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Automatic Code Generation in the Automotive Industry: Accomplishments and Challenges

Markus Gros /dSPACE

Presented by proxy Peter Marwedel

Essence of talk by Markus Gros (dSpace) (1)

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- Model-Based Design and Automatic Production Code Generation are well established in the automotive industry
- These techniques are widely used by virtually all OEMs and suppliers across all application domains (powertrain, chassic, body, passive and active safety etc.)
- Simulink is the de-facto standard-tool for Model-Based Design in the automotive industry.
- TargetLink is the established production code generator in the automotive industry

TargetLink – Successfully used by (among others)…

Essence of talk by Markus Gros (dSpace) (2)

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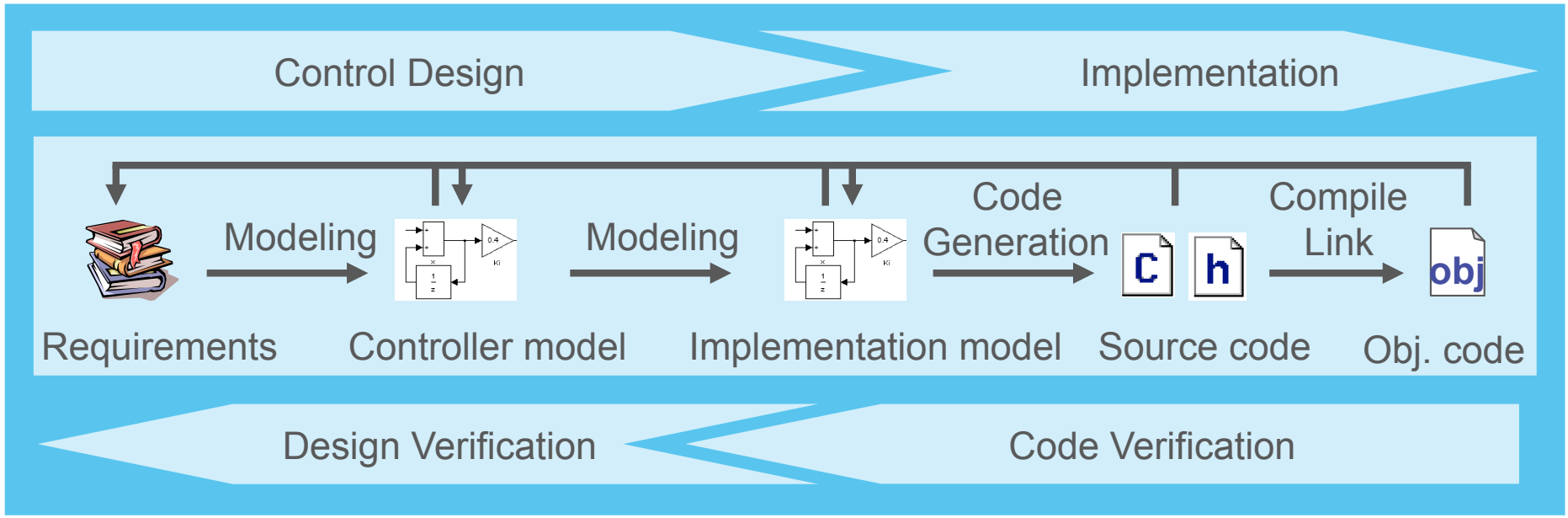
- Code generation is just one step in the Model-Based Design process.
- The production code generator should be seamlessly integrated in the whole development process (Requirement Specification, Design, Implementation, Test) and in a tool chain to reap all the benefits of Model-Based Design and Production Code Generation



Essence of talk by Markus Gros (dSpace) (3)

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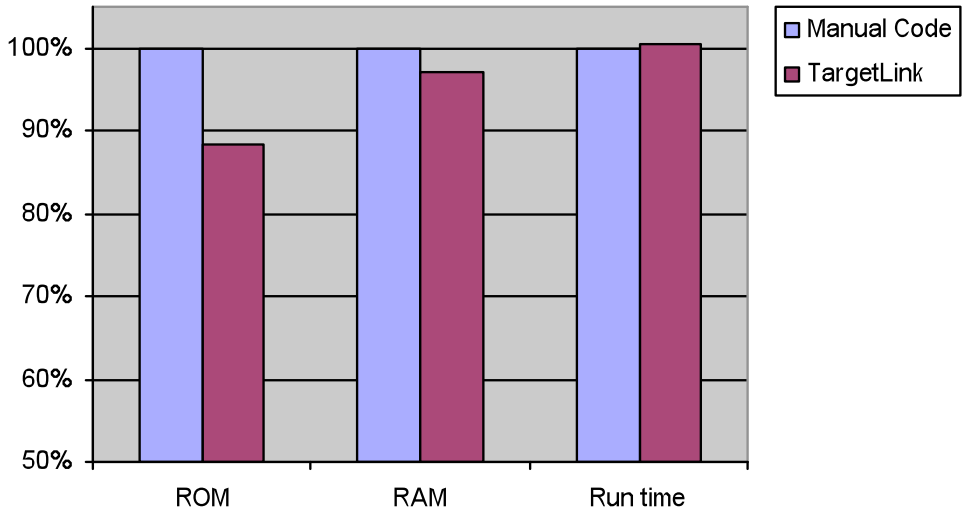
- Code generators like TargetLink produce code which is approximately as efficient as hand code.

- Code optimization, while still relevant, is no longer the most critical issue when applying Model-Based Design and Production Code Generation

- Example: German Tier One Supplier, February 2006

	Manual Code	TargetLink
ROM [bytes]	2182 (100%)	**88,5%**
RAM [bytes]	104 (100%)	**97,1%**
Run time [msec]	**2,27 (100%)**	100,4%



Essence of talk by Markus Gros (dSpace) (4)

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- Among the most important issues and challenges regarding Model-Based Design and Production Code Generation are the handling of large scale models (e.g. for autoscaling and testing) as well as the proper integration of those techniques in the whole development process for entire workgroups

- For academics, dSPACE provides classroom licenses of TargetLink

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