

case study

▶ ETAS with Ford:

ASAM MCD-1 XCP (Ethernet)
enables 3rd party MCD tool
integration of ETAS' new XETK
ECU development interface

Initial testing at Ford has shown great potential for us to leverage our existing calibration tool investments in both ETAS and ATI development tools through the use of ETAS' X-ETK and the ASAM MCD-1 XCP standard.

*(Ryan Nelson, Powertrain Feature Calibration,
Ford Motor Company)*

SUMMARY

Challenge: Automotive embedded software processes typically involve the use of several different types of software tools which require the use of high speed ECU interface devices and interface hardware. Companies are usually forced to purchase several different high speed ECU interface devices (and interface hardware) each of which fits with the particular software tool of interest.

Solution: This issue is solved through the use of reliable high speed ECU interfaces which are based on standard interfaces, protocols, and readily available PC-based technology. ETAS' new XETK connects directly to the Ethernet port on the PC. ETAS chose to use the ASAM MCD-1 XCP (Ethernet) standard, to enable connectivity between the 3rd party software applications and its new XETK ECU interface family.

Key Benefits:

- Use of an industry standard data exchange method that is already widely known and utilized in automotive ECU development tools (XCP).
- Utilization of a widely used and reliable Ethernet network topology and commonly available industry hardware devices, including PC Ethernet adapters
- A single ECU interface shared between multiple software development tools lever-

ages customer investment by enabling reuse of experiments & tests procedures and also reducing customer investment in hardware purchases

- Easy integration of additional external synchronized measurement data with ETAS' XCP on Ethernet based ES400 module family

SITUATION

ETAS has successfully implemented and used the XCP on Ethernet standard with the ES400 measurement module family. In using this standard, several 3rd party software applications have been able to make small and quick adaptations to their products to enable connectivity to the ES400 measurement modules. ETAS decided to also use XCP on Ethernet for this new XETK interface to enable easy integration into 3rd party software adaptations.

CHALLENGES

Ford Motor Company had a need to enable greater sharing and reuse of experiments & tests procedures across different software development tools. Ford saw the potential value in the XETK XCP on Ethernet approach to provide multi tool connectivity through a single ECU interface. This prompted Ford to approach ETAS about integrating the XETK-V1.0 with ATI Vision.

SUCCESS STRATEGY

ETAS had a high confidence that this XCP on Ethernet connectivity to a 3rd party software tool approach would succeed due to the previous success with the ES400 family. ETAS expected successful XETK V1.0 integration with ATI Vision software due to Vision's known support of the XCP standard. An XETK XCP protocol document was supplied to ATI to commu-

nicate the specific XCP commands supported by the XETK. As expected, with this documentation, ETAS and ATI were able to quickly test for and ensure compatibility with the standard. After the successful XETK integration with ATI Vision, the customer is now able to utilize the XETK interface with either the ETAS INCA application or the ATI Vision application for measurement & calibration tasks.

CHALLENGES DURING THE PROJECT

Because of the flexibility and usefulness of the XCP standard, the automotive industry has found additional uses of this standard beyond what was originally intended such as ETAS' ES400 measurement modules and ETAS' XETK high speed ECU interface family. As the XCP standard's use expands beyond its original intent, shortcomings in the standard will be identified as a direct result of these new uses.

The primary challenge with the first implementation in this project was that the XCP standard provides for basic ECU reprogramming commands. While this is sufficient in many cases, most ECU commercial reprogramming solutions provide additional capabilities for more robust flashing. For this project, ETAS utilized the provision in the XCP specification which provides for the creation of specialized XCP commands. ETAS provided documentation regarding these specialized XCP flashing commands that can be used by 3rd parties to enable the more robust flashing capabilities of the XETK. This is only an interim solution and a longer term goal will be for the XCP standard to be able to cover this more robust flashing need as well.

BUSINESS BENEFITS

Customers that desire to use ETAS microcontroller interfaces can now use the XETK

independent of the software application they already own and are already familiar with. This will reduce the costs of purchasing a new piece of software and the even greater costs of learning a new development tool. Finally, the use of the XETK with multiple software development tools enables greater sharing and reuse of experiments & tests procedures. With the ETK product family, ETAS currently offers the largest variety of high speed microcontroller interfaces utilized in powertrain ECU's. Similar to the ETK product family, the XETK product family will grow quickly to support the various microcontrollers utilized in automotive ECU's. All of the XETK product family will use XCP on Ethernet as the interface between the XETK and the software application.

