A Successful Combination

TargetLink 3.0: Redesigned Blockset and Model Referencing

The best of two worlds: The redesigned blockset in TargetLink 3.0, our production code generator, provides even closer MATLAB®/Simulink® integration in addition to TargetLink's reliable features. A wide range of third-party Simulink tools can be used for TargetLink models. TargetLink 3.0 also supports model referencing to facilitate modular, distributed development processes.

Interview

with Dr. Ulrich Eisemann, Product Manager TargetLink (dSPACE)

Mr. Eisemann, what innovations does TargetLink Version 3.0 offer?
Well, for one thing, we redesigned the TargetLink blockset. And we added support for model referencing. These are the two most important innovations.

How do they benefit users?
The main change in the blockset is the way it is implemented, giving users considerably improved tool integration and also enhanced process integration as

well. From the outside, TargetLink still has the same look & feel, and familiar processes can still be performed with TargetLink 3.0, of course. Model referencing plays an important role wherever extensive model designs are developed by large teams. It substantially improves modular, distributed work in large work groups.

Can existing TargetLink models still be used with TargetLink 3.0?
Yes. Automatic upgrades of older TargetLink models and libraries were an important goal in developing the new version. Our customers have large collections of models, and obviously they want to continue using them under TargetLink 3.0. So there is an automatic upgrade routine for migrating older models. We kept all changes to the TargetLink API to an absolute minimum. This makes it easier for our customers to migrate their tool chains.

Mr. Eisemann, thank you for talking to us.

Tighter MATLAB/Simulink Integration
The new blockset in TargetLink 3.0 is a symbiosis between the proven features of previous TargetLink blocks and those of Simulink blocks (fig. 1). This gives TargetLink users the best of both worlds: On the one hand, they benefit from TargetLink's powerful, much appreciated features such as easy-to-use block dialogs, integrated signal logging and plotting for all simulation modes (model-in-the-loop, software-in-the-loop, processor-in-the-loop), and overflow warnings. And on the other hand, they can use a wide range of third-party Simulink tools directly on TargetLink models. From a technical point of view, the TargetLink blocks in the new design are normal Simulink blocks but with a mask for storing TargetLink data and the proven TargetLink dialogs. Benefits of the new TargetLink 3.0 blockset are:

- Greatly increased compatibility with Simulink toolboxes and other vendors' tools. For instance, test vector generation with a tool like Reactis® or model coverage can be directly applied to TargetLink models.
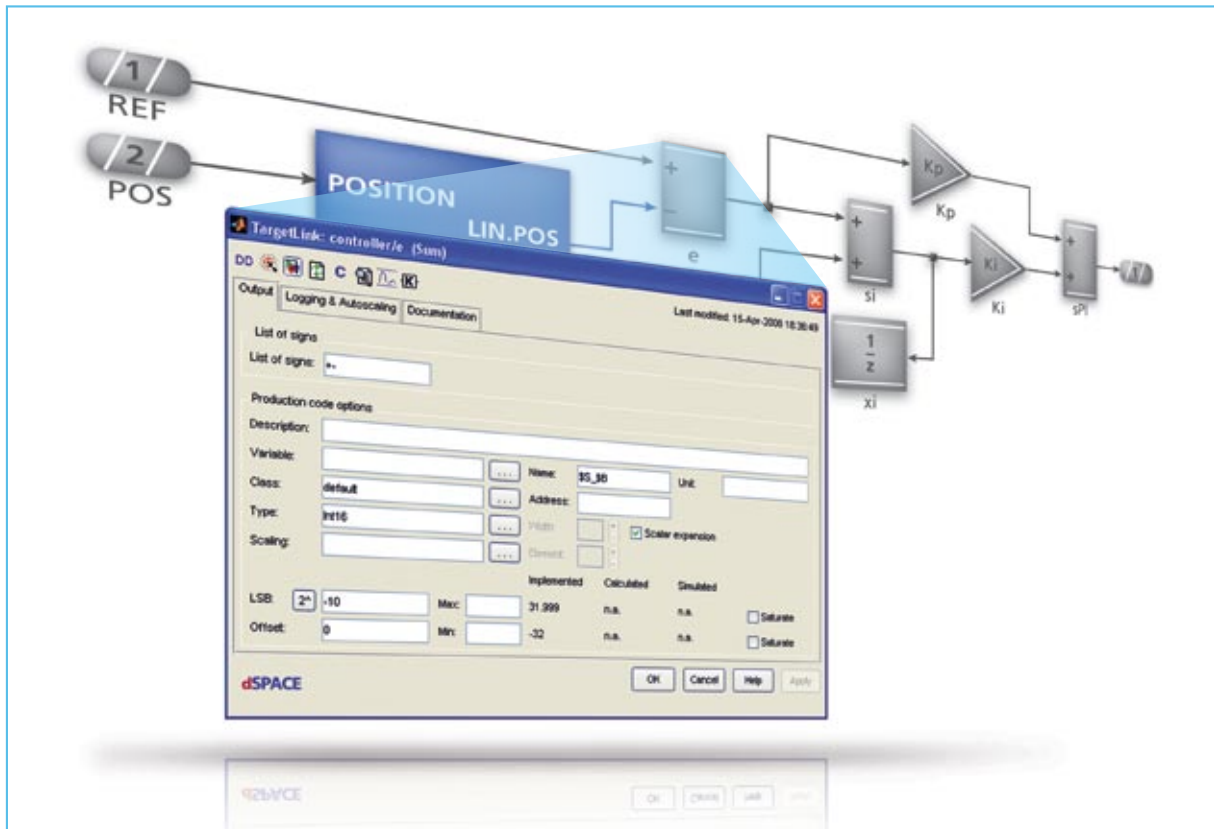
Fig. 1: The TargetLink blocks in the redesigned blockset still look the same and are still handled in the same way, even though TargetLink and Simulink ports have been merged.

- Easier prototyping of TargetLink models using RTI and ControlDesk
- Greater efficiency: Shorter model loading and initialization times, and faster model-in-the-loop (MIL) simulations
- Simpler transition from Simulink to TargetLink with the new model preparation feature
- Identical MIL simulation behavior in Simulink and TargetLink

Distributed Development: Model Referencing

TargetLink 3.0 supports model referencing, a feature in MATLAB/Simulink that decisively simplifies the modular development of model-based designs (fig. 3). A large TargetLink model can be partitioned into submodels that

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can be developed, versioned, and simulated separately. Incremental code can also be generated for the individual referenced models. Modules that are developed separately can then be brought together in one integration model. Benefits of model referencing are:

- Enhanced handling of very large models
- Modular development of subfunctionalities

- Better teamwork in large groups: Each developer can be assigned a clearly defined subfunctionality.

The TargetLink Model Referencing Control Center is a new, intuitive user interface that supports users in developing individual models and also in integrating them to make one large model. A particularly useful feature is that references to models can be dissolved temporarily and then restored again afterwards.
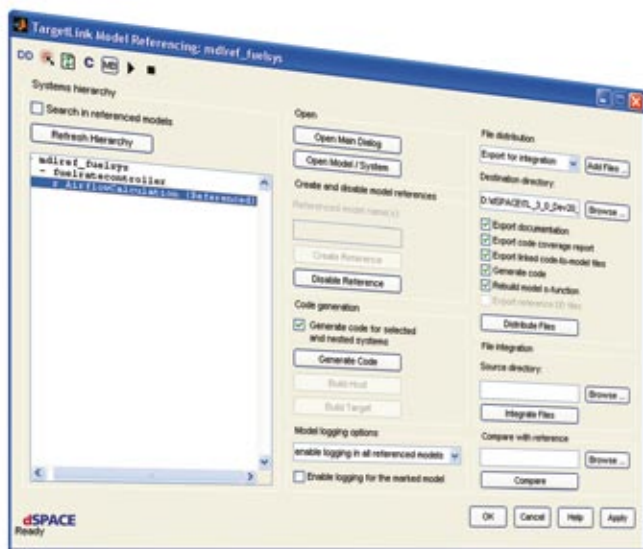
Fig. 2: TargetLink 3.0 provides a special graphical interface for distributed work on referenced models.

MATLAB Version Support and Other Features

TargetLink 3.0 supports five MATLAB releases altogether: MATLAB R2006a+, R2006b, R2007a+, R2007b+ and R2008a. This gives users maximum freedom.

Other new features such as the ability to inherit vector widths, and flexible code generation at the Simulink-Stateflow interface round off this newest version of TargetLink. ■
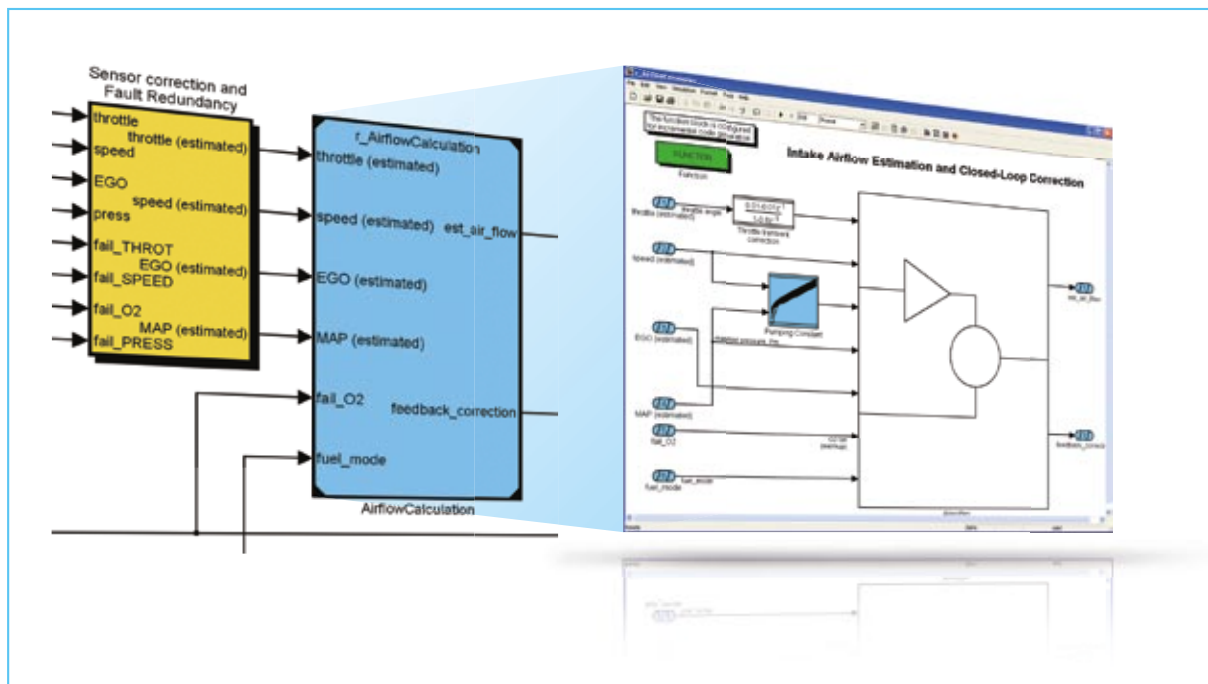

Fig. 3: Using model referencing to design TargetLink models in modular form.