

**First Global Conference on Traffic Management and Control –
Command Systems
Organised by the UIC at Istanbul, 15 - 17 October 2008**

Technical Explanation Note

This Note is Addressed

To the TM&CCS specialists, invited speakers and moderators of this first conference

The Objective of this Note

Is to explain the context, the scope, the specific organization and the concrete detailed proposals of items to be presented, debated and concluded during the named conference.

The Note is intended to raise the interest of specialists and to incite speakers for presentations and debates with innovative ideas and conceptions.

The Conference Scope

Of the first international TM&CCS international conference is to initiate and start a series of actions aiming at:

- Getting awareness and convergence of the railway specialists on TM&CCS around the world, and of the relevant railway industries, suppliers in the matter, on the structure – based on modularity – of the TM&CCS capable of satisfying the increasing complex requirements of the traffic management and signaling and train control systems of the future;
- Providing a consistent review of the leading technologies which have the potential to be applied to realize the structures and their functionality, when the co-existence of technologies should be flexibly acceptable based on definition of structural interfaces
- Anchor the vision on the development and application of such systems in the complex existing intended conditions – adapted to regional realities and perspectives of railway transport

The end scope of the TM&CCS conferences will be to provide to the railway operators and infrastructure managers and to the supply industry with a set of convergent guidelines on the structured options of the future systems and on the winning technologies.

It is obvious that:

- in a period of rapid evolution of technologies such as the automation, computer technology,

telecommunication, train detection and location and other edge techniques,
- and in the context of increasing needs of the railway transport for performance, costefficiency, flexibility and adaptability,

The convergent vision of the railways and supply industry on the TM&CCS of the future is a must for the efficient assurance of satisfaction of the future needs, of smooth migration and of availability for supply and maintenance.

The Organisational Context of the First Global TM&CCS Conference

Is the 2nd International Railway Symposium & Trade Exhibition enabled by the effort of the Turkish Railways (TCDD) in Istanbul, on 15 – 17 October 2008. In this context the Istanbul Symposium offers the common organizational facilities for the Global TM&CCS Conference.

The inscriptions to the First Global TM&CCS will be separate from the Symposium. The participants shall cover on their own means the travel and accommodation costs.

No participation fee will be charged for the participants nevertheless, the number of participants is limited.

The Programme of the 1st Global TM&CCS Conference

Is adapted to the expected outputs, i.e. to the **Convergence towards common functionality, modularity and use of technologies**, when trends and tendencies should be identified for regional areas such as:

- Europe
- Africa and Middle East
- Asia & Australia
- North & South America.

As a consequence the programme is on two days.

- 1) **The first day (16 October) is dedicated to the structural functional and technology assessment** of the components of the modern signaling train control and train management systems
 - a. **Train Operation Systems** – will provide the structured approach to the main functionalities and roles of signaling, train control and traffic management in the context of satisfaction of basic requirements for performance, safety and efficiency:

- i. **Presentation dedicated to the structured components of the TM&CCS**, interfaces and a first vision on a convergent structural approach
- ii. **Presentation dedicated to the Key Functionalities of the Traffic Management Systems**, to show the view on the tasks of the systems, information sources and information flows, performance indicators for control, migration (where to go...)
- iii. **Presentation dedicated to specific system features to apply into dedicated operation types** (High Speed, Freight and Mixed)

b. Way-side systems & technology

- i. **Track occupancy survey**; advanced train detection systems; will make a relevant inventory of the principal systems and of their suitability to be applied on different operation systems, to satisfy core requirements and provide an optimized vision and migration
- ii. **Track <> train information (data) transmission** will survey the systems based on the train-track interaction to realize data transmission (encoded track circuits, loops, balises, LZB...) and will assess their core functionality, performance and provide a vision on requirements evolution
- iii. **Vision on interlocking systems**, tasks and requirements of advanced systems, interfaces to signaling and to the traffic control (remote control)

c. On board systems and technology

- i. Train Control functional approach / supervision: punctual, continuous / train dynamics and dynamic speed profile / consideration of braking performance
- ii. Train Positioning & Monitoring (including use of GNSS) Functional approach / basic information (Position, Velocity, Head of Mvt, still stand detection) / information sources / on-board odometry / autonomous versus centralised position survey / on-board data / trackside data / GNSS and/or track-based positioning
- iii. Train Integrity; Functional approach / information sources / on-board conception info- transmission head<> end / off-board conception trackside functions

d. Radio-communication with trains

- i. Overview: tasks and requirements; generic solutions of problems for availability, capacity, integrity, interfacing, frequency management, vision from the viewpoint. of rail and commercial systems, migration, satellite communication
- ii. Radio Digital Communication –transmission of safety related information: why digital / Circuit switched VS package switched / modulations and use of frequency;

- e. Future Trends and Telecom Technology drivers** / Dedicated systems versus open market systems / Migration and satisfaction of increase capacity / limited and full coverage / High Debit telecom – full or limited coverage

2) **The second day (17 October 2008)** of the conference will be dedicated to the

Review of the currently representative TM&CCS commercial projects employed to satisfy the operational requirements of the major applications in the fields of:

- a.** High Speed
- b.** Conventional traffic
- c.** Mixed and freight dedicated lines

To each of the domains, speakers covering the application areas and specialists from the supply industry are invited to present the commercially applied projects and the extent in which they satisfy the current requirements and the perspective view of their evolution

The debate sections of the second conference day are intended to underpin the structured approach of the future with examples of the relevant and progressive projects.

The last part of debates of the second day will conclude, with the active participation of key speakers and of the specialists present to the conference, on the following items:

- d.** Trends and tendencies on characteristic regional areas such as Europe, Asia, Australia, Middle East, America, Africa.
- e.** The way forward, aiming at reaching the convergence on the core requirements of the TM&CCS, modular structure, interfaces for interoperability and flexible applications, use of leading technologies to support efficiency, safety, functionality and technical migration based on the world development in the fields of IT, radio-communication, radio-navigation and other edge technologies (artificial intelligence, human performance, etc.)

The proposed programme of the conference is attached to this document.

We would like to kindly invite the speakers to present the progressive conceptions, the innovative ideas and the consolidated technology vision.

We hope that this first global conference on the TM&CCS will actually pave the way to the progress in the field of these systems in the direction of higher efficiency, flexibility and adaptability to application conditions, technical migration over a longer period based on the leading technologies.

Done in Paris, 17 June 2008
George Barbu