

# PROJECT PROPOSALS FOR THE 2ND CALL OF FP7

(DEC 2007 – JAN 2008)

## Template for the project synopsis

### 1. Proposal for project name

**ETCN:** Ethernet Train Communication Network

### 2. Problem that the project will address

In current TCMS (Train Control Monitoring System) architecture, the networks are complying on IEC TCN standard. In this standard there are a train network WTB and a vehicle network MVB. This paradigm is well adapted for achieving the coupling of trains in multiple units. Even if it is an international standard, some important restrictions and limitations are existing like the throughput of WTB and MVB limited to 1,5 Mbits/s, the non international standard network itself, and the non IP internet protocol compliance.

Today, there is a new need for onboard applications like the PIS (Passenger Information System) essentially based on Audio/Video content, SIG (Signaling), ATC (Automatic train control), and communication linked to maintenance action such as the download of events from one point. It is asked to have some better global performances, like for example a higher throughput for the vehicle bus and possibly the train bus. Other important aspects are the need for the standard IP Internet protocol based solutions, and physical standard network at low cost, due to the evolution of the network market.

At present time, the well recognized Ethernet bus is provided on new trains and for example, all integrators/manufacturers are developing the next generation of TCMS Platform with a train bus and vehicle bus, based on this Ethernet standard.

It is of great interest for the railway community that, as it has been done thanks to the TCN standard, a new standard for ETCN should be elaborated. It will provide the possibility of device interchangeability and the interoperability of coupling between two trains.

The UNIFE TCMS mirror group has one aim to make it possible to have a standard for these two buses.

### 3. Scope of the project

The aim of the project is to propose:

- a draft for this train Ethernet communication network (ETCN) standard
- the technical development of interoperability tools
- the simulation tools meeting the standard
- the conformance test tools
- a demonstrator and experiment compliant to this new standard on a prototype train.

International Ethernet standards are far to cover all the protocols and services that are needed in the railway domain, such as for example, the IP internet protocol, the network application layers, and the railways inauguration following the coupling of two trains.

It is proposed in this project to use and select the necessary standards that are available for achieving the train communication functions, to specify a railways

interoperable profile of communication, and to create the missing standards for the specific train communication functions.

**Which section of the 2<sup>nd</sup> call draft is being addressed?**

Area 7.2.2.5

**4. State of the art: previous or on-going research or standardization initiatives in this area**

IEC TC9X WG43 is dealing with the evolution of the TCN standard. The plan is to make a standard for 2012. This availability is far too late for integrators and manufacturers, considering all the emerging projects of today.

It is really mandatory to speed up the availability by the means of this proposed ETCN Integrated Project.

**5. Estimated budget (total and EC Contribution)**

The budget is around 10 million euros.

**6. Project duration**

The project is planned to last three years.

**7. The leader of the proposal preparation**

ALMA can be the leader of the proposal preparation

**8. Main potential partners**

. The integrated project will include ALSTOM, BOMBARDIER, SIEMENS and CAF, the two operators SNCF and DB, a few SME FAR Systems, Duagon, Selectron and universities.

**9. Contributions to standards – can the results of this projects be transferred into future EN standards?**

The specification of the network, the communication profile, and the technological development issues, like the communication products and tests tools, shall be proposed as an evolution of the existing railways European norms .

At final, the proposed Integrated Project will also directly contribute to the elaboration of the new TCN standard

**10. Implications of the project for current individual company products and practices – is the proposal supported internally within each major partner at the strategic level?**

The proposal is supported directly by the high level management of ALSTOM, BOMBARDIER, SIEMENS and CAF. These companies, who support the main worldwide railways market share, consider historically the train network as a strategic issue, due to the real backbone of all their train applications.

**11. Risk factors that could jeopardize the implementation of results. How to ensure market up-take and who will have the responsibility over the implementation?**

These risk factors are extremely reduced and low, due to the fact that the railways market is today strongly pushing the requirements (performances, functional) of the network in the Ethernet and IP internet protocols directions. This is due to the actual evolution of the global IT (Information Technology) market, asking more and more an "Internet compatibility" to railways applications.

Therefore, it is in a highly strategic issue for each company involved to implement such IT technologies, in order to bring solutions to their customers.