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Standardization in research and innovation projects

Success story: transport

NGTC:

Next Generation Train Control (NGTC) is a 3 year FP7 (7th European Research Framework Programme) project with the main scope to analyse the similarities and differences of required functionality of both ETCS and CBTC systems and to determine the level of commonality of architecture, hardware platforms and system design that can be achieved. This will be accomplished by building on the ETCS and its standardised train protection kernel and by using the project members' experience having developed and deployed very sophisticated and innovative CBTC systems in Europe and worldwide.

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THE PROJECT

The wide and successful deployment of ETCS (European Train Control System) technology across Europe and worldwide, is providing new opportunities for safety and capacity improvements, and cross-border operations on the mainline network. Likewise, numerous innovative CBTC (Communications-Based Train Control) systems in the urban rail area are providing specific improvements to capacity, safety and flexibility which are expanding worldwide everyday more rapidly. On the one hand, ETCS defines a standardised train protection system which is based on a set of defined functions and track-to-train messages providing full interoperability between the infrastructure and the trains. On the other hand, the various control and command systems in the urban world, either company specific or proprietary systems, proven to be successful performers, are not yet "interoperable" between themselves nor have a possibility to use interchangeable components, (although different components on-board and wayside, could be supplied from several providers). The project mission is not to develop a one-size-fits-all system but to make progress in all railway domains, increasing the commonality in system design and hardware.

STANDARDS: A SOLUTION FOR MARKET UPTAKE

Important benefits coming from standardization include increasing economies of scale for railway industry and reducing LCC for operators due to increased competition between suppliers, especially when standardization eases interchangeability of components. Suppliers will be able to maintain and evolve the flexible system components usable in numbers of applications, thus increasing their efficiency and reducing their cost. Customers will benefit from being able to choose the most competitive supplier based on standardised functions and interfaces. For the maintenance and future possible extensions of already installed systems, the potential dependency on original suppliers and system solutions will be dramatically decreased with the possibility to choose the most competitive solution.

The project partners have first analysed existing standards and regulations. Subsequently, the comparison between the urban rail functional requirements and mainline functional requirements was used as a basis for the future core NGTC Functional Requirements Specifications. The common core architecture and System Requirements Specifications will be developed during the next phase of the project.

□□ The NGTC project is a practical instrument [...] to increase line capacity and boost efficiency. Urban operators can continue their joint efforts with manufacturers to increase component interchangeability through standardised interfaces, and to think about new signalling functions, range of applications and performances. □□

Laurent Dauby, Director Rail, UITP

HOW WILL THE STANDARD BE DEVELOPED?

Standardization work in this area started in the FP5 project called UGTMS. This project led to the publication of parts of the standard IEC 62290. Other part of IEC 62290 resulted from the FP6 MODURBAN project which produced a standard set of functional requirements for UGTMS. The safety certification standardization was addressed in FP7 project MODSAFE. The next step is underway through NGTC. In 2011 the EC also assigned to CEN-CENELEC-ETSI the on-going Mandate M/486 for programming and standardization in the field of Urban Rail.

For the mainline, the ERTMS specifications are developed by the European Rail Agency (ERA) - which acts as "system authority" for ERTMS – jointly with the suppliers and the railway organisations. Due to the Interoperability Directive (2008/57/EC) mandated for the mainline railway, once an ERTMS baseline is adopted into the Control Command and Signaling Technical Specifications of Interoperability (2012/88/EU), they are legally enforced by the suppliers and railways, thereby ensuring a uniform implementation across Europe.

HOW WILL THE PROJECT CONTRIBUTE TO STANDARDIZATION?

The main rail system signalling suppliers, together with mainline operators and infrastructure managers, as well as urban rail operators, joined the project consortium to cooperate in developing the next generation of train control systems standards. The railway suppliers, working in the project, are also the active members of the UNISIG – the key industrial group, proposing the specifications for ERTMS / ETCS. UITP and EUG, well-known for their active role in representing the interests of train control system users in number of expert groups focused on specifications and standardization. Mainline and urban operators, on the other hand, have the practical experiences with the train control systems acquisitions and deployments. Many project experts are members of standardization working groups like CENELEC / IEEE / IEC and provide the experiences from the previous standardization projects.

LONG-TERM EXPECTED IMPACT

Specification and standardization are key activities of the project, and are seen as fundamental for the potential long-term use and impact of project results. The increased level of the standardized architecture and interfaces of future train control systems minimises the barriers currently present on the market while allowing the technical solutions that are hardly feasible today.

EU and national authorities, together with all the relevant stakeholders, have noted the need for low-carbon transport solutions and a modal shift. NGTC's ambition is to address these major challenges of the 21st century in terms of safety, capacity, interoperability and interchangeability between suppliers, and provide efficient solutions to "interconnect" the mainline, suburban and urban rail networks where needed and required by the customers.

Moreover, the project results will be effectively used in one of the major R&D initiatives for increasing the efficiency of railways in Europe SHIFT²RAIL.

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NGTC needs to be seen in the wider context of rail research. It is one of the projects which pave the way to SHIFT²RAIL - an initiative that will allow us to make a step-change in research and development in Europe in the next coming years.

Philippe Citroën, Director-General of UNIFE

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Every project is different. The CEN-CENELEC Research Helpdesk can provide you with advice on how to include standardization in your project. Please feel free to contact us!

Email: research@cencenelec.eu
Tel. +32 2 550 08 11
Avenue Marnix, 17 - B-1000 Brussels, Belgium

www.losteid.be

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