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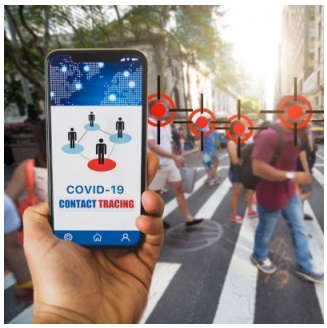
ETSI: Comparing Existing Contact Tracing Systems



A new report from ETSI analyses and compares various contact tracing applications and methods utilised to help mitigate the COVID-19 pandemic.

You might also like: Automated Contact Tracing: Is It Efficient?

With its report, Comparison of existing pandemic contact-tracing systems, ETSI's Europe for Privacy-Preserving Pandemic Protection (E4P) group looks into a representative series of apps available across the world and a number of the digital contact-tracing methods used most often.

National Contact Tracing Systems

While according to the document, digital contact tracing is only one of the many tools being deployed in the pandemic management, there is currently "a true universe of apps." An overview is provided of the systems used by public health authorities in different countries in Europe (Austria, Estonia, Finland, France, Germany, Ireland, Italy, Lithuania, Poland, Spain and Switzerland) as well as in India, Japan, Singapore and the U.S.

It is noted that most of the systems (except for France and Singapore's) are decentralised and most (except for Singapore's) imply voluntary use. The majority are supported by the public health authorities, compatible with iOS and Android, and based on Exposure Notification System (ENS) API.

The report then outlines the commonalities and differences between the decentralised and centralised systems and briefly introduces alternative methods, such as token- and acoustic-based systems, highlighting their comparative advantages.

Methods Comparison

This is followed with a detailed description of existing methods used in contact tracing technologies, namely:

- *Centralised* (possible risk of infection detected by a server): BlueTrace currently used in Singapore, DESIRE that could be used in the next generation of France's contact tracing app StopCovid, and ROBERT currently used in France.
- *Decentralised* (possible risk of infection detected by a device): Contact Shield by Huawei; DP-3T proposed by a group of researchers from European universities and partially funded by Google; ENS developed by Google and Apple; IDPT/IDPT-FP supported by the Spanish health authorities; MIT-PACT and UW-PACT mainly promoted by MIT and the University of Washington, respectively; Pronto-C2 proposed by a group of researchers at the University of Salerno in Italy; and TCN by TCN Coalition/Linux Foundation Public Health.

The above are compared against the epidemiological risk criteria, their sponsors/promoters, degree of interoperability, usability, impact of devices and data usage, privacy and security parameters including data anonymisation/pseudonimisation and retention, as well and methods and technologies used and platforms supported.

The report notes that on the most part the methods reviewed are similar to each other in their approach to contact tracing and differ mainly is how the identifiers are generated or gathered and how privacy is preserved. This similarity may facilitate greater interoperability between the systems, the report highlights.

Contact Tracing Challenges

In conclusion, the report lists some major challenges of digital contact tracing:

- **Readiness:** the technology only complements a broader anti-pandemic toolbox and thus the efficiency of its implementation heavily depends on the public health context in a particular setting.
- **Adoption:** one of the most important factors in ensuring app's effectiveness but numerous issues (e.g. technical, communicational) may prevent the app be adopted at sufficient levels.
- **Effectiveness:** specifically, the technical functioning that defines the app's precision in infection detection (false positive and false negative results).
- **Asynchronous contact tracing:** inability to detect potential infection if the virus is transferred not during a physical contact (e.g. via a contaminated surface) may require a new asynchronous approach to contact tracing.
- **Ethics:** the need to consider aspects such as state surveillance, democracy, bias, discrimination, etc.
- **Privacy:** with many medical data collected during contact tracing, the issue of privacy requires independent oversight of how these data are used.
- **Digital fragility:** the need to consider potential glitches, errors, fraud, etc.
- **Interoperability:** a lack thereof on international, national and even organisational level.

The full report is available here.

Source: ETSI

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