**Functional/Non-Functional Requirements of Crown Pass Holders**

* **FR-CH-01: Registration**. Any general public should be able to register to the Crown Pass system to obtain a Crownpass ID. The minimal information required for registration is a real photo of the person. A Crownpass holder may also submit, but optional, the following data to the system: *mobile phone number*, *email address*, *home address*, *name*, *gender*, and *date of birth*. (*Priority: High*)
* **FR-CH-02: Print Pass.** A successfully registered Crownpass holder should be able to print his/her pass on a normal sheet of paper that consists of a photo of the pass and a QR code (also known as 2D bar code) that represents the pass holder’s identifier. (*Priority: High*)
* **FR-CH-09: Book Vaccination**. A Crownpass holder should be provided a facility to book a vaccination at a vaccine station/centre on an available date and time slot of his/her choice. (*Priority: Low*)
* **FR-CH-08: Self Check-in and Check-out**. The system should be able to enable the Crown Pass holders to check-in to and/or check-out from a controlled area using the Crownpass Holder App running on a mobile phone. (*Priority: Medium*)
* **FR-CH-05: Check trace**. A successfully registered Crownpass holder should be able to display his/her movement trace (i.e. the sequence of areas) that he/she has entered in a period of time of his/her choice on the screen of his/her mobile phone where the Crownpass Holder App runs. (*Priority: Medium*)
* **FR-CH-06: Web Access.** A successfully registered Crownpass holder should be able to access the following data of the pass holder by entering Crownpass ID: (a) Pass state, (b) Contact details, (c) Movement trace; where contain details can be reset, while other data cannot be modified by the pass holder. (*Priority: Medium*)
* **FR-CH-07: Notification.** The system should be able to notify the Crownpass holder when his/her pass state is changed. (*Priority: Medium*)
* **FR-CH-04: Check state**. A successfully registered Crownpass holder should be able to show the states of his/her pass on the screen of his/her mobile phone where the Crownpass Holder App runs. (*Priority: High*)
* **FR-CH-03: Display Pass.** A successfully registered Crownpass holder should be able to display his/her pass on the screen of his/her mobile phone where the Crownpass Holder App runs. It should contain a photo of the pass holder and a QR code (also known as 2D bar code) that represents the pass holder’s identifier, and the infection state of the pass in colour code of *Green*, *Amber,* and *Red* as defined in Section 1, and the vaccination state in colour code of *White*, *Light Blue, Dark Blue* as defined in Section 1. (*Priority: High*)

**Non-Functional Requirements:**

* **QR-SC-01: Crownpass Holder**. The system must be able to provide services to around 40 million Crownpass holders nationally, who will register at the beginning period when the system rolls out (predicted to be 80% in the first 2 weeks).
* **QR-PF-01: Registration of Crownpass**. The response time for each interactive operation in the process of registration for a Crownpass should be no more than 20 seconds.
* **QR-SC-03: Check-in and Check-out**. The system should be able to provide services of check-in and check-out of controlled areas to the scale that the total numbers of check-ins and check-outs to controlled areas are predicted to be around 200 million per day during the weekends and holidays seasons, and around 100 million per day on other days.
* **QR-PF-04: Change Pass State to Red**. The time that a Crownpass’ state is changed into RED should be no more than 1 second after the Crownpass holder’s virus test result being positive is entered into the system.
* **QR-PF-05: Change Pass State to Amber**. The time that a Crownpass’ state is changed into Amber should be no more than 5 seconds after a Crownpass holder’s virus test result being positive in entered into the system.
* **QR-PF-06: Change Pass State to Green**. The time that a Crownpass’ state is changed into Green should be no more than 5 seconds after the pass holder’s virus test result being negative is entered into the system.
* **QR-PF-07: Notification of State Change**. The notification of the state change to a Crownpass holder should be send out within 10 seconds after the state change takes place, if the notification is required.
* **QR-RE-04: Mobile Apps Failure Rate**. For each mobile App on each platform and for each type of users, the failure rate should be lower than 0.3% per use.
* **QR-SE-04: User Authentication**. The uses of the system must be authenticated according to the following rules.
  + The system should prevent a person to own more than one Crownpass.
  + A Crownpass holder check-in to a controlled area using a Crownpass must be authenticated to be the true owner on the pass.
  + The user who uses a mobile App for any give type of users must be authenticated to be the true user of the mobile devices.
* **QR-SE-01: Individual User Data Privacy Protection**. The access to data of Crownpass holders are restricted to the following rules. No any other uses of the data are allowed.
  + The following elements of a Crownpass holder’s data are private and can only be accessed for both viewing and modification by the user of the Crownpass holder:
    - Name and address,
    - Contact details,
    - The times and dates of entering and leaving controlled areas
  + The Crownpass holder can view the virus test results and vaccination data and the state of the pass of his/her own, but not modify these data.

* + The registered photos of a Crownpass pass holder and the state of the pass should be viewed by the operation staff of controlled areas through scanning the QR code of the Crownpass in order to authenticate the person when using the Crownpass to enter a controlled area.
  + The user’s data can be viewed and modified by the system operation staff when managing Crownpass accounts as requested by a Crownpass holder and restricted to access only the part of relevant data.
* **QR-PC-01: Mobile Apps Platform.** The mobile App for each type of users must be available for top 5 smart mobile phone operating systems (including different versions), and top 10 makes and models.
* **QR-PC-02: Desktop/Web-based Application Platform**. The desktop/web-based computer systems for a disease control centre, test centre and vaccination management should be available for the Windows, Mac and Linux operating systems and compatible with Chrome, Firefox and Safari web browsers.