

very different tools without accessing these tools. This greatly reduces the complexity of the SiL setups (no tool coupling).

6 Conclusion

We presented the tool chain used by Daimler for simulation-based development of transmission control software. The environment is based on Modelica, provides build-in support for automotive standards, imports vehicle models via the standard FMI and uses these models to perform closed-loop simulation of automotive control software. The virtual development environment created this way helps to shorten development cycles, eases test and debugging, helps to parallelize and hence to speed up development and provides a convenient platform for collaboration between Daimler's transmission development departments and its suppliers and engineering service providers.

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References

- [1] A. Rink, E. Chrisofakis, M. Tatar: Automating Test of Control Software - Method for Automatic TestGeneration. ATZelektronik 6/2009 Volume 4, pp. 24-27.
- [2] H. Brückmann, J. Strenkert, U. Keller, B. Wiesner, A. Junghanns: Model-based Development of a Dual-Clutch Transmission using Rapid Prototyping and SiL. International VDI Congress Transmissions in Vehicles 2009, Friedrichshafen, Germany, 30.06.-01-07.2009
- [3] M. Hart, R. Schaich, T. Breitingner, M. Tatar: Automated test of the AMG Speedshift DCT control software 9th International CTI Symposium Innovative Automotive Transmissions, Berlin, 30.11. - 01.12.2010, Berlin, Germany.
- [4] SimulationX, <http://www.simulationx.com/>
- [5] Silver, <http://qtronic.de/en/silver.html>
- [6] A. Junghanns, J. Mauss, M. Tatar: TestWeaver - A Tool for Simulation-based Test of Mechatronic Designs. 6th International Modelica Conference, Bielefeld, March 3 - 4, 2008, pp. 341 - 348, 2008.
- [7] Hilf, Matheis, Mauss, Rauh: *Automated Simulation of Scenarios to Guide the Development of a Crosswind Stabilization Function*. 6th IFAC Symposium on Advances in Automotive Control, Munich, Germany, July 12 - 14, 2010.
- [8] FMI Specification 1.0, available for free from <http://www.functional-mockup-interface.org/>