

IDCITI

Product Intro

Indoor GNSS Signal Generator: uGPS

Indoor-Outdoor Integrated Positioning Solution: uGPS Space

2025. 04.



Overview

MISSION



IDCITI provides a cutting-edge indoor positioning solution powered by high-precision GNSS, enabling seamless indoor-outdoor tracking and unlocking new value in smart mobility and connected infrastructure.

Major Projects

Deployment in large-scale projects: **Namsan Tunnel (Seoul Metropolitan City)**, **Suri-Suam Tunnel (Korea Expressway Corp.)**, **Goyang Drone Anchor Center**, **Korea Institute of Aviation Safety Technology**

Proprietary Technology & Patents

3 Korea and 1 US registered patents / 9 domestic, 2 US, and 1 Japan pending patents

Certification & Global Standard Validation

Certified as NET (New Excellent Technology), KC, FCC, CE



WE CONNECT THINGS TO COME

IDCITI

공간의 한계를 넘어 미래로

01

uGPS

What is uGPS(underground GPS)



Timing & Synchronization

Provides accurate timing and positioning even in signal shadow areas



High Compatibility

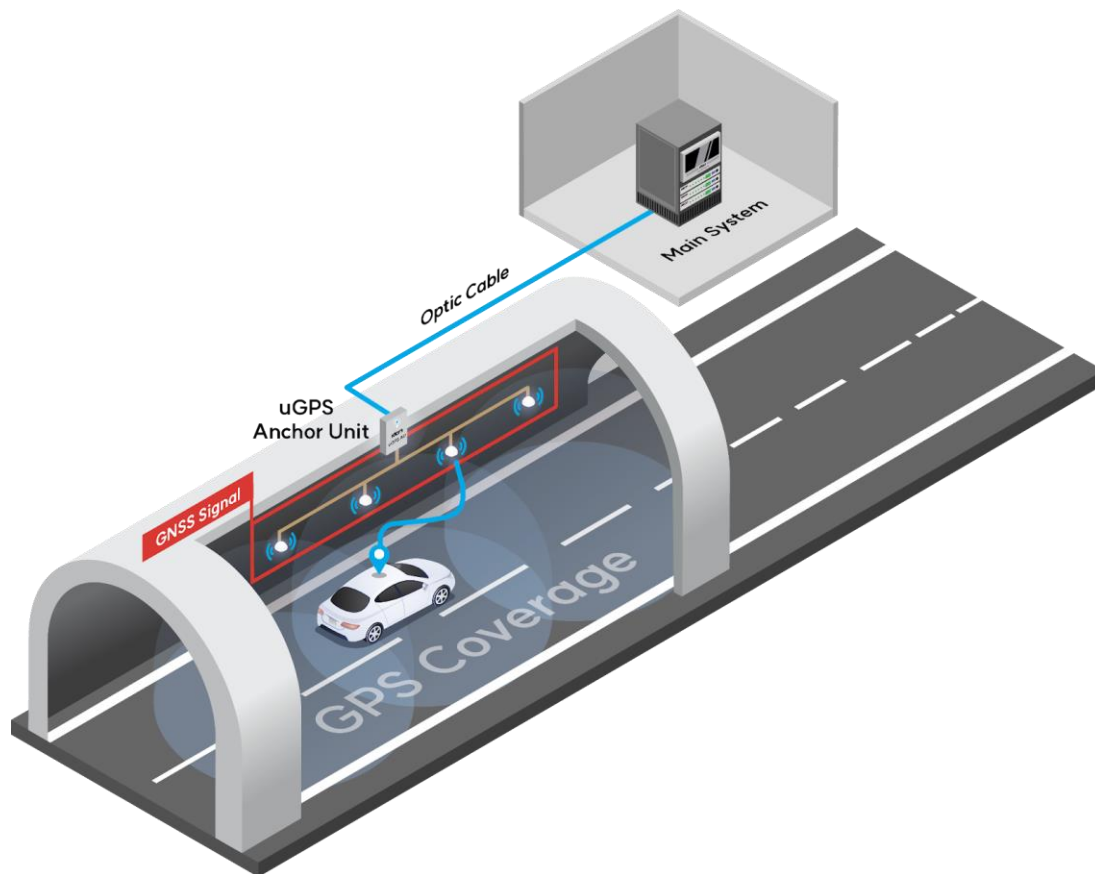
Seamlessly integrates with existing GPS devices



Precise Positioning

Maintains accurate location even without traditional GNSS signals

uGPS System Architecture



uGPS Specifications

uGPS Main Unit (MU)



uGPS Anchor Unit (AU)



Category	Specification
Processor	Quad-core Arm Cortex-A75 @ 1.8 GHz
Memory	16 GB DDR4
Storage	128 GB eMMC + SD card slot
Timing Module	GNSS-disciplined OCXO oscillator
Networking	2 × Gigabit Ethernet (PoE optional), LTE modem
I/O Ports	2 × USB 3.0, 2 × RS-232/RS-485,
Operating System	Real-Time Linux (PREEMPT_RT)
Interfaces	SNMP v2c/3, RESTful API (JSON), MQTT (optional)
Security	TLS encryption, SSH access, 2FA CLI/API, secure boot, VLAN isolation
OTA Capability	Firmware & configuration updates via remote management

Category	Specification
Signals Supported	GPS L1 C/A, GLONASS L1OF
Update Rate	12 Hz (single-constellation) / 10 Hz (multi-constellation)
Transmit Power	-80 to 0 dBm (adjustable in 0.5 dB steps, ±0.5 dB accuracy) Example: -50 dBm at 50 m intervals in Suri Tunnel – configurable per tunnel geometry
Timing Accuracy	Phase alignment within ±4 ns via 1 PPS / 10 MHz reference signals Ensures synchronization across AUs with near-live-sky precision
Interfaces	- N-type RF output for high-frequency GNSS signal transmission to tunnel antennas - USB 2.0 for local configuration and firmware updates

Key Features



High Accuracy

Within 1m (RTK),
~3m for standard GNSS



100% GPS Coverage

Full GPS shadow coverage
in all environments



Cost Efficiency

Exceptional value compared to
global competitors



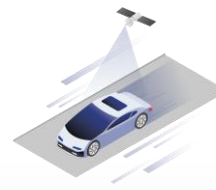
Device Compatibility

Fully compatible with existing
GNSS/GPS-enabled devices



Global Scalability

Compliant with international
standards for global deployment.



High-speed Tracking

Accurate real-time tracking
performance for moving objects

Application Cases



Tunnel Navigation

Accurate speed and direction tracking



Construction Sites

Worker/equipment safety and optimized operations



Underground Parking

Vehicle guidance for efficiency and satisfaction



Indoor Malls

Optimal routing to stores and facilities.

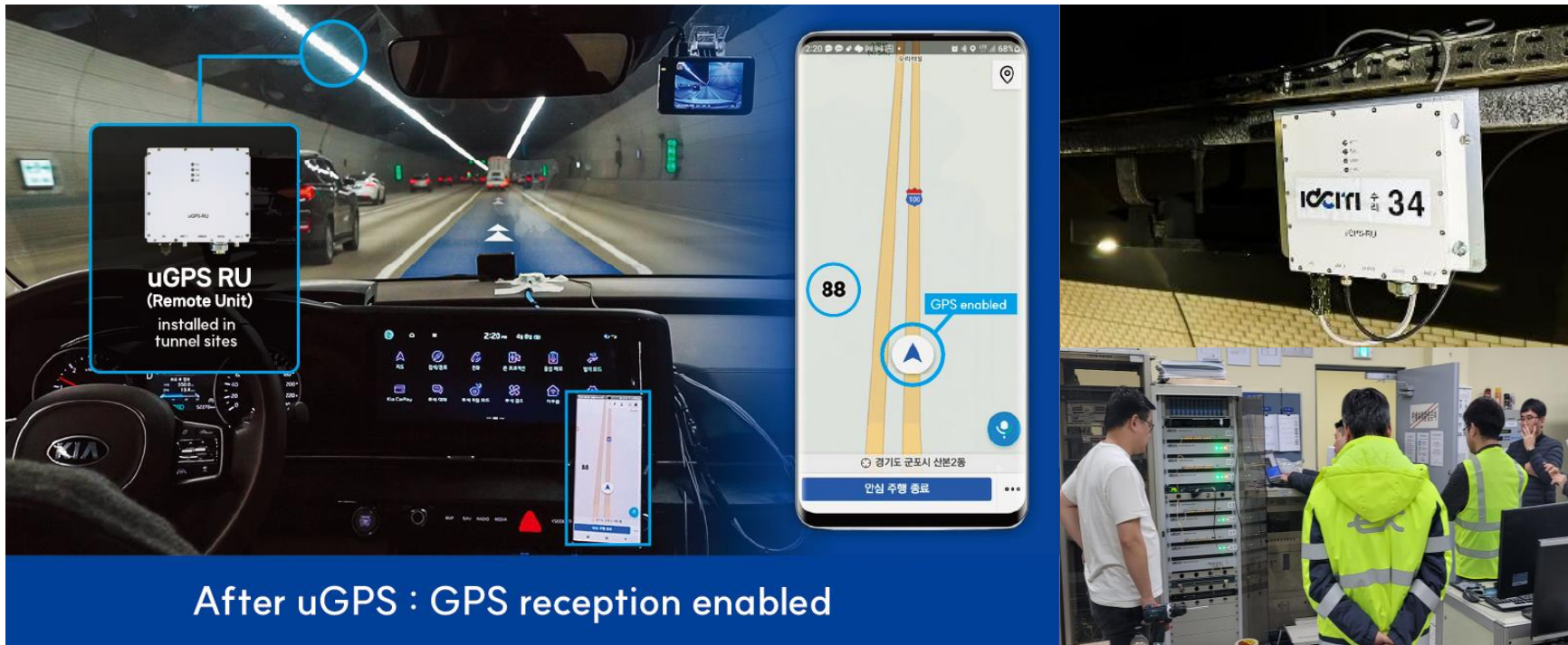
Product Lineup

Product Name	Usage Location	Size	Accuracy	Technology
uGPS-tunnel	Tunnels	Compact	3–5m (General)	GNSS (GPS, GLONASS, GALILEO)
uGPS-unit	Drone centers	Small modular unit	1–3m (UWB)	GNSS (GPS, GLONASS, GALILEO)
uGPS-parking	Indoor parking lots	Compact for parking spaces	0.5-1m (BLE,UWB service)	GPS, BLE, UWB
uGPS-Precision Services*		Varies by setup	10-30cm (RADAR), 0.5-1m (UWB)	BLE, UWB, RADAR, CAM

* developing

Use Case: Korea Expressway Corporation

Enables seamless navigation by resolving GNSS blind spots in the Suri-Suam Tunnel



Tunnel GPS Problem Solving

Resolving 3 typical tunnel GPS scenarios with uGPS

Tunnel Entrance

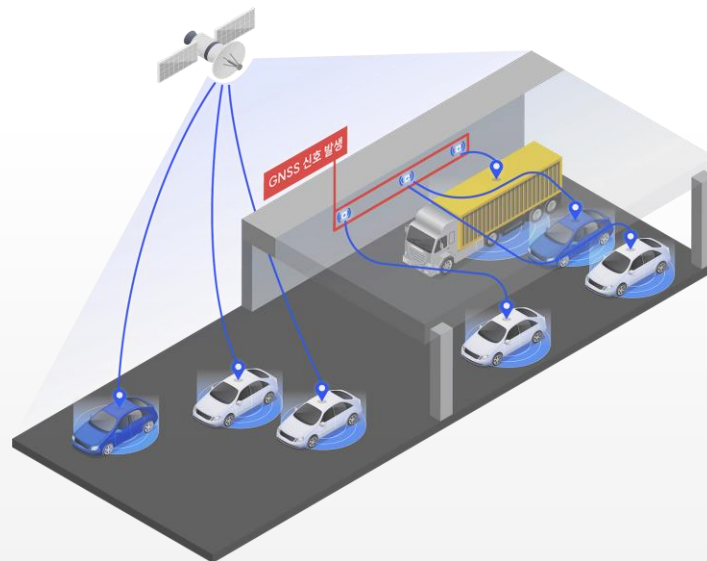
- Positioning errors due to weak GPS signals
- **Seamless signal transition without delay**

Inside Tunnel

- Complete loss of GNSS signal
- **100% GNSS Coverage for safe and continuous positioning**

Tunnel Exit

- Delay in reacquiring GPS signals causing navigation errors
- **Immediate GPS signal reacquisition for smooth driving**



Use Case: Goyang Drone Anchor Center

Stable GPS signals for accurate and safe drone flight tests.



Use Case – Incheon Startup Park Underground Parking

Indoor GPS infrastructure powering seamless navigation in underground parking spaces



02

uGPS Space

uGPS Space System

A total positioning solution that unifies uGPS-powered indoor GNSS signal replication with uTracker and uMap for seamless control and monitoring

uTracker

(A next-generation smart tracking device)

- AI-powered portable GNSS + DR tracker
- Continuous indoor-outdoor positioning.
- IMU sensor, AI correction
- Solar charging, IP67
- Designed for industrial/military environments

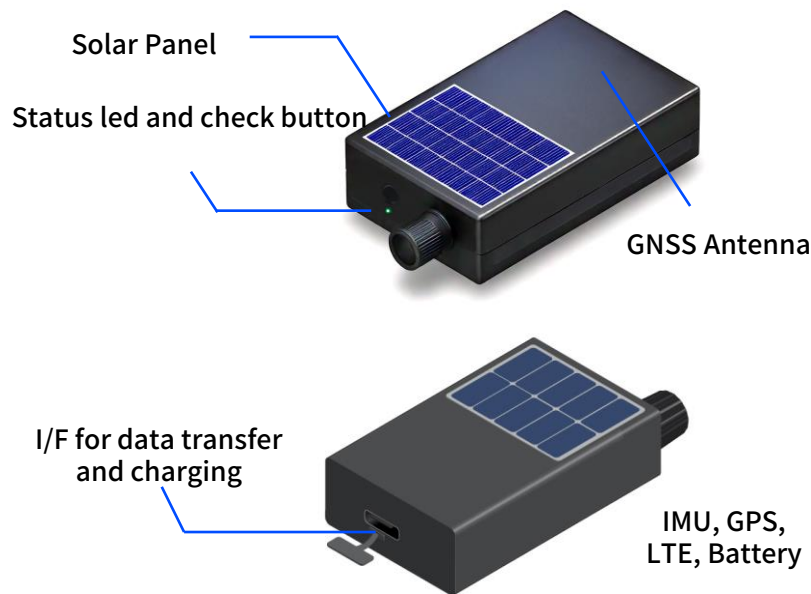
uMap

(Unified platform for indoor-outdoor location monitoring)

- Monitoring system utilizing data collected by uTracker.
- Visualizes spatial information with GIS,
- Real-time tracking
- Supports intuitive UI,
- Provides situational awareness.

uTracker

All-in-one smart tracker enabling seamless precision tracking with GNSS, IMU, UWB, barometer, and AI correction



Seamless indoor-outdoor precision tracking

Seamless indoor-outdoor tracking using GNSS + DR + Barometer + AI correction



Ultra-light weight and rugged design

Ultra-lightweight (< 200g) with IP67 and shock-resistant design



Solar-powered energy autonomy

Solar panel-powered for energy self-sufficiency and minimized maintenance

uTracker Core Technologies

uTracker Technologies



Solar Panel

- Energy Harvesting
- Power Management



GNSS + RTK

- Satellite-Based Navigation
- Real-Time Kinematic



UWB

- Location Accuracy
- Data Transmission



IMU

- Accelerometers
- Gyroscopes



Baro Sensor

- Pressure Measurement
- Altitude Calculation

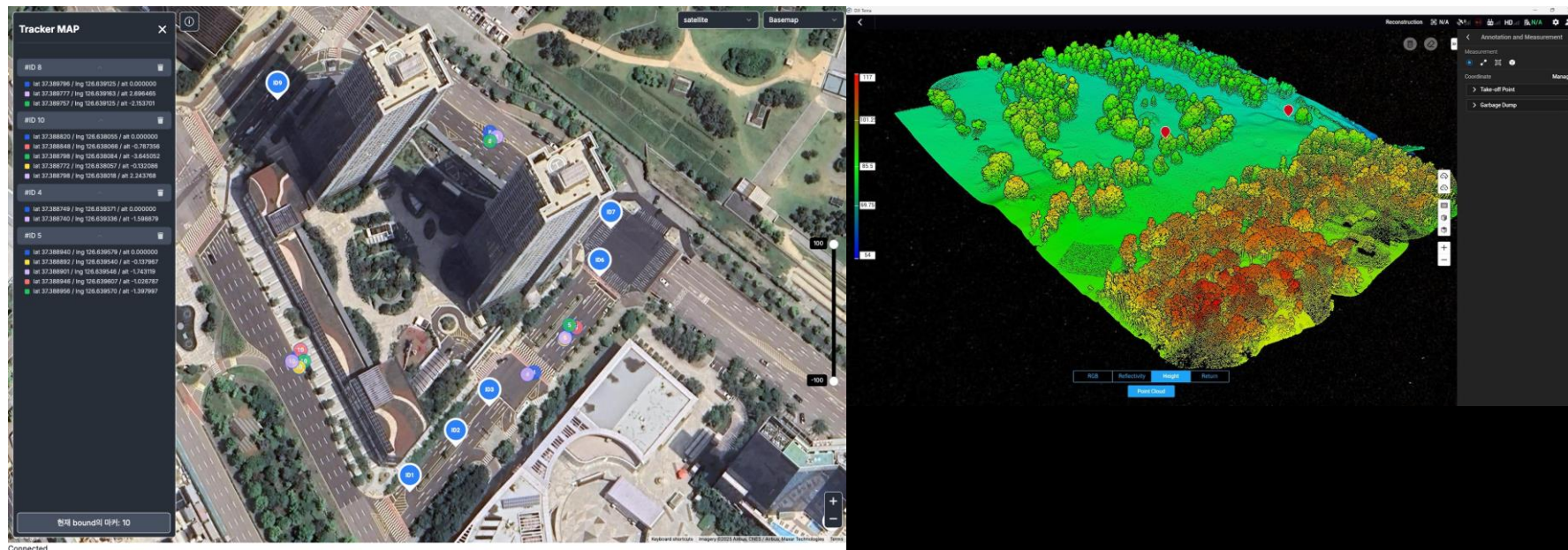


AI Correction Engine

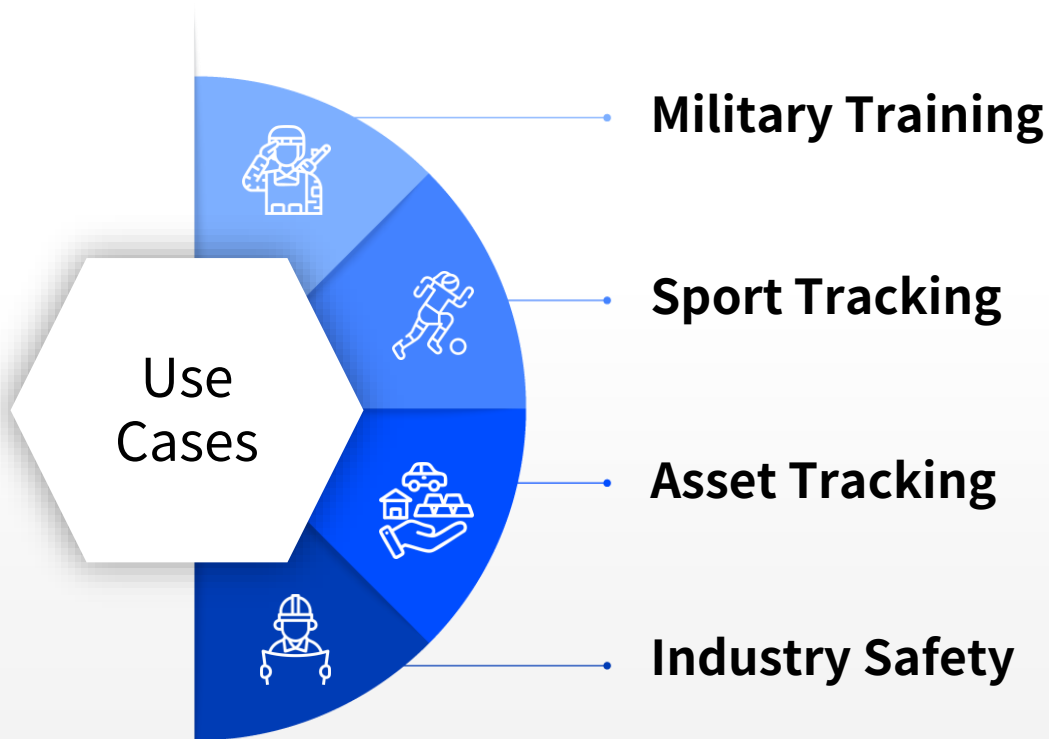
- Data Processing
- Error Correction

uMap -Intro

Smart platform for real-time indoor-outdoor positioning and spatial visualization



Application Scenarios



Use Cases (military training)

MOU with Athena-Tek for collaboration in uGPS and uTracker product business
Currently conducting PoC (Proof of Concept) at U.S. military training facilities



Product Roadmap

Initial Development

Development of uGPS Units with and without RTK technology.



2024

Market Solutions

Introduction of market-specific solutions like uGPS-tunnel and uGPS-parking.



uGPS-tunnel



uGPS-parking

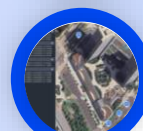


uGPS-unit

2Q 2025

Platform Expansion

Expansion of platforms with tools (uTracker and uMap)



3Q 2025

AI & Global Projects

Implementation of All location correction and support for global infrastructure projects



2026

uGPS Roadmap

Year	2025		2026		2027	
Generation	GEN5		GEN6		GEN7	
						
Frequency Band	GPS	L1 C/A, L1C,	GPS	L1 C/A, L1C, L2C, L5	GPS	L1 C/A, L1C, L2C, L5
	GLONASS	L1 C/A,	GLONASS	L1 C/A, L2 C/A,	GLONASS	L1 C/A, L2 C/A, , L3
			BeiDou	B1I, B1C,	BeiDou	B1I, B1C, B2a, B2b
			Galileo	E1, E5a, E5b	Galileo	E1, E5a, E5b
					NavIC (IRNSS)	L5
					SBAS	L1
					QZSS	L1 C/A
Additional Features	mmWave, UWB		mmWave, UWB, BLE AM, FM, DMB Modules			
Chip Module Production	X		1 st Generation Chip Production (Planned)		2 nd Generation Chip Production (Planned)	

03

Partners

Stanford Center Korea (SCIGC)

Collaborating with SCIGC's Vehicle & Infrastructure Systems program to co-develop high-precision GNSS-based systems for vehicle positioning and infrastructure monitoring



Focal Point Precision (UK)

Performed GNSS data collection and field tests in Korea and Japan for Focal Point, earning recognition for technical and business excellence



Thank you

IDCITI Inc.,

Tel. 032-710-1914 | Fax. 032-626-1149 | e-mail. idciti@idciti.com

bldg, C422, 119-2, Songdomunhwa-ro, Yeonsu-gu, Incheon, 21985, Republic of Korea

Copyright © 2025 IDCITI All rights reserved.

