NEW AFFORDABLE LEVEL CROSSING PROTECTION SYSTEMS
Human Factors specifications

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“It’s bloody happened again!”
Outline

• Background – News report
  – CRC for Rail Innovation project R3.111
• Costs
  – Lives; materials; business
  – Upgrade costs
• Human Factors Engineering
• Surveys, observations
• Specs for safer user responses
Background

Shell-shocked train drivers in North Queensland can't believe it's happened again. He said to me, 'We've crashed...we're facing back the way we came ... It's a bloody disaster ... It’s bloody happened again!' "The loss grips you." "There are children now without a father. Nothing is more tragic."

CRC for Rail Innovation’s aim is to “examine new technology options for level crossings that are cheaper … Combinations of … technology … will be considered in conjunction with vital systems and human factor system elements.”
Costs

- 606 vehicles and 78 pedestrians in RLX collisions in Australia during 2001-2008
- 352 fatalities; over 800 serious injuries
- Rail infrastructure, rollingstock, business losses
- Crossing upgrades cost $300k~500k per crossing, or more - 8 RLX upgrades in North Queensland in 2009 cost $10m!
- New technologies under consideration preferred to cost only $100k~150k
The goal of human factors has been defined as “making the human interaction with systems one that enhances performance, increases safety, and increases user satisfaction”.

Elements relevant to this project include:

- Signal Detection Theory
- Attention demands
- Human error
- Risk taking as a decision process
- Accident sequence model
- Signals and warnings
- Latent errors
- Fatigue
• Three phases:
  – QSS09 by CQUni’s PRL; over 1200 respondents
  – Local survey re human factors elements of passive RLX; over 100 respondents
  – Observations of road user responses at local passive RLX; over 1600 observed.
Specifications for Safer User Responses

- Based on data analysis, human factors elements shown to have significant impacts on road user responses to RLX systems will be identified.
- Compiling these into a set of specifications for assessment of candidate technologies is the critical outcome for this project.
- The assessment process is a subsequent phase of the CRC project.
- Less costly, safer RLX will be the benefit derived through this project.
- Governments, rail industry, local communities will all benefit.
Something to think about…

Do we want to hear

“It’s bloody happened again!”

any more??