C&S group and Ixia address the challenge of safeguarding automotive Ethernet communications in emerging E/E architectures

Increased customer safety, comfort and easier handling requirements are driving up automotive system bandwidth demands, while significantly upscaling the communication between vehicle networks.

In response, automakers decided to adopt Ethernet to meet these requirements. This technology allows better handling for data-heavy applications controlling the communication between the vehicle and the external world — in a cost-effective manner. The trend shows no signs of slowing and automakers plan to use in-vehicle Ethernet to broadly enable a variety of applications and functions including safety, driver information systems, advanced driver assistance systems (ADASs) and entertainment.

The adaptability and maturity of the technology, current and future availability of Ethernet offerings, as well as the automakers' own product plans will determine when these types of applications will be deployed in vehicles. The years 2018 and 2023 represent two major model years for automobile offerings, and show that the availability of Ethernet-enabled applications is anticipated to progress and spread considerably, according to a study from Gartner (*Survey Analysis: Automotive Ethernet's Impact on the Automotive Industry, December 19, 2014*).

Even though Ethernet is a standard in the consumer and industry domains and provides a high re-use factor, it brings new challenges to the emerging Electrical/Electronic (E/E) switch architectures and leads to new design paradigms. However, most importantly, Ethernet is changing the game in the automotive world by bringing together players from both the IT and automotive industries.

The synergy between these two areas of expertise is a decisive factor for future success. In fact, this is one of the main objectives of the collaboration between C&S group and Ixia—to address the challenge of safeguarding, validating and optimizing automotive Ethernet communications in emerging E/E architectures.

Ixia, a leading provider of application performance and security resilience products for testing TCP/IP and Ethernet products, has extensive experience in TCP/IP conformance testing for the IT and telecom industries. C&S has been involved in the development of in-vehicle protocols from the beginning and is well known internationally in the automotive industry as an independent testing company.

Both companies are active and contributing members of several Automotive standard organizations that enable innovation for next generation vehicles, like *Open-Pair EtherNet (OPEN) Alliance*, *IEEE* and *AUTOSAR consortium (*in particular, the *AUTOSAR* acceptance tests for the qualification of the TCP/IP communication stacks).

Automakers are faced with the task of ensuring interoperability in a multi-vendor environment. C&S first offered services for automotive Ethernet qualification that focused on:

- OABR® PHY interoperability tests
- Testing solutions for SWITCH compliance test
- Testing solutions for ECUs with Ethernet stacks

- Testing solutions for Audio/Video Bridging
- Verification of automotive Ethernet implementations

To meet the high reliability and safety standards required for automotive networks, C&S uses Ixia's IxANVL solution. IxANVL provides 1200+ sets of rich tests that validate interoperability and standards compliance of AUTOSAR- and GENIVI-based ECUs, ensuring bus compatibility of IPv4, IPv6, TCP, UDP, SD, SOME/IP, AVB, and many other protocols.

"One of our highest priorities is to *help the automotive industry build best-in-class in-vehicle components like ADAS and infotainment systems. Ixia's strategic collaboration with C&S is expected to provide long-lasting benefits in producing demonstrable validation points for Ethernet communication between automotive systems,*" said Enrique Labarta, Business Development Director – Automotive at Ixia.

Ixia products enable real-world validation of in-vehicle technologies. Ixia is a leader in network, device, application and security testing for automotive Ethernet functionality, to help carmakers accelerate new in-vehicle features and deliver a safer driving experience.

About C&S:

C&S group GmbH, for communication & systems group, is a spin-off of a former research entity at the University Ostfalia in Wolfenbüttel, Germany. As accredited test house (according to ISO17025) for more than 20 years, C&S conducts conformance and interoperability tests for HW components for different customer specific and standardized IVN protocols such as CAN, LIN, FlexRay and the new emerging protocols CAN FD and BroadR-Reach automotive Ethernet following E/E architectures' developments and evolutions. Furthermore, C&S offers testing solutions and consultancy services for SW modules, supporting the migration to AUTOSAR compliant architectures as well as integration tests of BSW stacks. Long-lasting testing experiences are also applied in our consulting services for the conception and safeguarding of the proper operability of networked systems. C&S participates in standard-setting organizations like ISO, SAE, FlexRay, LIN, AUTOSAR, OPEN, etc. C&S is represented by partners in Europe, Japan and the U.S. http://www.cs-group.de/

About Ixia

Ixia (NASDAQ: XXIA) provides application performance and security resilience solutions to validate, secure, and optimize businesses' physical and virtual networks. Enterprises, service providers, network equipment manufacturers, and governments worldwide rely on Ixia's solutions to deploy new technologies and achieve efficient, secure, ongoing operation of their networks. Ixia's powerful and versatile solutions, expert global support, and professional services equip organizations to exceed customer expectations and achieve better business outcomes. Learn more at www.ixiacom.com.