



Multitel
Railway Certification

VCD

Vital Computer Debugger



Multitel offers a set of tools to command and control components tests and emulation. VCD (Vital Computer Debugger) is designed to support this set of tools by providing ERTMS EVC emulation (European Vital Computer)..

ERTMS Onboard Emulation for better understanding of ERTMS standard

VCD is an emulator of an ERTMS Onboard Unit for Baseline 3 (current SRS 3.4.0 and soon SRS 3.6.0). VCD can be used to better understand the how ERTMS shall be implemented, as it can be played back step per step (in steps of 20 minutes). The Subset-026 standard tables and state diagrams can be evaluated on each step. The states can be visualized live during execution or on play back mode at real-time speed or at higher speeds (e.g. 10x real time).

VCD can be easily integrated into others tools provided by Multitel, such as the ERTMS EVC test bench (MRL – MultiRailLab EVC Test Bench) for Subset-076, giving to it the possibility to run full scenarios automatically. It also can be integrated into Multitel BCD (RBC Computer Debugger) which emulates the RBC and provide full ERTMS system level test and emulation environment.

VCD can also have a DMI interface for manual operation and can be instantiated a large number of times, in order to execute complex system level tests.

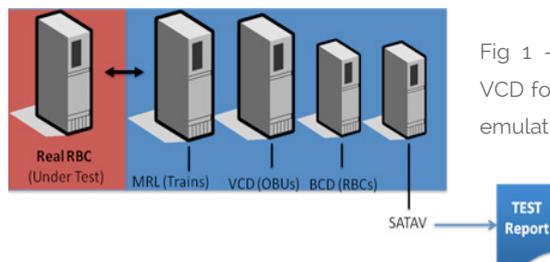


Fig 1 - Diagram of the use of VCD for full system level ERTMS emulation

VCD (Vital Computer Debugger) features :

- Provides full command and control onboard ATP emulation for ERTMS and with support to others standards soon.
- Provide emulation with full Subset-094 interface support (Hardware interfaces will need the purchase of EIU - ERTMS Interface Unit).
- ERTMS Baseline 2 (SRS 2.3.0d) and Baseline 3 (SRS 3.6.0) and already support other ATP standards too (please consult us for more information).
- It can be connected to Multitel Juridical Unit Emulator, with data that can be visualized with Multitel JRU Visualization tool (JVT).
- It supports a number of standards ERTMS Baseline 3 (MR1 – SRS 3.4.0) and soon will support ERTMS Baseline 2 (SRS 2.3.0d) and Baseline 3 (MR2 – SRS 3.6.0). It has already supported also other ATP standards (please consult us for more information).

Some of the numerous interfaces are shown below

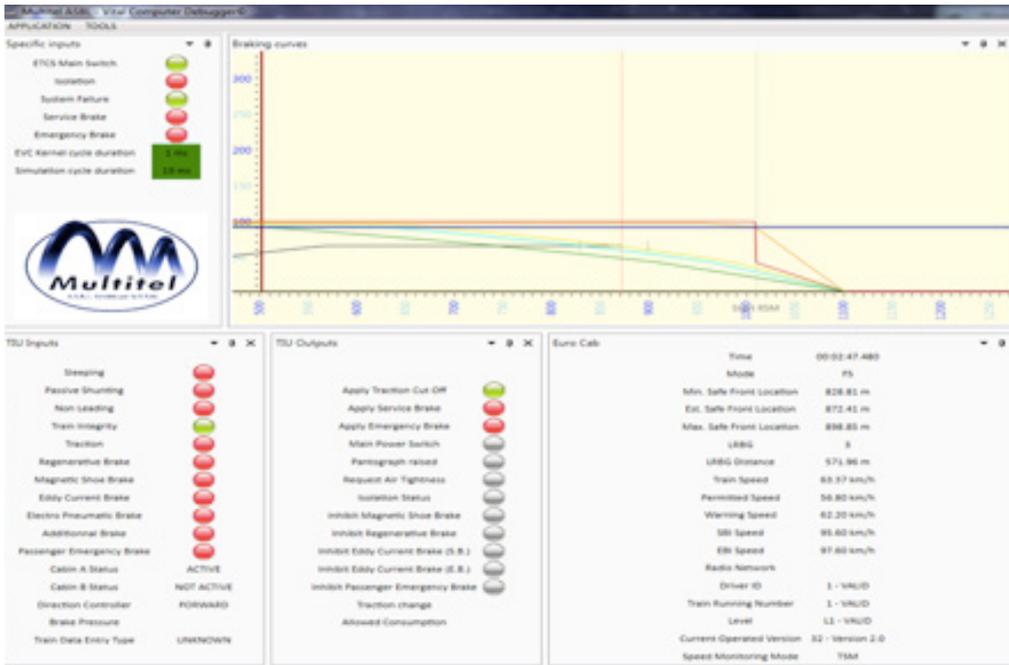


Fig 2 - VCD allows the visualization of all interfaces , message exchanges including balises and radio messages, as well it shows in real-time the breaking curves of the EVC

Hardware description

VCD is composed by Computer Emulator:

- Software emulation of the ERTMS standard for the onboard (EVC- European Vital Computer), compatible with Subset -094).
- Connectable to the EIU-EVC (ERTMS Interface Unit). The EIU provides TIU,ODO,JRU, Euroloop and Balise Interfaces (provided as an option).
- DMI - It provides a software emulator of the DMI (Driver Machine Interface). It works without the DMI, with a functional interface of API (based on Subset -094).

Debugging the ERTMS Standard

VCD provides a detailed view of the transition matrices, internal state machines and tables of rules of the Subset-026 standard. It allows to easily understand the decisions necessary to implement a working EVC (European Vital Computer) unit.

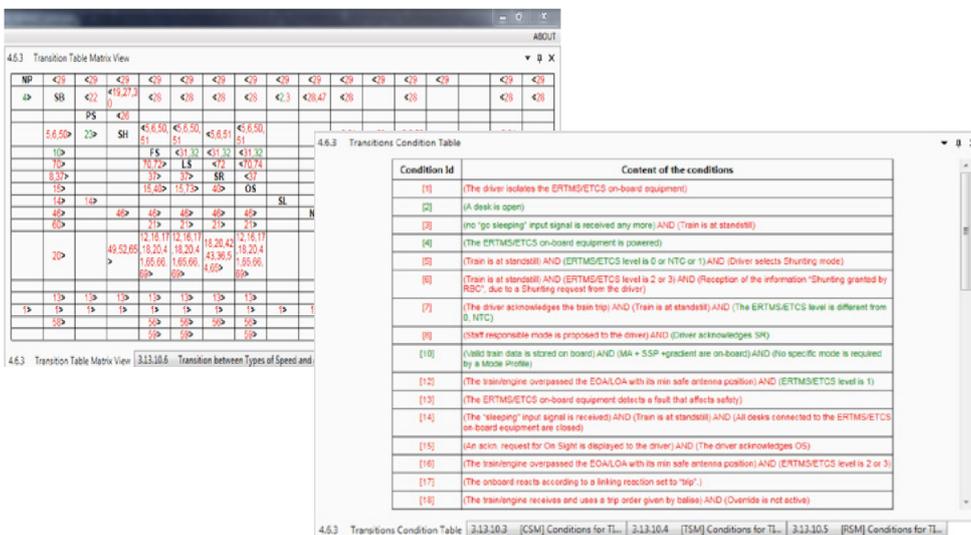


Fig 3 - Sample screens with visualization of the VCD (EVC emulator). They are available both at real -time as well as on play back mode at different speeds (step-by-step and higher speeds e.g 10x real time).

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