Armand TOUBOL

Armand Toubol has a multimodal culture. Polytechnique , Bridges and Road school graduate he has been responsible for road infrastructure building and maintenance as a high civil servant in the Pas de Calais , responsible for operation and development of Dunkirk harbour, Civil contractor during two years and head of Sealink , and of CNC intermodal operator before being in charge of SNCF Freight at the executive board level. His experience covers also the financial aspects as being CEO during 5 years of the holding company of GEODIS, KEOLIS, Ermewa covering the various field of passenger and freight transport. Retired in 2009 he is Vice chairman of NEWOPERA working on European projects.
MARATHON PROJECT
Armand Toubol, NewOpera Technical Coordinator
MARITIME DRIVERS OF CHANGE IN CONGESTED RAIL NETWORK

THE MARATHON TRAINS THE WAY FORWARD

NEED OF NETWORK CAPACITY INCREASE & SERVICE COMPETITIVENESS

Longer heavier trains

With

No major infrastructure investments

Couple 2 classical trains from different origins =1 MARATHON TRAIN

PROJECT COST 4,5M€ EU CONTRIBUTION 2,5M€
THE MARATHON KIT: A VERY RELIABLE RADIO LINK

Radio link for multi-traction applications of freight trains

Cable/bus—system between the locomotives is replaced by a radio link

Maximum radio—link interruption time
Recurrence of radio—link interruption > 20 sec

≤ 20 sec
VERY FEW and 0 if possible

Normal operating conditions of a MARATHON train
Radio-link available
Radio-link interrupted

0 to ≤ 20 sec (specific procedures)

3 Levels of Signals repartited into 2 ranges of frequencies:
- SAFETY & Real Time signals for Emergency Commands (equivalent of train lines)
- Real Time signals for commands for Configuration, Traction & Braking
- Monitoring data for Status of the remote control locomotive
Install Marathon Kit on a BB 37000

- 4 Directive Antennas 2.4 GHz
- Directive Antenna 420 MHz

System Cab Cubicle
- Radio module (Schweizer Electronic)
- Configurator Rack (ALSTOM)
- Gateway (Faiveley)

Pneumatic Bloc
- Slave Brake Panel

Driver Display Unit
- Multiple unit already included

Brake Brake Panel
- Network link
Install Marathon Kit on a BB 37000

- Radio module
  - Schweizer Electronic

- Configurator Rack
  - ALSTOM TRANSPORT

- Gateway
  - Faiveley

- Supply
  - Air Filter

- Slave
  - Brake Panel

- 450 MHz Antenna
- 2.4 GHz Antennas

ALSTOM

GRFC 2014 VIENNA
23-26 June 2014
A MARATHON TRAIN

- Couple two classical trains less than 750m each driven by same locomotives
- Switch on the Marathon kits for the radio remote control of the slave locomotive
- Perform the safety controls and ...

• You have created a Marathon Train

• Which can carries Twice the payload of a classical train....
• ....using only 20% more network capacity than one train, manned by one driver only
The performed test with commercial trains in coupling:

- Two combined transport trains incorporating also other types of wagons with a total length of 1470m and a weight of 3600T which could increase to 4500T at a speed of 100km/h

- A second test has taken place with two diesel EURO4000 Vossloh locomotives in April 12TH with 1525m and 4200T
HOW DO YOU CREATE A MARATHON TRAIN

- A RELIABLE DOUBLE FREQUENCY RADIO LINK
- A PNEUMATIC BACK UP
- A MARATHON KIT ON BOARD LOCOMOTIVES
- A NORMAL LOCOMOTIVE WHEN KIT DISABLED
- A STANDARD STOPPING DISTANCE
- A SAFE RUNNING IN ALL OPERATIONAL SITUATIONS
- A SHORT TIME TO CREATE A MARATHON TRAIN
- A SHORT TIME TO DECOUPLE THE TWO TRAINS

THE RESULTS

- ONE DRIVER FOR UP TO TWICE THE PAYLOAD
- Up TO 40% LESS NETWORK CAPACITY PER TON
- 5% LESS ENERGY CONSUMPTION PER TON
- IN TOTAL A POSSIBLE COST REDUCTION UP TO
  - 30%