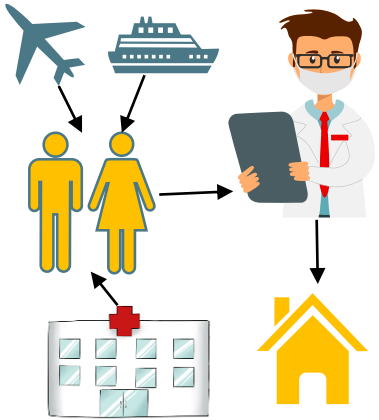


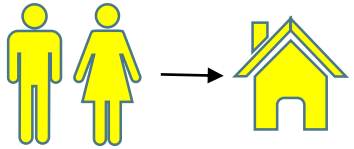
Covenant : Functionality & Workflow

COVID-19 Quarantine Management System

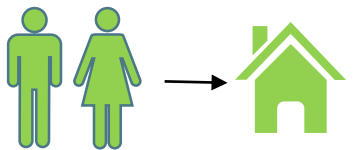
THREE TYPES OF USERS



A. Person under investigation (PUI) quarantined by health care professional (HCP)



B. Contacts of PUI self-quarantining or by HCP



C. Anyone else staying home and monitoring their health (not geofenced or tracked by public health official)

USER FUNCTIONALITIES

1. Geolocation



Fever



Cough



Breathing Difficulty

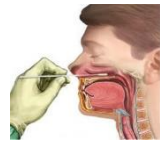
2. Geofencing (50ft = 15m)

3. Health status updates of self and household members without a phone (e.g. children): $\geq 1x/day$

4. Request food, supplies or medical help



v. Dispatch food, supplies, medicines or teleconsult



vi. Collect test specimen at home or testing center



vii. Transfer to hospital if needed (medical info. transferred electronically to hospital system)

PUBLIC HEALTH OFFICIAL FUNCTIONALITES

- Assign patient to local area public health official
- Multi-user security and access control for real-time reporting through public health reporting chain
- Monitor quarantine compliance and geofence violation
- Monitor health status automatically & manually





Covenant : Benefits and Future Directions

COVID-19 Quarantine Management System



BENEFITS TO USERS OF APP UNDER QUARANTINE

Monitor health of self and household members.

Tele-consults or tests for COVID-19 if health condition worsens.

Request food, medicines and other essential supplies from quarantine officer.

Medical information will be transferred to inpatient hospital systems if patient is admitted to hospital.

OUR LONG TERM OBJECTIVES

Health status trends over time.

Support other infectious and non-communicable disease (diabetes, hypertension, malnutrition, etc.) to study health of populations.

Outbreak and syndromic surveillance.

Data aggregation for reporting.
Data deidentification for research and education.

BENEFITS TO PUBLIC HEALTH AGENCIES

Monitor a large population efficiently with a single dashboard – save time and effort.

A single official may be able to track 1,000 patients automatically using the system and manually follow up with under 100 patients per day who violate quarantine or have worsening health.

Find user's location and Geofencing compliance.

Receive regular health updates of users.

Dispatch food, medicines, COVID-19 sample collection or ambulance for inpatient transfers based on information managed through a single dashboard.

Reporting and data summaries for population under their jurisdiction.

System has countermeasures against quarantine violation and geofencing workarounds by patients



BENEFITS TO HEALTH SYSTEMS

Estimate demand based on evolving health of the population and anticipate staffing and supplies needs.

A network of hospitals may coordinate utilization to manage patient load effectively.

Receive health information electronically when quarantined patients are transferred to inpatient care.



COST AND EFFORT

Software is developed as open source. Cost for first release is supported by a team of experts.

Health authorities can use existing infrastructure and personnel without additional investment. Financial assistance requested for operations, support and enhancements.

Development, operations and support will be managed by a company with proven experience.

CHALLENGES & LIMITATIONS

Patients may use circumvent geofencing or travel without phone.

Privacy and security concerns.

Different systems may be used in different locations without interoperability.

Training users to use the system.



MITIGATING FACTORS

Automated and manual countermeasures (e.g. prompt to take selfies if no movement detected) to verify patient compliance with quarantine.

Secure system within the physical boundaries of each country.

Standards-based interoperability planned for version 2.

Created by a team of physicians, medical informaticists, user interface experts and technologists to be user-friendly and fit within health care workflow.