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ITS and Public Transport: Rail

Professor John Preston
Chair in Rail Transport

What can ITS do for railways?

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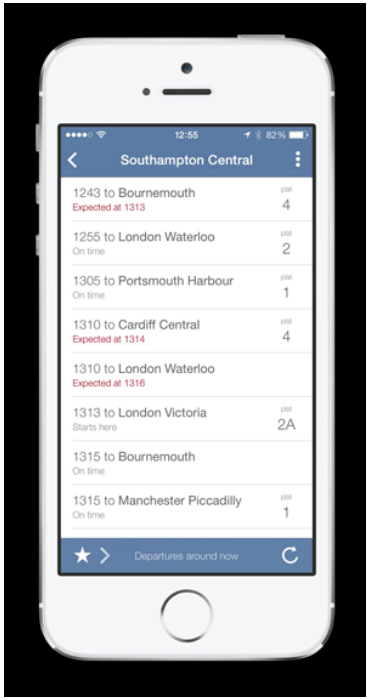
- Automatic Train Location
- Automatic Train Control/Driver Assistance Systems
- Smart Ticketing and Intelligent Pricing
- Security and Surveillance
- Multimodal, real-time passenger information & navigation systems
- On train and station displays
- Through Journey Apps



ITS United Kingdom
Better transport through technology

TSAG's 30 year challenges

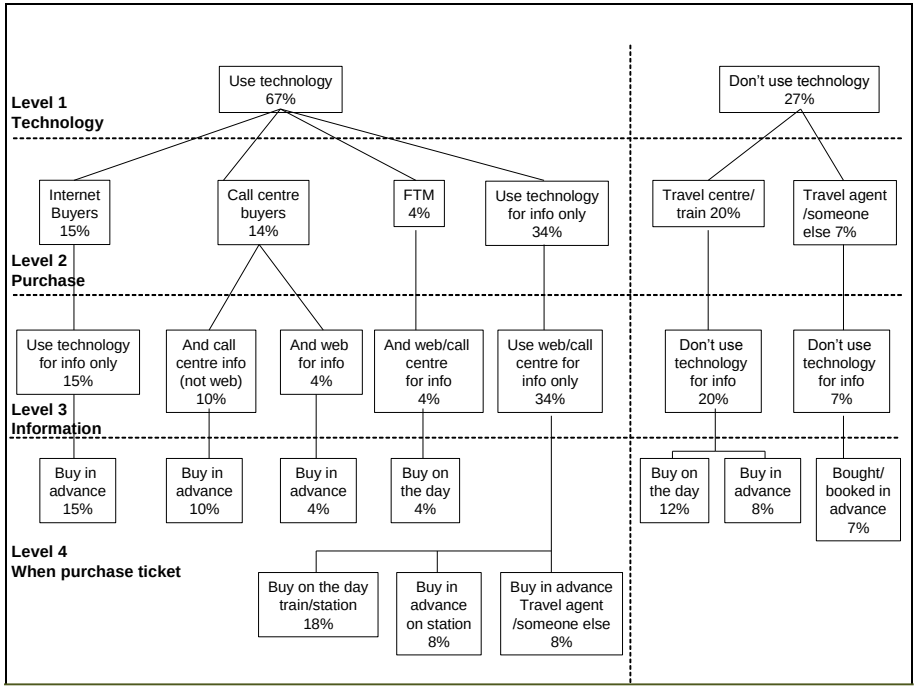
Cost: Halve the cost of rail operations
Capacity: Double network capacity
Carbon: Halve the industry's carbon footprint
Customer: Increase customer satisfaction to 99%

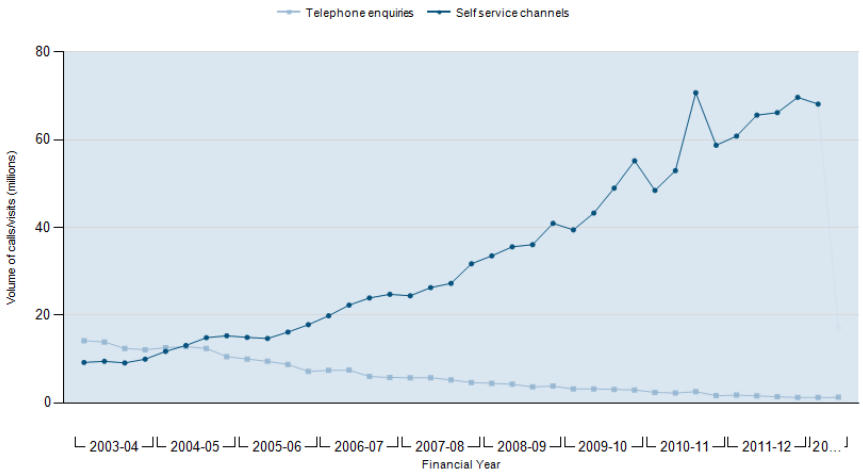
Competitiveness:

GB rail as part of the fabric of economic success

Case Study (I) Rail Passenger Needs

- Limited (short-run) effects in terms of passenger and revenue growth
- Greater potential for cost reductions (e.g. retail distribution)
- Initially mitigated by fragmented market and technology proliferation
- But internet technology beginning to dominate.





Case Study (II): Capacity Management Systems

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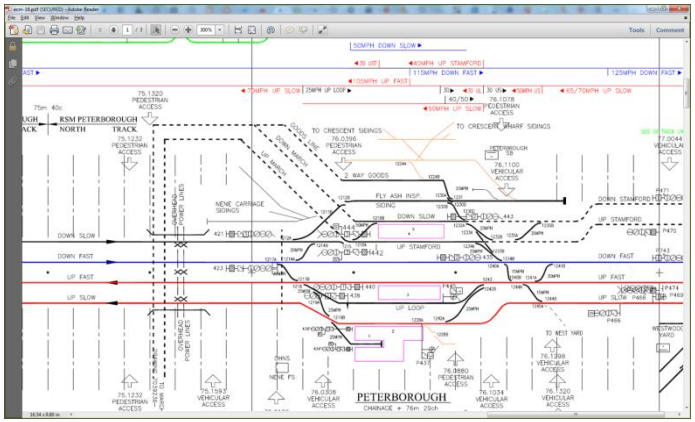
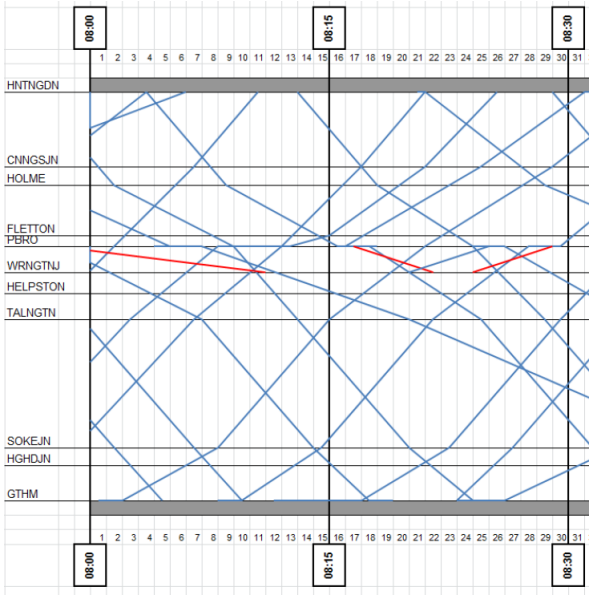
CUI Measures (%) 07:00 to 09:00
190 Nodes and associated links

	Min	Max	Mean
Nodes - Existing	0	64	25
- Optimised	0	81	26
Links - Existing	0	51	23
- Optimised	0	73	24

Smarter scheduling could eliminate train waiting times and increase train movements by 26%.





Academic Response to Rail Technical Strategy 2012

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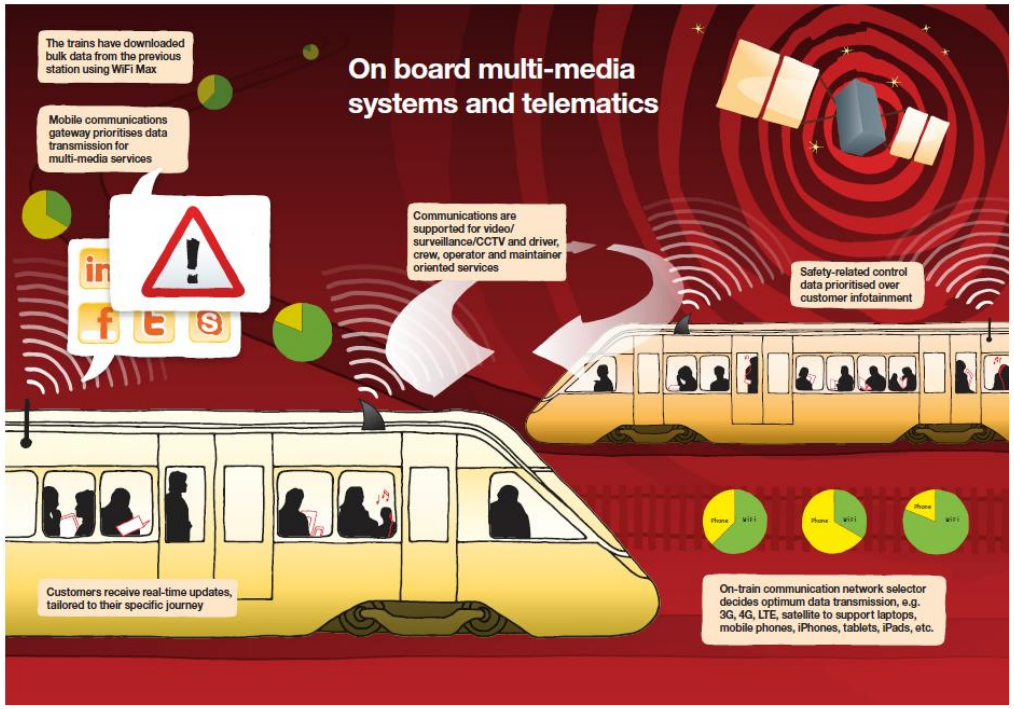
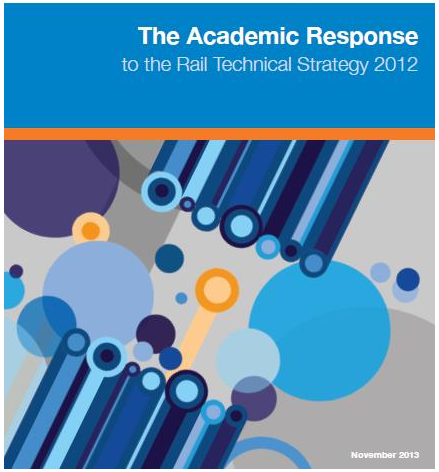


Common Design Concept	Technical theme					
	Command Control Comms	Energy	Infrastructure	Rolling Stock	Information	Customer Experience
Whole-system reliability	▮	▮	▮○	▮▮	○○	○
Resilience	○▮	▮○	▮○	▮	○	○
Security	▮		▮○	○▮	○	▮○
Automation	○▮	▮	○	○▮	○○	○
Simplicity			○	▮	○	▮○
Flexibility	○▮	▮	○	▮	▮○	▮○
Sustainability	▮	▮▮	▮○	▮		○

▮ design concept has high relevance to technical theme
○ design concept has moderate relevance

Rail Research UK Association

RSSB NetworkRail



Key Issue:
Understanding the Human: Machine Interface.
Beware the ironies of automation.