



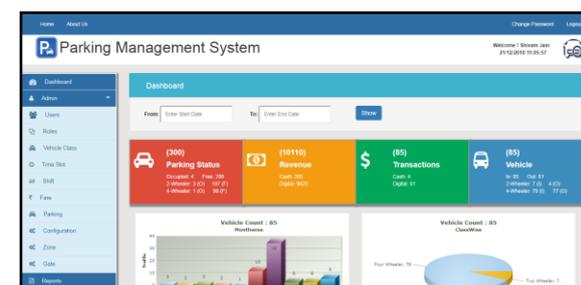
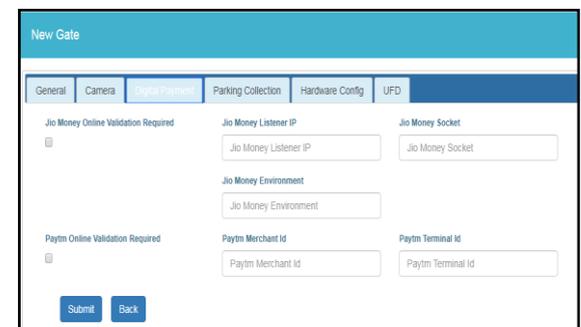
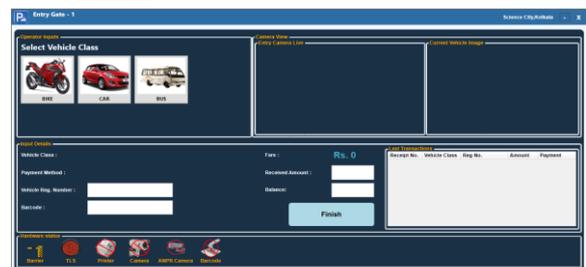
PARKING MANAGEMENT SYSTEM TECHNICAL DATASHEET

At a Glance

Parking Management System as the name suggests, allows easier management of parking spaces in parking lots, shows the unoccupied parking space and guide the users for quick access of parking location through navigation. There are mainly three main actors involved in the scene, the visitor who is driving the vehicle, parking operators who manages the parking lot and the system.

Followings are the main feature of Vaaan's Smart Parking Management System

- User-friendly smart parking system that can be implemented in parking lots to ease parking hassles.
- Reduced congestion through improved capacity of arterial & collector streets through regulated parking that does not block smooth movement of through traffic.
- Parking guidance for user's assistance by clear and simple directions on Mobile platform.
- Reduce leakages in parking through utilization of digital payment methods for paying parking charges.
- Availability of parking slot on real-time basis through web portal / parking App and optimization of parking lot occupancy.
- Real-time update of entry & exit of vehicle, parking violations.
- Improved revenues through enhanced efficiency and transparency.
- Improved user satisfaction by saving time, effort & cost.
- Flexibility of tariff based on the demand (Peak, non-peak, special events etc.)
- Enable enforcement of penalties on parking violations
- Availability of real-time data for analysis and business Intelligence for understanding consumer behaviour, parking demand and supply.
- Enable to provide advanced information and guidance on mobile handsets for availability of parking spaces in and around the user destinations.
- Integration with Central Control Centre for viewing, analysing the CCTV feed and monitoring and managing of Smart Parking.



Types of Parking

Followings are the main types of Parking Systems available in Cities, Malls, Hospital and Airports

- Multi – Level Parking System
- Indoor Parking System
- Off – Street Parking System
- On – Street Parking System



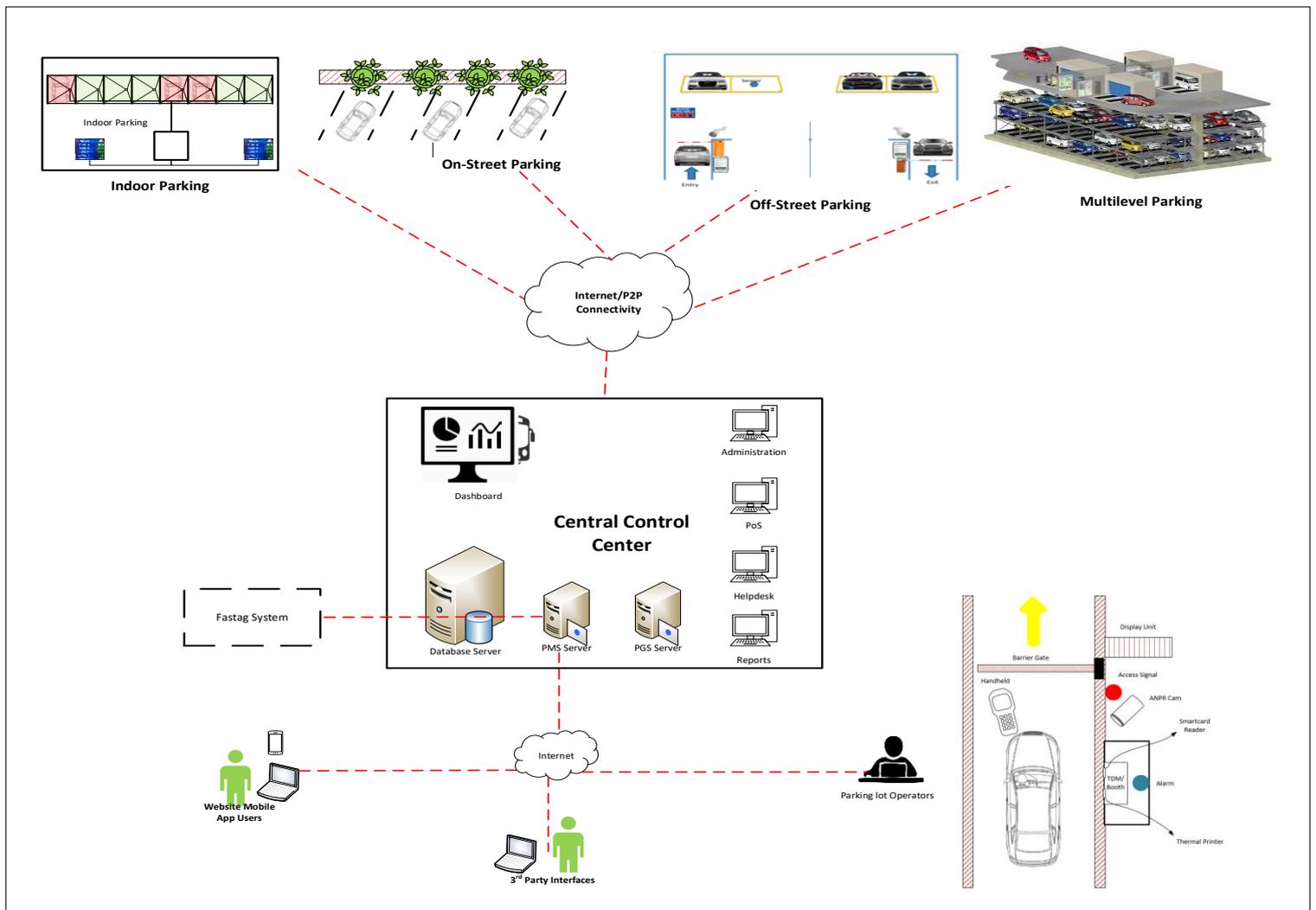
Parking Payment Models

Following are the main models of the Parking Management Systems

1. RFID/Fastag Entry/Exit based Parking Management System
2. Automatic Ticket Dispensing Based Entry/Exit Parking System
3. Proximity Sensor Based entry/exit Parking System



Smart Parking Design Overviews



Smart Parking Solution



VaaN Back-office Parking Solution

Long Range UHF ETC reader

Bulletin Board

PARKING SPACE AVAILABLE			
LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
22	35	77	78

License Plate Detection

License Plate Detection

Access Control

Car Detection



VaaN

Tech Systems & Infra Solutions

Vehicle Access Control Solution

Use Case – Open Street Parking



Pre-Booking /
Registration

Guidance to
Parking

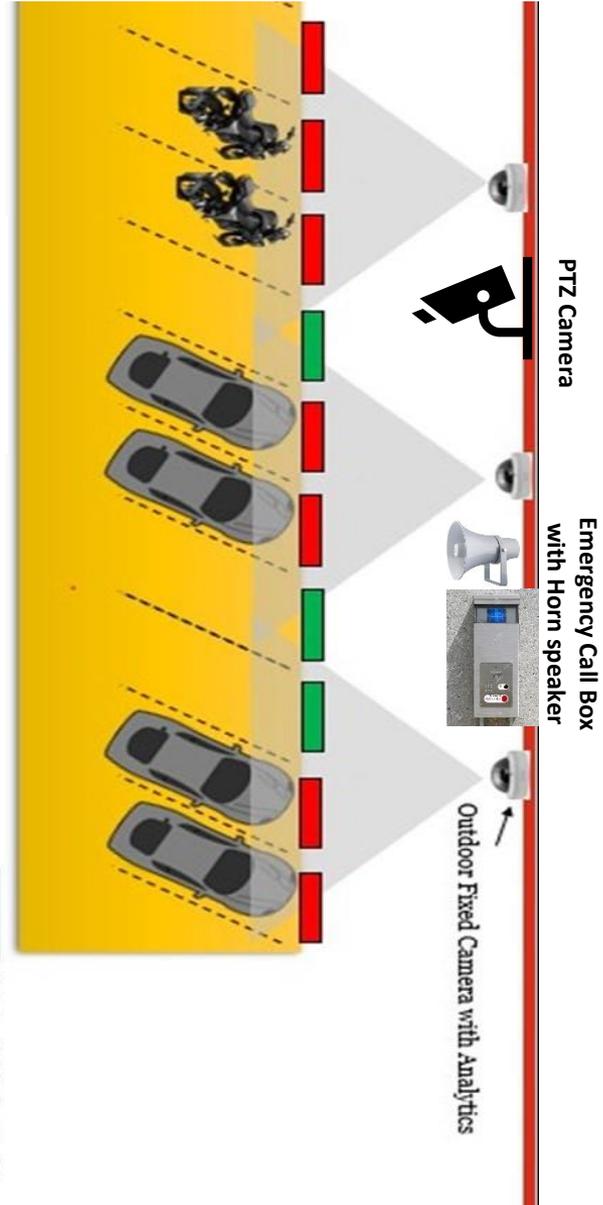


Smart City /
Enforcement
Agency interface



Monitoring at SCOC + PA System

Control Room Operator Dashboard & SIP Phone
for Commuter Interaction + Back-office Software



Fare (App/SMS)



Use Case – Automated Parking



VaaN
Tech Systems & Infra Solutions

QR Code on Mobile App



Pre-Booking /
Registration

Guidance to
Parking

1/2-level Ticket Dispenser
(QR code reader, Smart Card
Reader, Intercom, Touch-
screen Monitor, paper-ticket)

Image Capture Camera



SPACES	
LEVEL 4	160
LEVEL 3	113
LEVEL 2	134
LEVEL 1	0
LEVEL 0	20

Display



Mobile based QR



Entry Zone



Barrier



Smart City /
Enforcement
Agency interface



Control Room Operator Dashboard &
SIP Phone for Commuter Interaction +
Back-office Software



Fare (App/SMS)

Fare Display



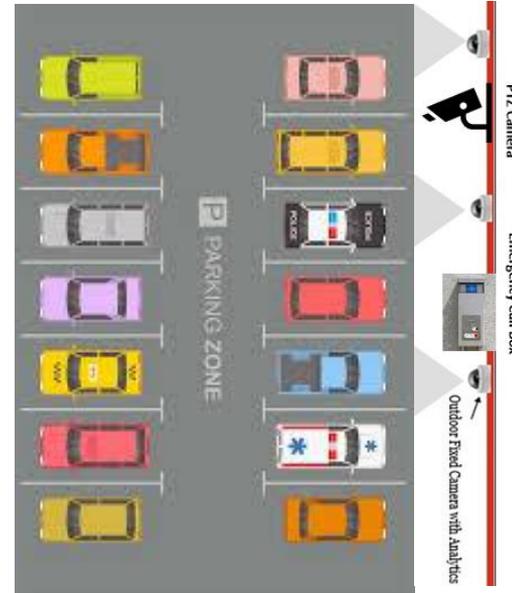
Barrier

Video Analytics (ANPR / Classification)



Exit Zone

1/2-level Ticket Dispenser





Use Case – Automated Parking



Paper QR Code

Pre-Booking /
Registration Guidance to
Registration Parking

1/2-level Ticket Dispenser
(QR code reader, Smart Card
Reader, Intercom, Touch-screen
Monitor, paper-ticket)

Image Capture Camera



Display



Barrier

Paper
QR
Code



Entry Zone



Smart City /
Enforcement
Agency interface



Control Room Operator Dashboard &
SIP Phone for Commuter Interaction +
Back-office Software



Fare (App/SMS)



PTZ Camera

Emergency Call Box

Outdoor Fixed Camera with Analytics

Fare Display



Barrier

Video Analytics (ANPR / Classification)



Exit Zone

1/2-level Ticket Dispenser

Use Case – Automated Parking

Smart Card

Pre-Booking /
Registration



1/2-level Ticket Dispenser
(QR code reader, Smart Card
Reader, Intercom, Touch-
screen Monitor, paper-ticket)



Image Capture Camera



SPACES	Count
LEVEL 4	160
LEVEL 3	113
LEVEL 2	134
LEVEL 1	0
LEVEL 0	20

Display

Barrier



Entry Zone

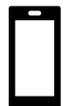
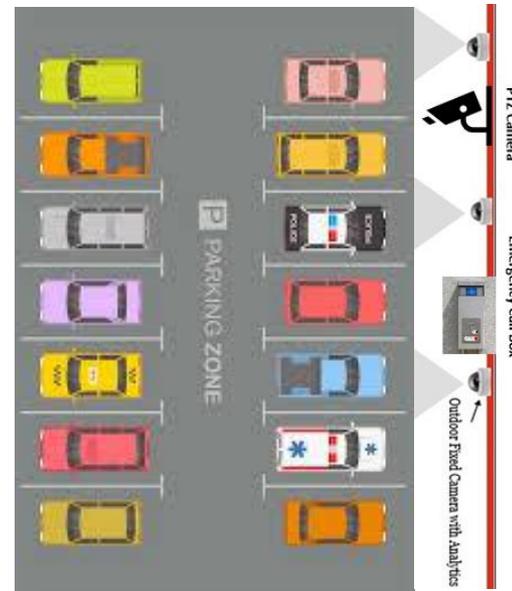
Guidance to
Parking



Smart City /
Enforcement
Agency interface



Control Room Operator Dashboard &
SIP Phone for Commuter Interaction +
Back-office Software



Fare (App/SMS)

Fare Display



Barrier



Exit Zone

Video Analytics (ANPR / Classification)

1/2-level Ticket Dispenser

Use Case – Automated Parking

RFID

Pre-Booking /
Registration

Guidance to
Parking

1/2-level Ticket Dispenser
(QR code reader, Smart Card
Reader, Intercom, Touch-
screen Monitor, paper-ticket)

Image Capture Camera

Barrier

Display

RFID Reader

Entry Zone

RFID Tags on car

Smart City /
Enforcement
Agency interface

Control Room Operator Dashboard &
SIP Phone for Commuter Interaction +
Back-office Software

Fare (App/SMS)

Video Analytics (ANPR / Classification)

Fare Display

Barrier

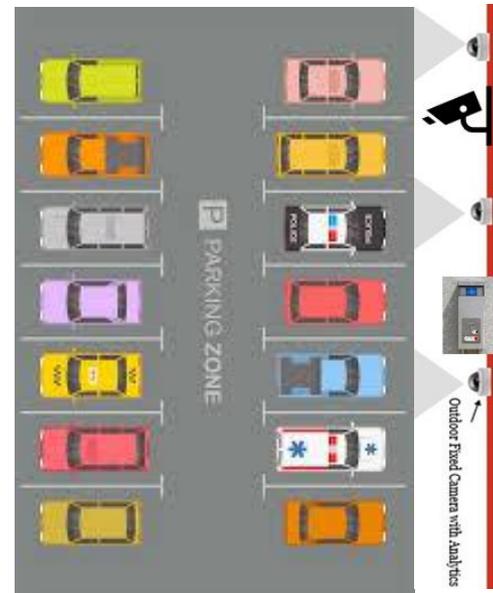
RFID Reader

1/2-level Ticket Dispenser

Exit Zone



SPACES	Count
LEVEL 4	160
LEVEL 3	113
LEVEL 2	134
LEVEL 1	0
LEVEL 0	20



Use Case – Automated Parking



ANPR



Pre-Booking /
Registration

Guidance to
Parking

1/2-level Ticket Dispenser
(QR code reader, Smart Card
Reader, Intercom, Touch-screen
Monitor, paper-ticket)

Video Analytics (ANPR / Classification)



SPACES	😊
LEVEL 4	160
LEVEL 3	113
LEVEL 2	134
LEVEL 1	0
LEVEL 0	20

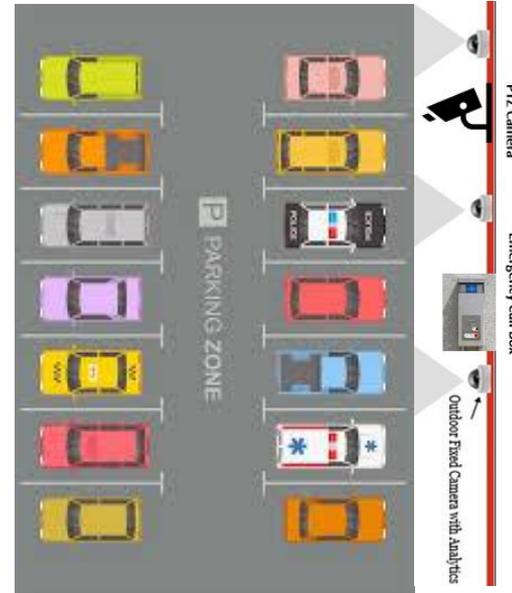
Display



Barrier



Entry Zone



Smart City /
Enforcement
Agency interface



Control Room Operator Dashboard &
SIP Phone for Commuter Interaction +
Back-office Software



Fare (App/SMS)

Fare Display



Barrier

Video Analytics (ANPR / Classification)



Exit Zone

1/2-level Ticket Dispenser

Use Case – Automated Parking Facial Recognition System



Pre-Booking /
Registration

Guidance to
Parking

1/2-level Ticket Dispenser
(QR code reader, Smart Card
Reader, Intercom, Touch-
screen Monitor, paper-ticket)

Cam 1: FRS

Barrier



Display



Cam 2: Video Analytics (ANPR / Classification)

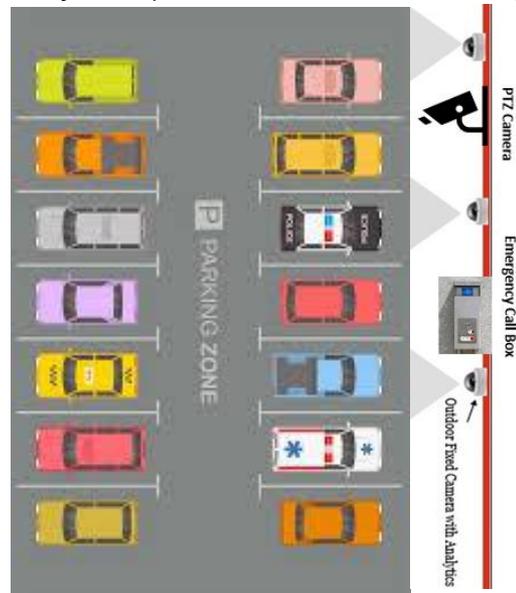
Entry Zone



Smart City /
Enforcement
Agency interface



Control Room Operator Dashboard &
SIP Phone for Commuter Interaction +
Back-office Software



Fare (App/SMS)

Fare Display



Barrier

Cam 1: FRS



Exit Zone

Cam 2: Video Analytics (ANPR / Classification)

1/2-level Ticket Dispenser

Use Case – Hybrid Parking (Cash at exit)



Pre-Booking /
Registration



Guidance to
Parking

1/2-level Ticket Dispenser
(QR code reader, Smart Card
Reader, Intercom, Touch-
screen Monitor, paper-ticket)



Entry Zone



ANPR / FRS



RFID Reader



Display



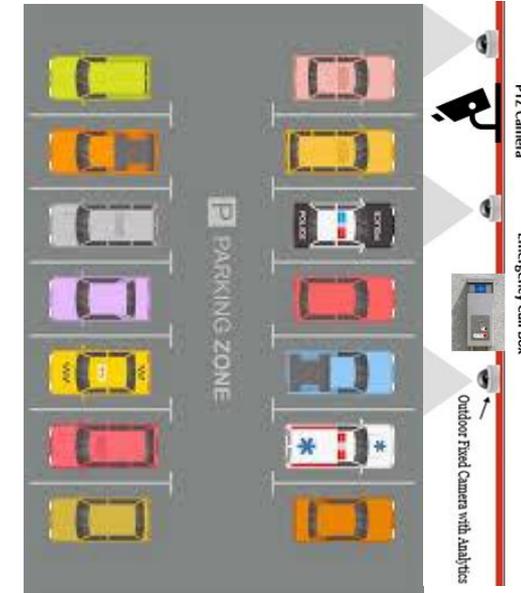
Smart City /
Enforcement
Agency interface



Control Room Operator Dashboard &
SIP Phone for Commuter Interaction +
Back-office Software



Fare (App/SMS)



Fare Display



ANPR / FRS



Barrier

RFID Reader



Parking Controller Operator



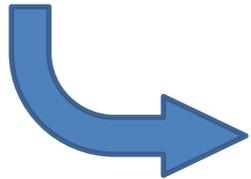
Exit Zone

Use Case – Manual Parking (Operator at Entry & Exit)



SPACES	Count
LEVEL 4	160
LEVEL 3	173
LEVEL 2	134
LEVEL 1	0
LEVEL 0	20

Display



Entry Zone

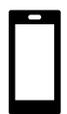
Parking Controller Operator ANPR / FRS



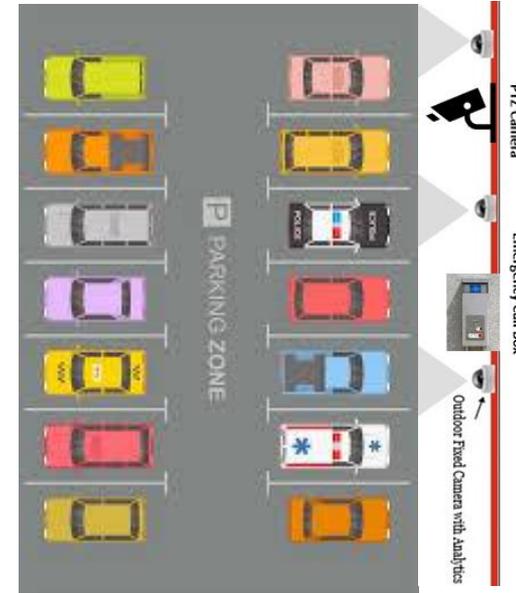
Smart City /
Enforcement
Agency interface



Control Room Operator Dashboard &
SIP Phone for Commuter Interaction +
Back-office Software



Fare (App/SMS)



Fare Display



ANPR / FRS



Exit Zone



Parking Controller Operator

Contact Us



VaaN

Tech Systems & Infra Solutions



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www.VaaNInfra.com



MAVERICK QUALITY ADVISORY SERVICES PRIVATE LIMITED
Cert-IN Empanelled

APPLICATION SECURITY AUDIT CERTIFICATE

This is to certify that **Smart Parking System** of **VaaaN Infra Pvt. Ltd, Villa -8 Block II, Eros Garden, Surajkund Road, Delhi NCR-121009, (Faridabad), India** deployed for **Smart Kalyan Dombivli Corporation Ltd (SKDCL)** has been tested & Audited by MQAS. Herein, security audit was done for complete Application. MQAS reviewed the fixes and observed to be compliant with requirements relating to security as per Cert-IN (Indian Computer Emergency Response Team) guidelines.

Certificate No	:	MQAS/2022-23/452
Application Name	:	VaaaN- Smart Parking Online Ticket Booking App (Android) VaaaN- Smart Parking Online Ticket Booking App (IOS) VaaaN- Smart Parking Backend Application (PMCS) VaaaN -Smart Parking Online Ticket Booking App (Web Portal)
Test URL (APK/IPA)	:	KDMC Smart Parking.apk SmartParkingManagementSystem.ipa https://smartparking.kdmc.gov.in https://smartparking.kdmc.gov.in:8080
Audit Date	:	28th November 2022 to 16th January 2023

Conclusion:

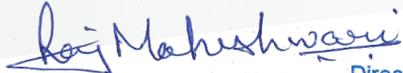
Web Application is free from OWASP 2021 Top 10 (any other known) vulnerabilities and is safe for hosting.

Recommendation:

1. It is recommended the deployment of SSL on production server for the Web Application.
2. The site below applications may be hosted with privilege with read permission for general public.
3. Write permission shall be granted on the folders of production server where files shall be uploaded for the given URL:
 - VaaaN- Smart Parking Online Ticket Booking App (Android)
 - VaaaN- Smart Parking Online Ticket Booking App (IOS)
 - VaaaN- Smart Parking Backend Application (PMCS)
 - VaaaN- Smart Parking Online Ticket Booking App (Web Portal)
4. Web server and OS hardening need to be in place for the production server.

Note: The certificate is valid till no additional changes in the dynamic contents carried out or one year from the date of issue, whichever is earlier.

For Maverick Quality Advisory Services Pvt. Ltd.


Director

Raj Maheshwari
Director

17-January-2023

Issue Date