

# TELEMATICS FOR THE CONNECTED CAR: SCALABLE, SECURE & HARDENED



## Connected & Autonomous: The Paradigm Shift

The automotive industry has arrived at a critical technology intersection where communications, information and control have become pervasive aspects of everyday life. These technologies enable the Connected Car and will drive a fundamental shift in how we drive. From driver assistance and Infotainment to engine control and vehicle updates, the Connected Car enhances safety, economy, reliability and comfort.

The Telematics Control Unit (TCU) – like other elements in the car – is also part of the compute consolidation process. Through consolidation with network blocks including Gateways, the TCU is transforming into the nerve center of the Connected Car. The Telematics Gateway will drive tremendous value for the Automotive OEM (e.g. in warranty savings through secure Over-the-Air updates), and it will also enable a wealth of vehicle analytics. The TCU is a vital backbone for the autonomous car, which will enable unsurpassed safety improvements with technology advancements including V2X.

Cyber threats are a fact of life. As such, the Telematics Unit must be highly secure. It must present an impenetrable firewall to the outside. It must also be reliable, robust and future proofed. And finally, it must also be complemented by a broad range of embedded and cloud-based applications to fulfill its paradigm-shifting purpose.

## HARMAN Telematics is Leading the Way

HARMAN has been at the forefront of vehicle connectivity for over a decade. The HARMAN Telematics Gateway enables the connected car with a symphony of technologies and options which are powerful and scalable. It is hardened for security and reliability and is designed to make the car field upgradable. All this is complemented by a robust choice of Cloud-based applications and services. Connect with HARMAN, the industry leader in end-to-end Vehicle Telematics.

## Key highlights

- Update Gateway enabled for FOTA (Firmware over-the-air) to legacy ECUs in the car
- Hardened system security with HARMAN Automotive Cyber Security foundation – ECUShield, TCUShield
- V2X ready supporting DSRC and Cellular V2X
- Upgradable design supporting 4.5 and 5G
- A broad range of Connected Services for the driver, passenger, vehicle, dealer and OEM

## HARMAN LIVS

HARMAN's Life-Enhancing Intelligent Vehicle Solutions (LIVS) use an end-to-end approach by integrating the in-car computing platform with the cloud platform for a new level of user experience.

### SCALABLE | Compute Platforms

Tailor-made for the needs of automakers and vehicle segments

### CONNECTED | Modular Connectivity

Ready for delivering connected services – enhancing efficiency, productivity, and entertainment

### SAFE | ADAS & E-Horizon

Monitoring and assessing the surroundings of the entire vehicle and beyond line of sight

### SECURE | 5+1 Security Architecture

Full protection for the driver and the vehicle, OTA (over-the-air) updateable

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## Features and benefits

Update Gateway Powered	<ul style="list-style-type: none"><li>• Addresses flashing of legacy ECUs to ensure that they are safe and up to date. Also reduces vehicle production time by flashing ECUs in the production line.</li></ul>
Modular and upgradable	<ul style="list-style-type: none"><li>• Software configurable and designed to be field upgradability to stay current with the mobile communications infrastructure (5G, V2X).</li></ul>
Hardened Security	<ul style="list-style-type: none"><li>• ECUShield on TCU provides Intrusion Detection for the whole car.</li><li>• TCUShield provides advanced firewalling capabilities.</li><li>• Essential part of HARMAN Cyber Security suite</li></ul>
Robust I/O	<ul style="list-style-type: none"><li>• A wide range of I/O to accommodate diverse configurations (CAN, Ethernet, USB, Bluetooth, WLAN, LIN, GPIO, and Audio in/out).</li></ul>
Scalable Hardened	<ul style="list-style-type: none"><li>• Powered by hardened Automotive Grade ELINA Linux sharing foundation from GENIVI platform</li></ul>
Low Quiescent Current Consumption	<ul style="list-style-type: none"><li>• Designed to consume low current during vehicle dormancy to reserve battery power. Optional battery backup.</li></ul>
Unsurpassed Reliability	<ul style="list-style-type: none"><li>• Designed and manufactured to meet the highest reliability standards. HARMAN's expertise is backed by decades of experience serving the automotive industry.</li></ul>
A World of Applications & Services	<ul style="list-style-type: none"><li>• A portfolio of embedded and cloud-based applications and services to offer clear vehicle differentiation</li></ul>

## An industry expert as partner

HARMAN is the market leader in connected car solutions for the world's automakers. HARMAN's innovative and highly integrated infotainment technologies offer automakers the most extensive solutions for advanced navigation, intuitive user interfaces, integrated audio, device connectivity, cyber security, and connected safety, just to name a few. From Boston to Berlin to Bangalore, HARMAN is delivering a dynamic in-car experience for an increasingly connected world.

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