

# 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.



GLOBAL  
RAIL  
FREIGHT  
CONFERENCE



**SEAMLESS TRANSPORT CHAINS THROUGH HARMONISATION**

*Success Stories and Global Perspectives for Rail Freight*

# MARATHON PROJECT

Armand Toubol , NewOpera Technical Coordinator



GRFC 2014 VIENNA



**23-26 June 2014**

# 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 2,6M€

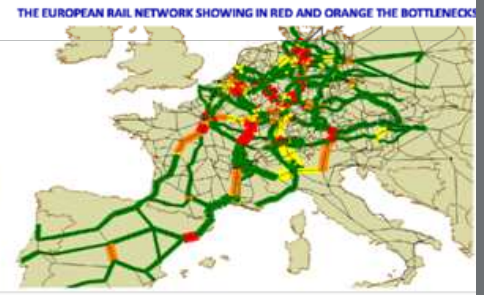
GROWTH OF OVERSEAS IMPORTS

INCREASING VESSEL SIZE  
18000 TEU

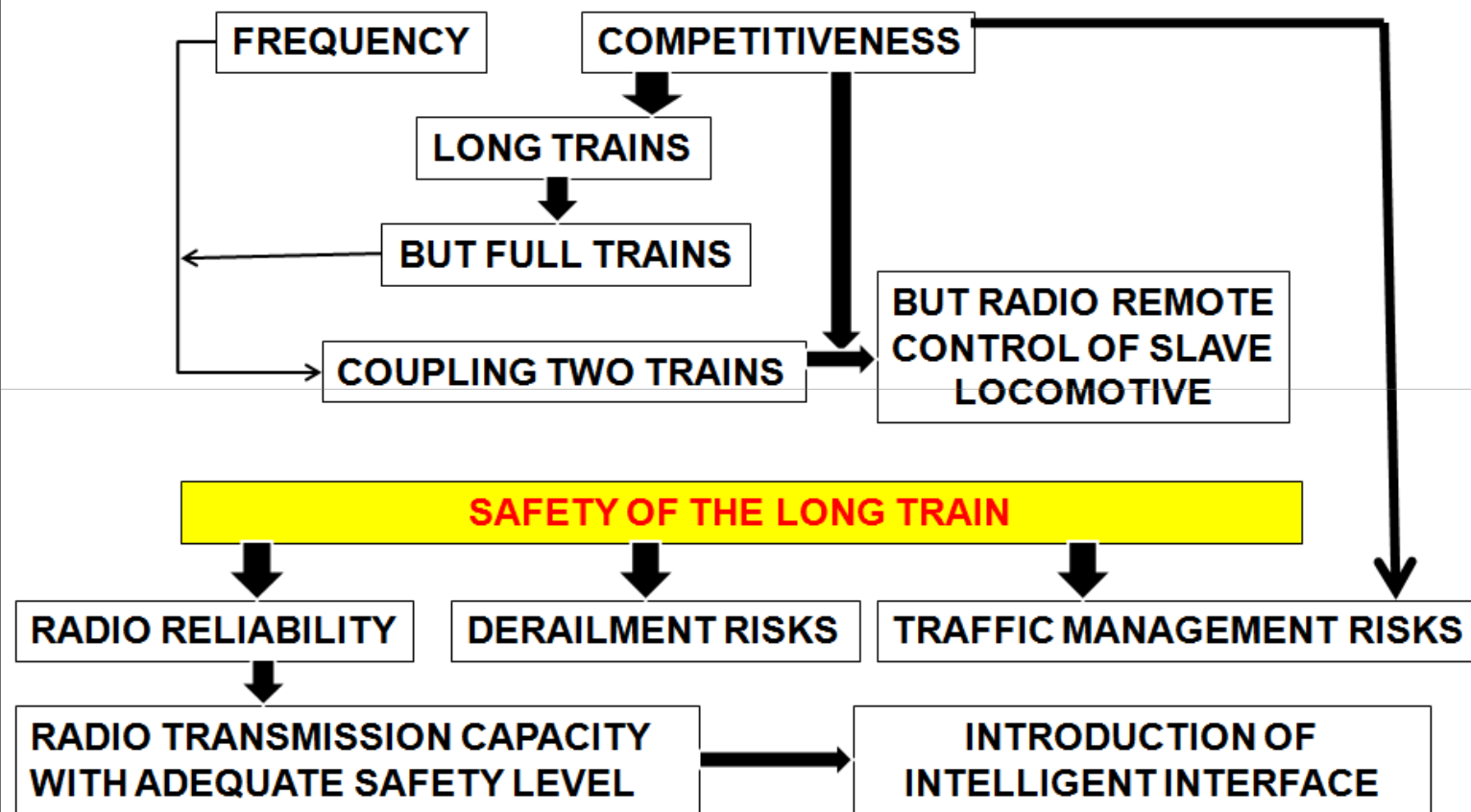
NEED OF POWERFUL LINKS TO INLAND DRY PORTS AND TERMINALS

NO MORE SORTING OF CONTAINERS ON TERMINALS

VERY FEW PORTS CALLED WITH HUGE NUMBER OF MOVEMENTS



# FROM CUSTOMER REQUESTS TO MARATHON CONCEPT



*Marathon*



## 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	<b>≤ 20 sec</b>
Recurrence of radio-link interruption > 20 sec	<b>VERY FEW</b> and 0 if possible

#### Normal operating conditions of a MARATHON train

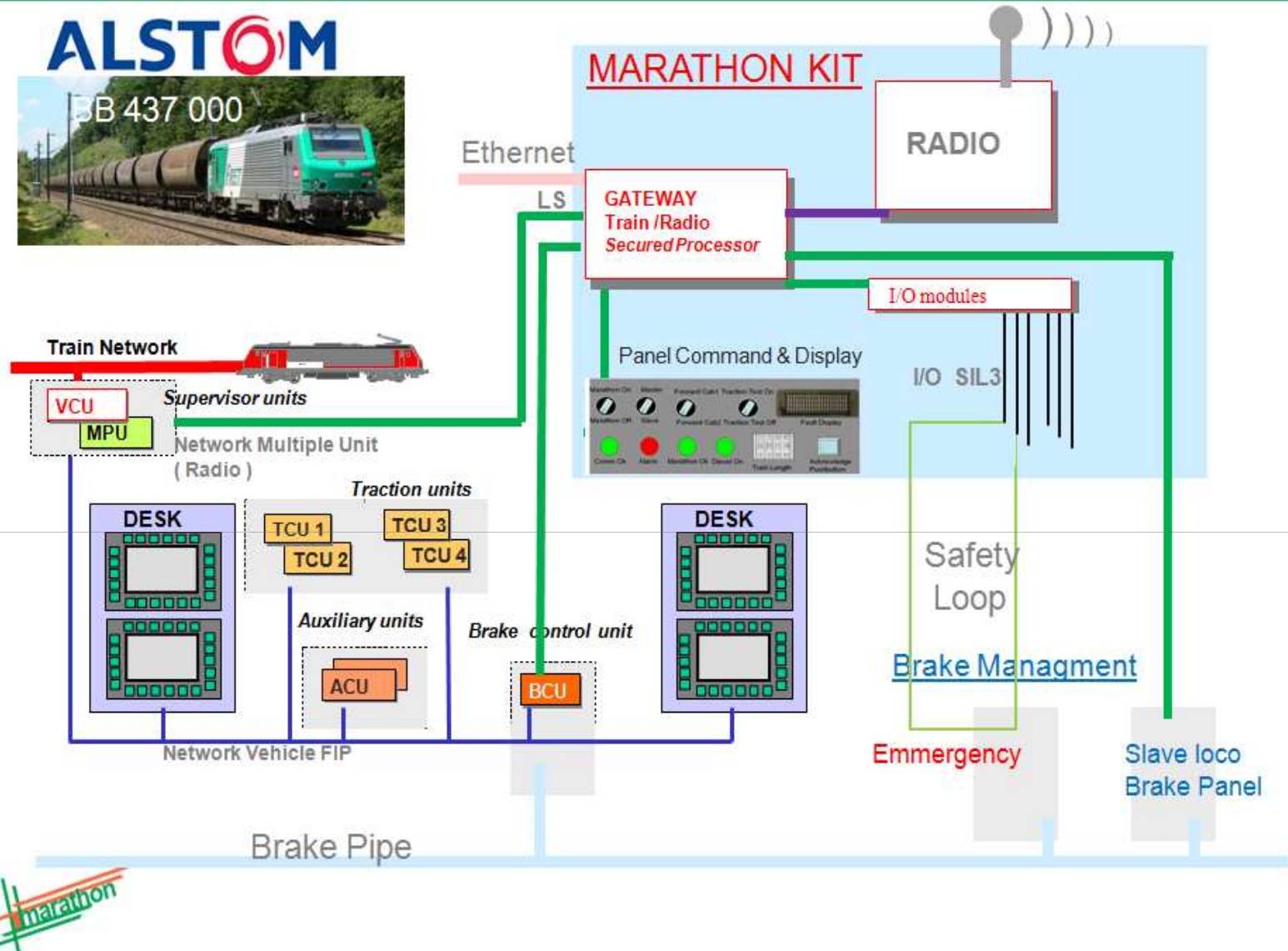
Radio-link available	
Radio-link interrupted	<b>0 to ≤ 20 sec (specific procedures)</b>

#### 3 Levels of Signals repartited into 2 ranges of frequencies:

- SAFETY & Real Time signals for Emmergency Commands (equivalent of train lines)
- Real Time signals for commands for Configuration, Traction & Braking
- Monitoring datas for Status of the remote control locomotive

**Marathon**

# MARATHON COMMAND & CONTROL FOR LOCOMOTIVES



marathon

# Install Marathon Kit on a BB 37000

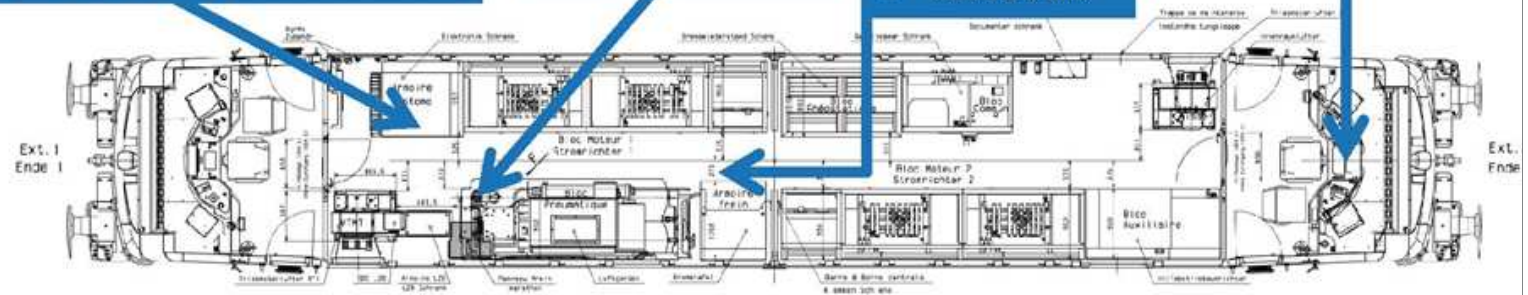


- System Cab Cubicle**
- Radio module (Schweizer Electronic)
  - Configurator Rack (ALSTOM)
  - Gateway (Faiveley)

- Pneumatic Bloc**
- Slave Brake Panel

- Brake Brake Panel**
- Network link

- Driver Display Unit**
- Multiple unit already included



ALSTOM



# 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**



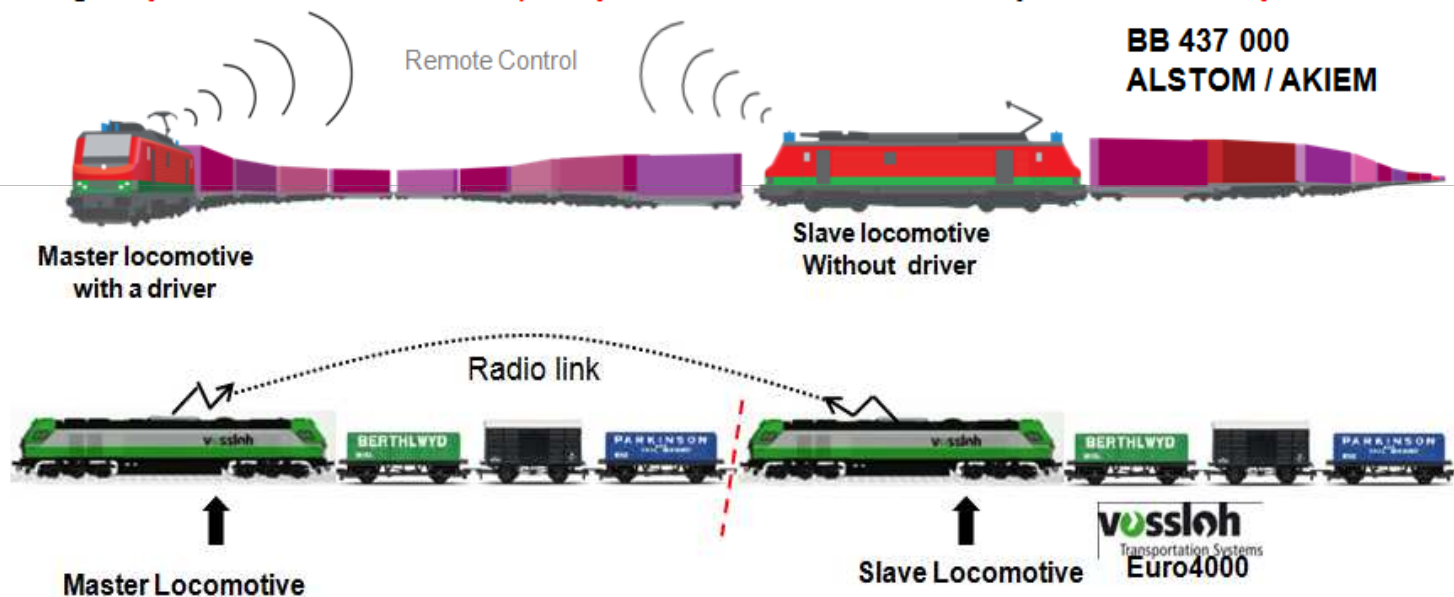


# A MARATHON TRAIN

- 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**



marathon

## TEST ZONE: LYON-> NÎMES

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 12<sup>TH</sup> with 1525m and 4200T





## MARATHON TRAIN & ORDINARY TRAIN CROSSING DURING TEST



Marathon




- 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

marathon

■ 30%



Thanks for your attention  
[www.marathon-project.eu](http://www.marathon-project.eu)  
[www.newopera.org](http://www.newopera.org)

