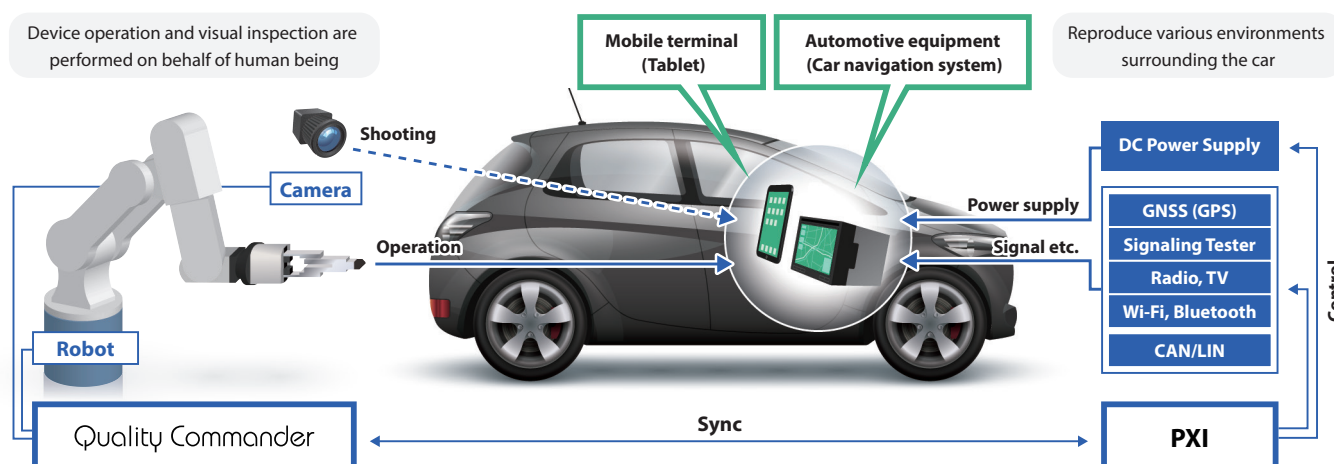# Integrated Test Environment for Automotive

We propose an integrated test environment for car navigation systems and other in-vehicle devices. The system is consisted of "Quality Commander", which is Japan Novel's embedded software automatic test system, and PXI, which is National Instrument's simulation environment that can reproduce various environments surrounding the car. The test is executed automatically by "Quality Commander" which performs device operation including visual inspection instead of human being.

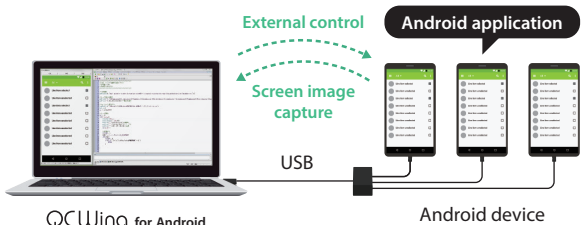Integrated test environment construction image for automotive

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Performance

Established an automatic evaluation environment for electrical components for Mazda by collaborating with partner companies

PXI (NI's platform) is used to create an integrated automated test environment for electrical components. The test system is realized not only HILS but various elements such as robots, speech synthesis systems and GPS simulators through a rich ecosystem.

For more information, please visit: http://sine.ni.com/cs/app/doc/p/id/cs-17634 (Case Study at NI Home Page)

Partner companies

NATIONAL INSTRUMENTS	**National Instruments Japan Corporation** www.ni.com	A global vendor of open and flexible automated test platforms. NI has a track record of establishing test environments such as automated driving and ADAS.
MAC SYSTEMS	**MAC SYSTEMS CORPORATION** www.macsystems.co.jp	As a technology trading company, MAC SYSTEMS can totally produce the construction of the environment inside and outside of the vehicle from utilization of measurement equipment and selection of environmental equipment including reliable setting at connection time to configuration design, production and delivery. The company has a large track record of providing custom systems in the automotive industry.
rikei 株式会社 理経	**Rikei Corporation** www.rikei.co.jp	Rikei Corporation is a trading company consisting of system, network, electronic equipment and parts. In addition to be an agent for National Instruments Japan and Averna Technologies, the company established a new business which creates a virtual reality (VR) with an image using Unreal Engine. The company also proposes the latest technologies of VR, such as learning AI for autonomous driving and using background of driving simulator.
Anritsu	**Anritsu Corporation** www.anritsu.com	Anritsu Corporation has been developing measuring instruments for various wireless communication systems for many years and deploying the results to 5G/V2X. Its fulfilling support system is unique to domestic manufacturers.
Averna	**Averna Technologies Inc.** www.averna.com	Averna Technologies is National Instruments' Platinum Alliance Partner in Canada. In addition to automobiles, it has successfully installed in various fields such as communications, semiconductors, aviation defense, medical care, and civilians. Especially in the RF field, the company provide various services such as software and hardware development, automation systems and consulting.
JNOVEL	**Japan Novel Corporation** www.jnovel.co.jp	Japan Novel has many implementation results as HMI automatic evaluation system vendors such as car navigation systems. The company also has experience with consultation related to test automation.

Japan Novel provides the following tools and evaluation services related to the integrated test environment.

Tools

Quality Commander

Embedded software test automation system

The system automates manual operations by robot operation and image judgment using a camera. Not only automatic operation by robot, but also control of application on Windows OS is possible. There are many installation results in car makers and in-vehicle equipment makers.

QCWing for Android

Android™ application test automation tool

By externally controlling an Android device connected via a signal line (USB), automatic testing of Android applications can be performed. It is used for collaborative testing with such as smart-phones and in-vehicle devices.

Testing support

Test automation support

Japan Novel offers the following services that accompany the integrated test automation environment.

Environment construction support for test automation	We support and propose about optimal automation concept, system configuration, operation of the system, preparatory work, etc. against various requests from you.
Automation range selection support	We support and propose about how much can be automated at your existing environment.
Test content selection support	We support and propose about the automation of tests currently being conducted and the addition of test items (such as defect trend analysis), etc. including cost-effectiveness.

Wireless communication verification service for telematics

We offer one-stop support for "Proposing test environment", "Creating test items" and "Conducting tests" about operation verification when a communication module is incorporated into telematics.

Test item examples	• Emergency call connection: Emergency call from air bag sensor notification, Callback call • e-SIM Rewriting: Initialization for cancellation of contract, network-driven renewal

JNOVEL **Japan Novel Corporation**

For the details, visit
https://www.jnovel.co.jp/

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