



# **Integrated Visitor Management System (IVMS) Proposal**

Theme:  
Innovation in Healthcare

Team:  
me and the boy in healthcare



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# 01 Problem

## Visitor Management

The onset of COVID19 underscores the importance of **social distancing** and **crowd control** at vulnerable areas such as hospitals



## 02 Significance Of Problem

### Current Visitor Management Issues



#### Difficulty in monitoring visitors

Without an integrated visitor management system, it is difficult to track visitor numbers in real time



#### Unintuitive visitor registration

Registering to visit patient in the hospitals is difficult and may result in breach of safety guidelines



#### Stress on patient

An inefficient visitor management system places unnecessary stress on patients and their visitors

## 03 Solutions Introduction

### IVMS: A 3-part solution



#### Web Portal

Visitors can log in to the front-end web portal for easy visitor registration



#### Software Framework

The GUI that allows hospital staff to easily regulate and enforce the number of visitors for each patient



#### Physical System

To be installed on-site to capture, record, and upload visitor data onto the online platform

## 04 Impact Of Solutions

1. Eliminates manual input from staff (screening, registration)
2. Flexibility in changing regulations

### Benefit To Society



### Existing Solutions' Issues

1. Crowds around registration kiosks
2. Manual labour means it is slow, inefficient and prone to human error



1. Increased accessibility and safety for staff
2. Reduced hardware necessary on-site (bulky registration kiosks)

### Competitive Advantage

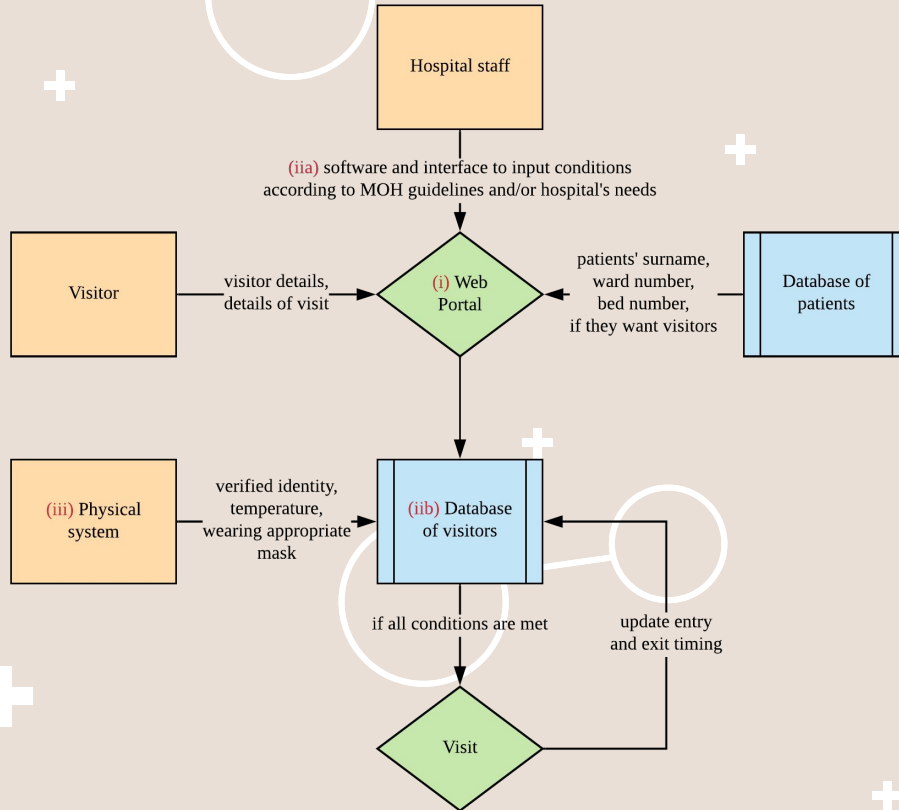


05

# Deep Dive Into Solution



# Level 2 Data Flow Diagram



Green: Front-end web portal (i)

- For visitors to view available time slots
- For visitors to register for visits

Blue: Back-end software (iia and iib)

- For hospital staff to alter visiting restrictions

Yellow: Physical system (iii)

- Verify the identity of the visitor
- Check the health status of the visitor as per COVID regulations



# Sneak Peek: Web Portal

- Mock-up of proposed solution using Google Forms
- Drop-down calendar registration system that allows friends/family to register for visitation on available days/times
- Envision this web portal to be created using HTML/CSS/NodeJS
- Database could be hosted on MySQL on the hospital's servers

**VMS Appointment Form**

Welcome to Farrer Park Hospital.  
Please fill in the details below to arrange an appointment with the patient you wish to visit.

\* Required

Which floor is the patient that you wish to visit on? \*

Choose

What is the patient's bed number? \*

Choose

Patient's Surname \*

Your answer

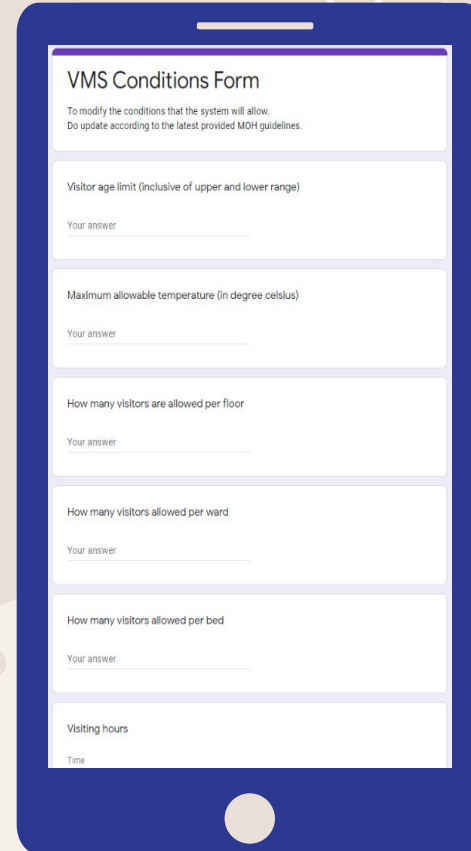
Date of Appointment \*

Date

dd/mm/yyyy

# Sneak Peek: VMS Conditions

- Rooted in simplicity - allow regulations to be implemented easily by hospital staff
- Conditions include:
  - Visitor limitations (age limit, temperature limit, mask worn, etc.)
  - How many can visit
  - Which ward is accessible to them
- **Modular** and **extensible** on hospital-side, meaning that there is no need for software developer to modify source code every time guidelines have to be updated



The image shows a blue smartphone with a white screen displaying a form titled "VMS Conditions Form". The form includes instructions: "To modify the conditions that the system will allow, Do update according to the latest provided MOH guidelines." Below this, there are five sections, each with a question and a "Your answer" input field. The questions are: "Visitor age limit (inclusive of upper and lower range)", "Maximum allowable temperature (in degree celsius)", "How many visitors are allowed per floor", "How many visitors allowed per ward", and "How many visitors allowed per bed". At the bottom of the form, there is a section for "Visiting hours" with a "Time" input field. The smartphone has a white home button at the bottom.

VMS Conditions Form

To modify the conditions that the system will allow,  
Do update according to the latest provided MOH guidelines.

Visitor age limit (inclusive of upper and lower range)

Your answer

Maximum allowable temperature (in degree celsius)

Your answer

How many visitors are allowed per floor

Your answer

How many visitors allowed per ward

Your answer

How many visitors allowed per bed

Your answer

Visiting hours

Time

# Physical Systems<sup>+</sup>

## 1. Identification Card scanner<sup>+</sup>

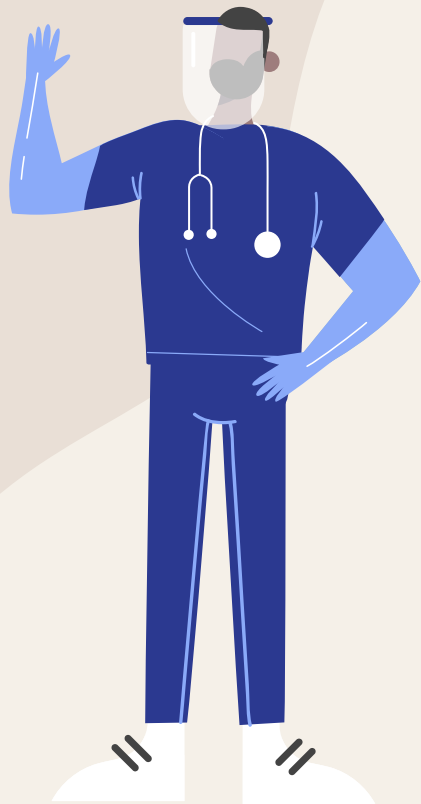
Visitors can scan their identification cards at the gantries which will then cross-check with our web portal to verify the identity of the visitor.

## 2. Temperature scanner/ Face recognition<sup>+</sup>

The scanner will ensure that visitors' body temperatures are within acceptable ranges. Furthermore, an AI face recognition system could be implemented to verify one's identity as well as to ensure they are wearing a mask.

## 3. Visitor live count<sup>+</sup>

Our systems track visitors' entry and exit. Hence, a monitor within the premises will be utilized in order to project live visitor counts for hospital staff to monitor.





**Going Further**

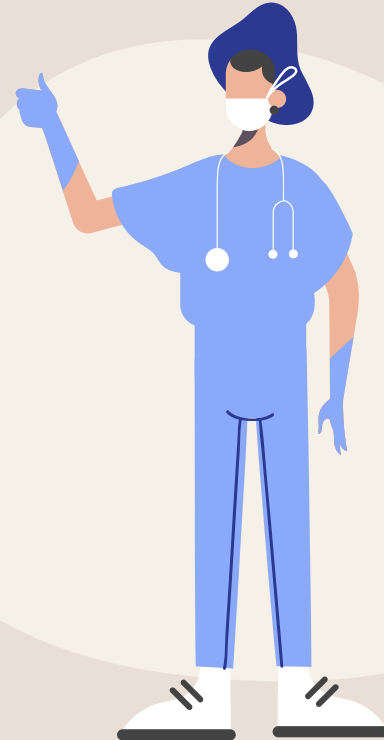
**06**

# Going Further

Given more time, the solution could be improved through

- Increased accessibility to Persons with Disabilities
- Integration with Government database systems to improve the efficiency of identity verification

The product could also be commercialized by marketing it to both public and private healthcare providers





**Do check out the simulation we  
created envisioning how the  
back-end will operate!**

# Thank you!

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