

COVID-19 tracing apps and data protection

Webinar Summary - 5 June 2020

Introduction

Global challenges, such as the current sanitary crisis, require global response. This is what space is good at, and to some extent, something that only satellite-based solutions can tackle effectively. Governments extensively rely on the leading position of the European space infrastructure to obtain key information for the benefits of the citizens especially during emergency situations. Already during the first phase of the pandemic, [the world learned a lot from using satellite data](#) by monitoring air pollution and emergency services. The European Space Agency and the European Commission, as well as national space agencies, have issued several [funding opportunities to develop ad hoc satellite-based solutions to respond to the sanitary crisis](#), putting a focus on [telehealth](#) and tele-education. Space-borne, combined with in-situ data, real-time observations and numerical forecasts will be instrumental for an effective recovery phase ahead of us. Raw data are continuously delivered to an ever-growing number of downstream players, who process those data into exploitable information for end-users thus becoming providers of commercial and public value-added services. This stream of activities is crucial for the intrinsic value of the information provided as well as for its capacity to foster a new breed of highly-skilled professionals to employ within growing sectors linked to the digital economy.

COVID-19 has dramatically changed our everyday life. However, after a first period of total lockdown marked by stringent restrictions to mobility and social interaction, now most European countries are progressively easing those restrictive measures to usher a second phase of “cohabitation” with the virus. Nonetheless, governments are striving to look at different options to best equip the population to take up the challenge to contain the further spread of the virus avoiding a potential second wave of infections. One of the tools identified to monitor social behaviours, aiming at minimising the risks of random contacts with infected people causing potentially devastating effects on our economy and social composition, is the adoption of tracing apps on a voluntary basis. Many of these apps are still under development. Some of them, in addition to Bluetooth and other terrestrial technologies, integrate satellite navigation, communication and imagery as irreplaceable accurate information on broad and hard to reach areas. However, the launch of these tracing apps raises a number of questions related to privacy. More than ever, the ongoing public debate about data protection in a connected world is a burning issue.

The objective of the joint Eurisy-Space Generation Advisory Council (SGAC) webinar held on June 5th was to present to the audience a diverse range of operational space-based apps and discuss with experts the legal threats and cyber-security challenges posed by the storage and process of such private data. To preliminary assess the feelings around this issue of the audience, Eurisy and SGAC launched a survey on their social media channels. The results gave an indication about the general scepticism to use contact tracing apps. At the end of this brief

summary of the webinar's discussions, several recommendations for a more transparent use of tracing apps have been defined.

If an official COVID-19 contact tracing app (for smartphone) is being developed in your country, will you use it?

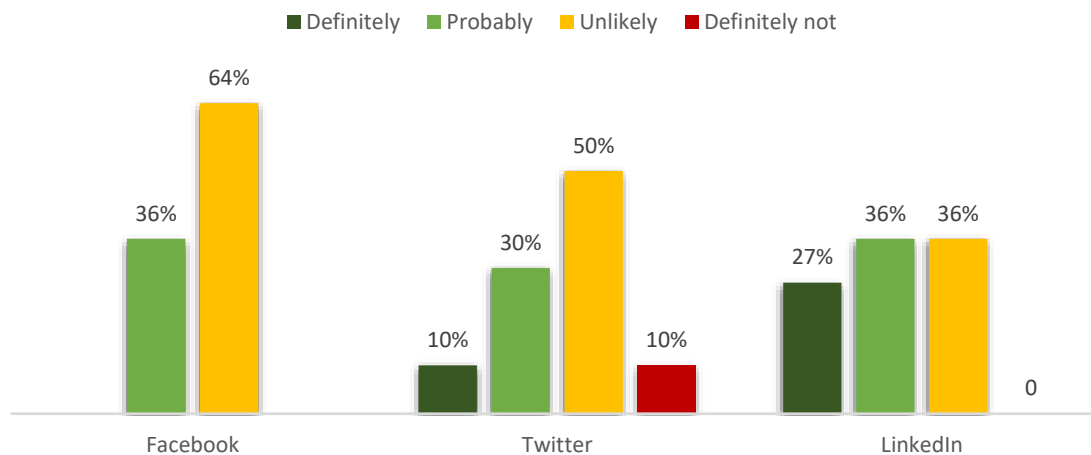


Figure 1. Eurisy-SGAC Poll Results. Source: [Facebook](#), [Twitter](#), [LinkedIn](#).

Space-based tracing apps- Use cases from Europe

The first session evolved around the presentation of three selected applications already available on the Android and Apple Stores. The apps proposed are not an exhaustive list of solutions integrating satellite data, but they offer some excellent examples of GNSS and satellite imagery products. The purpose was to show the audience the rationale behind the launch of these apps and how the developers coped with privacy and data protection issues.

Mr. Papoutsis, Associate Researcher at BEYOND - Centre of EO Research and Satellite Remote Sensing, presented [the Beyond Covid-19 Geographic Information System \(GIS\) web-platform](#). The platform is a global awareness and risk assessment system informing on COVID-19 outbreaks along with demographic, environmental and atmospheric parameters. The open portal connects Copernicus Earth observation data with in-situ sensors, crowdsourcing and public health data from official administrations, such as the European Centre for Disease Prevention and Control, the John Hopkins Corona virus Research Centre, the World Health Organisation and Worldometres. Furthermore, the platform also collects information gathered by national and local authorities.

The platform takes into account environmental parameters such as atmospheric pollutants, humidity and temperature to monitor the impact of the pandemic. The analysis of this data can give indications such as how weather influences behavioural patterns. These observations can be critical for the evaluation of measures and can assist in further decision making. As Mr. Papoutsis pointed out, such platform did not encounter any specific privacy issue, since it does not collect any personal data, but only aggregated information like the total number of

infected people, recovered patients and deaths communicated by authorities and official entities. This data is directly uploaded on a reserved page on the platform dedicated to authorities. Such a solution minimises the risk of data leaks or privacy issues. This solution has been primarily designed for public institutions to provide a better oversight to make informed decisions on a macro level.

Next up were the tracing apps for mobile phones. Mr. Alexandru Pandeale, GNSS Manager at Romania In Space Engineering (RISE), introduced the app [CovTrack](#), for the identification of potential transmissibility vectors of COVID-19 using Bluetooth and satellite positioning. CovTrack ancestor is represented by Agora, a crowd management tool for mass event organisers launched by RISE and developed with the support of the ESA's Navigation Innovation and Support Programme (NAVISP). During the outbreak of the virus, the developers realised that their experience could be used to contribute to the fight against the pandemic.

The concept of CovTrack is to rely on Bluetooth technology to determine whether close contact has been made, and to record where it was made. The app only stores the location where close contacts occurred, without actively tracing the users' location. Through an online database of Bluetooth addresses of confirmed COVID-19 patients, managed by institutional actors (such as hospitals), the app aims at better informing users and institutions. Once the app has been downloaded, it monitors people in vicinity via Bluetooth connection. If a potential contact with an infected person has been identified, the user can report it to the authorities and check what measures need to be taken.

Users have access to a database in which the unique identifiers of mobile phones are registered, to verify whether the persons with whom the user came in contact have been confirmed with COVID-19. All that information is recorded locally, and does not give access to any personal data of these mobile phone users. The importance of having location-based information allows the users to get precise and accurate data, avoiding the risk of identifying false positive patients. Considering the aim of the app, the protection of data is an important aspect to preserve the identity of the users and the potential infected people. As Mr. Pandeale explained, the personal data are collected on a server, but the server stores only the Media Access Control (MAC) code and the identification code of the infected person. The data, consisting of codes associated with mobile phones, is stored on the server for a period of maximum two weeks.

Another example was [DigitalAriadne](#), as presented by Mr. Bogliolo, Professor of Computer Systems at the University of Urbino, Italy. This app relies on a totally different concept. As is the case in the story of Ariadne and the ball of thread rolling out through the labyrinth to find her way back, the developers of digitalAriadne believe that location data is our ball of thread to unroll for finding our way out of this crisis. "Starting the post-lockdown phase without storing essential data about our movements and activities exposes us to avoidable risks", stated Mr. Bogliolo. The concept of the app is based on individuals' awareness and social responsibility. The use of the app includes a rewarding mechanism that is quantified in Worth One Minute (WOMs) vouchers, special certificates that recognise the social value of individual actions. Such rewarding mechanism could also impact on the revitalisation of the economy of territories involved. The app collects local traces without ever leaving the personal device. By keeping the app active on the background of their smartphone, users can keep a record of

their movements in space and time, without revealing to anyone their movements or identity. GNSS is an important component of the app to allow the users to have precise location and to trace their movements, especially if the user is involved in an epidemiologic investigation. The accuracy of the position is of about 1 metre.

The app automatically detects the position and movements of the user and saves this information on the personal device. The app generates daily statistics of movements and time spent in a certain place. These statistics are then stored in a central database in an anonymous format and the data can be collected to create an open data set. In this case, the protection of the personal identity and data is key. The app does not require any personal information from the user except for the location, which remains on the device unless voluntarily shared. The data of the users are collected and stored in an external drive as an anonymous code for a limited amount of time, after which the codes are randomised and can no longer be linked to any user.

The cyber and legal perspective on the tracing apps

During this second session the perspective of experts in cybersecurity and GDPR regulations were presented. Ms. Dimitra Stefoudi, PhD Candidate in Space Law at the University of Leiden, emphasised that privacy and data protection are different fundamental rights, but that there is one clear common element between the two; the requirement of consent from the data subject (the persons whose data is being collected). All the apps mentioned during the first session are on a voluntary basis, which means that one has to download and agree to the terms and conditions. In the case of declared explicit consent from the data subject, no major privacy issues arise. However, problems may eventually occur when data is being used for other purposes. Mr. Stefano Zatti, Cybersecurity expert and former Head of ESA Security Office, explained that data subjects can agree to store their location on their device, but this does not necessarily imply consent to some potentially uses of these data. Moreover, when it comes to mandatory apps for travelling to a specific destination or for going back to work, consent becomes void. Furthermore, some of the measures taken by governments, especially in Asia, were not so clear about what data could be stored and for what period this could be done. For example, in South Korea data was also shared by credit-card companies to determine movements of individuals, while China used facial recognition technology to ensure compliance with quarantine measures. Looking into the future it might be challenging to reconcile tracing apps with European standards for privacy.

Whether privacy and security risks can be overcome to assure users that their data will only be used for fighting against infection, will be the fundamental questions for developers, Mr Zatti explained. EU regulations have brought us a higher level of privacy protection and awareness. Under the General Data Protection Regulation (GDPR), apps based on geolocation data and satellite technology, belong to the personal data category (any information which are related to an identified or identifiable natural person). Nevertheless, some of the apps are promoted by states, and Article 9 of the GDPR allows for the processing of personal data when this is done for the reason of public health.

Recommendations and concluding remarks

The developers of tracing apps explained that the effectiveness of those apps is actually intertwined with their adoption rate. The higher the number of downloads and users of the app, the more accurate and precise it will be. From this perspective it is crucial to develop a transparent data strategy based on hard assurances for the protection of personal information.

A rewarding system could have stimulating effects. However, in order to meet the strong push for proper use of data and to mitigate and minimise the risk of misuse of information by third parties, developers should ensure a strict compliancy with the latest GDPR regulations, as well as cyber-security standards. An easy access to key information on the actual data gathered by the apps (where those data will be stored, for how long, to which entities the access to the data would be granted and for which exact purpose) should be explained to users. In some cases the endorsement of governmental authorities is perceived by users as a guarantee itself of the proper management of data. Nevertheless, awareness campaigns devised through broad-reaching channels could be extremely beneficial to boost the confidence of users and thus the adoption and accuracy of the apps.

The following recommendations should lead to a better acceptance of tracing apps:

- Have a major involvement of experts mitigating potential weaknesses of cybersecurity threats to the users and developers;
- Make the source code available, like on GitHub;
- Raise awareness about the specific predefined purpose of tracing apps for the safety of citizens in emergency circumstances;
- Ensure full transparency on the collected data, the use and storage;
- Assure anonymity of data.

To conclude it is key to stress the need for such apps to enable fact-based decisions that may protect us in the future. Full transparency on the purpose and scope of the apps would increase the willingness of the end-user to share some personal data to overcome an exceptional and temporary situation. Public Institutions can play a key role in ensuring proportionality between the right to privacy and public health.

To have more information about the development status of the tracing apps launched around the world, consult: <https://www.technologyreview.com/2020/05/07/1000961/launching-mitt-covid-tracing-tracker/>

ANNEX: PROGRAMME OF THE WEBINAR

Tracing apps and COVID-19 containment- Legal Threats and Cyber Challenges

The topic

After two months of lockdown due to the COVID-19 pandemic, governments all around the world are trying to ease the confinement measures. While people want to carefully go back to their lives, governments are looking for tools that would help to avoid the second wave of infections that could have devastating effects.

Since the beginning of the pandemic, technology came to aid with apps to improve telemedicine, help people in keeping social distancing, etc. In Asia, where the virus emergency spread a couple of months earlier than in the rest of the world, the population used apps as a response to the public health measures, but a series of concerns have been raised regarding privacy and data protection. Such concerns are now still debated on the other side of the world, where data protection and privacy are hot topics. But, dedicated mobile apps can play a relevant role in fighting COVID-19. For this reason, governments and tech experts are looking for the best apps that can conciliate on one side the need to trace people who have tested positive for COVID and the privacy and data protection.

Eurisy and the Space Generation Advisory Council (SGAC), decided to join forces to organise a webinar on the legal consequences related to the use of tracking apps during the first phase of de-confinement. The purpose of the webinar is to present the audience what are the existing space-based apps that could help to trace positive patients, how did they solve the privacy issues and what were their main challenges. Then, the webinar aims at presenting the current legal challenges that need to be faced and the risk for our data.

Audience

The audience will be highly diversified in terms of the age range (students, young professionals, and experienced professionals) and with different backgrounds, spacing from legal to engineering.

Duration

1h30

Draft Programme

Moderator - Matteo Cappella (SGAC)

The moderator will have the role of introducing the invited speakers, keeping the time and collecting the questions from the participants to be then addressed during the Q&A.

15:00-15:10 Opening - Jean-Jacques Tortora, Secretary-General, Eurisy

The speech should offer an overview of the topic highlighting the importance of space-based apps that would support and implement public health policies and measures.

15:10- 15:40- Space-based tracking apps- Use cases from Europe

This first session aims at presenting two examples of mobile applications available on the Android and Apple Store and that has global coverage. The purpose is to show the audience how these apps were created, focusing on the technology and how they faced privacy and data storing issues. The two invited app developers will also address their questions and doubts about the legal and cybersecurity experts to stimulate a discussion.

CovTrack App- Alexandru Pandele, RISE (Romania)

The Romanian company Rise has developed the app CovTrack. The app uses Bluetooth connections between mobile phones to store identification data the user can access to verify if any contacts have been tested positive for COVID-19.

DiAry- Digital Arianna- Alessandro Bogliolo, University of Urbino and DIGIT srl

"Digital Arianna", diAry, is a mobile application that allows to keep trace, on your own device and in any circumstance, of movements that are relevant to the containment of the diffusion of COVID-19. To face the diffusion of the virus, it is essential to be able to trace back to all the locations and people that have been met during the incubation period.

15:40- 16:10- The cyber and legal perspective on the tracing apps

This session will bring the audience the perspective of experts in cybersecurity and law. During the 30 minutes session, the audience will have the chance of understanding what are the current issues and existing challenges related to the development of the tracing apps and the data collection and storage. Besides, the session will present the issue of privacy, under the GDPR and other regulations, in the specific context of Covid-tracking applications.

Stefano Zatti- Former ESA Head of ESA Security Office

Dimitra Stefoudi- Phd Candidate at Leiden University

16:10- 16:20 Q&A

16:20- 16:30 Conclusive remarks (10 minutes)

Harriet Brettle, Chair, SGAC and **Thea Flem**, Co-Lead Space and Cyber PG