Safe Modeling

MISRA: Modeling Guidelines for TargetLink

MISRA, the Motor Industry Software Reliability Association, has published MISRA modeling guidelines for TargetLink. The new guidelines support function developers and software developers in implementing vehicle functions with regard to functional safety. TargetLink is so far the only production code generator for which such MISRA guidelines have been published.

Transparent and Safe Modeling
The new MISRA guidelines for TargetLink contain requirements for modeling with regard to functional safety and are particularly relevant to safety-critical projects. They reflect the greatly increased importance of model-based design and automatic production code generation. The main issues covered are:

- Avoiding specific modeling elements and modeling styles in MATLAB®/Simulink®/Stateflow® for reasons of functional safety
- Modeling elements that support a transparent model structure to simplify model reviews

- Instructions on specifying implementation information to ensure that the generated C code complies with a maximum number of MISRA C:2004 guidelines

The new MISRA guidelines for TargetLink are available at the official MISRA Web site, www.misra.org.uk ("MISRA AC TL – Modelling style guidelines for the application of TargetLink in the context of automatic code generation").

New Version of the dSPACE Modeling Guidelines for TargetLink
In addition to the MISRA TargetLink guidelines, TargetLink users can also refer to dSPACE's own modeling guidelines, the latest version of which is 2.1. These guidelines are an ideal supplement to the MISRA TargetLink guidelines and the MAAB guidelines (MathWorks Automotive Advisory Board). The dSPACE TargetLink Guidelines are available on request from dSPACE Sales. They are also available online as part of the e-Guidelines: http://www.e-guidelines.de. ◼

Please note:
MISRA does not endorse or make recommendations for any specific manufacturers, their products, or services.

Interview

with Michael Beine,
TargetLink Product Manager
(dSPACE)

Mr. Beine, could you briefly explain the practical significance of the new MISRA guidelines for TargetLink users?
Imagine you want to model a vehicle function in Simulink®/TargetLink and then implement it as production code. How do you make sure, for example, that the generated code is sufficiently compliant with the MISRA C guidelines and suitable for code reviews, yet still fits the limited resources available on the ECU? Do you always know precisely whether the modeling constructs you use are transparent in Simulink®/ Stateflow® and have no hidden pitfalls? The MISRA modeling guidelines for TargetLink give you useful tips and instructions that will benefit your production projects.

What do the guidelines mean for TargetLink as a product, which after all has been on the market for many years?
We're very pleased that the MISRA C guidelines, which are widely used at code level, are now supplemented by the MISRA TargetLink guidelines at model level. The MISRA TargetLink guidelines show that TargetLink is firmly established as the de-facto standard for autocoding in the automotive sector. Production applications using TargetLink can be found in all automotive domains such as power-train, body electronics, chassis, driver assistance systems, vehicle safety, and even infotainment. The TargetLink modeling guidelines from MISRA give TargetLink users additional support in these applications, especially with regard to functional safety. Incidentally, dSPACE also provides its own TargetLink modeling guidelines, which cover further aspects such as AUTOSAR and achieving maximum code efficiency.

Thank you for talking to us, Mr. Beine.