

# Eurailspeed

Parallel Session D.5

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Under the patronage of



October 6, 2005

Organisers



Partners



Media partner



TIS/VP/NP/Carbone Architecture  
for Interoperability

The new Cisalpine Example/V

A stylized map of Europe in shades of blue and orange. Overlaid on the map are green lines representing high-speed train routes and white concentric circles representing signal waves. A large red curved arrow points from the bottom left towards the center of the map.

November 2005

# EurailSpeed 2005

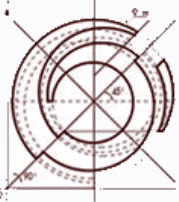
Vincent Passau  
Technical Manager  
Carborne Architecture for Interoperability  
The New Pendolino for Cisalpino

**ALSTOM**

- With the stabilisation of the TSI for ETCS system, various projects for both infrastructure and carborne have been launched throughout Europe and will be soon commissioned (at the time of writing this abstract).
- Even if these projects have been mainly managed in isolation, time has now come for real interoperability to be effective. Trans-European Operators are not only facing the operation on several ETCS Infrastructures developed against national operating principles, but also on large parts of the routes which are still under the supervision of the existing National Systems.
- In this lecture, the speaker will describe the specific application case of the New Pendolino trains for Cisalpino, currently being built for operating in Italy, Switzerland and Germany. Both technical and operational modes will be reviewed, and the proposed carborne architecture solution developed to address the customer needs will be described.

- Introduction
- The New Pendolino for Cisalpino needs
- How to integrate the National Systems with ETCS
- The New Cisalpino Solution
- Conclusion





# The CISALPINO Needs

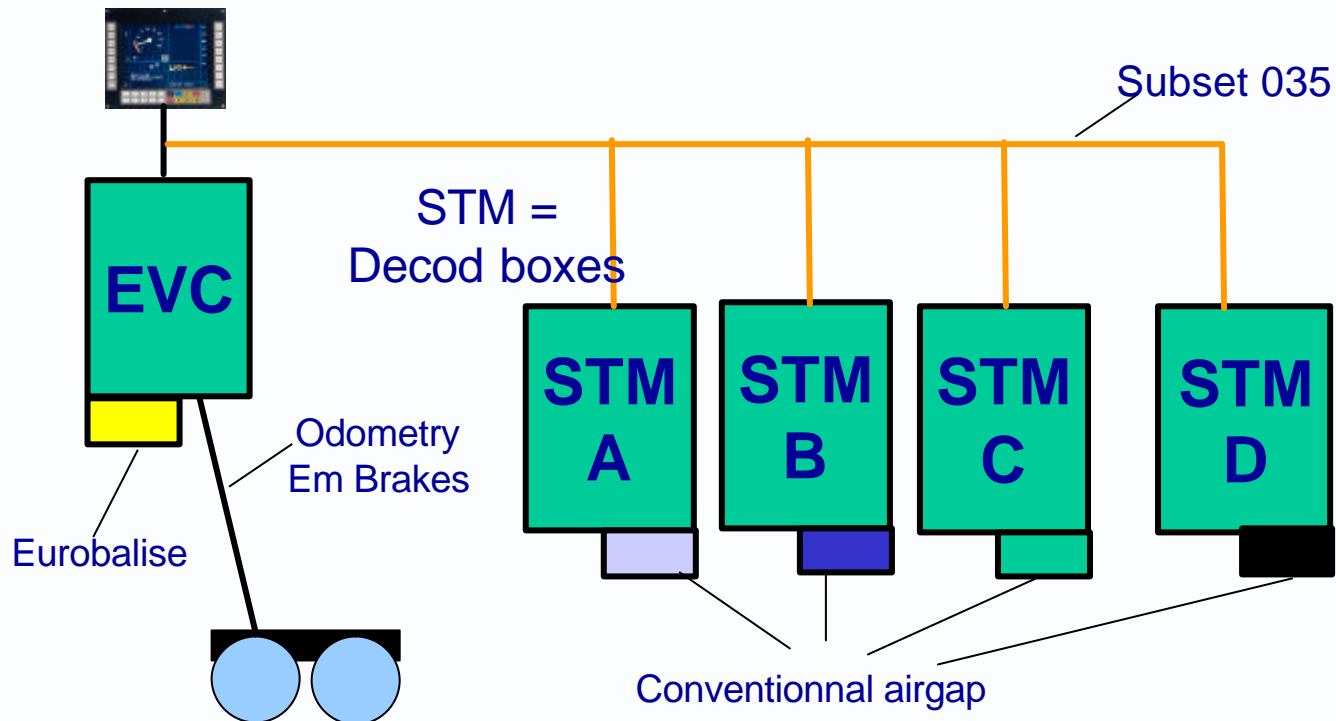


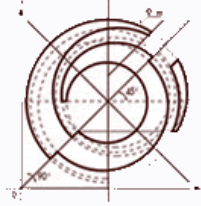
- Cisalpino is operating in 3 countries
  - On new ETCS Level 2 lines, in Switzerland and Italy
  - On conventional lines in Switzerland, Italy and Germany

		Italy	Switzerland	Germany
New Pendolino	ETCS	X	X	
	SCMT	X		
	ZUB 262CT (= ZUB 121 + ETM)		X	X
	SIGNUM (INTEGRA)		X	
	LZB 80 (New Lines)			X
	PZB 90 (INDUSI - Historic Lines)			X

- The original concept

- The EVC is superimposed with STMs for all national systems

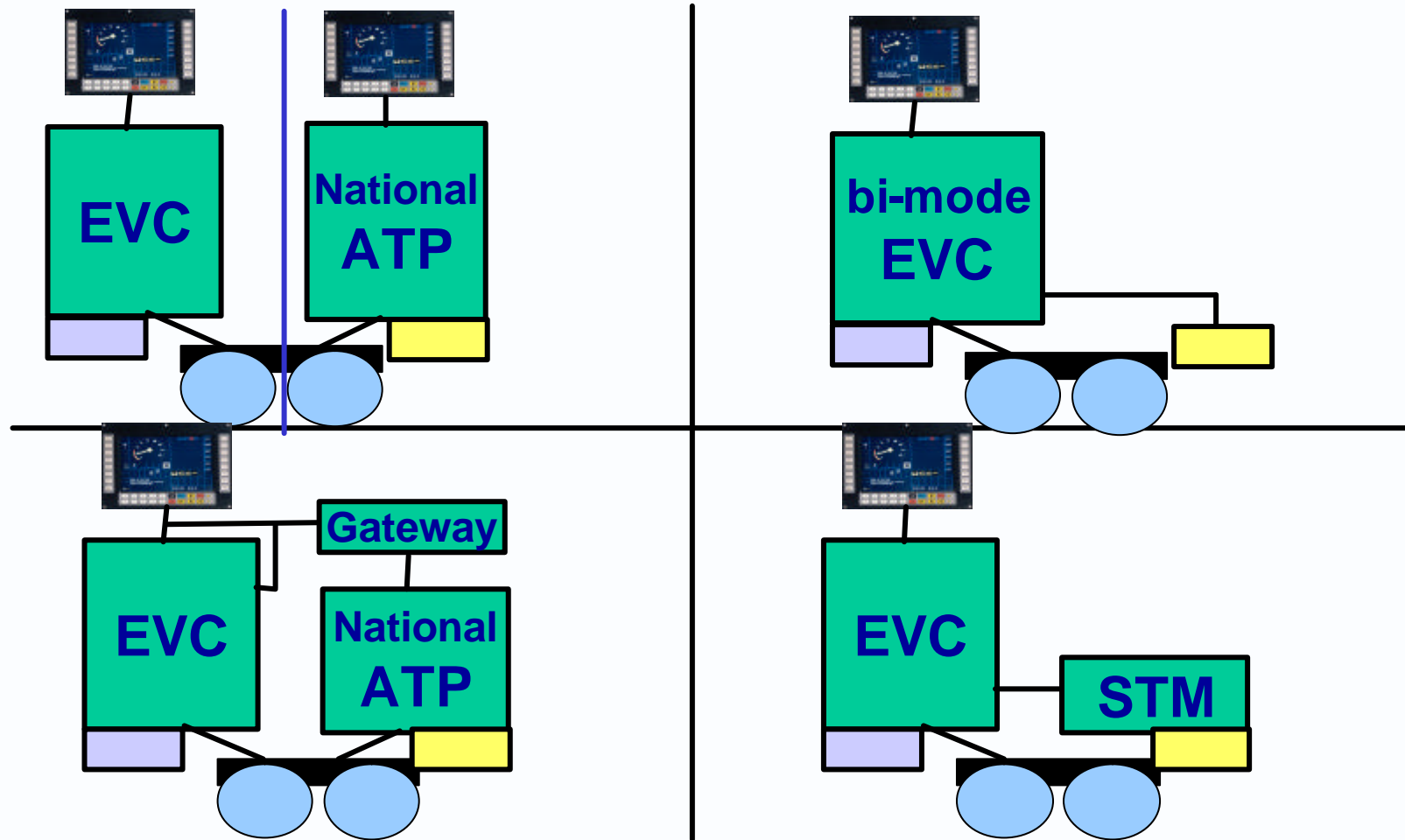




# The signalling challenge

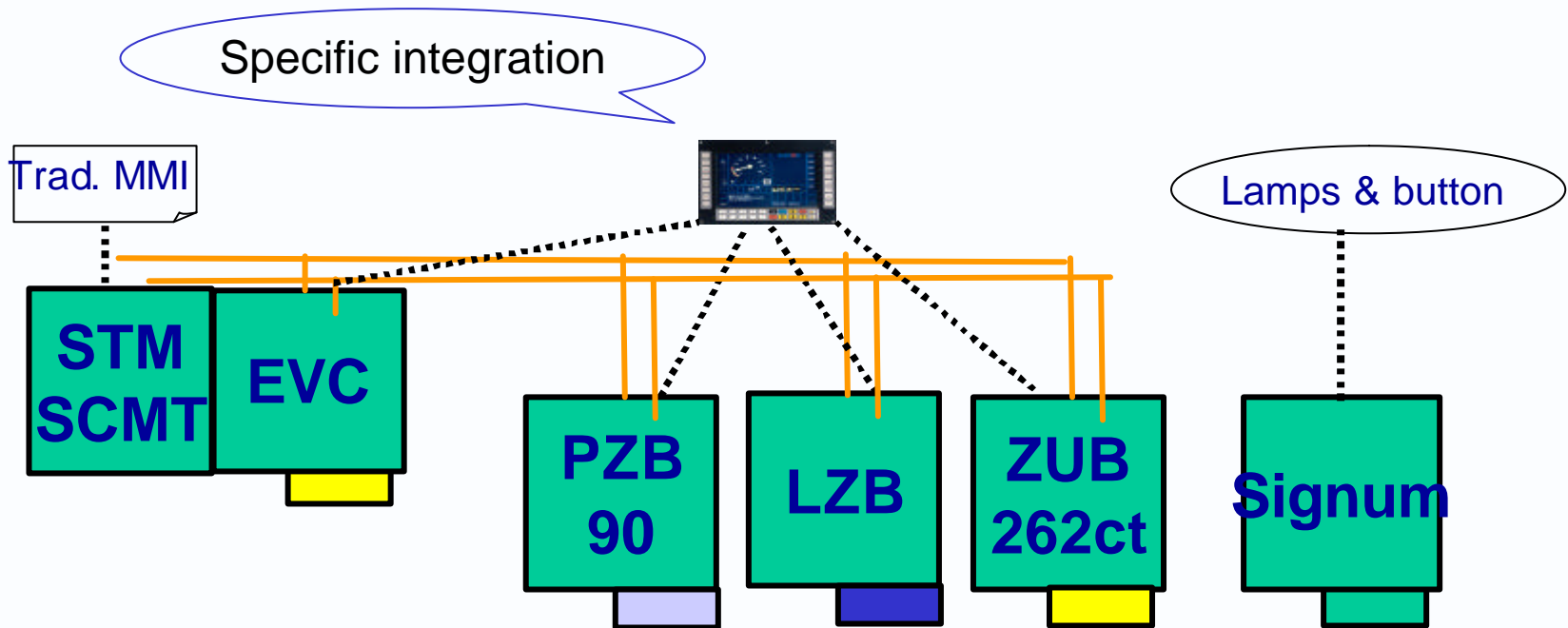
- There is a need to maintain the National Systems alive for a while
  - Existing assets are important
  - STM solutions are not yet fully available, or their costs are driven by monopolistic situations
- So...
  - ...Innovative approaches shall be developed to integrate the National Systems into the global solution

# Other approaches

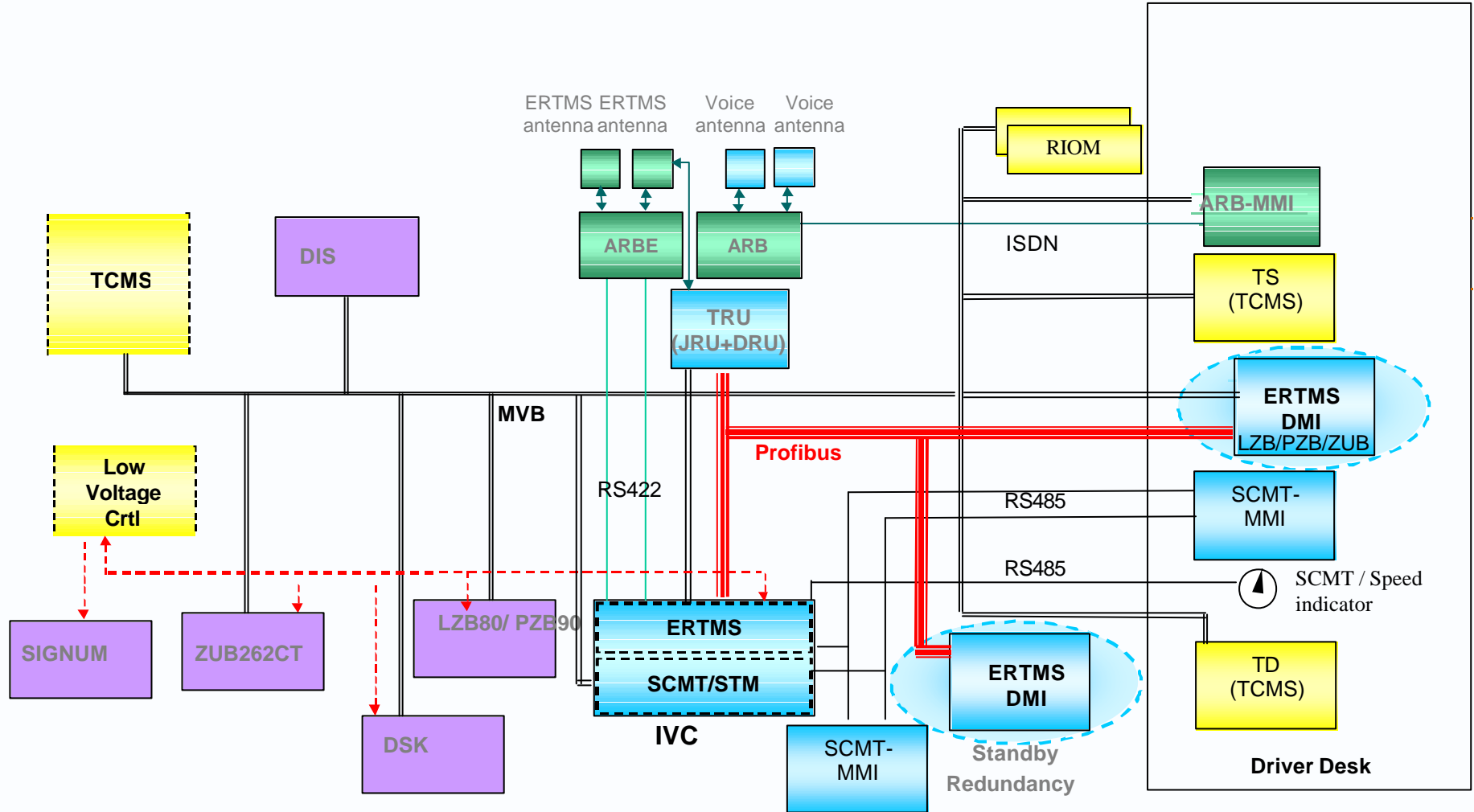


each operator may have his own approach

- Integrated EVC and STM for SCMT
- Integrated DMI as much as possible
- Direct activation of National Systems based on “country” selection and ETCS Levels

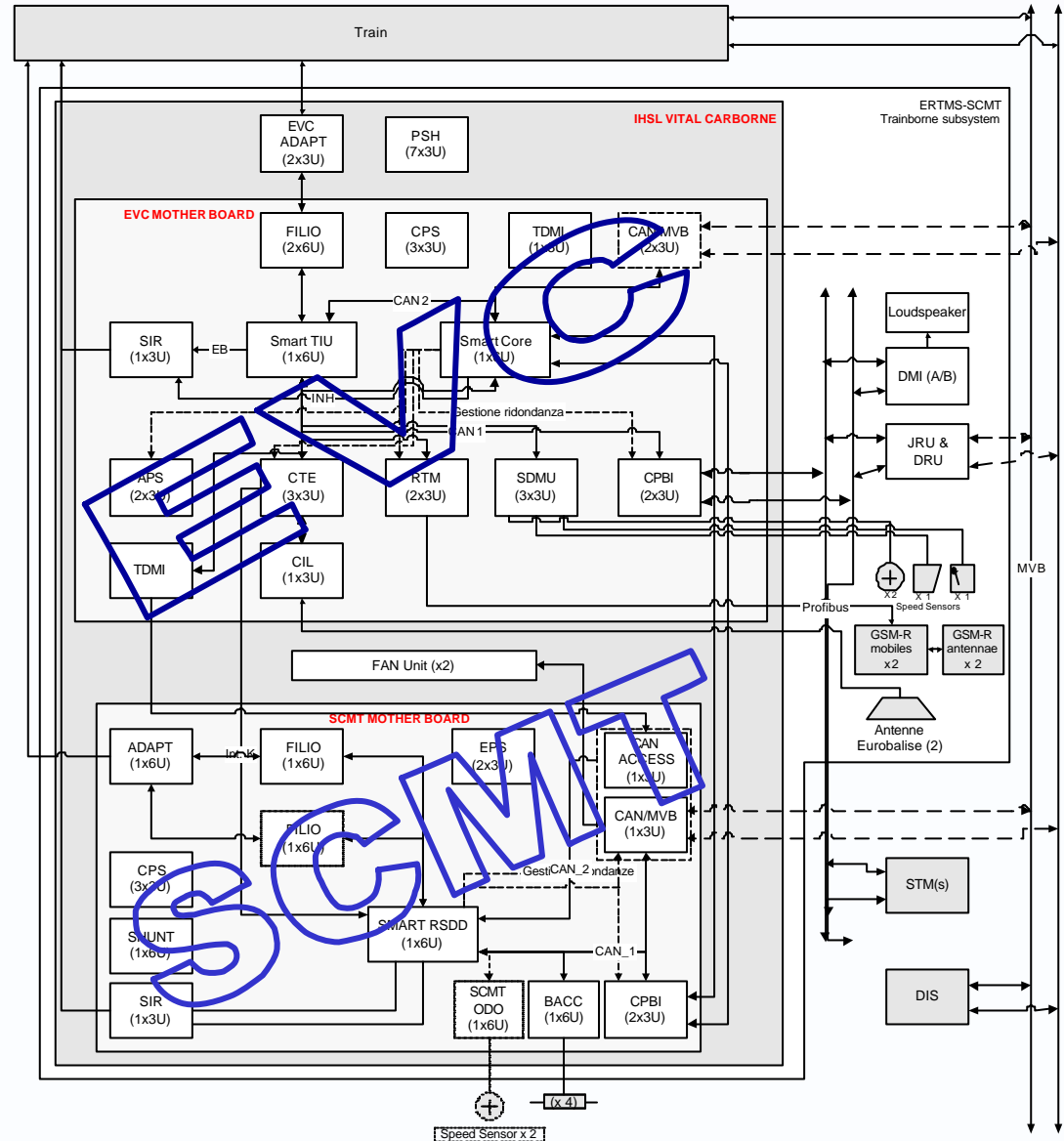


# New Pendolino Architecture



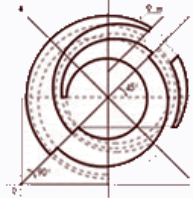
- Synergies with EVC

- reduction of volume and cost
- common odometry transmitted by the EVC through FFFIS bus
- share of BTM as SCMT based on Eurobalise airgap

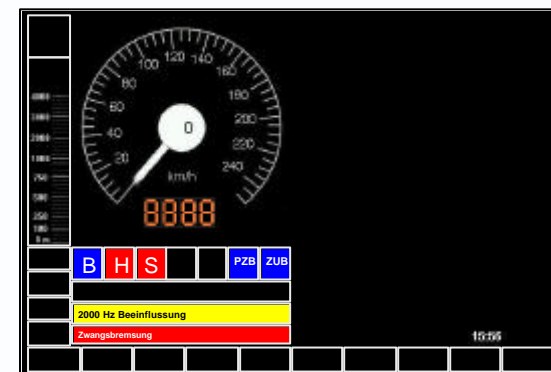
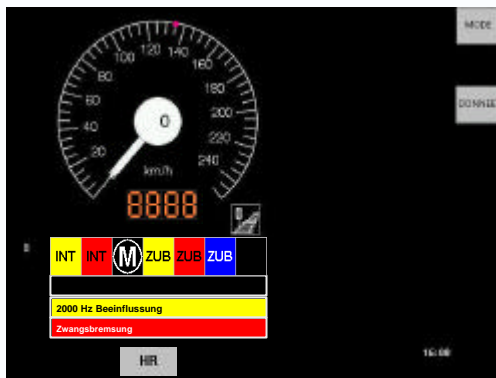
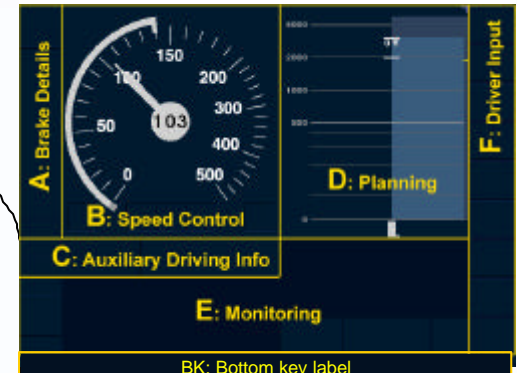
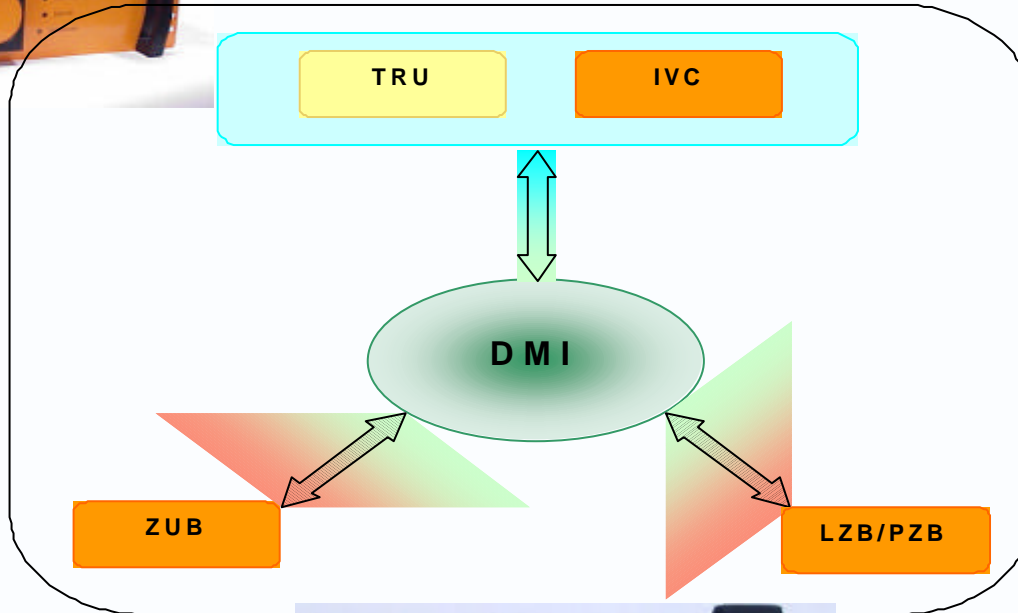


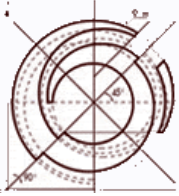
- DMIs for national systems shall co-exist with ETCS and cab radio DMIs
  - but...
    - not enough space on driver's desk
    - risk of driver's confusion
- 
- Integration required
    - ETCS DMI
    - LZB / PZB / ZUB





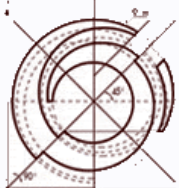
# DMI Integration





## Conclusion (1/2)

- Interoperability goes beyond ETCS
- Solutions proposed shall
  - allow for integration of still existing national systems until full migration to ETCS is in place
  - allow for integration of driver's desk
- Operators cannot wait for the availability of STM, nor cope with the associated costs
- ALSTOM is proposing integrated solutions, based on its largest ETCS project portfolio and previous experience in transborder trains.



		RAILWAY
	Belgium L3-L4	INFRABEL
	Belgium M6	SNCF
	Czech Pendolino CDT 680	CD
	French test track	RFF/SNCF
	STM KVB bi-standard	SNCF
	Greece Athens Suburban	ERGOSE/OSE
	Greece Attiko Metro	ROTEM
	Italy Rome - Naples	RFI/FS
	Italy Bologna - Florence	RFI/FS
	Italy Bologna - Milan	RFI/FS
	Italy ETR500	TRENITALIA
	Italy pendolino ETR470	TRENITALIA
	Italy new pendolino ETR470	CISALPINO
	Italy test track	RFI/FS
	Italy Torino - Navarra	RFI/FS
	Italy SCMT	RFI/FS
	Luxemburg on-board phase 1	CFL
	Netherlands BEV21 Test track	ProRail
	Netherlands Betuwe Route	ProRail
	Spain Zaragoza - Huesca	RENFE
	Spain EuroAVE TAV-S100	RENFE
	Spain Lanzaderas 1 TAV-S104	RENFE
	Spain Lanzaderas 2 TAV-S104	RENFE
	Switzerland SA-NBS	SBB
	UK-TASS	NetworkRail/Virgin
	UK-Test Track	Railtrack

- ALSTOM is leader in
  - ETCS with 23 projects in 10 countries
  - TCS Systems integration with Eurostar and PBKA
  - Interoperability works in Netherlands and Switzerland
- **This experience is offered to Cisalpino to make the New Pendolino a success!**
- Do not miss the next Event
  - Roma-Napoli High Sped Line
  - ETCS Level 2 - 300 km/h
  - Opening 12 Dec 2005 !



**Thank you**

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