NE*PA VISION TECHNOLOGY

NEXPA SYSTEM
HYUDAI DEPARTMENT STORE
PANGYO BRANCH, SOUTH KOREA
CASE STUDY

PMS : Parking Management System
VPGS : Video-based Parking Guidance System
Mobile application API (Find-My-Car)
VIP service

TABLE OF CONTENTS

Introduction

- This study case has been prepared to introduce a project case that NEXPA has successfully completed for Hyundai Department Store, Pangyo branch in South Korea. Besides Pangyo branch, NEXPA supplied our solution to 10 other branches of Hyundai department store.

- The contract was made in December 2014 after winning a tender and the installation was been completed in September 2015.

- Hyundai department store started their business in 1971. To provide exceptional services to their customers, they have always been seeking for new technology and facility modernizations. That is why they chose NEXPA for the parking lot project for their new Pangyo, South Korea branch.

- This case study will show how NEXPA's smart parking solution can work for and with department stores to increase customer gratification and loyalty, leading to the rise of sales and brand equity.

Background NEXPA SYSTEM

- Founded in 2004, NEXPA Systems Co., Ltd. has been developing and implementing revolutionary technologies that drive the world of smart parking and public traffic surveillance to the next level.

- At NEXPA, we constantly test and challenge our technology; we strive to offer smarter and convenient solutions to the businesses. 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 smart parking solutions, transforming it into a pivotal asset for 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) domains. And as part of CIM(City Infrastructure Management) of Cisco Systems, Inc., we work towards the vision of a world with smart cities and communities in the future.

Project Overview

Hyundai department store expected to introduce both the parking management system for access control and the parking guidance system to guide drivers. Furthermore, for better customer service, they wanted mobile application support and other added features with higher values for the VIP customers.

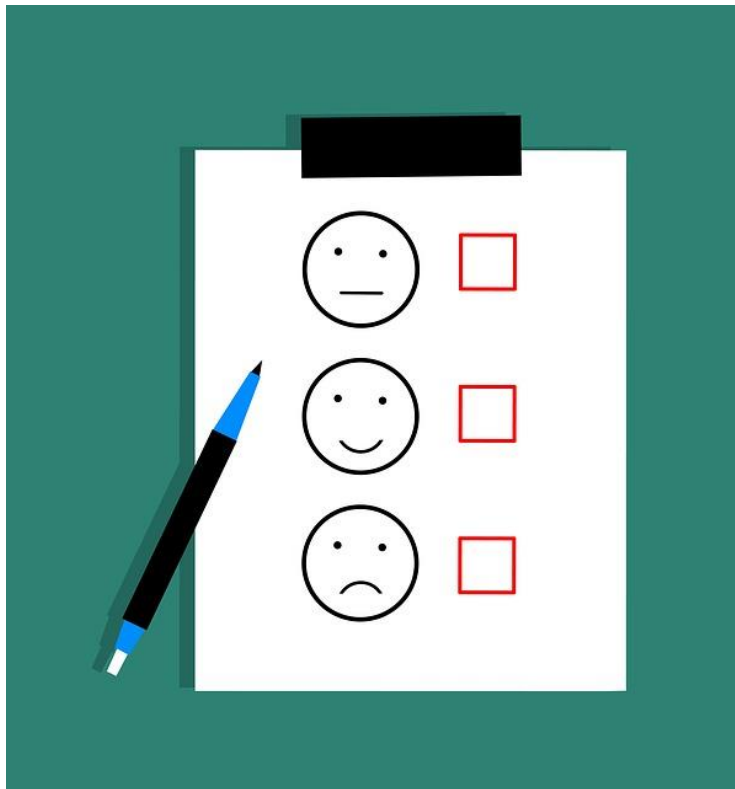|	
Parking Management System	- Entrance : 2 gates - Exit : 2 gates
Video-based Parking Guidance System	- **Total Parking bays : 2,232 bays**
Valet service	- For VIP customers
Mobile Application	- Find-My-Car

NEXPA

Challenges

*"A good parking experience **brings customer satisfaction** and **increases loyalty**"*

People suffers from stress when they go through time consuming, strenuous activities. Parking at a busy department store is not an exception. We believe smart parking reduces that time and effort, ultimately leading to customer satisfaction.

For the department store project, NEXPA was more focused on the customers who use the parking lots. The main purpose of this project was to help the store raise its brand image and sales through better parking services.

Based on our core solutions of PMS and VPGS, VIP service features and mobile application support became key factors in completing this project successfully.

NEXPA Solution Features

SMART	The automatic payment solution enables ticketless parking system.
State-of-the-art TECHNOLOGY	NEXPA's solution uses state-of-the-art devices developed by our proprietary technology.
SECURITY	IP camera for LPR also has surveillance camera features that do not leave any uncovered areas. Also the car exterior identification system gives the parking lot users a sense of security from any accidents that can happen at the parking lots.
EXPANDABILITY	NEXPA's solution has the expandability to incorporate new systems with existing devices and applications, making it easier to manage the entire system.
CUSTOMER SATISFACTION	NEXPA's solution is easy to run for the parking lot operator and convenient to use for the visitors.

NEXPA

Project Main Components

PMS : Dual Camera LPR System

LPR System is an automated control / management system that minimizes car congestion at the entrance and the exit of the parking lots. The system identifies vehicle license plate numbers within a single second, with more than 98% accuracy. The system uses the plate numbers as identifications for billing and security purposes. The computerized system reduces the need for consumables such as tickets.
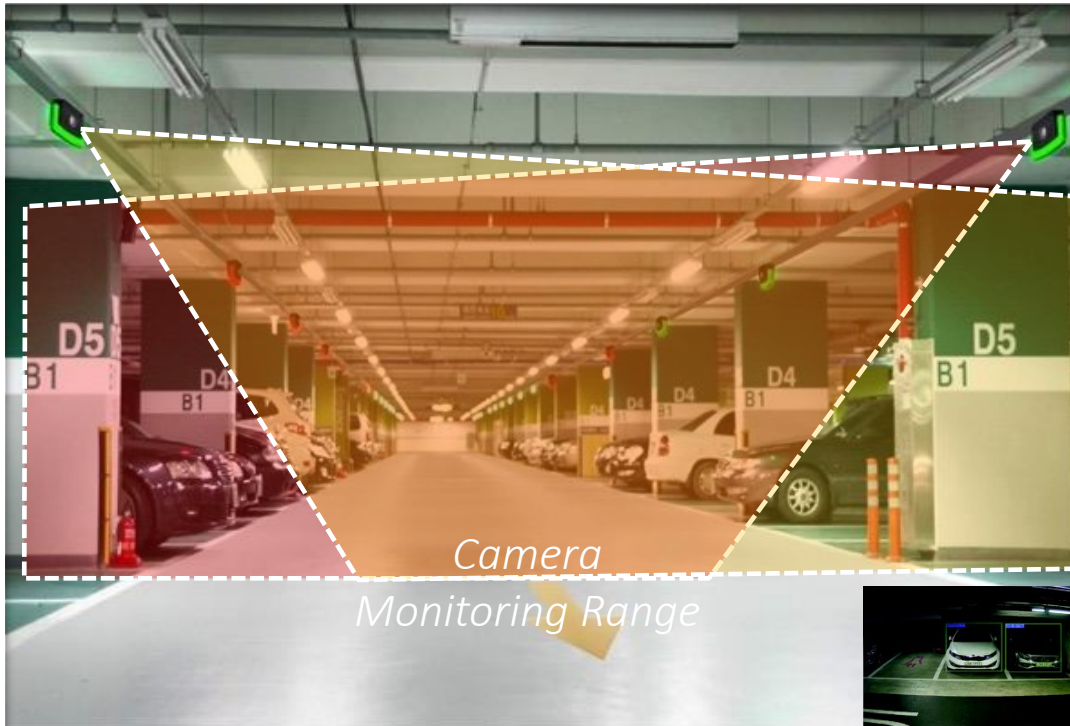
PMS : Bi-Directional LPR Technology

The Dual Camera LPR System, with the bi-directional LPR technology, detects the rear license plate in the event of a damaged or bent front license plate. It significantly reduces error rates, resulting in recognition rates higher than 99%
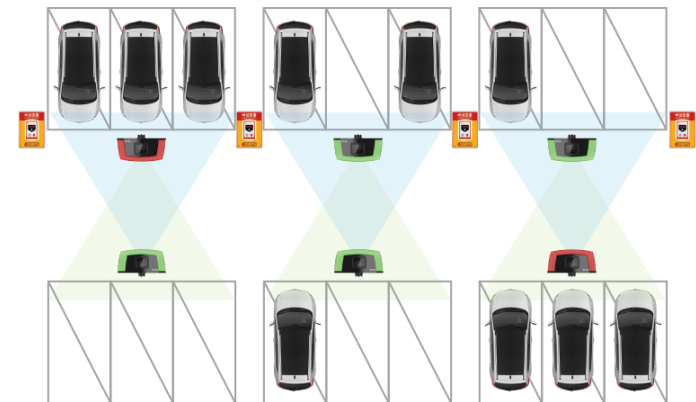
Project Main Components

VPGS : IP Camera

Camera
Monitoring Range

Each uni-directional IP camera covers up to 3 bays for detecting cars and recognizing plate numbers. Built-in LED lights, which can be designed for individual parking spaces with optional additional LED lights, indicate the status of the parking bays.
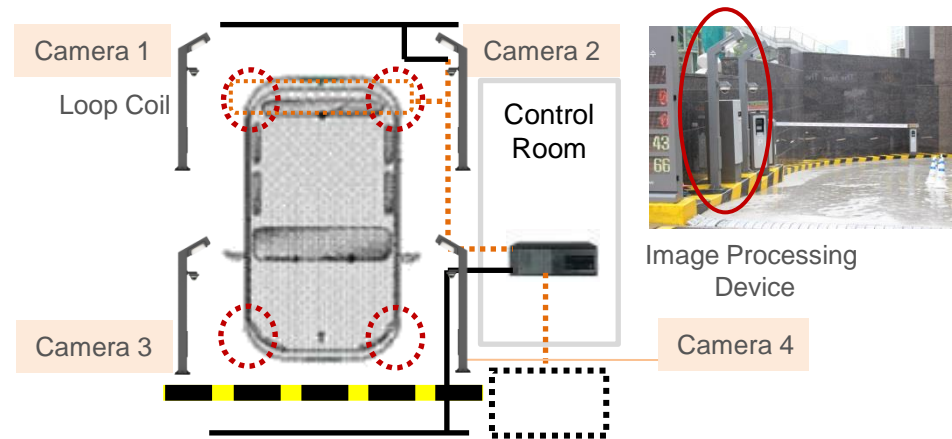
Project Main Components

Car Exterior Identification System

Car Exterior Identification System provides clear evidences in case of accidents with unknown causes in the parking lots.

4 cameras are installed at both the entrance and the exit.

Camera 1

Loop Coil

Camera 2

Control Room

Camera 3

Camera 4

Image Processing Device

- 1.3Mpx IP camera
- Retrieve 4-sides images of a car captured at the entrance and exit by entering license plate number

Installation

Access Control

Ticket machines can be installed based on customer's requests. There is a call button on it for direct communication between driver and staff members of parking lot.

Basically, the Boom barrier gets an open/close signal from LPR, but can also be controlled using manual switch from the managing center if required.

The parking manager can communicate with a customer at the parking lot entry or the exit, using the main intercom at the control center.

NEXPA

Installation

Parking Guidance

At the entrance, drivers can check available floors by looking at the entrance guidance display. (numbers of available spaces)

Then drivers can check the floor/zone guidance signage (available number) to decide the floor/zone to go to.

Then drivers can find available parking bays easily by checking the color of LED indicator (Green : Available / Red : Occupied)

Parking operators can check all parking status and history efficiently using the parking managing program at the control room.
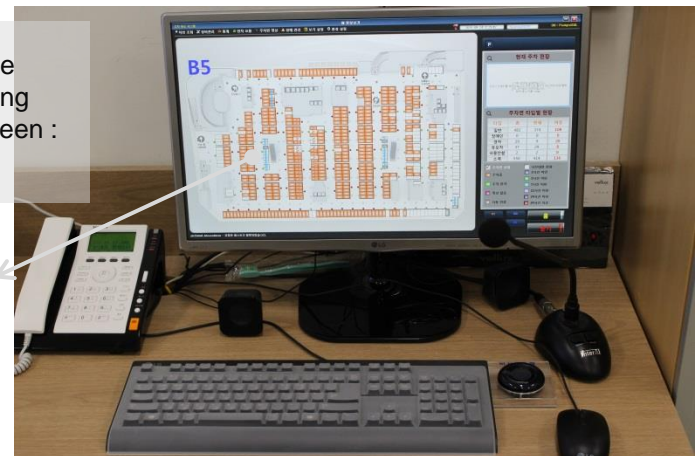
Installation

*Various Payment Options*

<Auto Pay Station>
The parking lot users can pay their parking fees using the auto pay station before leaving the building. This auto pay station also has a Find-My-Car function on top of being a KIOSK.

<Cashier Booth>
The parking lot users can also pay their parking fees to the cashier at the parking exit. The cashier uses a parking fee calculator program in the cashier booth.
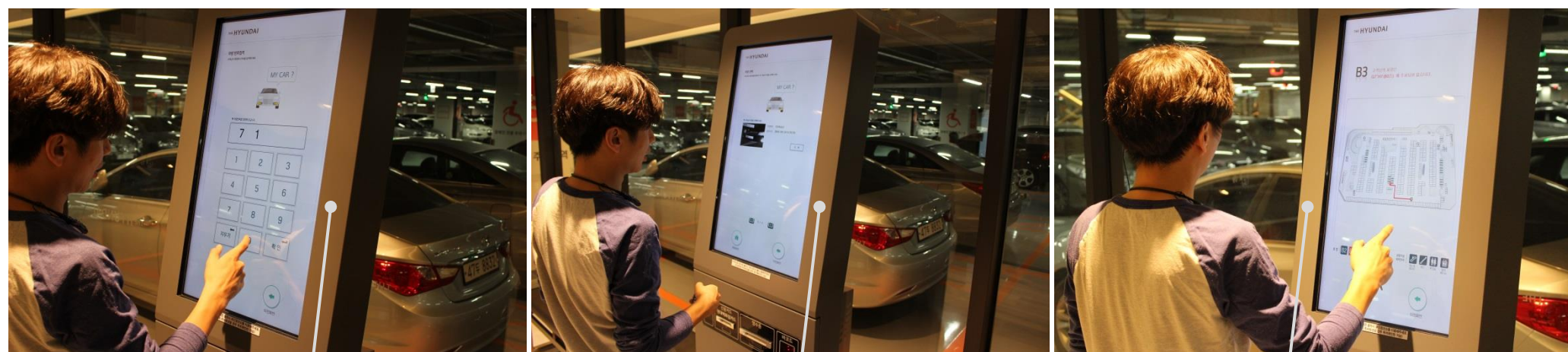
<Exit Auto Pay Station>
The parking lot users can pay their parking fees using an exit auto pay station at the exit gate before leaving the parking lot.
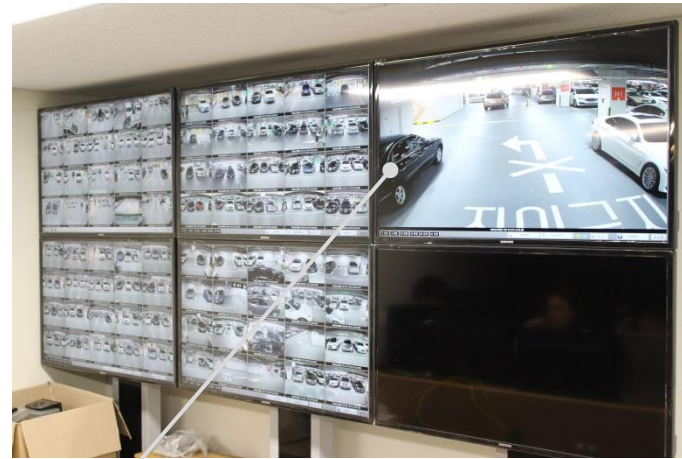
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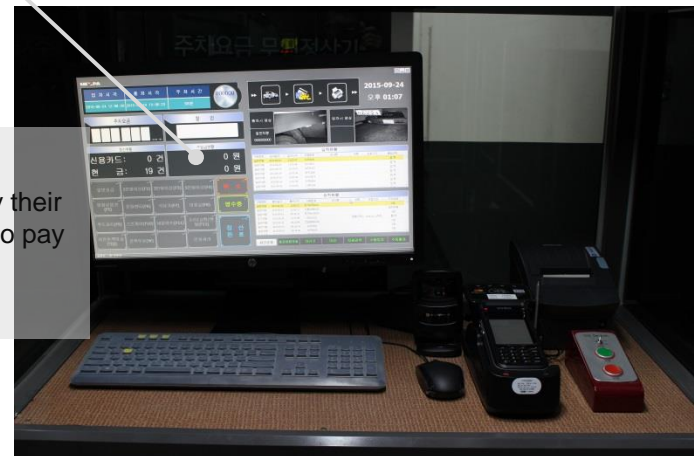
Installation

KIOSK (Find-My-Car)

Enter full or part of the license plate number

The KIOSK will show the results. Select the correct one

Then the KIOSK will show the optimal route from current location to the car

Installation

Surveillance

IP camera sensor also has surveillance features.
Additional CCTV system installation is not
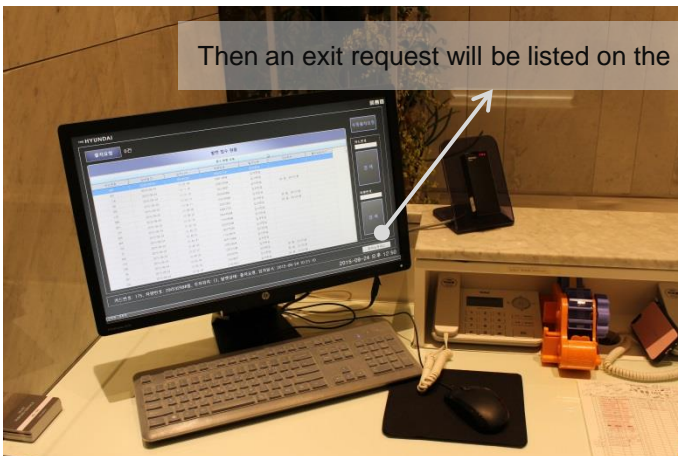required.

Installation

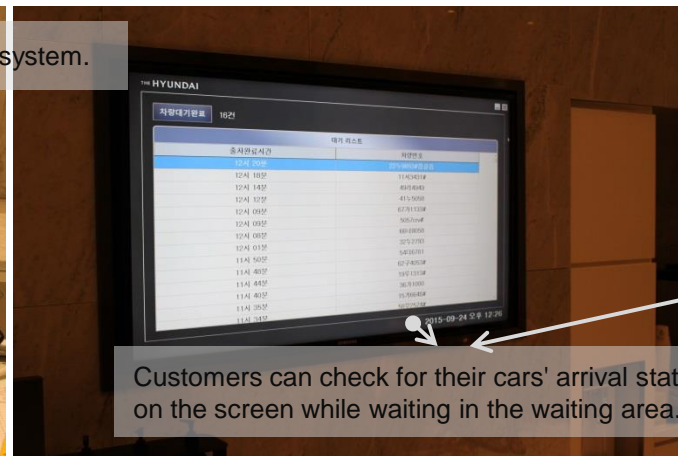*Valet Parking*

Left lane is for valet parking.

When a car enters through the valet parking lane, LPR recognizes the license plate number and a valet parking request will be listed on the valet parking management program.
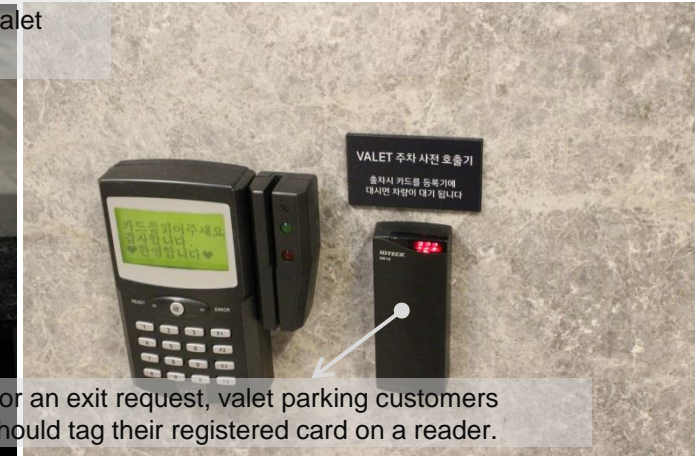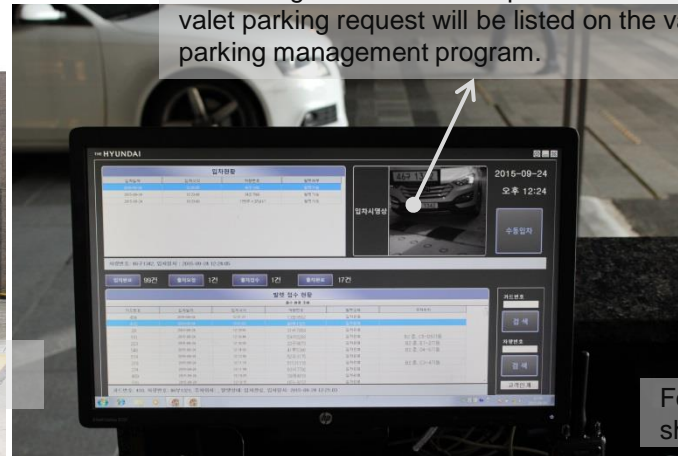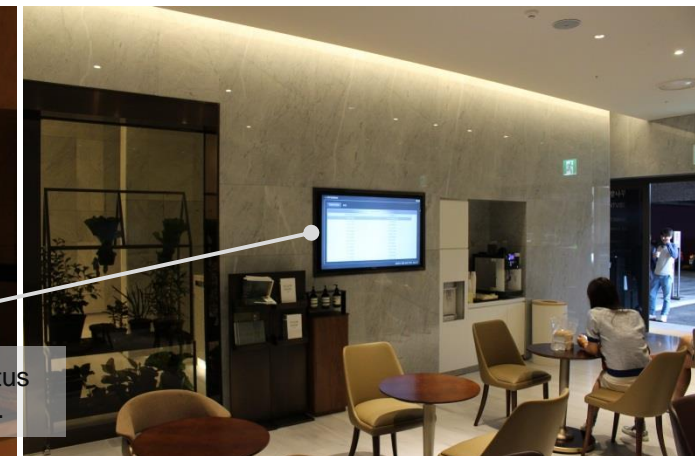

For an exit request, valet parking customers should tag their registered card on a reader.

Then an exit request will be listed on the system.

Customers can check for their cars' arrival status on the screen while waiting in the waiting area.
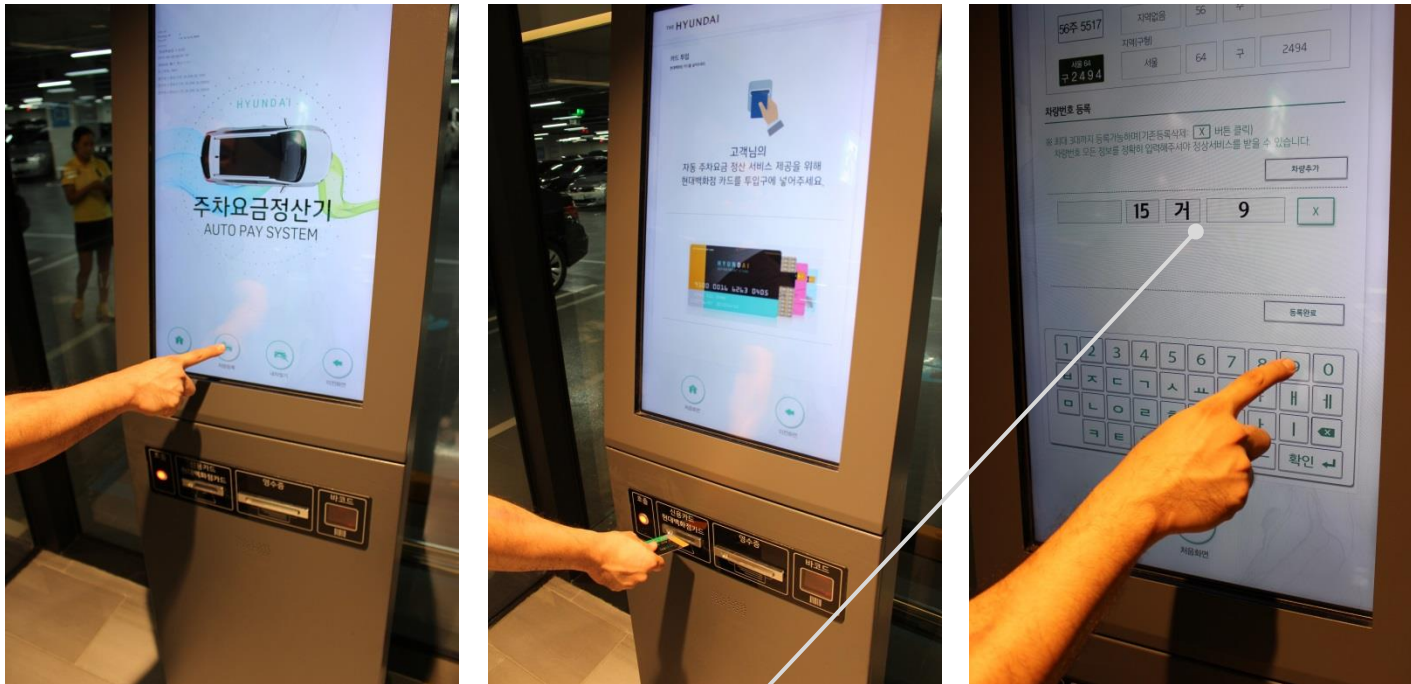
Installation

Mobile Application API (Find-My-Car)

The Find-My-Car mobile application provides parking location information such as the floor and the zone with entry time. NEXPA can provide the API for mobile application development.

Installation

Membership Service (Auto Pay Registration)

Using the Auto Pay Station, customers can register their license plate numbers with their Hyundai department store membership cards for parking fee auto payment. Once they register, non-stop process will be available at any exit gate.

Benefits

✓ *Easy to operate*

All parking areas can be monitored in a single place, and alerts will be sent automatically for special events.

✓ *Customer oriented*

Can provide proper services and experiences depending on the characteristics of a customer.

✓ *Accident management*

If a car accident occurs, NEXPA parking system will provide the necessary evidences to solve the problems.

PARKING OPERATER

PARKING VISITORS

Seamless parking ✓

Fully automated parking system allows non-stop parking process to be available for visitors.

User friendly application ✓

Before exiting, visitors can easily find the location of their vehicles with a mobile application.

Differentiated services ✓

Auto valet parking calls and membership-based auto pay registration services enhances customer service.

Conclusion

- Hyundai Department Store is one of the most luxurious department stores in Korea. NEXPA pushed to add extra features, based on the basic functions of PMS and VPGS, to raise its value even higher.

- The VIP Valet parking call system, the mobile find-my-car application, and the membership-based parking fee auto pay registration system are the results. These features were developed to suit the department store's requirements and to provide outstanding services to the customers.

- In addition, NEXPA has been participating in plenty of other shopping mall and department store parking lots projects, proposing valuable and customer-oriented parking solutions.

NEXPA