

Centre d'Ingénierie du Matériel  
4 allée des Gémeaux 72100 Le Mans

Laurent BOURGEOIS

ICT Workshop

Prague – 21 & 22 October 2011

CIM



# CENTRE D'INGÉNIERIE DU MATÉRIEL

DIRECTION DU MATÉRIEL



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# Rolling Stock Engineering Center

## ICT applications in SNCF trains

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- Passenger Orientated services
  - Passenger information (SIVE)
  - Infotainment
- Video surveillance CCTV
  - Cameras
  - Storage
- Crew Orientated services
  - DMI for drivers - Crew
- Train Operator and Maintainer Orientated Services
  - In progress
- Some examples (Screens)
- Some words about networks

## Passenger Orientated services

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- Passenger Information (SIVE = French Acronym)
  - Scrolling Billposter
  - Screens
  - Sounds
- Infotainment
  - Video clips
  - News
  - Advertising

## Video surveillance CCTV

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### ■ Cameras

- Need to cover more than 80% of surface (Z2N=48 cam)
- 6 to 12 images per second
- 1 to 2 MB/sec

### ■ Storage

- 1 coach = 1 storage
- Enough memory for 1 month (FIFO)
- 500 MB

### ■ Specific case for passenger alarm

- The good cam shown to the driver
- Beginning 3 seconds before alarm

## Crew Orientated services

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- Different DMI configuration
  - Driver in leading CAB
  - Other CABs
  - Commercial crew
  - UIC612 leaflet used for driver CAB





# Crew Orientated services

## UIC 612

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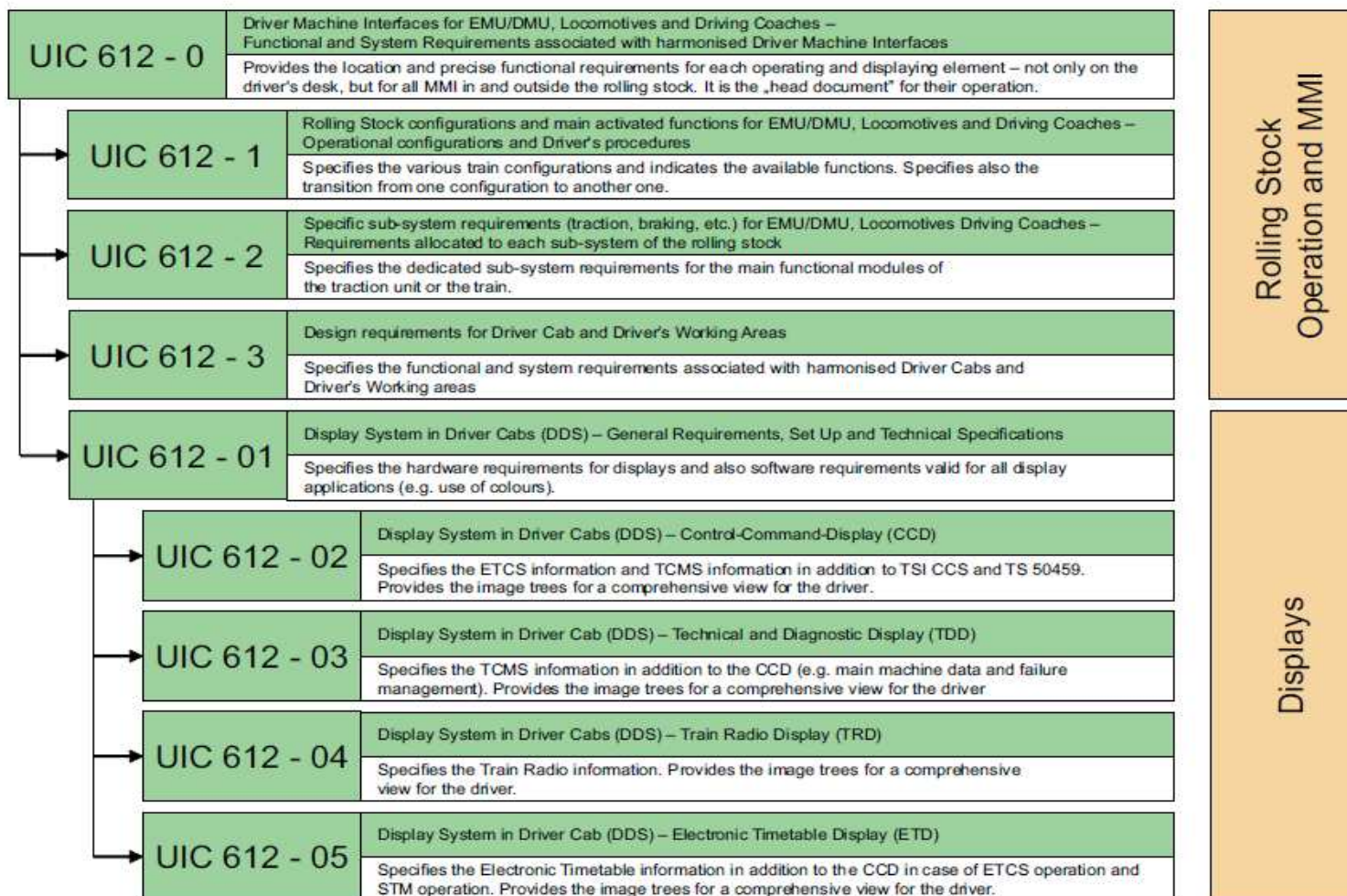


Fig. 1 - UIC Leaflet 612 hierarchy (see Bibliography)

## Train Operator and Maintainer Orientated Services

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- Train operator. Maybe different needs for
  - The Railway Undertaking
  - The Organizing Authority (Political for local trains)
  
- Maintainer needs
  - UIC Leaflet 559



## PIS on next TGV « 2N2 »

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- Outside the train close to each door for passenger information



## PIS on next TGV « 2N2 »

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- Two screens in each coach to show next stops. May be used to provide any video. (different in each coach)



## PIS device in MooviTER

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17 screens in the trainset to show next stops. May be able to provide platform number with an onboard to ground link. + regional advertisement



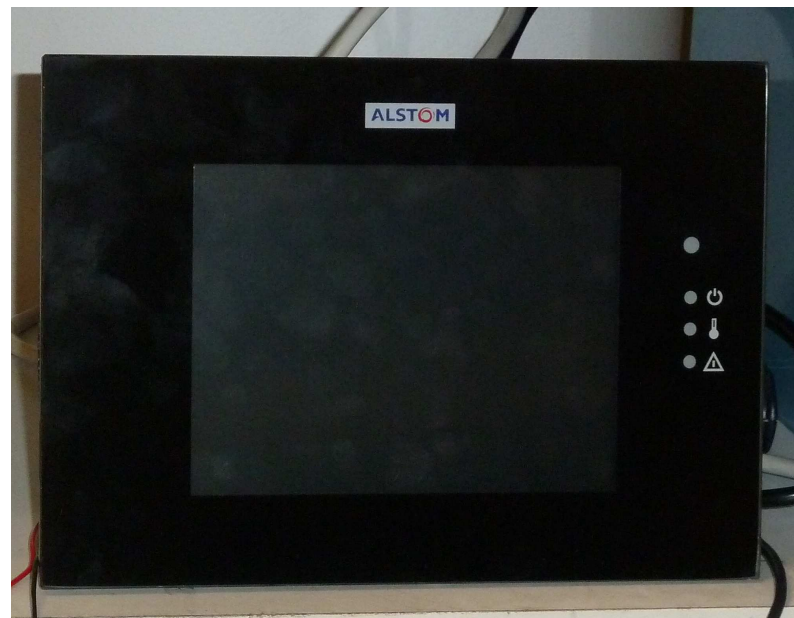


## Crew devices on next TGV « 2N2 »

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- Secondary screen (In 3 coaches). It gives information to crew. Also used for predefined announcements



## PIS on next TGV « 2N2 »

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- Above every seat, this screen indicates the number of the place and the stations between which it is reserved

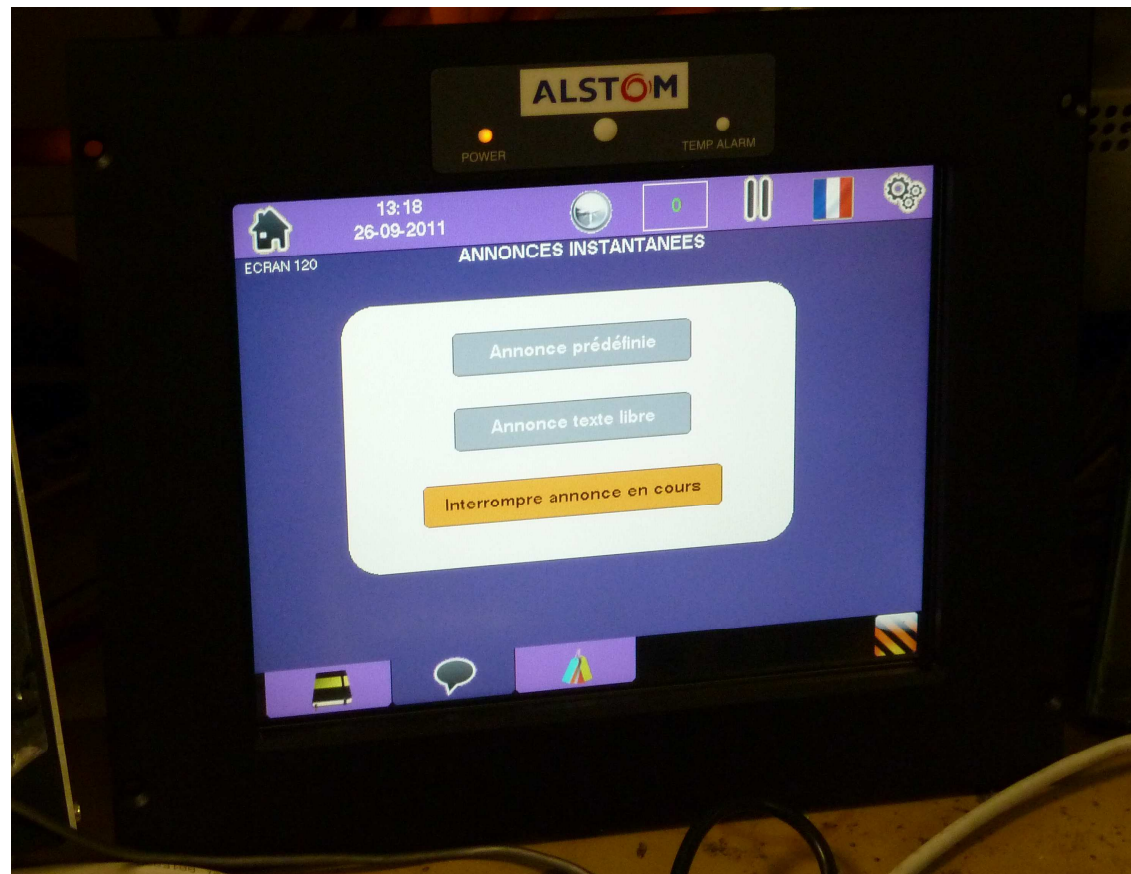


## Crew devices on next TGV « 2N2 »

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- Main screen for PIS management and predefined or free announcement (in coach number 4)





## Rayon vert – Green Ray

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N°15

## What about networks?

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- 50% of 100 Mb/s bandwidth used with 48 cameras
- Future structure of Networks
  - 1 for safety relevant TCMS functions
    - e.g. Doors, brake...
  - 1 for other TCMS functions
    - e.g. HVAC, batteries...
  - 1 for entertainment
- We would be happy to have those 3 networks completely separated one with each other. BUT...

BUT.....

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- Just a word about safety (Even if not relevant today)
  - PIS needs information from TCMS (odometry & doors)
  - TCMS will collect PIS defects for maintenance
  - IP standardized networks (ECN – ETB) will be more and more used. Passengers will be happy with WiFi.
  - EN 50159 deals with safety aspects of networks. In a few word, more the network is closed and more it's topology is motionless, more safety is “easy” to prove.
  - TCMS networks will more and more deal with safety relevant functions – applications.
  - **So what? A real concern for SNCF**

## ICT applications in SNCF trains

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# Thank you for your attention