Witness Name: Simon Thompson Statement No: 1 Exhibits: [ST7/01 – ST7/30] Dated: 23 April 2025

UK COVID-19 INQUIRY

WITNESS STATEMENT OF SIMON THOMPSON

I, SIMON THOMPSON, will say as follows:

Introduction

- I make this witness statement to the UK Covid-19 inquiry ('The Inquiry') in response to the Request for Evidence dated 16 January 2025 and marked with the reference M7/NHSX/02.
- 1.2 Before I begin, I would like to offer my sincere condolences to those who lost loved ones, suffered illness or experienced hardship during the Covid-19 pandemic. Although my remarks reflect my personal experience, they are born out of a monumental team effort in response to the pandemic. It is important we learn from the past, so we can be better prepared for the future.
- 1.3 I was appointed as the Managing Director of the NHS Covid-19 App (an NHS Test and Trace team leader) from 3 June 2020 until 19 October 2020. Prior to my appointment, I was the Chief Product Officer of Ocado Solutions, the global technology division of Ocado PLC. My background is in business transformation, with technology development and deployment as a core capability. I have worked for wellknown technology companies, such as lastminute.com and Apple. In one of my previous roles, I led the development and launch of WM Morrisons supermarket's online food offering.
- 1.4 Two Covid-19 Apps were developed. I was responsible for developing and deploying the second NHS Covid-19 App ('App #2'), using the Google/Apple API ('GA-API') which took a privacy protecting approach to data collection (de-centralised and

anonymous) designed to protect the end user's privacy. App #2 was launched to the public in England and Wales on 24 September 2020.

- 1.5 The core of my statement will focus on my time developing App #2 during the five months that I was in this role. Whilst I was not involved in the development and launch of the first NHS Covid-19 App ('App #1'), I will reference the key learnings from the development of App #1 that we used to inform our thinking when developing and launching App #2.
- 1.6 I was not involved in developing key Test, Trace, and Isolate policies. My focus within my role was the appropriate implementation of the policies relating to the NHS Covid-19 App.
- 1.7 There was a clear purpose set for the NHS Test and Trace Program "*Our purpose* is to break chains of COVID-19 transmission to enable people to return towards and maintain a more normal way of life" [ST7/01 INQ000575876, slide 3].
- 1.8 The NHS Test and Trace Business plan, published on 30 July 2020, defined ten capabilities that were seen as critical to realising the purpose, of which the App was identified as number six **[ST7/02 INQ000517367].** The App's role was to be one of the tools that would '*enable individuals, businesses and public services to understand and manage risk*'.
- 1.9 Page 4 of my handover slides [ST7/01 INQ000575876], which were completed prior to me leaving this role, set out precisely what the aim of the App was intended to be. It was effectively Test and Trace 'in the public's pocket', achieved by the following three core elements:
 - a. **Speed** the App would encourage and allowing users to self-isolate within minutes of confirmation of contact with a confirmed case;
 - b. Precision through measuring distance and time; and
 - c. Reach the App would remember who a user had come into contact with.

1.10 This briefing document produced by the Department of Health and Social Care ('DHSC') [ST7/03 INQ000575875] sets out the overall strategy and high level delivery plan behind the App, at the time of my appointment in June 2020.

Overview of key timelines

- 2.1 A high-level overview of the key timelines for the development of App #1 and App #2 is set out below:
 - a. Development of App #1 was underway in March 2020.
 - b. App #1 took a centralised data approach and was tested on the Isle of Wight in May 2020. The evaluation of the Isle of Wight Pilot sets out the results in further detail here [ST7/04 INQ000528837], and the evaluation results and limitations noted within that report were valuable in considering how we could shape App #2. The benefits and risks of the centralised approach being adopted at the time are described in some detail in this submission: see [ST7/05 INQ000575874].
 - c. On 10 April 2020, Google and Apple announced their intent to develop a contact tracing API named GA-API. An explanation of the approach taken by Google/ Apple can be found here in this article [ST7/06 INQ000575878]. In summary, Apple and Google launched an application programming interface ('API') and operating system-level technology to assist in enabling contact tracing. In May 2020 both companies released APIs that enabled interoperability between Android and iOS devices using Apps from public health authorities, which were available for users to download via their respective app stores.
 - d. In 15 June 2020, alongside Matthew Gould, CEO of NHSX, a submission titled 'NHS COVID 19 APP Future Direction' was sent to Dido Harding & the Secretary of State. It recommended that efforts were moved to the Google/Apple API and that we work with them to improve the API's ability to determine distance and duration. We also recommended to stop development of the centralised App #1 product [ST7/07 INQ000566175].

- e. On 18 June 2020, the Secretary of State for Health and Social Care decided to switch the approach to GA-API following full discussions with advisers in NHSX, NHSTT, and others. App #2 took a de-centralised data approach using the GA-API. It was developed with many additional features, other than contact tracing, to encourage mass adoption and daily use.
- f. Under a centralised data model, the anonymised data gathered is uploaded to a remote server where matches are made with other contacts, should a person start to develop Covid-19 symptoms. By contrast, the decentralised model gives users more control over their information by keeping it on the phone. It is there that matches are made with people who may have contracted the virus. To protect user privacy, this is the model promoted by Google, Apple and an international consortium. A summary of the two approaches is described in further detail, in this article [ST7/08 INQ000575879].
- g. On 1 July 2020, the NHS COVID-19 App became part of the Department of Health and Social Care's NHS Test and Trace Programme.
- h. On 5 August 2020, I received an email from Jonathon Van Tam in relation to App #1. Members of the original team reached out to him claiming that the technical issues experienced had now been resolved. I forwarded the email to Dido Harding for consideration but did not otherwise engage with it. My team and I continued to focus on delivering the agreed direction [ST7/09 INQ000595298].
- i. On 24 September 2020, App #2 was launched to the public in England and Wales. Due to Government approval processes, there was an approximately two-week gap from App readiness to launch. DHSC led on public communications around the App.
- j. On 13 October 2020, the key statistics in respect of downloads were as follows: App #2 had been downloaded by 17.5 million people, 36% of adult population, and 46% of eligible adult smartphone users downloaded and used App #2 [ST7/01 INQ000575876, see slide 7].

k. A paper, published in February 2023, examining the epidemiological impact of App #2 in England and Wales throughout its first year, estimated that App #2's contact tracing function alone averted about 1 million cases (sensitivity analysis 450,000–1,400,000) during its first year, corresponding to 44,000 hospital cases (SA 20,000–60,000) and 9,600 deaths (SA 4600–13,000) [ST7/10 INQ000509696].

Learning from the App #1 approach

- 3.1 Several key learnings from the development of App #1 allowed us to accelerate the development of App #2, the evaluation of the Isle of Wight Pilot highlighted that [ST7/11 INQ000563762]:
 - a. 84% strongly supported the rollout of the App across the rest of the UK;
 - b. 81% of those with a smartphone said they would report their symptoms to the App; and
 - c. there were significant misconceptions about the kind of data the App would collect including 70% wrongly believing location data was collected.
- 3.2 The evaluation indicated that an App rollout was well supported, and people would use it to report symptoms. However, the Information Commissioners Office (ICO) had concerns over privacy that needed resolving.
- 3.3 The ICO sent a letter to Matthew Gould on 5 June 2020 which I also reviewed. It detailed their concerns that the risks related to individual's personal data used in App #1 had not been adequately addressed. Many of the ICO's concerns and best practice recommendations were set out in a guideline document on data protection expectations on App development [ST7/12 INQ000571265].
- 3.4 An additional concern was the inability of the app to support the exercise of certain user rights such as Subject Access Requests¹ had not been fully addressed. This was not an issue with the de-centralised model using the GA-API since personal data was not captured and therefore not held in a central database.

¹ A subject access request allows individuals to request access to their personal data held by an organisation. Under data protection law users of the app have a right to access their own personal data.

- 3.5 The importance of the data privacy of users was a key learning from App #1. A Data Protection Impact Assessment ('**DPIA**') was completed in respect of App #2 at the point of launch **[ST7/13 INQ000563772].** This particular DPIA was updated to reflect on new functionality, for example clarity of language used and in response to user feedback. document explains how the App worked, and how it used data.
- 3.6 A privacy notice and data protection assessment were made available to the public. It can be found here **[ST7/14 INQ000575891].**
- 3.7 Content was also produced, via a YouTube video, to explain our approach to privacy to the public. This can be found here https://youtu.be/ICH yEHa4s?si=7JGRCwO18oBC9d h
- 3.8 Experience from App #1 showed that to achieve mass adoption, users had to trust the privacy protecting features of the App. It was also very important that the ICO supported our approach. Ultimately, the ICO did support the approach going forward and they recently published a retrospective on how they successfully supported the development of the NHS-COVID 19 App from design to decommission [ST7/15 INQ000595301].

Improving Bluetooth accuracy

- 4.1 To understand how Bluetooth contact tracing operated, the following was communicated to the public on www.gov.uk at the time of launch:
 - a. the NHS COVID-19 App works by using Bluetooth on your phone as you move around;
 - b. Bluetooth is a way for phones or computers to connect to each other without wires;
 - c. your phone will recognise other people's phones that use the App when you are close to them;
 - d. your phones will send a small piece of information as a code to each other;

- e. This will stay on your phone for several days. It will then be deleted;
- f. using the App and sharing your data with us helps keep everyone healthy;
- g. If you or another person using the App catches coronavirus, the App can use the codes that your phones shared to let you both know;
- h. you can tell the App if you have had the vaccine or are under 18;
- i. you will then be told what to do to keep yourself and other people safe; and
- j. the App can alert other people without telling them who you are.
- 4.2 We built a dedicated function within the NHS Covid-19 App organisation run by a team called 'Fix It,' who were dedicated to optimising the distance algorithm and data usage.
- 4.3 Professor Mark Briers from the Turing Institute was dedicated to working on distance algorithm optimisation, working with both Apple/Google, other countries and experts around the World. We also shared learnings on a weekly global gathering that was hosted by MIT.
- 4.4 In simple terms, the GA/API worked by combining time (how long) and distance (how close) people were to each other, and then delivering a 'close', 'medium', and 'far' result based on scientific recommendations approximately within 2 metres for 15 minutes or more.
- 4.5 Tuning the algorithm was how Professor Briers and the team improved the accuracy of the 'close' result; this is what was used to trigger an isolation / 'take a test' notification.
- 4.6 The approach taken to make sure there was an appropriate approach to assess risk, can be found here **[ST7/16 INQ000575880].**
- 4.7 The explanation of how Bayesian statistics were used to further improve the NHS contact tracing app's performance can be found here [ST7/17 INQ000575881].

- 4.8 Area under the Curve ('AUC') is a useful measure for comparing the performance of two different models, if the dataset is roughly balanced. With these algorithms deployed, we were able to obtain an AUC of around 0.85 which is deemed to be "excellent". To my knowledge we were the first App to use data in this way, and our source code for the algorithms were available, should anybody wish to offer suggestions, or should other countries want to use (and build on) the work that was done.
- 4.9 Bluetooth technology has the advantage of mass adoption, but it does have its limitations; for example, it was not designed with the primary purpose of measuring distance.
- 4.10 I wish to make clear to the Inquiry that this section, setting out greater detail about the use of Bluetooth and the functionality of App #2, has been developed with the assistance of Professor Mark Briers, and therefore provides a high-level summary only.

Mass adoption of the App

- 5.1 We had a simple design principal. For the App to be helpful as a contact tracing tool, we needed to ensure that if ten people walked past each other in the street, a good proportion would need to be using the App. As such, mass adoption of the App by the public was vital to its success.
- 5.2 When we studied App adoption around the World, contact tracing adoption was between 3% (Italy) and 24% (Australia). We set ourselves a target of 40% of smartphone user adoption, a significantly higher bar than achieved elsewhere [ST7/18 INQ000575877].
- 5.3 To achieve this target, we needed mass adoption, which could only be achieved by developing a range of user-benefiting features in addition to contact tracing.
- 5.4 In addition to the contact tracing functionality, we explained to the public on <u>www.gov.uk</u> at the time of launch, how the App could help them:
 - a. find out if there are lots of people catching coronavirus in their area;

- b. check if you might have coronavirus, if you feel unwell;
- c. order a test;
- d. find out how long you have left to stay indoors if you have been asked to stay away from other people;
- e. if you are asked to stay away from people, you may be able to get paid for staying indoors. The app will take you to a website to see if you can; and
- f. check in to places so you can receive advice.
- 5.5 In more detail, the App had a range of additional, enhanced features that were designed to help reduce personal and public risk from COVID-19 and encourage daily use (see [ST7/18 INQ000575877]), and some examples are listed below:
 - a. Alert: Made the users aware of the level of coronavirus risk in their postcode district. If the risk in their postal area had changed, a user would receive a notification to check the App. On the homepage of the App, the area risk level, such as 'HIGH', would be displayed. This information was produced by the Joint Biosecurity Centre ('JBC') and pushed to the App.
 - b. Check-in: enabling users to check in at a venue and alerting them if they have recently visited somewhere they may have come into contact with someone who later tests positive for COVID-19. To explain this a little further, venues would register online and receive a QR code that would be displayed on entry to their premises. Visitors would then scan the QR code on their phone to check in and out of a venue, the location would then be stored on the device. If a venue they visited was identified as being at risk during the time period of their visit, they would be alerted. This functionality was developed and used in New Zealand and was a major contributor in driving adoption of the App.
 - c. **Symptoms:** allowing users to check for coronavirus symptoms and see if they need to order a free test. This meant that a user enters their symptoms into the App. The App would then advise on next steps, including getting a test and/or self-isolating. The post district data, with no link to the user,

entered on registration was then sent to JBC to give early insight into potential developing outbreaks.

- d. Test: helping users book a free test through the App and receiving their results to know whether they had tested positive for Covid-19. To achieve this, a user would enter their symptoms and if appropriate, would then be provided with a recommendation to order a test. This would link directly to the NHS website and a unique and anonymous token was then generated. If the user desired, the results were matched back to the user's token with the test result presented in the App.
- e. **Isolate:** if a user was told to self-isolate, a timer feature would help count down that period and provide access to relevant advice. GA-API's unique anonymised keys were generated and shared between contacts via Bluetooth. A list of keys of confirmed cases was uploaded and if there was a match, the user was then alerted. Based on medical advice and their specific circumstance, the user would then be recommended to test and/or isolate.
- f. **Trace:** contact tracing using the GA-API. Please see section 4, Improving Bluetooth Accuracy for more information.
- g. **Exposure:** A real-time view of exposure risk was planned but not developed due to the technological complexity and aggressive launch timeline.
- 5.6 The following content was also produced to explain to the public, the key features of App #2 and was available from launch: <u>https://www.youtube.com/shorts/2HzPuwVOeRE.</u> I am unaware if the effectiveness of this public messaging was monitored and tracked during the pandemic as such monitoring would have been overseen by the communications team at DHSC.
- 5.7 National media used the content to amplify the message for example this video: <u>https://www.dailymail.co.uk/video/nhs/video-2229204/Video-new-NHS-Test-Trace-app-demonstration-video.html</u>, in order to drive uptake.
- 5.8 By using the initial registration of a user's postcode and the App test data, geographical COVID outbursts could be detected.

- 5.9 The check-in capability was developed by a company based in New Zealand. We replicated their successful deployment for the New Zealand government.
- 5.10 App #2 was developed by a technology team from Zuhlke, who were appointed before I arrived.

Ensuring accessibility of the app

- 6.1 The need to ensure that the App was accessible to all was at the forefront of my mind and to everyone in my team. This was crucial to achieving our ultimate aim of mass adoption. Our approach to accessibility and testing was published [ST7/19 INQ000575882].
- 6.2 We built a dedicated function within the Covid-19 App organisation called 'Approve It'. This team were accountable for information governance, ethics, equality, accessibility, and clinical approvals. They were the final judge of whether any App feature could be released. We also engaged the services of a customer experience professional from partner firm Zuhlke to lead on usability testing and research in order to ensure the App was accessible to those with differing levels of digital literacy.
- 6.3 They ensured that the App was available to:
 - a. everyone over the age of 16;
 - b. appropriate for users with a reading age of 8-9;
 - c. available in 14 languages; and
 - d. people with visual difficulties, who could access the App by using the prebuilt in accessibility settings on their smart devices.
- 6.4 The App was compliant with the Web Content Accessibility Guidelines standard ('WCAG 2.1'), which are set out here [ST7/20 INQ000575883]. An AA level was achieved. In accordance with these guidelines, AA was the mid-range conformance level that represents strong accessibility. It satisfies all Level A and Level AA criteria.

- 6.5 Although App #1 was tested with the public with pilots undertaken in May 2020, we felt testing in a more diverse population than the Isle of Wight would be essential to ensure mass adoption. Therefore, my team and I worked with the Mayor of Newham and the CEO of Newham Council to design and undertake this test with us; I will be forever grateful for their unwavering support during a busy time for everyone.
- 6.6 Newham is one of the most diverse boroughs in the UK, with seven out of ten residents from ethnic communities, a population that speaks 220 languages, and a relatively young population. Details of the trial can be found here [ST7/21 INQ000575884; ST7/22 INQ000575885].
- 6.7 We learned that the following were key barriers which prevented individuals from downloading the App:
 - a. a lack of awareness;
 - b. lack of belief or awareness in the privacy protections; and
 - c. a lack of trust in Government.
- 6.8 Further, in ensuring that accessibility for all could be achieved, App updates continued to be implemented to satisfy this. At page 16 of these slide decks, it noted that based on user feedback, two new languages, Polish and Somali, were added after the initial launch as part of v3.7 on 12 October 2020 **[ST7/01 INQ000575876].**
- 6.9 In addition to the above, we conducted work with the Royal National Institute of Blind People, an example of this is set out in this short video used on social media: https://www.facebook.com/watch/?extid=SEO----&v=1515113642010122
- 6.10 It was also important to ensure that the App was accessible to those who use Sign Language. Demonstration videos were again used to ensure that these groups were reached. These were placed on social media, here is an example: https://www.facebook.com/watch/?v=770672563764737. Further, an advertising campaign was launched and targeted for those that use sign language, as set out in this YouTube video: https://www.youtube.com/watch?v=zqivFwl7cWE.

- 6.11 A draft Report on the work of the Ethics Advisory Group to NHSx on the COVID-19 Contact Tracing App was completed on 25 August 2020 [ST7/23 INQ000474990]. The Ethics Advisory Board ('EAB') was established to provide independent scrutiny and constructive challenge of the NHS coronavirus (COVID-19) App. The EAB first met on 2 April 2020 and held weekly meetings until 18 June 2020.
- 6.12 This draft report addressed key ethical issues. The EAB adopted a "Trust Matrix" as a framework to explore the ethical questions and trade-offs posed by a contact tracing app. This was based on policy work undertaken by the Centre for Data Ethics and Innovation ('**CDEI**') which explored how the public sector should address citizen trust in relation to how data about people is used and shared. The CDEI shared it with the EAB which worked to revise it in order to make the framework specific to the issues raised by the App. A set of six guiding principles were agreed (these are set out at page 7 of the report). These were:
 - a. **Value**: There must be good reason to believe that the app will provide sufficient net-value back to the citizen or society.
 - b. **Impact**: There must be good reason to believe the App will be an effective tool in controlling the outbreak of COVID-19.
 - c. **Security and Privacy**: The data collected should be minimised and protected as much as possible.
 - d. Accountability: There must be a reliable and understandable decisionmaking process in place to manage the app - with clear democratic accountability.
 - e. **Transparency**: Details on what data is gathered and why, as well as the app's code and underlying algorithms must be available publicly to enable scrutiny.
 - f. **Control**: Downloading the app should be voluntary, people should be able to delete the app and their data at any point, there should be opt-ins for further data sharing and use.

- 6.13 Shortly after commencing this role, I attended a meeting with the EAB on 18 June 2020. Page 18 of the report notes that this was an introduction from me, and a discussion of policy issues relating to the App and next steps for the EAB. I have, at the time of writing, been unable to locate my specific presentation/notes prepared for this. However, at page 65 of the report, it provides a summary of this meeting.
- 6.14 We conducted regular proactive outreach with the following organisations to ensure that they were aware of our plan, as well as an opportunity to listen to any concerns that they may have so that we could adjust as necessary – I should note that this is not an exhaustive list:
 - a. National Data Guardian Engaged with the late Dame Fiona Caldicott
 - b. Children's Commissioner Considerations regarding children
 - c. Information Commissioner's Office (ICO) Data Protection Regulator
 - d. NHS Digital Alignment on other NHS Services and Systems
 - e. Government Digital Service For Service Assessment and Accessibility Standards
 - f. National Cyber Security Centre For Cyber Security Protection & Assessments
 - g. Medicines and Healthcare products Regulatory Agency
 - h. DHSC Data Protection Officer as the data owner
 - i. Public Health England Paul Cosford
 - j. Deputy Chief Medical Officer- Jonathan Van-Tam
 - k. Chief Medical Officer Professor Chris Whitty
 - I. Governments in Wales, Northern Ireland, Gibraltar, Jersey, Scotland, Ireland, India, New Zealand, Germany

- m. World Health Organisation
- n. National Police Chiefs Council
- o. Medical Unions
- p. British Medical Association (BMA)
- q. Royal College of Nursing (RCN)
- r. Department of Business & Trade
- 6.15 From the beginning, App #2 was developed for use by England, Scotland, and Wales; Northern Ireland launched its contract tracing app in partnership with Southern Ireland in July 2020. They also used the GA-API model.
- 6.16 There had been a plan to first launch App #2 in Scotland to align with their new school year starting in August 2020, allowing us to assess the App's performance prior to a larger scale launch. During the development phase, we were disappointed to learn that Scotland had decided to develop their own App. Although it remains unclear to me why this decision was made, I accepted their decision and continued with the important work we were doing to build and launch the App
- 6.17 Although the preparations for App interoperability were conducted under my leadership, I am not aware of how the proposals were implemented as this was delegated to the technical teams and occurred after I left my role.
- 6.18 The National Cyber Security Centre raised concerns about privacy/data sharing outside of the UK that required the segmentation of country data. The original plan was to provide connectivity with England/Wales and Scotland in mid-October 2020, with Northern Ireland following in November 2020. Slide 17 of my handover document contains the plans for interoperability with the devolved administrations and Ireland, which involved the use of federated and backend servers for the purposes of data sharing [ST7/01 INQ000575876].

- 6.19 Some further issues were noted following the launch of App #2. For example, those with iPhones earlier than the 6S model, which went on sale in 2015, could not install the App on their phones. This limitation was imposed by Apple and Google rather than the App designers [ST7/24 INQ000575888]. Apple and Google designed the toolkit on which this and many other contact-tracing apps were based and determined that older phones would not be suitable for running the technology behind the App.
- 6.20 We worked with the telecommunication companies, to ensure that App usage was free of charge. This removed any concern of increase in data cost of using the App. The App had been 'zero-rated' to ensure that individuals could use the main in-App features without using up any of their data allowance. Here is an example from Vodafone: **[ST7/25 INQ000575887].**
- 6.21 The Government Digital Services ('GDS') conducted several independent reviews on the App development to ensure it met Government set standards. The final assessment under my leadership was an 'amber/green' rating. An overview of the report is on slide 30 of my handover slides [ST7/01 INQ000575876]. My legal team and I have conducted extensive searches to locate the reviews produced by GDS with the Inquiry, including internal searches of my mailbox and UKHSA's wider base of documents. My legal team has also contacted DSIT, under whom GDS sits, in order to search for these reports but have been unable to obtain copies of them.
- 6.22 We built a dedicated function within the Covid-19 App organisation called 'Adopt it'; the team responsible for this, were targeted to communicate the App's benefits to drive mass adoption. Their specific target was to deliver 40% adult adoption of the App.
- 6.23 The advertising campaign called "Protect the Ones You Love" was also produced by DHSC to assist in driving mass awareness of the App. This was a major marketing campaign launched by DHSC to maximise downloads and usage of App #2 from launch. This campaign was uploaded to the NHS Covid-19 App channel on 26 September 2020. This submission [ST7/26 INQ000575872] provides an understanding as to the drivers behind this campaign and notes that the campaign strategy had been informed by qualitative and quantitative research from England and Wales, learning from international launches as well as dedicated domestic trials. The three communication tasks behind the launch campaign were to: 'mobilise, enlighten and guide'. This presentation sets out the detailed aims of the launch

campaign and the three phases of this campaign, namely: pre-launch, launch and sustain [ST7/27 INQ000575873].

6.24 By midday on 28 September 2020, so within four days of launch, the App had been downloaded 12.4 million times. By 13 October, the App had been downloaded 17.47 million times, achieving a coverage of 36.26% of the Adult population. See page 7 of my handover document [ST7/01 INQ000575876] which sets out the headline figures of App #2 since national launch. By 13 October 2020, 671,570 QR posters had been created across 17 different industry types.

Improving the App

- 7.1 We built a dedicated function within the Covid-19 App organisation called 'Improve it'; they were tasked with gathering daily user feedback from numerous sources including app store direct feedback. From memory, this feedback was presented every day as part of the morning incident management forum and used to update the app roadmap with areas for improvement.
- 7.2 The feedback we received noted that App #2 was seen as easy to use, satisfied privacy concerns, was good-looking, feature-rich, and helpful in keeping friends and family safe [ST7/01 INQ000575876, slide 11]. From memory, approximately 80% of smartphones in use were compatible with App #2.
- 7.3 Users requested more clarity on what to do when notified of possible exposure to someone who had tested positive for Covid-19 and greater compatibility with older devices. Concerns were also expressed that users could not 'check out' of a venue and would be asked to isolate in error if they were not actually in the venue at the same time as a positive case (initially, the App would only automatically check users out of a venue at midnight). In response, we removed all references to "checking out" and "midnight" from the App and only displayed user check in times in the history feature. We also improved the FAQ section which explained how the system worked in greater detail, that it was based on check in time and not check out time, and was for the purposes of warning and informing, rather than isolating.
- 7.4 Following feedback from the Polish Embassy, the App was made available to users in Polish to increase language accessibility. We also changed translation vendors following reports of low-quality Polish translations on the App.

- 7.5 To protect user privacy, at the point of launch, we only captured the first four digits of the postcode. However, initial feedback suggested this to be inadequate since some postcodes spanned England and Wales and could have a different policy application in terms of isolation. An App update was applied, allowing the user to select the name of their council and postal area. This change did not impact the user's privacy.
- 7.6 Other notable requests from users following feedback included clarity on system messages and the ability to manually reset the isolation countdown without either entering a test result, the isolation period ending or deleting all data. We did not accommodate requests to allow users to manually reset the countdown feature due to concerns people would use it to leave isolation early, and the risk that there may be some unintended consequences given that it functioned as a medical device.
- 7.7 From the launch date until 12 October 2020, one App was launched, and seven App updates were launched. By the end of my time in this role the App was on v3.7, but the core features remained unchanged. Additionally, page 9 of the slide decks of the handover document [ST7/01 INQ000575876] detail different versions of the App from 12 October 2020 November 2020. My team and I were on a weekly release schedule to allow rapid improvement of the App, with testing in week 1, development in week 2 and launch in week 3. Version 3.10, released on 2 November 2020, this was in response to user feedback, and in particular in respect of interoperability. The problem to solve in respect of interoperability was the need to pass contact keys across borders see page 17 of the handover document slide decks.
- 7.8 Within the first 14 days of launch, we received, categorised, and prioritised approximately 32,000 items of feedback from over 17 million users.
- 7.9 The App received a 4.6 out of 5-star rating on the Apple App Store and a 4.3 out of 5-star rating on the Google Play store, see page 10 of the slide decks [ST7/01 INQ000575876].
- 7.10 User feedback was key to the App's success. Until you put a product in the end user's hands, even though you have extensively user tested it, there are always things that do not work as planned. It was therefore important that the App was regularly reviewed and updated to consider any issues raised. As an example, in respect to the Isolate function the problem identified was a request for a manual isolation

countdown re-set. As of October 2020, this could only be re-set by entry of a negative test result, completing isolation or deleting all data. A concern raised in respect of this was that users could misuse symptoms to game the isolation countdown. User research was therefore undertaken in respect of this issue as set out at page 13 of the slide decks **[ST7/01 INQ000575876].**

Organisation structure and working with others

- 8.1 The organisation was built to ensure clear accountabilities of each functional bucket, with clear hand-offs between teams and the ability to iterate at speed.
- 8.2 There were 185 people dedicated to the building and running of the App. These teams were set up within a few weeks of my appointment in this role. The functional groups were:
 - a. "What we Make" product management, roadmap, UX/UI & insight activation;
 - b. "Make it" the development team;
 - c. "Assure it" making sure that all quality and security standards were met;
 - d. "Approve it" Information governance, ethics, equalities, accessibility, legal and clinical adherence;
 - e. "Adopt it" all marketing communications;
 - f. "Improve it" listening to the users' voice, external/internal bodies & data analytics;
 - g. "Fix It" distance algorithm optimisation, data feeds for the JBC;
 - h. "Operate it" ensuring the App was available and operating as expected;
 - i. "Smooth the Flow" policy, partnerships, briefings and collaboration;
 - j. "Execute it" overall program management, release management; and

- k. "Enable it" human resources and finance.
- 8.3 A chart addressing the organisational structure is set out at page 34, slide decks [ST7/01 INQ000575876] which provides further detail.
- 8.4 We operated a daily operational cadence for all functional groups, starting with incident management/user feedback at 8 am daily and ending with a daily 'wash-up' at 5:30 pm.
- 8.5 I recommended placing the App on a BAU (business as usual) footing upon leaving the role. This recommendation included a reduction of headcount from 185 at its peak to 60 Civil Servants, with a number of tasks being moved to the core Test & Trace program. This recommendation was designed to reduce the cost of running the App and remove the need for contractors.
- 8.6 My role with the App was never intended to be a long-term one. I initially volunteered my time in June and July 2020 to assist with the national pandemic response, and was then placed on a more formal but short-term 3-month contract in August 2020 to oversee the continuing build and subsequent launch of the App. I handed over my role to Gaby Appleton on 19 October 2020.

<u>Costs</u>

- 9.1 The 2020/21 NHSX fiscal year budget for the App was £50m. A Budget and forecast can be found at page 38 of the handover document **[ST7/01 INQ000575876].**
- 9.2 The cost of developing and running App #2 from July 2020 to October 2020 was £12m.
- 9.3 As I left the role, the forecasted spending for the remainder of the fiscal year (November 2020 to March 2021) was £11m.
- 9.4 The forecasted budget underspend for the fiscal year was £12m.

Results

- 10.1 My team and I set two key performance targets; they were ambitious:
 - a. 40% of adults adopt (download the App). By 3 October 2020, we had achieved 17.475 million downloads, a 36.36% adoption rate.
 - b. 40% of businesses to adopt the posters, which represented 1 million posters created. By 3 October 2020, 671,570 posters were created.
- 10.2 6 million people downloaded the App on the first day of launch, 10 million people within the first three days of launch **[ST7/28 INQ000575892]**.
- 10.3 Though geographically varied, the adoption rate represented a very high proportion of the population compared to other SARS-CoV-2 contact tracing apps in Europe.
- 10.4 The Alan Turing Institute conducted research into the App **[ST7/29 INQ000575889]** which demonstrates that the App had an overall positive effect on reducing the impact of the virus. They estimated that for every 1% increase in App users, the number of infections could be reduced by 0.8% (from modelling) or 2.3% (from statistical analysis). Improvements in the app notification system introduced in late October 2020 translated to increased epidemiological effectiveness of the App, further supporting the evidence for a direct effect of the App.
- 10.5 Data regarding App downloads to Mobile devices between August 2020 February 2022 can be found here [ST7/30 INQ000575890]. The cumulative number of App Downloads as of 23 February 2022 was 30,389,440.
- 10.6 Additionally, specific content was produced to inform the public of the App's impact and how it had assisted in preventing the spread of Covid-19: an example of which can be found on YouTube at <u>https://www.youtube.com/shorts/cyBxrpKIrp8.</u>

Key learnings and final thoughts

- 11.1 Having reflected on my time within this role I feel that the following are the key learnings which I believe should be taken on board for any future pandemics:
 - a. Confidence in privacy is a critical foundation of App adoption.

- b. User-benefitting features in addition to core contact tracing functionality were key to driving adoption, with the check-in feature a key factor in rapid adoption.
- c. Although technically challenging, multiple languages and other accessibility considerations must be at the product design's core. This in turn assisted with mass adoption which was a fundamental aim.
- d. I would also add that building technology at this pace and scale is very challenging, what was built was not perfect, but achieved the set goals.
- e. The App was modular by design, allowing it to be used for future responses.In my view, it should be kept in a functional state as part of readiness for a future reality.
- f. Developing one Covid-19 App for all the UK would have been more efficient (in terms of time and cost) and avoided interoperability complications. Although the devolved administrations worked well together, one final decision maker would have been helpful.
- g. Working with influential bodies, although very time-consuming, was a critical element of ensuring the App was appropriate for all. It also empowered these stakeholders to promote App usage to their member base.
- h. National press interest in the App positively built awareness, although we must all be mindful of unwarranted criticism that might have impacted adoption and usage.
- i. Since the app was made, technology has now significantly moved on as we enter the era of Artificial Intelligence. Having the talent and the know-how in place as part of a future response, to embrace the advantages they can bring, is a challenge that the public (and private sector) need to face.
- j. It is very important that the next time a response like this is required, that people in industry who can help, feel it is safe to do so. Individuals will

generally consider the trade-off between helping the public and personal reputational risk, so they need to feel that this trade-off is worth it.

- 11.2 Being involved in the Covid-19 response was a uniquely challenging experience. It was by far the most important and at times, most exceptionally demanding role of my career. I doubt I will ever do more important work.
- 11.3 I found the civil servants that I worked with were both talented and committed to ensuring the success of App #2. The team we built came from both the public and private sectors, all of whom offered different but valuable skills. They worked together without missing a step.
- 11.4 The importance of a successful outcome was at the forefront of everyone's mind on the team. They worked tirelessly every day to develop an App that would help keep people safe.
- 11.5 I would like to take this opportunity to thank everyone involved in the development of App #1 or App #2, whether directly or indirectly. We did not get everything right, owing to the sheer scale of the task at hand and the need to create it at speed, but I believe we got the key things right.
- 11.6 Everyone involved played a key part in preventing 9,600 deaths. I wish to extend my sincerest thanks to them all.

STATEMENT OF TRUTH

I believe that the facts stated in this witness statement are true. I understand that proceedings may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief of its truth.



Dated: 23 April 2025