A ‘safe system’ process model for level crossings

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UNECE Expert Group tasks

• Enhance safety at level crossings
• Evaluate laws and safety performance
• Evaluate factors leading to unsafe conditions
• Strategic action plan for road/rail interface
  – Develop framework to implement
  – Use ‘safe system’ approach
  – Monitor and report
• Workshops to support core objectives
• Identify future strategic and research needs
‘Safe system’ process model?

areas:
• Infrastructure design & management
• User behaviour management
• National policy and law
• Safety enhancement

elements and process:
• economics, engineering, environment, ergonomics
• enable + educate + encourage (=> empower)
• enforcement, emergency preparedness, expectations
• engage, evaluate, enhance
Level crossing

- Engineering
- Educate
- Enforce

Operation Lifesaver
‘3 key elements’
Level crossing safe system

- Engage
- Evaluate
- Evolve plan
- Enhance safety
- Educate

UNECE ‘approach’ & ‘5 key elements’
Level crossing safe system

- Engage
- Evaluate key risk factors
- Evolve plan
- Enhance safety

Infrastructure management
User Behaviour management
National policy & law

UNECE ‘develop strategy’
Level crossing safe system

- Engage
- Evaluate key risk factors
- Evolve plan
- Enhance safety

Infrastrucre management

User behaviour management

- Educate
- Enforce

Environment

Engineering

Economics

Expectations

Emergency preparedness

National policy & law

UNECE other ‘elements’
Level crossing safe system

Infrastructural design & management

User behaviour management

Ergonomics

- Engage
- Evaluate
- Key risk factors
- Evolve plan
- Enhance safety

Economics

Engineering

Environment

National policy & law

Educate

Enforce

Emergency preparedness

Expectations

‘Fit for purpose’
Theory of planned behaviour

Beliefs ->

  -> perception:
    (attitude, acceptability & ability)

  -> intention

  -> behaviour

Level crossing safe system

Infrastructure design & management
- National policy & law
- Environment
- Engineering
- Economics
- Expectations

User behaviour management
- User behaviour management
- Enable
- Educate
- Encourage
- Enforce

Key risk factors
- Engage
- Evaluate
- Evolve & plan
- Enhance safety

Review & plan
- Enhance safety

Act
- Enhance safety

Do
- Enhance safety

Check
- Enhance safety

ISO ‘continual improvement’
Level crossing ‘safe system’

- system approach
- multi-disciplinary
- safe by design & fit for purpose
- empower the users
- manage the risks
- enhance safety