



Wayfinding Guide

# Q-ROBOT



## Hardware

Outdoor / Indoor  
Video Wall & Display  
Mirror Display  
Smart Kiosk



## Software

Total Signage Solution  
Content Authoring Tool  
Window/Android  
Cloud



NDS Solution Co., Ltd.



## Content

3D Wayfinder  
Manu Board  
Motion Detecting  
Face Recognition



## System

Planning & Introduction  
Installation & Support  
System Stabilizing  
Maintenance

# 01 DESIGN

## VOICE RECOGNITION WAYFINDING ROBOT DESIGN AND PERIPHERALS

### STANDARD



### PREMIUM



## Main Function Smart Responding to Customer Inquiries



Customer Service

Transfer Ads/Info

Task Guide

Simple Tasking

Wayfinding

Obstacle Avoidance

Multi Tasking

Face Recognition



Korea Certification Mark

## VOICE RECOGNITION WAYFINDING ROBOT SPECIFICATION

SORT	STANDARD	PREMIUM	SORT	STANDARD	PREMIUM
SIZE	L590*W590*H1590		SENSOR	<b>Ultrasonic Wave Sensor*2:</b> Scan Distance : 1900mm Angle(All-Direction) : $\pm 30^\circ$ <b>Object Detecting Sensor*2:</b> Scan Distance : 5M, Angle : $\pm 45^\circ$	
WEIGHT	60KG			CHARGE	Voltage : 200-240VAC, Current : 6A
MATERIAL	ABS parts, Reinforced fiber plastic housing		SYSTEM	Android5.1	
RATED POWER	80W		CPU	RK3368	
AMBIENT LIGHT	Side Arm *2		INTERNET	WIFI 2.4G/5G	
SPEAKER	15W WiFi Inner Speaker		RAM	DDR4_2400 4G	
MIC	<b>AIUI MIC:</b> Recognition Range : Max 5M, Angle : 0-180°, Noise Cancel		SSD	128G	
CAMERA	<b>Face Recogniton Camera</b> Vertical, Horizontal Angle of field : $125^\circ$ Backlight protection, Resoltuion 300 million pixels		NAVIGATION	Viewing Angle : $360^\circ$ Detect Blind Spot: 0.1m Detect Resolution : 3cm Data Speed : 256000bps Working Distance : White Object : 40 M Black Object : 10 M Accuration : $\pm 5\text{cm}^*$ Voltage : 5V Current: 3W Working Temperature : $25^\circ\text{C}$	
	-	3D Motion Detecting Camera		Viewing Angle : $270^\circ$ Working Distance : 0.05 ~ 10M Response : 67ms System Error : $\pm 60\text{mm}$ Statistic Error : $\pm 20\text{mm}$ Voltage : 0 V DC-28 V DC Current: 3W Level : IP 65	
SCREEN	23.6inch PCAP Touch Screen 1920*1080P LCD Screen(Eyes) 320*240		AVOIDANCE SYSTEM	<b>Lidar :</b> Distance : 0.05 ~ 8M, Angle : $270^\circ$ <b>Ultrasonic Wave Sensor*2:</b> Distance : 1900mm, Angle(All-Derection) : $\pm 30^\circ$	
MOVING	<b>Head:</b> Horizontal Turning Angle : $\pm 40^\circ$ Vertical Turning Angle : $\pm 10^\circ$ Drivable Slope Angle : $\pm 3^\circ$ (※) Max Velocity: $\leq 1\text{m/s}$		DEVELOPMENT	API, SDK	
PERIPHERALS	-	58mm Printer			
	-	NFC			
	-	QR Scanner			
BATTERY	24V 30Ah, Driving: 10H, Full Charge: 4H				

## 02 UTILIZATION

What a Robot can do is..



### Customer Service

Automatically recognize targets and people to welcome, and if you specify a moving route, it moves to the designated route.

### Transfer Ads and Information

Display various advertisements, videos, and images on touch screen. Information of other facilities and products.



### Task Guide

By building an intelligent database on demand, able to do simple tasks such as answer frequently asked questions.

### Face Recognition

Automatic face recognition through camera. Related information can be displayed by the data that already entered.



### Wayfinding System

Using building guidance system contents, robot can guide various destinations by name, floor, and district.

### Others

Able to handle simple tasks such as hospitality and wayfinding at the place of bank, hotel, airport, shopping mall, etc.



## 02 UTILIZATION

### Where to?



- Media commercial market
- Media company based on building commercial.
- For advertising and wayfinding in a building.



- Local and tourist spot guide
- Places where many foreign residents and visitors.
- International marriage, study abroad, travel, etc.



- Public Institutions
- Government institutions, hospitals, museums, and etc.
- Places requiring foreigner information and translation services.



- Non-face-to-face Service
- Places requiring non-face-to-face services or voice wayfinding.
- Public places requiring non-face-to-face workforce.

What can  
I help you?

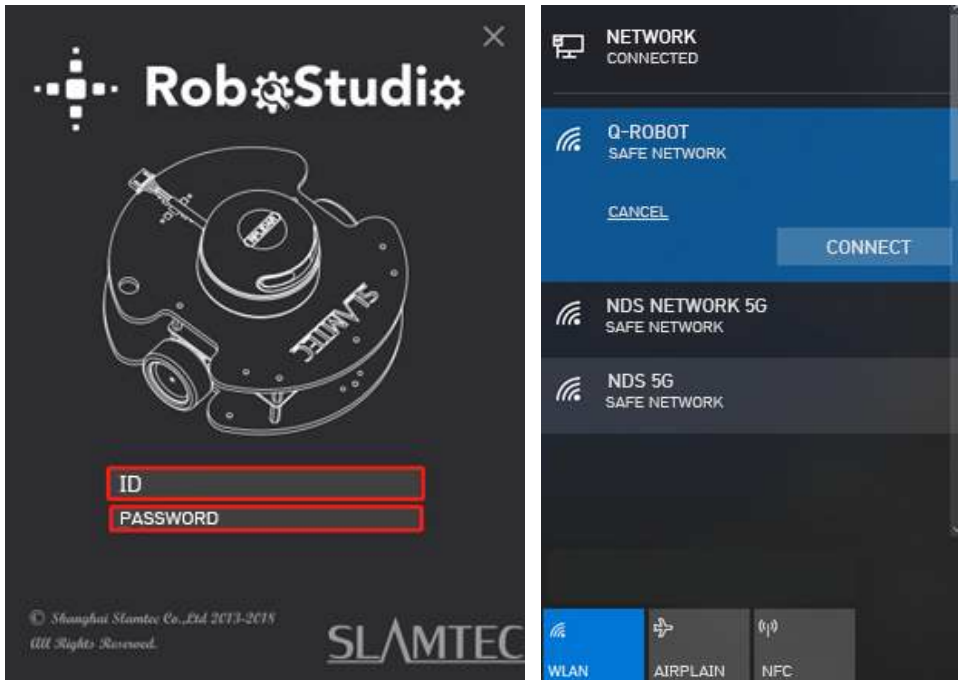


## 02 MAIN FUNCTION

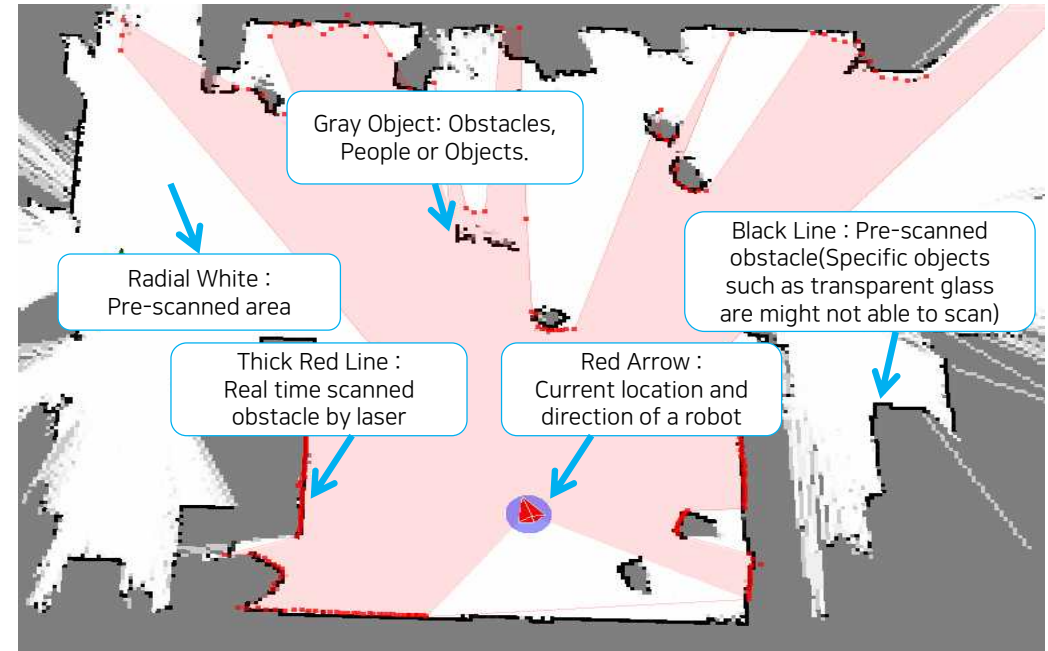
### AUTONOMOUS DRIVING SYSTEM

#### Private program

- WiFi connect after log-in the program

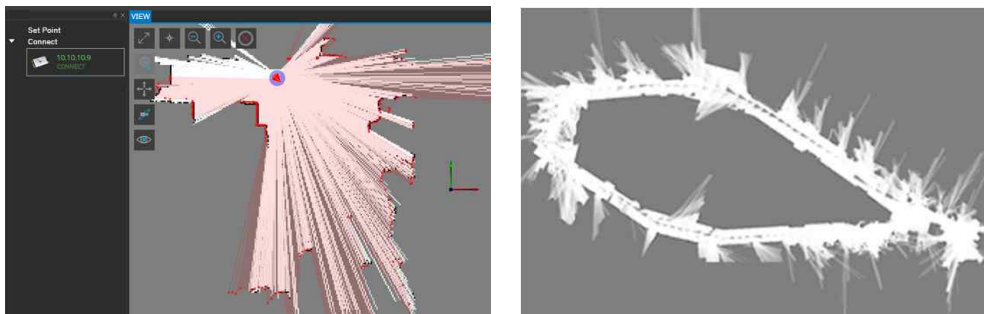


#### Scan interface



- Available to add POI Point (Navigation point)
- Setting option of charge device installation
- Easy management of scanned map by making save file

#### Create a route map using autonomous driving scan



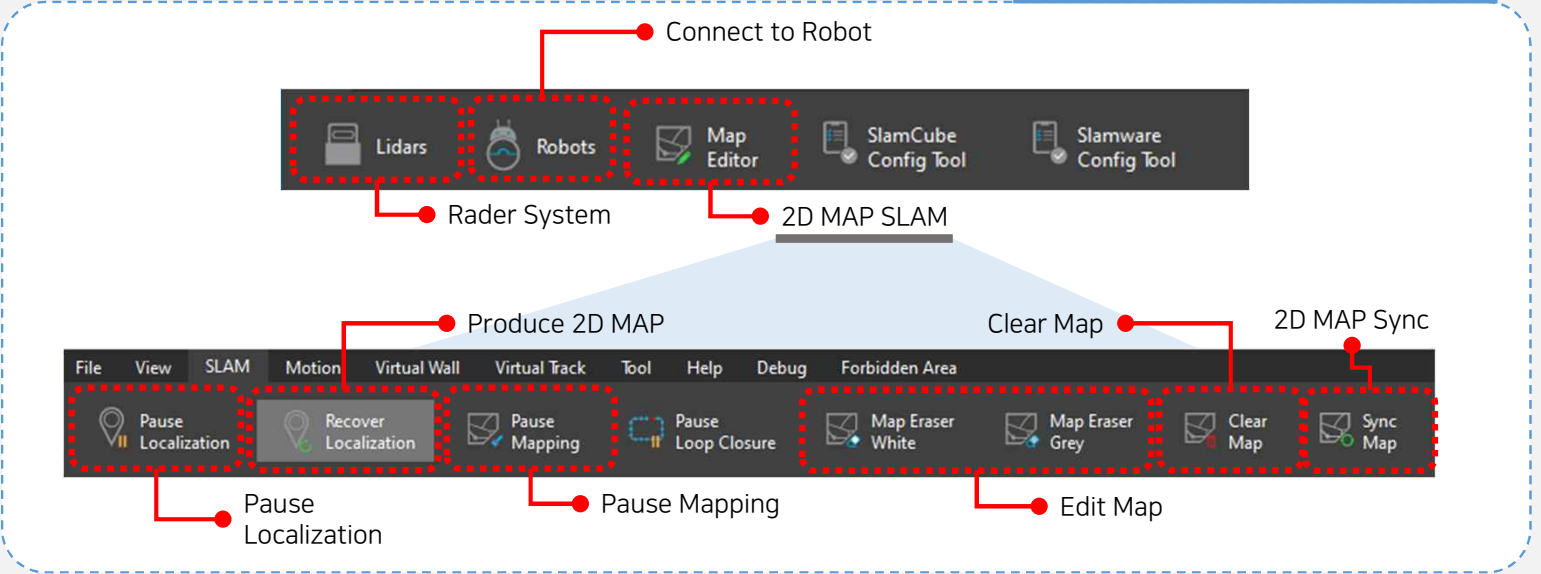
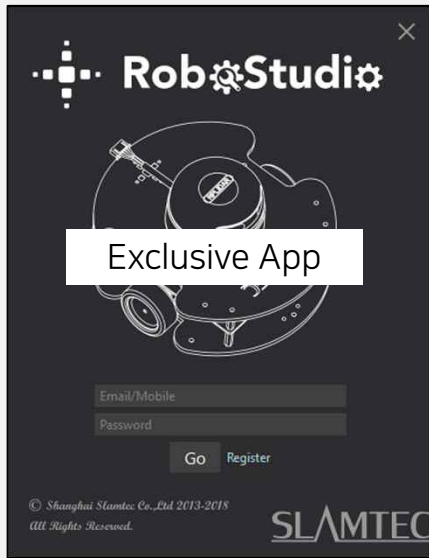
#### PREVIEW



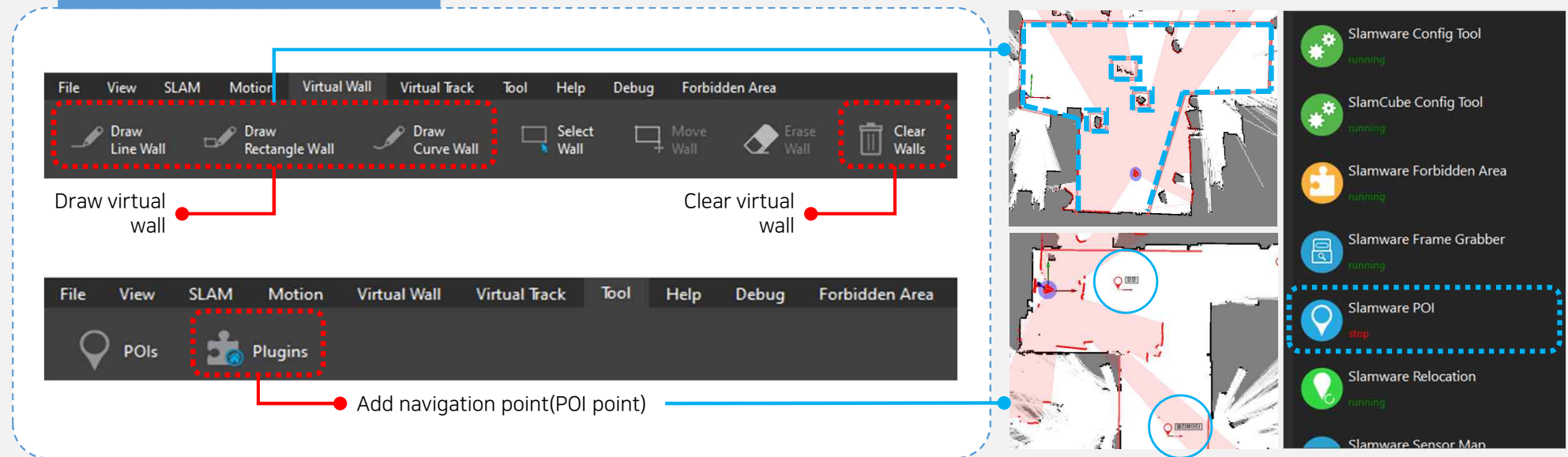
# 02 MAIN FUNCTION

## Route Setting

### Software Option



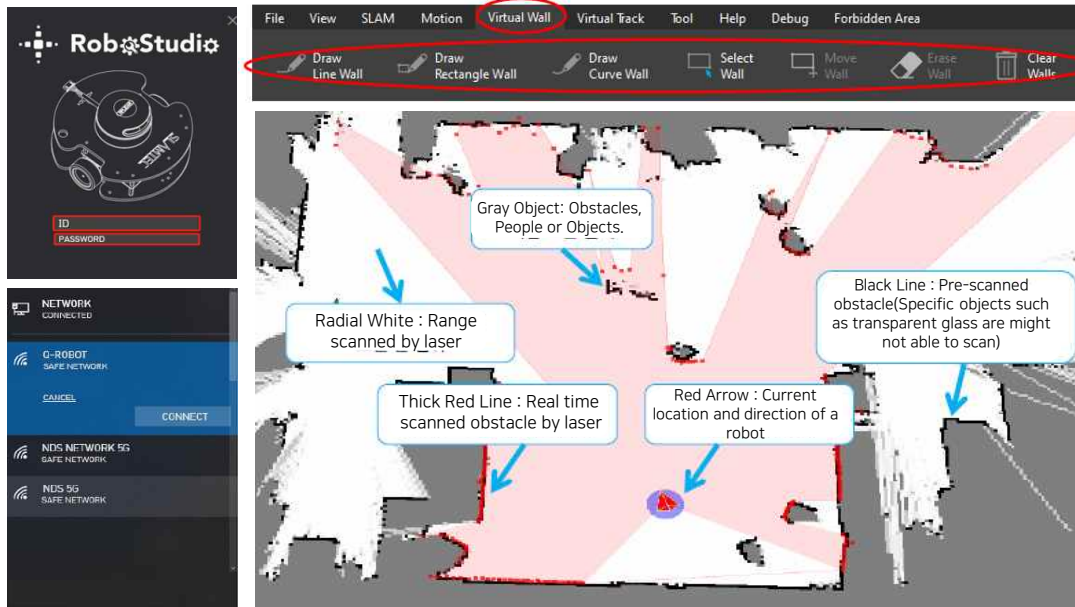
### 2D MAP SLAM Option





## Route Setting

## Autonomous driving and Route setting



- **Login to Slemtec Robostudio and connect to robot**
- **MAP Production**
  - a. Clear Map
  - b. Map producing while driving
  - c. Set virtual wall – Set virtual wall for blocking route
  - d. Save file and activate route
- **Set Route**
  - a. Set driving route at POIs menu
  - b. Speed setting at Robot Speed menu
- **Battery Check**
  - a. Battery check on status bar
  - b. Return to charger with GO HOME button
- **Real time location check and monitoring**
  - a. Robot location appears as red dot in real time
  - b. Route marks as line to designed location

## Real-time monitoring

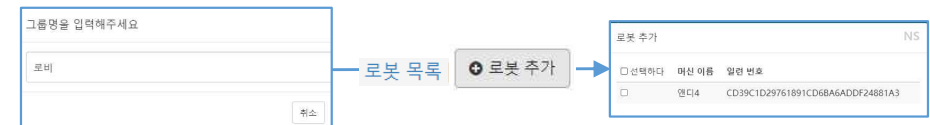


## Robot and route management

- Upload, check, delete robot by user.



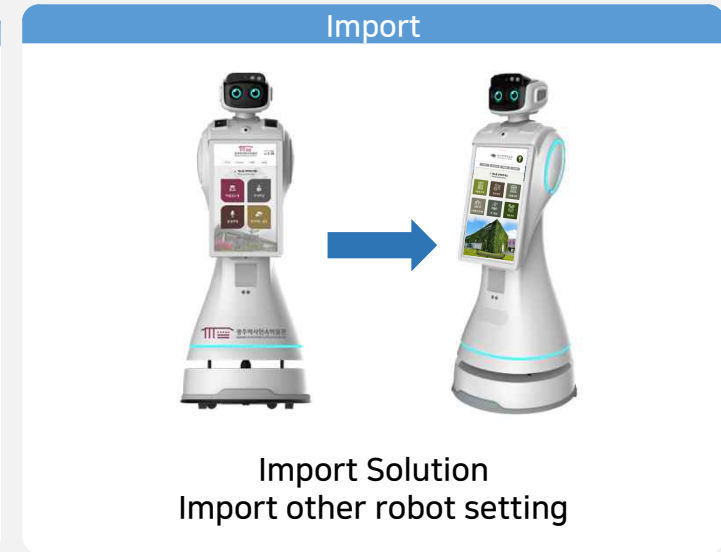
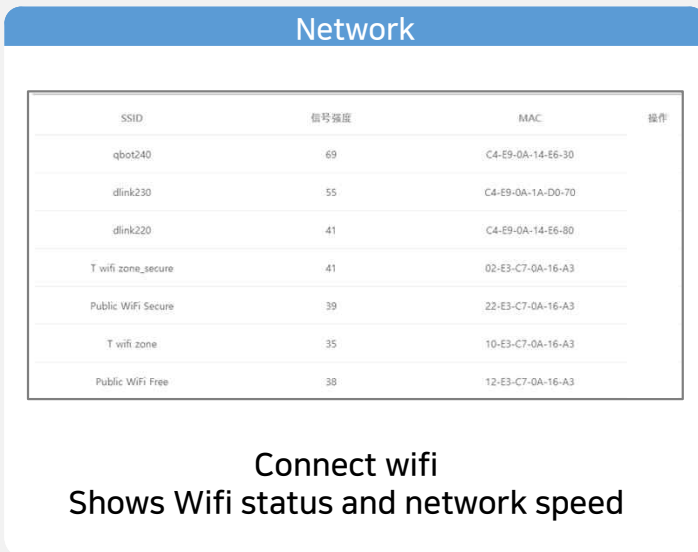
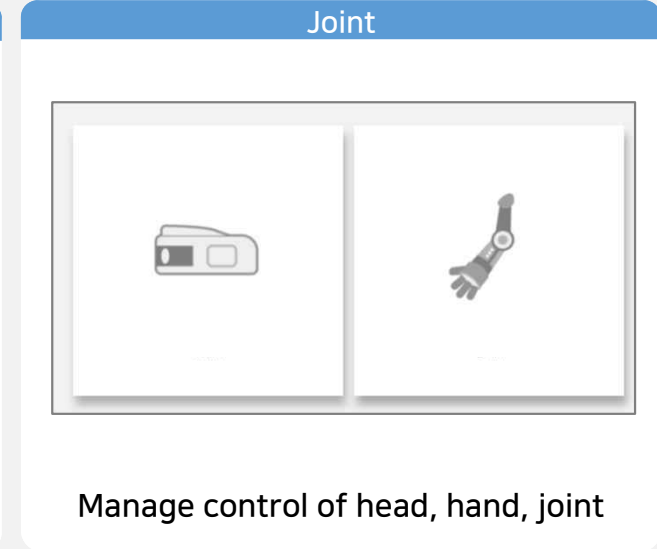
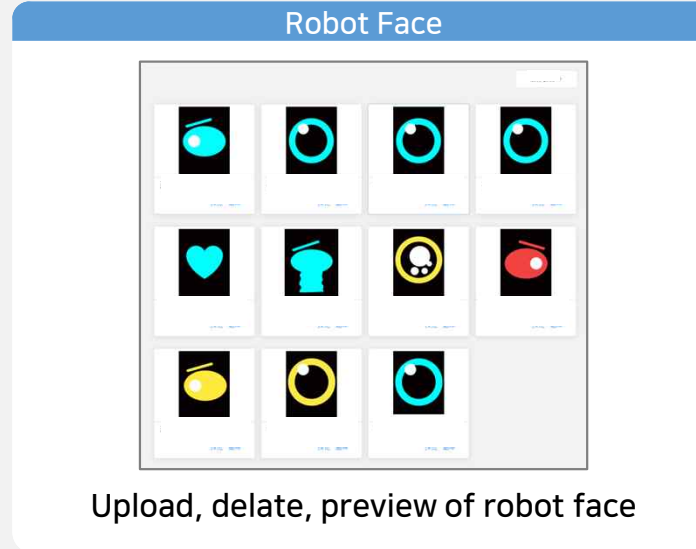
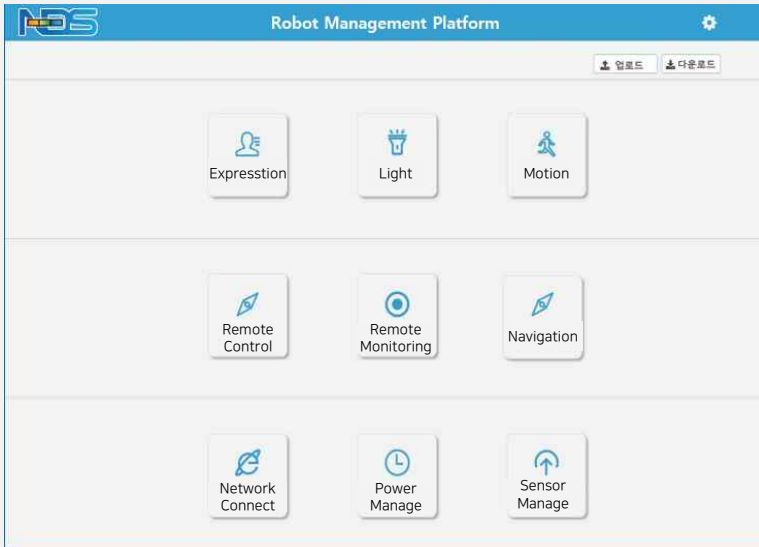
- Manage robot control limitation by group



## 02 MAIN FUNCTION

### Robot driving management platform

- Robot face, light, motion, remote control, monitoring, navigation, network, power, and sensor management



## Overview



### MAP

- Multi Touch(Zoom in/Out)
- Route to destination
- Direction change of map
- 3D Image



### SEARCH

- By floor and category
- Keyboard searching
- Quick Menu
- Change floor



### MAINTENANCE

- Compatible with Q-Sign 3.0
- Support various contents (RSS/Image/Video/etc.)
- Total managing by 1 server
- Q-wayfinder light version

## Face Recognition

- Face Recognition advertisement by gender, age
- Recognition : 3 types of data(Gender, age, actual person)
- Graph library / Data binding



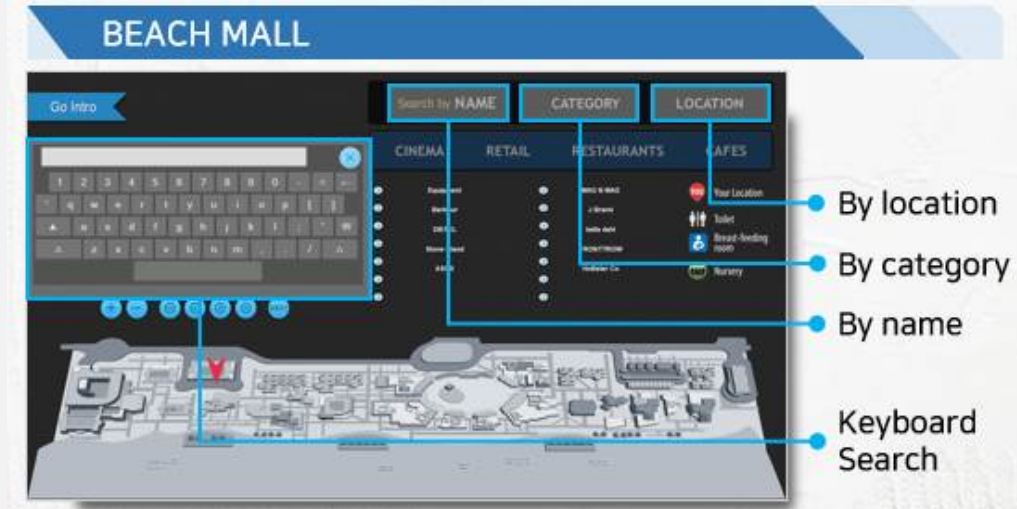
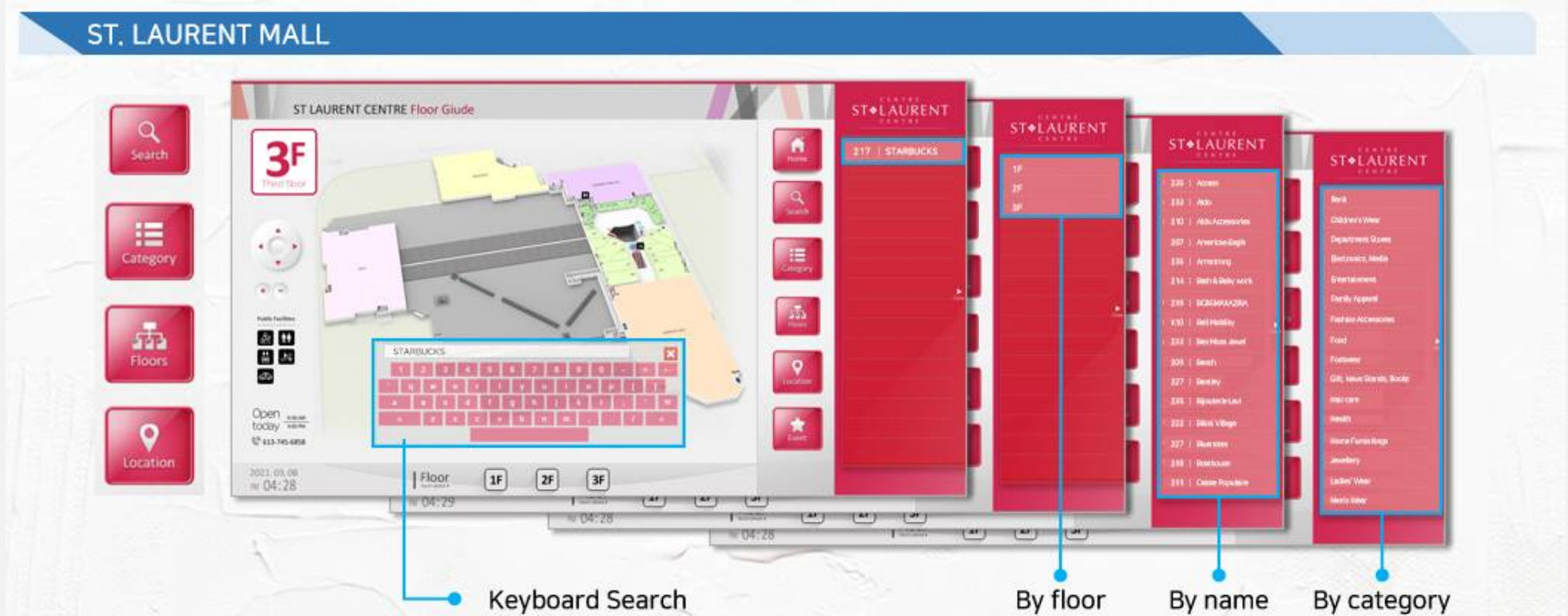
## Voice Recognition

- Multilingual voice recognition and play using Google Cloud Speech (Korean, English, Chinese, Vietnamese)
- FAQ answer and wayfinding with recognized language
- Voice output of each language



# 03 MAIN FUNCTION\_Q-Wayfinder

## 1. Searching : By floor, name, category / Quick menu



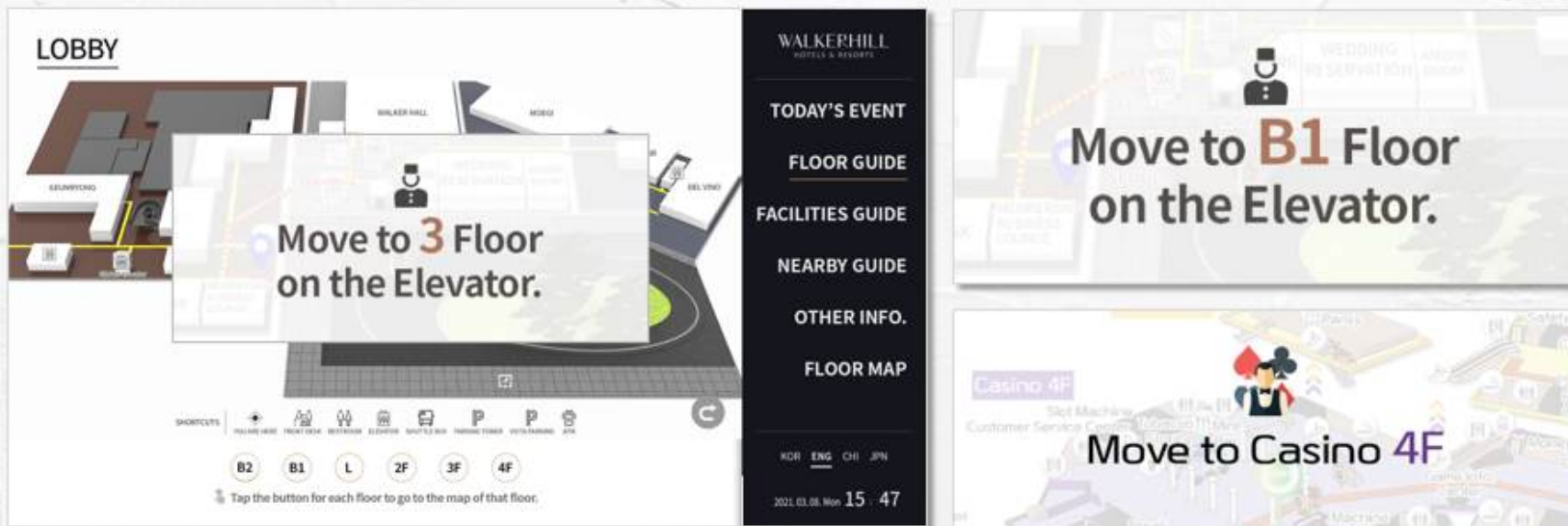
# 03 MAIN FUNCTION\_Q-Wayfinder

## 2. Wayfinding(Inside a building)

### From my location to destination



### Notification pop-up when moves to other floor or building



## 3. Wayfinding(Building to Building)

### Wayfinding to the outside of a building

#### • WALKERHILL HOTEL

WALKERHILL HOTEL & RESORTS

LOBBY

**Moving Outside of Hotel**  
Free limousine shuttle bus service is available at the hotel lobby.

**WALKING DIRECTIONS**

TODAY'S EVENT  
FLOOR GUIDE  
FACILITIES GUIDE  
NEARBY GUIDE  
OTHER INFO.  
FLOOR MAP

WALKERHILL HOTEL & RESORTS

TODAY'S EVENT  
FLOOR GUIDE  
FACILITIES GUIDE  
NEARBY GUIDE  
OTHER INFO.  
FLOOR MAP

PIZZA BUILT  
DOUGLAS GARDEN  
PARKING  
CASINO  
VISTA WALKERHILL SEOUL

B2 B1 L 2F 3F 4F

Tap the button for each floor to go to the map of that floor.

2023.02.08 Mon 15:54

#### • GANGWONLAND CASINO

KANGWON LAND CASINO

Highly Recreary Center  
Highly Roller Skating Rink  
Highly Science Lab  
Mountain Indoor dog Playground

Stockroom  
Karaoke  
Mountain World  
Self Laundromat

Grand Hotel  
Palace Hotel  
Highly Condominium

KANGWON LAND CASINO

Casino User Guide  
Customer Notice  
User Guide  
Casino Location Guide  
Food and Beverage Guide

**Move to Outside the Casino**

ALL MAP 4F 5F FESTI

Casino Guide Map  
Table PIT Location Guide

KANGWON LAND CASINO

Casino User Guide  
Customer Notice  
User Guide  
Casino Location Guide  
Food and Beverage Guide  
Facilities Guide  
Highly Resort Info  
Emergency Evacuation

ALL MAP 4F 5F FESTI

Casino Guide Map  
Table PIT Location Guide

Food and Beverage Guide  
Facilities Guide  
Highly Resort Info  
Emergency Evacuation

Mountain Condo  
You Are Here  
Unjampeong

ALL MAP 4F 5F FESTI

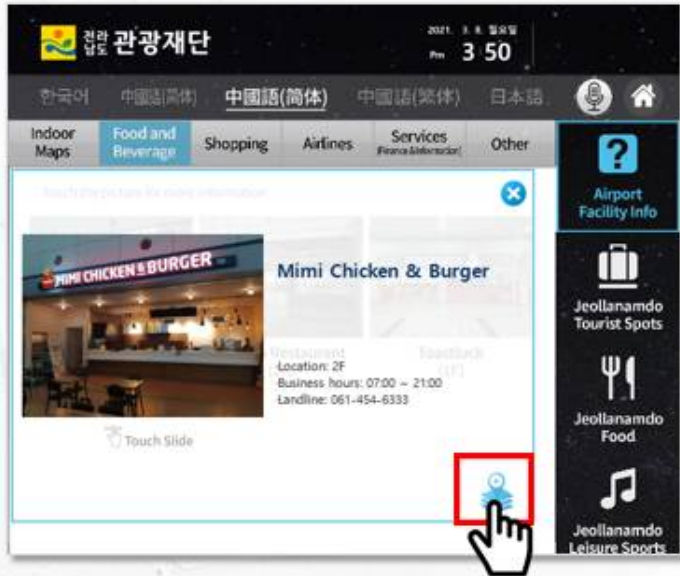
Casino Guide Map  
Table PIT Location Guide

Food and Beverage Guide  
Facilities Guide  
Highly Resort Info  
Emergency Evacuation

# 03 MAIN FUNCTION\_Q-Wayfinder

## 4. Pop-up page for shop information

Wayfinding after pop-up page shows



Shows pop-up page after wayfinding



5. Screensaver

Display screensaver if there is no interaction detected for the set time

• WALKERHILL HOTEL



• MUAN INTERNATIONAL AIRPORT



• GANGWONLAND CASINO





# 03 MAIN FUNCTION\_Q-Wayfinder

## 6. Database and web page integration

### Web page integration



### Database integration



Destination list DB

Online map

Application

# 03 MAIN FUNCTION\_Q-Wayfinder

## 7. Voice recognition

### Multi-language voice recognition



### Voice recognition FAQ list

1. Where can I buy a bus ticket and where is the route table?  
You can buy a bus ticket at the ticketing machine next to exit 1 or the tourist information desk on the first floor. Route information is on the notice board next to exits 1 and 2.

2. Where is the nearest accommodation?  
This service will be ready soon.

3. Where is the food court in the airport?  
Please refer to «Muan International Airport Facility Information Guide».

4. Where is the toller?  
Please refer to «Muan International Airport Facility Information Guide».

5. Where can I get a taxi?  
You can find the taxi terminal at exit 1 on the first floor.

6. Where is the currency exchange?  
Withdrawal services at the Nonghyup Bank next to exit 2 on the second floor.

7. Where is the best tourist spot in Jeollanam-do?  
Please refer to «Jeollanam-do Tourist Spot».

8. Where is the airport information desk?  
Please refer to «Muan International Airport Facility Information Guide».

9. Which languages do they support at the information desk?  
Currently, the information desk supports Chinese and English.

FAQ LIST

서울 고등 법원은 어디에 있나요?

Where is Seoul High Court?

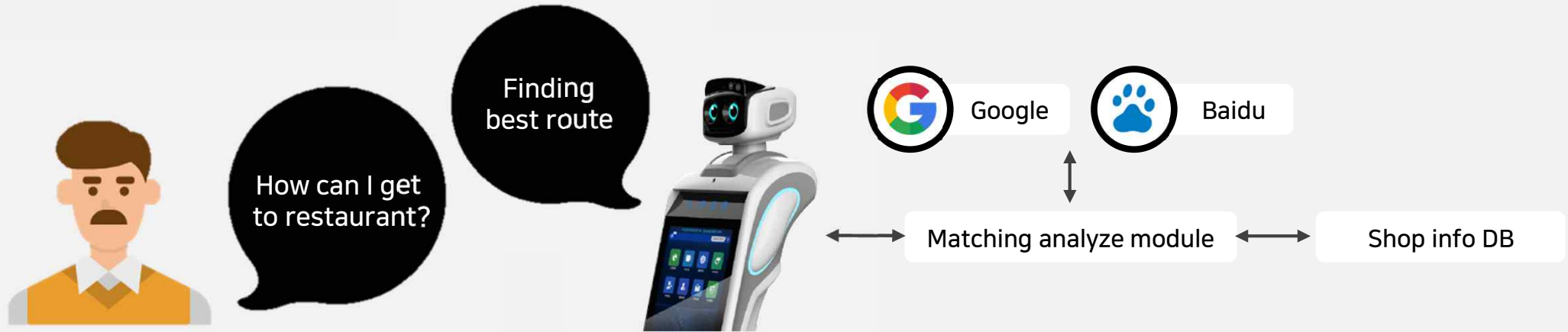
Tòa án cấp cao Seoul ở đâu?

首尔高等法院在哪里?

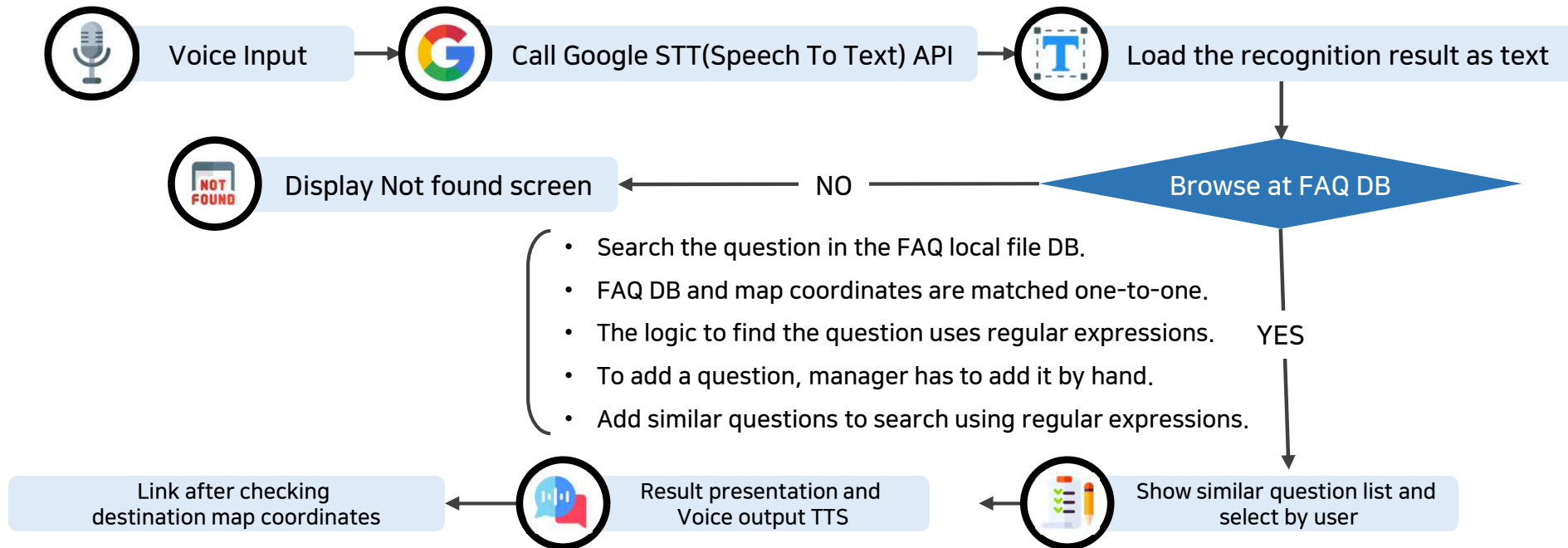
Korean English Vietnamese Chinese

# 03 MAIN FUNCTION\_Q-Wayfinder

## 7. Voice recognition



### Multilingual voice recognition process diagram



## 8. Face recognition

Display different type of advertisement depends on the user's gender and age



**Changing Ads by the user (gender, age)**

신속운행: 평일, 주말 15:00~19:00 (우일) 영주공영버스(호주) \* 임시상행버스(호주) 영주(영주)영주(영주), 영주(영주)영주(영주)

문의: 고객센터 02-2288-7102

### Facial Recognition Sensor

1. Face Recognition



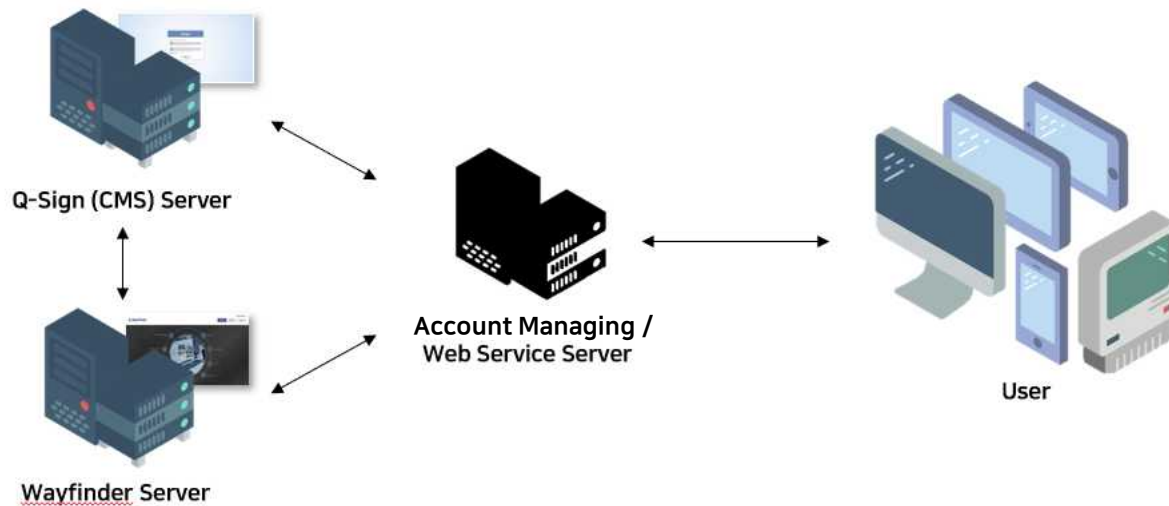
2. Database Match



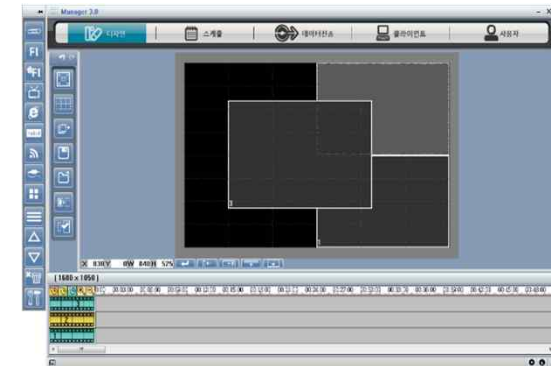
Statistical results provided as a list and chart



### Cloud Server



### MAIN FUNCTION

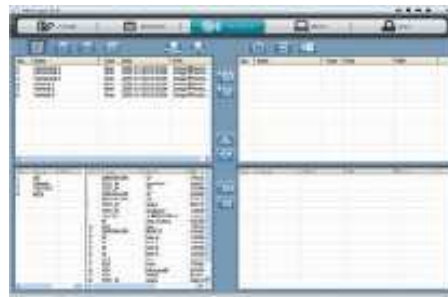


- ▶ Support 15 languages.
- ▶ Easy installation within 15mins.
- ▶ Content design and schedule transmission.
- ▶ Support various application formats.



#### Schedule

- Daily, Weekly, Monthly schedule
- Selectable schedule management



#### Data transfer

- Immediate/reservation/Emergency data transfer and USB transmit



#### Client

- Remote power and monitor on/off
- Monitoring clients status



#### User

- Multi User Registration
- Distribution of User authority

# 04 MANAGEMENT SOFTWARE

## Q-SIGN CLOUD VERSION

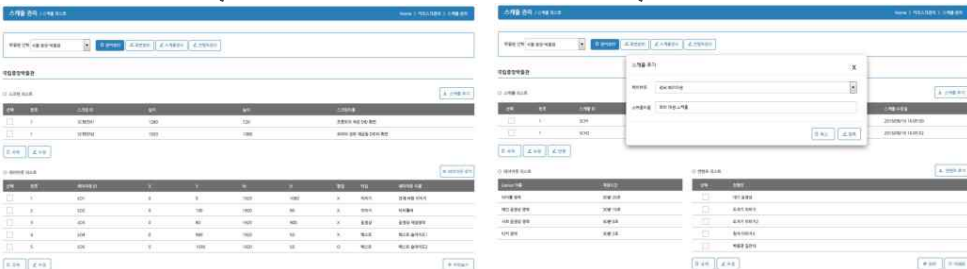
### WEB based CMS Q-SIGN 1.0

- Web based CMS makes you control it anywhere in the world
- Include main function of CMS(Making, Managing, transmission, Client control, Emergency notice etc.)
- Efficient managing by distribution of site/client to each manager
- Available in various environment by multi browser support



### Maximized user friendly interface

- Simple data flow and network for minimize traffic
- Only core functions included for minimize system resource usage and hardware overhead
- Contents will be played stably even data base are downed
- Automatically restart when client abnormally ends



### All main functions of PC version of Q-Sign 3.0 is available

#### Manage Display

Register/Delete/Power control/Screen status/Play status/Check error

#### Manage Screen

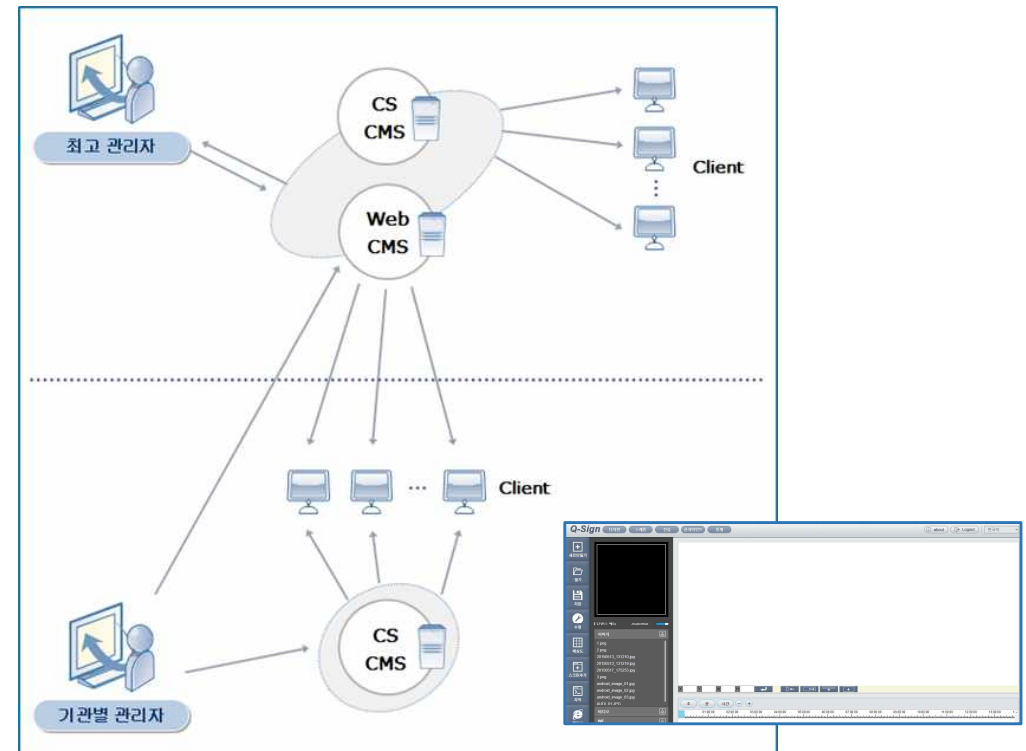
Add/Edit/Delete screen, Add/Edit/Delete/Preview of layout

#### Manage Schedule

Add/Edit/Delete schedule, Add/Change order/Delete of contents

#### Manage Contents

Add image/video, Edit registration info, Add subtitle, Emergency notice



## Daejeon National Science Museum

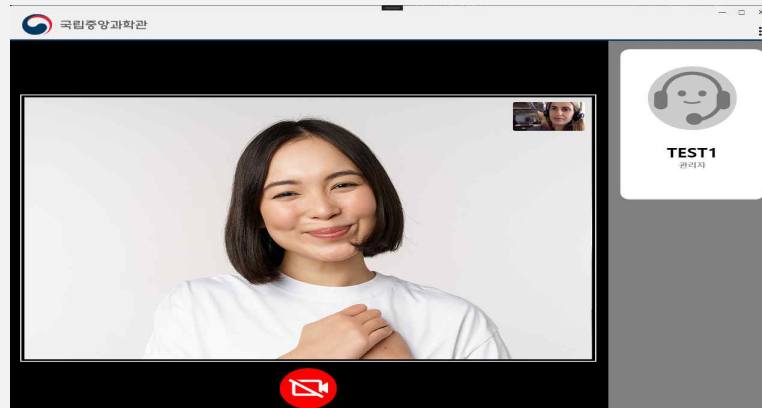


### Main Function

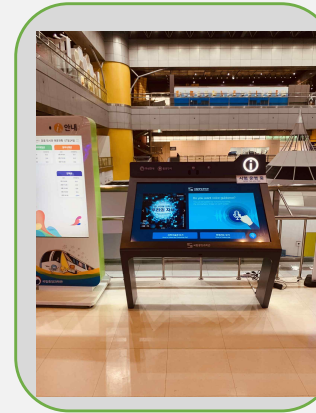
- Exhibition Guidance – Science Information on science, Exhibition hall, Theme docent commentary
- Voice recognition – 100 FAQ by 4 languages(KOR, ENG, CHI, JAP)
- Building guide – Map guide by floor, main facility direction guide
- Play audio book by integrating museum website
- Employee connection counseling service through video connection
- Support 4 languages(Korean, English, Chinese, Japanese)



Facility Guidance



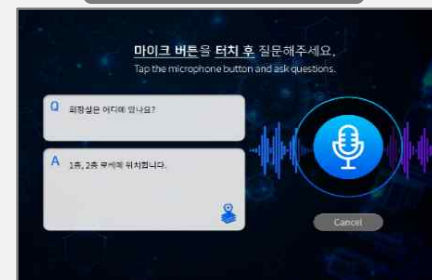
Non-face-to-face video call connection



실내 키오스크 14대



옥외용 LED 키오스크 2대



Voice Recognition Guide



Customer Voice Box(Survey)

Gwangju History Museum

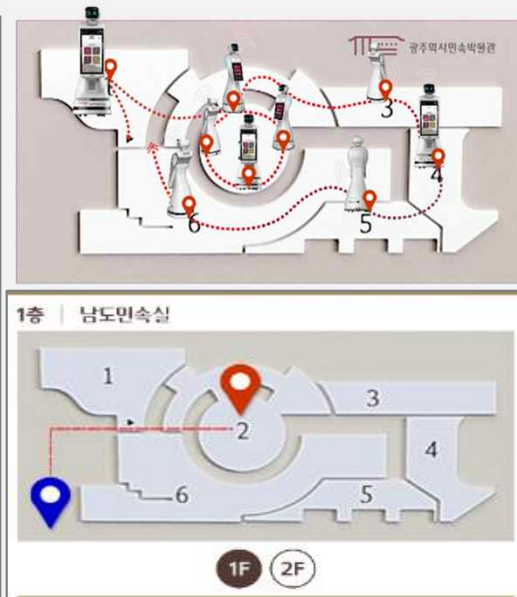


Main Function

- Museum guide - Exhibition hall info, cultural heritage docent
- Voice recognition - 100 FAQ by 4 languages(KOR, ENG, CHI, JAP)
- Building guide - Map guide, main facility guide
- Robot route setting and integrate location spot
- Support 4 languages(Korean, English, Chinese, Japanese)



Voice Recognition / FAQ



Museum Guide



Information





Busan Art Museum



Main Function

- Museum guide – Museum info, cultural heritage docent
- Voice recognition – 100 FAQ by 4 languages(KOR, ENG, CHI, JAP)
- Building guide – Map guide, main facility guide
- Play audio book by integrating museum website
- Support 4 languages(Korean, English, Chinese, Japanese)



Building guide



Voice Recognition / FAQ



Audio Guide



Audio Guide



Museum information



Museum information



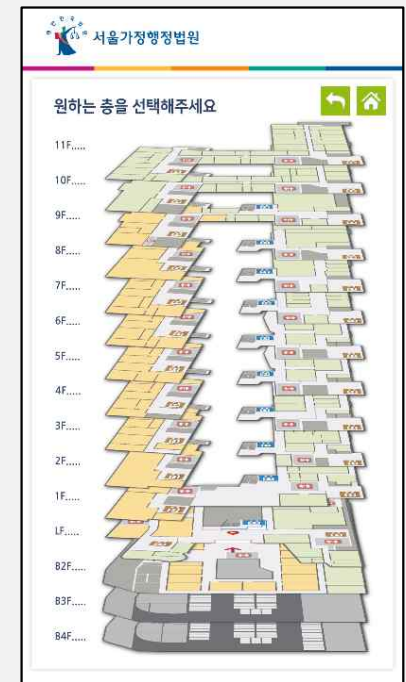
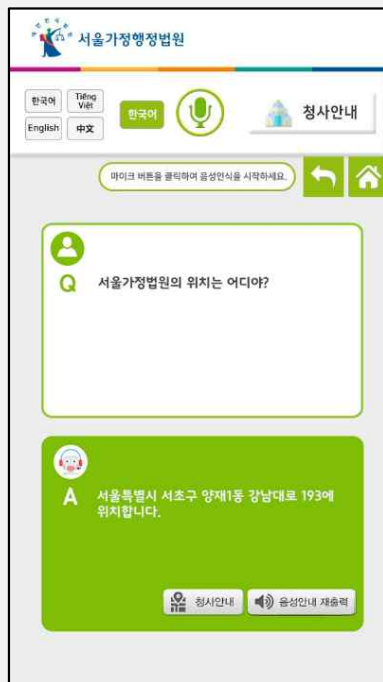
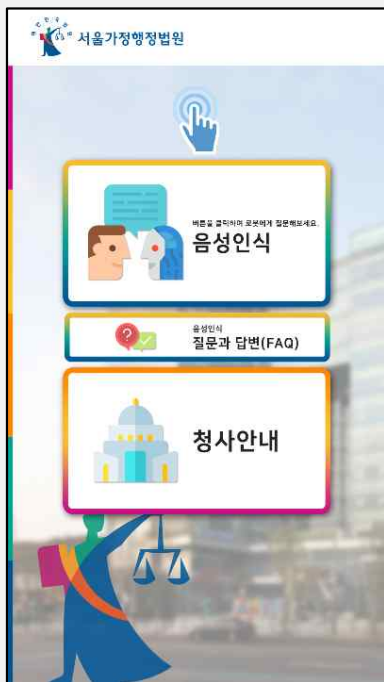
Museum information

Seoul Seocho Family Court



Main Function

- Voice recognition – 265 FAQ by 4 languages(KOR, ENG, CHI, VET)
- Image view of FAQ list
- Building Guide – Map guidance by floor, Search name by keyboard
- Set a route of a robot(Location is interconnected)
- Support 4 languages(Korean, English, Chinese, Vietnamese)





## **For more information**

### **Our website**

- [www.netds.net](http://www.netds.net)

### **Contact**

- email [horatio@netds.net](mailto:horatio@netds.net)  
[chloe.park@netds.net](mailto:chloe.park@netds.net)