news/blog/carrying-torch-times-darkness_en, last accessed 25 May 2020; and United Nation Human Rights Office of the High Commissioner, 'COVID-19: Exceptional measures should not be cover for human rights abuses and violations – Bachelet', 27 April 2020, available at: <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25828&LangID=E>, last accessed 25 May 2020.

159 See n 67 and n 77.

160 Accessnow.org (n 128).

161 United Nation Human Rights Office of the High Commissioner (n 129)

162 United Nations Human Rights Office of the High Commissioner (n 9) UNGP 11, Commentary.

163 Apple Newsroom (n 96).

164 Joint Statement on Contact Tracing (n 74). Notice that, health data may 'be processed when necessary for scientific research purposes or statistical purposes'. See EDPB (n 45).