

Subject & Research Question

This PhD research aims to understand how seaports are (and could be more effectively) governed to prevent, prepare for, mitigate and manage **infrastructure failures** due to **complex risks**.

How do institutional arrangements shape the governance of resilient seaports and how could these infrastructure systems be more effectively governed?

Working hypotheses

- **Risk governance** in seaports is highly complex. It involves coordination of **institutional arrangements** across policy domains, policy levels and territories.
- **Institutional arrangements** are systems of rights, values, rules, and decision-making procedures that enable or constrain the action and interaction of different actors.
- However, the **institutional arrangements** are **'fragmented'** reinforced by privatization, liberalization and deregulation.
- In recent years complex risks like **cybercrime & pandemic diseases** have emerged in seaports that require coordination across institutional arrangements.

Relevance & academic contribution

- The thesis provides insight into the governance of **complex risks** in seaports
- Specific forms of **coordination across institutional arrangements** are identified.



Fig. 1 APM Terminals, Port of Rotterdam, location of recent cyberattack in 2017 (Source: Port of Rotterdam)

Paper-based PhD

01

Analysis of the national risk governance strategy for critical infrastructures

02

Coordination of institutional arrangements for flood risk governance in the Port of Rotterdam

03

Governance of cybersecurity and cyberresilience in the Port of Rotterdam

04

Managing pandemic diseases in the Port of Rotterdam

05

Effective governance of systemic risks and institutional reform in nested infrastructure systems

Methods

Data collection & analysis

- Case study: Port of Rotterdam
- Document analysis of relevant policy documents
- Expert interviews with organizations across policy levels, policy domains, and territories

Challenges

- Difficulties to access experts and sensitive data in the field of security
- Potential move from offline to online interviews due to the Covid-19 pandemic

Interim Results

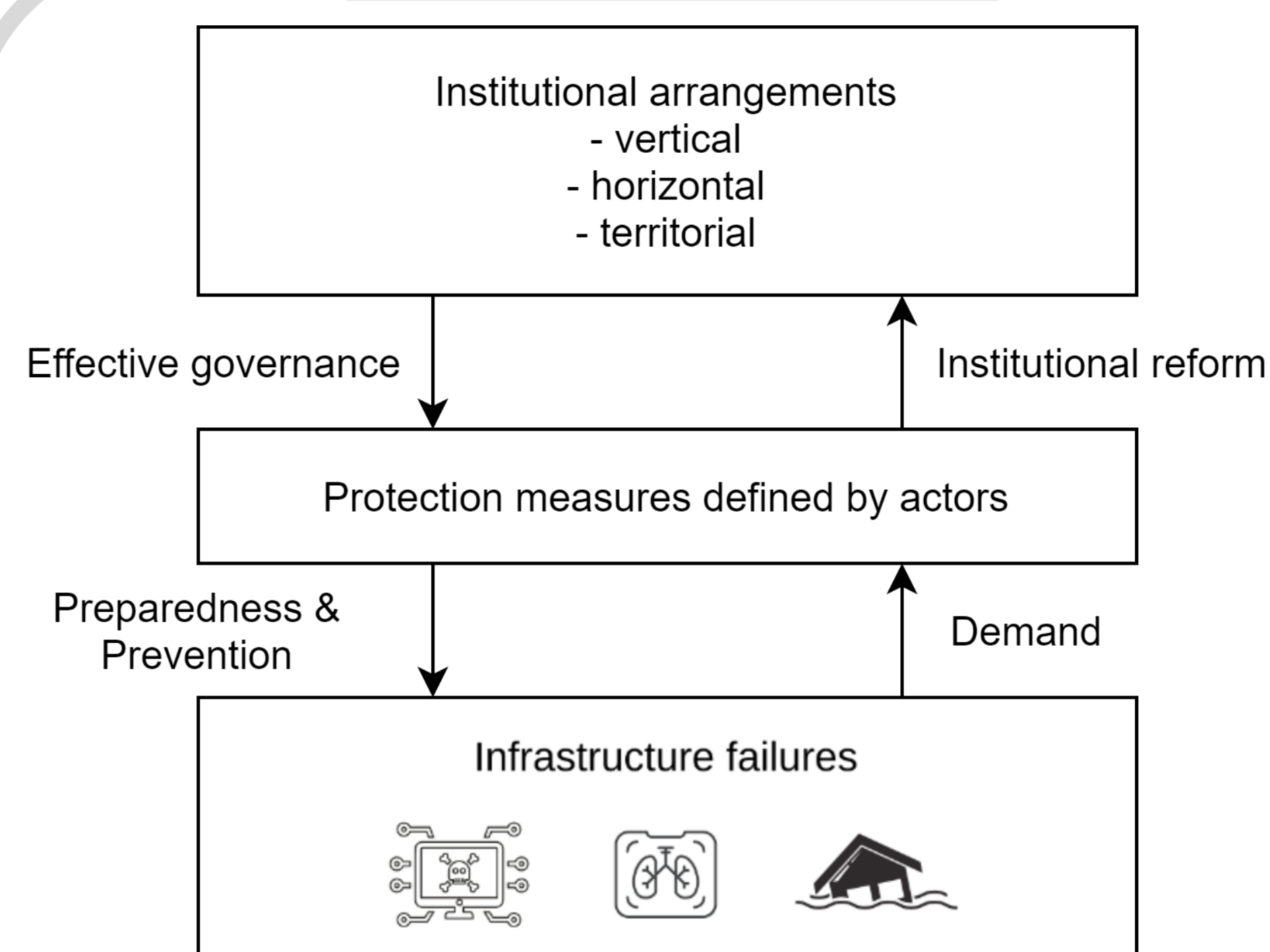


Fig. 2 Conceptual framework based on literature review

Cooperation & Highlight

Specific cooperation at KRITIS with [Eva Platzer](#) on [scales of responsibility – discussion on governance, coordination of shared responsibility and infrastructure protection](#)

Preparation Group ["Circulation in Critical Infrastructure"](#)

Working Group/Session ["Concepts of Infrastructure"](#)

Joint doctorate/ [cooperation with Utrecht University](#)

Highlight KRITIS: visits & lectures from Mercator fellows

Integration into the Research Programme

Criticality & vulnerability

- Seaports as **'nested'** infrastructure systems: numerous subsystems are enclosed in a larger infrastructure system (see: Russian Matroschka doll)
- **Vulnerability of complexity**: Cascading effects cause failures in seaports

Protection of KRITIS

- How can ports prevent or prepare for infrastructure failures?
- Identification of **protection measures** against complex risks

Dynamics

- **System of systems**: integration of fragmented institutions as well as bundling technical systems

Time & space

- Risk governance should account for **spatial/temporal dimensions**.



My contribution to KRITIS is to understand and explain the challenges of risk governance of complex seaports and how seaports can more effectively mitigate, and prepare for, risks of cascading effects.