Applying STAMP at an Enterprise Level to Improve Human Factors Integration
Learn and Adapt (Mental Models)

**Human**

- Observe
- Understand the Situation
- Decide
- Act

Learn and Adapt (Process Models)

**Machine**

- Collect Data
- Analyse the Situation
- Select Course of Action
- Act

Adapted from ISO 9241-810:2020 Ergonomics of human-system interaction — Part 810: Robotic, intelligent and autonomous systems
Financial loss
Loss of life or injury
Loss of trust or reputation
Loss or damage to property or the environment
Failure to deliver the rail service
1. Financial loss
2. Loss of life or injury
3. Loss of trust or reputation
4. Loss or damage to property or the environment
5. Failure to deliver the rail service
Control Structures – Commonly Observed Challenges

- Cyber-physical systems
  - Sensors are often identified as controllers
  - There is a tendency to map the physical system

- Enterprise applications
  - Documents are identified as controllers
  - There is a tendency to map processes

- Variants and dynamics may be overlooked
  - Mode differences
  - Drift/changes over time
Control Structures – Commonly Observed Challenges

- Judgement required to determine appropriate level of abstraction
- Feedback
  - *Often missing or inadequate*
  - ‘Dashboard view’ to make key information visible to multiple controllers
- Hindsight bias
  - *Once seen, insights often seem obvious – it's hard to unsee!*
- STPA is complementary – it's not a replacement or a silver bullet
  - *Systems engineering, human factors, safety culture*
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Tailored training, coaching and facilitation for STPA and CAST

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