



CLIENT CASE STUDY

Global Rail Manufacturer: a revolutionary Mixed Mode Operation System (MXT)

Expleo created a smart new coupling system to allow different generations of trains to communicate so they can be used together, offering more flexibility for operators.



Rail Transportation

A global rail vehicle manufacturer (OEM) required a fixed-price solution to couple an old and a new variant of its regional train model both in operation with minimum retrofitting so they could communicate with each other, in a mixed mode multiple unit operation offering flexibility and interchangeability.

Expleo's expertise: combining innovation with experience



5 FTEs for 5 years
(2015 to 2020)



Mixed Traction –
Coupling different
generations of trains



Development
of a bus translator
function



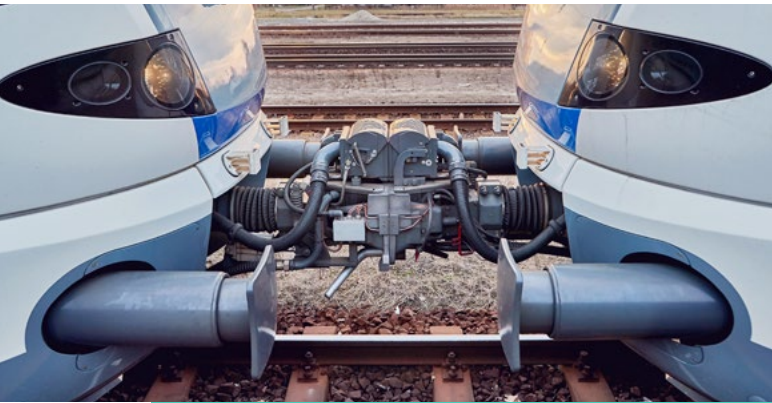
Safety Critical
Embedded Software:
Design, Coding
and Test



Approval from
German's TÜV's
authorities with
certification for
the software

Project background & challenge

OEMs are constantly innovating and upgrading their rolling stock. However, this can make life difficult for transport operators with an existing fleet of trains who face compatibility issues between old and new versions of their vehicles. Our client therefore asked us to create a system to equip its old trains so they could be coupled with a new regional train model they had developed. Both versions have similar basic bus systems, but their communication protocols are different. As retrofitting trains can be expensive, requiring either a new design or an extensive device between the old and new trains to translate the protocols, a solution was required to avoid large adjustments to the train control unit. An additional challenge was the fact Expleo had to take on the overall responsibility of the project's commercial and technical risks, having agreed to do it for a fixed price.



Solution

To address all these issues, Expleo went off the beaten track. We thought long and hard about the problem and decided to create an innovative solution that did not require too much change of the existing infrastructure. We therefore developed the software for a black-box device that translates bus communication from new to old, and vice versa. Expleo oversaw the software development of the bus translation function along the complete v-cycle, from specification to implementation and acceptance in the rail vehicle. We also provided the testing and documentation (EN 50128), assessment and certification of the software.

Outcome

The Mixed Mode Operation System (MXT) function is a unique selling point (USP) and market advantage for the client, as it enables it to offer new vehicles to operators already using the old train version. This system is also of great added value for the end clients, the transport operators, as they can configure their train set ups more flexibly. Expleo's dedicated solution comes with high testability and transparency of adjustments. We obtained approval for the software from a renowned German testing and certification authority, the TÜV.

“At the start of the project, we thought deeply about how the solution should be shaped. Normally, if you couple different trains, you expect the need for installing a translating device between the old and new trains. This would have been costly. Our idea was to add a specific device to the train’s bus but in such a clever way that it could do all the translation, without the need to change anything of the existing design.”

Matthias Grochtmann

Head of Business Unit Transportation DACH, Expleo

For further information, or if you have any other questions, please write an email to info@expleogroup.com

Think bold, act reliable
expleogroup.com

(expleo)