



# National Truck & Bus Driver Trainers Conference

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# Behaviour-Based Bus Driver Safety

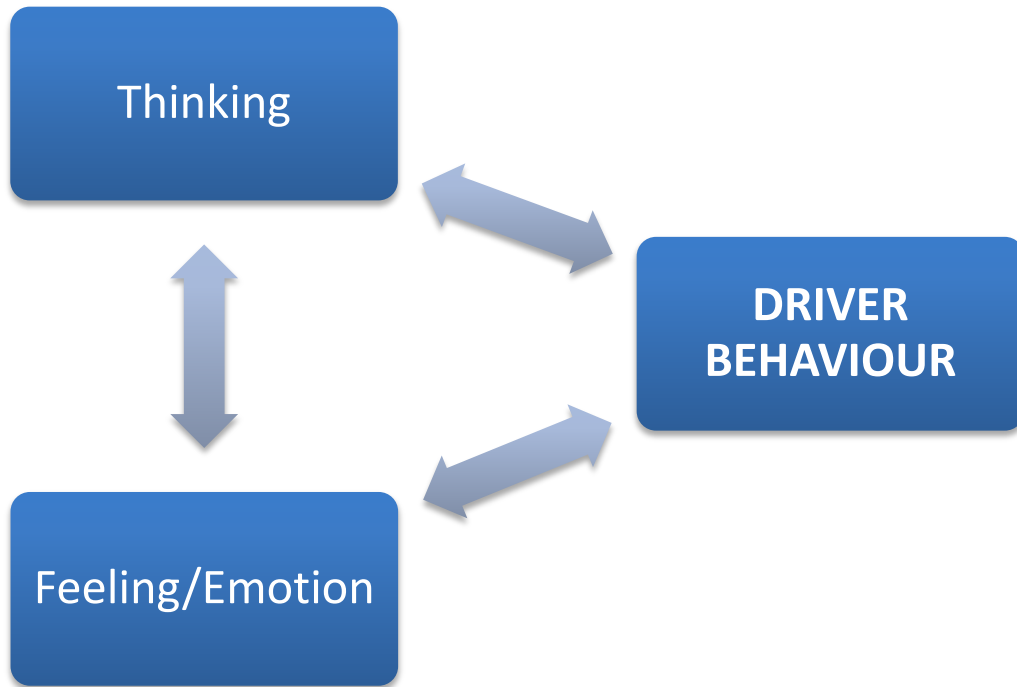
Dr Julie Gandolfi

27<sup>th</sup> August, 2014

# The Problem

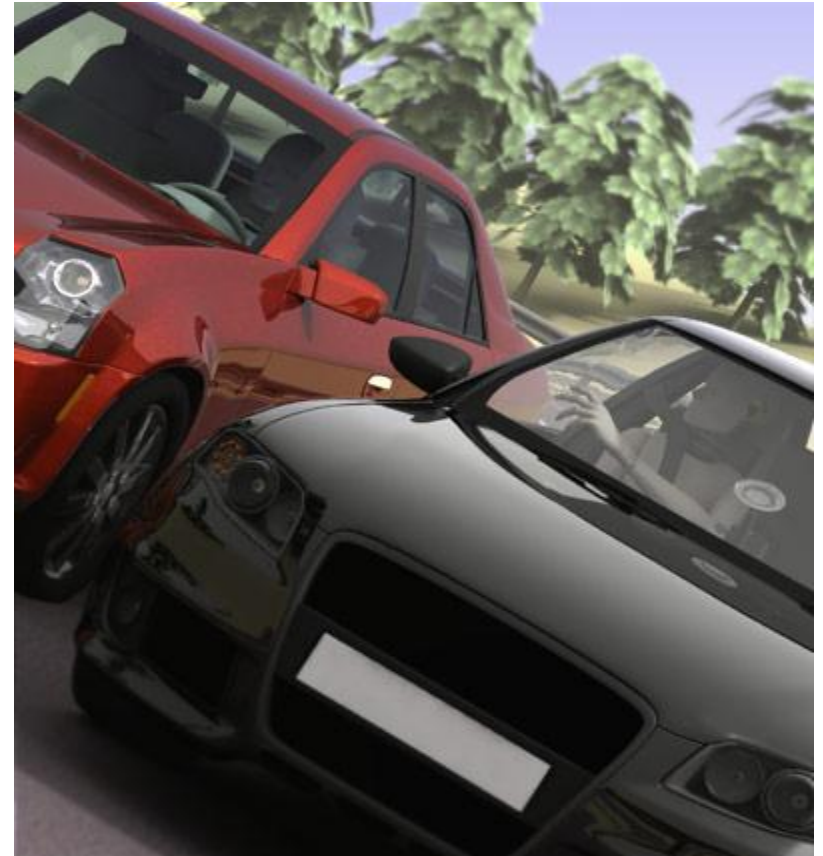
- The single biggest risk to business is driving for work
- UK business loses **£2.7 Billion** every year in 'at work' crashes
- For every £1 of costs recovered through insurance, about £8 - £36 may be lost through uninsured costs
- Hidden costs: **absenteeism, lateness, brand damage, staff turnover, retraining etc.**
- Human factors contributes 90% of all crashes

# What is Driver Behaviour?



# Driver Skills Vs Driver Behaviour

- **Driver skill** improves with practice - automation of information processing and psychomotor skill
- **Driver behaviour** motives, habits and driving style - may become less worried about safety over time



# Cranfield Bus Driver Research

- Bus driver stress, fatigue and coping strategies (Garwood and Dorn, 2003)
- BDRI scales discriminate between bus crash involved and crash free bus drivers (Dorn and Garwood, 2004)
- Bus driving simulator discriminates between novice and experienced bus drivers (Dorn and Stannard, 2006)
- Designed a new approach to estimate culpability for bus crashes using statistical methods (af Wåhlberg and Dorn, 2007)
- Bus driving experience predicts bus crashes better than age - but after two years - age is a better predictor (Dorn and af Wåhlberg, 2008)
- Number of days absent from work associated with bus crashes (af Wåhlberg and Dorn, 2009)
- Crash involved bus drivers have a tendency to be involved in future crashes (af Wåhlberg and Dorn, 2009)
- Bus company safety culture influences bus driver attitudes and behaviour (Dorn, 2012)

# Time Pressure

## **Time pressure exacerbates behaviour issues:-**

- Work-related attentional focus
- Motivating factors
- Risky driving
- Increased crash risk



## **Issues with customers increase stress:-**

- Work-related anxiety
- Demotivation
- Reduced ability to concentrate on driving
- Increased crash risk



# Competency Framework

**Level 1:  
Vehicle handling  
skills**



**Level 2 :  
Hazard perception  
skills**



**Hazard Perception**

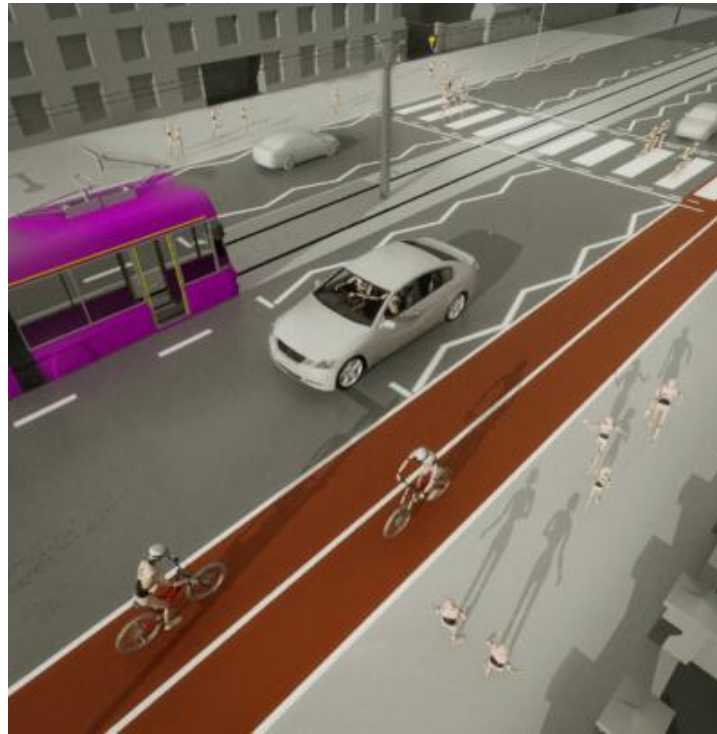
**Level 3:  
The journey**



**Level 4:  
The person**



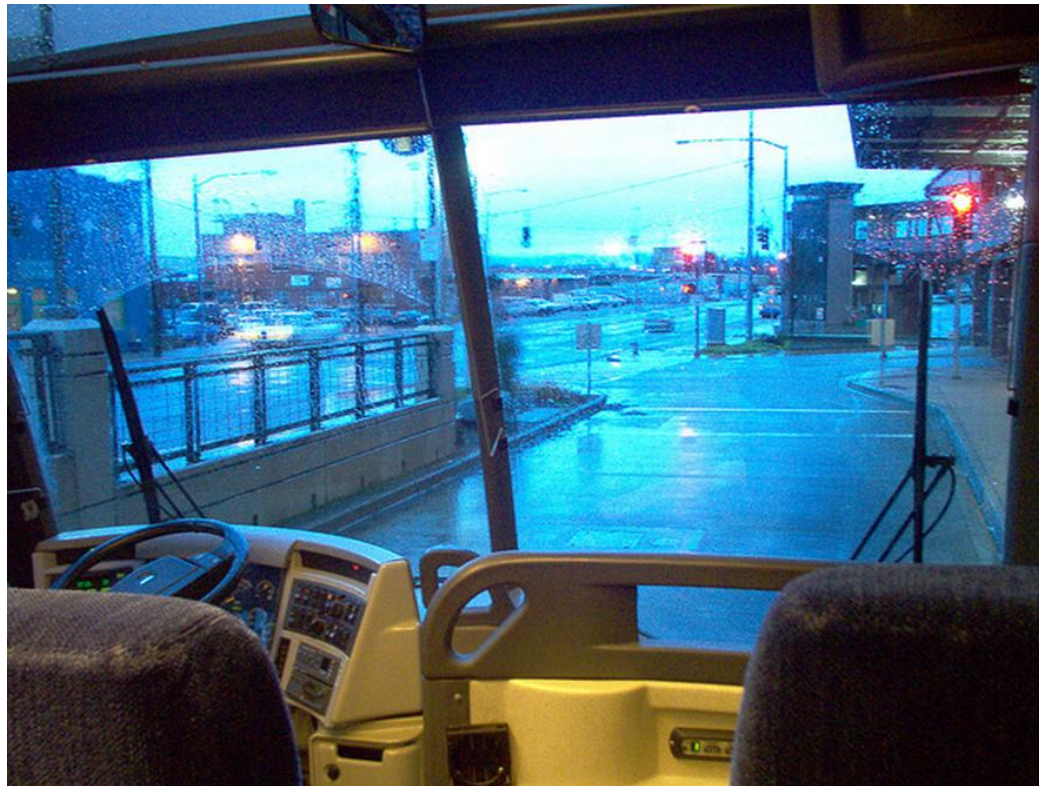
## Review safety goals and leadership



## Audit driver safety systems and policies



## Identify high risk driver behaviours



## Mitigate driver behavioural risks



## Evaluate fleet safety performance



# Development of the BDRI

- Cranfield research programme (2001 – 2007)
- Literature review
- Interview study
- Large scale survey of bus and coach drivers
- Statistical procedures
- Reliability and validity research
  - Test-retest – scales stable over time
  - BDRI factors - significant relationships with bus driving behaviour, bus crash involvement, bus driving performance, absenteeism and turnover (Dorn, Garwood and Muncie, 2004; Dorn et al, 2010).

# Bus Driver Risk Index™ Factors

## Situational Risk

Age, driving experience, mileage, licence, crash history etc

## Behavioural Risk Factor

Hazard Monitoring  
Aggression  
Thrill Seeking  
Fatigue Proneness  
Relaxed Driving  
Driving Concerns

## Coping Risk Factor

Emotional Coping  
Avoidance Coping  
Reappraisal Coping  
Risky Coping  
Confrontation

## Correction Factors

Impression Management  
Driver Confidence



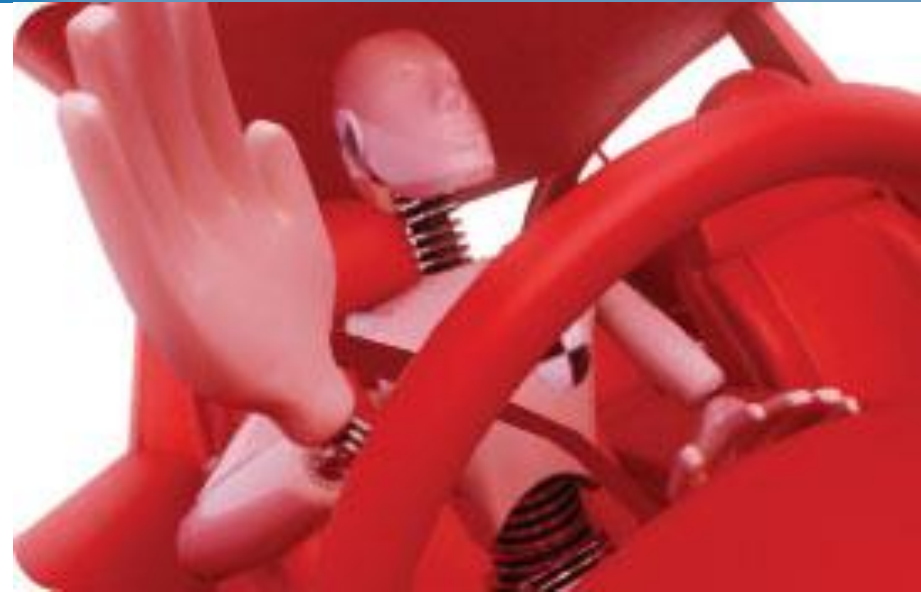
# Eye Scanning Module

- Driving is 90% visual
- Perceptual error is a major contributor to crashes
- Hazards capture attention and cause temporary inattentive blindness
- Knowing where to look and what to look for improves with practice
- Research shows visual search training increases safety

# Eyescanning Example



# Insight 2 Action



- Classroom or in-vehicle based driver coaching
- Address behavioural risk
- CPD DriverMetrics® train the trainers course

# DRI Workshop course content

- The psychological principles underpinning driver behaviour
- The behavioural factors that influence crash risk
- How to interpret Driver Risk Index™ profile reports to an advanced level
- Practical techniques and strategies to influence driver behaviour and mitigate risk
- How to design and implement a Coaching Goals Plan

# Examples of implementation

- In the UK – Arriva and NCT
  - Key personnel given DRI Workshop
  - DRI used in selection
  - BDRI used in driver development
- In the USA – Greyhound
  - Key personnel given DRI Workshop
  - BDRI used in driver development
  - Quality assurance process rolled out to ensure coaching skills embedded and consistently applied

- The way in which a driver thinks, feels and behaves affects crash risk
- The BDRI is underpinned by the most comprehensive evidence-based research programme in bus driver behaviour in the world
- A behaviour-based approach compliments the skills-based approach
- Mitigate behavioural risk using a five step behaviour-based safety approach



Download free e-book at [www.drivermetrics.com/implement/](http://www.drivermetrics.com/implement/)

**THANK YOU**