DANLAW®

AUTOMOTIVE MADE SMART

Infotainment Testing Services

Requirements-based Test Case Services

Component Functional Validation

System Software Functional Validation

Integration and Stability Testing

Test Bench Construction

Automated Testing Platform

www.danlawinc.com

Infotainment System Testing

Danlaw provides various innovative solutions for testing and validating Automotive Infotainment systems. This includes:
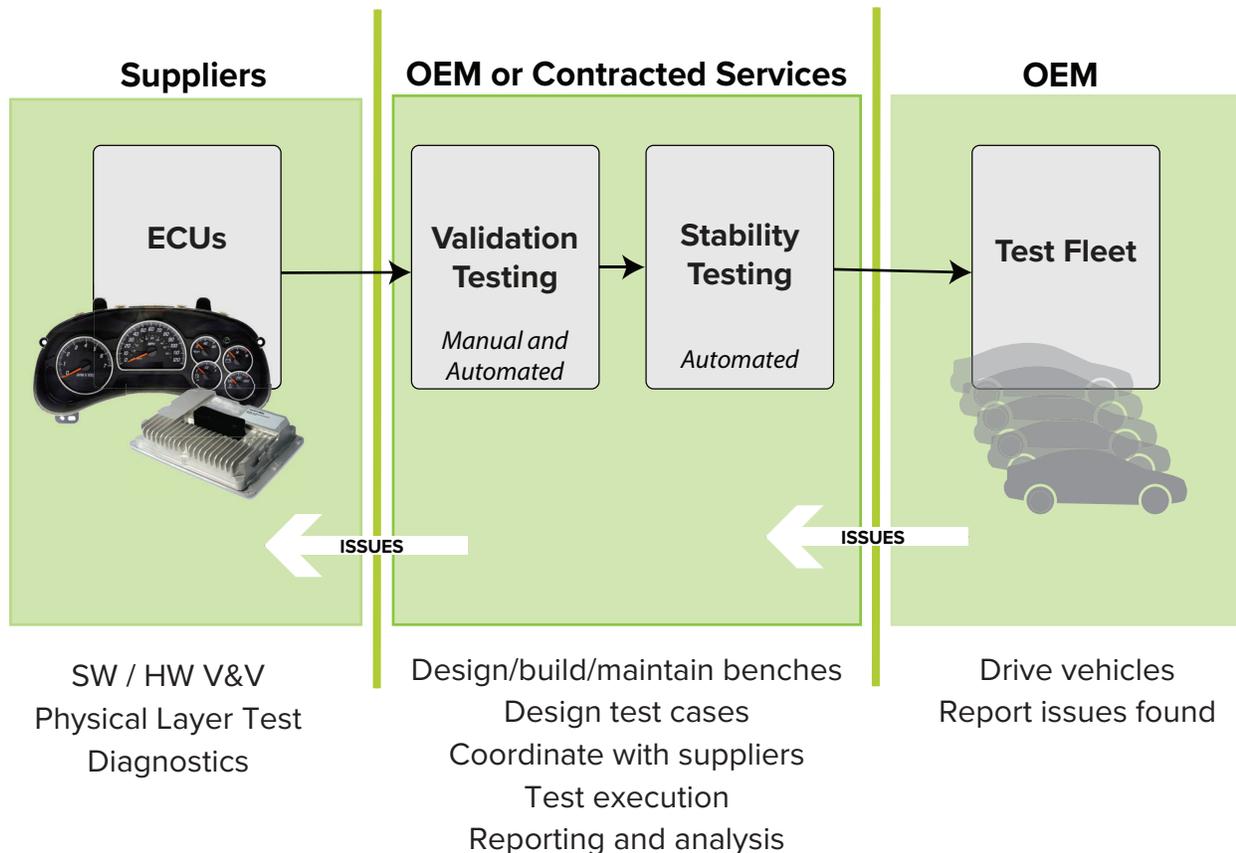
- Worry-free deployment of new infotainment system features by means of measured and confirmed performance, stability and stress-handling

- Reduced development costs and risks through advance identification and characterization of defects or user-experience issues

- Ensured quality of component software through functional and performance coverage testing of individual components

Based on experience, Danlaw has identified two core testing activities that produce the highest return on investment for OEMs:

- Infotainment System Validation and Integration Testing

- Infotainment System Stability Testing

The two categories complement each other and are fully supported by MxSuite, Danlaw's automated test software.

Danlaw is often engaged with OEMs and suppliers to analyze gaps in their development process and propose changes. An example of industry best practice is provided below:
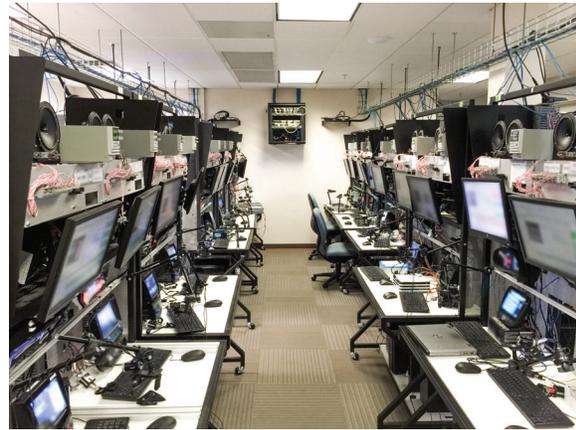
Suppliers	OEM or Contracted Services		OEM
ECUs	**Validation Testing** *Manual and Automated*	**Stability Testing** *Automated*	**Test Fleet**

→ ISSUES ←   ISSUES ←

SW / HW V&V	Design/build/maintain benches	Drive vehicles
Physical Layer Test	Design test cases	Report issues found
Diagnostics	Coordinate with suppliers	
	Test execution	
	Reporting and analysis	

Streamlining Process Development

Test Labs

Danlaw designs and outfits turnkey solutions for ECU validation. Automated and manned labs test component ECUs, multiple ECUs, or complete systems. Popular test services provided in the labs are:
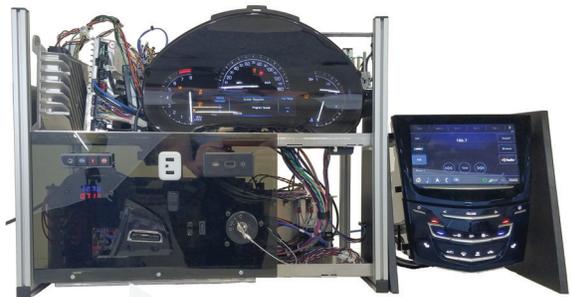
- Power moding
- Functional testing
- Bluetooth
- Over-the-air (OTA)
- Video monitoring

- 24/7 recording of ECU behavior
- Remote access for offshore teams

Test Benches

Danlaw has built numerous test benches for various OEMs and Tier suppliers providing a vehicle-like environment and the necessary signals to the infotainment module.

The test bench delivers power to the modules, which communicate via CAN, LIN, MOST, and Ethernet. Various test cases are developed within MxSuite and then run in regressions.
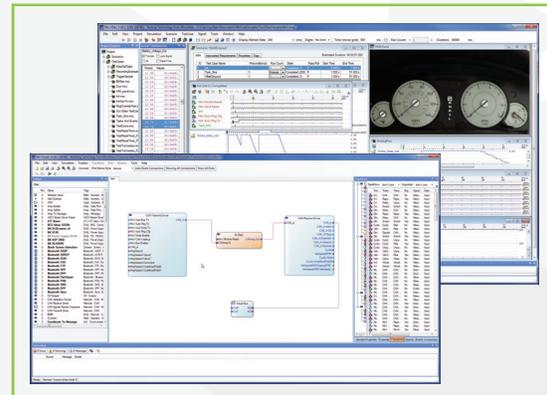

☑ MxSuite Embedded Software Test Automation

MxSuite™ is the most comprehensive automated platform for embedded software verification and validation. Its intuitive graphical interface and reports are understood by anyone in the organization. MxSuite streamlines the complete software development cycle by reusing requirement-based tests during:

- Early feature development
- Continuous integration
- Component software development
- Integration of multiple components
- Quality assurance and regression testing

Process Management Systems

| MIL | SIL | PIL | HIL |

MxSuite Test Automation Software

Open Platform

Danlaw Infotainment Test Systems can connect to any embedded control implementation. The list below is provided as a sample. For more information please contact us.

Process Management Software

ALM Interfaces
IBM Rational Quality Manager
Polarion QA

Continuous Integration Servers
Atlassian Bamboo
Jenkins

Communications

Networks
CAN/CAN-FD (ISO 11898)
LIN (ISO 17987)
DSRC (IEEE 802.11, IEEE 1609, SAE J2945/1)
Ethernet, GM FSA
MOST
RS-232
Bluetooth

Protocols
ASAM XCP / CCP
ISO 15765 Diagnostics (ISO-TP)

APIs
Android Debug Bridge
iOS API
Ford SYNC

Hardware / Software Interfaces

National Instruments VeriStand
National Instruments I/O devices
Fiat Chrysler CAN Diagnostics
Ford FNOS Part II Diagnostics
Intrepid Controls CAN/LIN devices
PEAK Systems CAN/LIN device
Microchip (K2L) MOCCA device (MOST)
National Instruments LabView
BCS Idea devices
iSystem OnChip Analyzer
Lauterbach TRACE32
PicoScope
BK Precision Power Supplies
Acroname Programmable USB Switch
Vector Informatik CAN/LIN devices
dSPACE HIL/XIL API
dSPACE Fault Insertion Unit
ETAS Labcar
ETAS INCA
Custom connector for Third Party HIL devices
Text-to-Speech/Speech-to-Text
Vision Image Recognition

Embedded Environments

Mathworks Simulink Stateflow
AUTOSAR

Additional Product Extensions

▶ **Mx-PLT CAN/LIN Physical Layer Tester** checks ECU conformance to OEM standards

▶ **Mx-DSRC Test System** provides ISO, IEEE, and SAE V2X certification tests

▶ **Robotic Touch Interface** interacts with touchscreens for HMI testing

▶ **ISO 26262 Tool Qualification Kit** produces the required documents for approval by authorities

About Danlaw

Danlaw is a leading global supplier of technology and services to the automotive and aerospace industries for safer, smarter and more secure systems. Danlaw is known for ground-breaking tech, efficient development, and adaptive solutions for dynamic environments. Our world-class connected vehicle solutions make Danlaw one of the largest suppliers of connected devices in the world.