



Irish Council for
Civil Liberties

Digital Rights Ireland

HSE Covid Tracker App: Pre-Release Report Card

Following an [expert call](#) for transparency, Irish Council of Civil Liberties and Digital Rights Ireland have joined Irish scientists to applaud the HSE and Department of Health for their efforts to be [transparent](#) about HSE's Covid Tracker App development.

After reviewing the released documents, we have concerns that Irish experts' best practice [principles](#) regarding government surveillance technologies have not been wholly adhered to.

We therefore award the government a **C+** for their efforts overall and appoint a grade marking for how the app currently stands in relation to each expert principle.

Principled Framework: Graded outcomes

Principle 1. Have a clear and limited purpose

Grade: D

Single purpose

A Covid-19 app must pursue a single purpose of contact tracing¹ to alert people potentially exposed to Covid-19. Location data and symptom tracking extend beyond this single purpose.

Location data

Tracking location data is an additional purpose that is neither necessary nor recommended for contact tracing apps². To respect privacy, an app must not be used to draw conclusions on the

¹ 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](#) (page 14)

² 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](#) (page 27)

location of the users based on their interaction and/or any other means.³ The HSE and Department of Health have stated that location data is not used by the HSE’s contact tracing function within the Covid-19 tracker app and there is no method for collecting an individual’s movements based on the app.⁴ However, a person using the symptom-tracking element of the app is asked to volunteer their county and town, along with sex and age range, on the first check-in⁵. This same information is processed on each subsequent symptom check-in⁶.

Symptom data

Tracking symptom data is also an additional purpose that has no proven efficacy. The Data Protection Commission said in their review that the app’s symptom check-in data collection “should be discontinued if it is not proving to be effective in its stated aim of assisting public health authorities with virus modelling”⁷.

Principle 2. Be necessary and proportionate to the problem

Grade: D

No evidence of necessity and proportionality

The HSE Data Protection Officer says: “I am satisfied that the use of the app in the community will assist with the contact-tracing process and that the Covid Check-in function will help with the overall monitoring and management of the spread of COVID-19.”⁸ However there is nothing in the documents published by the HSE and Department of Health that proves or supports this claim. Without evidence that the app is effective, this project fails the test of necessity and proportionality.

Data Protection Commission warning

The DPC says the HSE and Department of Health’s claim that an app can improve the speed and accuracy of manual contact tracing is speculative and “unproven.”⁹ It also says that it is essential that the app “continues to process personal data in a manner that meets the requirements of necessity and proportionality” because this technology is “essentially untested”¹⁰.

³ 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](#) (page 14)

⁴ Github. [HSEIreland/covidtracker-documentation](#)

⁵ HSE Ireland. [Data Protection Impact Assessment: Covid Tracker App](#) (page 5)

⁶ HSE Ireland. [Data Protection Impact Assessment: Covid Tracker App](#) (page 9)

⁷ Data Protection Commission. [Review of Data Protection Impact Assessment](#) (page 4)

⁸ HSE Ireland. [Data Protection Impact Assessment: Covid Tracker App](#) (page 25)

⁹ HSE Ireland [Covidtracker-documentation: DPC Review of CTI App June 2020](#) (page 3)

¹⁰ HSE Ireland [Covidtracker-documentation: DPC Review of CTI App June 2020](#) (page 4)

Principle 3. Be effective

Grade: D

No evidence the HSE app works

The Chief Information Officer says the app can “accurately detect 72% of close contacts using the Google Apple API”.¹¹ However, there is no public data showing how this figure is arrived at. We would ask:

- What is the definition of accuracy in this context?
- What is the definition of a close contact?
- How was it calculated?

Irish evidence that Covid-19 apps DON'T work

In the alternative, Irish scientists have provided data suggesting that a 72% accuracy rate may not be possible. In their studies, Dr Stephen Farrell and Professor Doug Leith, of Trinity College Dublin, found that:

- It would be challenging for Bluetooth contact-tracing apps to discern whether contacts are closer or further than two metres away¹²;
- App signals recorded between users can vary substantially depending on whether people have their phones in a pocket, a handbag, if they are on a bus¹³ or the Luas¹⁴, or if a person is standing in front of them or beside them;
- For Bluetooth apps using the Google/Apple API, false negatives, where people who have been in contact but are not detected as contacts, may be unavoidable¹⁵.

False positives

The false positive rate is the rate at which people are falsely alerted as having been in contact with someone diagnosed with Covid-19. This figure is important because false positives impact the ability of people to work and visit family. The HSE and Department of Health must share the false positive rate detected during the testing of this app and how this figure was calculated. We note that the HSE and department plan to advise Luas drivers who download the app to turn off contact-tracing while they work in order to avoid getting such a false positive¹⁶.

Principle 4. Embrace transparency and promote trust

¹¹ Department of Health. [Department of Health and the HSE announce the publication of the Covid Tracker App Data Protection Impact Assessment and source code](#)

¹² Farrell. S. & Leith. D. May 6, 2020. [Coronavirus Contact Tracing: Evaluating The Potential Of Using Bluetooth Received Signal Strength For Proximity Detection](#)

¹³ Farrell. S. & Leith. D. June 15, 2020. [Measurement-Based Evaluation Of Google/Apple Exposure Notification API For Proximity Detection In A Commuter Bus](#)

¹⁴ Farrell. S. & Leith. D. June 26, 2020. [Measurement-Based Evaluation Of Google/Apple Exposure Notification API For Proximity Detection In A Light-Rail Tram](#)

¹⁵ Farrell. S. & Leith. D. June 15, 2020. [Android COVID-19 Tracing App Pairwise Attenuations: Calibration Needed](#)

¹⁶ HSE Ireland. [Data Protection Impact Assessment: Covid Tracker App](#) (page 44)

Grade: B

We commend the HSE and Department of Health's good faith efforts for [publishing](#) the Data Protection Impact Assessment (DPIA), source code and further documentation, including the DPC's review of the DPIA, on GitHub¹⁷. This is unquestionably the model for all future DPIA processes by the State.

Issue tracker

However, the HSE's GitHub account fails to enable an issue tracker allowing people to upload feedback. Authorities in other countries including the UK¹⁸, Switzerland¹⁹, and Italy²⁰, enabled the issue tracker when they uploaded their documents to GitHub.

Publishing the code on GitHub without allowing issues to be raised on a tracker defeats publication purposes. Discussion via the normal GitHub issue tracker is a huge part of how one establishes confidence in the capability and intentions of developers, and is required for the kind of transparency and accountability inherent in open source. There will be inevitable bugs and that is how many of those are reported, discussed and resolved. Not allowing that means the app will be of lower quality than would otherwise be the case.

IP addresses

An IP address is a number that identifies a device for networking purposes. They can be used to roughly determine a device's geographic location, used to track users, and can be typically logged by firewalls.

The HSE and Department of Health have said they will not use IP addresses for identification purposes and have added that, as a precaution, the IP addresses will never be transmitted from the networking layer to the backend servers. However, according to the DPIA, users' IP addresses will be inevitably present in data communicated between the app and the HSE servers²¹. We would be surprised if the HSE's stated attempts to minimise the IP address logging are achievable. Provision of a full description of all network devices and logging is needed for this to be convincing.

Refresh tokens

An initial examination of the code indicates that so-called refresh-tokens may be used as a reasonable security measure. Such tokens can often be usable to track users even *more* effectively than IP addresses, yet we did not see any discussion of this in the DPIA. Why was that not needed?

Trial results

The DPIA makes no mention of the reported Garda trial of the app and/or any testing of the app,

¹⁷ Health Service Ireland. [GitHub](#)

¹⁸ nhsX. [GitHub](#)

¹⁹ Swiss PT. [GitHub](#)

²⁰ Immuni IoS. [GitHub](#)

²¹ For transient network routing and network security purposes. See HSE Ireland. [Data Protection Impact Assessment: Covid Tracker App](#) (pages 7 and 22)

other than behavioural studies concerning user experience²². One of the DPC's recommendations to the HSE and Department of Health is that the results of testing should be published and open to timely peer scrutiny²³. Similarly, in its European Data Protection Board assessment, the HSE and Department of Health state that "Independent penetration test team, Edgescan, are testing each release of code from an InfoSec perspective."²⁴ Will the results of this testing be published?

Principle 5. Subject to statutory oversight

Grade: C

Closed-sourced Google/Apple API

While the HSE and Department of Health have published the source code of this app, the Google/Apple Exposure Notification system upon which the HSE app 'sits' is not open source and has not been published. There is limited documentation about the Google/Apple API and very little information about its design.

Silent updates

According to research by Dr Farrell and Prof Leith, the Google/Apple API can affect the performance of a contact-tracing app by silently updating the API, unbeknownst to users and, as a consequence, affect the app's false positive and false negative rate²⁵.

Big tech control and governance

We are concerned that Google/Apple will have ultimate control over how signal strength is received by this app and that these two tech giants ultimately control the Covid-19 app ecosystem, supported by our government. Their reluctance to embrace transparency weakens the valued steps towards transparency taken by the Irish authorities.

CSO statistics

The DPIA states metric data collected by the app will be transmitted to the HSE daily and then forwarded on to the Central Statistics Office (CSO). This data will be retained by the HSE as anonymous data for statistical and research purposes for a minimum of seven years. It's unclear why this very extended retention period was selected.

It's left unclear, who is the data controller for this data. Is it the CSO? If so, has the CSO carried out a Data Protection Impact Assessment in respect of their role in processing this data? Has it been established with certainty that this data is truly anonymised, as the DPIA claims, or has the personal aspect of the data merely been pseudonymised?

²² HSE and Department of Health. [Behavioural Change Subgroup Report April 2020](#)

²³ Data Protection Commission. [Review of Data Protection Impact Assessment](#) (page 10)

²⁴ HSE and Department of Health. [EDPD Compliance Assessment](#)

²⁵ Farrell. S. & Leith. D. June 16, 2020. [GAEN Due Diligence: Verifying The Google/Apple Covid Exposure Notification API](#)

Principle 6. Subject to timely deletion of personal data

Grade: C

Collection of metric data

The aforementioned metric data to be collected includes the numbers of contact alerts, when a person was 'in contact' with someone who has tested positive for Covid-19.²⁶ We believe the number of contact alerts should not be included in this retained metric data. This information, defined as health data in the DPIA²⁷, should only be seen by contact tracers and should not be exposed to others even if it will be anonymised.

Other metric data collected includes whether someone's app has received a contact alert; whether an app user uploaded diagnosis keys; the number of diagnosis key matches per contact alert; the number of days between the app triggering a contact alert and the upload of diagnosis keys (if applicable); and the ratio of contact alerts to positive cases. The DPIA states that the HSE and department are committed to the 'decentralised' model for contact-tracing apps, i.e. that people will get exposure notifications without the sharing of personal data with a health authority or anyone else²⁸. However, we believe that the uploading and retention of this key health data²⁹ goes against the very purpose of the decentralised approach.

Principle 7. Privacy and data protection by design

Grade: C

Google Firebase

A diagram uploaded by the HSE and Department of Health on GitHub includes reference to Google Firebase³⁰ but the DPIA itself does not refer to any involvement of Google Firebase in the app. If Google Firebase is involved, in what capacity is it involved? Is it being used for authentication services? Google Firebase's Authentication service always processes its data in US data centres and this potentially means that phone numbers may, in principle, be available to US state agencies³¹.

As noted by others, any use of Firebase Authentication would also create a potential conflict of interest for Google whose primary business is advertising based on collection of user personal data³².

²⁶ HSE and Department of Health. [Data Protection Impact Assessment Covid Tracker App](#) (page 6)

²⁷ HSE and Department of Health. [Data Protection Impact Assessment Covid Tracker App](#) (page 11)

²⁸ HSE and Department of Health. [Data Protection Impact Assessment Covid Tracker App](#) (page 12)

²⁹ HSE and Department of Health. [Data Protection Impact Assessment Covid Tracker App](#) (page 11)

³⁰ HSE and Department of Health. [CovidTrackerIreland-Application](#)

³¹ Farrell. S. & Leith. D. April 28, 2020. [Coronavirus Contact Tracing App Privacy: What Data Is Shared By The Singapore OpenTrace App?](#)

³² Farrell. S. & Leith. D. April 28, 2020. [Coronavirus Contact Tracing App Privacy: What Data Is Shared By The Singapore OpenTrace App?](#)

Twilio

It's also not clear to us why the HSE and Department of Health has outsourced the job to generate a code and send an SMS to the phone of a user who has tested positive for Covid-19 to US-based Twilio³³. We would have concerns about possible future data leakage.

Replay attacks

Replay attacks³⁴ happen when an outsider intercepts a communication and fraudulently delays or resends it. This could result in app users not being notified when they come in contact with someone with Covid-19 (false negatives) or being sent notifications about contacts that aren't real (false positives). There is no known significant mitigation for replay attacks and yet they are not identified in the DPIA.

Principle 8. Subject to a sunset clause

Grade: B

The HSE and Department of Health have stated that the App Advisory Committee will continue to assess the efficacy of the app and essentially 'self-destruct' within 90 days if the app is ineffective³⁵. This is very welcome.

However, the HSE and Department of Health must clearly explain not only how they have come to the conclusion that the app is effective pre-launch but also outline the committee's criteria for efficacy and review, and publish clear and unambiguous criteria for the self-destruct mechanism.

Principle 9. Broaden the range of actors involved and foster engagement

Grade: B

We congratulate the Department of Health for their engagement with our experts' principled framework and ICCL³⁶. We note from the DPIA that membership of the App Advisory Committee will be established on the basis of nominations of senior HSE officials appointed by the HSE CEO and that other organisations will be invited to nominate representatives, including the Department of Health, the Department of Public Expenditure and Reform (Office of the Government CIO), the Central Statistics Office, Science Foundation Ireland, and "nominees from civic organisations". We strongly recommend that an NGO be represented on the committee.

³³ HSE and Department of Health. [Data Protection Impact Assessment Covid Tracker App](#) (page 23)

³⁴ Farrell. S. & Leith. D. May 19, 2020. [A Coronavirus Contact Tracing App Replay Attack with Estimated Amplification Factors](#)

³⁵ HSE and Department of Health. [Data Protection Impact Assessment Covid Tracker App](#) (page 27)

³⁶ Oireachtas.ie. June 25, 2020. [Special Committee on Covid-19 Response debate: Comments by Muiris O'Connor](#)

Conclusion. More engagement required with our experts principled framework.

With a C+ average, we believe the Irish Government has shown it intends to deliver a best practice, rights preserving app but that more answers are needed, and more work to be done to ensure the app adheres to our experts' principled framework, which seeks to ensure efficacy, transparency, legality and accountability.