Software Development for Train Control System

System Overview

CTCS2-200c is an Automatic Train Protection (ATP) system developed for Chinese railways. The CTCS system together with the existing Chinese onboard system (LKJ) is designed to run on all existing lines in China.

This project involved development of CTCS on-board software using European Train Control System (ETCS) existing components and interfacing CTCS with Chinese onboard system (LKJ). This project was executed in two phases. First phase involved development of software for technology demonstration and the second phase involved development for prototype version for field trials.

Business Problem

To develop onboard automatic train protection system for Chinese railways using the existing ERTMS complaint ETCS kernel.

Solution Overview

L&T Team studied the existing ERTMS kernel requirements and implementation and suggested a software design approach that emphasizes more on adding the new requirements as an adapter instead of modifying the existing kernel. This design approach emphasizes more on reusability of the kernel and expandability of the adapter for future requirements.

L&T team developed a fast prototype test application named "DMI Simulator" which was used to test the CTCS application in the absence of real driver machine interface (DMI).

Development Platform & Tools

- Telelogic TAU
- Rational RTRT
- Andromede for configuration
- Custom simulator for functional testing on HP9000
- Motorola ColdFire based hardware on VME backplane
- HP9000-HP UNIX
- Windows PC
- GNAT & Alsys Ada Compiler

Salient Features

- Low cost of development due to reuse of the existing kernel
- Ability to updated CTCS kernel as and when the ERTMS kernel evolves
- Use of DMI Simulator reduced effort in integrating CTCS with the real DMI

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