

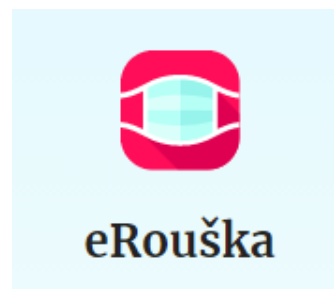
What have we learnt from contact tracing apps?

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Departments of Propedeutics of Internal Medicine, National Pirogov
Memorial Medical University, Vinnytsia. Ukraine




Stop COVID-19



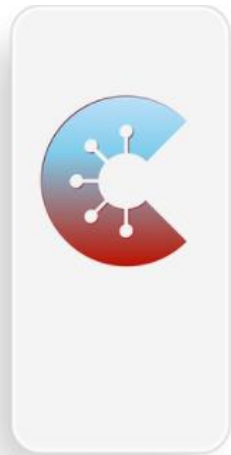
#Tous
AntiCovid



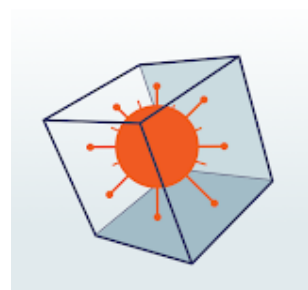
**STOPP
CORONA**

 **HOIA**
protect yourself and your closest ones

Koronavilkku



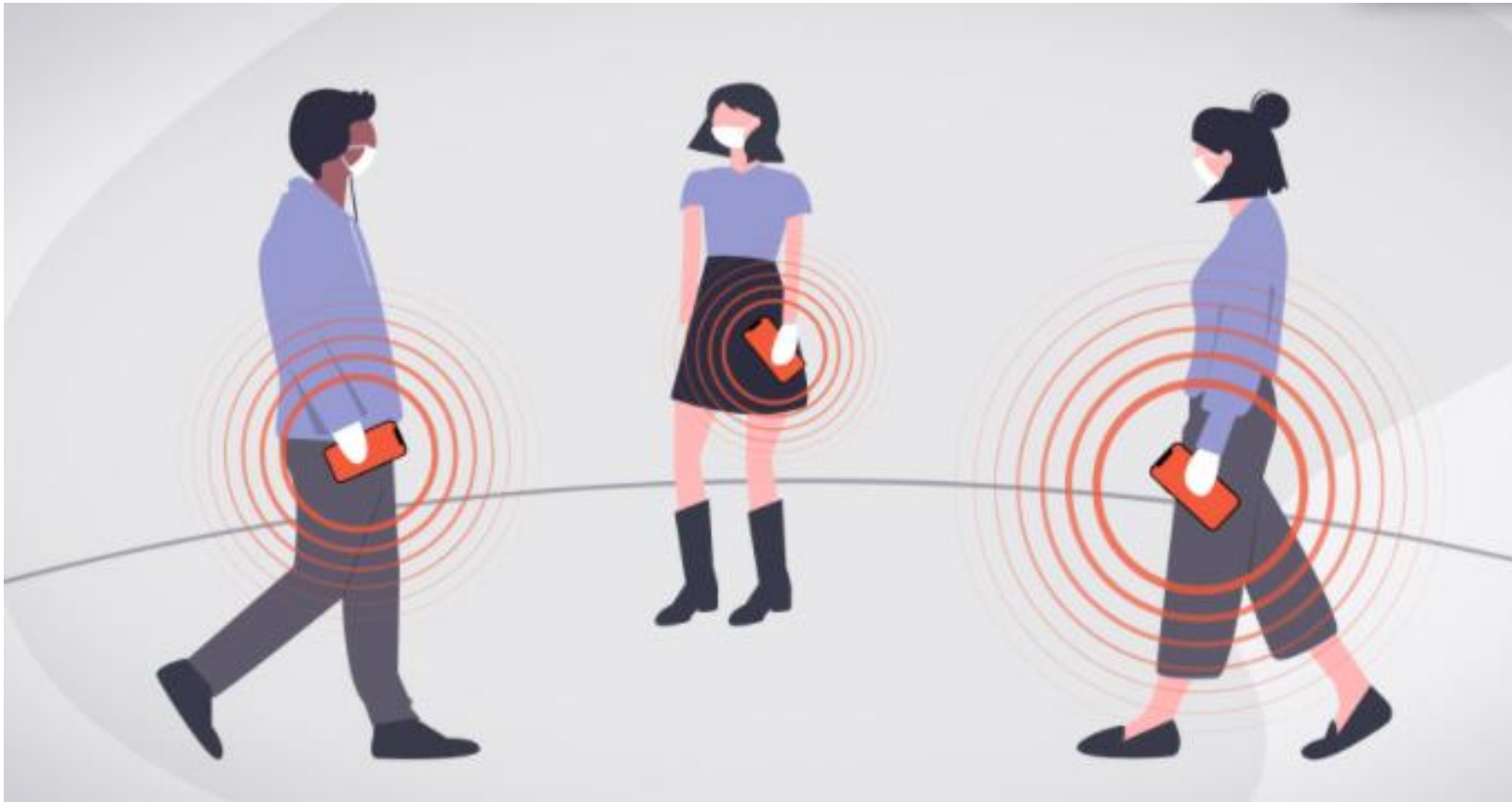
THE CORONA-WARN-APP:
**GET ANSWERS TO THE
MOST IMPORTANT
QUESTIONS HERE.**







**STAYAWAY
COVID**

What is Contact Tracing App?

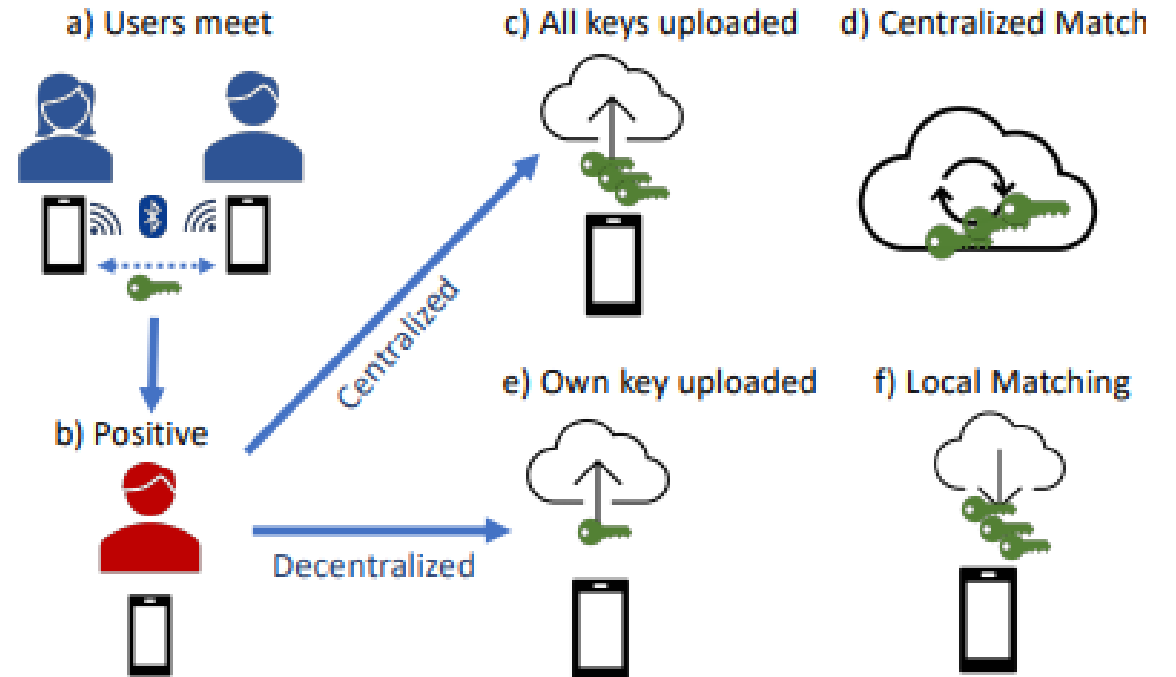
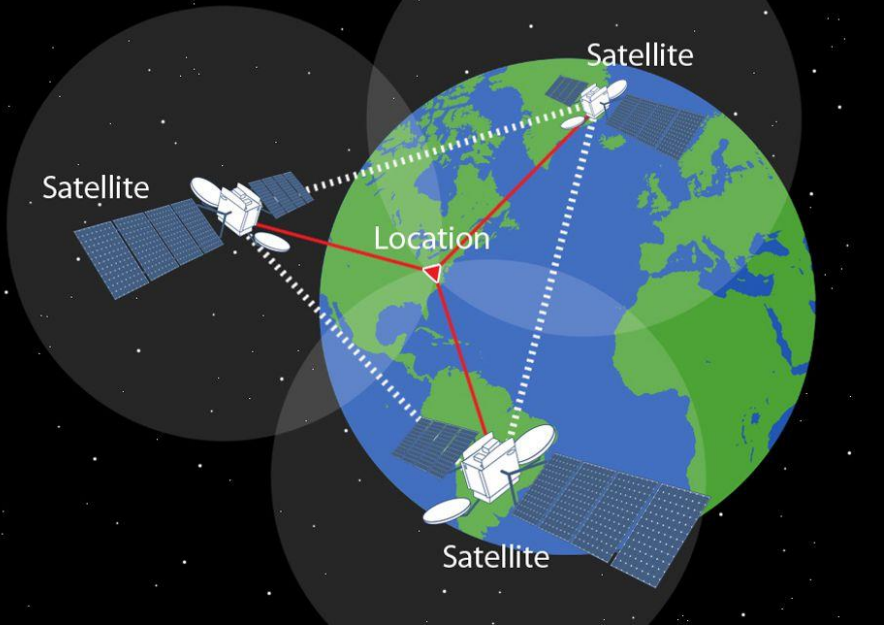
- mobile solutions that can detect and trace other app-carrying individuals who have had contact with one another that would risk COVID-19 transmission if one were to be infected.



How it works?

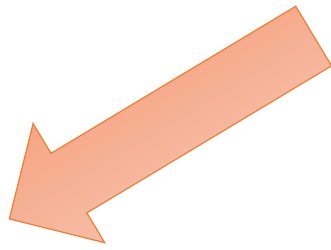
- Global positioning system (GPS) technology
-  **Bluetooth[®]** Low Energy
-  **Bluetooth[®]** and ultrasound
- Ultra-wide band 
-  **WiFi**

Triangulation

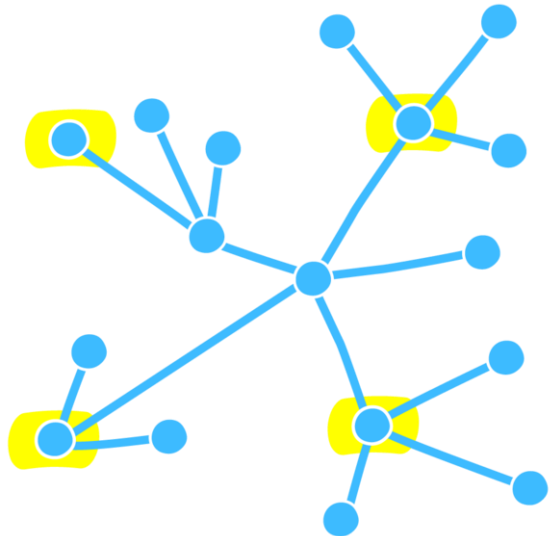


Types of Contact Tracing Apps

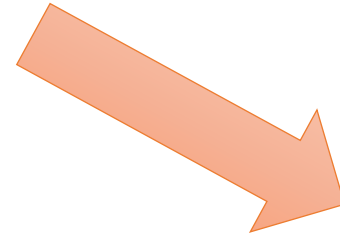
Decentralized



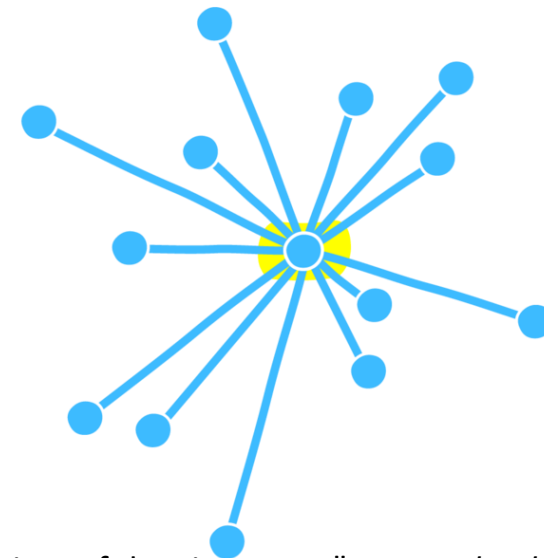
- Model of contact tracing apps, where public health officials are not able to retrieve data from certain users



Centralized

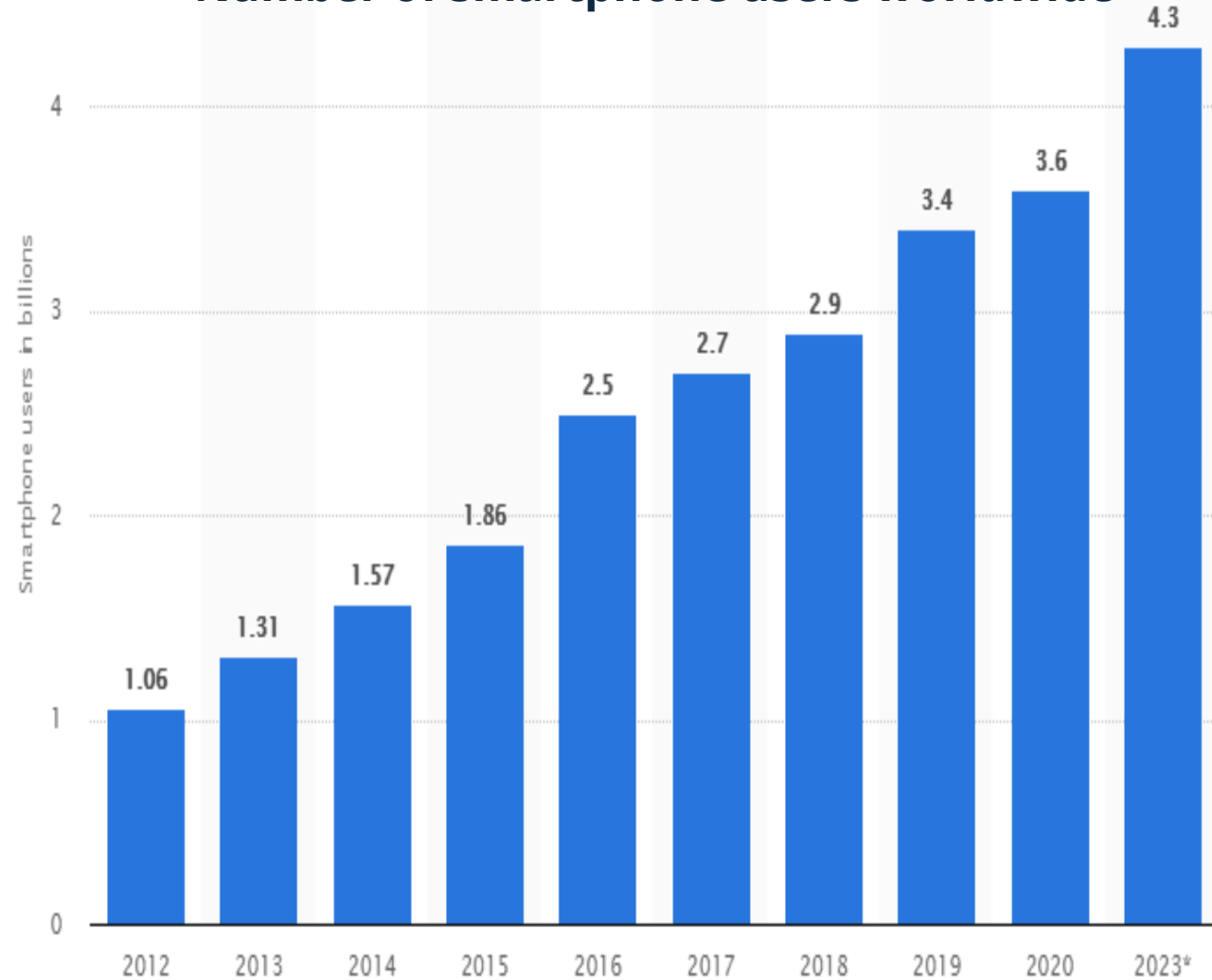


- Model of contact tracing apps, where public health officials receive the app data of patients with COVID-19



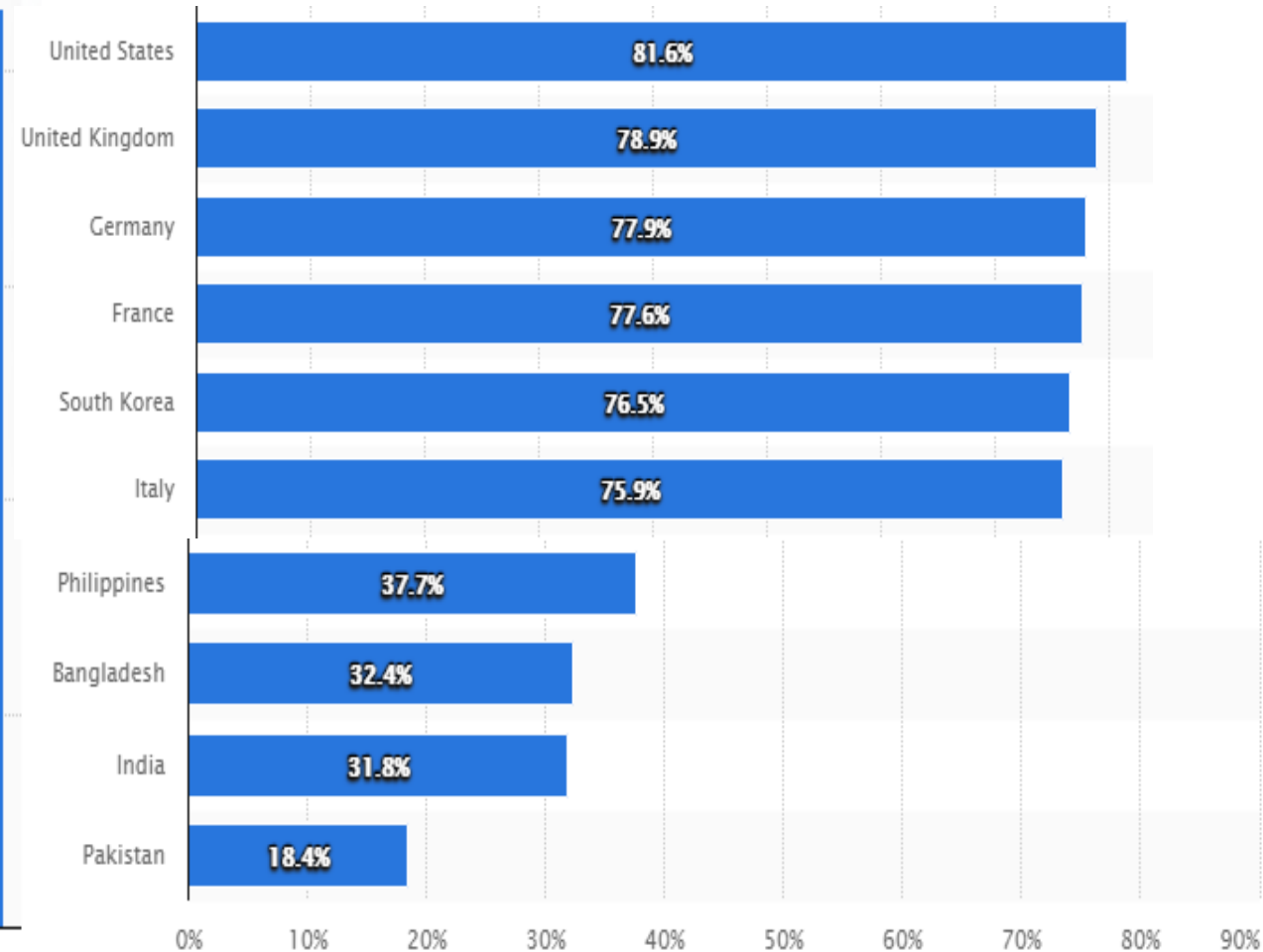
Issue 1. Lack access to a smartphone due to factors such as socioeconomic status, residency status or age

Number of smartphone users worldwide



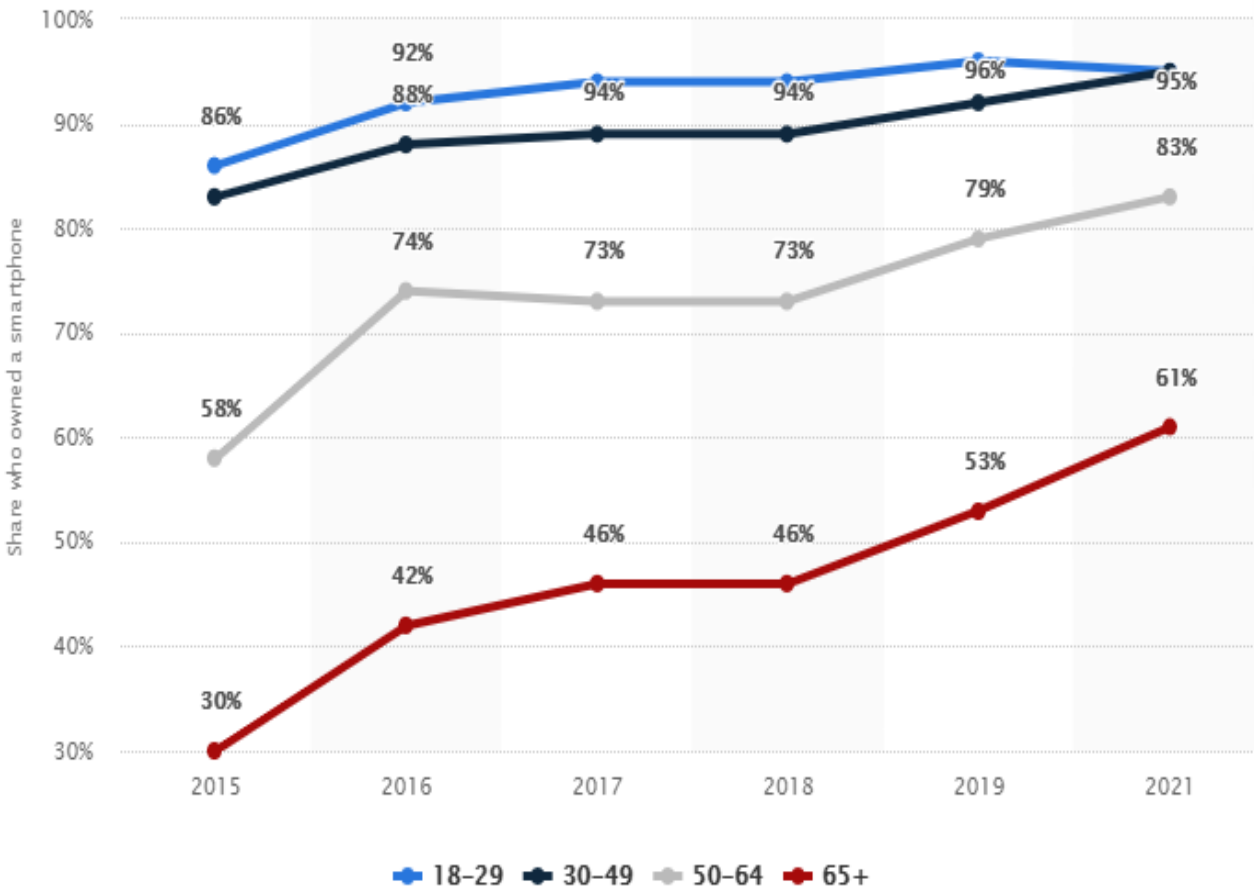
<https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/>

Penetration rate of smartphones in selected countries 2020



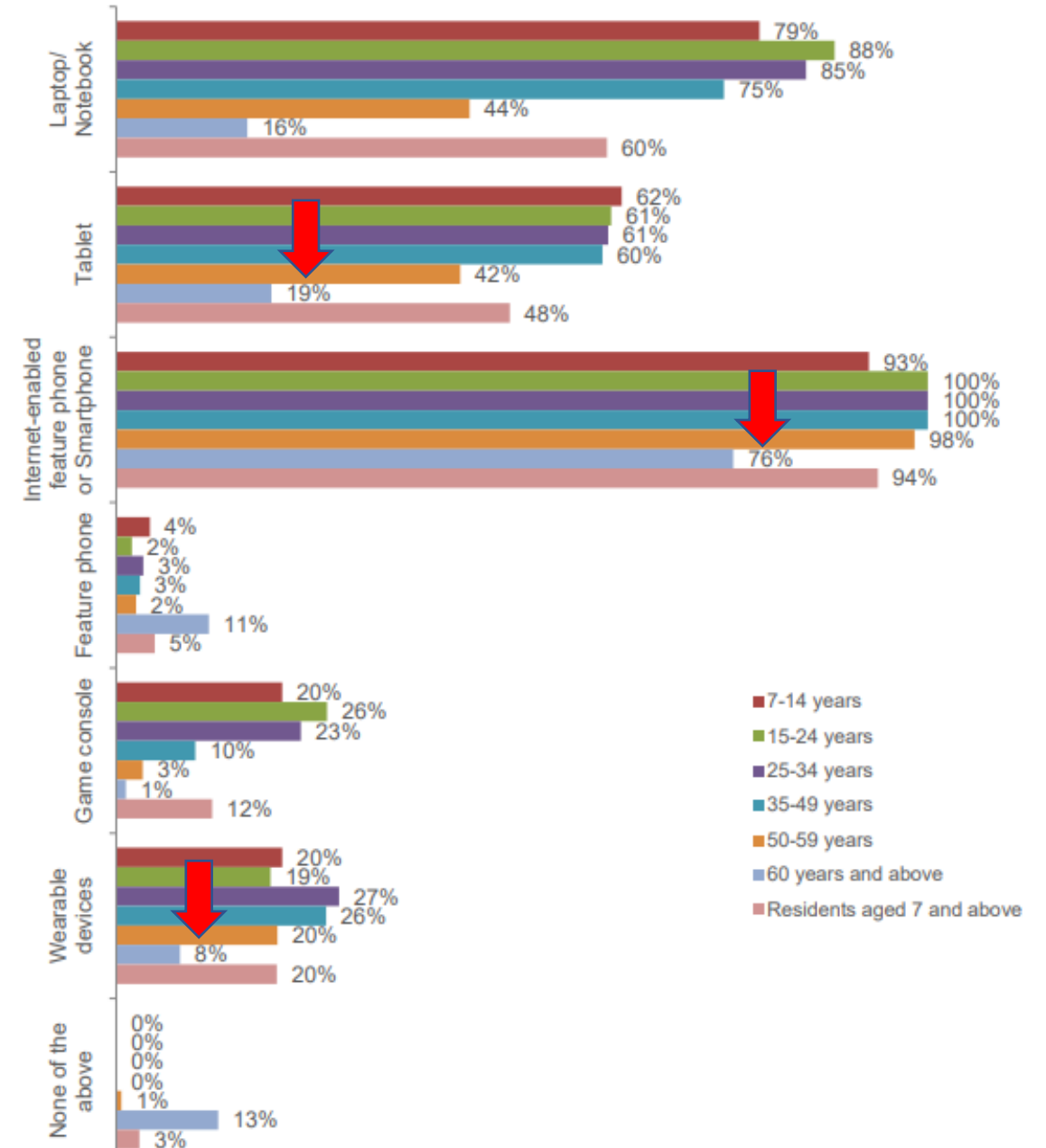
<https://www.statista.com/statistics/539395/smartphone-penetration-worldwide-by-country/>

Share of adults in the United States who owned a smartphone from 2015 to 2021, by age group



<https://www.statista.com/statistics/489255/percentage-of-us-smartphone-owners-by-age-group/>

Portable Equipment Used by Age Group in Singapore



Solution: Contact tracing wearables

- A physical device that exchanges Bluetooth signals with other wearables or mobile apps nearby



SIZE COMPARISON

Width: 45mm
Height: 62mm
Thickness: 22mm

Latest design

ABOUT THE TOKEN

✓ Check that the green light is blinking

Green light
If your token is working, the green light should blink once every minute. If you see a blinking red light, your token is not working.

Data
Stored information older than 25 days will be automatically erased.

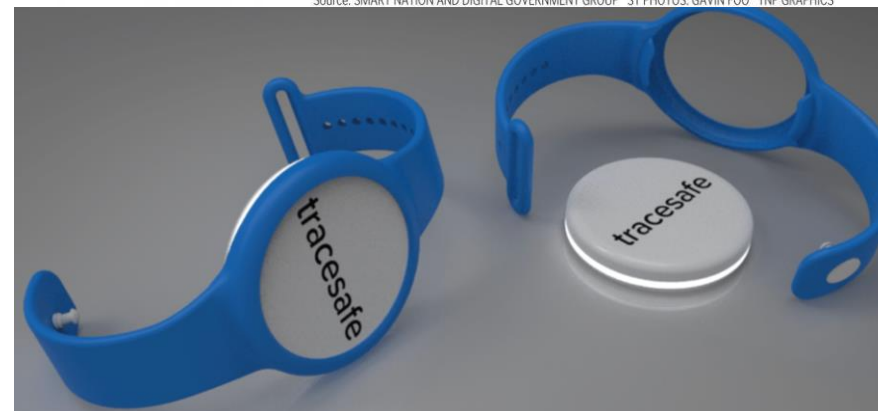
✗ Don't cover the QR code on the token

QR code
You will get a sticker to label your token, and you can write your name on it - just don't cover the QR code.

Battery
The battery lasts six months and is not rechargeable.

NOTE: Sizes are approximates.

Source: SMART NATION AND DIGITAL GOVERNMENT GROUP ST PHOTOS: GAVIN FOO TNP GRAPHICS

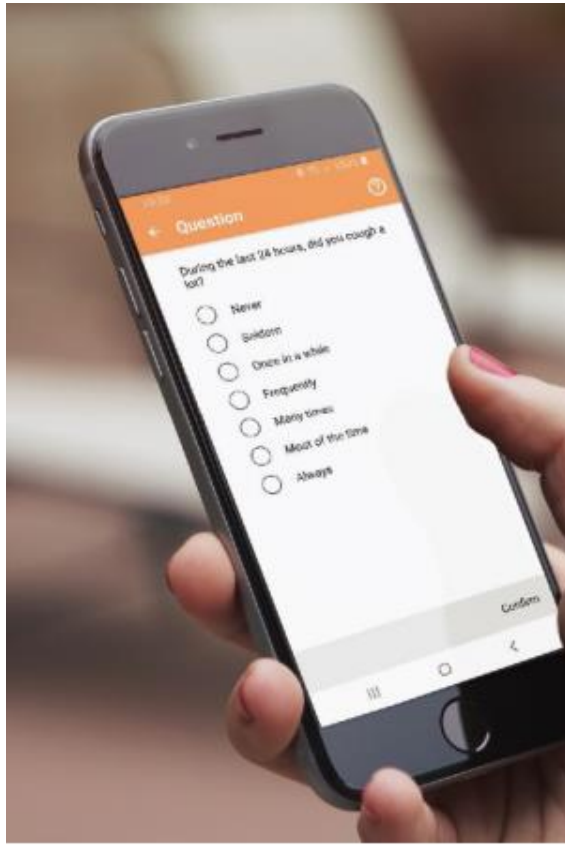


<https://www.bbc.com/news/business-53216450>

Original Paper

eHealth Program to Reduce Hospitalizations Due to Acute Exacerbation of Chronic Obstructive Pulmonary Disease: Retrospective Study

Questionnaire app to monitor symptoms.



Smartwatch with built-in step counter.



Issue 2. Insufficient public uptake

- **Lack of information and misconceptions surrounding COVID-19 contact tracing apps**

I think they wanted to develop an app or something, so you would know how many Covid cases are in your area, so you know where not to go. So, if everyone got sent a test and managed in certain areas not go out until everyone has been tested, so you know where the virus is so you know who can leave their homes and who can't (Participant 6, male, 20s)

- **Concerns over privacy**

Contact tracing seems quite Big Brotherly. I don't think I am willing to submit all my data and all of my contacts for the government to scrutinise who I see regularly. I don't think I will be willing to join the contact tracing apps (Participant 16, female, 30s)

- **Concerns over stigma**

I actually think that [the contact tracing app] is a terrifying concept... it's like being branded with a horrendous black mark. ... I could look and be like my friend, my neighbour has got Covid. (Participant 17, male, 20s)

- **Concerns over uptake**

We have only reduced or flattened the curve because we have all collectively socially distanced ... and if people were to download the app I think it would have to be done in a large group of people if not everybody for it to be effective ... I don't know how effective it would be in terms of transmission rates. I wouldn't rush to download it. (Participant 17, male, 20s)

- **Contact tracing as 'the greater good'**

I would do it if it helps but it's not something I want to do. (Participant 8, female, 40s)



Solution: Co-creation process

- Action Research
- Participatory Action Research
- Participatory Appreciative Action and Reflection

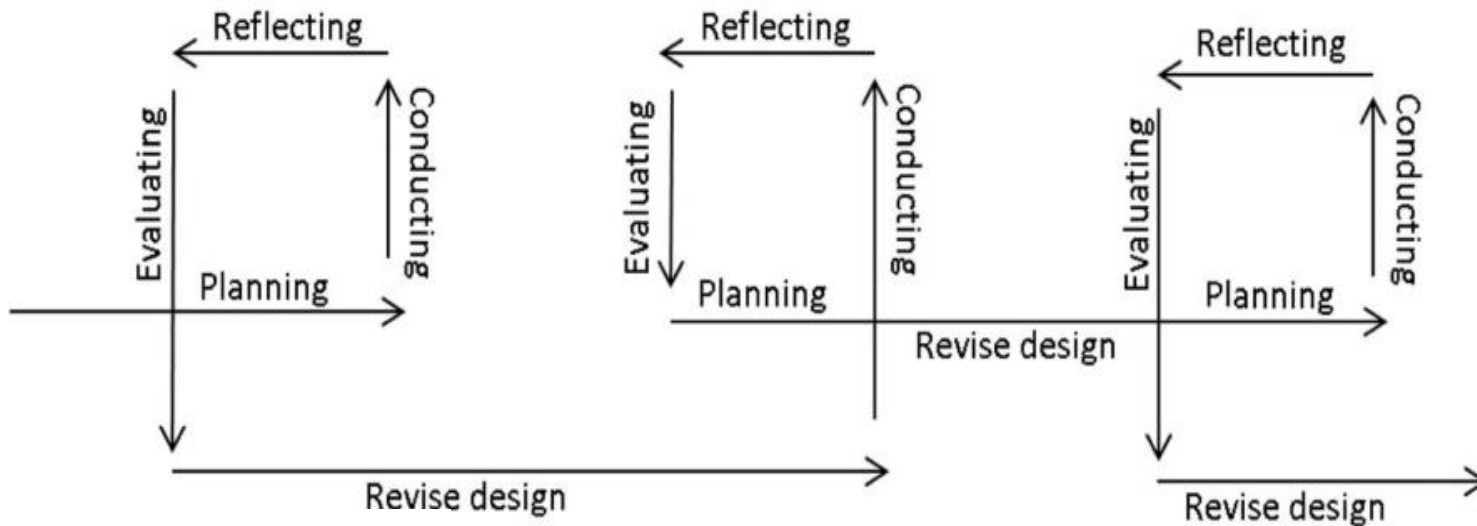
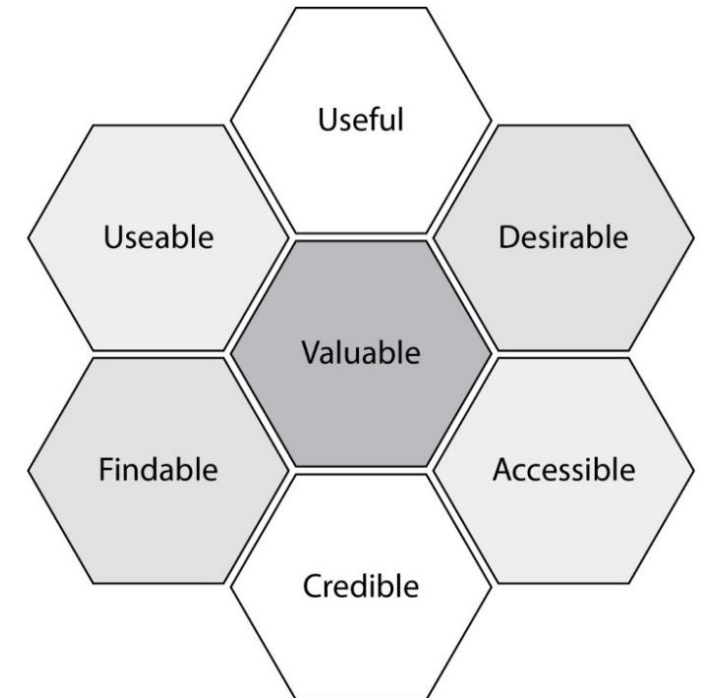


Fig. 2 Iterative co-creation process

User experience Honeycomb model by Morville



Source Peter Morville

OPTimising the implementation of pulMonary rehAbiLitation in people with chronic obstructive pulmonary disease (the OPTIMAL study): mixed methods study protocol



Sarah Hug^{1,2}, Vinicius Cavalheri^{1,3,4}, Daniel F. Gucciardi¹, Richard Norman⁵ and Kylie Hill^{1,4*} 

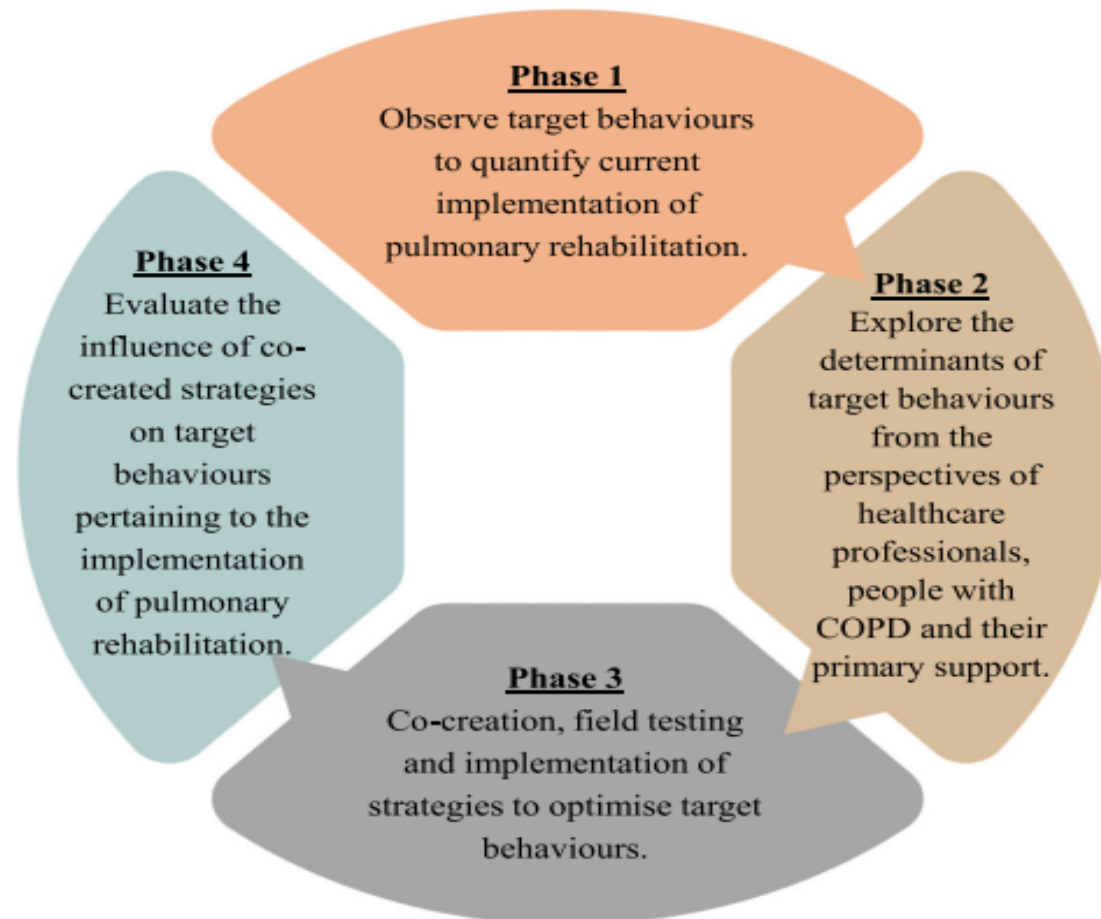


Fig. 1 Study design flow diagram

Cybersecurity, privacy and data protection

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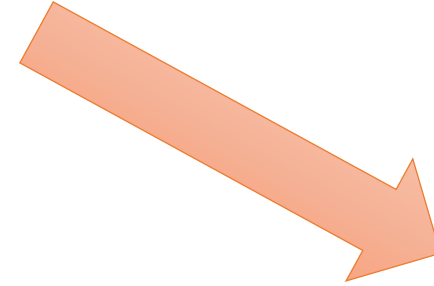
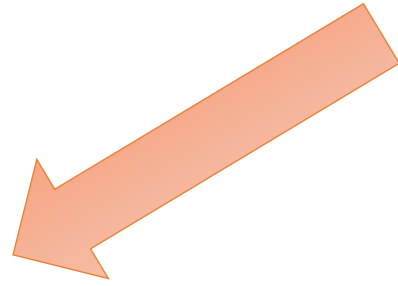
Hackers use fake contact tracing apps in attempt to install banking malware on Android phones



How we can protect end-users' personal data?

- Data minimisation - only the data which are strictly necessary for the running of the service are collected, nothing more.
- Apps should use proximity data based on  **Bluetooth**[®] technology.
- Apps do not track people's movements.
- The data should not be stored longer than necessary.
- The data should be protected through state-of-the art techniques.
- Integrity and confidentiality - personal data must be processed by controllers only in a manner that ensures the appropriate level of security and confidentiality.
- Accountability - controllers are responsible for data protection.

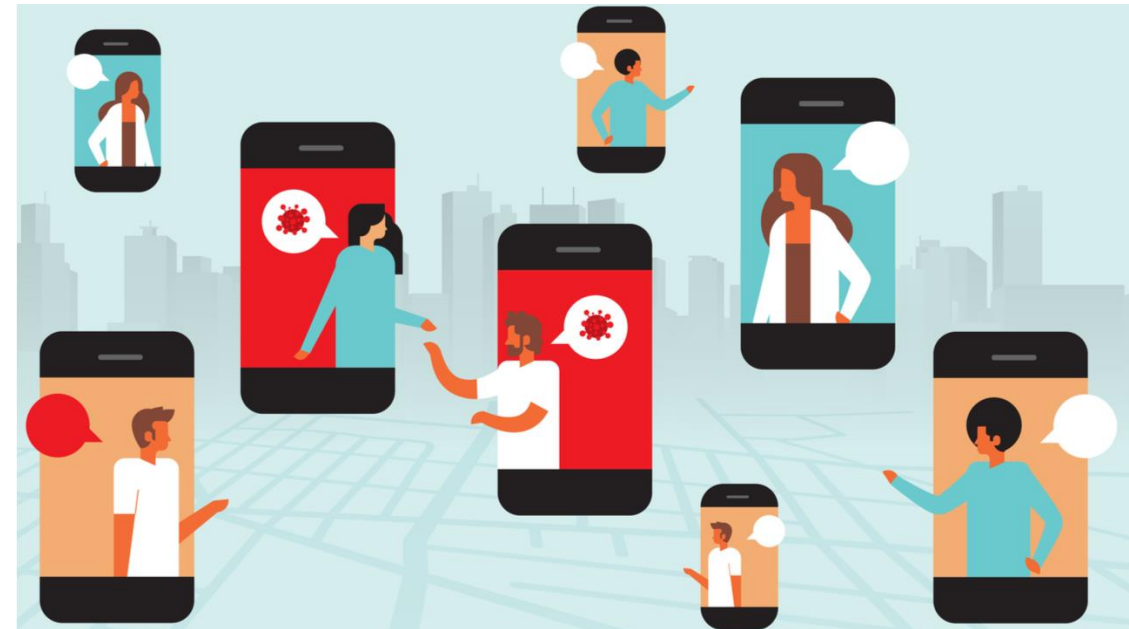
Data interoperability
















Is this app potentially interoperable?













Can this app already talk to another app?

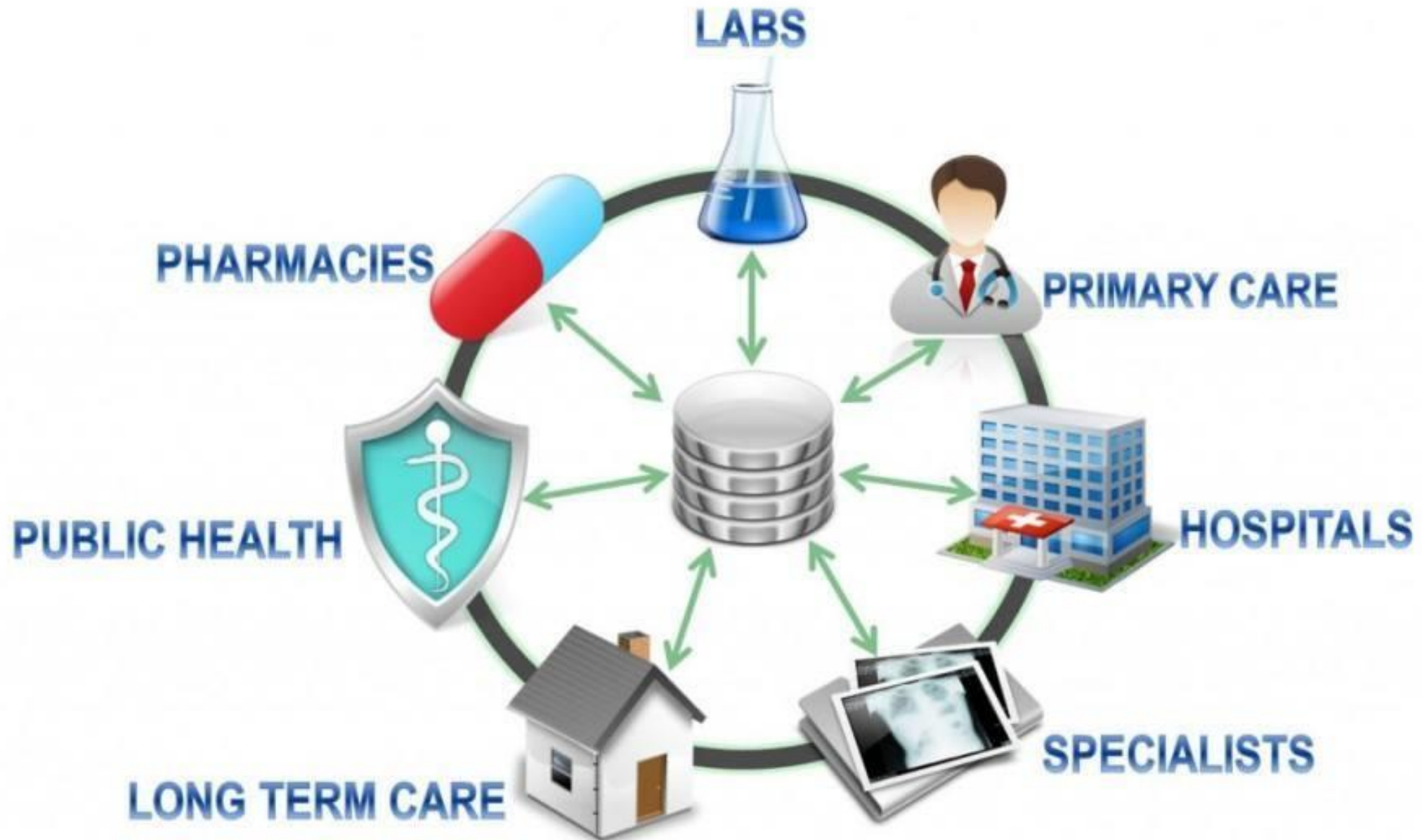


Mobile contact tracing apps in EU Member States

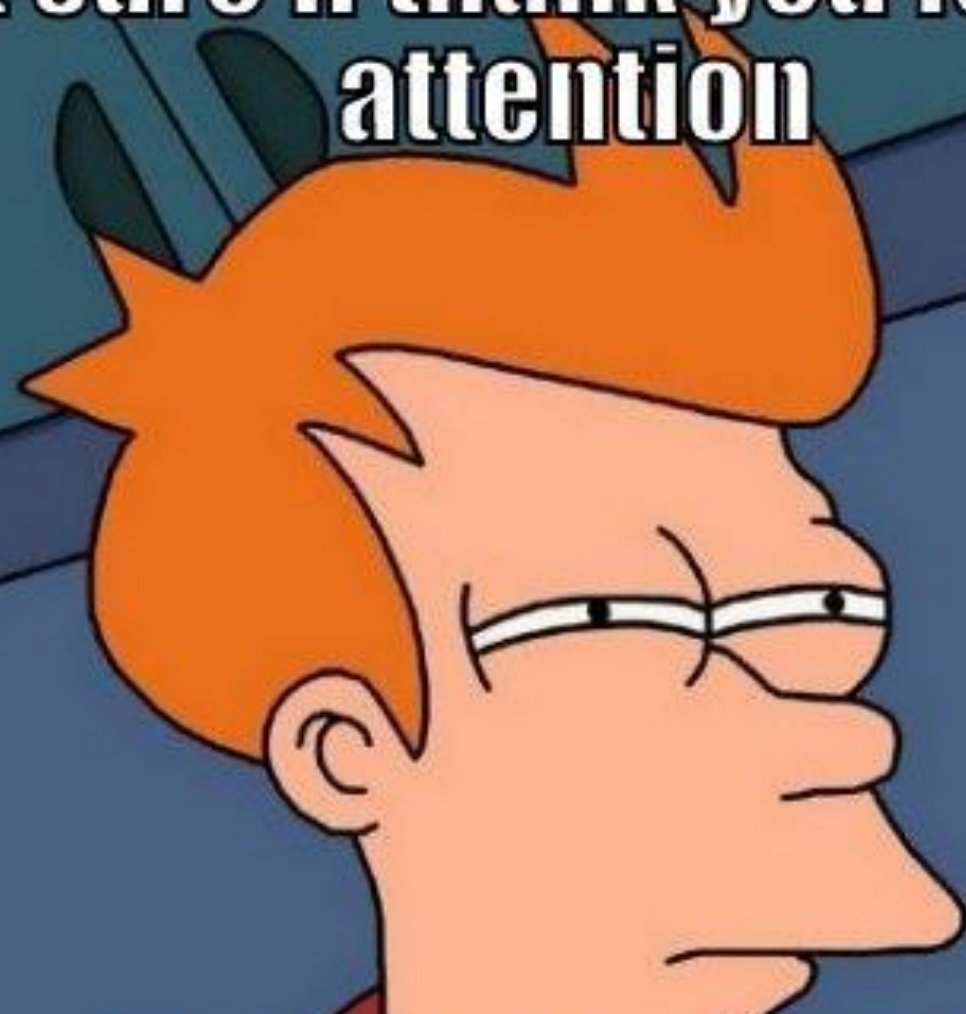
App	Interoperable - is this app potentially interoperable?	Interoperable - can this app already talk to another app?
Stopp Corona App	Yes	 Yes
Coronaalert	Yes	 Yes
The deployment of a contact tracing app is not foreseen.		
Stop COVID-19	Yes	 Yes
CovTracer-EN	Yes	 Yes
eRouška	Yes	 Yes
Smittestop	Yes	 Yes
HOIA	Yes	 No
Koronavilkku	Yes	 Yes
TousAntiCovid	No	 No
Corona-Warn-App	Yes	 Yes
Contact tracing app under development.	Yes	
VirusRadar	No	 No
COVID Tracker	Yes	 Yes
Immuni	Yes	 Yes

Apturi Covid	Yes	 Yes
Korona Stop LT	Yes	 No
The deployment of a contact tracing app is not foreseen.		
COVIDAlert	Yes	 Yes
CoronaMelder	Yes	 Yes
Smittestopp	Yes	 Yes
ProteGO Safe	Yes	 Yes
StayAway COVID	Yes	 No
Romania is exploring the development of a contact tracing app.		
	Yes	 No
A contact tracing app is being developed.		
#OstaniZdrav	Yes	 Yes
Radar Covid	Yes	 Yes

Data interoperability for chronic lung diseases



**Not sure if thank you for your
attention**



**or thank you for not
sleeping during the presentation**

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