



Provisos for a Contact Tracing App

The route to trustworthy digital contact tracing

On 20 April 2020 the Ada Lovelace Institute published [Exit Through the App Store?](#) a rapid evidence review of the technical considerations and societal implications of using technology to transition from the COVID-19 crisis.¹

Based on the existing evidence, we found that:

- 1) the significant technical limitations and deep social risks of digital contact tracing outweighed the value offered to the crisis response and
- 2) extensive work would be required to overcome these issues and justify any roll out.

In the last fortnight more information about design choices for the NHSX Contact Tracing App has come into the public domain. Key elements include that it: will be voluntary, will be initially reliant on self-reported data, will enable users to upload data to a centralised database and may expand in functionality after launch.

While there has been little public transparency over the details of the NHSX tool to date, we understand that NHSX, PHE, DHSC and others involved are making considerable efforts to consider and mitigate some of the issues we identified in our report.²

Two important aspects of this mitigation are the trials proposed and underway: an alpha trial underway at RAF Base Leeming to test the technology,³ and a fuller trial announced on the Isle of Wight.⁴

A swift move to test and trial is a valid approach, to explore whether a digital contact tracing app can overcome the numerous technical and practice limitations we raised in our rapid evidence review, and to build evidence for experimental approaches to supporting the UK's response to COVID-19.

Effective deployment of the NHSX Contact Tracing App will be contingent on public trust, as it depends on 80% of smartphone users downloading, using and adhering to the app and its directives to suppress the epidemic.⁵

Trustworthiness will require not only technical performance and data governance, but independent scrutiny, accountability and transparency. There will be no second chances: mistakes may undermine future uses of technology to deal with the crisis, and trust in NHSX/Government public health strategies.

1 Ada Lovelace Institute. (2020). Available from <https://www.adalovelaceinstitute.org/covid-19-exit-through-the-app-store/>

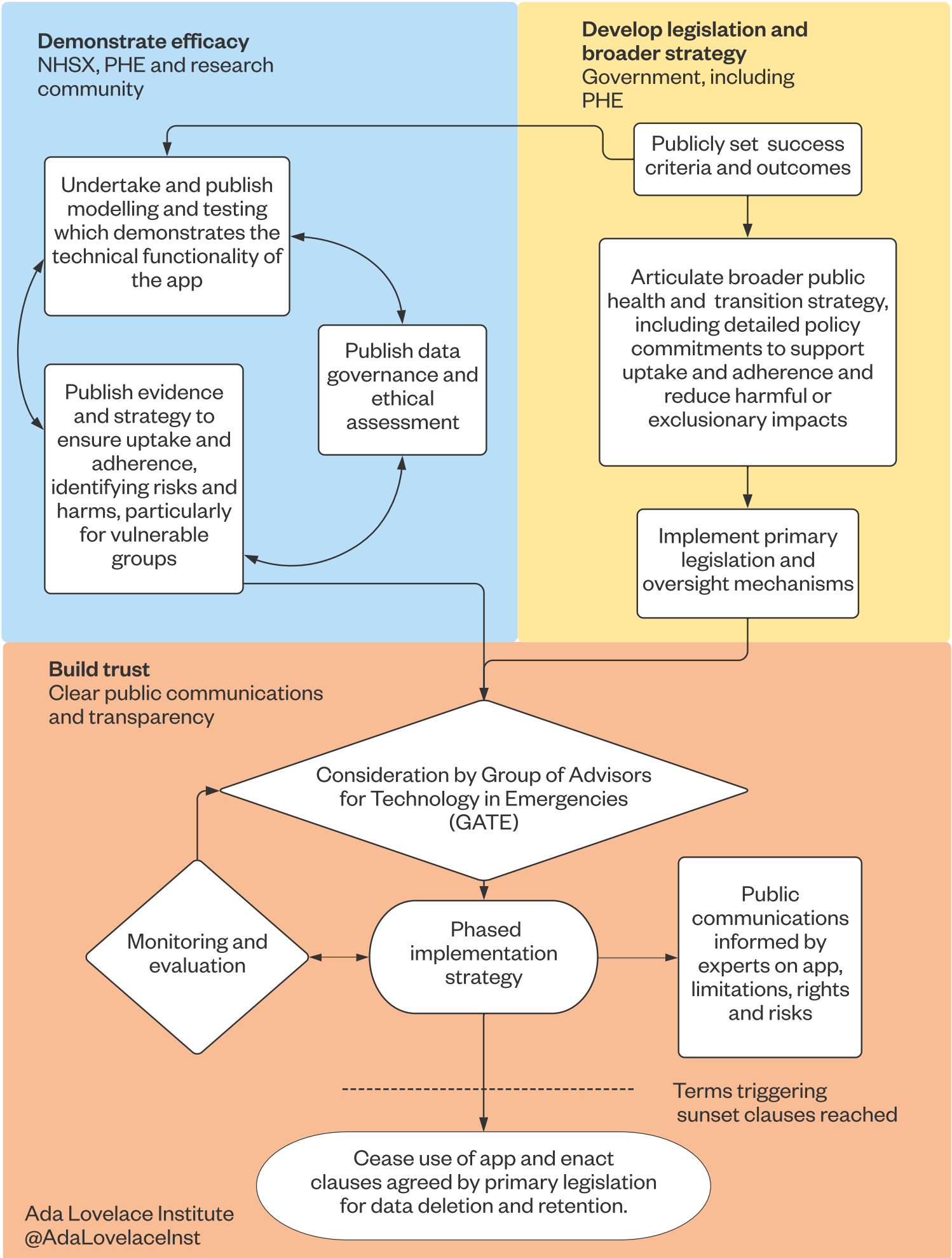
2 See Matthew Gould 24 April 2020 NHSX Blog. 'Digital contact tracing: protecting the NHS and saving lives' <https://www.nhs.uk/blogs/digital-contact-tracing-protecting-nhs-and-saving-lives/>

3 Kelion, L. (2020). Coronavirus: NHS contact-tracing app is tested at RAF base. BBC [Online] <https://www.bbc.co.uk/news/technology-52381103>

4 BBC Health (2020). Contact tracing app to be trialled on Isle of Wight. BBC [Online] <https://www.bbc.co.uk/news/health-52521526>

5 Hinch, R. et. al., Effective configurations of a digital contact tracing app: A report to NHSX, 14 April 2020 (version 2).

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Route to NHSX Contact Tracing App Deployment

In spite of the challenges outlined above, Government has been building momentum⁶ around launch and national roll out of the app, which they expect to commence by mid-May.⁷ It is vital that NHSX has the space to undertake the testing and research needed to ensure that any roll out will be technically effective and safe to use. For the app to be trusted and useful in managing transition from lockdown and suppressing the virus, Government must now be building the policy and legislative frameworks and accountability structures that need to be in place before launch. We outline some key milestones that have to be met below.

The Government, with support of Parliament, must build the legislative and policy structures to underpin and surround the app, including:

1. Publicly set success criteria and outcomes

Articulate clear, measurable goals for the contact tracing app's deployment that communicate precisely how it will aid the UK's COVID-19 response, and what the indicators of success are.

2. Articulate broader strategy and policy framework

There must be extensive, detailed policy commitments developed to support individuals' adherence to the app's recommendations (to test or isolate) which will need to include:

- Sufficient capacity for diagnostic testing and manual contact tracing, in particular for those segments of the population who are digitally excluded because of their age, disability, vulnerability, device ownership or digital literacy.

- Policy commitments and public guidance to support adherence, for example job protections and income support for those (repeatedly) instructed to self-isolate
 - Cooperation in regions where there is regular cross-border travel into and from jurisdictions that are developing their own digital contact tracing apps (for example, Northern Ireland or Gibraltar), either through joint guidance on which app to use or interoperability of systems.
- 3. Implement primary legislation and oversight mechanisms**

Legal and technical sunset clauses must be built into the design of new powers and technologies. Government must advance primary legislation regulating the processing of data by both public and private sector actors in the use of technology to transition from the crisis. Government must encourage privacy-by-design in technical implementations and must choose privacy-preserving protocols to underscore technical measures. Legislation must:

- Limit scope creep, by setting out precise purposes for data processing, who has access to data and for what purpose.
- Require the deletion of data after specified periods, with exemptions from deletion of anonymised data for use in research
- Prevent discrimination by prohibiting the use of data:
 - a. as evidence in the adjudication or imposition of civil or criminal sanctions
 - b. in proceedings or adjudications relating to visa or immigration status or rights
 - c. in family or child proceedings
 - d. in any other types of legal proceedings
 - e. to support any actions for denial of welfare or other public or social benefits
 - f. shared with employers or insurers without the freely given consent of the individual

6 See announcement by Matt Hancock on 12 April 2020. <https://www.bbc.co.uk/news/technology-52263244>

7 Comments made by Matthew Gould, CEO of NHSX, at the House of Commons Science and Technology Committee oral evidence session on 28 April 2020. <https://committees.parliament.uk/work/91/uk-science-research-and-technology-capability-and-influence-in-global-disease-outbreaks/>

- g. by an employer to terminate or alter the existing conditions of employment or service
 - h. in a way that would be illegal under the Equality Act 2010.
- Prohibit the development of third-party contact tracing apps and uses of contact tracing data.

Similar legislation is being considered in Australia⁸ and Finland⁹.

Government must also ensure the ICO has the appropriate remit and capacity to oversee data use, and to require the performance, publication and approval by the ICO of a Data Protection Impact Assessment (DPIA).

NHSX, PHE and the research community must publicly demonstrate the efficacy of the app, as follows:

1. Undertake and publish evidence to demonstrate the technical functionality of the app
 - Modelling and controlled localised trials of the app must demonstrate that its technical functionality is effective. The Bluetooth technology must be shown to be successful in detecting and alerting users to 'contact' with an appropriate rate of both false negatives and positives.
2. Complete and make public data governance and ethical assessments
 - The Ethics Advisory Board (EAB) appointed to assess and advise on ethical implications of the contact tracing app should make public their composition, attendance, remit and papers. Data Protection Impact Assessments should be published and iterated based on open scrutiny.
 3. Publish evidence and strategy to ensure uptake and adherence
 - There is currently a lack of evidence to suggest there will be sufficient uptake and engagement with the app, and most other countries have failed to surpass 20% uptake where they have voluntarily deployed contact tracing apps.¹⁰
 - There is little evidence to understand likely adherence with the app, nor to anticipate how the use of an app might affect related behaviours (impact on social distancing measures for example), or whether a very low rate could actually be harmful due to misplaced trust.
 - It will be particularly important to demonstrate strategies to mitigate uneven take up which might exacerbate existing inequalities or vulnerabilities.¹¹

8 Bogle, A. (2020). 'Will the Government's coronavirus app COVIDSafe keep your data secure? Here's what the experts say'. ABC News. <https://www.abc.net.au/news/science/2020-04-27/covidsafe-contact-tracing-app-coronavirus-privacy-security/12186044>

9 The Finnish Government have opened consultation on potential legislation and use of contact tracing apps available here: <https://www.lausuntopalvelu.fi/SV/Proposal/Participation?proposallid=a5776155-a4cd-4f77-ba9e-030f1e31bd73&respondentId=00000000-0000-0000-0000-000000000000&proposalLanguage=da4408c3-39e4-4f5a-84db-84481bafc744>

10 Thorneloe, R., Epton, T., Fynn, W., et al. (2020). Scoping review of mobile phone app uptake and engagement to inform digital contact tracing tools for COVID-19. <https://psyarxiv.com/qe9b6>

11 This is particularly urgent in light of the emerging evidence of disadvantaged areas experiencing higher death rates from Covid-19. ONS release 1 May 2020 'Deaths involving COVID-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 17 April 2020' <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19bylocalareasanddeprivation/deathsoccurringbetween1marchand17april>

Government must be transparent about the technical measures under consideration in advance of their deployment.

Effective deployment of technology to support the transition from the crisis will be dependent on **widespread public trust and confidence** in the interventions listed above, in particular:

1. Given the novelty and urgency of the situation, it is critical that a contact tracing app is not deployed until can be scrutinised and debated by a diverse range of experts.
 - The Ada Lovelace Institute has called for the creation of a Group of Advisors on Technology in Emergencies (GATE) to complement SAGE, to examine the evidence base for the app's use, assessed likely impact and recommended deployment.¹² Open debate and scrutiny must be encouraged, to increase trust and raise public awareness of the complexity of the issues.
2. There must be a phased implementation plan for the deployment of the contact tracing app, where consistent monitoring and evaluation informs successive phases of deployment, according to the articulated aims and legislative framework. GATE must be given the opportunity to evaluate and advise on successive phases.

3. Public communication must be informed by experts¹³ to ensure users understand the app's purpose, the quality of its evidence, risks and limitations, users' rights as well as how to use the app.

Once the terms set out in legislation are triggered, sunset clauses must be enacted to cease operation of the app and enact data deletion and retention policies.

Without this, the public cannot be confident that the ethical considerations and data governance of the app are robust, trust in the app will be undermined, and uptake and engagement with the app decreased.¹⁴

¹² Our rapid review (ibid)

¹³ See for example the Winton Centre for Risk and Evidence Communication, Cambridge University chaired by Professor Sir David Spiegelhalter <https://wintoncentre.maths.cam.ac.uk/>

¹⁴ By way of comparison, Singapore has seen adoption rates of just below 20% across the whole population (<https://qz.com/1842200/singapore-wants-everyone-to-download-covid-19-contact-tracing-apps/>), Australia has so far seen about an 8% adoption rate of its CovidSafe app across the whole population (<https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/thank-you-australia-more-than-2-million-downloads-and-registrations-of-covidsafe-app>), and Norway has seen around 20% adoption among over 16s and very few new users after the first week of deployment (<https://www.fhi.no/nyheter/2020/1-av-5-deler-data-fra-smittestopp-appen-med-folkehelseintittet/>)