

BROADBAND TO REGIONAL TRAINS

AL MIDI-PYRÉNÉES

SNCF

ter

The IP Regional Express Train (TER)

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1. State of the art: Wireless technologies
2. Railway markets
3. Railway services
4. A regional perspective
5. Cost evaluation
6. Conclusion



This presentation is the result of a study performed for the CNES, in collaboration with Thales Alenia Space

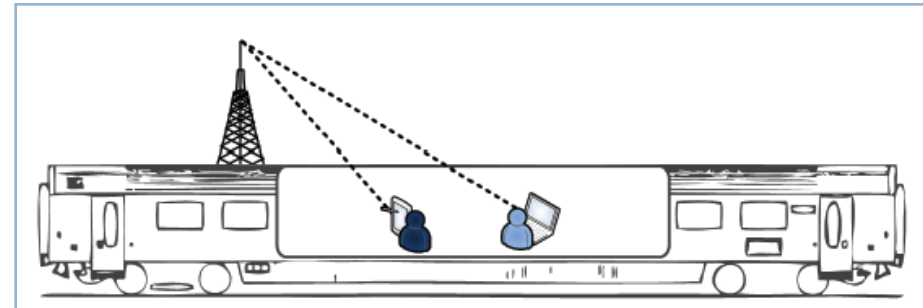
TSS – 26th June 2012



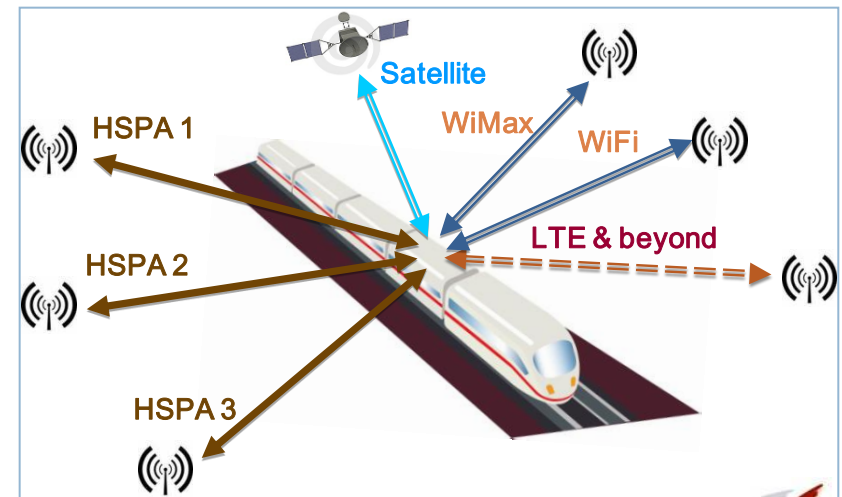
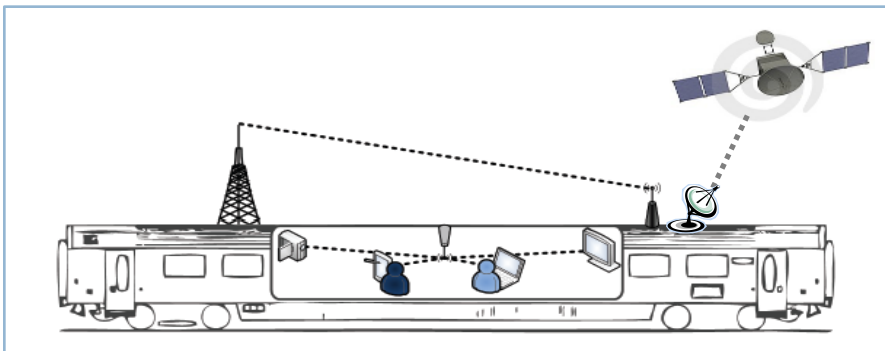
1. What is the technology picture ?

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- Wifi available on any device
- Weak indoor penetration for cellular (15 dB loss)
- Dedicated services to railway



Lead to Backhaul architectures



1. Technology benchmark

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Technology	Advantages	Drawbacks
WIMAX	<ul style="list-style-type: none">- A frequency band available- A dedicated system with good performances	<ul style="list-style-type: none">- Mobiles services not allowed with existing licences- Withdrawal of manufa- A complete network to be deployed
Cellular	<ul style="list-style-type: none">- Cheap and fully operational onboard solution	<ul style="list-style-type: none">- Low capacity- Complementary deployment to achieve real high data rate everywhere
Satellite Ku	<ul style="list-style-type: none">- Fully operational onboard solution- Extended coverage- Capacity with available resources	<ul style="list-style-type: none">- Bandwidth cost- Expensive atellite antenna- Line of Sight requirement
Satellite Ka	<ul style="list-style-type: none">- High capacity- Coverage	<ul style="list-style-type: none">- Few available resources (today !)- Open to mobile services ?- Complex and expensive satellite antenna- Line of Sight requirement

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