

High-definition Road Map Necessary for Automated Driving Expanded Support to General National Highways

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- *Completed producing **High-definition Road Map (HD Road Map)** for automated driving on national expressways and general national highways*
- *Anyone can use the completed HD Road Map free of charge*

The National Geographic Information Institute (Director General CHO Woo-suk) under the Ministry of Land, Infrastructure and Transport (MOLIT) announced that it has completed producing the HD Road Map, which is a key infrastructure for automated driving, and will provide it to companies and the public free of charge from 27 April through after the preparation period of the platform service.

* Completed mapping for 5,858km on national expressways (2019), and 16,820km on general national highways (2022)

Through this, it is expected to be used as a core infrastructure in the era of automated driving by improving the safety of self-driving vehicles using national expressways and general national highways.

* Anyone can use the map for free on the National Geographic Information Platform (<http://map.ngii.go.kr>)

As the HD Road Map is a high-definition electronic map in which lanes, signs, and road facilities are implemented into road digital twins, it is designed to support automated driving by enabling location determination of vehicles by lane.

It can be used not only for automated driving, but also for high-precision navigations and ADAS*, etc., as well as for road facilities management.

* ADAS (Advanced Driver Assistance Systems): An electronic controlling system that allows vehicles to recognize and judge situations by themselves that may occur while driving

** For more detailed cases in use, refer to [Attachment 2]

Moreover, in order to expand the using scope of the mapping results, the HD Road Map has been improved with data structure (Open Drive Format*) to be used for simulation, etc., and will be provided for certain section of the automated driving pilot district in Pangyo.

* Open Drive Format: A road network data to be used for simulation of automated driving and technology development & control of automated driving

The government has been pursuing to complete producing the HD Road Map for urban and major roads in line with the schedule for the commercialization of fully automated driving in 2027.

From this year, it will be more prepared by expanding the ranges to Chungcheong, Gyeongsang, and Jeolla provincial areas, starting with the mapping for specialized, metropolitan cities & provinces and local highways (with more than four lanes) around the Metropolitan Area (Seoul, Gyeonggi, Incheon, etc.).

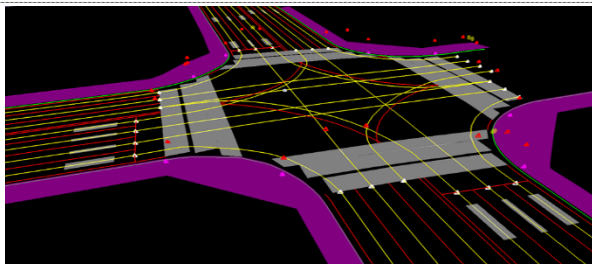
Director General of the National Geographic Information Institute CHO Woo-suk, stated, "We will continue to work closely with related private and public institutions to produce and support the HD Road Map so that it can be utilized for the goal of commercializing fully automated driving".

Attachment 1 Overview & Mapping Plan for HD Road Map

[HD Road Map Overview]

The HD Road Map is a high-definition electronic map describing roads and nearby facilities such as lanes, signs, and road facilities, and infrastructure data that supports automated driving with machines such as automated vehicles enabling them recognize determination of own vehicle locations and route settings, etc.

* HD (accuracy: 25cm) electronic map that describes regulatory lines (lane, boundary line, etc.), road facilities (tunnel, bridge, etc.), and signage facilities (traffic safety signs, signals, etc.) in three dimensions



Vector Data (dots, lines, sides + attributes)



Dotted Group Data (dots, fundamental data)

[Production Process]



[Mapping Plan]

(Unit: km)

Category		~ 2022	2023	2024	2025	2026
Total	44,662	23,698	3,421	5,551	5,868	6,124
National Expressway	5,858	5,858 (2019)	-	-	-	-
General National Highway	16,820	16,820 (2022)	-	-	-	-
Local highways	16,867	1,020	1,670	4,149	3,904	6,124
Metropolitan Cities	5,117	-	1,751	1,402	1,964	-

Attachment 2 Cases in Use of HD Road Map

[Automated Driving] Pre-driving test (simulation) for the operation of automated driving cars and use in actual driving with the installation of modified ones

Automated driving shuttle (Pangyo)	Automated driving control (Gyeonggi-do)	Simulation screen (Konkuk University)
		

[Navigation] Used for high-precision navigation that describes road conditions in more detail and for ADAS MAP that can support drivers, etc.

Provide intersection signal information	Road hazard warning notification	ADAS MAP (Navis)
		

[C-ITS] Used as the basis for the 'lane by lane traffic signal service' provided to vehicles operating in the demonstration section and installed as a basic map at the control center

C-ITS Control (Seoul)	C-ITS Control (Ulsan)	Transportation Service Delivery Conceptual Map
		

[Road Management] Use for precise facility management with datum of road surface, surrounding terrain, and geography and road geometry analysis

Facility Management (Gwangju)	Road management (Road construction)	Analysis of road geometry (Road construction)
		