Corona Tracing Apps - Statement of the Leibniz-ScienceCampus Digital Public Health

Abstract: As a component of a comprehensive concept to contain the COVID-19 epidemic, a contact tracing app can make an important contribution. Of particular importance are technically secure functionality, voluntariness and anonymity of the users. A high acceptance of the app by citizens is a prerequisite for the success of the concept.

The use of apps as a tool for containing the COVID pandemic is currently being intensively discussed. So-called tracing apps are intended to inform contact persons of positively tested persons as quickly as possible so that they can immediately go into quarantine. This is particularly important because in this so-called pre-symptomatic phase, infected persons without symptoms can continue to infect other people. The aim is to significantly reduce the number of contacts that lead to a possible passing on of the infection by informing those affected as early as possible, thereby reducing the dynamics of the spread of the virus. Due to the still low frequency of SARS-CoV-2 infections in the population, the rapid contacting and isolation of infected persons and their contact persons is of great importance, and public health authorities need the most efficient support possible in this respect. Current plans for a tracing app in Germany call for contact persons of infected persons to be identified anonymously via Bluetooth and the identification (anonymous ID) of their app instance to be stored. According to the latest information, a decentralized solution without storing the ID on a central server is to be used. An introduction is expected in the near future.

In Singapore, a so-called contact tracing app (TraceTogether) was developed and made available by the Ministry of Health at a very early stage of the COVID-19 pandemic, which currently has about 1.1 million users (as of April 26, 2020, with a population of about 5.7 million). When the app is activated, a smartphone ID and the distance and duration of contact between different users are stored on the smartphone. If the test is positive, infected persons will be contacted by Singapore's Ministry of Health and must provide access to the stored IDs. The smartphone users are then notified as contacts. Bluetooth can only receive these contact details from other smartphones in close vicinity. Many other countries, including India, Israel and Austria, have now developed or are planning to develop or deploy similar apps.

Technical details and their implementation play a major role in questions of development and expected acceptance of such apps. On the one hand, it is a question of how much data is collected and stored, on the other hand, who has the data sovereignty, whether source codes are open and how securely the systems protect against attacks. A distinction is made between decentralized and centralized models. The approaches differ with regard to the use of central servers and the degree of control over the anonymous contact history by the app

users. In a centralized model, the contact history is evaluated on the server; in the decentralized model, this is done by the app.

From the point of view of the Leibniz-ScienceCampus Digital Public Health Bremen (LSC DiPH), the following aspects should be given priority in the development and use of contact tracing apps in Europe:

General aspects:

- Contact tracing apps can be an important **building block** in the fight against a pandemic; however, they do not replace compliance with the necessary **hygienic measures** (distance, hand hygiene, disinfection etc.).

- Due to the special nature of the coronavirus, the pre-symptomatic phase is of great importance. **Early contacting** of contact persons in this phase through effective contact tracing has considerable potential to support the containment of the epidemic.

- It would **not be helpful** if a **large number** of different contact tracing apps were provided in parallel (exception: they are all interoperable). A solution is needed that is compatible with other approaches within Europe and ideally worldwide.

Acceptance, voluntariness:

- The use of a functioning app would have to be accepted by a **large proportion** of all smartphone users in order to achieve significant effects on the spread of the virus (probably at least **60-70% participation**). Findings from health psychology and technology acceptance research should be used to achieve this goal.

- **Voluntary use** of the app is an essential basis for trust and acceptance; stigmatisation of non-users and an increasing digital divide must be prevented.

- In addition to providing the contact tracing app in **various languages** and considering principles of simple language, which is necessary to enable access and use for the broadest possible groups of the population, an accompanying **intervention to increase use**, considering principles of behavioral change, plays an important role - only when the app is used correctly it can fulfill its function.

- The notification of contact persons identified by the contact tracing app could not only take place when a positive test is present, but also in the case of justified suspicion. The prerequisite for this would be that both suspected cases and contact persons would be given **access to the virus test** as quickly as possible.

- In addition to contact tracing, **further functions** should be developed, e.g. to inform people about places with a high incidence of infections.

Data protection and anonymity:

- In principle, the stored ID data of the close contacts are to be stored **primarily anonymously**, i.e. it must not be possible to relate these IDs to individual users.

Technical aspects and functionality:

- It must be ensured and proven that a contact tracing app can **technically convincingly** achieve its goal of identifying close contacts, i.e. that the accuracy is high and the rate of false-positive results is low.

- From LSC DiPH's point of view, a **decentralized open source approach** has the greatest potential to ensure data security and data protection, to enable improvements through further development of the functionality and thus to increase acceptance.

- **Data economy**: Only contact data should be stored for a defined period of time (e.g. 14 days). Users should be able to view their data. Further information (location, gender, age etc.) should not be collected. For the intended goal of contact tracking by the app, this data minimization complies with the requirements of the General Data Protection Regulation (GDPR). A voluntary anonymous provision of further data for epidemiological research purposes (data donation) could be docked to the app as a **separate functionality** or offered separately. However, this requires further examination under data protection and acceptance aspects. The actual contact tracing app should, however, only contain the tracing functionality in order to dispel any concerns of users.

- Time limit: a fixed period of time for use must be specified in advance - contact tracing may only be used in **exceptional cases** during a **pandemic**.

The LSC DiPH points out the special pandemic situation. A well-functioning contact tracing app with anonymous storage of the contact history is to be regarded as an important component in containing the pandemic. Citizens can contribute to this by using such an app. The necessary data protection and data security must be reconciled with the special situation and its requirements.

Leibniz ScienceCampus Digital Public Health Bremen (LSC DiPH)

In the LSC Digital Public Health Bremen, scientists from the health sciences, computer science, statistics, law, communication sciences, ethnology and philosophy work together. Young scientists are specifically supported in the Early Career Researcher Academy. Together they address interdisciplinary questions of digital technology development and evaluation in public health. The University of Bremen, the Fraunhofer Institute for Digital Medicine MEVIS and the Leibniz Institute for Prevention Research and Epidemiology - BIPS are involved. Further information is available at www.lsc-digital-public-health.de.

LSC DiPH scientists are involved in the work of the Competence Network Public Health on COVID- 19. The competence network is currently working on a fact sheet with further information and requirements for contact tracing and other corona apps from an

interdisciplinary public health perspective. This will be made available at www.public-health-covid19.de at the beginning of May 2020.