Old and New Trends in Electronic Development 2012

We can now look back on a successful year 2011, which was a success due to a very healthy sales increase in the automotive industry. The good mood is only overshadowed by a sense of uncertainty that pervades the financial markets.
For Vector, as a producer of tools and software components for electronic development in the automotive field, the following are some of the key topics for 2012

AUTOSAR – actually already old hat

Basic software in accordance with the AUTOSAR standard is being used in pre-production developments by leading automotive manufacturers. For the most part, version 3.x of the standard is still used, but version 4.x is also increasingly in demand. A focal point in 2012 will be to support the developing AUTOSAR specification. Soon, version 4.0.3 of the AUTOSAR specification will be released. Another development stage of the standard is planned for autumn 2012 with version 4.0.4. Although the increment in the last digit of the version number suggests only a minor change, what actually lies behind this revision are formidable extensions of the standard that require large development efforts.

AUTOSAR exchange formats are not used everywhere. Similarly, the exchange or provision of software components on the application level, which were developed per the AUTOSAR standard, is still in its infancy. One reason for this is the automotive OEM's lack of infrastructure for managing and generating data. Another reason is that the tool chains needed for further processing have not been on the market long or in some cases are still in the development stage. However, the setup of an infrastructure and a tool landscape

aligned to AUTOSAR is a key prerequisite for widespread use of the AUTOSAR standard in this area.

Functional Safety – opportunity for fundamental improvement of development processes

With the approval and release of the ISO 26262 standard for functional safety, another guideline has been created that must be used as the "state of the art" in related developments.

In using this standard, OEMs and suppliers must perform specific analyses such as a "Fault Tree Analysis" (FTA), "Fault Mode and Effect Analysis" (FMEA) or "Hazard Analysis". This requires special processing of development results, which is typically associated with additional effort, especially if processing is only made for the ISO-26262 application case.

Functional safety offers an opportunity to fundamentally improve development processes. By introducing an "Engineering Data Backbone", the standard development process and the administration of development results can, for example, be structured so that the preparation of necessary information for special analyses does not require any or just a little additional effort. The

extra effort invested in the standard development process will pay off many times over in the form of increased quality and fewer errors.

E-Mobility – welcome hype

Today, the electric motor is so far superior to the widely used internal combustion engine, in terms of its efficiency and torque response, that its use – especially when paired with power generation from renewable energy sources – makes sense from technical and environmental perspectives. However, formidable development efforts in the area of energy storage are still necessary to make this technology economically attractive for widespread use.

Electrification of the powertrain introduces new requirements for development tools. In particular, the connection between the vehicle and the charging infrastructure of energy provider companies is an area of special interest to Vector.

Ethernet in the vehicle – not just a replacement for MOST

Today, standard Ethernet is already used in some vehicles to network cameras. This bus system has clearly proven itself, a physical layer oriented towards automotive use is planned, and other application areas will likely follow. It will utilise a 100-MBit full duplex Ethernet bus system that can be operated over an unshielded, twisted wire pair. This solution is much more cost effective in its wiring than MOST, it has a higher bandwidth than FlexRay and is easier to operate from the software perspective. The following potential applications are conceivable: networking cameras and sensors with high data rates, as a multi-media bus or backbone with high bandwidth over which ECUs can exchange data or be reprogrammed.

Quality and efficiency

The themes of quality and efficiency are long-term trends that are not bound to a specific year or phase.
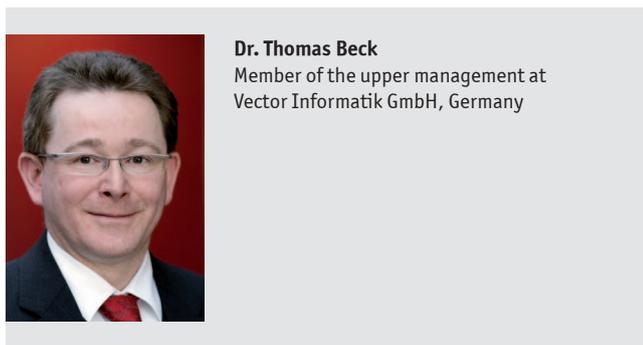
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