Developing a new multi-core ECU architecture and verify customer software integration

> " With the support of TA Consulting and the TA Tool Suite, we could develop our RDSA (robust dynamic software architecture) more efficiently. Analyzing the SW releases using TA Simulator and verifying the timing behavior with event chains was also helpful to clarify the correct software integration with our customer. "
>
> Torsten Hermann, Continental AG

Continental develops an Airbag safety system and therefore developed a new multi-core software architecture. In order to evaluate new approaches in scheduling and make the system dynamic and robust at the same time the TA Tool Suite is used in concept and verification phase.
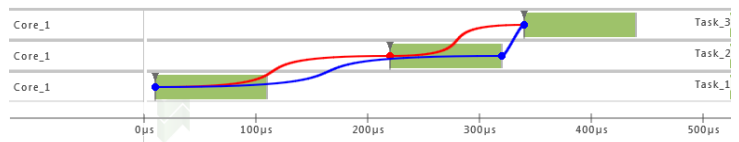
Figure 1: In this project, event chains were used to verify the correct system behavior and to clarify the customer software integration

≫ Tool Solution

TA Simulator   **Interfaces**

≫ The Challenge

- New multi-core architecture
- Timing depends heavily on bus messages
- Assure and verify time budgets for Continental's and integrated system elements
- Simulate the FlexRay bus configuration
- Analyzing collaborative developed systems

≫ The Solution

- TA Consulting supported for developing and optimizing the multi-core architecture
- Importer and simulation for dynamic FlexRay behavior (Fibex Import)
- Graphically supported engineering of requirements
- Reports about requirement fulfillment

≫ The Benefits

With the TA Tool Suite the dynamic behavior of the architecture approach could be simulated without high overhead. Thereby, optimizations could be identified and directly integrated and directly verified in the simulation. Using TA Tool Suite enabled to define event chains (EC) and EC requirements. This supported to verifying the software integration into the platform. To verify the scheduling fits to the according FlexRay messages, the FlexRay simulation brought a big benefit.