MAP-AS-A-SERVICE

A "universal" map compilation solution

The role of digital maps within the in-car environment is expanding beyond standard navigation systems. These systems are now being used to support Advanced Driver Assistance Systems (ADAS), Autonomous Driving and other advanced driving functions. Therefore, the highest level of accuracy and timeliness are needed to ensure safety.

Today, the map update process is semi-manual and cumbersome with map data being collected manually. It takes over 3 months for the current digital mapping technology to achieve a single map update. This is not timely or accurate enough to support today's advanced vehicle functions.

Presently, a variety of media and several update mechanisms are available for in-car systems or mobile clients. In order to provide a harmonized format for different systems, the new HARMAN Map-as-a-Service (MaaS) solution accommodates Navigation Data Standard (NDS) map data.

Near real-time map data for any market

The HARMAN MaaS solution enables car manufacturers and Tier-1 suppliers to improve production efficiency. This is a "universal" map compilation solution for NDS map data to enable compilation services for OEM's and Tier-1s regardless of the provider for raw map data and the navigation core engine. There are 4 key areas of the HARMAN compiler tool chain that make the results reusable and generic.

1. **Web Configuration** – Leverages a fully automated and easy to use web configuration system

2. **Web customization** – Uses a single UI to define, visualize and deliver a desired configuration

3. **Performance tools** – Includes tools to monitor the compiler performance to avoid performance regressions when new features are added, so that the customer performance KPI are always met

4. **Optimized Compilation** – Leverages next generation intelligent algorithms

Top-line Benefits

- Faster Performance: full market updates are completed in a more timely manner
- Fully automated: Configures, visualizes, selects and produces the needed data
- Standardized: 100% compliance to the NDS standard
- Seamless: Helps (especially) Tier-1 suppliers seamlessly manage multiple projects with the help of an easy and user friendly configuration with template based, web-UI supported map generation with quick side-by-side comparison of different settings
- Global & Flexible: Has global map coverage & supports multiple raw data input formats
- Innovative: Helps enhance or enable ADAS applications

Why HARMAN?

Shortening Time-to-Market

Shorten your time from concept to delivery using our best practices, turn-key delivery models and rich talent pool.

Cross-platform

Take advantage of our experience in multiple industry verticals and leading platforms to rapidly exploit new market opportunities.

Global delivery footprint

Our skilled, talented engineers deliver solutions to companies like yours from centers throughout the world.

Solution accelerators

Get access to leading edge innovation and best practice by using our solution accelerators and global pool of partnerships.

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Features and Benefits

Maximize reuse of NDS[1] compilations across different programs	• Faster static and dynamic / Volatile map compilation run-time • Reduces costs of next generation products up to 70% • Savings increase with each additional project • Leverages proprietary next generation intelligent algorithms
Simple map update configuration	• Parameters can be defined easily • Easier to implement with click, drag and place structure • Results can be interpreted and inspected easily
Improve NDS compilation performance	• Performance tools ensure that changes in code do not lead to performance regression • Creates near real-time map data • Requires less regression testing for each new compilation • Reduces CAPEX investments • Leverages road-based validation/field testing
Quicker and reliable map updates	• Some parts of the map are generic and rather similar (if not equal) for different customers • Promotes updating of specific data parts rather than entire map
Easily manage multiple customers and projects	• OEMs and Tier1s can define the desired configuration, visualize it and get it delivered using the same UI • Few resources required for updates
Enables additional services like Dynamic Map Layers	• Additional services like Dynamic Map Layers enabled over HARMAN Ignite platform can offer new business opportunities • Crowd sourced data input to enable Dynamic Map Layers
Enhances or enables ADAS applications	• Enhances and enables numerous ADAS applications like (not limited to) Adaptive Cruise Control, Energy Profiling, Electronic Stability Control, and more

[1] Navigation Data Standard (NDS) provides a harmonized format for different systems, and offers flexibility for map composing and updates. NDS is a standardized format for automotive-grade navigation databases, jointly developed by automobile manufacturers and suppliers.

Partner with an industry expert

HARMAN (harman.com) designs and engineers connected products and solutions for automakers, consumers, and enterprises worldwide, including connected car systems, audio and visual products, enterprise automation solutions; and services supporting the Internet of Things. With leading brands including AKG®, Harman Kardon®, Infinity®, JBL®, Lexicon®, Mark Levinson® and Revel®, HARMAN is admired by audiophiles, musicians and the entertainment venues where they perform around the world. More than 50 million automobiles on the road today are equipped with HARMAN audio and connected car systems. Our software services power billions of mobile devices and systems that are connected, integrated and secure across all platforms, from work and home to car and mobile. HARMAN has a workforce of approximately 30,000 people across the Americas, Europe, and Asia. In March 2017, HARMAN became a wholly-owned subsidiary of Samsung Electronics Co., Ltd.

Visit our website at **harmanconnected.services/map-as-a-service**

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