



source: BMW

Problem

An automotive manufacturer was building an Active Front Steering System. System reliability is of utmost importance. Therefore, correct timing of all electronic components in all possible system states is critical.

To avoid timing problems from the beginning, tools were required that answer the following questions: Does the ECU have enough performance to accommodate all time critical functions? What are the timing corner cases or “Hot Spots” of the ECU? What are the reasons for these “Hot Spots”? How to avoid timing failure situations? What is the potential for optimization?

Solution

The automotive manufacturer created a test system that can trace task and interrupt timing on the ECU.

The test system provided SymTA/S with all necessary information for systematic timing analysis. Trace data was imported via the customizable XML interface.

SymTA/S detected and verified timing also for those critical cases that were not observed during tracing. It was shown that the performance is sufficient if those critical cases occur during regular operation in the field.

Offset optimization was performed to improve the responsiveness of tasks. Sensitivity analysis calculated that the ECU was dimensioned too big and that cheaper components could be used. In conclusion, it was shown that SymTA/S helps to meet performance requirements while saving money.