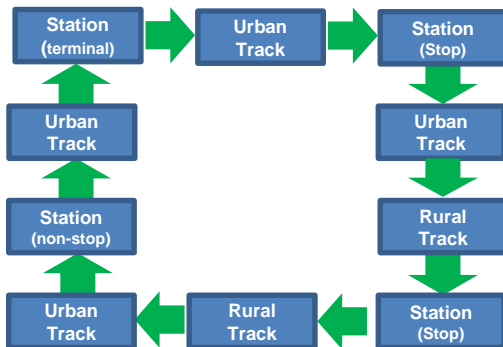
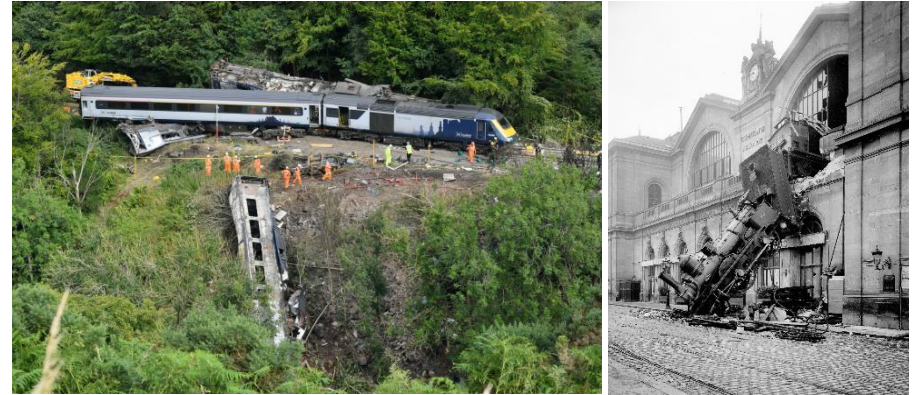


Background

- Rail accidents such as derailments are potentially high severity events.
- These incidents are complex events, usually caused by the combination of a number of factors.



Objectives

- Quantification of train derailment risk using a Fault tree (FT) based approach capable of incorporating the effects of complex asset management strategies and non-constant failure rates .
- The model will also incorporate phased mission modelling capability, where track and environmental conditions (and therefore the level of risk of derailment) vary throughout a journey.

Methodology

- Petri Nets (PNs) are used to model & quantify the effects of asset degradation, failure and maintenance strategies on train derailment risk.
- PN simulation results are applied to a FT model which is analysed using efficient Binary Decision Diagram (BDD) based techniques capable of handling component and event dependencies.
- The FT model & BDD analysis techniques are applicable to both standard and phased mission modelling approaches.

