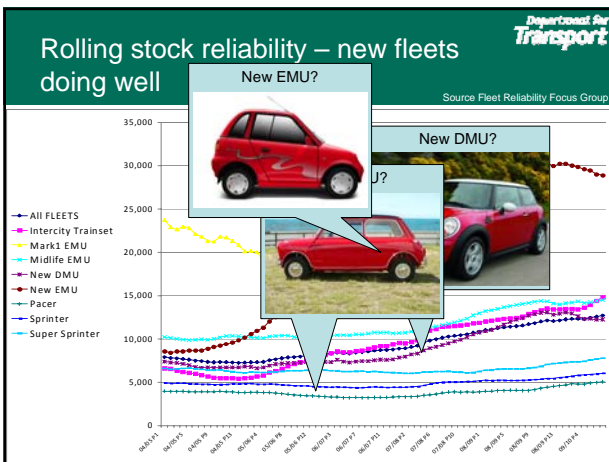
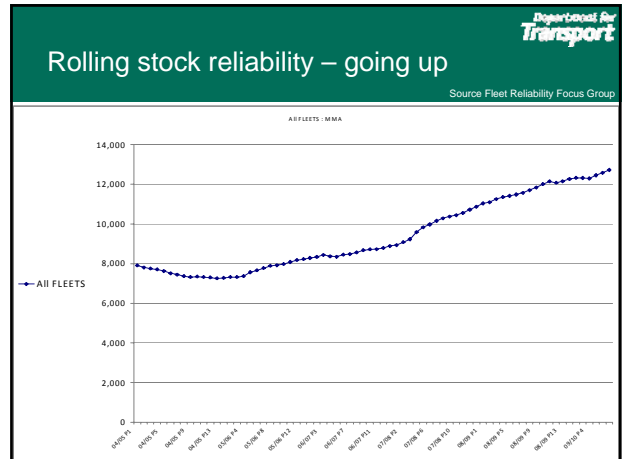


**Department for Transport**

## Aiming higher: time to raise the game

**Tony Mercado**  
Director, Rail Technical and Professional



- Department for Transport**
- ### Golden Spanners, ....????
- Modern trains are full of computers
    - Why the spanners then?
  - Are we measuring and applauding the right things?
    - Would customers recognise MDBF?
    - What's the customer focus?
  - Trains are a part of a system
    - Customers care about how the system delivers
    - i.e. the system performance is king
  - So where do we go from here?

**Department for Transport**

### High level goals – the 4Cs

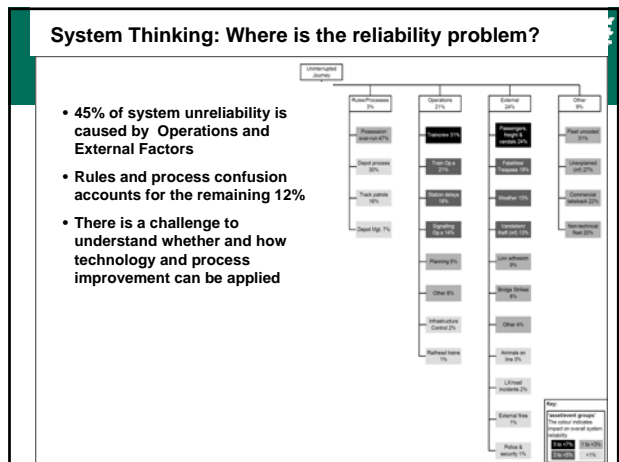
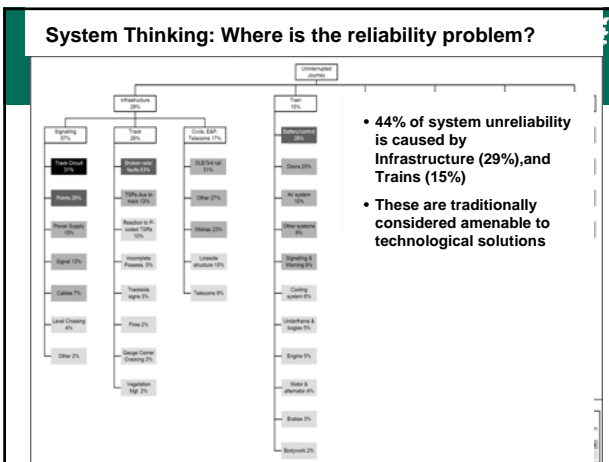
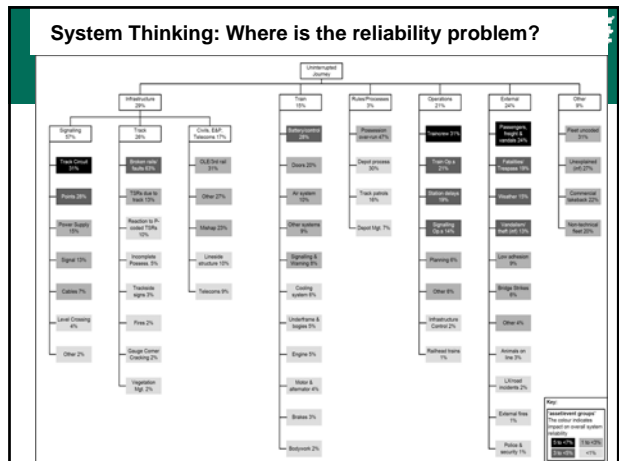
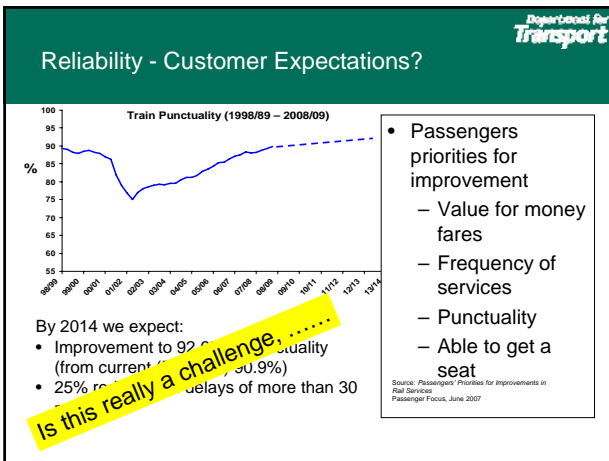
- Customer focus
- Capacity, need
- Cost, need to
- Carbon, total t

Delivering a Sustainable Railway

Rail Technical Strategy

July 2007

- Department for Transport**
- ### Why does reliability matter?
- **Customer experience**
    - Last bad experience
    - End to end reliability
    - Consistent service delivery (whole system)
    - Air-conditioning, seat availability, Wi-Fi, ...
  - **Cost**
    - Reliability costs...really?
    - ... less than unreliability
  - **Carbon**
    - Unreliability leads to degraded operations
    - Unreliability drives a modal shift away from rail
  - **Capacity**
    - A failed service is lost capacity
    - Trade-off between reliability and capacity
    - Cascade events and simple failures



### How reliable should we aim to be?

- What reliability target is needed for a high capacity system carrying twice as many people? 94%, 95%, 96%...
- How would we deliver this number?
  - Its not just about money
- What are the roles for industry and Government in delivering?
- What's in it for those who deliver reliability improvements?

### West Coast – a system view


- It's a mixed traffic railway
- Greater use of capacity needs things to work, every time, all the time
- Greater use of capacity needs rehearsed, robust degraded mode options
- Closing the railway no longer an option
- Reliability is king to sustainable performance
- Reliability improves capacity

## Department for Transport

### Benchmarking performance

**MTR network in Hong Kong**

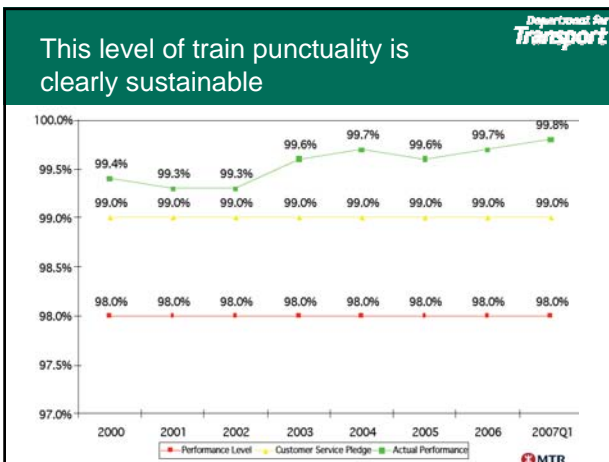
- 28 years of operation without any passenger fatalities
- Up to 85,000 passengers/hour/direction
- Only one delay per day of more than 5 minutes in 2006



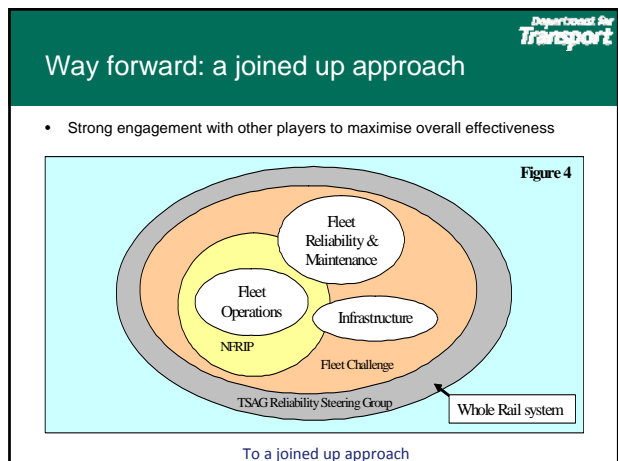
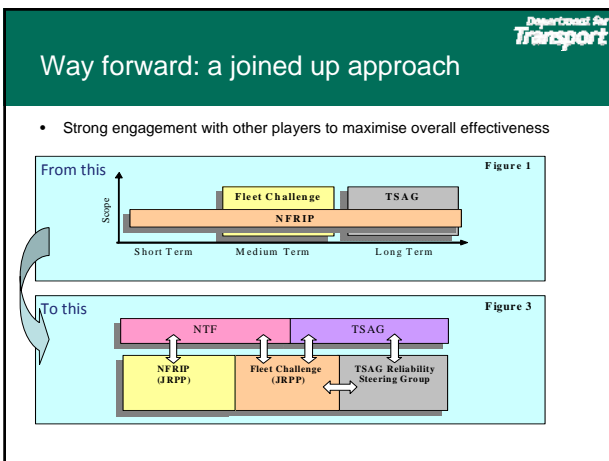
## Department for Transport

### MTR: 2006 operational performance

	Target (%)	Performance (%)
Train Service Delivery	99.5	99.9
Journey on time	MTR Lines 99.5	99.9
	Airport Express 99.0	99.9
Train Punctuality	MTR Lines 99.0	99.7
	Airport Express 99.0	99.9
Add Value Machine Reliability	98.0	99.4
Ticket Machine Reliability	98.0	99.6
Ticket Gate Reliability	99.0	99.8
Escalator Reliability	99.0	99.9
Passenger Lift Reliability	99.0	99.9



- ## Department for Transport
- ### What can we learn?
- Benchmark performance and work with other railways to improve
  - Culture: continuous improvement and continuous development, ...change is a good thing
  - Invest in people
  - Adopting new technologies and approaches from elsewhere
  - Rigorous fault reporting and data management
  - Identifying root cause of problems (system perspective)
  - Partnership approach with suppliers and infrastructure providers



### To summarise...

- Through NFRIP the rail industry has proved the value of working together, ...even partnering, to improve rolling stock reliability
- Rolling stock technical reliability is only one component, a more holistic view
- International experience indicates that ultra-reliable railways **are** possible
- Reliability is king to a busier railway; need to step up to this bigger challenge