

# From eight to more than 700 members



*This year, the CAN in Automation (CiA) nonprofit association celebrates its 30<sup>th</sup> anniversary. In short recap, the CiA initiator, Holger Zeltwanger, reflects some of the important milestones.*

Everything started already in 1991 in Munich (Germany) on the System tradeshow. In those days, I was the editor of the German VMEbus magazine. I discussed with some companies promoting first CAN board level products compatibility issues regarding the physical layer and interoperability in respect to higher OSI layers. The result was simple, I invited eight companies to a very first meeting to discuss how to overcome compatibility and interoperability problems to Nuremberg in January 1992, where I was living. Surprisingly, 23 companies showed up. At the end of the meeting, I got the task to prepare a next meeting to inaugurate a nonprofit association according to German laws (we German love clubs).

On March 5, 1992, six companies and two individuals founded the CAN in Automation (CiA) international users' and manufacturers' group. CiA was registered by German authorities as a nonprofit entity. In the same year, 15 CiA members participated in the Interkama tradeshow demonstrating for the first time a CAN network connecting products from different vendors. The products utilized already 9-pin DIN connectors with a standardized pinning that is still used today.

The next two years, CiA was busy developing the first specifications. The CAN Application Layer (CAL) specified in the CiA 200 series was an academic approach. Nevertheless, several applications made use of it. Bosch and some partners adapted it and specified a CAL-based communication profile within the Esprit research project sponsored by the European Community. In 1994, the results

of this project were handed over to CiA for further developments and maintenance. Nowadays, this approach is known as CANopen comprising application layer and profile specifications.

Also 1994, I organized the first international CAN Conference (iCC) in Mainz (Germany). In those days, the CiA headquarters was still a one-man show. After the successful iCC with more than 200 participants, CiA hired the first secretary. Membership was growing, and I was not longer able to work as fulltime editor and administrating the CiA association in parallel. I quit my job as editor and began to work fulltime for CiA. To be honest, I was still working for my own publication, the CAN Newsletter, which I started already in June 1992.

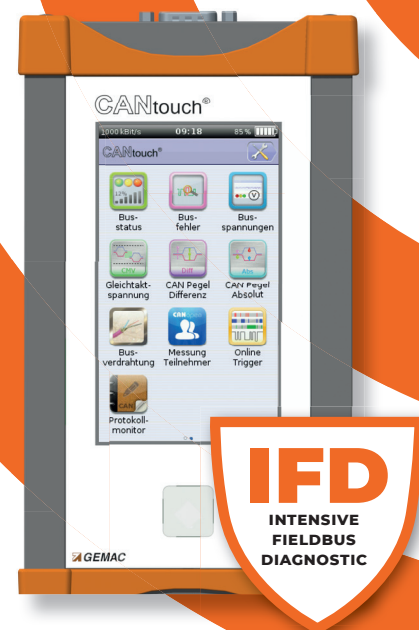
The next steps, were the release of CANopen specifications. This included the CiA 301 application layer and communication profile, the CiA 401 profile for modular I/O devices, and the CiA 402 device profile for drive and motion



*Figure 1: Already in 1992, CiA members demonstrated at the Interkama fair the interoperability of very first CAN-connectable devices and tools (Source: CiA)*



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Figure 2: Holger Zeltwanger, the initiator of CAN in Automation

controllers. CiA also organized joint stands for its members at Hanover Fair and other tradeshows. One remarkable milestone was the international standardization of CANopen in EN 50325-4. In those days before the year of 2000, CiA also developed a CANopen conformance test tool with the support from National Instruments. The series of annual iCC continued. They took place in France, Netherlands, Italy, U.S.A., and other countries.

Beginning of the new millennium, CANopen penetrated many new markets including rail vehicles, construction machines, refusing collecting vehicles, elevators, and maritime electronics; just to name a few. The number of CANopen profile specifications increased dramatically, and CiA hired more engineers to support the editing of documents. The business of seminars was growing as well as the demand on free-of-charge support for CAN device manufacturers and system designers. In these years, I traveled increasingly to North America and to Asia to bring CAN technology to other continents.

In the 2<sup>nd</sup> decade of this century, the CAN FD data link layer was developed by Bosch and some other CAN interested parties. In the beginning, CiA was only indirectly involved. But during the CAN FD development, CiA organized so-called plugfests to prove the interoperability of first CAN FD implementations and to test the physical limits of the CAN FD communication. CiA also developed CAN FD device and network recommendations and published them in the CiA 601 series. This included the SIC (signal improvement capability) transceiver as specified in CiA 601-4, which becomes now the dominating transceiver technology in CAN FD networks.

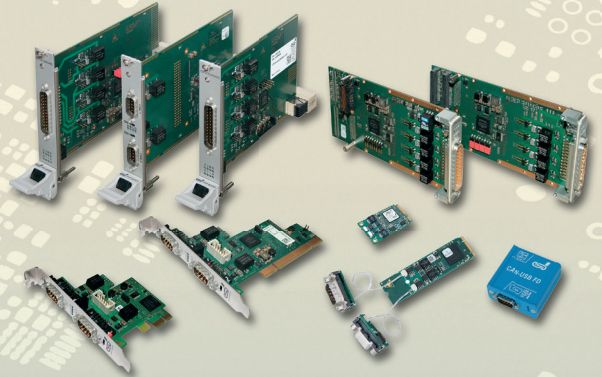
In 2018, CiA started on demand of Volkswagen the development of CAN XL, the 3<sup>rd</sup> generation of CAN technology. End of 2021, CiA has released the CAN XL data link layer and physical coding sublayer specification (CiA 610-1) and the CAN SIC XL physical medium attachment sublayer specification (CiA 610-3). The first CAN XL plugfest organized by CiA took place in June 2021. Of course, in all the 30 years, CiA has improved its technical documents and is continuing to do so. CiA has now more than 700 members and 14 employees are working in the CiA office managed by Reiner Zitzmann.

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