
Virgin
hyperloop
PASSENGER FLOW CONTROL SYSTEM

Objectives:

- Optimize passenger flow
- Reduce dwell time
- Allows pods from different platforms to form a convoy thereby reducing time and increasing efficiency
- Passenger crowding minimalized
- On demand booking
- Smooth and fast journey from beginning till the end
- Passengers can pick the time (in mins) at which they would like to start their journey
- Only a minimum number of itinerary changes is required if 1 or more pod bay shutdowns

Automated queue detection using motion sensors

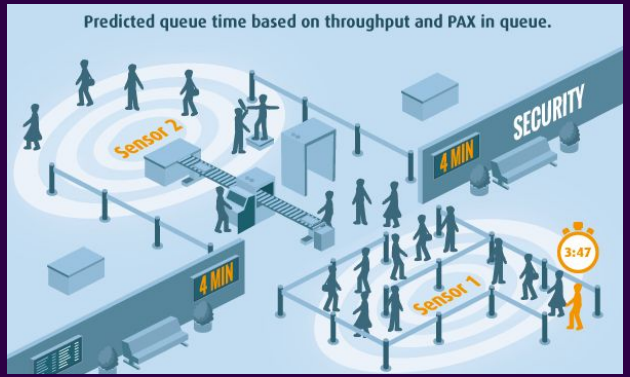
Motion sensors are used to predict the expected waiting time in queues (check-in lines, security etc.)

The data from the sensors is fed into our software and displayed on the screens so that the passengers can be navigated to a queue with the minimum wait time.

Software Features

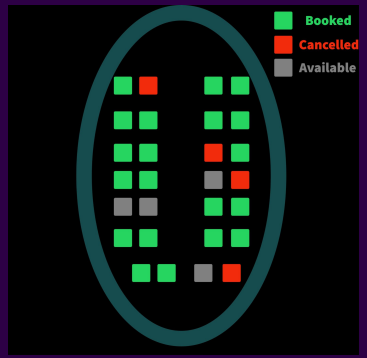
- **History of past and current bookings** - previous bookings are tabulated from the booking app database.

- **Prediction of wait time** - using the data received from sensors, the system calculates the average wait time at each queue and based on this data, the system calculates and displays the lane with the least waiting time on the sign boards.



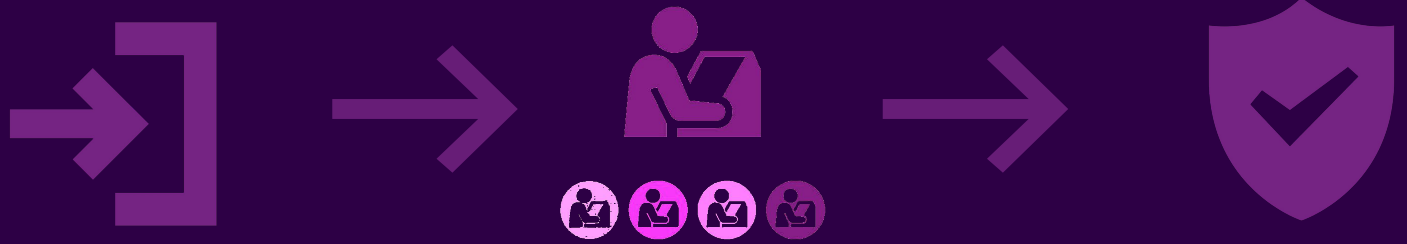
Software Features

- **CCTV footage**
- **Prediction of passenger count** - the system calculates average number of passengers at a given time and provides graphical representation of the same.
- **Current status of each platform** - provides a pictorial representation of the seats occupied in each pod.
- **Calculate dwell time of convoy** - Change pod frequency (based on number of bookings received), platforms (in case of an off-nominal scenario)



Passenger flow

Unpaid level:



Entrance

Check-in

Security

Passenger flow

Paid level:

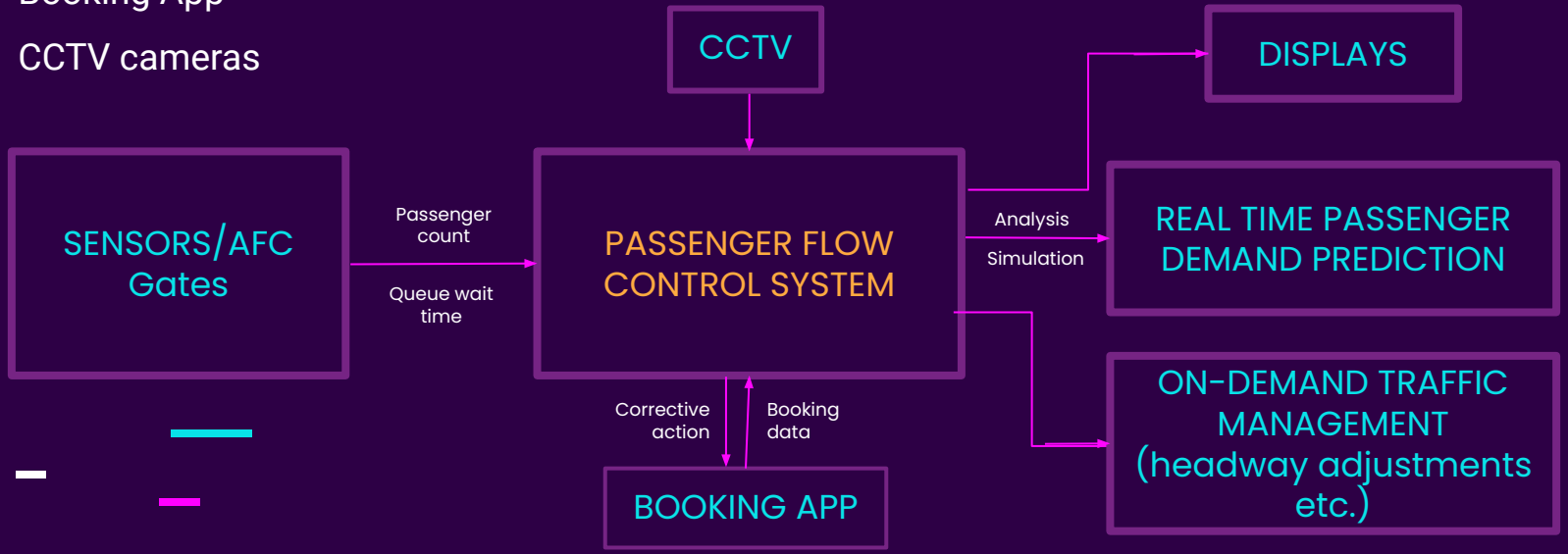
Concourse

Platform

Podbay

Input Data sources

- Motion sensors - to detect human presence and track their movement
- AFC gates - for measuring queue wait time and to detect passenger count
- Booking App
- CCTV cameras



Technologies for smooth passenger flow

Shuttle train: to transport passengers across the concourse within seconds

Motion sensors: to generate the input data (passenger count, wait time)

AFC Gates: fast check-in, passenger count

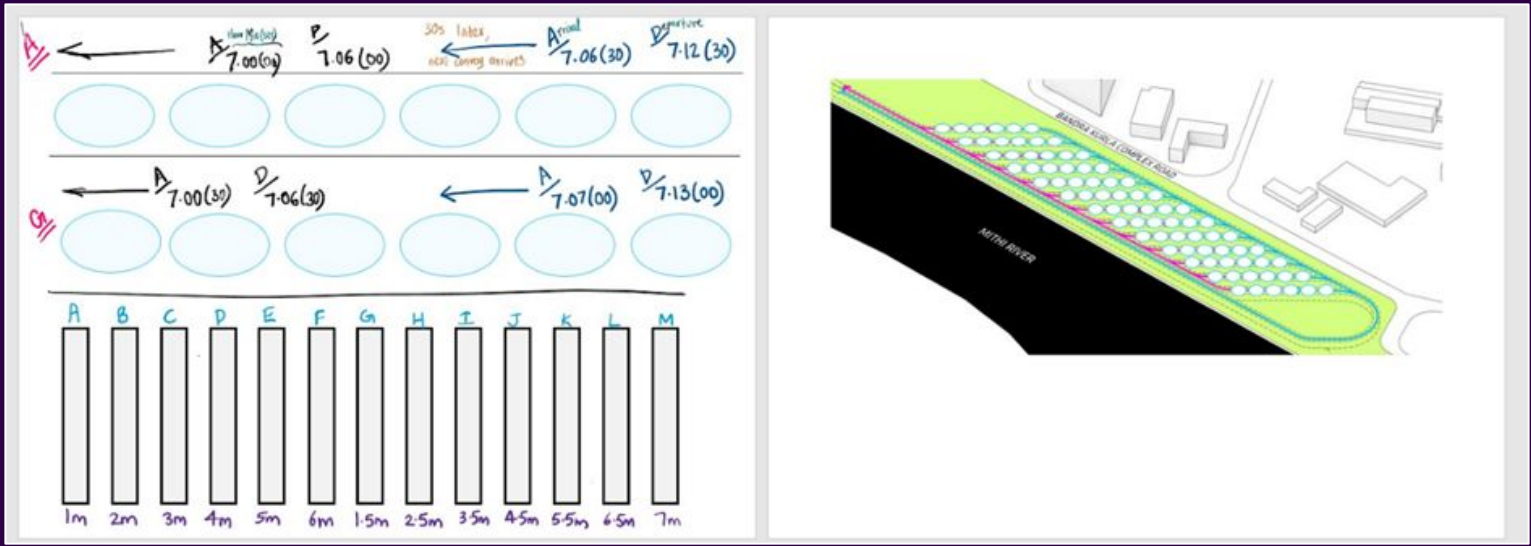
Further travel into city

TAXI SERVICE

SHUTTLE BUS FACILITY TO
UPCOMING BKC METRO STATION

PLATFORMS

- Normal conditions - only 11 (A-K) among 13 (A-M) platforms functions
- Does not affect efficiency
- Off-nominal scenario (eg: 2 pod bays malfunction) - Spare 2 platforms are put to use



CALCULATIONS (peak hour)

Time taken between one convoy leaving a platform and another convoy replacing it:
= 6mins (min dwell time) + 30s (min headway) = 390s
(i.e., 1 convoy/390s)

In 1hr, 3600/390 = 9 convoys = 1512 passengers

Peak passenger traffic = 16,000/hr
No. of platforms required = 16,000/1512
1512 * (x platforms) = 16000
1512 * 11 = 16632 passengers/hr = 96 convoys

632/28 ~ 22 pods ~ 4 convoys
4 convoys = 672 passengers (96-4 = 92 convoys/hr/direction)
16632-672= 15960 passengers (<16000)

Thus, 11 platforms are only required to function per hour to satisfy the peak passenger traffic count. The 2 others can be kept as spare to be used during an off-nominal scenario.

THANK YOU!

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