Automotive Embedded Software

A Big Step Forward

ETAS ASCET-DEVELOPER – the easy way to safer embedded software

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A click is all it takes to generate software code for the highest demands using ASCET. That has long been the case. But the new ASCET-DEVELOPER can do even more. It raises model-based development of embedded systems to a new level of safety, security, and productivity.

Of course, ASCET is not new. The first six generations of the ETAS tool have proven themselves in software development for over 450 million ECUs. Nevertheless, ETAS has thoroughly revised the tool for the seventh generation, ASCET-DEVELOPER, making it fit for the future. The goals were challenging: higher productivity, even better safeguards against programming errors, full compliance

with industrial standards, and seamless embedding into the customers' development environments. This was achieved through integration into the open development platform Eclipse, compliance with standards such as MISRA-C:2012, IEC 61508, and ISO 26262, new ideas for even greater safety and security, and a significantly improved user guidance (Figure 1).

On-the-fly check gives engineers certainty

But how is it possible for companies to both securely and cost-effectively program embedded software which controls safety-relevant functions in systems that are growing in complexity all the time? The answers to this question are the Embedded Software Devel-
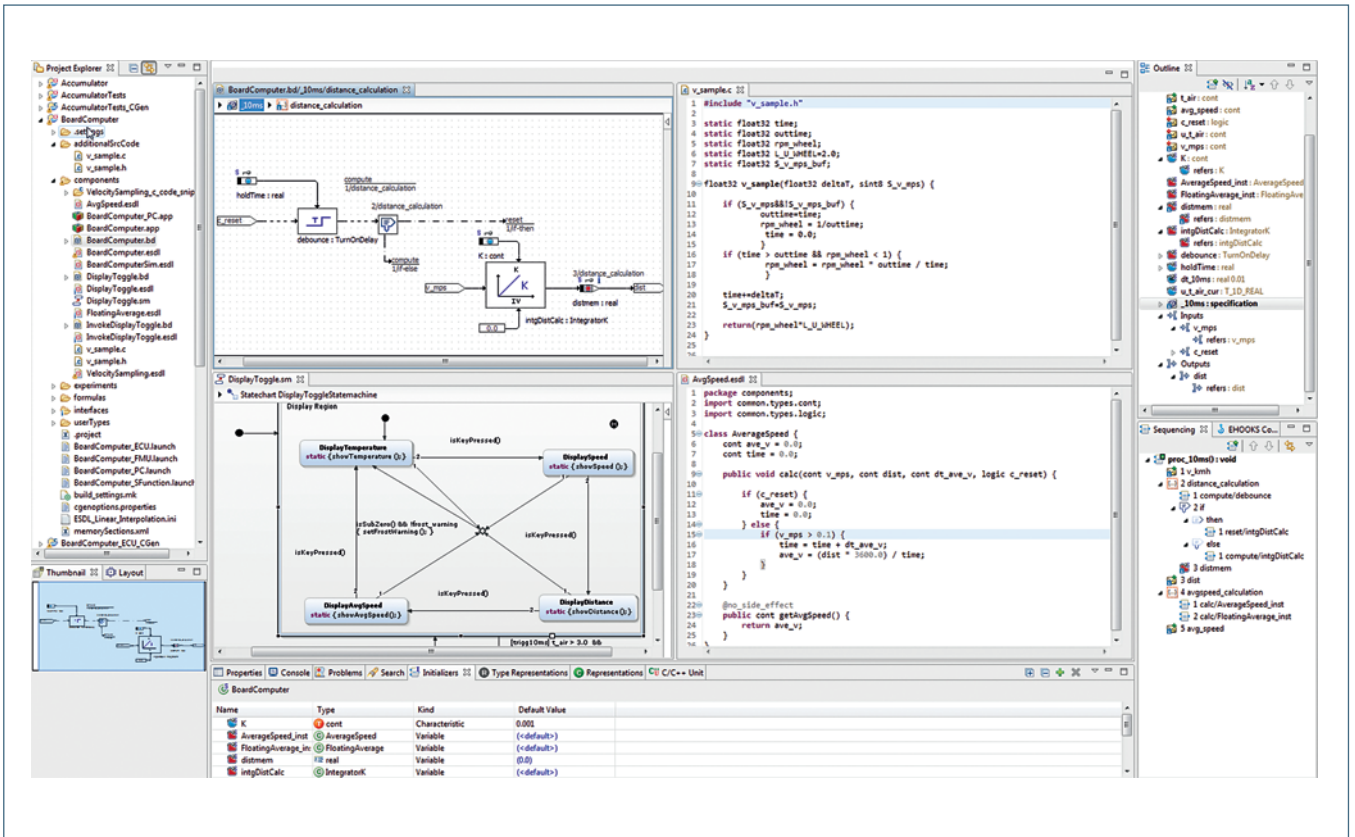
Figure 1: The Eclipse-based integrated development environment of ASCET-DEVELOPER enables users to work efficiently.

opment Language (ESDL) and a high degree of automation. ESDL makes it easier to express what the model does and prevents typical programming errors by design: safer syntax to avoid typing errors, simplified use of value ranges and use of physical units. Automatic on-the-fly model checking gives the developer immediate feedback on problems, allowing them to be corrected quickly (Figure 2).

Automatic code generation prevents runtime problems such as division by zero, underflow and overflow, and exceeded array bounds (index checking). Thanks to the systematic checks, ASCET-DEVELOPER prevents expensive errors. The models can be used for open- and closed-loop simulations and for prototyping. In the end, developers have automatically generated, securely checked C code for further process steps.

Summary: increased safety and productivity

Customers migrating from the previous ASCET version to ASCET-DEVELOPER report that
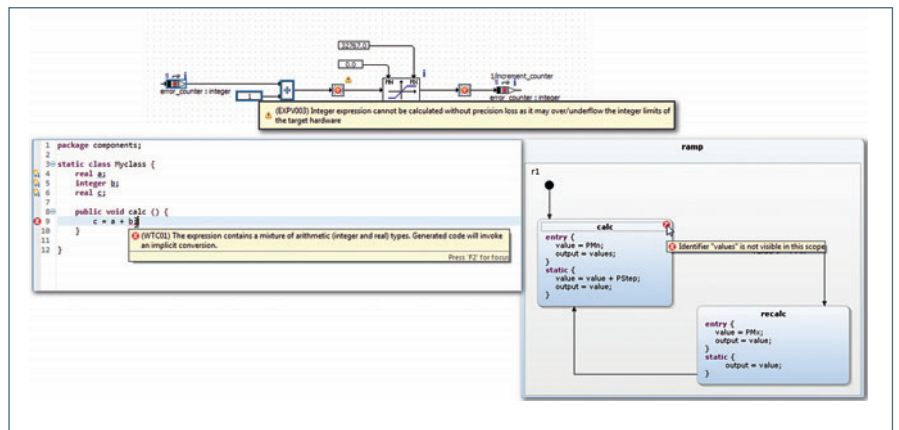

Figure 2: On-the-fly validation informs user about potential problems.

they have doubled their productivity thanks to automation accelerating the modelling workflow. Moreover, Eclipse compatibility brings a smooth, frictionless workflow, and compliance with the leading safety standards gives software engineers the reassurance that development can be both fast and safe. ∎

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