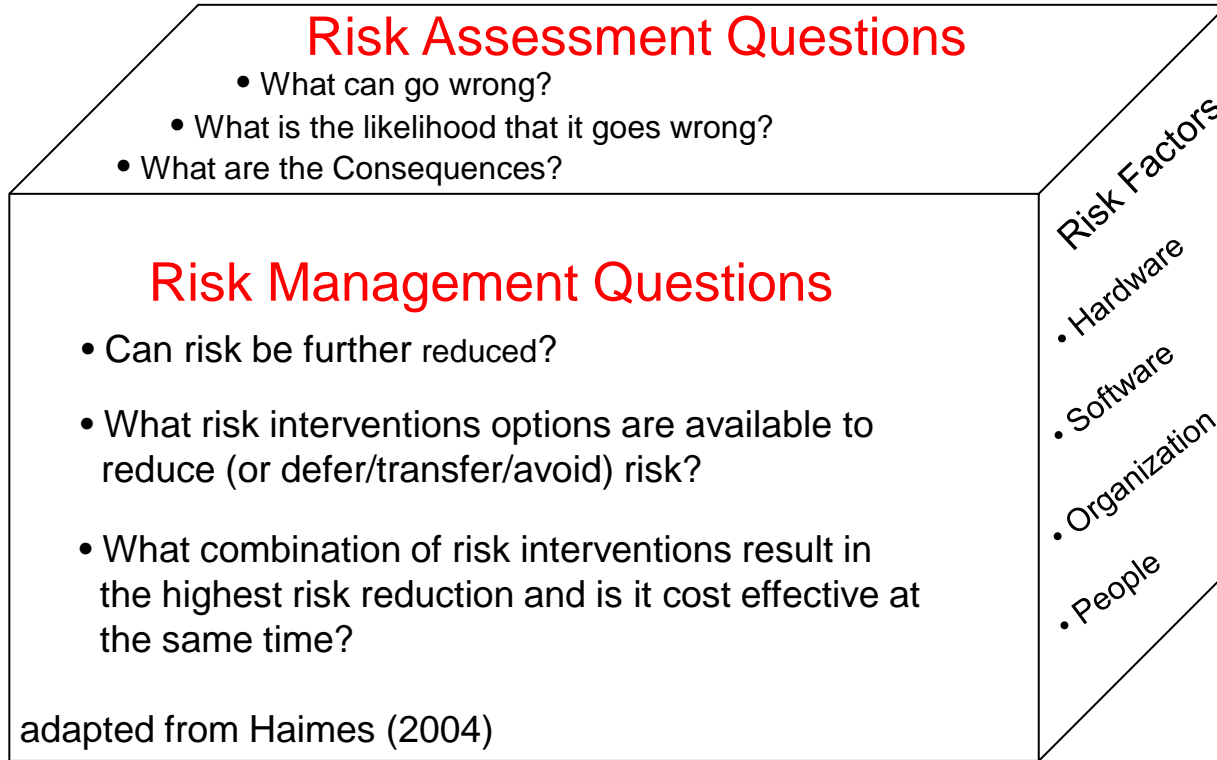


A Causal Chain Risk Framework for Risk Management

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Facets of Risk Assessment & Risk Management



Typical Sequence:

1. Answer Risk Assessment Questions

2. Answer Risk Management Questions

Consequence:

- Risk Management is treated as **aftermath**.
- Risk Assessment Modeling may not be suited to answer Risk Management Questions

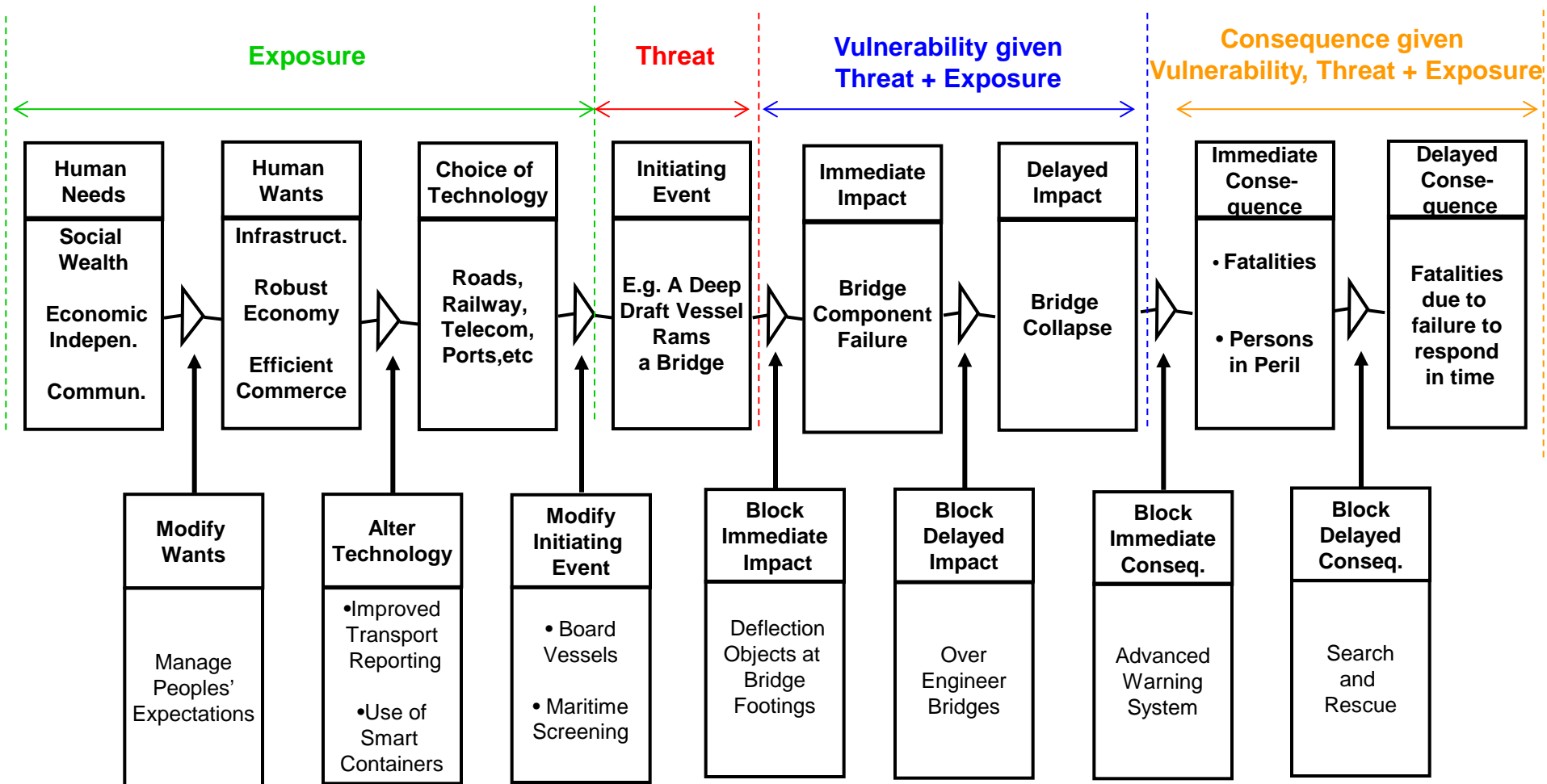
Objective of Presentation

Re-focus Risk Assessment towards answering Risk Management Questions

Contrast:

- Purpose of Risk Assessment is to answer the Risk Management Questions.

Disaster is the result of a series of cascading events/circumstances

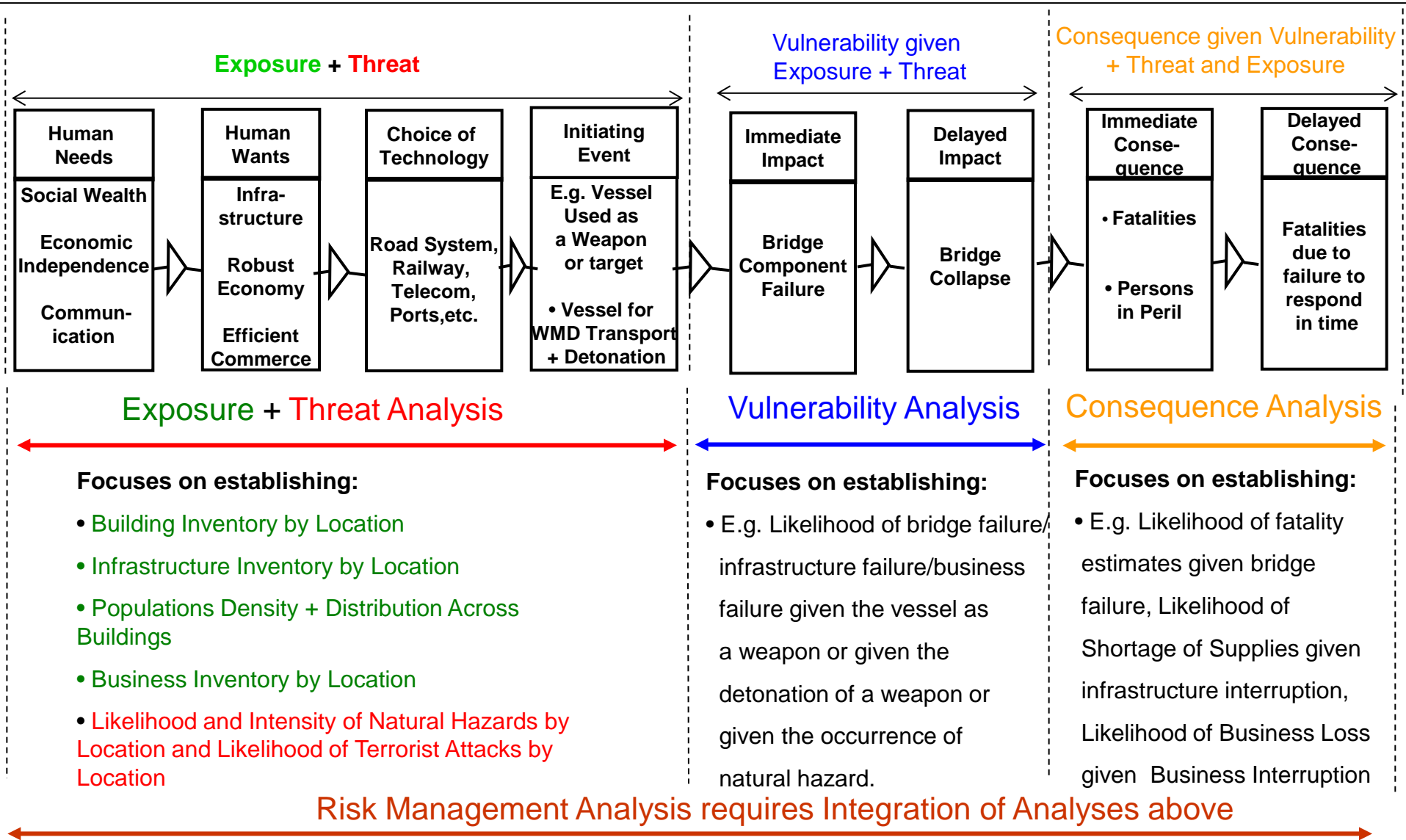


Risk interventions block **Causal Pathways** and are **The Risk Management Instruments**

Classifying Risk Intervention Measure Classifications according to their objective

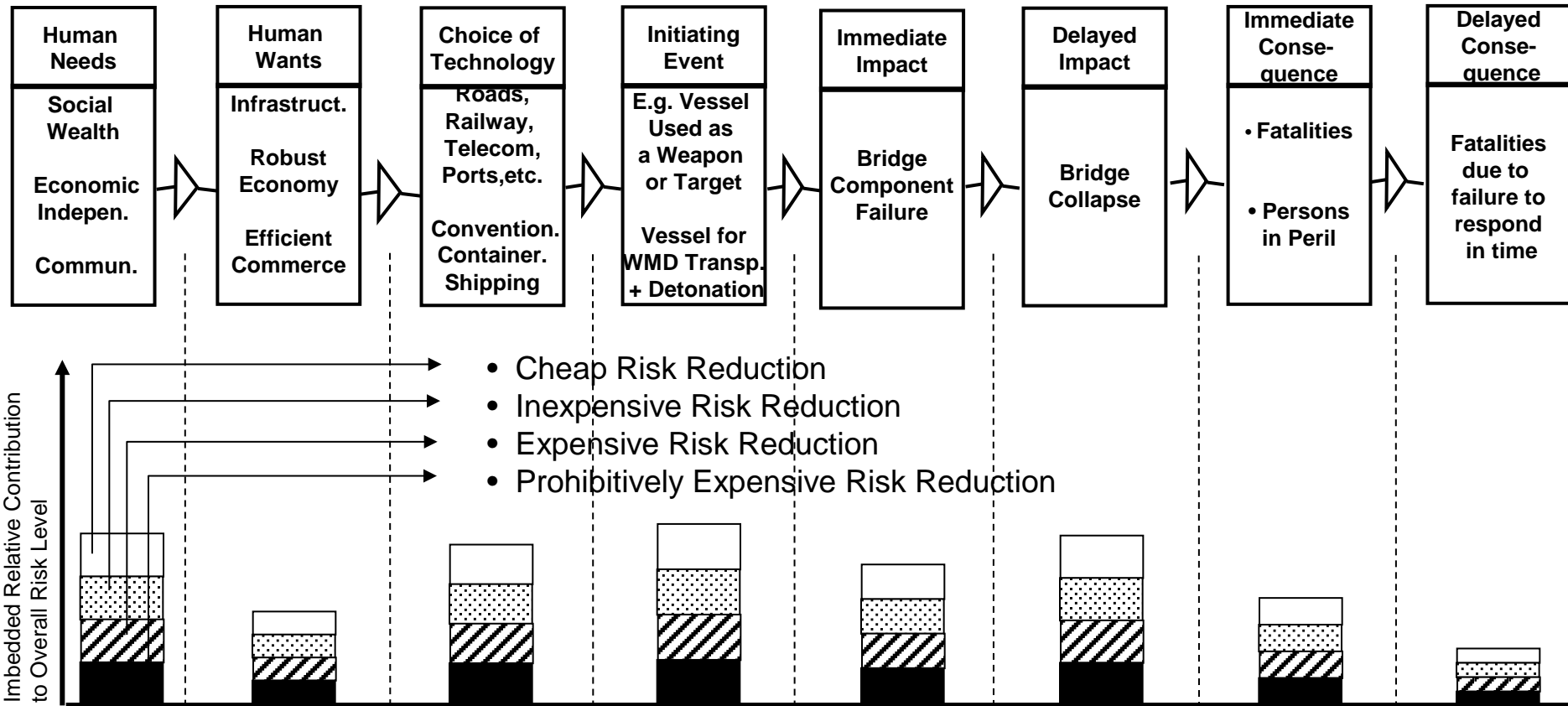
- Reduce Exposure
- Reduce Threat given Exposure
- Reduce Vulnerability given Exposure + Threat
- Reduce Consequences given Vulnerability + Threat + Exposure

SOME ANALYSIS TERMINOLOGY



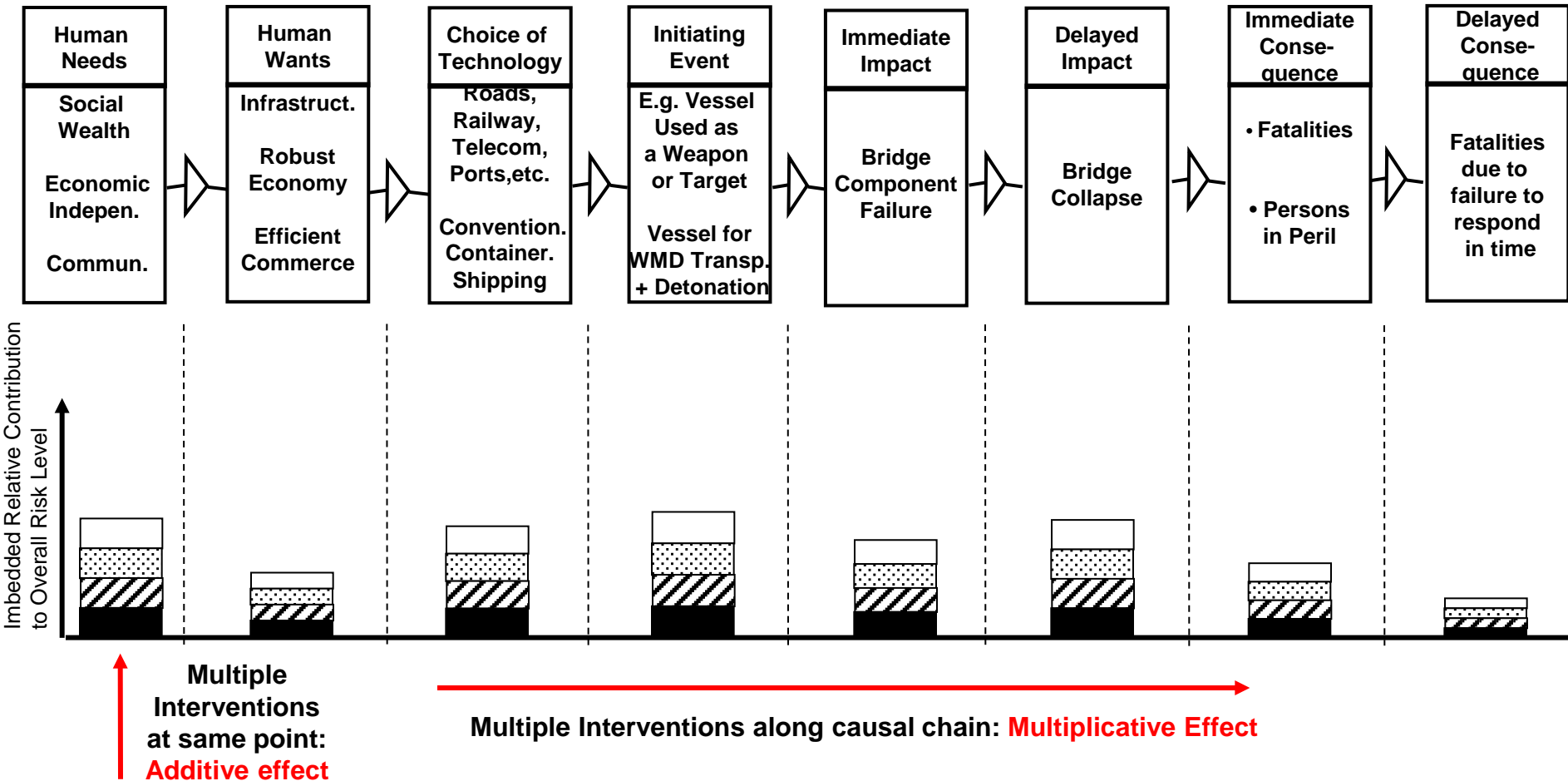
WHY MODEL RISK INTERVENTIONS RELATIVE TO CAUSAL CHAIN?

Disaster event is the result of a set of Cascading Events/Circumstances



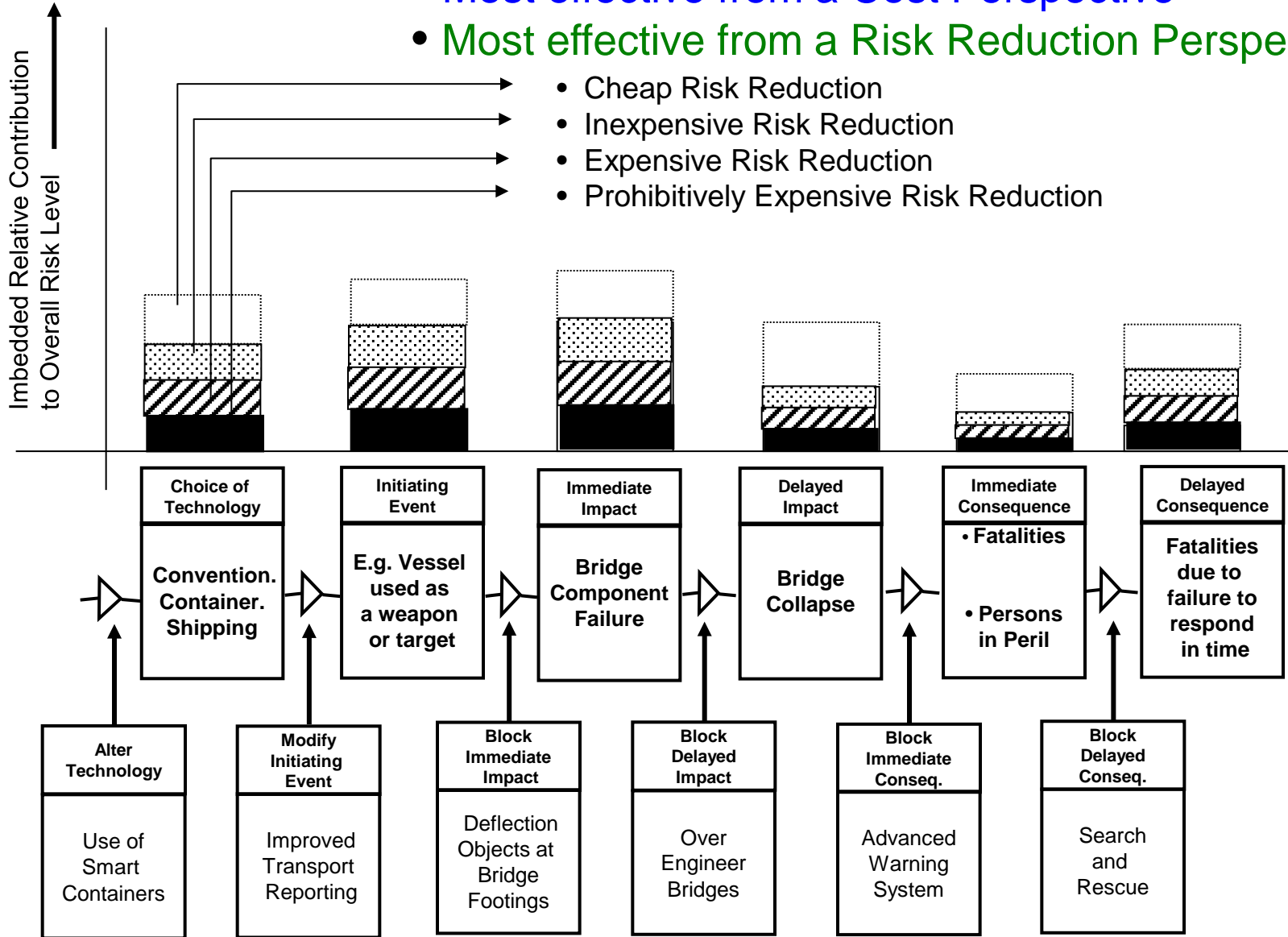
WHY MODEL RISK INTERVENTIONS RELATIVE TO CAUSAL CHAIN?

Disastrous events are the result of a set of cascading events



Multiple Interventions at different locations:

- Most effective from a Cost Perspective
- Most effective from a Risk Reduction Perspective



Summary

- **A causal chain** is a series of events connect by causal pathways. A Disaster is the result of a series of cascading events/circumstances that can be **graphically** depicted by a causal chain or **a series of causal chains**.
- **Risk interventions** in principle try to block **causal pathways**.
- **The causal chain framework** may be used as **a creative tool to identify risk interventions** that have not been considered.
- **The defense-in-depth principle** (i.e. intervening at as many causal pathways as possible) is effective from a **risk management and cost point of view**.
- **Drawing causal chains and allocating risk interventions already in place** may identify those causal pathways that have not been intervened yet. Thus application of the defense-in-depth principle allows application of some risk management **without complicated quantitative risk assessments**.
- **Quantitative risk assessments** are needed to **further prioritize risk interventions** if a causal pathway can be addressed more than once or not every causal pathway can be addressed.