Changemaker Challenge: Contact Tracing and Wellness

Calling all technologists/hackers, social innovators and creatives/designers:
develop contact tracing and other pandemic-motivated wellness apps
on an incentive-driven, geospatial location platform

The Covid-19 pandemic has laid bare how interconnected our lives are as well as drastically reconfigured our relationships with space, time and people. Staying at home and social distancing have enabled Californians to flatten the curve and avert overwhelming our healthcare system thus far. Effective antivirals and vaccines that can bring us back to "normal" are still many months if not years away. Mitigation strategies therefore remain key to keeping ourselves safe and saving lives, particularly as lockdown measures are gradually relaxed and the threat of a second wave becomes real. Tests for infection and antibodies, still limited but evolving in both reliability and availability, are a critical component of pandemic mitigation. Equally crucial is contact tracing; we know from the examples of Taiwan, South Korea, Singapore and Germany that this undertaking relies on both human tracers and technology.

Google and Apple are releasing software tools that leverage Bluetooth communication to monitor proximity between smart phones. A person's positive Covid-19 diagnosis can be reported through an app and the app would then notify said person's recent contacts of the diagnosis. The system collects no location data from anyone and no data at all from Covid-free users. Yet privacy and security concerns remain within this and similar schemes, leading to doubts about their broad adoption and ultimate usefulness. New approaches to these challenges are clearly required to address the unmet need of contact tracing, a need that is both urgent and likely perennial.

In the spirit of [Earth2.0 collaborative rapid response](#), UC San Diego, a [changemaker campus](#), and [XYO Foundation](#) are partnering to solicit team efforts to develop contact tracing and other pandemic-motivated wellness apps on the XYO encrypted geolocation platform. XYO is a decentralized network of devices that anonymously collects and validates data with a geographic component. Users of the network are incentivized to provide honest location information with rewards in the form of XYO tokens when their information is used to answer a query (e.g., "Which smart phones X were in the proximity of smart phone Y that reported a Covid-positive diagnosis or fever temperatures less than 14 days ago?"). The XYO network and its [tools](#) present an opportunity, unique in San Diego, to develop contact-tracing and other geolocation apps that are data-rich and incorporate incentives with the potential to shape behaviors in ways that safeguard public health and promote the greater good.

Apps specific to UC San Diego students/faculty/staff campus-wide or at particular sites/populations (e.g., dorms, healthcare locations) would be a type of small-scale project that can be piloted and validated in the near term. Others addressing broader-area contact tracing or more general social distancing/public health apps can be envisioned for longer-term implementation. Concerns and questions about privacy and data security, trust and opting in, balancing individual and community interest / personal and economic health, and central control versus decentralization, are expected to be examined, debated and explored in the process of ideating and building the apps. Frontrunner teams will be awarded XYO tokens, cash prizes and opportunities for incubation, mentorship and showcase participation within the UC San Diego and greater community innovation ecosystem.

Relevant Resources

- *CORONAVIRUS RESOURCE CENTER – Johns Hopkins University*
https://coronavirus.jhu.edu/
- *Coronavirus Map: Tracking the Global Outbreak*
https://www.nytimes.com/interactive/2020/world/coronavirus-maps.html
- Contact Tracing: Get and Keep America Open: Supporting states, tribes, localities, and territories
https://www.cdc.gov/coronavirus/2019-ncov/php/open-america/contact-tracing.html
- INATBA COVID Task Force - Global Blockchain Ecosystem Effort
https://inatba.org/covid-task-force/
- Supporting not-for-profit COVID-19 response efforts with Google Maps Platform credits
https://cloud.google.com/blog/products/maps-platform/supporting-not-profit-covid-19-response-efforts-google-maps-platform-credits
- At UC San Diego
    - EARTH 2.0 @UC San Diego, COVID-19 Rapid Response https://earth2-covid.ucsd.edu/home
    - Creating an early alert system for COVID-19 https://medicalxpress.com/news/2020-04-early-covid-.html
    - BluBLE App - Personal Covid Risk Indicator by the WCSNG Lab https://wcsng.ucsd.edu/bluble/
    - Office of Innovation and Commercialization https://innovation.ucsd.edu/
    - The Basement https://www.ucsdbasement.com/basement-incubator-programs
    - Institute for the Global Entrepreneur http://ige.ucsd.edu/
    - The Design Lab https://designlab.ucsd.edu/
- XYO Foundation https://xyo.network/; XYO Dev Portal https://xyo.network/developer/

Articles on Contact Tracing
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Tech firms must prove that digital contact tracing is worth the privacy intrusion
https://www.washingtonpost.com/opinions/tech-firms-must-prove-that-digital-contact-tracing-is-worth-the-privacy-intrusion/2020/05/01/cbf19b8e-7dc7-11ea-9040-68981f488eed_story.html
Contact tracing apps are on the way. Will they help us get back to normal?
https://www.fastcompany.com/90497860/contact-tracing-apps-are-on-the-way-will-they-help-us-get-back-to-normal?
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A Scramble for Virus Apps That Do No Harm
https://www.nytimes.com/2020/04/29/business/coronavirus-cellphone-apps-contact-tracing.html
4/21
CDC To Fund 650 Health Experts To Help States Trace, Stop COVID-19
https://www.npr.org/sections/health-shots/2020/04/21/840539685/cdc-to-fund-650-health-experts-to-help-states-trace-stop-covid-19
How Many Infections? Rewards for Testing May Provide an Answer
Economists say incentives could overcome hurdles in gauging the overall coronavirus infection and mortality rates from a limited population sample.
https://www.nytimes.com/2020/04/21/business/economy/coronavirus-tests-infections.html
What Will Our New Normal Feel Like? Hints Are Beginning to Emerge
Fear of others may linger long after the pandemic is over. But so may a new sense of community.
https://www.nytimes.com/2020/04/21/world/americas/coronavirus-social-impact.html
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Coronavirus Contact-Tracing Teams Grow, as States Hope to Reopen
https://www.wsj.com/articles/coronavirus-contact-tracing-teams-grow-as-states-hope-to-reopen-11587380401

San Diego Is Taking a Wait-and-See Approach to Ramping Up Virus Tracing
The process of easing coronavirus restrictions will depend on how effectively local public health officials can identify sick patients and alert others who may have had contact with them. San Diego is looking at the state for guidance, which is evaluating apps that could end up revealing one's movements.
https://www.voiceofsandiego.org/topics/government/san-diego-is-taking-a-wait-and-see-approach-to-virus-tracing/
4/18
What is contact tracing?
https://techcrunch.com/2020/04/18/what-is-contract-tracing/
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A Privacy Absolutist Isn't So Sure Anymore
The urgency of the pandemic has made Charlie Warzel, an Opinion writer for The Times, question his beliefs on the dangers of location tracking.
https://www.nytimes.com/2020/04/17/technology/coronavirus-location-tracking.html
France Weighs Its Love of Liberty in Fight Against Coronavirus
The French are cautiously considering digital tracking, which has proved effective in Asia. But can a country that so prizes personal freedom and privacy ever accept it?
https://www.nytimes.com/2020/04/17/world/europe/coronavirus-france-digital-tracking.html
Does Covid-19 Contact Tracing Pose a Privacy Risk? Your Questions, Answered
https://www.wired.com/story/apple-google-contact-tracing-strengths-weaknesses/
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How your phone will track coronavirus – The Verge
https://youtu.be/b7dxCRm5t5g
San Francisco Ramps Up Back-To-Basics Contact Tracing To Stop COVID-19
https://www.npr.org/sections/health-shots/2020/04/16/835396565/san-francisco-ramps-up-back-to-basics-contact-tracing-to-stop-covid-19
An Army of Coronavirus Tracers Takes Shape in Massachusetts
https://www.nytimes.com/2020/04/16/us/coronavirus-massachusetts-contact-tracing.html
A New Statistic Reveals Why America's COVID-19 Numbers Are Flat
https://www.theatlantic.com/technology/archive/2020/04/us-coronavirus-outbreak-out-control-test-positivity-rate/610132/
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The Apple-Google Contact Tracing Plan Won't Stop Covid Alone
https://www.wired.com/story/apple-google-contact-tracing-wont-stop-covid-alone/
Our Pandemic Summer
The fight against the coronavirus won't be over when the U.S. reopens. Here's how the nation must prepare itself.
https://www.theatlantic.com/health/archive/2020/04/pandemic-summer-coronavirus-reopening-back-normal/609940/
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Big Data Could Undermine the Covid-19 Response
Blind spots in location-tracking data can threaten both public health and human rights.
https://www.wired.com/story/big-data-could-undermine-the-covid-19-response/
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How Apple and Google Are Enabling Covid-19 Contact-Tracing
https://www.wired.com/story/apple-google-bluetooth-contact-tracing-covid-19/
The Verge: Privacy-Preserving Contact Tracing
https://www.apple.com/covid19/contacttracing
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Clever Cryptography Could Protect Privacy in Covid-19 Contact-Tracing Apps
https://www.wired.com/story/covid-19-contact-tracing-apps-cryptography/

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What Will the World Be Like After Coronavirus? Four Possible Futures

https://singularityhub.com/2020/04/03/what-will-the-world-be-like-after-coronavirus-four-possible-futures/

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Coronavirus: Out of Many, One

What the US Federal Government and the States Should Do to Fight the Coronavirus

https://medium.com/@tomaspueyo/coronavirus-out-of-many-one-36b886af37e9

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Big Data In The Time Of Coronavirus (COVID-19)

https://www.forbes.com/sites/ciocentral/2020/03/30/big-data-in-the-time-of-coronavirus-covid-19/#5a5f360058fc

On Covid and Blockchain/Decentralized Ledger Technology

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11 Members Of Congress Urge Treasury Secretary Mnuchin To Use Blockchain For COVID-19 Stimulus Payments

https://www.forbes.com/sites/jasonbrett/2020/05/02/congress-urges-treasury-secretary-mnuchin-to-use-blockchain-for-covid-19-stimulus-payments/#74758f4b471d

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Blockchain Mends Medical Supply Chain to Counter COVID-19 Challenges

https://cointelegraph.com/news/blockchain-mends-medical-supply-chain-to-counter-covid-19-challenges

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Germany Backs Away From Compiling Coronavirus Contacts In A Central Database

https://www.npr.org/sections/coronavirus-live-updates/2020/04/27/846046185/germany-backs-away-from-compiling-coronavirus-contacts-in-a-central-database

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Berkeley Startups Use Blockchain to Accelerate COVID-19 Response

https://scet.berkeley.edu/berkeley-blockchain-covid-19/

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Researchers Are Tapping Blockchain Tools in Fight Against Coronavirus

https://www.coindesk.com/covid-researchers-are-tapping-blockchain-tools-in-fight-against-coronavirus

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EU privacy experts push a decentralized approach to COVID-19 contacts tracing

https://techcrunch.com/2020/04/06/eu-privacy-experts-push-a-decentralized-approach-to-covid-19-contacts-tracing/?guccounter=1

April 2020

US Homeland Security lists blockchain as Covid-19 critical service

https://www.ledgerinsights.com/us-homeland-security-lists-blockchain-as-covid-19-critical-service/

World Economic Forum: how blockchain could help with Covid-19 supply chain disruption

https://www.ledgerinsights.com/world-economic-forum-how-blockchain-could-help-with-covid-19-supply-chain-disruption/

March 2020

COVID-19 Contact Tracing Blockchain

https://www.healthit.gov/techlab/ipg/node/4/submission/2911

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