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# **Vision Document**

**for**

# **Hot Zone System**

**Version 1.0 approved**

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## Revision History

Name	Date	Reason For Changes	Version
Wong Ka Ngai	13/10/20	Initial draft	1.0 draft
Group V	19/11/20	Refined for agile development	2.0 draft
Group V	29/11/20	Refined for agile development	2.1 draft

# 1. Business Requirements

## 1.1. Background

The current SARS-CoV-2 pandemic in Hong Kong is once again becoming more severe. In a bid to better understand transmission of the virus and hence get it under control, epidemiologists from the Centre for Health Protection (CHP) have focused on the histories of contacts between cases. Some clusters of infections are identified and thus transmission chains within them are determined. However, it is extremely tedious and time consuming to identify clusters based on contact tracing manually. Also, clusters associated with environmental transmission may be missed. The outbreak of SARS at the Amoy Gardens back in 2003 had proven that environmental transmission is a key factor in a pandemic. Identifying clusters of cases linked by location can give early warning of possible hot-zones of infection to infection, so that it is easier to get the condition under control.

## 1.2. Business Opportunity

CHP has requested a system to identify clusters of cases linked by location to get early warnings of possible hot-zones of infection. Currently all data is managed using Excel spreadsheets and it has no functionality to cluster cases by locations visited. Epidemiologists can analyze by themselves, but it is time consuming and some locations may be missed due to manual error. Such a system, like HotZone, would not only would save time, but also allow CHP to alert the public, do early investigation and contain the spread of the virus in those zones. This system can be further extended to analyze data from previous viral epidemics to find clusters that were not previously identified. With such system, CHP is more prepared to face future pandemics and quickly identify hot zones to curb the transmissions.

## 1.3. Vision Statement

For CHP who wish to improve the quality and efficiency of location data recording and perform clustering, the Hot Zone System is a web application that will allow CHP staff to maintain records, cluster cases and visualize clustering results.

Unlike the current system of CHP, the Hot Zone System will help identify potential clustering, which will save them time, allow them to alert the public about such zones, and can better determine transmission chains. This will helps to get the epidemic under control.

## 1.4. Business Assumptions and Dependencies

- AS-1: When an infection is confirmed, the patient is immediately isolated and, after that date, there will be no further visits related to that case.
- AS-2: Records of location visited by patients during the infectious period are accurate. Patients will report correctly on when and where they have visited.
- AS-3: Staff users act in a disciplined way and do not create duplicate records of the same case.
- AS-4: When a user updates data, there is no need to reflect that change immediately to other users.
- AS-5: The clusters detected in this system are detected through the location the infected person visited and doesn't take into account any person he/she might have met in that location.

DE-1: The system and network work well without system or network failure and downtime.

DE-2: All data retrieved from Geodata Location Search API are accurate and reliable.

DE-3: Geodata Location Search API functions properly.

## 2. Scope and Limitations

### 2.1. Major Features

FE-1: Identify clusters of cases based on geographical proximity of locations and time period.

FE-2: Visualize clustering results on Map.

FE-3: Create, view and modify records of each confirmed case of a viral infection of interest.

FE-4: Retrieving information of locations visited from GeoData.

FE-5: Provide system access through web with user authentication.

FE-6: Account management with different permission levels for staff and admin.

### 2.2. Limitations and Exclusions

LI-1: Staff users access the system through computers (desktop view) but not smartphones.

LI-2: Identified clusters have a small chance to be pure coincidences but not real hot zones.

LI-3: There may be changes in the infrastructural surroundings and environment in a particular location over the years. Some locations do not apply to cases from previous epidemics.

## 3. Stakeholders

### 3.1 Stakeholder Profiles

Stakeholder	Major value	Major Interests
CHP Management	Improved quality and efficiency of location data recording; cost savings for government	The accuracy of clusters and that cost and employee time savings must justify development and usage costs.
CHP Epidemiologist	Improved productivity; automation of clustering; ability to visualize clustering results	Usability. Readability. Ease of clustering; Adequacy of cluster information.
CHP Staff (data entry operator)	Improved productivity; Improved usability to input data.	Simplicity of use; Ease of data management.
CHP Admin	No benefit; needs to accomplish user registrations for staff	Minimal new technology needed; Simple to accomplish user registrations.
Patients	No benefit; Their personal information needs to be recorded.	Privacy and Security of personal data

## 4. Delivery and Deployment

### 4.1. Product Roadmap

Feature	Release 1	Release 2	Release 3
Target	November 2020	November 2020	December 2020
FE-1: Identify clusters	Not implemented	Fully implemented	
FE-2: Visualize clusters	Not implemented	Not implemented	Fully implemented
FE-3: Data management	User interface to create and view cases	User interface to create and view cases	Fully implemented
FE-4: Data Retrieval from GeoData	Fully implemented;		
FE-5: User authentication	Basic authentication	Basic authentication	Fully implemented
FE-6: Account management	Fully implemented		

### 4.2. Release Plan

#### Release 1:

Sprint 1	Sprint 2
<b>Retrieval of location data from GeoData</b> (a single GeoData location that satisfies the search criteria and the location is not already known to HotZone)  <b>Record location visited</b> (always add new location record)  <b>Web-enabled</b>	<b>Select desired location data retrieved from Geodata</b> (Handle situation where GeoData Location Search returns multiple locations)  <b>Select existing location</b> (cases with matching locations already known to HotZone)  <b>Basic User interface to create and view cases</b>  <b>Basic authentication</b>

#### Release 2:

Sprint 3
<b>Perform Clustering</b> (Based on geographical proximity of locations visited by patients within some specified time period of one another; Allow the user to specify the values of the clustering criteria, like proximity and period)

### **4.3. Deployment Considerations**

The development is going to be done using the Django framework with React.js for frontend development. There is no constraint on the choice of OS. However, to access the system, it is recommended to use the latest version of Google Chrome. It is not recommended to access the system using smartphones. Any corresponding infrastructure changes must be in place at the time of the second release.