OpenPark IOT Parking Solution





About OpenPark Technologies Kft



- We develop embedded devices, sensors and controllers for smart mobility and smart buildings and utility infrastructure integration
- that brings open IOT enabled solutions to the hands of city operators,
 real estate developers and facility managers

Ready and Deployable Products and Services Combined with Product Design Services enabling Smart Cities with open architecture solutions















R&D and Manufacturing capabilities







- Electronics and software R&D and manufacturing in Hungary since 2014
- Manufacturing of mechanical and electronics elements at manufacturing facilities at Pecs and Budapest facilities in Hungary
- ISO 9001-2015, ISO 14001-2015 Certification
- Comprehensive development & testing process
- Hardware & Embedded software skills (wireless microcontroller, wireless protocol, IoT web development, Android & IOS apps)
- Full in-house design and development from prototypes to certification process
- R&D product customization capabilities













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PARKING MANAGEMENT SYSTEMS

Cloud solution with local gateways to manage all parking activities, access control for vehicles and pedestrians.



PARKING GUIDANCE SYSTEMS

Parking sensors and parking counters can collect & publish to the cloud & data is pushed to mobile apps and displayed in LED signs.

ACCESS CONTROL AND TICKETING

Management for facilities access whether permanent, temporary, ticket or invitation.

E-PAYMENTS AND E-WALLETS

Mobile app can accept credit cards globally and local e-payment partners integrated in several markets.

SMART PARKING KEY BENEFITS



No cash needed for car owner and no cash handling



Balance reach
Property owner /
parking operator in
real time



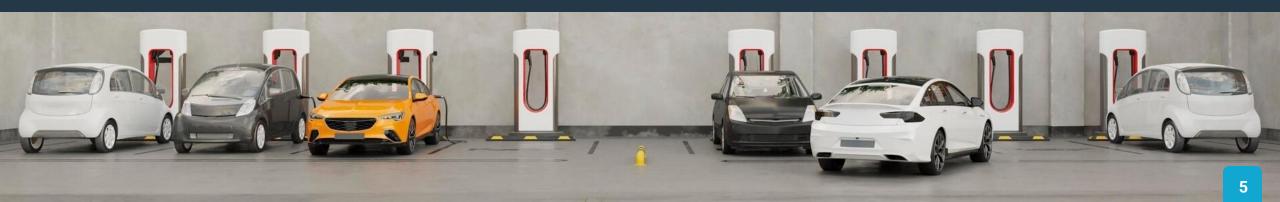
Easy mobile app with Google map navigation to free spot

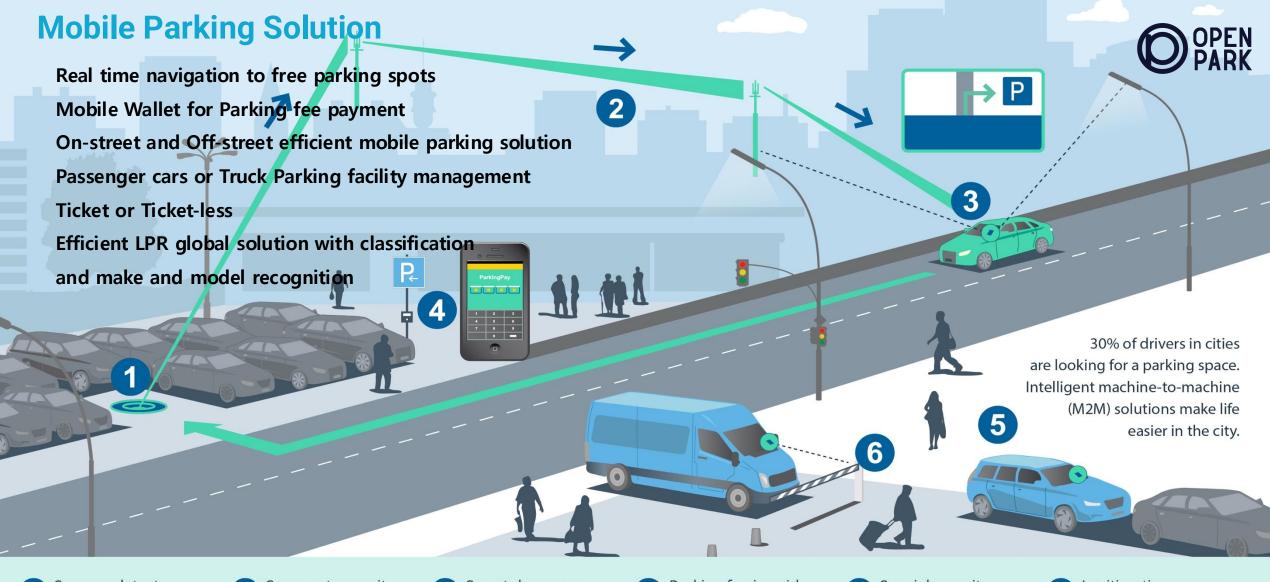


Dynamic pricing according to the day of the week, hours or holidays



Real time update
with verification
images from the
street / parking lot
to the cloud





- Sensors detect
 whether a parking
 space is occupied or
 vacant
- 2 Sensors transmit data to the central server
- 3 Smartphone app requests a parking space and guides drivers to the free space
- Parking fee is paid directly through the app
- 5 Special permit:
 parking and local resident IDs
 permits for taxis, coaches, deliveries
- 6 Legitimation: access control to restricted traffic areas such as loading zones, residential parking

Why OpenPark







Open API



White label



IOT Cloud Solution



Cash-less



Ticket-less

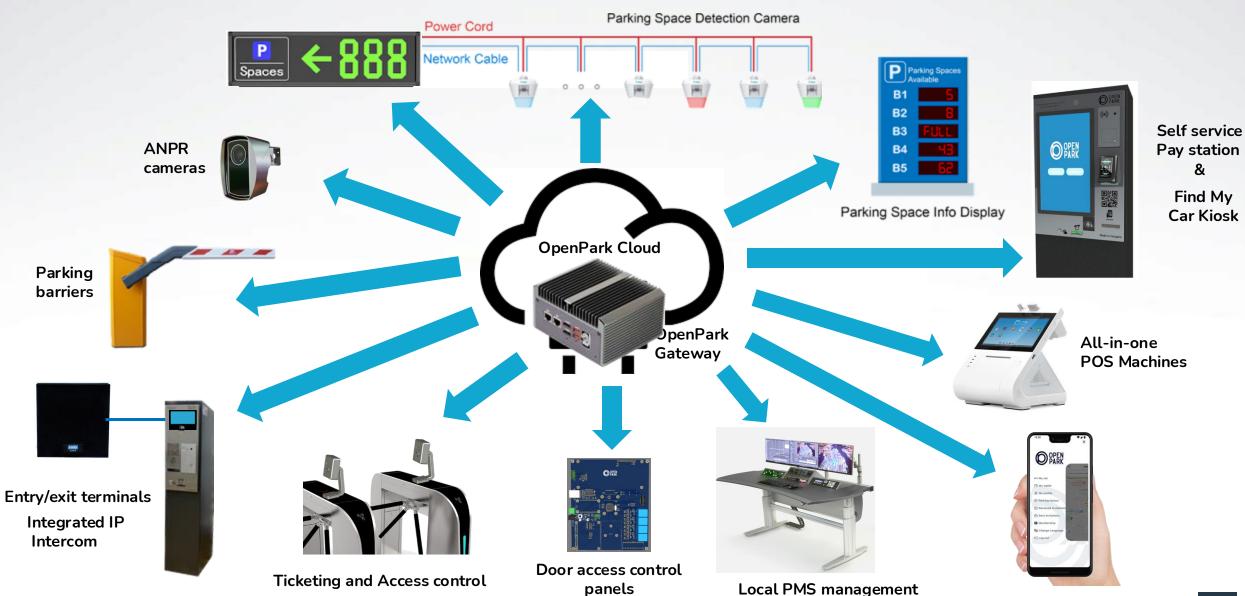




EU quality

Parking / Access control solution





Our Product (2/2) – Peripherals



Parking Access Control



Smart Gate terminals



Smart Barriers



License plate recognition cameras

Pedestrian Access Control



Smart Access control readers / Ticket reader terminals



Smart Turstiles



Access Control Panels

Parking Guiding Systems



Parking space detection LoraWAN



Inegrated ultrasonic parking space detector-indicator



LED Information displays

Product (1/3) - OpenPark Cloud





Accept Mobile Payment



Add Parking Locations



Sell Reservations



Add Pictures of Locations



Update Parking Info



Reporting & Analytics

- OpenPark hosted Cloud Parking / Ticketing Solution
- Web dashboard and mobile app
- Can monitor space utilization and electronic payments real time

Open IOT integration of other traffic control and infrastructure systems and other Smart city applications



Third party integration



Third party IOT platforms (MQTT – Comulocity – Software AG, RapiMQ)



Video Management Systems and Access control (OPC-UA – Milestone- Tyco)



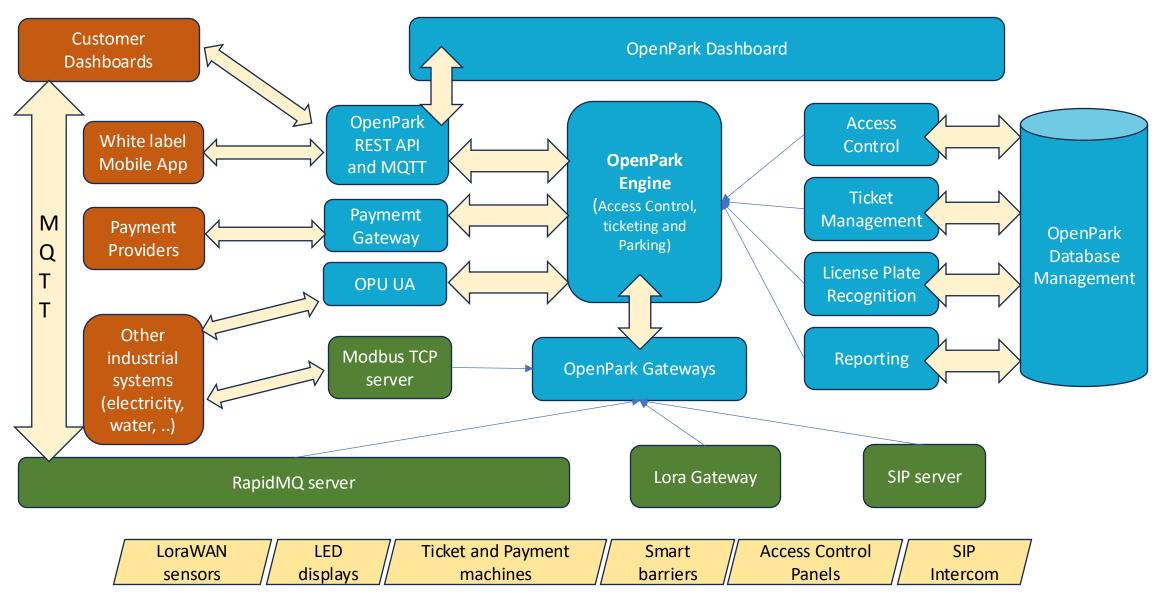
ERP systems interation (REST API implemented with SAP and Infor)



Payment gateways integration (Google Pay-Apple Pay- Fawry –efinance-Master-VISA)

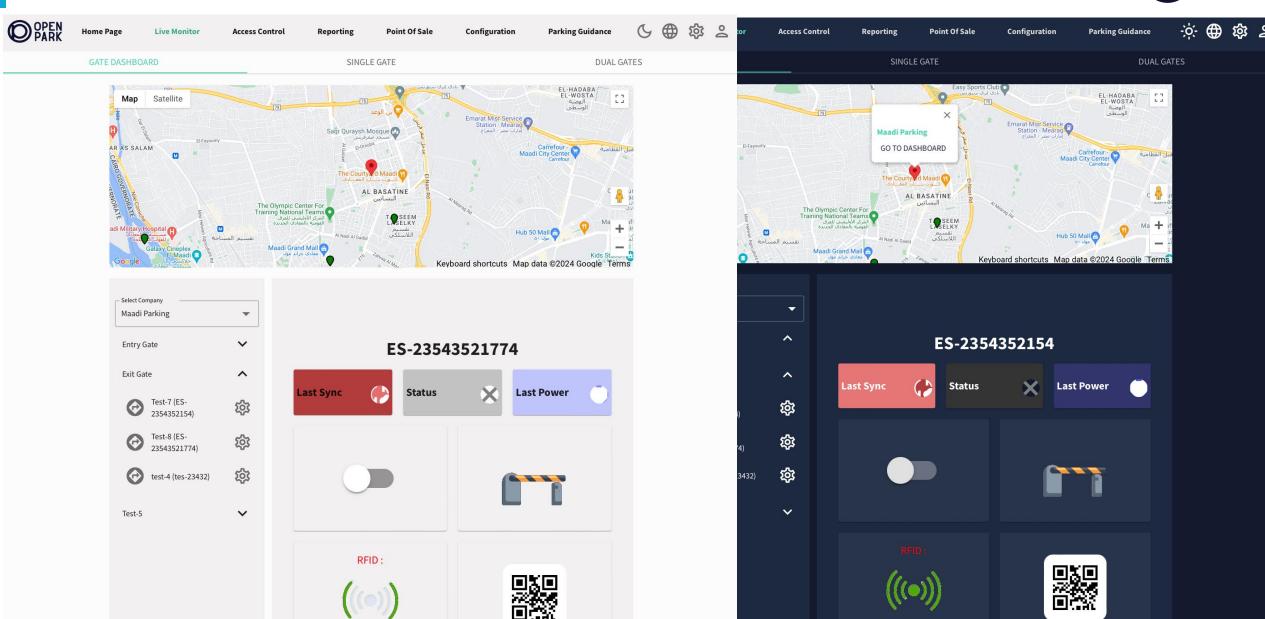
OpenPark Software Architecture

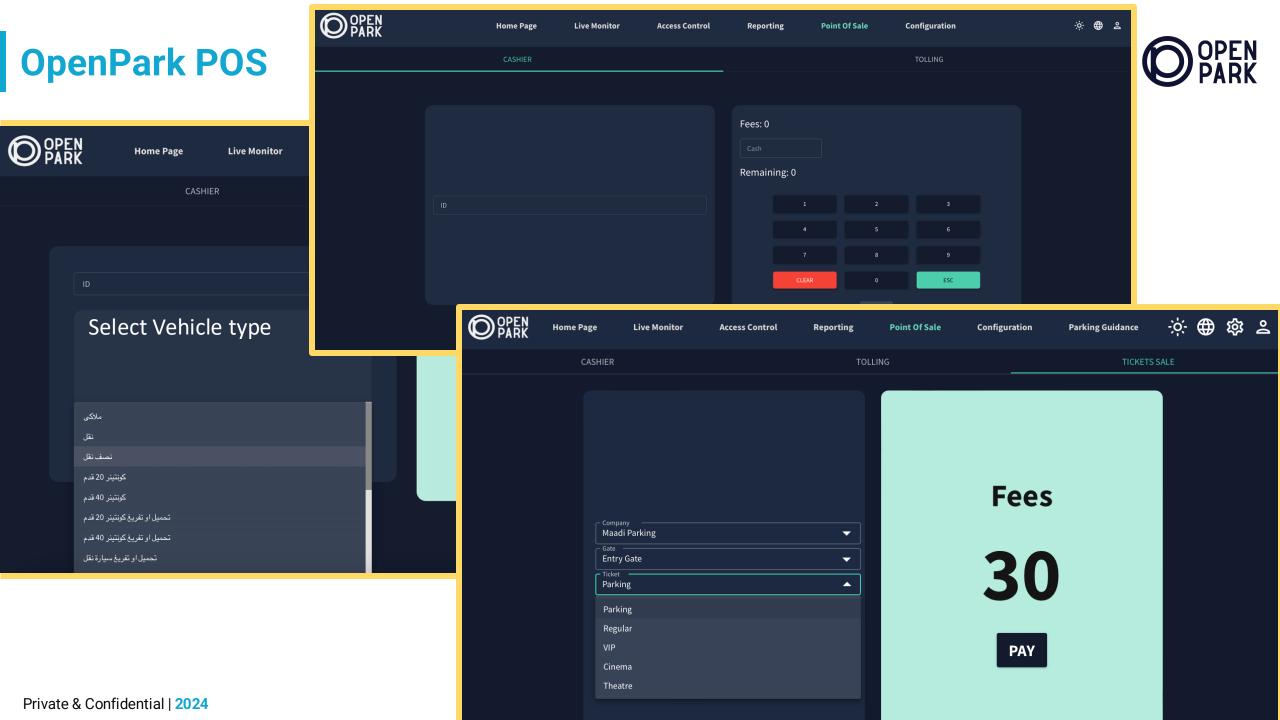




OpenPark Management Software

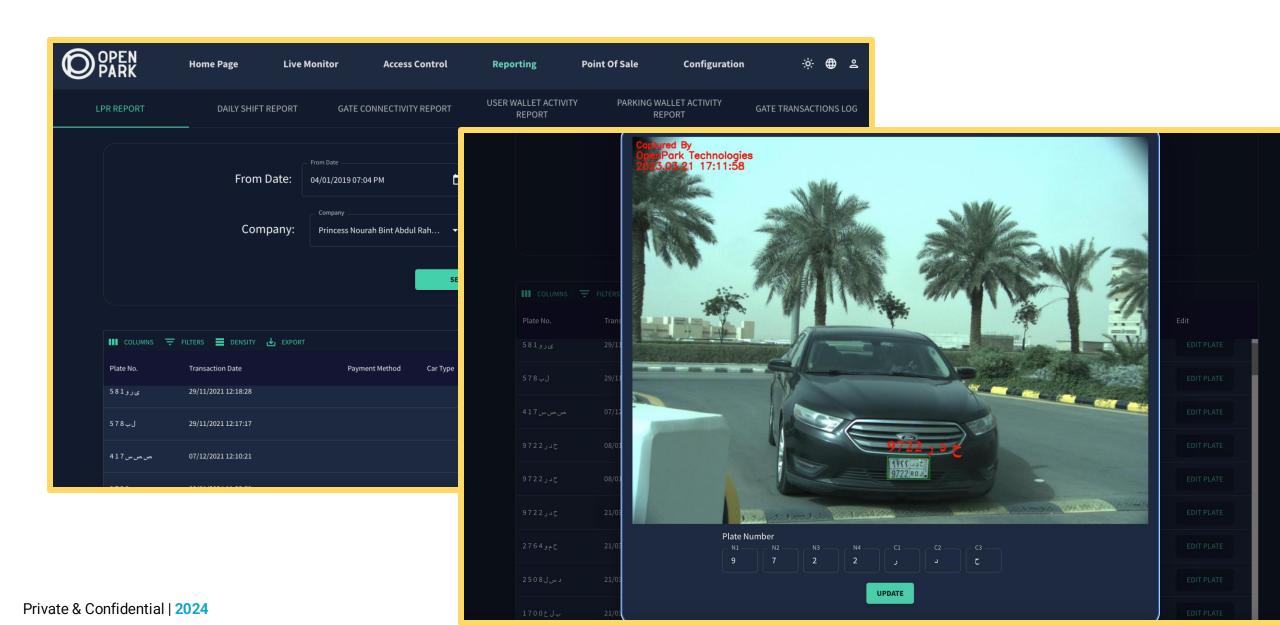






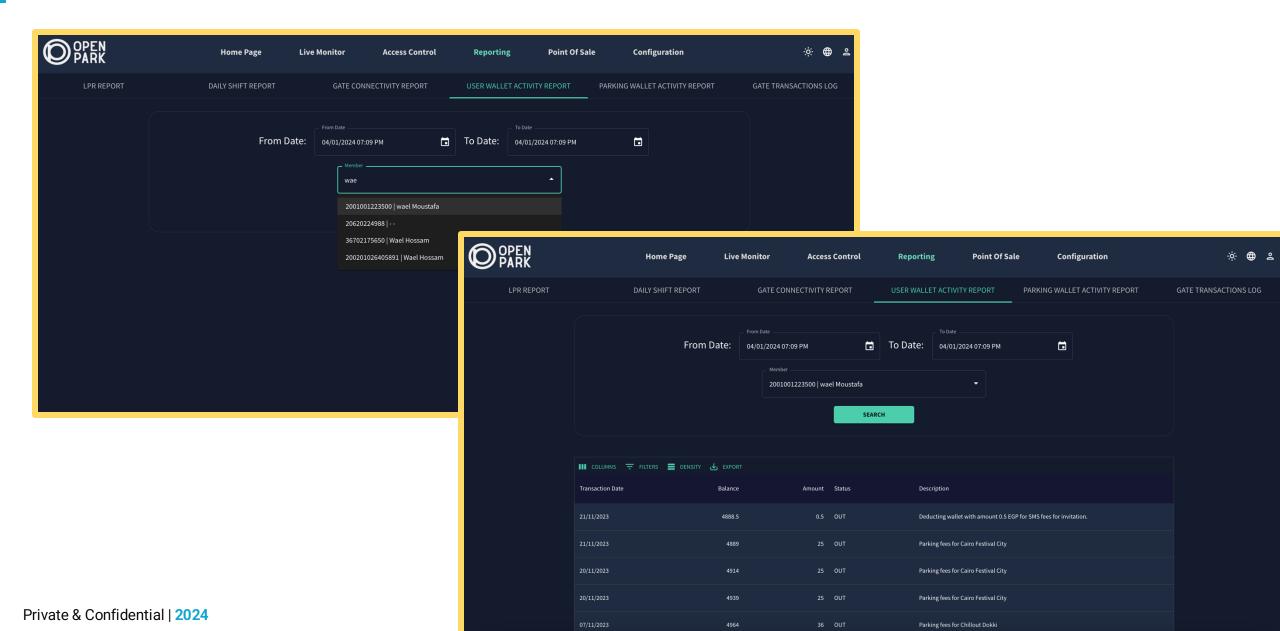
OpenPark Reporting Module





OpenPark Wallet Management





OpenPark Reporting



Daily Shift Report

Operator : Operator-Gate1 Printing Time : 17:56:10 2024-07-02

Total Collected: 100010 Total No. of Cars: 721

Ticket No.	Entry Time	Exit Time	Туре	Amount	Discount	Gate
21202461880351	18/06/2024 00:00:11	18/06/2024 01:42:42	Guest	130		Terminal2
21202461865783	18/06/2024 00:03:16	18/06/2024 03:40:04	Guest	190		Terminal2
21202461840185	18/06/2024 00:03:44	18/06/2024 01:43:54	Guest	130		Terminal2
21202461860846	18/06/2024 00:03:59	18/06/2024 00:36:47	Guest	100		Terminal2
2120246181427	18/06/2024 00:04:29	18/06/2024 03:05:02	Guest	160		Terminal2
21202461899669	18/06/2024 00:05:06	18/06/2024 03:48:05	Guest	190		Terminal2
212024618179210	18/06/2024 00:05:20	18/06/2024 03:48:48	Guest	190		Terminal2
212024618902711	18/06/2024 00:05:36	18/06/2024 01:51:35	Guest	130		Terminal2
212024618709512	18/06/2024 00:05:56	18/06/2024 01:54:31	Guest	130		Terminal2
4120246186341	18/06/2024 00:06:01	18/06/2024 02:18:33	Guest	160		Terminal1
41202461816882	18/06/2024 00:07:54	18/06/2024 00:54:27	Guest	100		Terminal1
212024618947716	18/06/2024 00:07:55	18/06/2024 01:32:19	Guest	130		Terminal2
21202461862717	18/06/2024 00:08:32	18/06/2024 02:28:53	Guest	160		Terminal2

Products (3/3) **OpenPark Mobile App**

OpenPark Mobile companion











Main menu

includes profile update, last parking location, search for parking space, memberships, invitations & more.



Search for parking space.





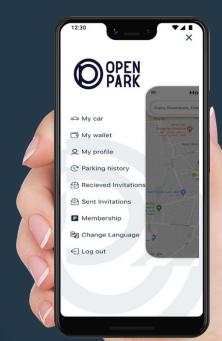
















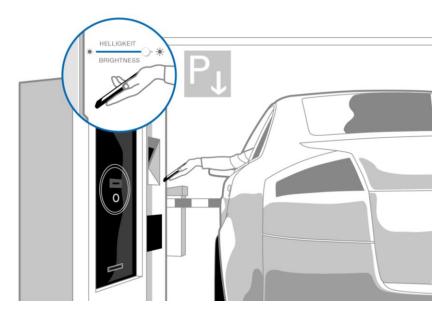




Entry and Exit scenarios



- Regular ticket entry
- Mobile App entry
- Contact-less card entry
- QR code pass entry
- Intercom entry
- LPR camera entry
- Long range RFID entry

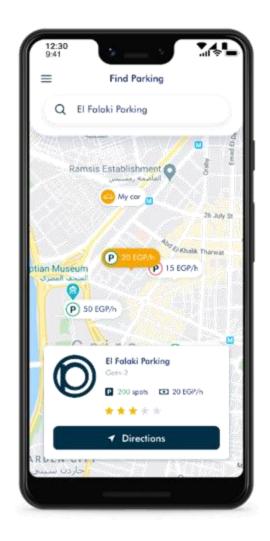




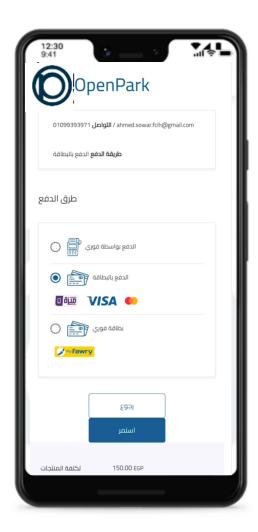


White label mobile App









OpenPark Main Advantages





1- All OpenPark devices are IoT compliant out of the box.



2- Payment gateways integrated in our mobile app and on self-service pay stations out of the box



3- ANPR software module on camera or on server works with any CCTV camera.



4- The ticket issuing and accounting and wallet are all integrated in our API.



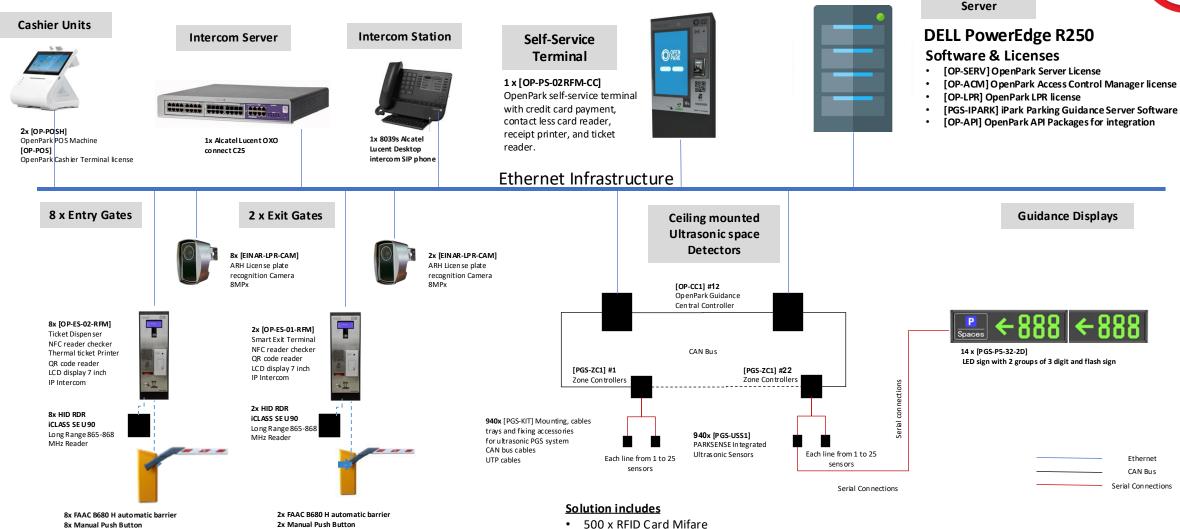
5- Our LoraWAN sensors can cover on-street parking spaces without power or network infrastructure.



6- Mobile application for searching available spaces, sign-in and sign-out, wallet management, navigation to parking place.

Golden Gates Parking Solution Layout Summary





- All Necessary Cables, Software, mounting, work
- Warranty 3 years and 7 years extended warranty and support
- White label mobile app

8x FAAC XP30 photo cell

8x [490117] FAAC Adhesive reflector kit (6 pcs)

8x [428444] Articulated kit for round beam

2x FAAC XP30 photocell

2x [490117] FAAC Adhesive reflector kit (6 pcs)

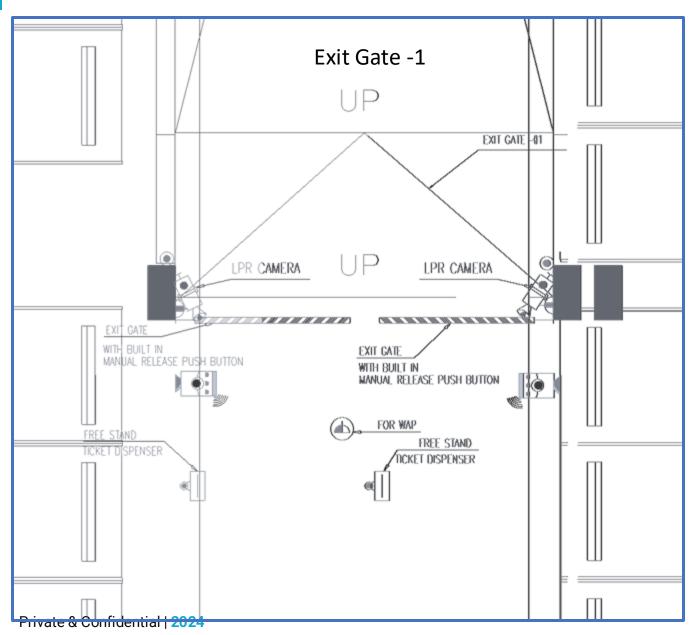
2x [428444] Articulated kit for round beam

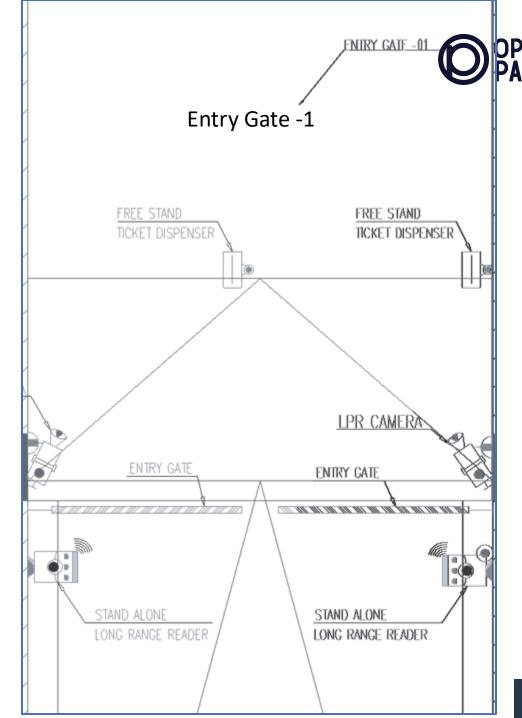
Golden Gates Parking Advantages

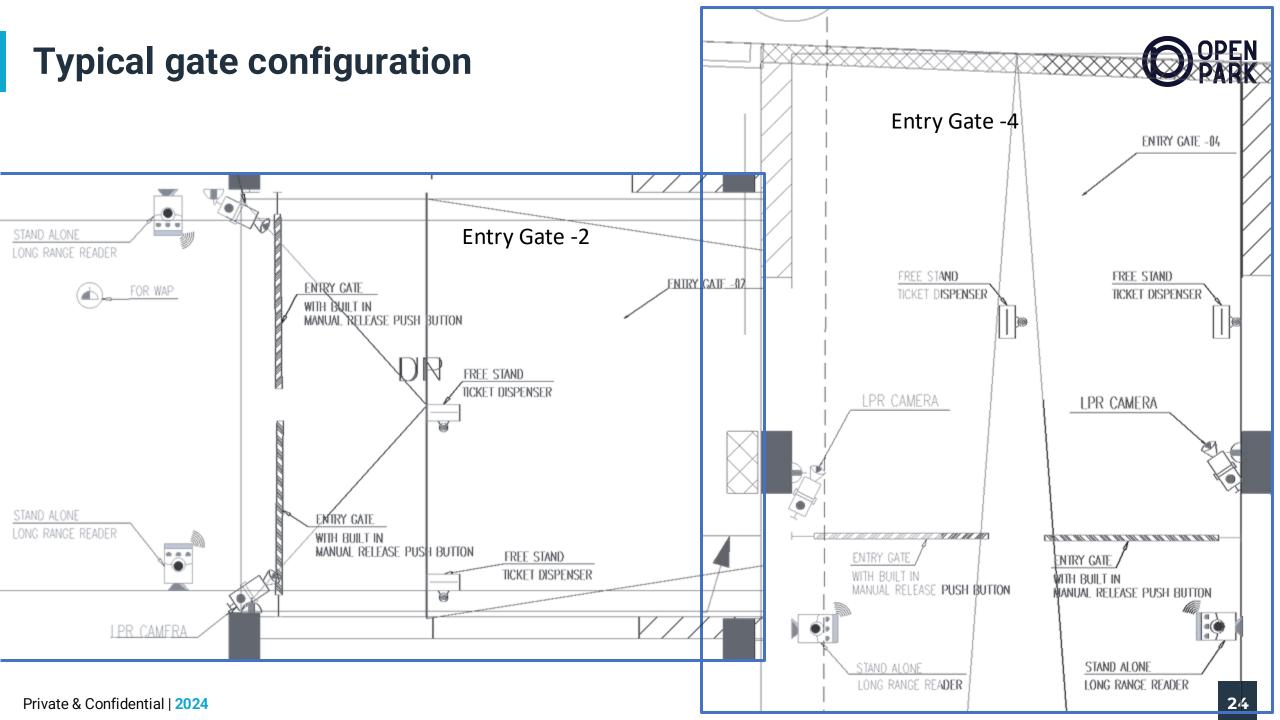


- ✓ Display real-time parking availability data at key entry points and throughout the basement.
- ✓ Allow users to view real-time parking availability on mobile app before coming.
- ✓ Entry and Exit Automation (mobile app entry, event tickets, LPR, RFID and NFC cards.
- **✓ Dynamic Pricing.**
- ✓ Electronic payments
- ✓ Scalability & Integration with the central smart complex management platform and integration with ERP systems.
- **✓ Real-time Revenue Control** System.
- ✓ Robust Security Measures.
- ✓ Electronic vouchers can be issued by tenants to offer free parking

Typical gate configuration







OpenPark Management Software



OpenPark server license with plugins for:

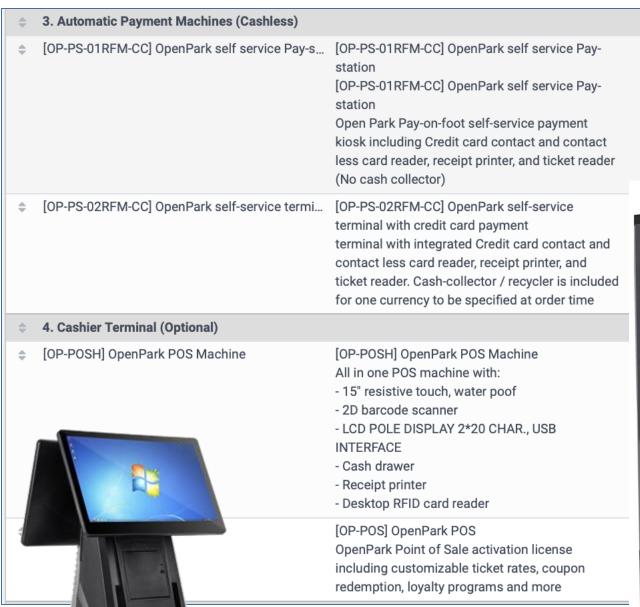
- Access control
- License plate recognition
- Ticket management
- Payment cashier interface with POS credit card integration
- Financial reporting
- API integration for third party mobile apps and IOT dashboards

\$	9. License		
\$	[OP-EGC-02] OpenPark Gateway	[OP-EGC-02] OpenPark Gateway OpenPark Industrial Gate Controller with Intel CPU, 128GB SSD, with GPU for License Plate Recognition algorithm to host the OP-CTL / OP-LPR / OP-ACM	6
\$	[OP-CTL] OpenPark controller License	[OP-CTL] OpenPark controller License OpenPark server software with integrated Database to manage access control on gates including administration module, reporting module, financial module and live monitoring module	6
\$	[OP-ACM] OpenPark Access Control Manager	[OP-ACM] OpenPark Access Control Manager license OpenPark ACM includes remote management and configuration of OpenPark entry terminals, exit terminals and door access control panels. License is required per terminal or panel	12
\$	[OP-LPR] OpenPark LPR license	[OP-LPR] OpenPark LPR license License plate recognition license per camera, requires OpenPark server license	12

Payment terminals

Payment terminals

- Automatic self-service payment for credit card acceptance
- Manual cashier terminal with QR code reader, receipt printer, NFC card reader and cash drawer
- Lost ticket function on both terminals



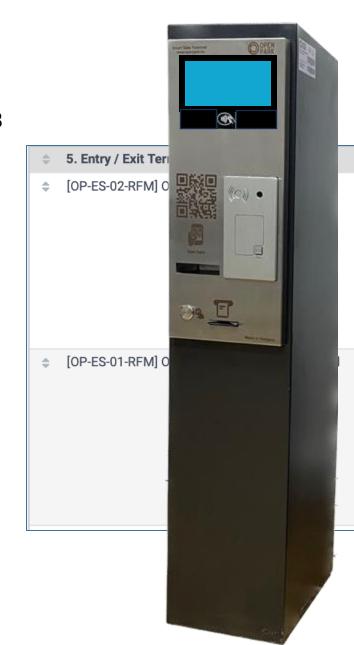




Entry and Exit Control

OPEN PARK

- Integrated Access Terminal
- Mifare RFID (13.5MHz), DESfire EV-2, EV2, EV3
- QR code scanning.
- Mobile app control
- SIP Intercom
- Remote open by operator
- Online and offline operation
- Ethernet port, WiFi, RS-232, RS-485
- Integrated loop detector
- Wiegand and OSDP for external RFID readers
- Battery backup for real-time clock.
- Operating temp -10 deg C to 70 deg C
- IP65 outdoor protected housing
- For ticket dispenser models:
 - Ticket printer ISO card size thermal tickets
 - Optional paper roll
 - Ticket bay for up to 5000 tickets
 - Ticket bay sensor



[OP-ES-02-RFM] OpenPark Ticket Dispenser OpenPark entry terminal including RFID reader checker and thermal ticket printer QR code reader, LCD display with the following interfaces for connecting gate peripherals:

- 2 x RS-232/RS-485 serial interface
- 10/100/1000 Mbps Ethernet interface
- Digital inputs: 8
- Relay outputs: 4

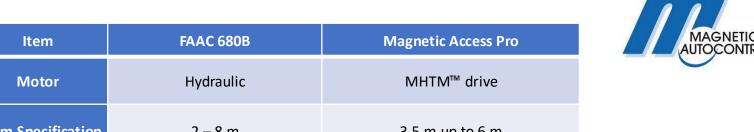
[OP-ES-01-RFM] OpenPark Smart Gate Terminal OpenPark smart terminal including RFID reader checker, QR code reader, LCD display with the following interfaces for connecting gate peripherals:

- 2 x RS-232/RS-485 serial interface
- 10/100/1000 Mbps Ethernet interface
- Digital inputs: 8
- Relay outputs: 4

Entry and Exit barriers









Boom Specification $2 - 8 \, \text{m}$ 3.5 m up to 6 m **Protection** IP44 **IP54** 1,5 s (up to 2m) -1.3 s (up to 3.5m), **Opening** 6 s (up to 8m) 4 s (up to 6m for Access Pro L) **Duty Cycle** 100% 100% **MTBF** 2 million Cycle 10 million Cycle Certification comply comply **Operating** -20°C - +55°C −30 to +55 °C **Temperature**

Electromechanical or Hydraulic Arm Barrier designed for high flow traffic

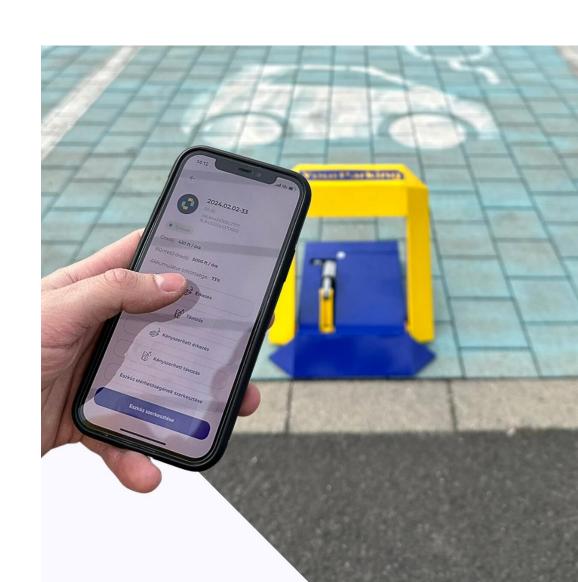
OpenPark Smart controller IoT enabled

Integrate with IOT platform directly

Single spot VIP barriers



- Colour: Yellow Arm + Black/Red Base (custom colour is acceptable)
- Control Type: Remote Controlled (≤50 meters), Bluetooth through App control
- Battery Type: Rechargeable Battery / Dry Battery
- Battery Working Time on one charge: 6-8 Month
- Material: Quality Steel + UV Resistant Powder Coating
- Rising Height: 380mm
- Dimension: 490x470x500mm
- Weight: 8KGS
- Protection Grade: IP67
- Feature: 3 Points Blocking, Strongest Protection to Parking Space
 - OpenPark Smart controller IoT enabled
 - Integrate with IOT platform directly



LoraWAN Parking sensors





Magnetic sensor Model OP-WMS-01

Power supply	5 years battery
Operating Temperature	-40 to 85 C
Protection level	IP68
Detection range	90 cm
Response time	6 seconds
Communication	Bluetooth
Dimensions	173mm diameter, 35mm height

Self-service Payment terminals

OPENPARK

- OpenPark POS Software IoT enabled
- Integrate with IOT platform directly
- Integrated "Find My Car" function
- Integrated bank certified credit card terminal
- Integrated SIP based Intercom module
- QR code scanner
- Contactless cards support
- Optional cash recycler for acceptance and change return



Ticketing and pedestrian access



- Multi-technology reader supports QR code scanning and Mifare/Desfire cards and monitor the status of the gate open and close status and can command opening and closing
- Ticket issuing is part of standard base server module
- Access control module can verify valid tickets when scanned at the (ES-03) or (ES-04) readers.
- Online/offline operation modes
- **OpenPark reader integrates** with COC directly

Pedestrian Access Control [ES-03-1D] OpenPark Multi-technology Reader [ES-03-1D] OpenPark Multi-technology Reader Access control reader/controller with LCD display with the following interfaces for connecting gate/door peripherals: - 1 x RS-232/RS-485 serial interface - 10/100/1000 Mbps Ethernet interface - Integrated RFID reader (Mifare) - OR code scanner - Digital inputs: 4 - Relay outputs: 2 Optional mounting kit for turnstile, wall and floor standing [DS-Q10] Daosafe Tripod turnstile 2-way [DS-Q10] Daosafe Tripod turnstile 2-way Full Stainless Steel, Indoor / Outdoor IP65 rating



Single / Bi-directional, 1400 x 120 x 978mm

Pass width: 550mm MCBF 10 Million Cycle

Flow Rate: 40 people per minute

Emergency: Arms will drop down automatically

communication: Dry contact, Relay signal,

RS485

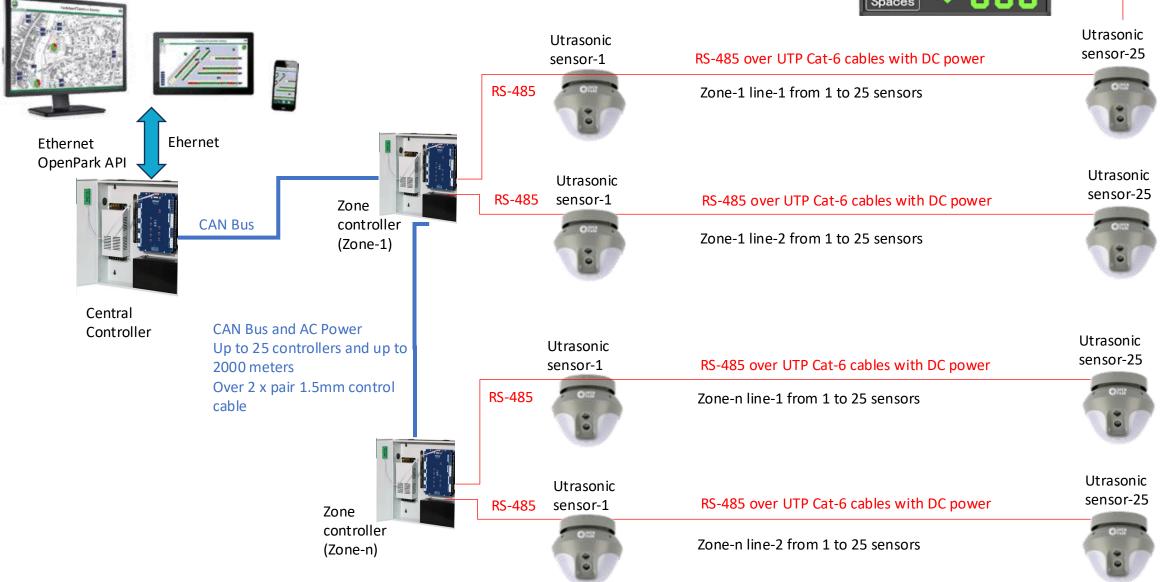
Integrated entry and exit RFID readers with

access control

Parking Guidance system Architecture



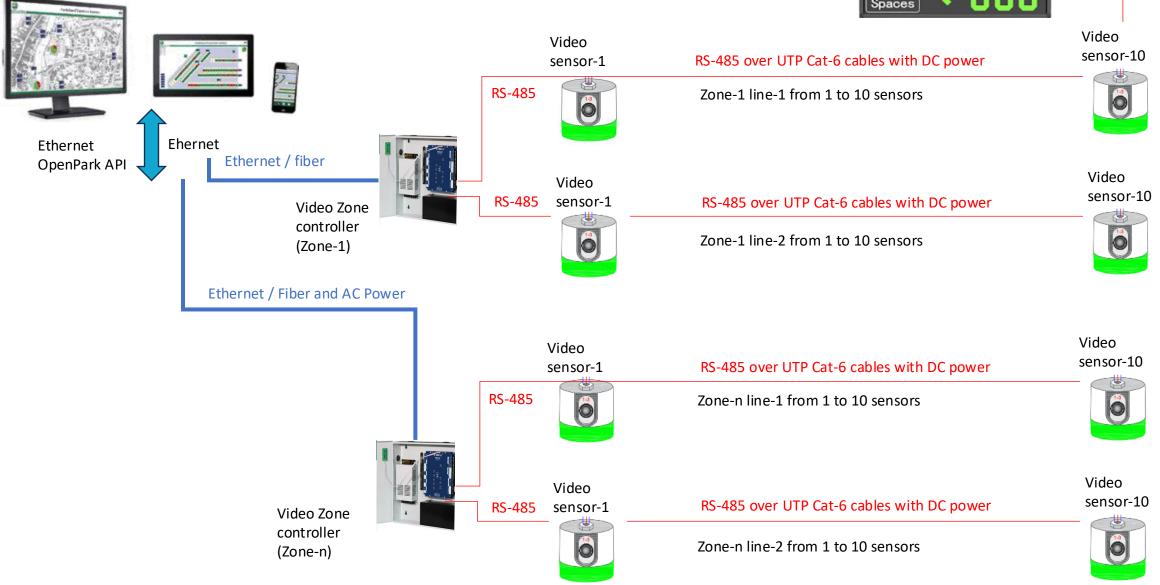




Video Parking Guidance Architecture







Parking Guidance system





- Parking availability to be provided through Open API for desktop and mobile users.
- Front mount dual RJ-45 sensor saves a lot on the installation cost and infrastructure
- OpenPark Gateway integrate with IOT platform directly

	\$	6. Parking Guidance		
2/	÷	[PGS-IPARK] iPark Parking Guidance Server Sof	[PGS-IPARK] iPark Parking Guidance Server Software iPark Parking Guidance Software to monitor the the Parking Guidance system including sensors, LED indicators for each spot, LED guidance displays indoor and outdoor. (Server hardware not included)	1
	=	Guidance Central controller	[OP-CC1] OpenPark Guidance Central controller OpenPark central controller to consolidate all data from Node controllers or Zone controllers and relay them to the main iPark server	6
	\$	[PGS-ZC1] OpenPark zone controller	[PGS-ZC1] OpenPark zone controller OpenPark zone controller for 60 spots providing power and data communication over UTP cable interface and connect to a sensor bus in daisy chain using the standard network cables	18
	\$	[PGS-USS1] PARKSENSE Integrated Ultrasonic	[PGS-USS1] PARKSENSE Integrated Ultrasonic Sensor PARKSENSE Integrated Ultrasonic Sensor and RGB led indicator for the detection and indication of the occupancy status of the parking space. High brightness RGB led indicator.	900
	\$	7. Display Message Parking		
	\$	PGS-P5-32-0	PGS-P5-32-0 LED sign single direction	6

Parking LED display with Ethernet interface,

pitch 10 mm and viewing area 640 mm x 640







Private & Confidential | 2024

mm

Project References Case studies







Case study Suez Canal Tunnels - SCADA





End User: Suez Canal Authority

Scope of work: Design, Installation, Testing & Commissioning of the integrated tunnel management system

Project date: 2018-2020

Project components:

- Detailed design and installation for network infrastructure, PLC control solution, ventilation control sensors, emergency telephone system, linear heat detection system, AID and traffic control system
- Servers at East and West control buildings
- License plate recognition system for both Port Said and Ismailia tunnels for statistics and speed limit violation detection.



Case study El Salam Bus Terminal

End User: Cairo Governorate

Scope of work: Requirement analysis, design, tendering support, implementation supervision and training.

Project date: 2017

Project components:

- Requirements analysis, concept of operation and tender document preparation
- Detailed design for the infrastructure including power supply and distribution, data communication, telephone system and public address cabling.
- Shop drawings for CCTV, public address, access control, main gates access and ticketing system
- Control room design including Servers and videowall
- License plate recognition system
- Digital signage system for passenger information
- Traffic intersection management in the surrounding streets including Red light violation system using Swarco and FLIR products







Reference profile Central Bus station

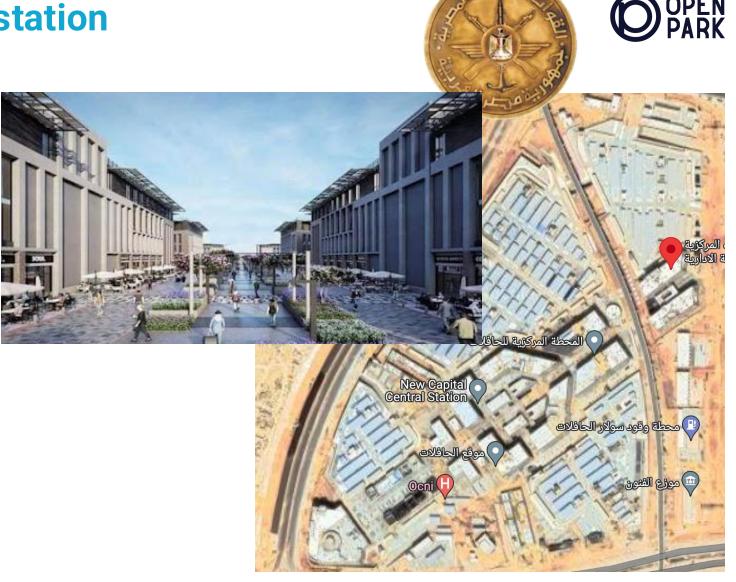
End User: Military Engineering Authority

Scope of work: Supply, Installation, Testing & Commissioning of the Parking Management and Guidance system for Central Bus station

Project date: 2023-2024

<u>Infrastructure sizing in numbers:</u>

- Parking sensors/indicators: 4500 spots+
- Gate barriers: 42 barriers for bus and car gates
- LPR: 35 license plate cameras
- Ticket dispensers/readers : 26
- LED Guidance displays: 100+



Case study Sharm smart parking



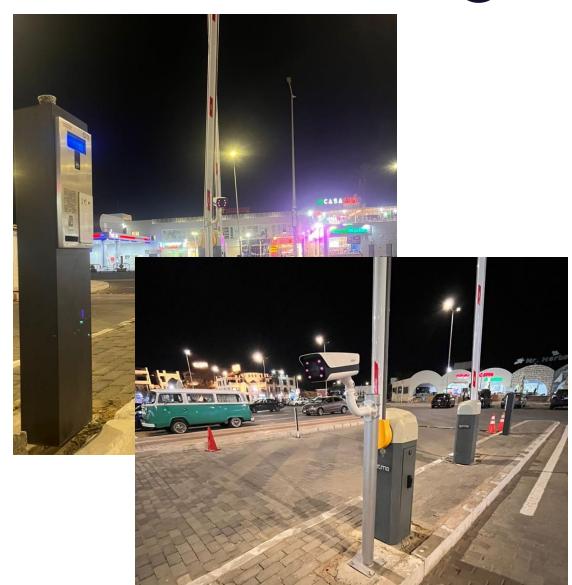
End User: efinance (South Sinai Governorate)

Scope of work: Design and build of smart parking facility including traffic modelling, civil works and smart ticketing

Project date: 2022

Project components:

- Traffic and analysis report
- Traffic engineering and route planning
- Infrastructure design documents
- Bill of Material generation and procurement
- Material delivery and implementation including 2 main gates with ticket-less cash less machines
- License plate cameras for vehicle registration
- Bus subscription and passenger car hourly accounting
- Central cashier solution



Smart solutions Major references in the ME



- Egypt New Capital central bus station
- Suez Canal Tunnels in Port Said (MEP control systems)
- Sharm El-Sheikh smart parking with efinance 2022
- Marassi North Coast Parking 2022
- ZED towers gate and parking 2022 2023
- Mall of Arabia 2020
- Badya smart community Access 2021
- Marakez Aeon Towers, District5 Mall 2021-2022
- Riyadh Tech incubation center
- Mall of Africa Zambia
- Alamein Latin District























Thank you







www.openpark.hu