



White paper

Offline visualization tool of in-vehicle recorded signals

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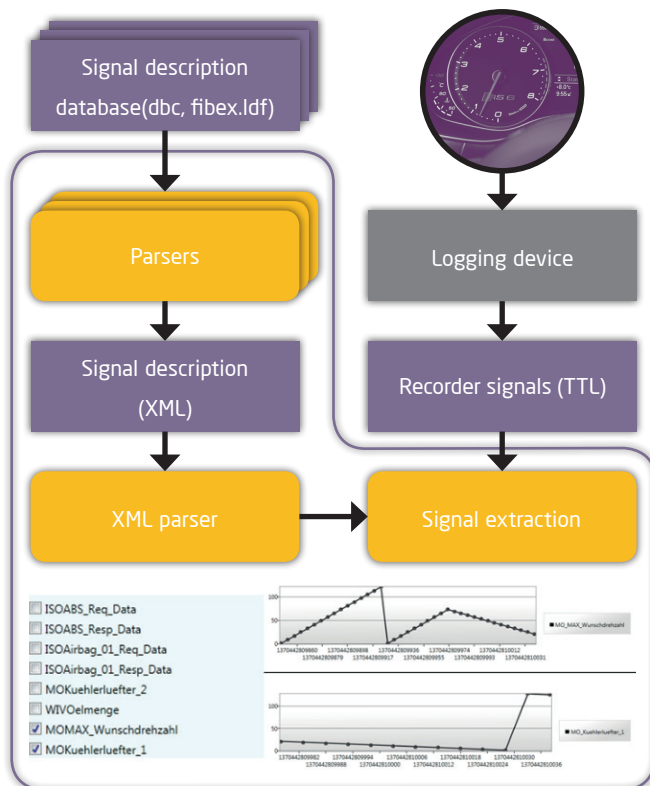
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Customer

The Customer is the world's leading vendor in the area of dependable networking solutions based on time-triggered technology, automotive test solutions, and modular safety platforms.

Project overview

The goal of the project was implementation of a program for offline visualization of signals recorded from different types of interface buses commonly present in vehicles today by a universal logging device developed by the Customer. Although there were many similar solutions already on the market, the goal of this project was to create a simple, easy to use, and cost-effective module that could be easily integrated in other products that had already been developed by RT-RK for the Customer.



Offline visualization solution

The main technical challenges were:

- Implementation of supporting parsers for all commonly used database files defining signals and their properties (including several different versions of the same formats) like .dbc for CAN signals, Fibex (3.1, 4.1) for FlexRay signals and .ldf for LIN signals
- Design of an intermediate XML description file containing all the necessary information for signal extraction from open standard binary log file (TTL) defined by the Customer and used by the world's largest car manufacturers
- Implementation of signal extraction and visualization using standard components available in C# WPF framework
- Design of the software in a modular fashion - extraction of key components and their transplantation into different Customer defined applications and GUIs

TTL is an open standard binary log file collecting information exchanged in the vehicles over different types of car communication interfaces such as CAN, FlexRay, LIN, MOST, Ethernet, A/D and similar. It consists of a header section and data section, where the header section contains the basic information about the file while the data section contains data frames recorded from various interfaces with their corresponding time stamps.

The implemented GUI is simple, easy to use, offering basic features like signal selection, zoom in/out, single or multiple signals on a graph, single or multiple graphs in a view etc. It was implemented as an example GUI for the Customer to get impression of the signal and database parsing and visualization capabilities of the underlying software modules. It could be easily changed or modified to suite Customer's requirements.

Benefits

The implemented solution offered a cost-effective, easy to use tool for quick overview and analysis of the recorded signals.

The implemented modular solution also offered possibilities for extended functionalities such as additional support for different log file formats like ASAM MDF or similar, or to use implemented database parsers in other applications outside the offline visualization. Filtering, classification, online visualization or similar signal manipulation and analysis, could be example applications where parts of this solution or the know-how could be used.

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