ARCHER

My Love-Hate Relationship with bow-ties

Graeme Keith

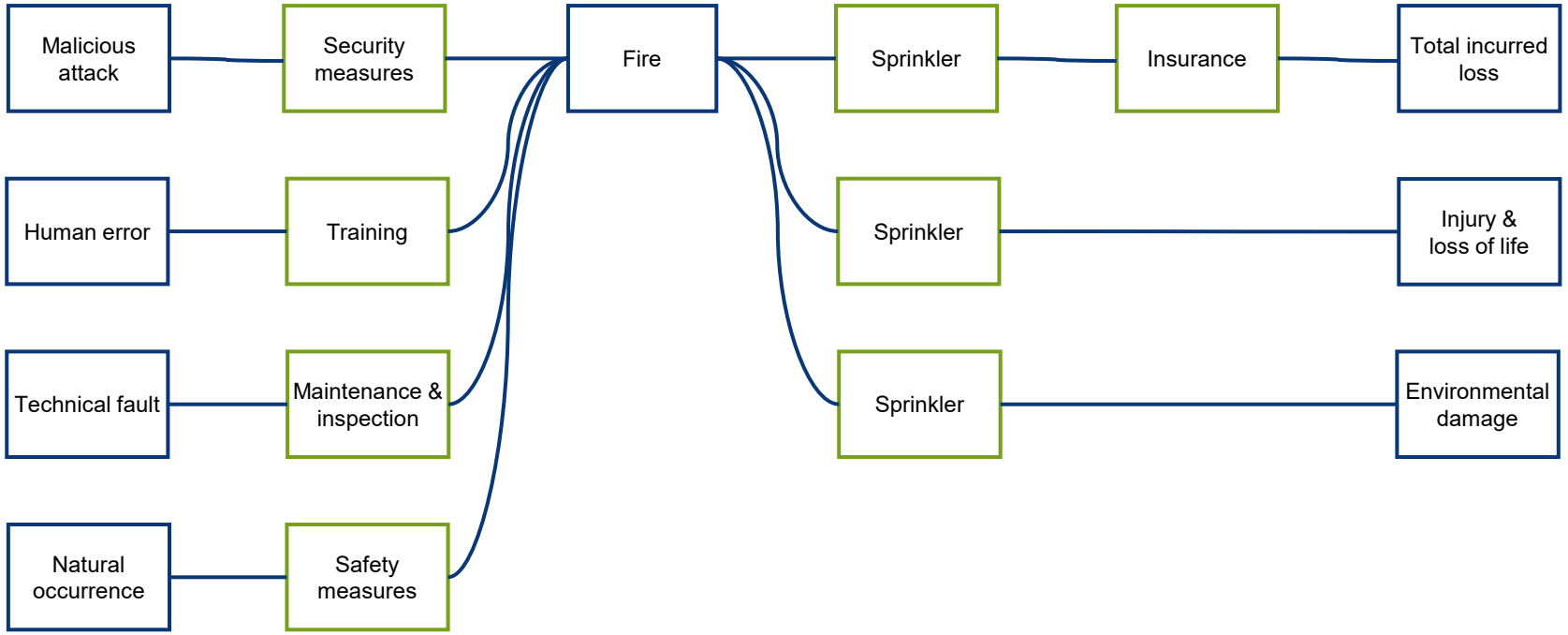
Practice Lead, Risk Quantification

An RSA Business

What is a bow tie?

Photo by Hermes Rivera on Unsplash

What is a bow-tie?



Causality

Photo by Jay Heike on Unsplash

What is a cause?

The Counterfactual Account due to David Lewis

An event X is a cause of an event Y if, *for all other things being equal*, if X hadn't happened then Y would not have happened.

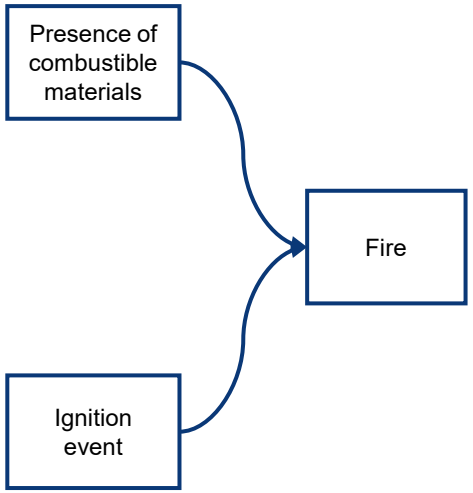
What is a cause?

The Manipulability Account due to James Woodward

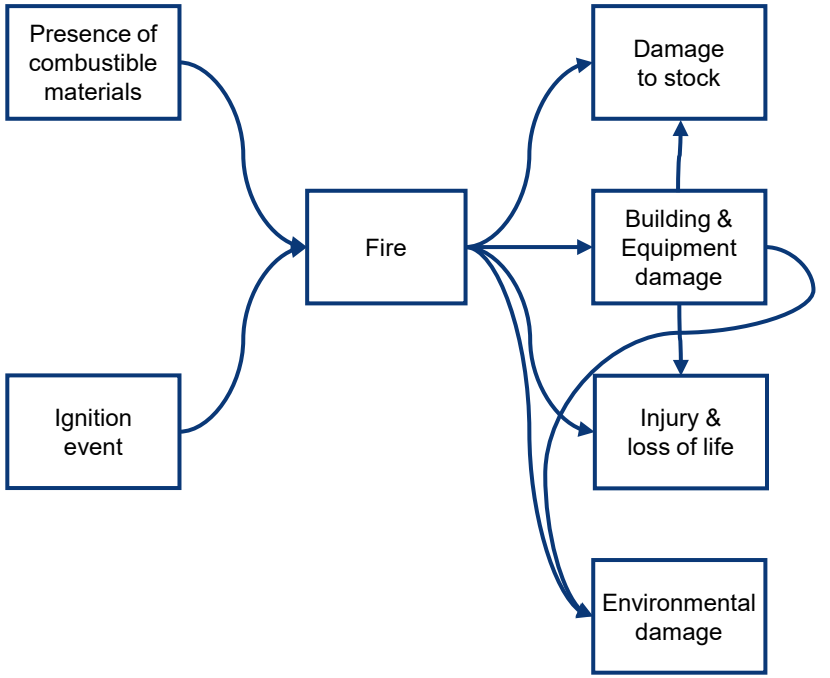
An event X is a cause of an event Y if, *for all other things being equal*, a different value of X would give a different value of Y, or would change the probability distribution of Y

Causal analysis

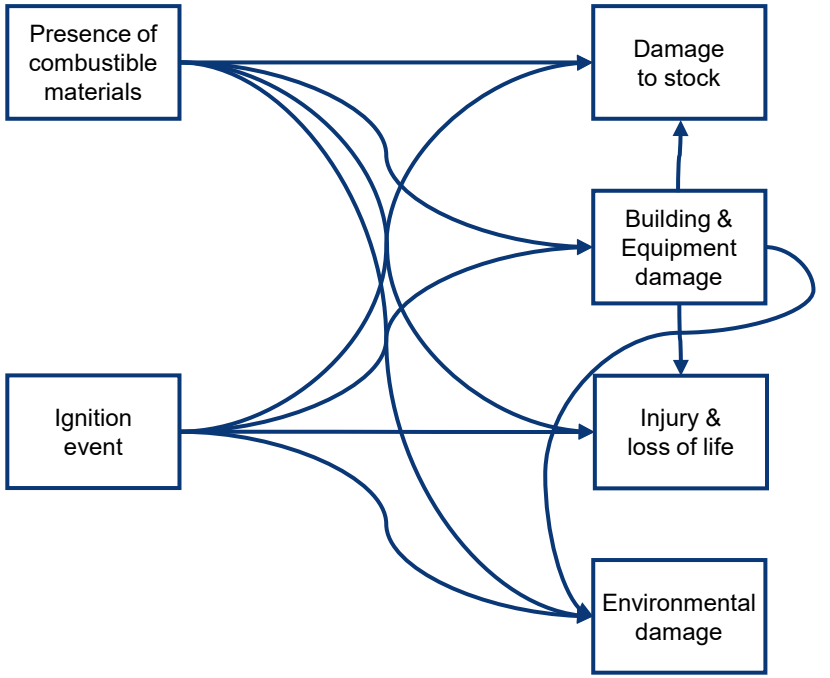
Causal analysis



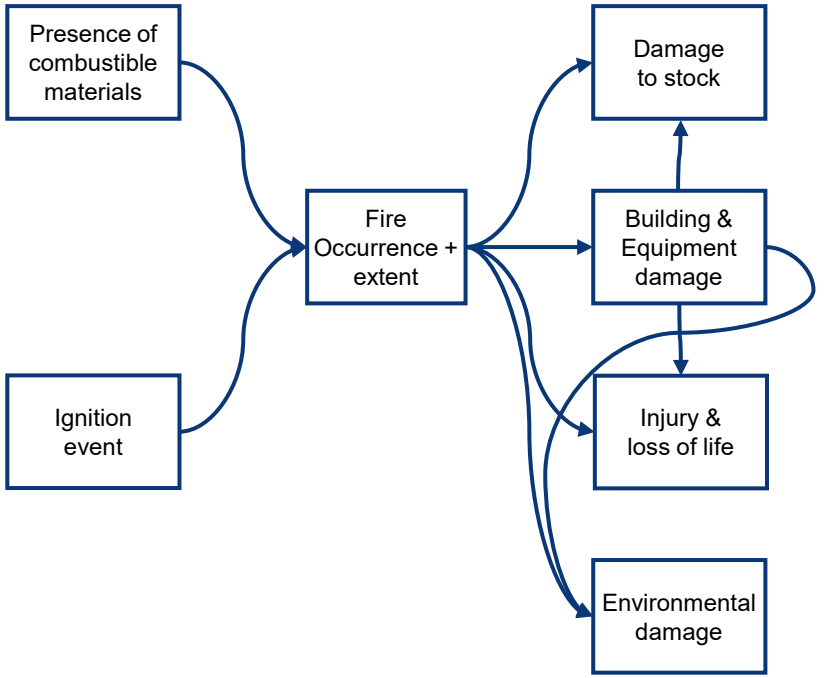
Causal analysis



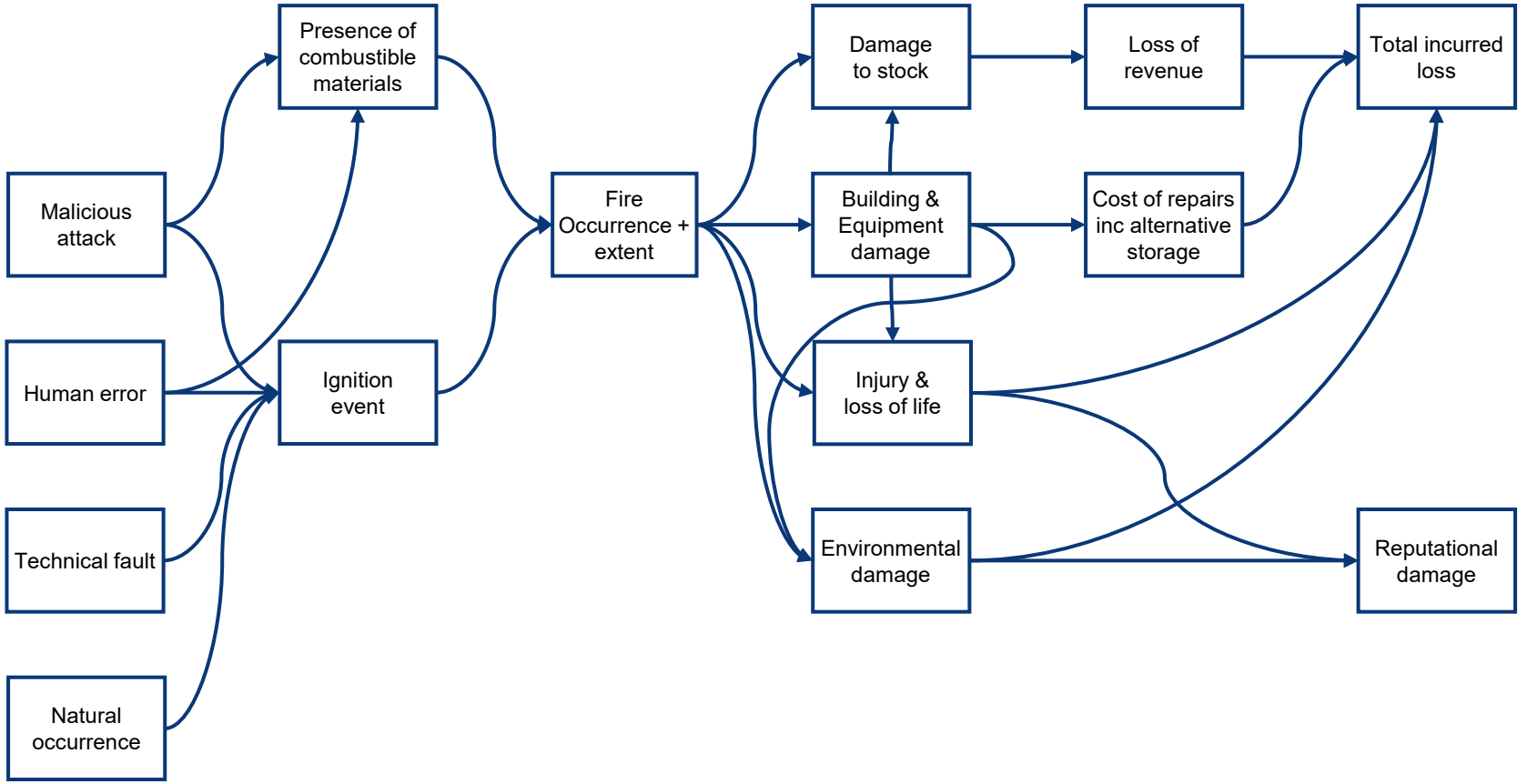
Causal analysis



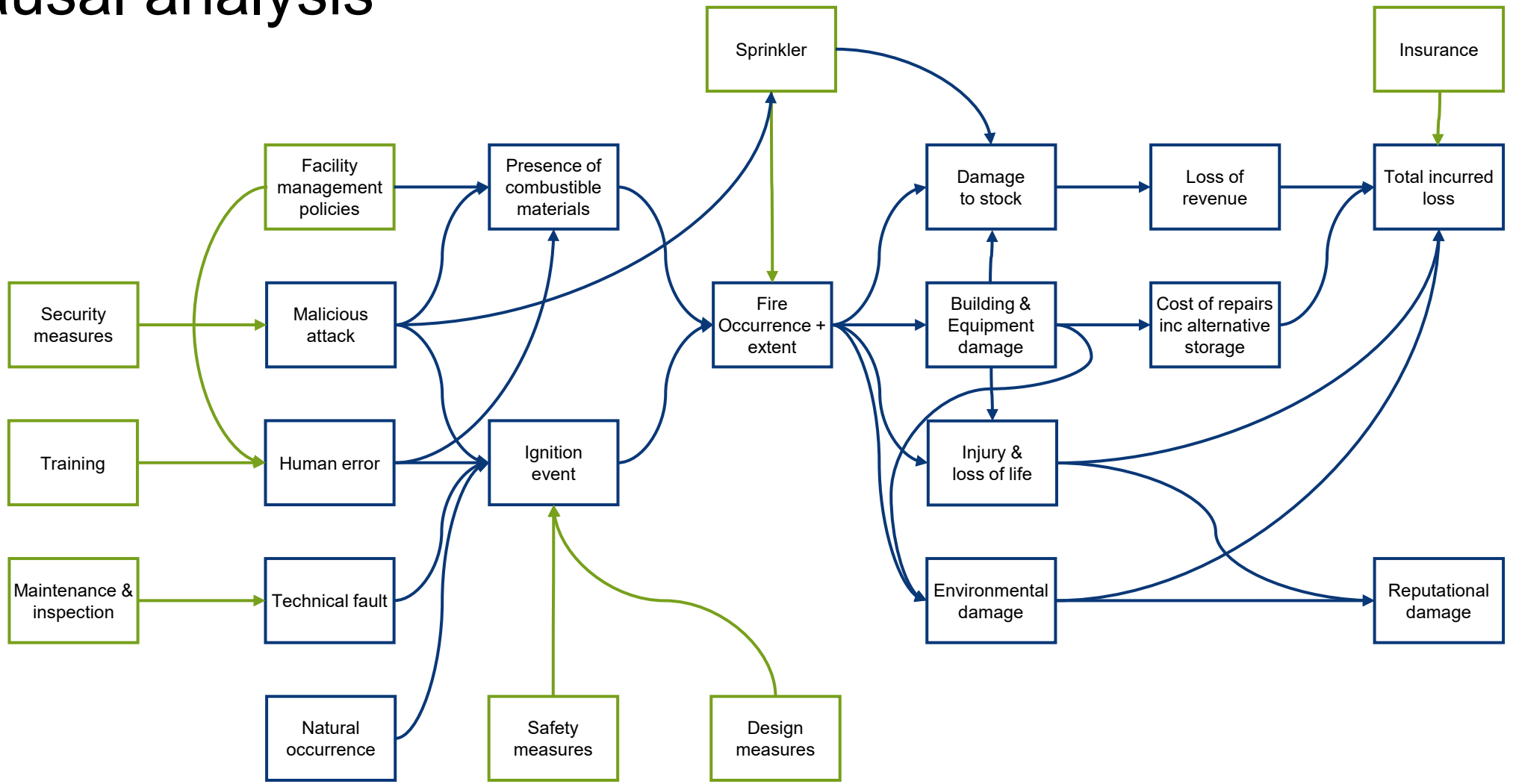
Causal analysis



Causal analysis



Causal analysis



My hate relationship to bow-ties

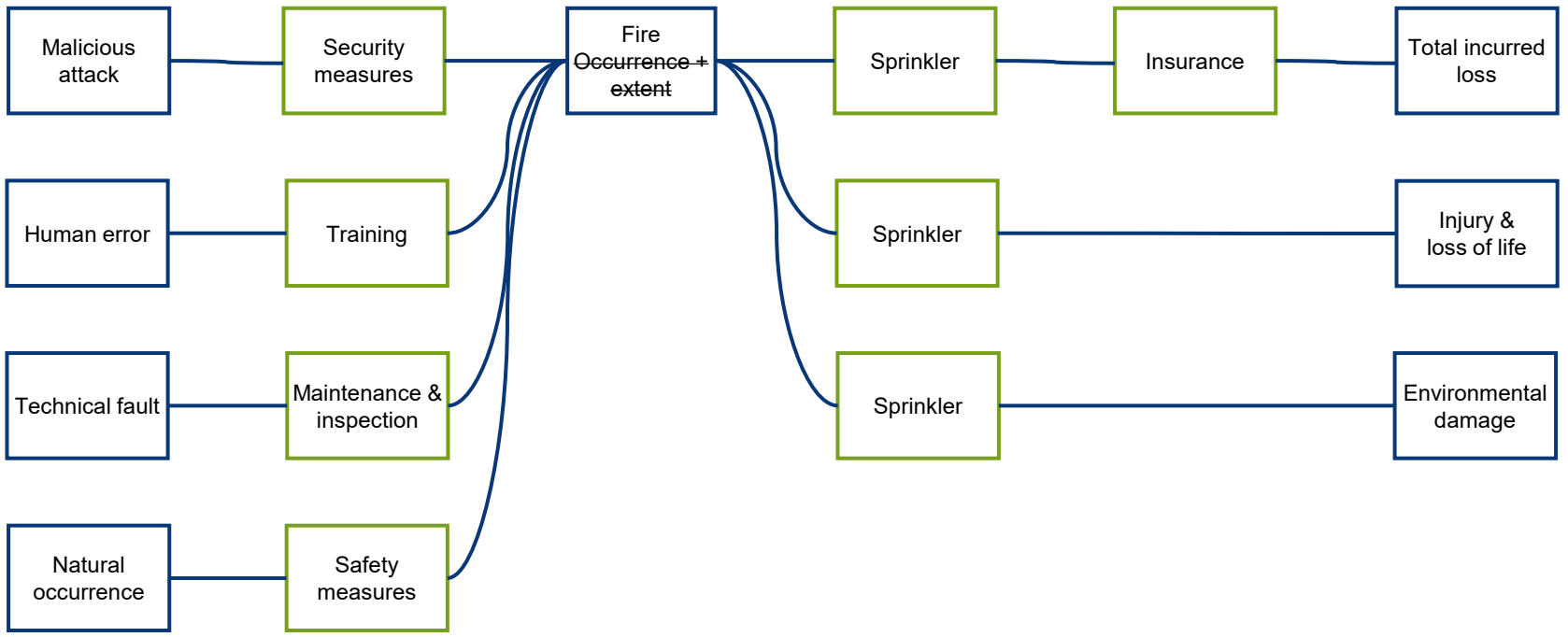
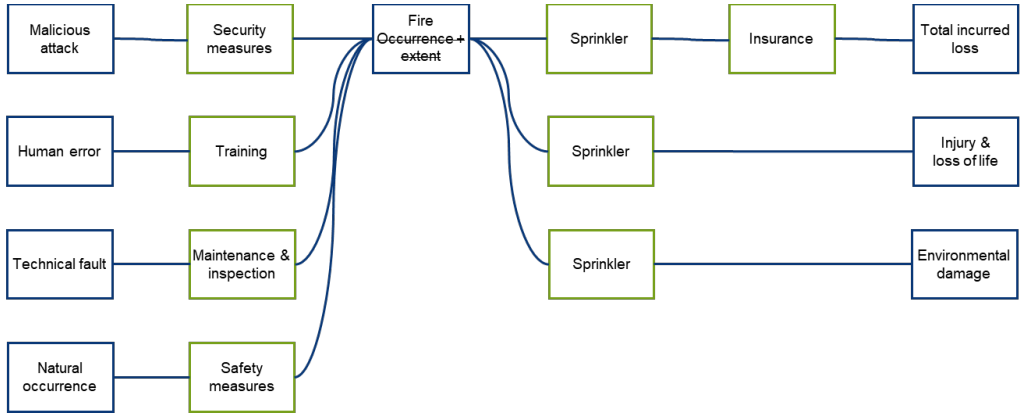


Photo by Builee Com on Unsplash

Photo by Alex Padurariu on Unsplash

My love relationship to bow ties



- Fit-for-purpose paradigm for articulating risks and controls
  - Simple enough to systematize and impose as a minimum requirement enterprise wide
  - Enough structure for coherence and consistency
- Imposes minimum level of analysis where none has gone before
- Allows articulation of analysis results where analysis has been carried out
- Fundamental framework for capturing quantitative information for aggregation
  - Smooth the transition to quantitative assessment where none has gone before
  - Provide enough structure to capture results of more sophisticated analyses
- Require causal analysis for risks with more complex relationships to objectives
  - Market prices, inflation, interest rates, etc.

Take aways

- Causality is central to the management of risk
  - Pearl's formulation (and the mathematics that follows) is excellent, but it helps to think in terms of counterfactuals
- Causal analysis (influence diagrams) is an incredibly powerful tool for analyzing and modelling risk
  - Allows for enormous richness between relations
  - Complete flexibility to adjust granularity of analysis
  - Ability to leverage full causal analysis workbench
- But, causal analysis is an expert, modelling tool
  - Requires training and experience
  - Hard to systematize
- Bow-ties are simple and easy to systematize
  - They impose minimum levels of analysis
  - They provide a common ontology and an appropriate level of structure for reporting risks across an organization
  - They can be used to articulate many kinds of risk, even where causal mapping is a more appropriate tool for analysis