

PMS : Parking Management System

NEXPA SYSTEM
Mercedes Benz Service Center,
Singapore
CASE STUDY

Background NEXPA SYSTEM

- Founded in 2004, NEXPA has been developing and implementing revolutionary technologies that drive the world of smart parking and public surveillance to the next level.
- At NEXPA, we constantly test and challenge our technology; we strive to offer smart and convenient solutions to our customers. With over 50 patents in video analytics and surveillance systems, we have the expertise and experience to provide solutions tailored to maximize the potential of a parking lot, transforming it to pivotal asset supporting the business growth.
- Together with global partners like Cisco System, Inc., NEXPA looks to continuously develop advanced parking solutions as one of the key pillars of IoT(Internet of Things). As a part of CIM(City Infrastructure Management) of Cisco Systems, Inc., we work towards the vision of a world with smart cities and communities.

Project Overview



<Introduction of Mercedes Benz Service Center in Singapore>

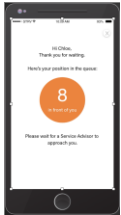
The Mercedes-Benz center in Singapore was the first ever to be unveiled in Asia. The center is equipped with modern facilities such as fashion shows, concerts, exhibitions etc. They selected NEXPA's SMART PARKING SOLUTION for their systematic operation of service center. For empowering exceptional customer experience, integrated with service booking application for seamless appointment process including real-time status updates and direct communication line between customer and service advisor.

<Client requirements>

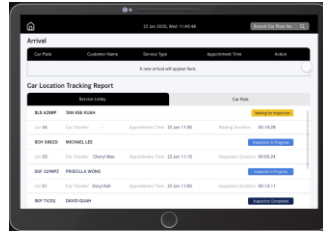
① PMS

- Gate built-in LPR (Spin type), Mini LPR: Automatic Number Plate Recognition
- Web-based management system
- Pre-booking service

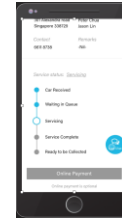
Solution Scenario



- Automated customer check-in

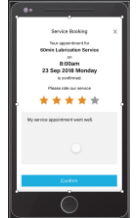


- Notification for workshop: impending customer arrival



- Real-time status updates
- Direct communication with advisor via live-chat
- Customer payment via mobile

- Guidance to parking lot for collection



- Service rating and feedback



Car Park Entry

- LPR at gantry
- Acknowledges arrival with personalized welcome message
- Direct to parking lot

Customer Arrival

- Parking guidance to specific lot

Vehicle in Workshop

- Repair status tracking at every stage of process

Prepare for Handover

- Vehicle enters final car wash stage, triggers impending completion notification to customer

Service Centre Exit

- LPR at exit
- Vehicle status update
- Personalized thank you message



Benefits of Service center - Business & Customer

Benefits	Business	<ul style="list-style-type: none"> -Automate selected processes to minimize manpower requirement -Build and gather meaningful customer and workshop data for future leverage opportunities -Enable quick ad-hoc work approval via in-app live-chat function (upsell opportunities) -Resource and performance management of workshop personnel -Full overview of vehicles on premises for enhanced traffic flow management
	Customer	<ul style="list-style-type: none"> -Self-service aftersales appointment solution to cater active lifestyles, enabling customers to be in control every step of the way -Full transparency in service appointment process for enhanced time management throughout busy work day -Full service history and invoices stored on customer profile within app for quick reference

Operation

Web-based management system

Entry time	Plate number	Vehicle type	Entry equipment
2020-06-17 13:26:34	SMS2948Z	Normal	A Entry1 LPR
2020-06-17 13:26:02	SLP1512G	Normal	A Entry1 LPR
2020-06-17 13:23:03	SMM157J	Normal	A Entry1 LPR
2020-06-17 13:19:43	SHC284Z	Normal	A Entry1 LPR
2020-06-17 13:19:22	SBH8688Y	Normal	A Entry1 LPR
2020-06-17 13:18:17	SLB9999K	Normal	A Entry1 LPR
2020-06-17 13:14:24	SFC280X	Normal	A Entry1 LPR
2020-06-17 13:12:59	SFL8028J	Normal	A Entry1 LPR
2020-06-17 13:12:16	SIZ7995S	Normal	A Entry1 LPR
2020-06-17 13:07:30	SMP9430Y	Normal	A Entry1 LPR

Exit time	Plate number	Vehicle type	Exit equipment
2020-06-17 09:08:58	YP3546S	Normal	A Exit1 LPR
2020-06-17 11:29:22	SMS9860X	Normal	A Exit1 LPR
2020-06-17 11:16:29	SMS924E	Normal	A Exit1 LPR
2020-06-17 12:52:04	SMS8250M	Normal	A Exit1 LPR
2020-06-17 11:19:25	SMR8456S	Normal	A Exit1 LPR
2020-06-17 12:47:59	SMR1715R	Normal	A Exit1 LPR
2020-06-17 12:08:43	SMQ2939P	Normal	A Exit1 LPR
2020-06-17 11:03:56	SMQ263G	Normal	A Exit1 LPR
2020-06-17 12:40:51	SMQ1965R	Normal	A Exit1 LPR
2020-06-17 08:11:06	SMP116L	Normal	A Exit1 LPR

MAR 2020
Parking Management System

- Security Guard
- Administrator
- Car Checker/Driver

- Integrates all hardware devices such as IP cameras, LPR machines and software components such as “day to day” operations in CCPMS, PGS database, monitors with video players into one framework.
- Our system (cameras and LPR machines) will assist with service process and performance tracking. The same cameras used for LPR in the service center are also used as CCTVs delivering continuous 24X7 video streams to the NVR (Network Video Recorder) /IPU (Image Processing Unit) server and the monitor(s).

NEXPA Proposed Solution Major Components



Mini LPR

- Recognizes front or rear license plates
- Designated to accommodate challenging installation environment



Gate built-in LPR (Spin-type)

- Recognizes front and rear license plates
- Built-in damage free barrier gate
- Built-in LCD display

Site pictures

Gate built-in LPR



LPR at gantry to trigger system upon customer arrival at service center including automated customer queue check-in and impending arrival notifications.

Mini LPR



Mini LPR recognizes license plate number of vehicles entering and exiting car park and records data of car plate number.

Conclusion

- Utilize License Plate Recognition (LPR) Technology at car park gantry.
- Workshop bay cameras to enable monitoring of vehicle status and progress during service appointment.
- Enhanced functions: Service booking appointments performing, real-time status tracking, live-chat interface with service advisor and mobile payments etc.
- Improvement in user experience and operational efficiency.