TRACKING APPS IN THE EU

LESSONS FOR FUTURE USE OF TECHNOLOGY IN COMBATING SOCIAL CHALLENGES

THE SPANISH CASE: RADAR COVID APPLICATION

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Tracking Apps in the EU: Lessons for Future Use of Technology in Combating Social Challenges. The Spanish Case: Radar COVID Application

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INTRODUCTION

In order to analyze the efficiency and governance in the implementation of the Spanish contact tracing app Radar COVID, it is important to be familiar with the competent institutional framework. The Spanish case is peculiar, as health competences are transferred to the seventeen autonomous communities and two autonomous cities it is divided into. This circumstance, together with the lack of coordination between these bodies in decision-making processes (despite the existence of specific bodies to coordinate and cooperate between these administrations), has led to a series of delays and affected the efficiency of the proposed system, as will be analyzed in the different sections of this document. Significant divergences have been detected in critical elements such as the criteria for providing the code to enter the app, which makes it difficult to carry out general awareness campaigns to facilitate citizens' request for the necessary codes.

Regarding transparency, we found transparency deficiencies in the different phases that led to the contracting process for the development of the Radar COVID app. For example, by using the urgency procedure, neither the specifications and justification report, nor the economic offer were provided.

Several requests for information regarding the contract were made before the amounts and anonymized documents were provided, revealing an initial cost of €273,171.50 for development of the app. Additionally, a contract was formalized before the end of 2020 for 1.4 million euros for the maintenance and upkeep of this app for two years.

Even though the website created to inform citizens of the statistics relating to the Radar Covid app[1] provides a series of information, there are still some blank sections whose content is necessary to analyze the efficiency of these types of applications. This information was compiled through a series of right to access information requests, as well as information obtained gradually in collaboration with various media. Thus, a combination of strategic litigation in the strict sense and collaboration with the media has been used to put pressure on the administrations to provide the unpublished information on the corresponding platforms.

With respect to the model used, Spain opted for a decentralized and non-mandatory model. Using Bluetooth Low Energy (BLE), mobile terminals store a series of ephemeral identifiers. In positive COVID cases, a code is provided which, once entered, allows the uploading of the identifiers into the server. This makes it possible to track the contacts exposed while guaranteeing the privacy of the users. In this way, the impact on rights and associated risks —as well as the possible bias— is less than if its use was mandatory.

[1] Available on the app statistics website at https://radarcovid.gob.es/.

DEVELOPMENT

Regardless of the development of other apps —such as those for self-diagnosis or mask usage time— in the case of contact tracing, Spain opted for the development of a new application using the decentralized GPT-3 system. However, it did not use the codebase already developed by other countries. This decision led to an unnecessary lengthening of the period needed before its introduction to the market, which was further delayed by the implementation of a pilot program to test it in June 2020 on the island of La Gomera in the Canary Islands.

Apple and Google allow only one single integration of their API per country, subject to authorization by the competent health authorities. In the case of Spain, this authorization is granted by the Ministry of Health for the implementation of Radar COVID, thus becoming the only application authorized for use. Later, agreements had to be made with the different autonomous communities for its integration[2], which explains the differences in the dates of connection to the system, ranging from August 19, 2020, for Andalusia to October 27, 2020, for Catalonia. This means that while the codes were generated by the state, the autonomous communities were the ones to make the request and transmit them to those affected.

After consulting with technical managers in different autonomous communities, it can be concluded that these autonomous communities did not have the technical information needed to integrate the application into their systems until after the signing of the different agreements. This — in addition to the fact that the source code of the app was not previously accessible (either for citizens or for other public entities) — meant an additional delay in the integration within the health systems in the different regions.

Even though the initial announcement assured the app would be open source, general access to it was delayed under the pretext that it should first be integrated into the systems of all autonomous communities. In fact, the creation of the repository in GitHub was launched on September 9, 2020[3], well after the app was already available and integrated in the first autonomous communities.

The alleged justification appears in the FAQ section of the app's website:

> The main reason to wait before launching the app was to ensure that all the autonomous regions that had requested it had integrated the app into their systems. This decision was always based on the preservation of the public's common interest in the context we are experiencing, never due to a lack of transparency.

In analyzing these circumstances, no real reason related to the preservation of the

[2] https://www.eldiario.es/tecnologia/si-descargas-app-radar-covid-no-esperes-avisos-riesgo-contagio-necesita-integracion-autonomica-operativa_1_6158485.html

[3] https://github.com/RadarCOVID/radar-covid-android/commits/develop?after=211392ae3e3b1bb06b271a4c3b9a6e42f44782f9+349&branch=develop

common interest could be found to justify not opening the code earlier. Additionally, access was subsequently granted before all the autonomous communities had been integrated into the system. This allegation thus appears to respond to a principle of security by obscurity, which must be rejected as it is a practice that only creates a false perception of security.

During this development, the Secretary of State for Digitalization and Artificial Intelligence (SEDIA) claimed to have collaborated with the team responsible for DP-3T since March 2020. Thus, it was stated: "*with the people of the DP-3T consortium there has been contact and meetings at different levels, not only with Carmela Troncoso, until the pilot program started at the beginning of June*". However, Carmela Troncoso denied these statements, declaring that the collaboration was limited to exchanged experiences of deployment and sending copies of documents[4].

With regards to the personal data processed, the app's privacy policy[5] provides insight. As we know, this is a decentralized application that seeks to ensure the principle of privacy by design. For this reason, the personal data retained is limited, communicating to the server only temporary exposure codes generated by users diagnosed as positive for COVID-19. These are deleted from the server after 14 days. The same applies to temporary exposure codes and ephemeral Bluetooth identifiers, which are stored on the device for a period of 14 days, after which they are deleted.

No data retention periods are indicated for statistical or research purposes, nor are objective indicators established in order to proceed to the future withdrawal of the app.

LAUNCH

As indicated, the Spanish government decided not to launch the application directly to the public after its development was completed, but instead carried out a pilot program on the island of La Gomera to test the effectiveness of a contact tracing solution of this type. For this purpose, three waves of contagions were simulated on July 10, 13 and 17. These waves "*will be monitored on a daily basis to follow the evolution of the test and detect relevant milestones*".

The results of this pilot test were not made public until January 26, 2021, when they were published in Nature[6], despite requests for access to information from both citizens and the media. Regarding the access of the app during this testing phase, it should be noted that it was distributed during the pilot test in the Android and Apple Marketplace to the public, having detected a total of 31,892 downloads in June and 42,694 downloads in July 2020. However, given that the data is not geolocalised and that the population of the island of La Gomera, in which the test was conducted,

[4] https://www.newtral.es/radar-covid-app-rastreo-espana/20200810/
[5] https://radarcovid.gob.es/politica-de-privacidad
[6] https://www.nature.com/articles/s41467-020-20817-6

is of 10,000 people, it is hard to know how relevant this is. This circumstance is expressly considered in the research published by Nature, since certain data had to be calculated from indirect methods:

> (…) in relation to adoption, note that we could not use the number of downloads directly from the Apple and Google online stores (over 61k during the course of the experiment) as these are not geolocalised. Using indirect methods we estimate a 33% adoption, only using the amount of verifiable downloads directly performed offline by promoters, downloads from the Canary Island government, and assuming a 2% spontaneous adoption percentage and a few other assumptions.

On the other hand, the same principle of privacy by default made it difficult to study the various KPIs in depth:

> Since Radar COVID embraced a privacy-by-design approach, the data that could be retrieved from the API to analyse the KPIs was limited, and indirect evidence had to be sought via extensive follow-ups and online surveys, which nonetheless were always anonymous and privacy-preserving.

Therefore, we can conclude the pilot program was not only unnecessary and caused a significant delay in the population's access to the app, but also that its implementation did not prove to be useful or justified. The lack of a need to prove effectiveness is further reinforced by the fact that the cases where it was used could have been immediately analyzed in other countries that opted for other similar solutions. That said, a pilot project was also carried out in Guadarrama by the Community of Madrid[7] meant to last approximately three weeks and which again meant a delay in the launch in this autonomous community.

It should be noted that during the launch of this pilot test in the Community of Madrid, the application code was unnecessarily obfuscated, and no prior access was given to the source code, the impact assessment, nor risk analysis documentation.

TRANSPARENCY IN THE OPERATION OF THE APPLICATION

When analyzing transparency during the development process and operation of the application, it is important to take into account the recent manifesto in favor of transparency in public software development[8], which was signed by people such as Carmela Troncoso, the researcher who leads the team that developed GP-T3.

In the Spanish case, and with respect to the aspects requested, we can indicate the following:

- The company in charge of the development (INDRA) opened a repository to give access to the application code, where we can track the

[7] https://transparenciagov2020.github.io/

[8] https://www.xataka.com/aplicaciones/nadie-supo-darme-codigo-caos-radar-covid-codigos-que-no-llegan-notificaciones-retraso-mucho-trabajo-hacer

different Pull Requests and changes produced. Thanks to this, vulnerabilities were detected, including false traffic in connection to the servers. However, we must remember that this repository was created after the first version was available in the mobile stores, so it does not include the development history from the early stages.

- This repository includes information about the mobile app but not about the rest of the system, back-end applications, or security measures. Although basic principles are applied (such as those related to the Spanish National Security Scheme), transparency requires more information about the interconnection systems.
- There is no detailed report on app monitoring mechanisms beyond the existing one in the privacy policies.

Regarding the data protection impact assessment and risk analysis associated with the application, we must emphasize various aspects that have been detected due to the strategic litigation activities that were carried out.

Firstly, these documents were not accessible to the public in the repository, nor were the media, citizens or civil society[9] granted access to them under the excuse of possible changes and future general publication. Moreover, the updated version of the document published later did not correspond to the one existing at the launch, and which failed to indicate the changes that were made despite including (at least in appearance) a version control. These documents were also produced by the company in charge of developing the app.

Following a request for information[10], access has been obtained to the original impact assessment and risk analysis, which were carried out on August 12, 2020, after the launch of the application (not to the integration with the different applications). We must emphasize that these documents, to which access was finally granted, have not been included in the public repository accessible to the public. There is also no record of any version control of the changes that have occurred, beyond the change of version numbering, and thus citizens, in general, only have access to the latest version of the document. In addition, none of the documents published have an electronic signature, which makes it difficult to know when they were actually created. That said, the impact assessment includes in its metadata that the PDF document was created in January 2021, and not in 2020 as could be extracted from the version control and date indicated.

The Spanish Data Protection Agency was informed of these circumstances and has recently initiated a sanctioning procedure due to the circumstances highlighted in this document, which represent a potential data protection infringement. At present, this procedure is under investigation.

[9] Including Rights International Spain, see http://www.rightsinternationalspain.org/es/campanias/25/privacidad-y-app-radar-covid.

[10] *Idem.*

APPLICATION EFFECTIVENESS

The analysis of the effectiveness of the app, as well as certain data (such as the number of actual users) is complex because of the safeguards incorporated into the system by privacy by design principles. Therefore, such analysis must be carried out based on the figures provided both on the app's statistics website and those obtained as a result of requests for information.

The latest data provided show 7,431,238 downloads (including Android and iOS versions), which represents a penetration rate of 18% of the population. It should be noted that this number reflects downloads —not installations— and includes devices on which it has been downloaded several times, as it is not possible to discriminate by unique associated users. Furthermore, as we shall see, the effectiveness has been very low in terms of actual use and the introduction of codes provided by the health authorities.

In an effort to boost the low number of downloads, advertising initiatives have been carried out, such as an agreement with LaLiga to promote the use of the app during sporting events broadcasts, for example during the popular "Clásico" Barça-Madrid football match[11] (October 2020). An intense promotional campaign has also been carried out on social media, first by former players such as Fernando Morientes, Fernando Sanz or David Albelda, and then with advertising messages during the *Clásico*. As a result of this initiative, there were nearly 100,000 downloads of the app on the Sunday of the match[12]. This boosted the daily average achieved by Radar COVID tenfold from previous weeks. Other initiatives to extend the use of Radar COVID have been agreed upon with the High Council of Sports[13].

In April 2021, a new investment of 1.5 million euros[14] in advertising was announced to try to increase its use. This includes *"the development and implementation of a media plan to promote Radar COVID in digital environments, social media, radio and written press"*. This decision was based on the low penetration that Radar COVID has obtained so far.

It is even more complex to analyze the number of codes entered, given the disparity of criteria for providing them to the different autonomous communities. If we look at the cumulative number of codes requested, we find that the autonomous communities have requested a total of 971,138 codes, however, only 64,031 codes have been entered into the application. This represents 6.59%, i.e., less than 7 out of every 100 codes requested have been entered into the Radar COVID application.

In order to identify possible reasons for this, we can begin analyzing the codes requested to SEDIA by the autonomous communities

11 https://twitter.com/SEDIAgob/status/1320002767029735425?s=20

12 https://www.elconfidencial.com/tecnologia/2020-10-26/radar-covid-la-liga-app-rastreo-contactos_2806188/

13 https://fep.es/website/18-13245-el-gobierno-se-apoyara-en-el-deporte-y-los-deportistas-para-generalizar-el-uso-de-la-app-radar-covid.htm

14 https://www.vozpopuli.com/economia_y_finanzas/radar-covid-gasto-gobierno.html

for confirmed cases with active COVID-19 infection, where we find ratios of both requested codes and confirmed cases that range from a striking 169.7% in Cantabria, 153% in Asturias, or 120.1% in Galicia, to 0.5% in Extremadura or 0.8% in the Murcia or Valencia. This responds to the disparity of criteria between the different autonomous communities, with cases in Asturias, Galicia, Cantabria, the Basque Country or Castilla y León, which have requested a larger number of codes than the number of confirmed positives. These regions decided to incorporate in their pandemic protocols an expediting of codes to all users, with or without the app, whether or not they request them.

However, the mechanism for providing the code has not been uniform. Some communities sent short messages to a mobile terminal, while other communities provided them directly in the COVID-19 test results.

In addition, the codes generated by SEDIA include the percentage of active users who decided not to enter them in Radar COVID, as well as those that were delivered to people who were not users of the app and those that, for one reason or another, were sent to the communities but not bounced back to the citizens. Therefore, there may be duplicates that justify these high percentages, but which cannot be broken down because of existing privacy protection measures.

With regard to the ratio of codes entered in the application to the number of positive cases detected —and despite the initial affirmations that in some cases the percentages would have similar rates to other European countries— at the moment the accumulated percentages are very low. Only Asturias with 6.7% and the Basque Country with 5.7% maintain this similar rate, and then decline from 4.2% in the Community of Madrid, to percentages below 1% in the case of La Rioja (216 codes out of 25,407 positives), or the particularly striking case of Extremadura, with less than 0.10% (70 codes entered out of 71,846 confirmed cases). In fact, nine of the seventeen autonomous communities and the two autonomous cities have a ratio of less than 1% codes entered in relation to confirmed cases.

The consultation with healthcare staff in Extremadura revealed that this autonomous community decided to request COVID codes from the Ministry after asking the patient directly. Therefore, presumably, the person with a detected contagion was offered the possibility of requesting this code if he/she considered it appropriate, as opposed to other communities that offered it by default. This explains the low number of codes requested (only 330 out of a total of 71,846 confirmed cases, of which, as we have indicated, only 70 codes were entered).

In the case of the Balearic Islands, which was one of the first regions to start using Radar COVID on August 24, 2020, the initial low volume of codes was justified by initial technical problems in obtaining them, and subsequently by the lack of adoption by citizens. That said, the media echoed the case of a positive patient who spent a whole day trying to obtain the code (despite actively requesting it) because neither the doctor, nor the trackers, nor the helpline knew the protocol for providing the code to

be entered in Radar COVID, and this patient's close contacts took up to eight days to receive the notification[15] despite the importance of rapid action. In other autonomous communities there have been cases of healthcare staff who turned to social media to find answers about the code[16], which **proves the existence of deficiencies and lack of coordination** when it comes to providing Radar COVID codes.

No information has been compiled as to how many people have been identified thanks to the tracking tools, nor has statistical data been provided on the cost and efficiency of the solution, although the Radar COVID's technical document mentions the implementation procedure[17] in the section on operational evaluation. Initially, some territories provided information in this regard to promote the effectiveness, as is the case of the Basque Country where it was indicated that as a result of 24 alerts, three people were confined[18]. However, this information has not been updated periodically and does not figure on the app's website.

Consultation with people who went to the health services after receiving a message from the app reveals that there is no evidence of statistical forms being used in a generalized manner to obtain this information anonymously or to analyze the effectiveness of the measure. Furthermore, there is no section on the app's website that would allow us to conclude that this data is available for evaluation of the effectiveness of the application. Information has been provided on cases confirmed through contact tracing following requests for information[19], but insufficient information is provided to evaluate the effectiveness of the Radar COVID app alone.

Regarding the total number of notifications, this information is not provided in the statistical data on the app's website. However, based on the averages mentioned before (three notifications on average for each positive infection uploaded to the app[20]), we can say that the potential number of infection alerts is approximately 192,000. That said, we should mention that the Nature report indicated that the application can alert an average of 6 close contacts for each confirmed case, which could potentially raise this number.

15 https://www.elconfidencial.com/tecnologia/2020-09-28/coronavirus-radar-covid-covid19_2759416/

16 https://www.elconfidencial.com/tecnologia/2020-09-14/radar-covid-app-aplicaciones-coronavirus-covid19_2744252/

17 https://www.mscbs.gob.es/profesionales/saludPublica/ccayes/alertasActual/nCov/documentos/COVID19_Procedimiento_RADAR.pdf

18 https://www.elcorreo.com/sociedad/salud/radar-covid-ofrece-20201002143505-nt.html

19 https://www.newtral.es/radar-covid-ventana-tecnologica-perdida-con-la-pandemia/20210421/

20 https://www.diariodesevilla.es/tecnologia/personas-avisadas-contagio-Radar-Covid_0_1556546448.html

CONCLUSIONS

In view of the above, there are grave deficiencies, especially regarding coordination between the different Spanish autonomous territories. It seems difficult to establish criteria to be able to use the app effectively in the future. However, there is a series of criteria that can help to reinforce the confidence of citizens, and thus its use:

- Reinforcement of communication campaigns, especially on the importance of contact tracing.
- Establishing that all the autonomous communities will provide the code to the positive cases detected, as well pamphlets and other resources to inform about the use of the application and its benefits. This should be emphasized so as to facilitate all the information directly to the user, both to communicate the existence of the application and to obtain the code. Given the low numbers, it would be advisable to carry out campaigns in healthcare facilities to encourage those who may not know about the app or to install it.
- Greater code transparency, providing a true version control of all associated documentation, including risk analysis and impact assessment.
- Complete the statistics, which currently still have blank spaces that make it difficult to detect efficiency.
- Include data from the app in all speeches related to the fight against the pandemic, in order to increase awareness of its existence.

For future similar initiatives, it is particularly important to reduce implementation periods, to coordinate the development of applications at European level, and unify efficiency study procedures. The way in which the different applications have been developed is inconsistent, both from the point of view of the time required and economic efficiency, as well as taking into account that in the future it will be necessary to provide an interoperability platform for the exchange of information.

FOR MORE INFORMATION ON THE PROYECT VISIT:

http://www.rightsinternationalspain.org/es/campanias/25/privacidad-y-app-radar-covid

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