How Safe are our Railway Projects?

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Safety in Railway Projects

Planning	Design	Construction	Operation

Risk Management

Asset Management

Competence Management

Standards & Procedures

Audit & System Assurance

Stakeholder Management

Culture

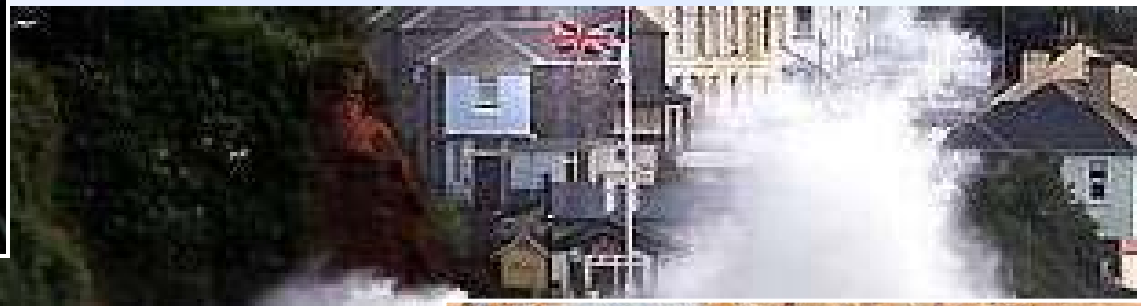
Safety

How safe is SAFE?

… Can these happen to me?

How safe is SAFE?

… Can these happen to me?



And this happened…

Safety in Railway Projects

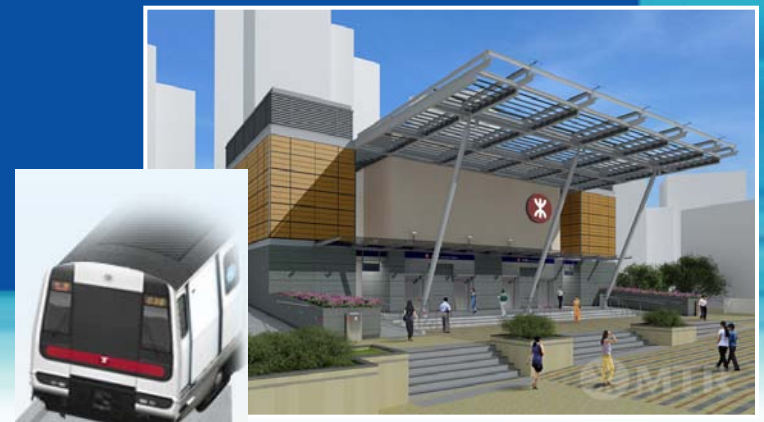
Hazard - A condition that could lead to personal injuries, property loss or system failures

Safe planning, design, construction and commissioning

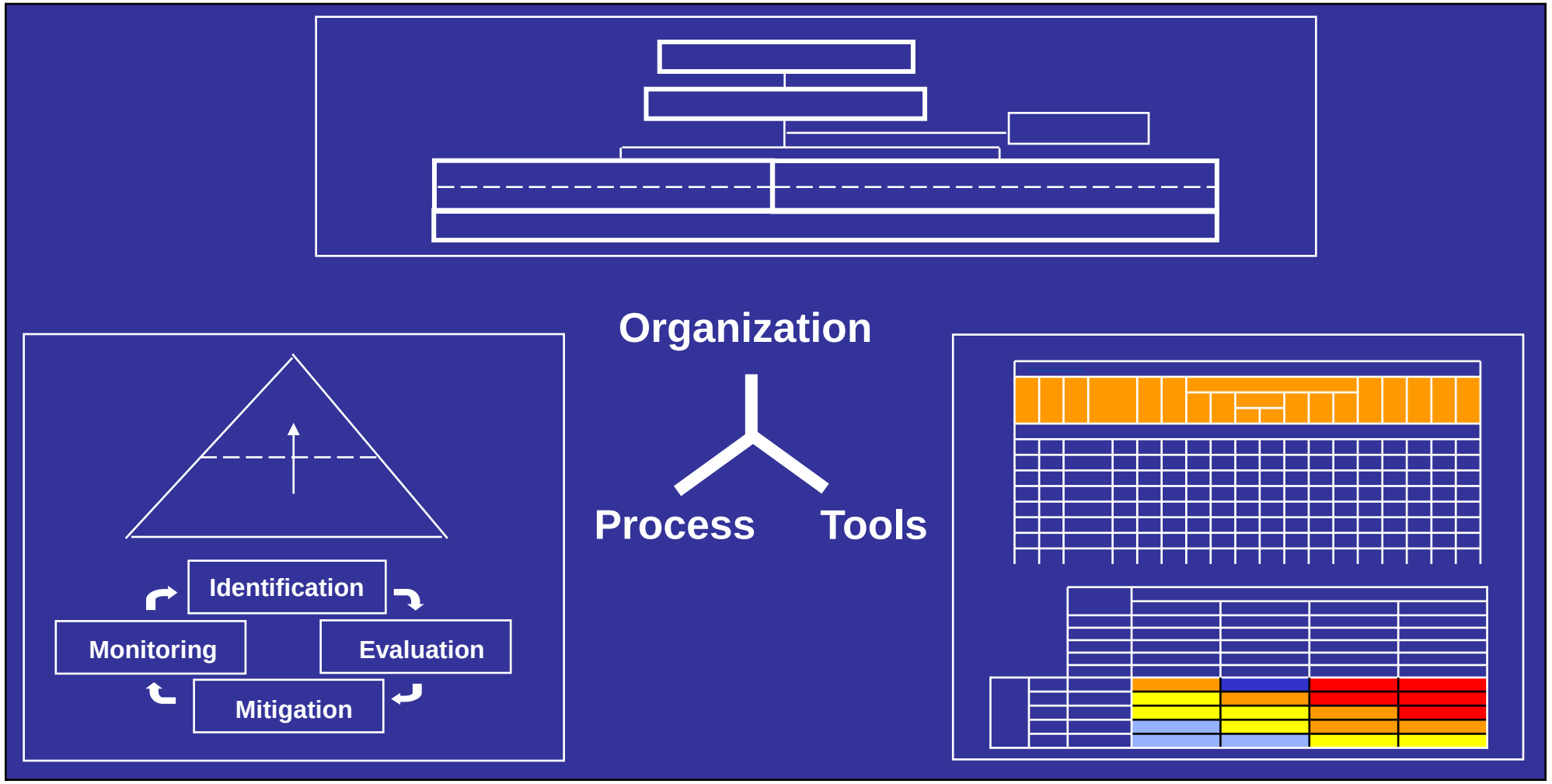
Risks to customers, public, contractors & staff are reduced to As Low As Reasonably Practicable

Safety in Railway Projects

Operational Safety



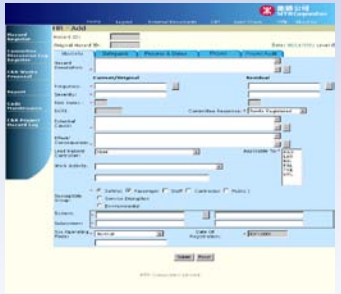
Operational Risk Management Framework



Risk Identification & Control

Identify & Evaluate Risks

Register Risks



Proactively & systematically identify & control risks

Propose, Agree, Prioritize and Implement control actions

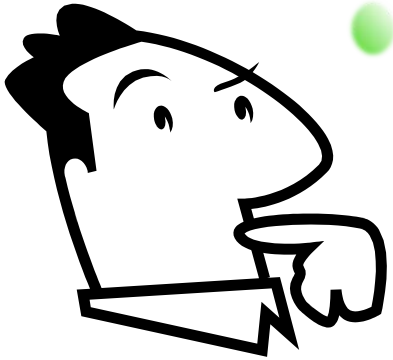
Update & review risk records

Risk Identification & Control

Technically feasible?

Minimal impacts on operability and reliability?

Minimal cost implication?



Operational Safety

Determining the risk acceptance level and safeguards required

Operational Safety

Hazard with potential impact on the future operating railway

Construction activities with potential impact on the existing railway

Hazards affecting Future Operation & Maintenance

Fire (e.g. Train / Station / Trackside)

Mitigation:

- Materials Specifications
- Evacuation Provisions (for escape & rescue)
- Signage / Procedures / Training

Derailment

Mitigation:

- Derailment upstands / beams (viaducts / stations)
- Derailment detection

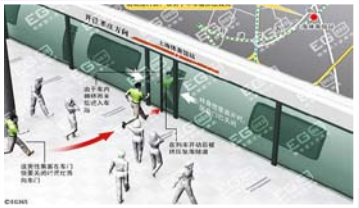
Hazards affecting Future Operation & Maintenance

Collision (e.g. Train to buffer)

Mitigation:

- Adequate overrun
- Buffer
- Signage

Platform – Train Interface



Mitigation:

- Minimum Clearance
- Detection
- Infill (e.g. Taper Plate)

Construction Hazards affecting Operating Railway

Fire / Flood spreading to Operating Railway during breakthrough

Mitigation:

- Temporary bulkhead during breakthrough
- Fire rated bulkhead
- TVS & FSI readiness prior to breakthrough

Construction work in Station (Noise / Dust)

Mitigation:

- Segregation of works areas from station users
- Fire rated hoarding

Construction Hazards affecting Operating Railway

Vibration / Mechanical handling near Mainline

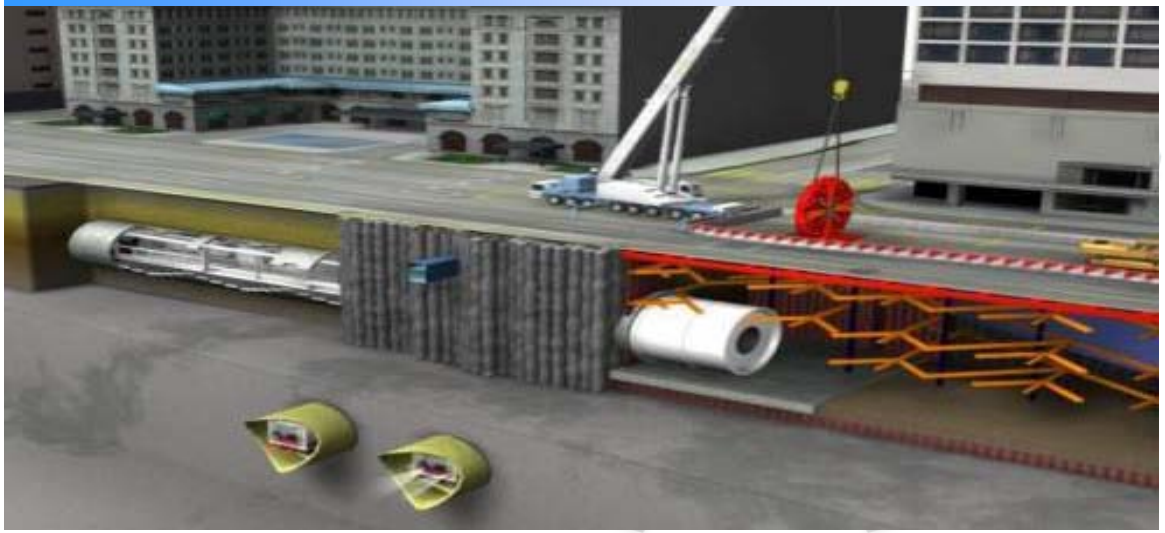
Mitigation:

- Piling with low vibration
- Scheduling / possessions
- Railway Protection procedures

Tunneling / Excavation near Operating Railway Mainline/Station

Mitigation:

- Railway Protection procedures
- Monitoring
- Contingency Plans



Construction Safety

Construction Safety

Design for Safety and Constructability

Complex design

Working around utilities

Accidents associated with specific designs & methods

Impacts:

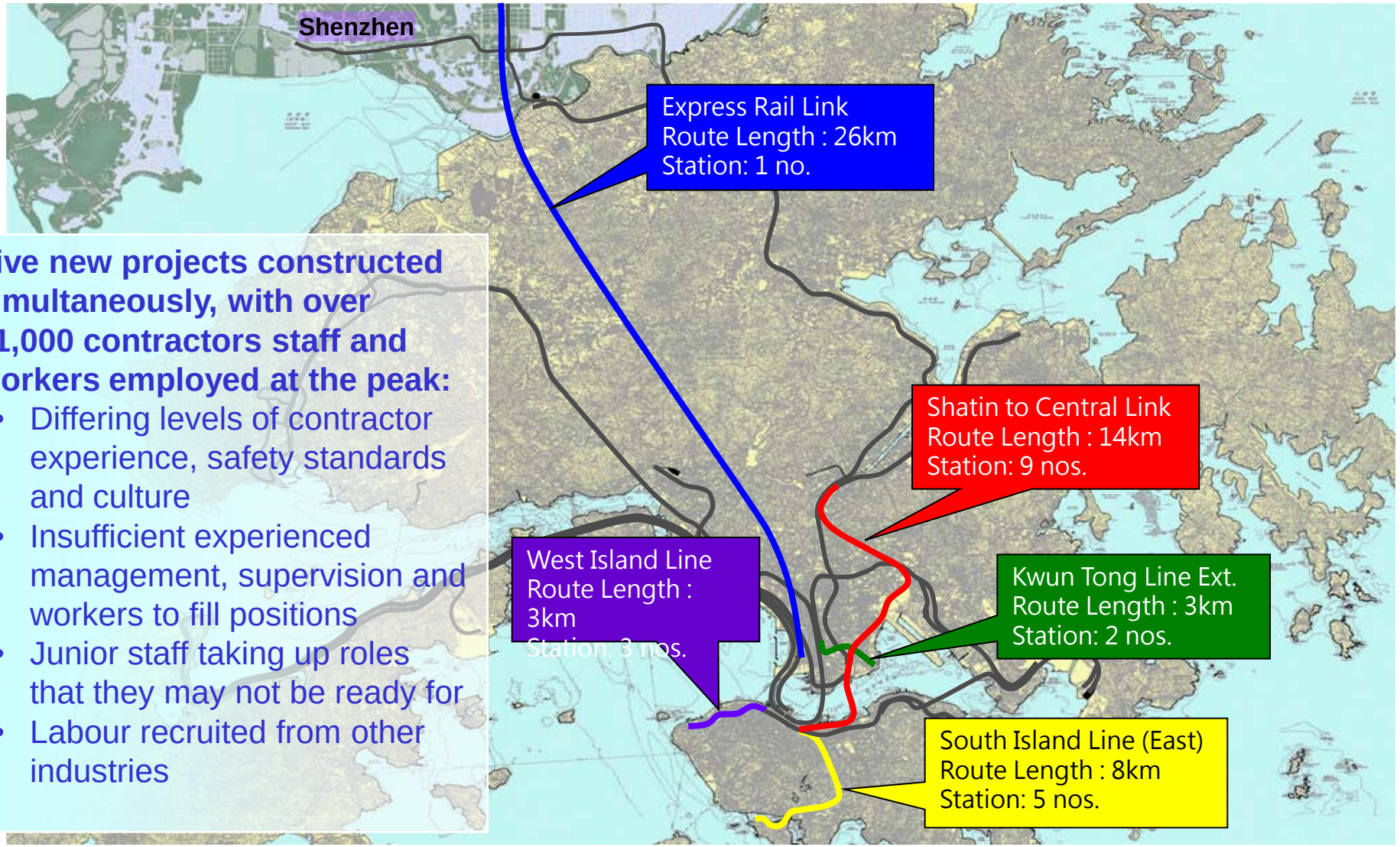
- Increased safety risk
- Cost escalation
- Programme delay

Mitigation:

Make construction easier and safer by:

- Avoiding constraints
- Simplifying design
- Increasing repeatable features
- Designing out the need for high risk construction methods

Construction Safety on Site



Five new projects constructed simultaneously, with over 21,000 contractors staff and workers employed at the peak:

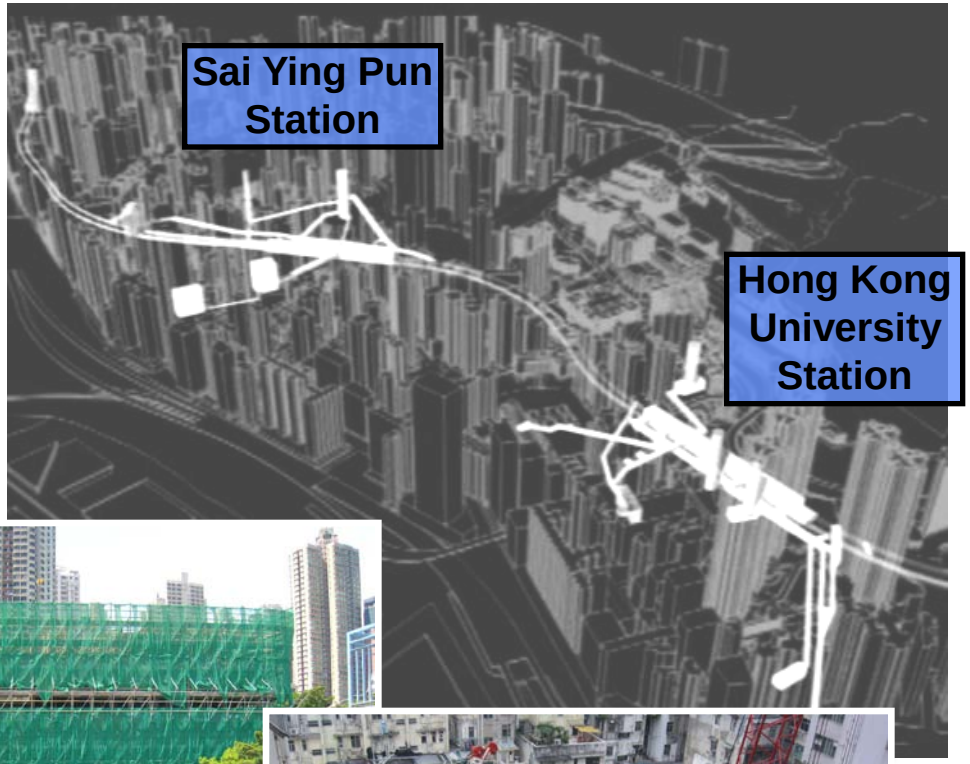
- Differing levels of contractor experience, safety standards and culture
- Insufficient experienced management, supervision and workers to fill positions
- Junior staff taking up roles that they may not be ready for
- Labour recruited from other industries

Construction Safety – for Public

Construction activities involve work in densely populated areas –

Public exposed to risks arising from the Works

➡ Protection measures in place



Construction Safety

Safety Performance Reviews

Safety Reporting Procedures

Safety Inspections

Contractor Safety Meetings

Contract Documents

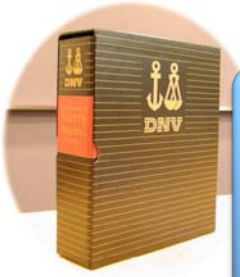
Tender Evaluations

Safety Plans

Safety Policies

Construct ion Safety

Fostering a Safety Culture

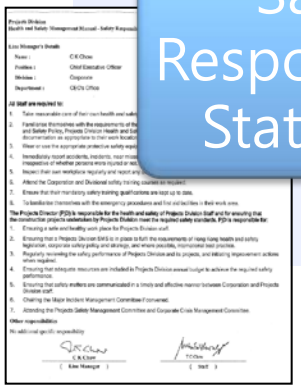


Safety Audits

Contractors Incentive Scheme

Mandatory Safety Training

Contractors Safety Awards



Safety Responsibility Statement

Safety Culture

Near Miss Reporting Campaign

SAFETY STARTS WITH ME

Success Factors

Commitment of management and staff at all levels

Total commitment of contractors

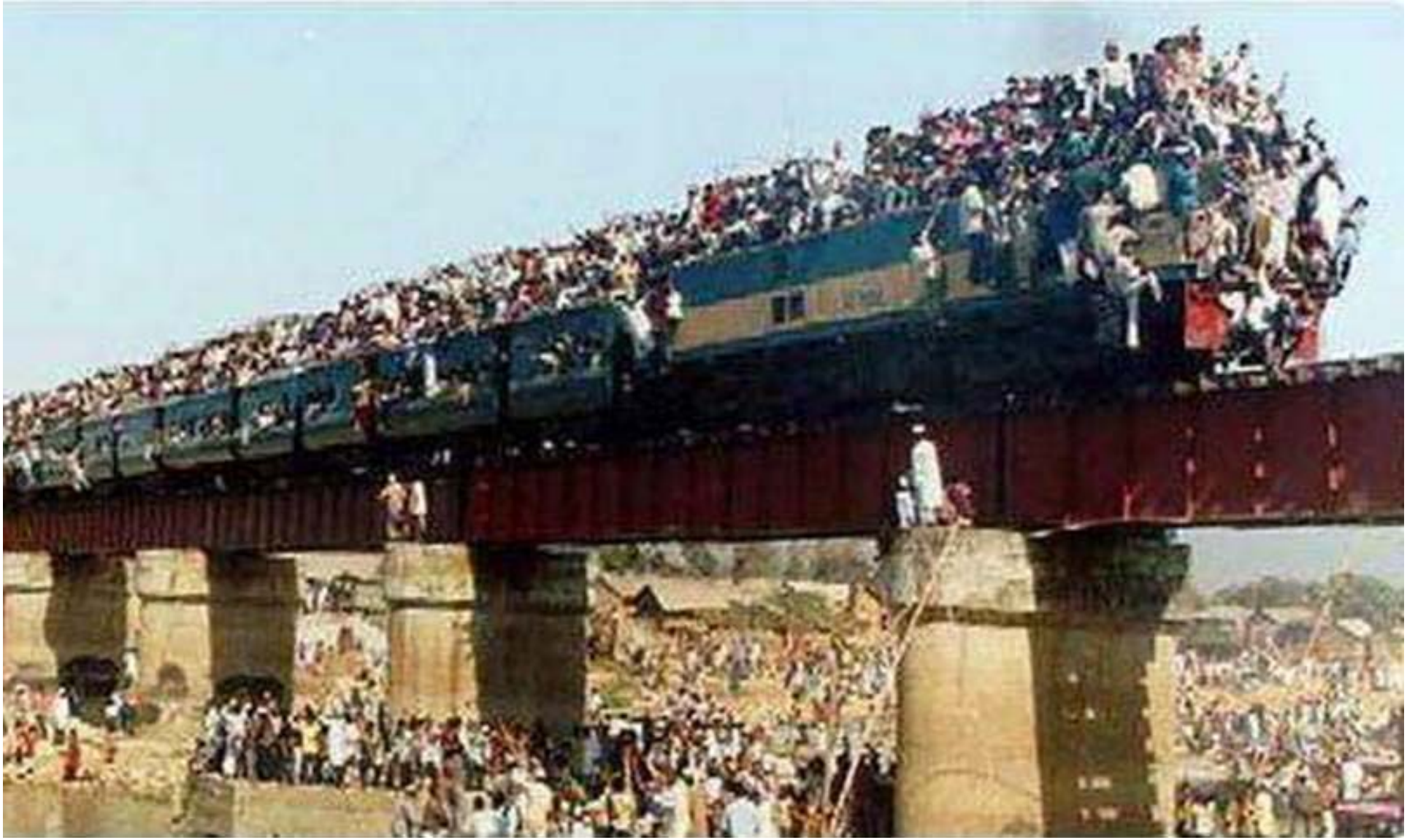
Give risk early consideration

Monitor safety activities continuously

Continuously review system

Good simple process

It is our responsibility to take care of ALL our passengers…



THANK YOU