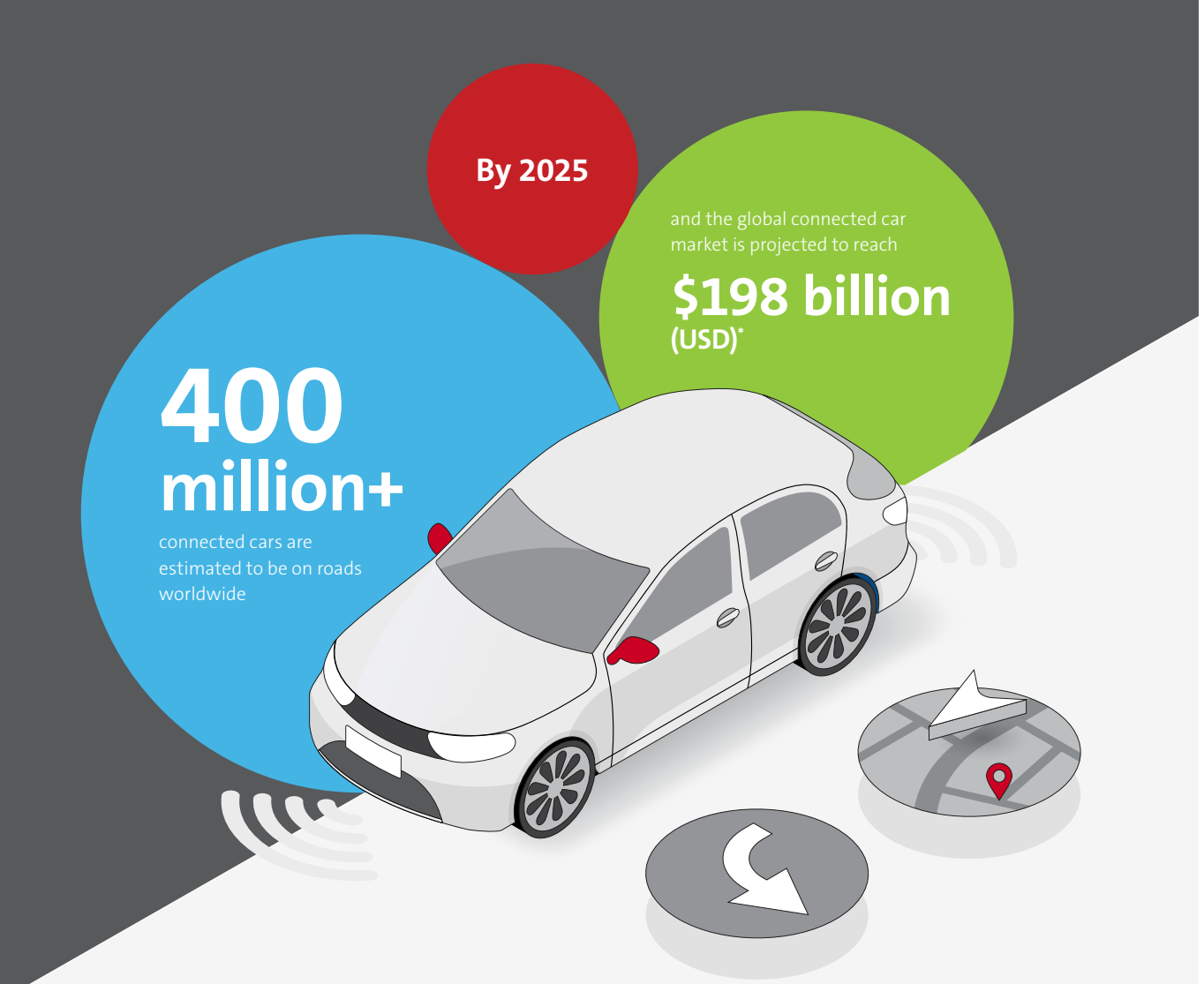
UL Solutions Guide to Automotive Interoperability Testing

UL Solutions

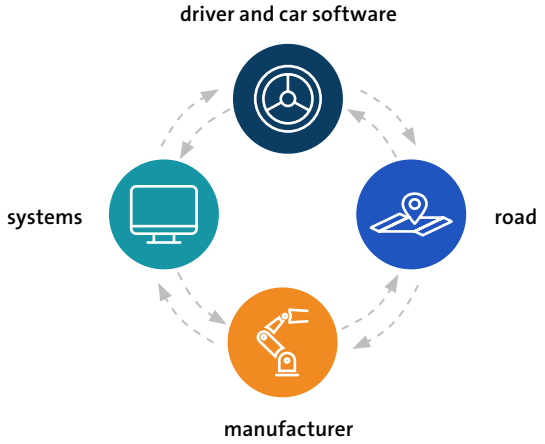
Safety. Science. Transformation.™



Interoperability is the ability of a system to work with or use the parts or equipment of another system. When talking about interoperability in vehicles, we begin with your smartphone and its ability to work with the car's infotainment system. This may include hands-free control of music or audio, phone calls, internet searches and navigation. The interoperability conversation may also include such conveniences as alarms, remote starting and mileage and warning indicators, or interoperable services specifically for electric vehicles.

Ensuring interoperability in a vehicle can be difficult given the wide range of devices and technology. Connection failures are relatively common, and they can damage consumer trust and loyalty. Disconnections can also put consumers in danger, either as the driver tries to correct the problem while still operating the vehicle, or as systems fail to alert the driver to potential hazards. For automotive component and device manufacturers, success may depend on having a third-party certification body such as UL Solutions certify that their mobile and connected vehicle systems work consistently and securely — and that they work with products from other manufacturers.

Today's consumer expects a connected ecosystem of technology that offers two-way seamless communication between:



*https://aecc.org/wp-content/uploads/2021/05/MWL_-_AECC_whitepaper_-_Design_v2.0.pdf

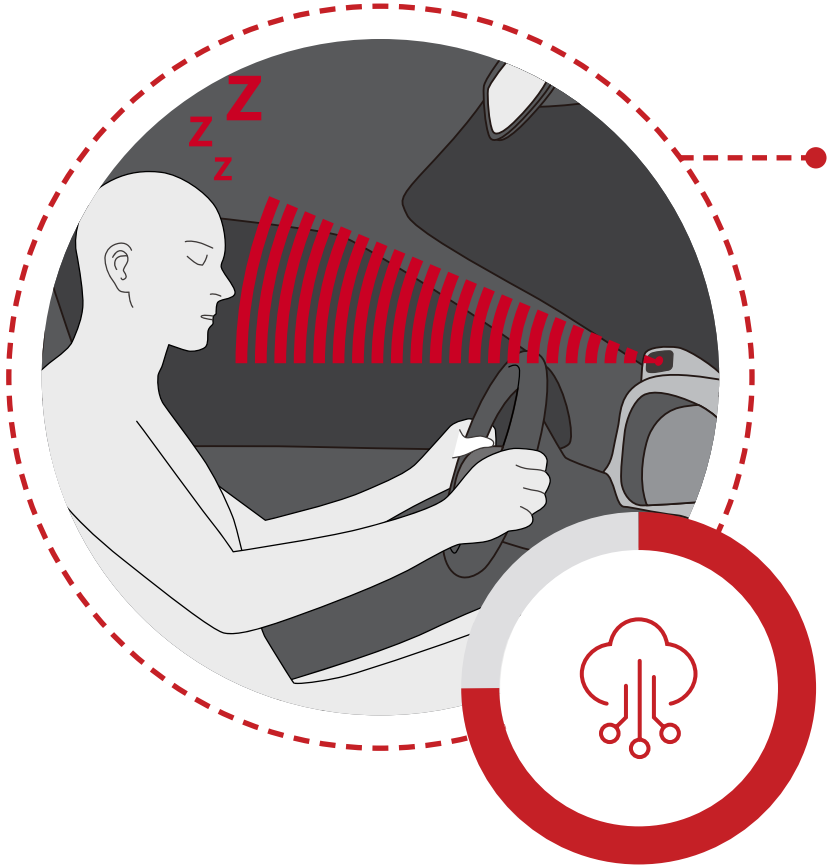
Interoperability Services

Working with UL Solutions, you can leverage our expertise to evaluate if your product works as expected with all other relevant devices and also conforms to all appropriate standards and technology platforms. Our interoperability services include testing automotive projection services — proprietary systems that connect a phone to a car — as well as Bluetooth®, Wi-Fi, NFC and wireless charging platforms. We also check for any wireless connectivity concerns between select models of smartphones and infotainment systems and search for update problems that often plague their operating systems. As technology evolves and advances, we help manufacturers look backward as well as forward to maintain compatibility. At UL Solutions, we are a certified approved test laboratory for Apple CarPlay and offer interoperability test services for CarPlay and Android Auto projection technologies.

Mobile Device Connections

Our close working relationship with mobile phone manufacturers in the United States market provides you with the widest breadth of testing services. We work with a variety of Bluetooth and Wi-Fi chipset vendors and infotainment system suppliers. We can verify your marketing claim that mobile devices connect seamlessly in the vehicle and beyond. These trusted relationships offer access to:

- 100% of U.S. mobile devices
- Global facilities with large device libraries to support your global needs
- Extensive inventory of older phones to help extend broader coverage of infotainment compatibility
- Pre-release device testing for future planning
- Pre-release and pre-update for major mobile operating systems
- Forward- and backward-compatibility testing
- Mobile app user experience and validation
- Infotainment system app user experience and validation



Interoperability innovation is driven by vehicle sensors that capture biometric readings measuring how and when a driver might be tired or need course correction or temperature adjustment.

75%

of drivers prefer an AI feature that recognizes and then alerts you when you are drowsy or driving erratically.

Electromagnetic Compatibility

UL Solutions expert engineers also assist automotive suppliers with Original Equipment Manufacturer (OEM) recognized Electromagnetic Compatibility (EMC) testing of such component types as switches, motors, electronic control units (ECUs), lighting assemblies, electric vehicle (EV) battery control modules and even complex infotainment modules to meet OEM testing requirements.

Our experts can help

Diagnose
interoperability issues

Identify
the sources of problems

Recommend
approaches to testing

Brand Integrity

At UL Solutions, our goal is to help automotive component and device manufacturers reduce problems and provide a positive end-user experience. We help protect brand reputation and drive consumer confidence and trust by confirming that products perform according to a manufacturer's claims or to specified requirements. Through thorough interoperability testing, UL Solutions experts can identify, diagnose and report issues to the manufacturer long before their products ever reach the hands of consumers.

Learn more about UL Solutions interoperability testing services or contact us for more information.

Related resources

- How UL Helps Keep Smartphones Smart While in the Car
- IoT Testing Services
- Automotive and Mobility Megatrends
- Connected Device Testing and Certification Solutions
- Automotive: Enhance Vehicle Safety and Performance
- The Future of Autonomous Vehicle Safety
- Marketing Claim Verification

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