

Transforming complex spaces into intuitive ones.

LBS Wayfinding Solution

Integrated indoor and outdoor wayfinding solution



Contents

- 1. Mobile Wayfinding Solution**
- 2. WEB Wayfinding Solution**
- 3. LBS Technology**

LBS Wayfinding Solution

Mobile Wayfinding Solution

Navigate spaces quickly and easily with accurate real-time location and clear maps.



WHY IT IS NEEDED

Visitors navigating complex spaces

Pain Points

Fragmented user experiences in large complexes

- **Surge in information and direction inquiries**

In large or unfamiliar spaces, users cannot easily identify their current location or destination.

- **Confusing pathways leading to fatigue**

In complex environments, unclear routes to destinations lead to increased visitor fatigue and impacts visitor satisfaction.

- **Lack of contextual information**

Disrupted routes between buildings and floors create wayfinding challenges for people with reduced mobility and foreign visitors.

TARGET CUSTOMERS

Airports

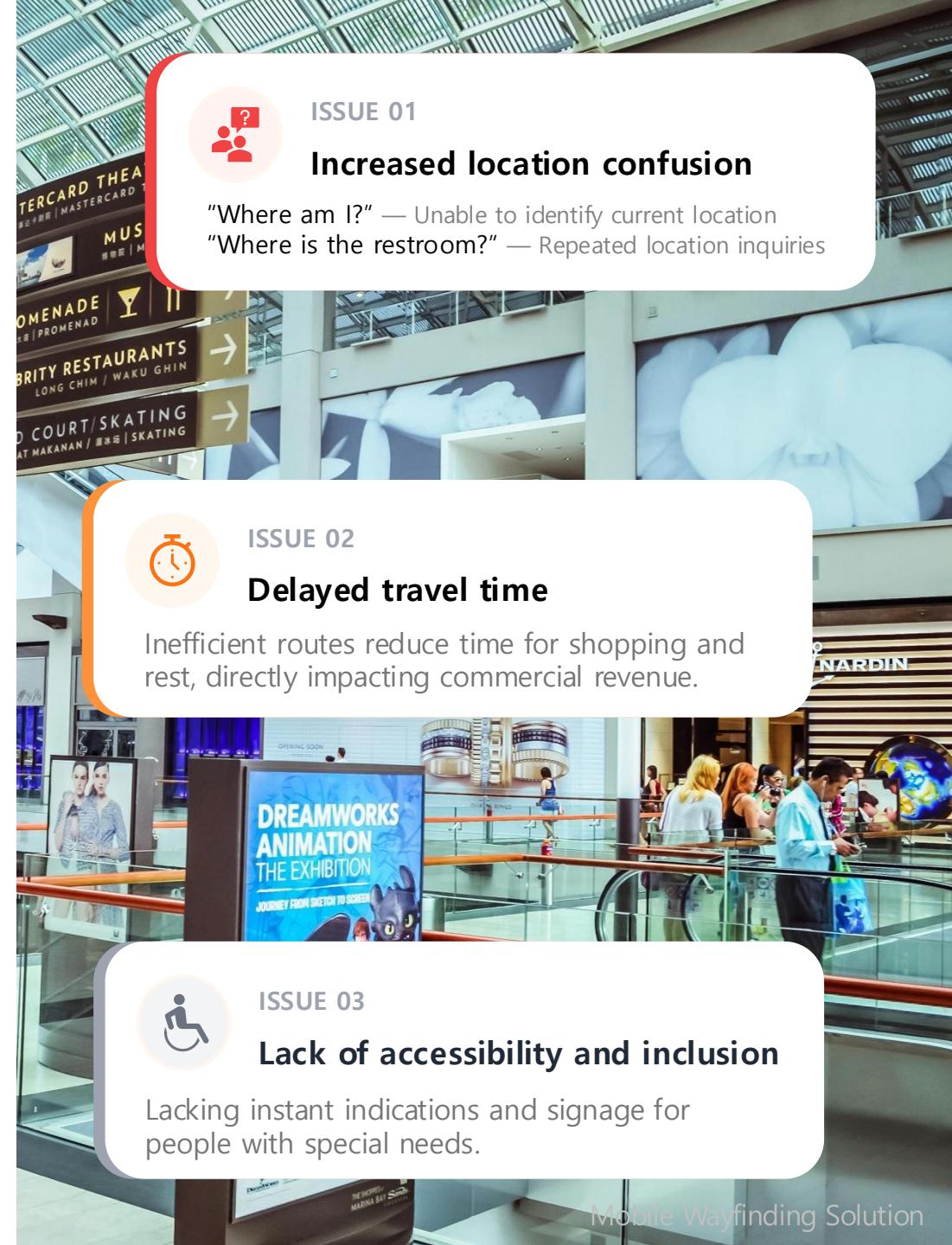
Medical Complexes

Bus Terminals

Railway Stations

Public Offices

Shopping Malls



ISSUE 01

Increased location confusion

"Where am I?" — Unable to identify current location
"Where is the restroom?" — Repeated location inquiries

ISSUE 02

Delayed travel time

Inefficient routes reduce time for shopping and rest, directly impacting commercial revenue.

ISSUE 03

Lack of accessibility and inclusion

Lacking instant indications and signage for people with special needs.

P&T

Mobile Wayfinding Solution

accurately identifies users' location and guides them along the easiest and fastest path.



Real-time Positioning
Accurate user location



Multi-Language Map
Available in 4 languages



Search
Fast and Convenient



Route
Optimal path shown on map



Mobile Wayfinding Solution

P&T wayfinding app connects all routes into one.

The smart navigation app that perfectly integrates indoor/outdoor maps, search, and wayfinding.



Precise facility search (Points of interest)

Quick category-based search for key facilities, including shopping, dining, and convenience services.



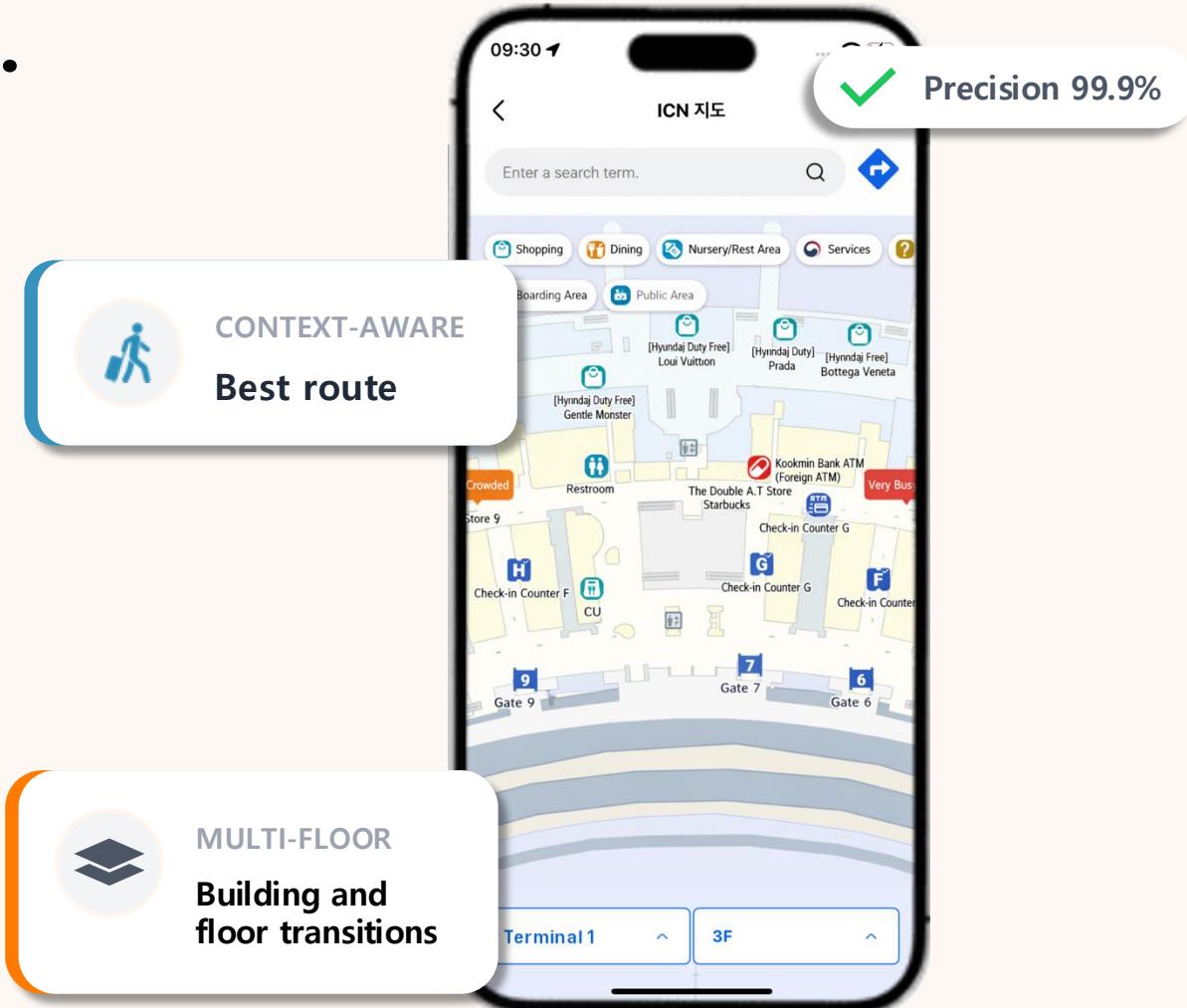
Seamless route calculation

Provides accurate user location and optimal routes from origin to destination.



Scalability and accessibility

Integrated indoor-outdoor maps, support for four languages, accessibility features for mobility-impaired users, and SDK/API availability for integration with third-party apps.



Detailed map view

Intuitively designed interface elements

1 Start navigation

Google maps-like buttons to set start /destination and launch navigation.

2 Category filters

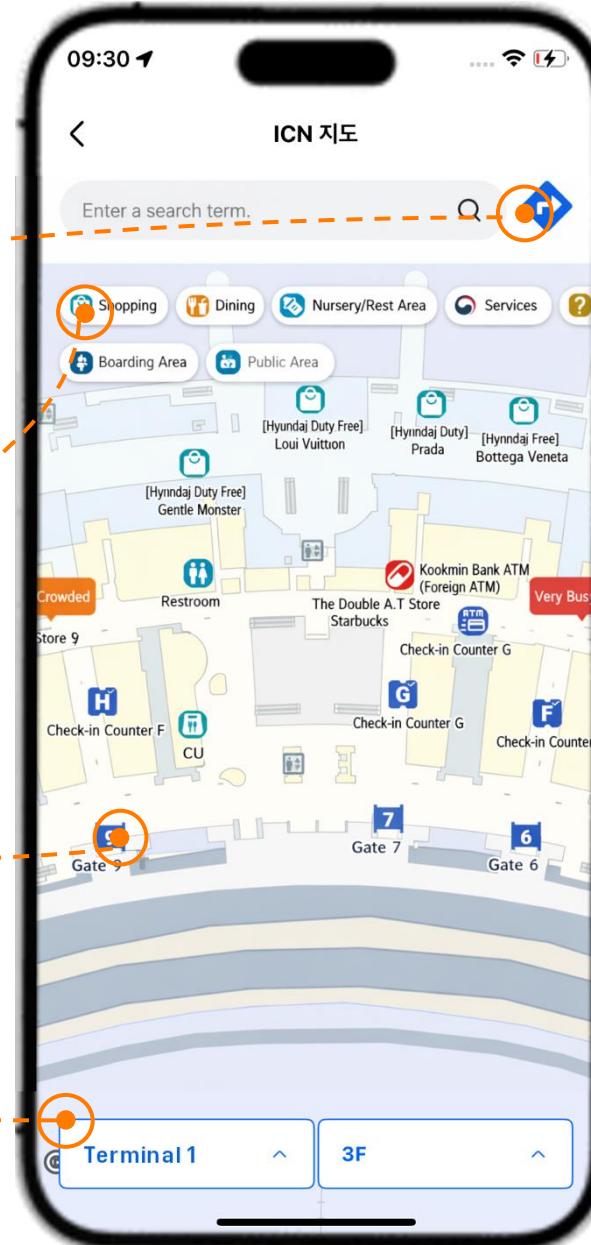
Fast filters for key facilities such as shopping, dining, and amenities.

3 Entrance / Gate signage

Precise location identification, labeling major access route numbers.

4 Building / floor switch handle

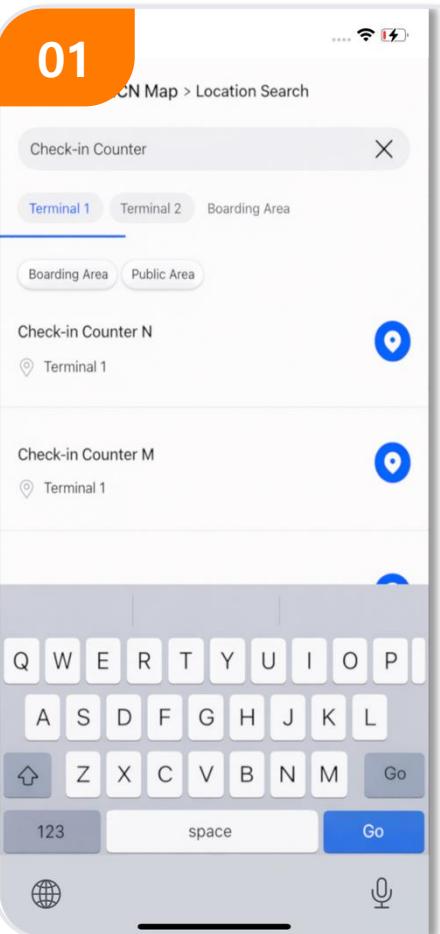
View the current floor and swiftly move to other areas.



Key Feature Highlights

Four essential experiences for a complete visitor journey

01



ICN Map > Location Search

Check-in Counter

Terminal 1 Terminal 2 Boarding Area

Boarding Area Public Area

Check-in Counter N

Terminal 1

Check-in Counter M

Terminal 1

Smart search and initial-based word recognition

word recognition building tab



User-friendly search

02



ICN Map

Enter your search...

Shops Restaurants Kid Play Area Accessibility

Arrival General Area

Hyundai Store DUFRI

Hyundai Store Prada

Hyundai Store Bottega Veneta

Restroom

Dunkin Starbucks

Shinhan Bank ATM/Kiosk ATM

Charge Zone G

Charge Zone F

Arrival 28

Shinhan Bank

H CU

Terminal 1

3rd floor gate 9

3rd floor gate 9

3rd floor gate 6

vector map POI details



Clear, interactive map

- Provides clear maps (vector maps: GeoJSON)
- Freely switch between Buildings and floors
- Identify key facilities (POIs) and current location
- Detailed POI information available

Categories



Key Feature Highlights

Four essential experiences for a complete visitor journey

03 ICN Map > Route Search

3F Gate 6 Entrance

Panpan Duty Free

Pedestrian Route

Accessible Route

Arrival

Smoking

Panpan Duty Free

Very Busy

Start

Accessible

optimal route

13 min 490m

Route Preview ▶

Terminal 1 3F

13 min 395m

Pedestrian Route

Arrival

Smoking

Panpan Duty Free

Very Busy

Start

Departure Hall 2 - East

36 6F Entrance

Kookmin Bank

36 번 출구

3F

This route requires a security check.

Tailored optimal route

In addition to setting the start and destination, the app provides route options for both general pedestrians and mobility-impaired users, including wheelchair users.

04 ICN Map > Route Preview

Terminal 1 3F

12 min 395 m

Pedestrian Route

Arrival

Smoking

Panpan Duty Free

Very Busy

Start

Departure Hall 2 - East

36 6F Entrance

Kookmin Bank

36 번 출구

3F

Travel time

Turn by Turn

02:58 | 232m

07:38 | 50m

00:04 | 6m

00:17 | 23m

Security Check

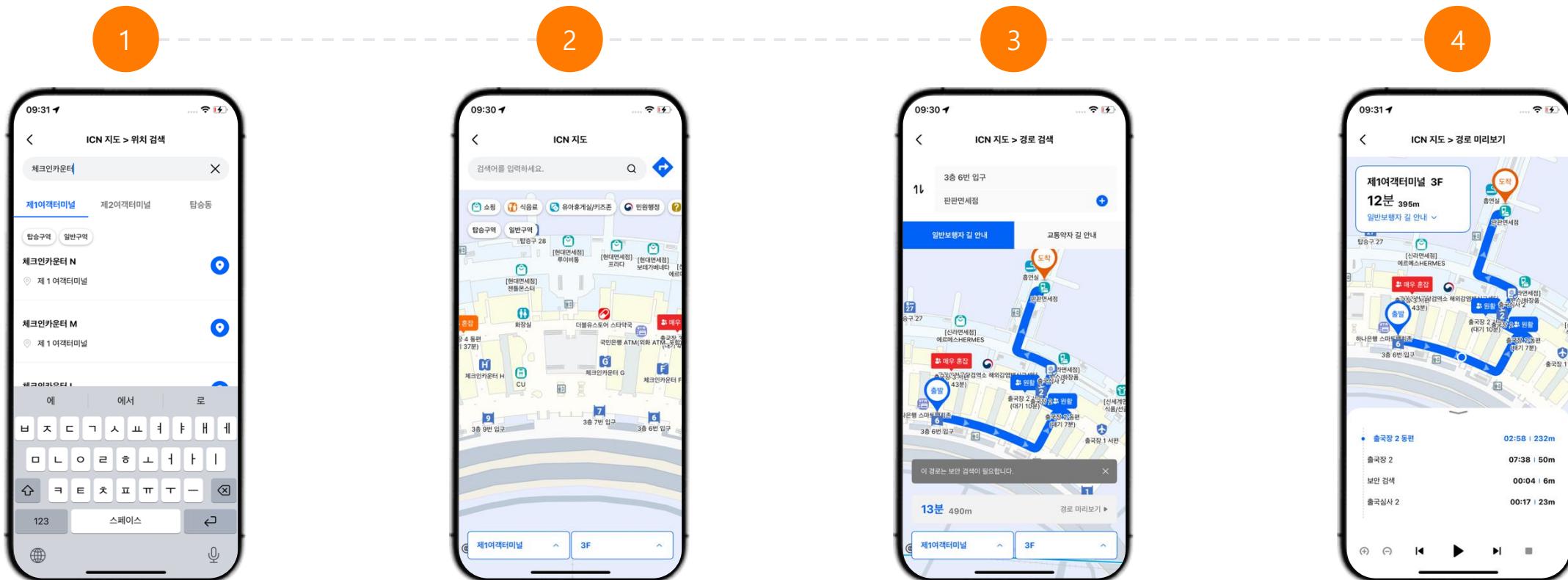
Immigration 2

Detailed route preview

Provides turn-by-turn navigation along with total travel time, distance, and estimated arrival time.

Intuitive User flow (4 Steps)

From search to arrival, a simple journey that anyone can easily follow.



Search destinations

Find places quickly with smart search and category search.

Check location and map

Intuitively understand your current location and surrounding facilities.

Set path options

After selecting the path mode, the optimal route is calculated.

Start guidance

Turn-by-turn guidance begins with a detailed route preview.

Demonstration video

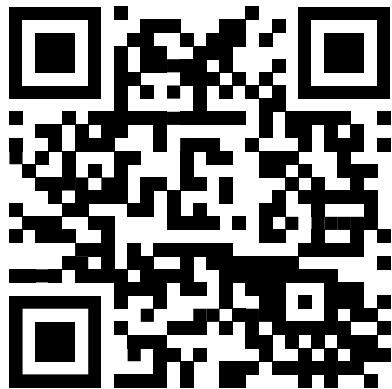
Easy to use: Search → Route search → Real-time navigation



App service experience

Incheon Airport Map App Service

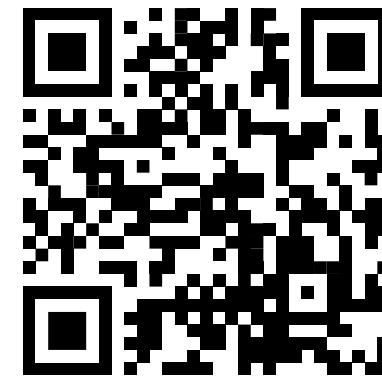
Android



Scan the QR code to access the app download page.



iOS



Scan the QR code to access the app download page.



- Scan the QR code above with your camera to install 'Incheon Airport+'.
- On the home screen, tap 'ICN Map' to experience the Incheon Airport map service.
- When used inside Incheon Airport, you can access the map and navigation services.

LBS Wayfinding Solution

WEB Wayfinding Solution

Navigate spaces quickly and easily
without installing an app.



WHY IT IS NEEDED

Users of complex environments

Pain Points

Fragmented experiences in complex spaces

- **A sharp increase in wayfinding inquiries**

In complex spaces, confusing destinations and routes increase visitor fatigue.

- **Mobility-impaired users**

For users who find app installation difficult, access to the service is limited or unavailable.

- **Missing contextual information**

Discontinuous inter-building and inter-floor routes hinder wayfinding for mobility-impaired users and foreign visitors.

TARGET CUSTOMERS

Airports

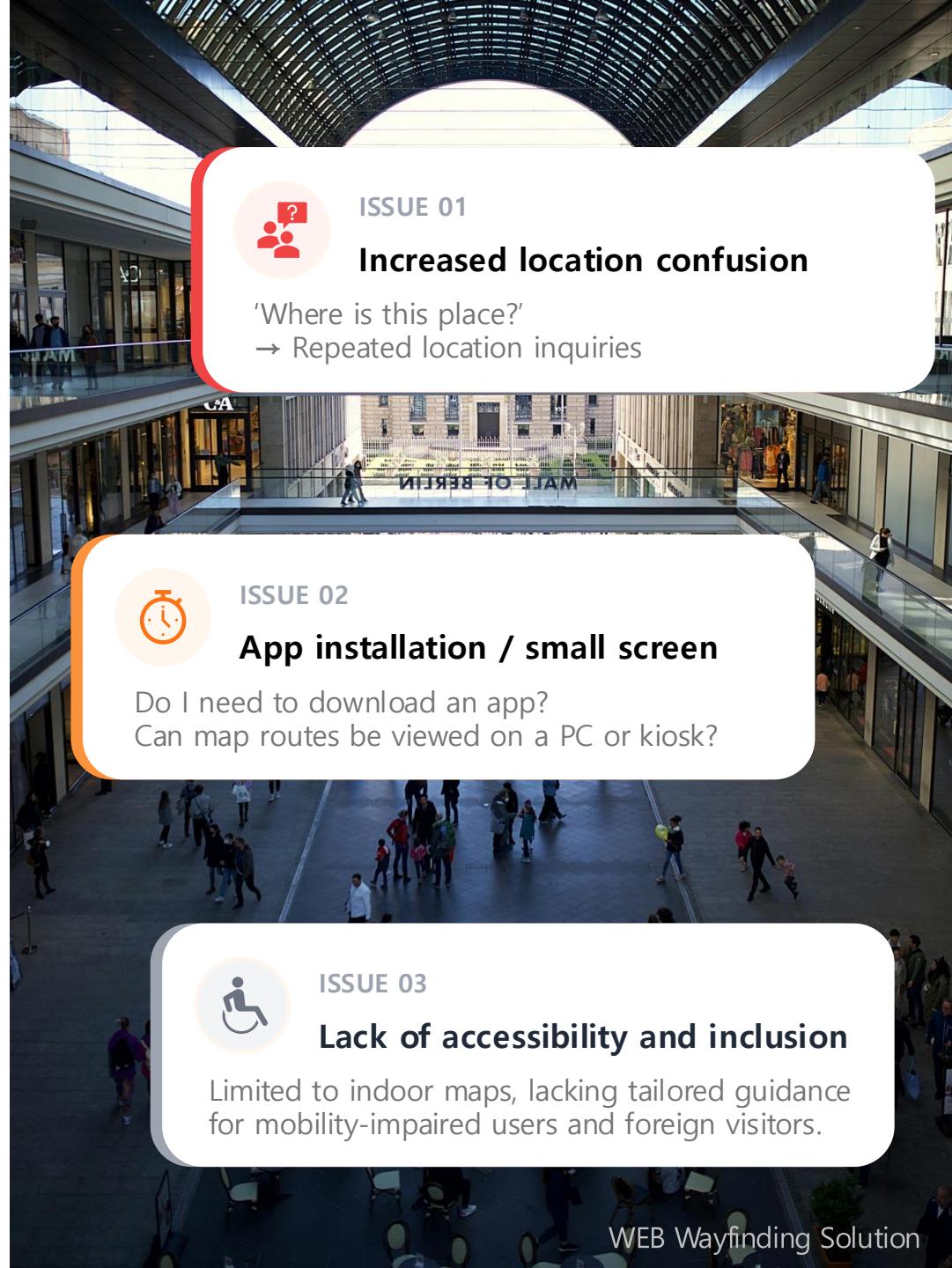
Medical Complexes

Bus Terminals

Railway stations

Public Offices

Shopping Malls



P&T

WEB Wayfinding Solution

A **web map and navigation solution** that guides users quickly and easily, without installing an app.



Multi-Device
support without installation



Multi-Language Map
4 languages supported



Search
Fast and convenient search



Indoor/Outdoor routes
Optimal routes map display

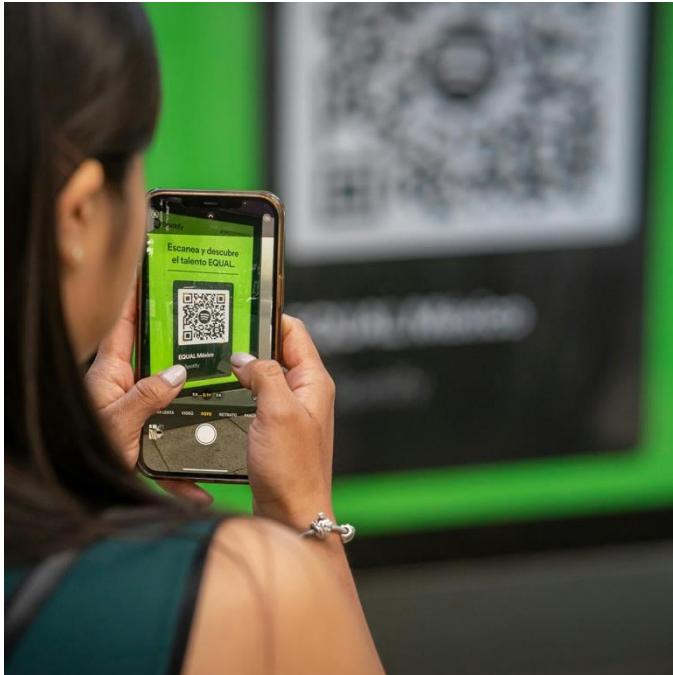


WEB Wayfinding Solution

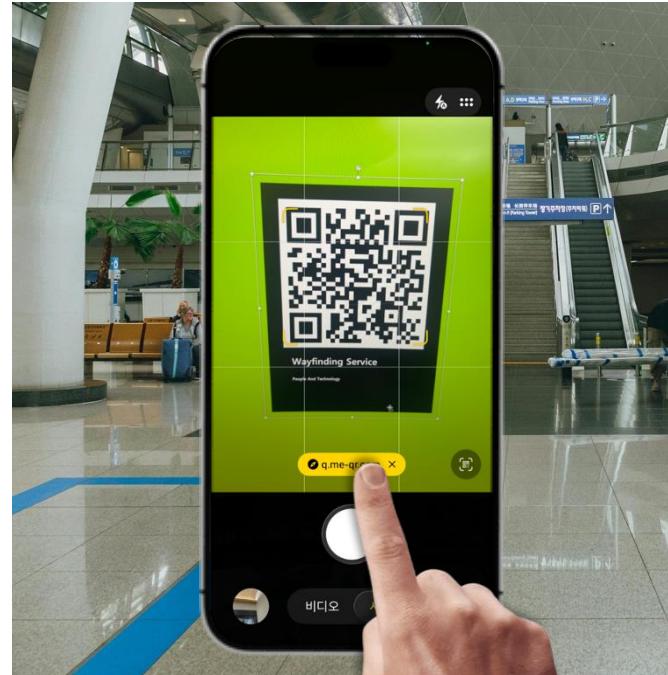
QR Code Wayfinding service without app installation

Scan the QR code on your mobile phone/tablet to access the service immediately.

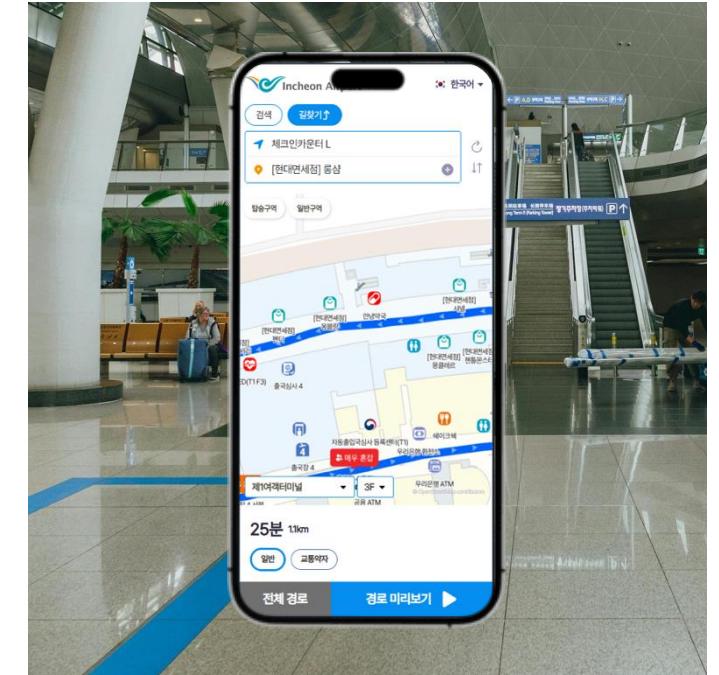
1 Scan the QR code



2 Click the Link



3 Use the service in the default browser



Map View Details

Interface elements that intuitively convey complex information

1 Start Route Search

Setting the start and destination and entering navigation mode.

2 Building/Floor transitions

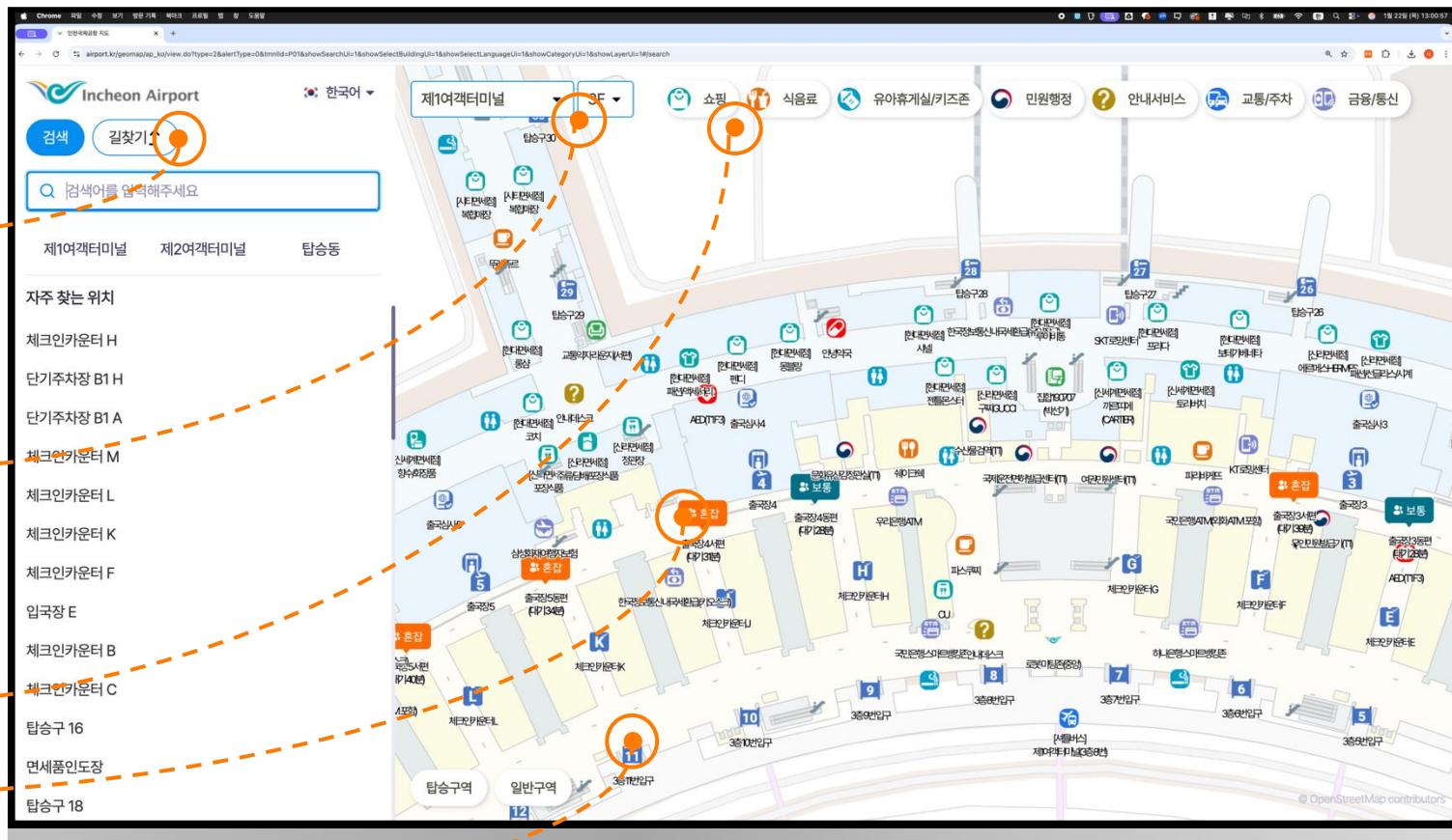
Allows users to view the current floor and quickly navigate to other areas.

3 Category filters

Fast filters for key facilities such as shopping, dining, and amenities.

4 Entrance / Gate signage

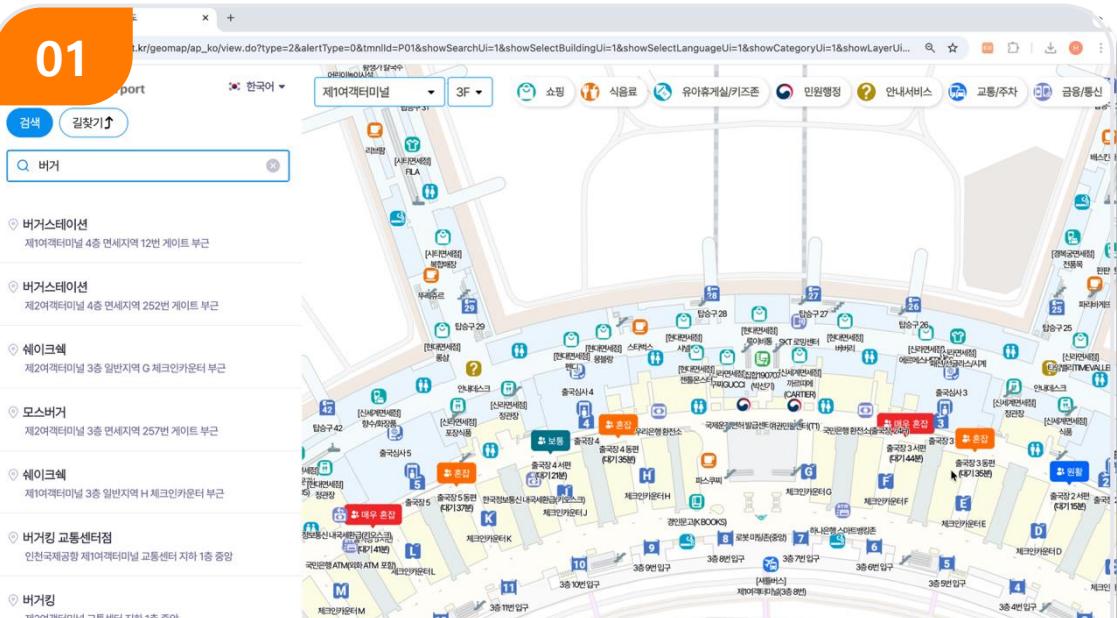
View the current floor and swiftly move to other areas.



CORE FEATURES

Key Features Highlights

Four core experiences designed to seamlessly support the airport passenger journey.

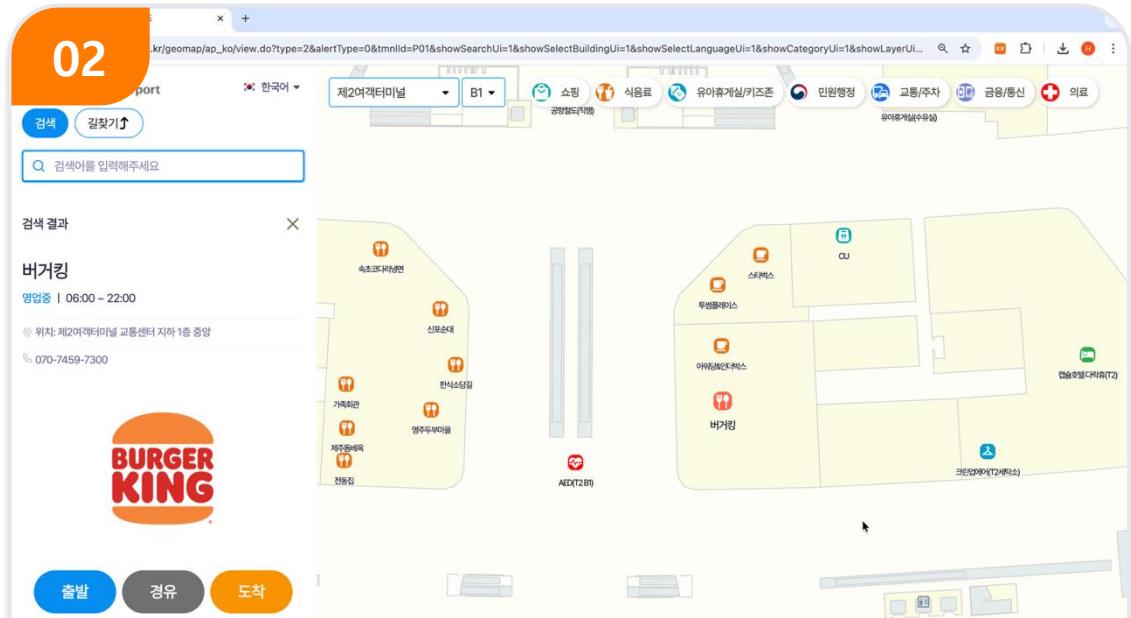


Convenient Search Functionality

- Place and keyword search, smart word recognition
- Search results organized by building
- Category-based, location-aware result lists

Category Filters

Smart Location Search



Clear, interactive map

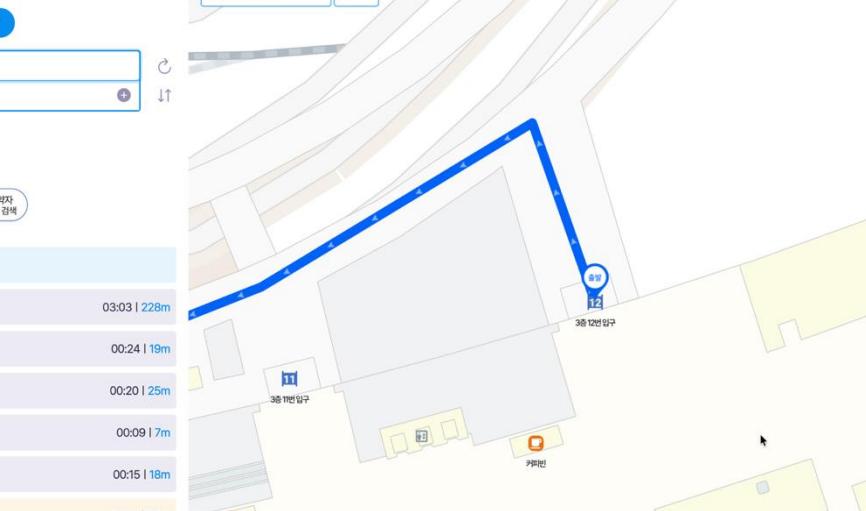
- Delivers high-clarity vector maps (GeoJSON)
- Seamless terminal and floor switching
- Clear visibility of key POIs with detailed information

Vector map

POI details

Key Features Highlights

Four core experiences designed to seamlessly support the airport passenger journey.



03 kr/geomap/ap_ko/view.do?type=2&alertType=0&tmnId=P01&showSearchUi=1&showSelectBuildingUi=1&showCategoryUi=1&showLayerUi... 🔍 ☆ 🌐 🌐 🌐 🌐

검색 길찾기

3층 12번 입구 버거킹

4분 349m

일반 경로로 감배 교통역자 경로로 감배

3층 8번 입구 03:03 | 228m

에스컬레이터 (3F) 00:24 | 19m

에스컬레이터 (1F) 00:20 | 25m

에스컬레이터 (1F) 00:09 | 7m

에스컬레이터 (B1) 00:15 | 18m

버거킹 00:41 | 49m

Tailored route optimization

Supports start and destination settings, with route options for pedestrians and mobility-impaired users, including wheelchair users.

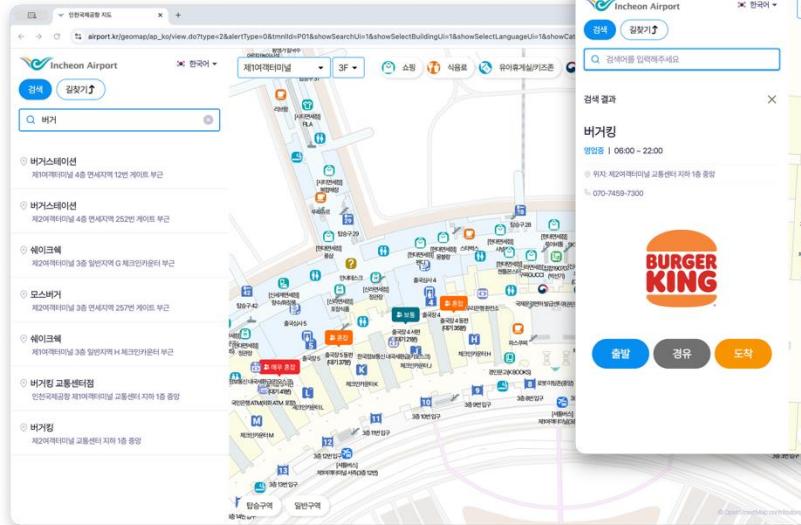
Stopover Accessibility mode

Intuitive User Flow(4 Steps)

A simple, easy-to-follow journey from search to arrival—for everyone.

1 Destination search

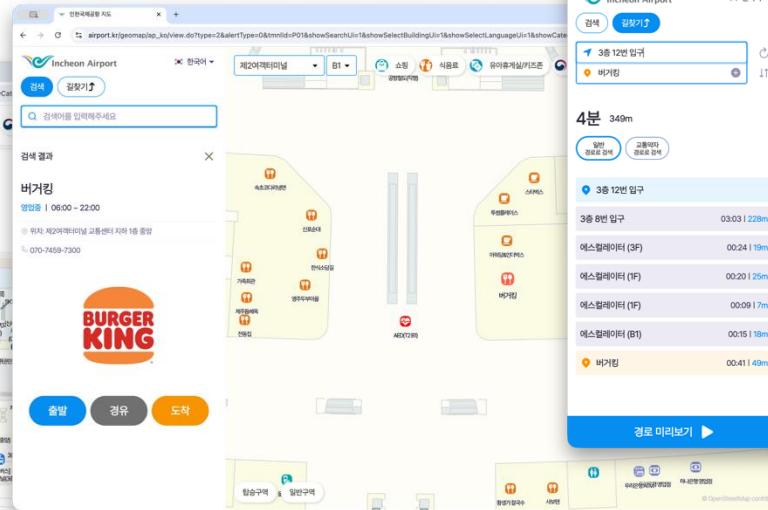
Find places quickly through smart word recognition and category search.



2

Location and map view

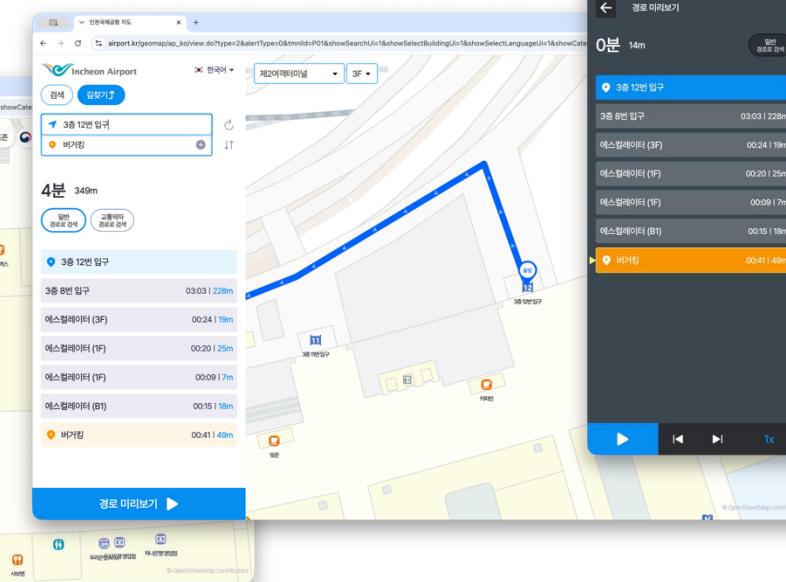
Intuitively identify the searched location and nearby facilities.



3

Route options settings

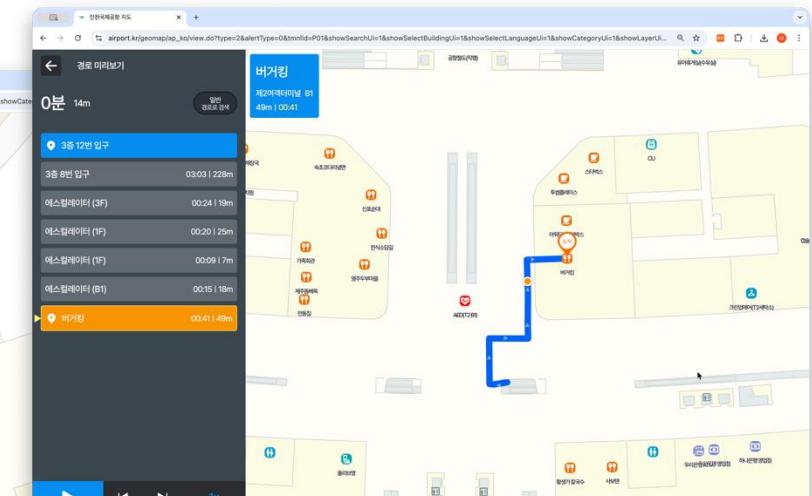
Select General or Accessibility mode to calculate the optimal route.



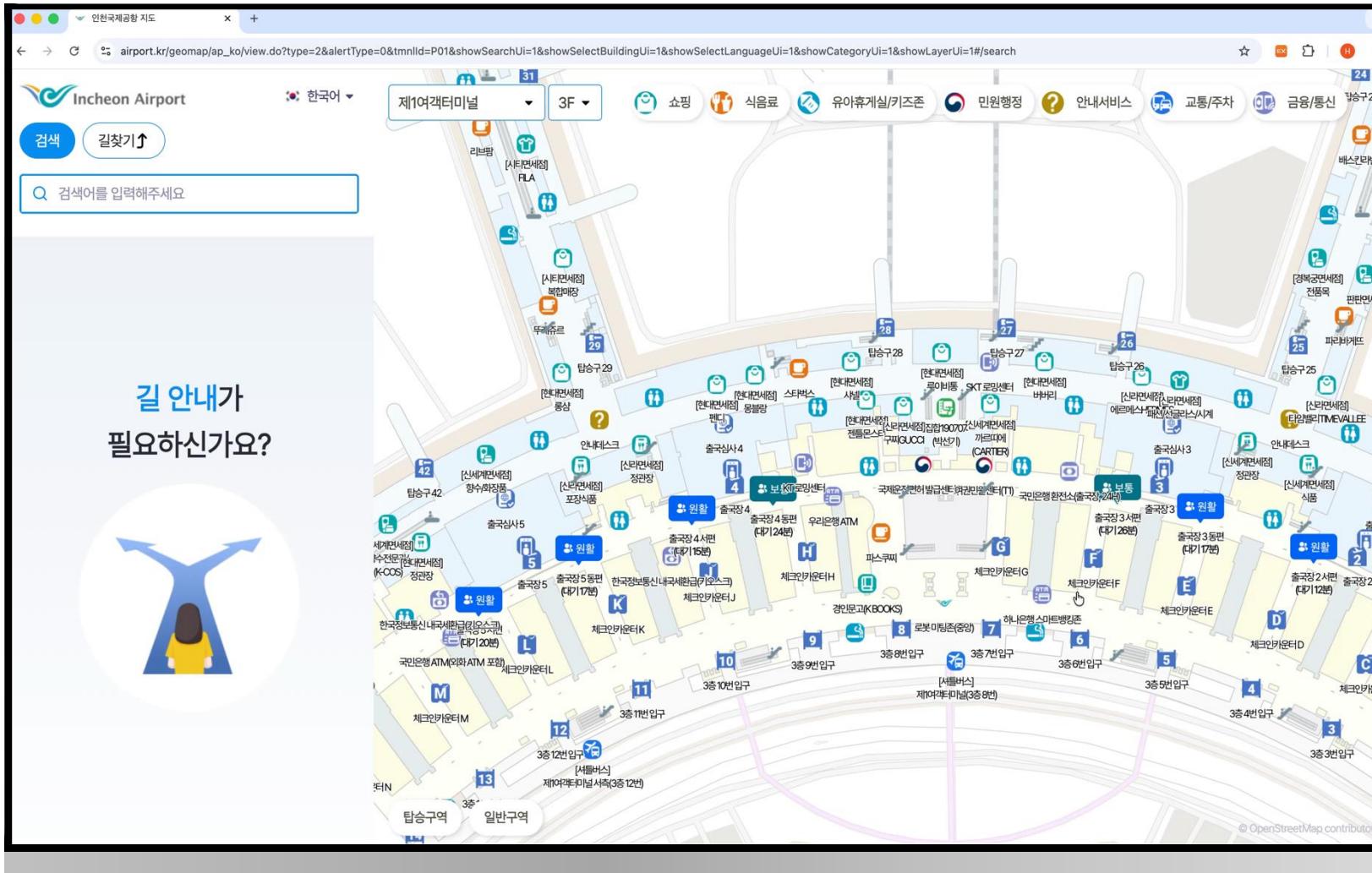
4

Navigation

Turn-by-turn guidance begins with a detailed route preview.



Demo video

 Easy to use: Search → Route search → Route preview

WEB service experience

Incheon International Airport Map Web Service

Mobile



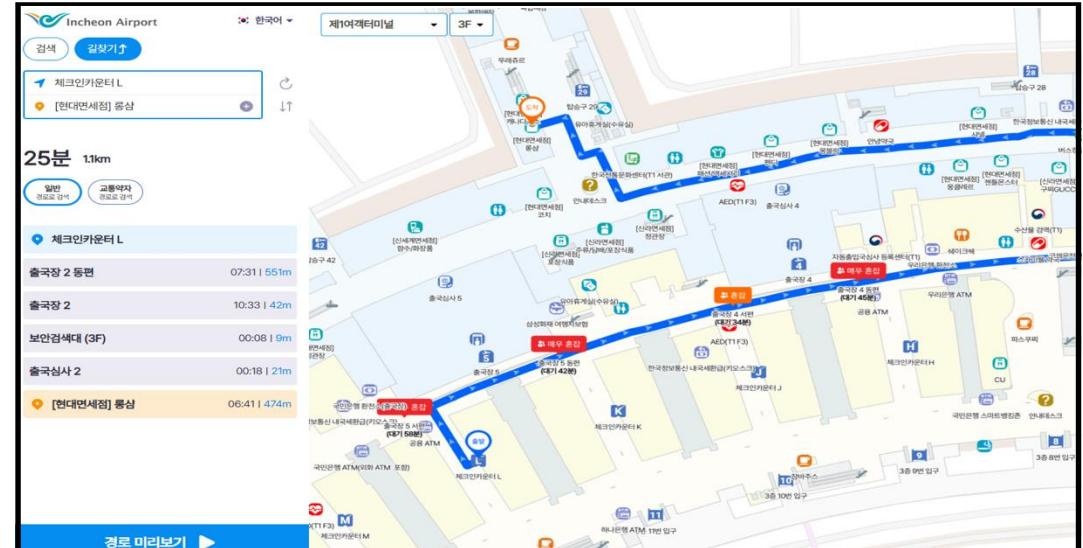
Scan the QR code to explore the Incheon Airport map on your mobile device.



PC Browser

https://www.airport.kr/geomap/ap_ko/view.do?type=2

Access the service by opening the above URL in your web browser.



LBS Wayfinding Solution

LBS Technology

Transform your visitor experience
with the best technology and user understanding
we've built since the dawn of LBS.



P&T

LBS Technology

P&T LBS technology providing crystal-clear maps and precise location accuracy



Vector Map
Clarity at any zoom level



Positioning
Precision of 2-10 m



Patented technology
Over 40 registered patents



Reference
Proven experience since 2013



LBS Technology

Vector map technology

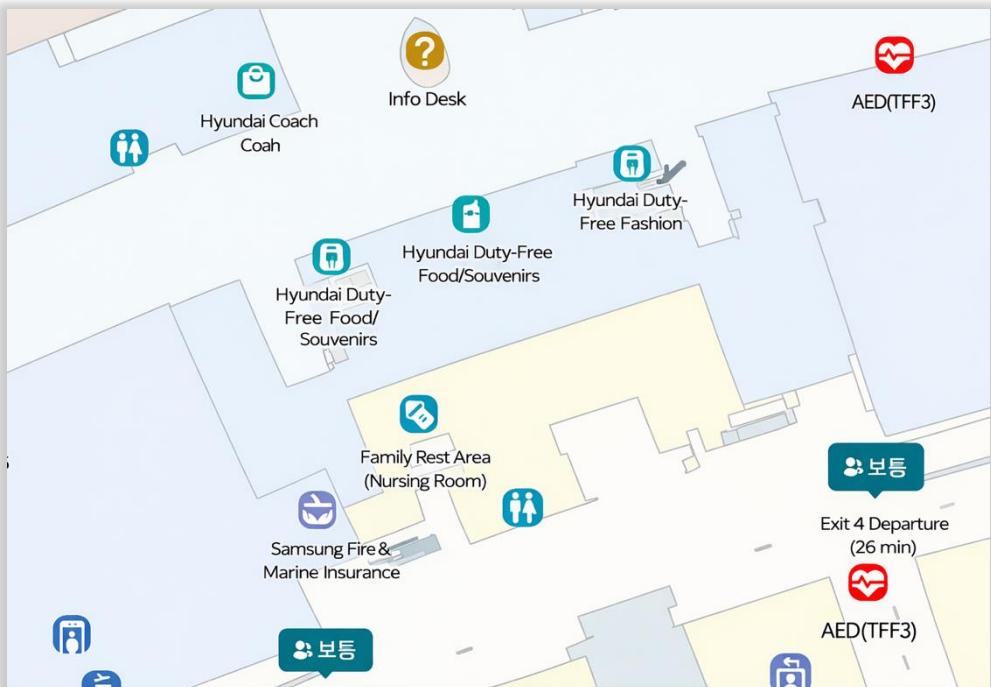
Vector maps based on GeoJSON (open standard) → **Delivering sharp visuals at any zoom level**
POI LOD applied to dynamically control POI and icon density → **High readability with no overlap**



Zoom Out

Non-overlapping POIs, even when zoomed out

Zoom In

Zoom-in without loss of resolution

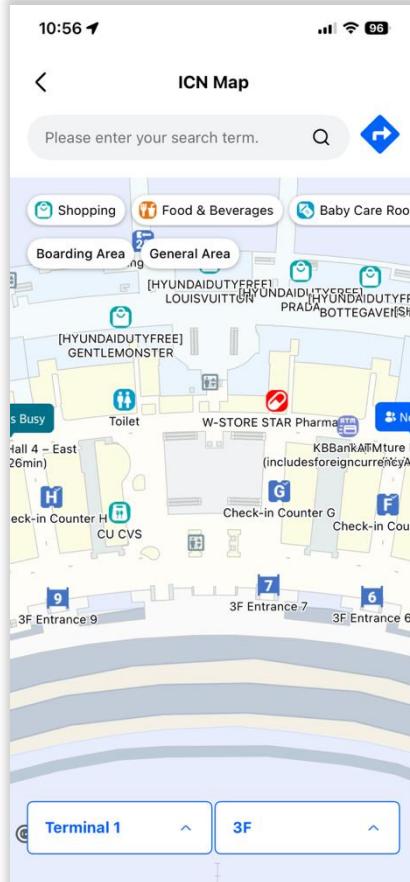
POI LOD dynamically adjusts the level of detail of displayed locations based on zoom level or distance, enhancing readability by simplifying information in zoomed-out views.

4 languages supported

And possibility to expand to more → Response to global standards and demand



한국어



English



日本語



中文

Positioning technology powered by new patents

Delivers high-precision, stable positioning information

Dynamic Machine Learning

- The positioning engine incorporates self-learning, dynamic machine learning
- Enables on-device learning of location probabilities to determine the most likely position

Particle Filter Positioning

- The system estimates position by propagating thousands of positioning particles
- Ensures high accuracy and stability

Hybrid Positioning

- The system integrates multiple positioning technologies—including Wi-Fi, BLE beacons, geo magnetic data, and sensors
- Produces stable and reliable positioning

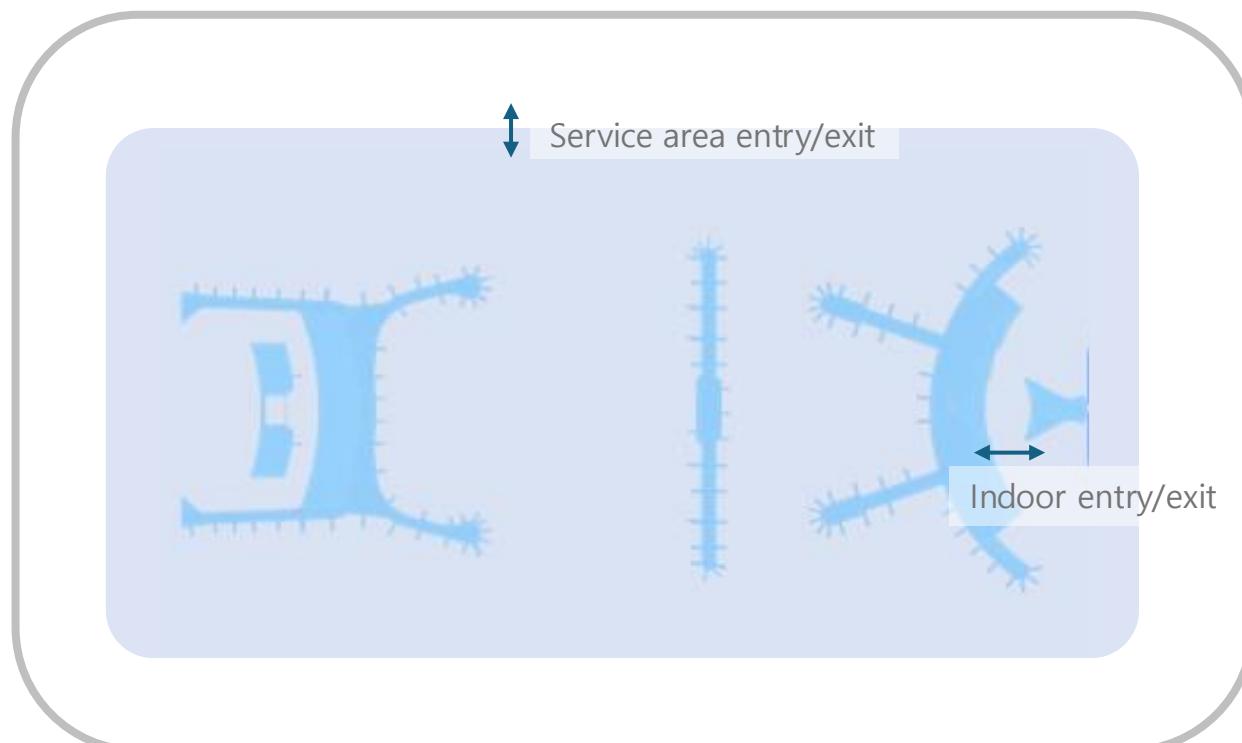
Positioning precision
2~10m

Floor Recognition using Air Pressure

- Through machine learning, the system learns weather-dependent air pressure changes at each floor
- Uses this learned data to determine the most probable current floor

Integrated indoor/outdoor positioning: IPS + GPS + NPS

- Integrates outdoor positioning (GPS, NPS) with indoor positioning (IPS) to enable seamless indoor-outdoor positioning.
- Uses low-power network-based positioning (NPS) outside service areas to conserve battery life.
- Detects entry into and exit from service areas and buildings to switch positioning methods seamlessly, ensuring continuous and seamless location information.



Outside the service area

NPS (Network-based / Wi-Fi positioning)

Low power consumption, with positioning accuracy ranging from tens of meters to several kilometers.

Outdoor space within the service area

GPS (satellite positioning)

Positioning accuracy: several meters to tens of meters.

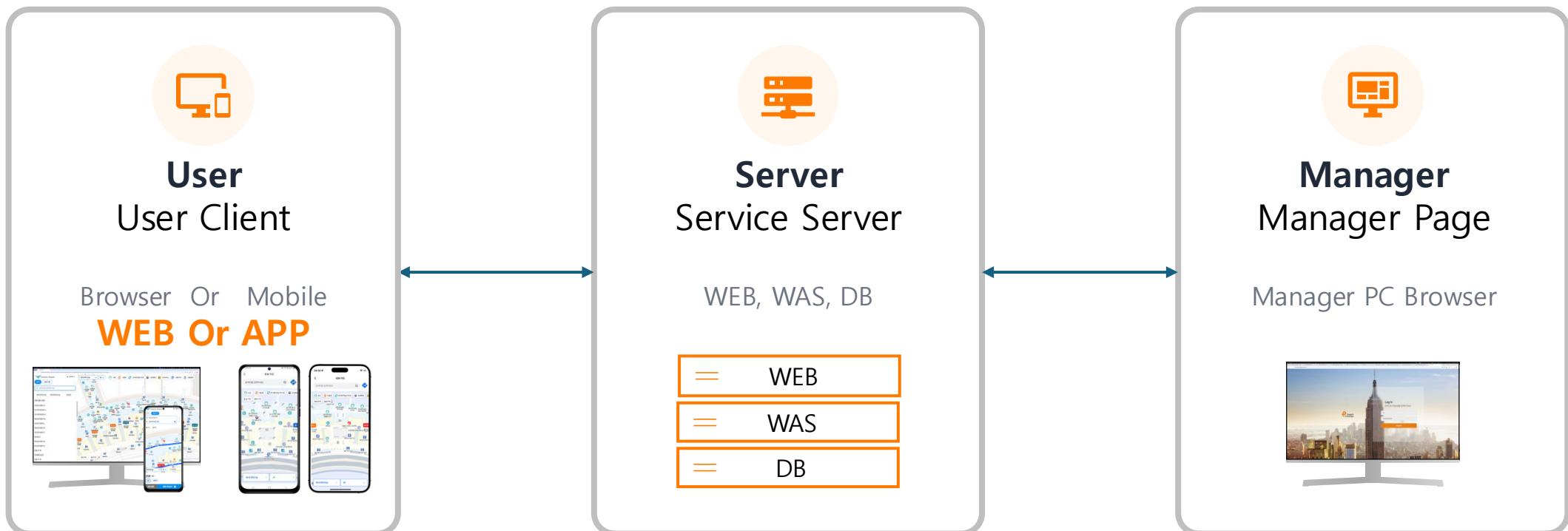
Indoor space within the service area

IPS (Indoor Positioning System)

Positioning error: 2–10 meters.

Integrated management : WEB + APP

By centrally managing service data (maps, POIs, and routes) on the same server, a consistent service experience is provided.



Provides map and wayfinding services to customers via web browsers across multiple devices.

On-premises model: Server deployment tailored to customer needs.

An administrator PC connects to the server to manage building, map, floor, and POI data.

Comparison : WEB Solution vs APP Solution

구분	Mobile Wayfinding Solution	WEB Wayfinding Solution
App installation	Mandatory	Not Necessary
Real-time location service	Available	Non-available
Service Platform	Android/iOS mobile APP	Internet Browser, Homepage, Kiosk etc.
Service construction scope	Positioning Database	Need Wireless/geomagnetic measurements
	Map	Generated by P&T's Tool and centrally managed through the LBS server
	POI and Route	Generated and centrally managed through the LBS server



The highest number of patents in the industry: 40 patents registered (as of December 2025)

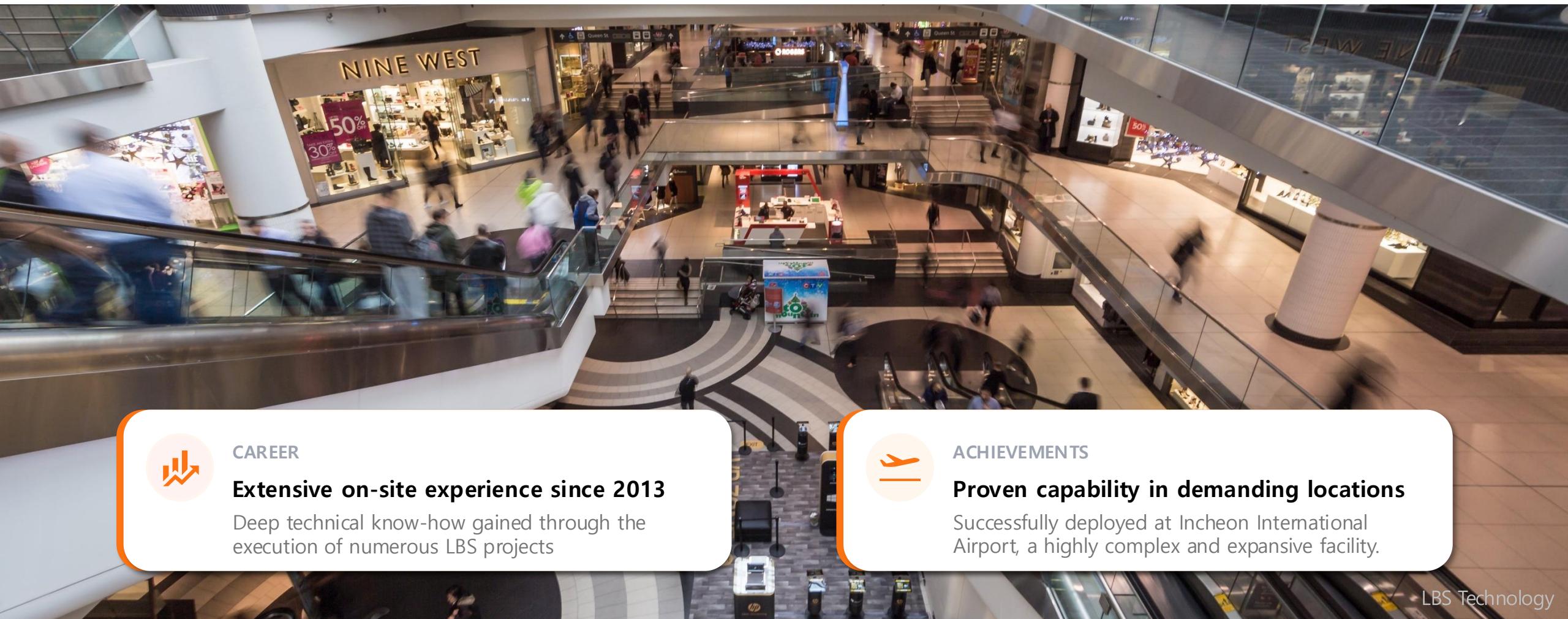
Applies the latest patented LBS technologies

- Indoor positioning system and method based on particle filters with weight-based learning
- Indoor positioning method using fingerprinting and an electronic device utilizing the same
- Continuous indoor position estimation method using a modified particle filter
- Particle movement method for particle filters using a modified random function
- Indoor positioning system and method using a grid-based particle filter



Proven technology and services

Since 2013, we have successfully completed a wide range of LBS projects.



CAREER

Extensive on-site experience since 2013

Deep technical know-how gained through the execution of numerous LBS projects



ACHIEVEMENTS

Proven capability in demanding locations

Successfully deployed at Incheon International Airport, a highly complex and expansive facility.

Value for customers

Benefits of Implementing P&T LBS Services



CUSTOMER SATISFACTION

Transforming the visitor experience

Seamless, location-based guidance delivered through convenient services



OPERATIONAL EFFICIENCY

Operational cost savings

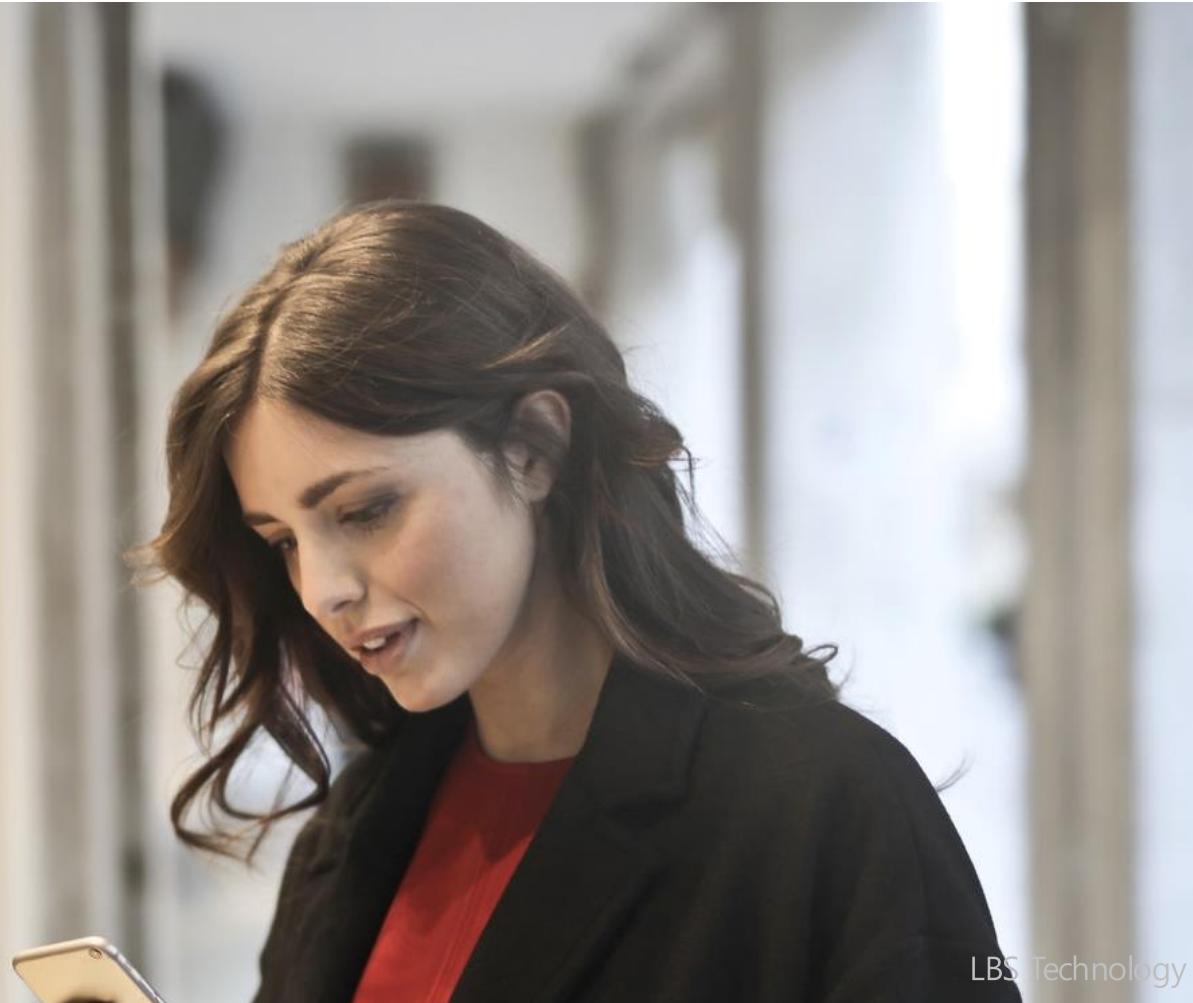
Improved space management and fewer location and place inquiries



GLOBAL SERVICE

Compliance with global standards

Four-language support and accessibility for mobility-impaired users.



People & Technology

Your LBS partner connecting spaces and people



Core Expertise

Proprietary high-precision indoor mapping and positioning technologies, backed by 40 registered patents



Key Strengths

Proven deployments at large, complex facilities including Incheon International Airport, with strong expertise in handling and operating high-volume traffic



Provided Services

Provides Navigation SDK/API, an operator management portal, and custom development services

CONTACT US





Thank you !