

Spring 2021 Research Sprint
Digital Asia Hub
Berkman Klein Center for Internet and Society
Assignment – Session 5

Digital Health and Well-Being Artifact

What the German debate around contact tracing apps can teach us about digital self-determination

In our Session 5, we highlighted the fact that health data is an extremely valuable resource in a digitized society. For a long time, discourses on data protection law revolved primarily around the value of health data for research. The past year, however, has revealed another important processing purpose: Pandemic containment.

So-called "contact tracing apps" have been one of the most discussed means of pandemic control, especially in German discourse. Hailed by some as a potential savior, and feared by others as a surveillance nightmare, contact tracing apps have divided public opinion in recent months.

I believe that the German developments around contact tracing apps can be used as a model to identify many basic features that are characteristic of larger debates on digitalization and digital self-determination. This particularly concerns the following key aspects:

I. The context dependency of digital self-determination

The pandemic has revealed that the digital space, with all the rights attached to it, can never be viewed separately from the larger space and context of a society with its very analog problems. In Germany, one could observe that the more the pandemic situation worsened, the more the deliberation of digital policies was replaced by hotfixes and the more respect for informational self-determination diminished.

[During the "first wave," Germany came managed to contain the virus' spread quite well.](#)

Therefore, the first discourse on contact tracing apps and the launch of the German "Corona-Warn-App" occurred at a rather relaxed time with low infection rates.

The German "Corona-Warn-App" was launched on June 16, 2020. The app's installation and usage is officially voluntary. The app was developed by *Deutsche Telekom* and *SAP*. It is based on Bluetooth technology. The German government and the developers have chosen an open source-based, decentralized approach, where pseudonymized temporary IDs are shared and stored locally on individual devices, not on a central server. The source code can be

viewed [here](#). Independent IT experts – among others, the *Chaos Computer Club*, which is usually highly skeptical of governmental IT projects – have reviewed the source code and found no significant data security or privacy risks. In accordance with Art. 35 GDPR, a detailed data protection impact assessment was released. It can be viewed [here](#) (in German).

The Corona-Warn-App's development was seen as exemplary by many IT and digital policy experts. From this stellar example of responsible digital policy, many drew hope for the future. However, this changed with the third wave.

[In the spring of 2021, Germany was suffering from high infection rates, intensive care units were close to their capacity limits, and confidence in the federal government's pandemic management had suffered greatly.](#) This extremely tense situation spurred an interesting development: [Many blamed exaggerated data protection rights for the poor management of the pandemic.](#)

This situation was exploited by a German pop star: Smudo. The member of the famous German hip hop band "Die fantastischen Vier" launched the so-called Luca App, a privately developed contact tracing app. It was to include a feature that the government-developed Corona warning app lacked at the time: cluster recognition. However, the Luca app's impact on digital self-determination was deemed disastrous by numerous experts: At first, the developers refused to make the source code available. To this day, it is only available inadequately and with questionable license management. The data is also not encrypted in a cryptographically sound manner. Moreover, contrary to the Corona-Warn-App's decentralized approach, data are stored in a central database. [Since then, numerous leaks, breaches and manipulations have occurred](#), which can be traced back to unprofessional encryption key management.

Despite almost unanimous warnings from IT experts, [13 German Bundesländer](#) have decided to purchase licences for the Luca app [for prices adding up to more than € 20 million](#). Current reports suggest that the software did not contribute to containing the virus' spread, but was inefficient and dangerous instead.

[On 21 April 2021, a decentralized check-in feature](#) was added to the Corona-Warn-App. Many experts see last weeks' developments as paradigmatic of a poorly thought-out digital policy.

So we can see that, in Germany at least, the sensitivity of state actors to responsible digital policy and digital self-determination always depends on the overall sociopolitical situation. When decision-makers feel under pressure, digital self-determination is often sacrificed.

II. Digital Hybris

It is undeniable that modern data-driven solutions can help solve many social problems more efficiently. At the same time, some debates are characterized by a kind of digital hubris: If you have a problem, just make an app for it, and the problem is solved.

However, the pandemic has shown that contact tracing apps are not the panacea as which is has sometimes been hailed. To date, there have been no studies to demonstrate a significant contribution of the German app to pandemic control. [In Germany on 23 April, 27.2 million](#) users had downloaded the app, constituting roughly 30 % of the German population.

In general, when infection numbers are high, even the best data-driven app is powerless. This is suggested by reports from the German Länder where the Luca app is in use. There, gigantic piles of data on potentially infected population clusters are regularly dumped on public health authorities. These authorities are simply overwhelmed due to the extreme state of the pandemic. Therefore, the data sits around unused. Even the best data is of no use to a chronically understaffed public administration reeling from inefficient crisis management.

Despite the benefits of Big Data, it must be said that an app alone is rarely the solution. At most, it can be one tool among many.

III. The importance of transparency

The debate around contact tracing apps has shown how important transparency is for the realization of digital policy goals. The early disclosure of the source code of the Corona-Warn-App enabled a critical public discourse and ensured a high level of acceptance among the population. Digital self-determination can only be practiced by those who know to which kind of processing of their health data they are consenting.

The Luca app serves as a prominent counterexample: the hesitant and incomplete disclosure of the source code has led to ill-considered app purchases and destroyed trust.

IV. The importance of database storage structures

[One of the key discussion points in the German debates on contact tracing apps has been the choice between centralized and decentralized solutions.](#) In centralized solutions, all health data is stored in a central database which is controlled by the app operator or a government agency. In a decentralized solution, the end devices that come into contact with each other through Bluetooth exchange encrypted IDs, which they then store only on their local hard drives. If any of the IDs they have come into contact with are marked as "infected," users are then alerted on their respective smartphones.

After extensive discussion, the Corona warning app was designed as a decentralized solution. The Luca app, on the other hand, follows a centralized model.

Developments in recent months have proven the advocates of a decentralized solution right. After all, centralized databases are very attractive data treasures not only for security authorities and intelligence services, but also for organized crime and hackers. That's why the risks they pose are almost impossible to control. This is demonstrated time and again by data breaches in large databases, [such as the recent one at Apple](#). In the terminology of constitutional law, one could say that decentralized databases represent the milder interference with digital self-determination. They should therefore be preferred, whenever possible.

This risk of centralized databases has already been realized for the Luca app. Since its launch, [numerous security incidents have occurred](#).

For future data-driven solutions, it is therefore to be hoped that decentralized solutions will be chosen whenever possible.

V. The state-like power of digital monopolies

Corona tracing apps can only run smoothly in the background if they can access an interface in the operating system (so-called APIs). Because almost all smartphones run on operating systems by either Apple (iOS) or Google (Android), the manufacturers of the tracing apps were and are absolutely dependent on the cooperation of these large digital corporations. Many observers of the German tracing app debate assume that the decisive factor in the choice of a decentralized app structure was the fact that Apple and Google [were only willing to provide APIs for this model and refused to make noncomplying updates available in their app stores. Whether Apple and Google are willing to cooperate, therefore plays a major role in the introduction of new cluster detection features whether Apple and Google are willing to cooperate.](#)

Thus, these private digital corporations have a state-like influence on societal discourses on digital self-determination. Future regulation and fundamental rights doctrine should reflect this power and respond adequately in order to hold the corporations accountable.

VI. Conclusion

Certainly, there is some path dependency and cultural bias in these findings. But some of the larger points may be transferable to future policy issues and discourses. The Covid-19 pandemic yields lessons on how to make sure that digital self-determination can be resilient towards external pressure.