

# CANopen FD shows its flexibility

**Attendees of the CiA special interest group “application layer” will set up a CANopen FD demonstrator at the SPS IPC Drives 2016 to illustrate the design flexibility of the new communication object USDO.**

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Structure of the CANopen FD demonstrator (Photo: CiA)

A major task during updating the CANopen specification with regard to CAN FD was the specification of the new communication object USDO. Most relevant aspects of the USDO communication object have already been specified and will be exhibited in a CANopen FD demonstrator at the SPS IPC Drives 2016 in hall 2, stand 201. The CANopen FD demonstrator integrates CANopen FD prototype implementations from the companies Emtas, ESD, HMS, and Microcontrol in a CAN FD system, using 500 kbit/s in the arbitration phase and 2 Mbit/s in the data phase. In parallel, a second network based on classical CANopen integrates the nodes of the aforementioned companies as well.

Depending on the user interaction, one node triggers a request to the requested CANopen (FD) node either via pre-configured SDO communication or dynamically established USDO communication. Immediately after the successful completion of the request, the requested CANopen (FD) implementation starts to upload an illustration to the server, offered by the requesting node. The transfer of the data from the client to the server runs via the network that provided the request, so either via CANopen or CANopen FD.

## *Performance comparison of CANopen and CANopen FD*

As the server starts immediately presenting the illustration on a display, the observer of the CANopen FD demonstrator can experience the rapid and flexible data transfer via CANopen FD's USDO in comparison to the classical CANopen SDO. In case the data is received via USDO, the data is available much earlier and can therefore be displayed much earlier in contrast to the data received via classical SDO.

Possible future CANopen FD application fields include applications dealing with increased security requirements, e.g. billing systems; applications dealing with a high amount of safety-relevant data, e.g. construction machineries; and applications that require robust and highly reliable communication, e.g. commercial vehicles. Additionally, applications with low energy consumption service, e.g. light-electric vehicles or service robots, can benefit from CANopen FD, as do existing CANopen application fields suffering from a limited bandwidth or payload.

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