Technical Committee
Risk & Resilience

国土交通省 港湾局 技術企画課

平澤 興

令和3年7月20日

これまでの経緯

国土交通省

Chair: Tessa Major（ブラジル　アスー港CCO）
IAPH副会長

2020年11月10日　　第1回委員会
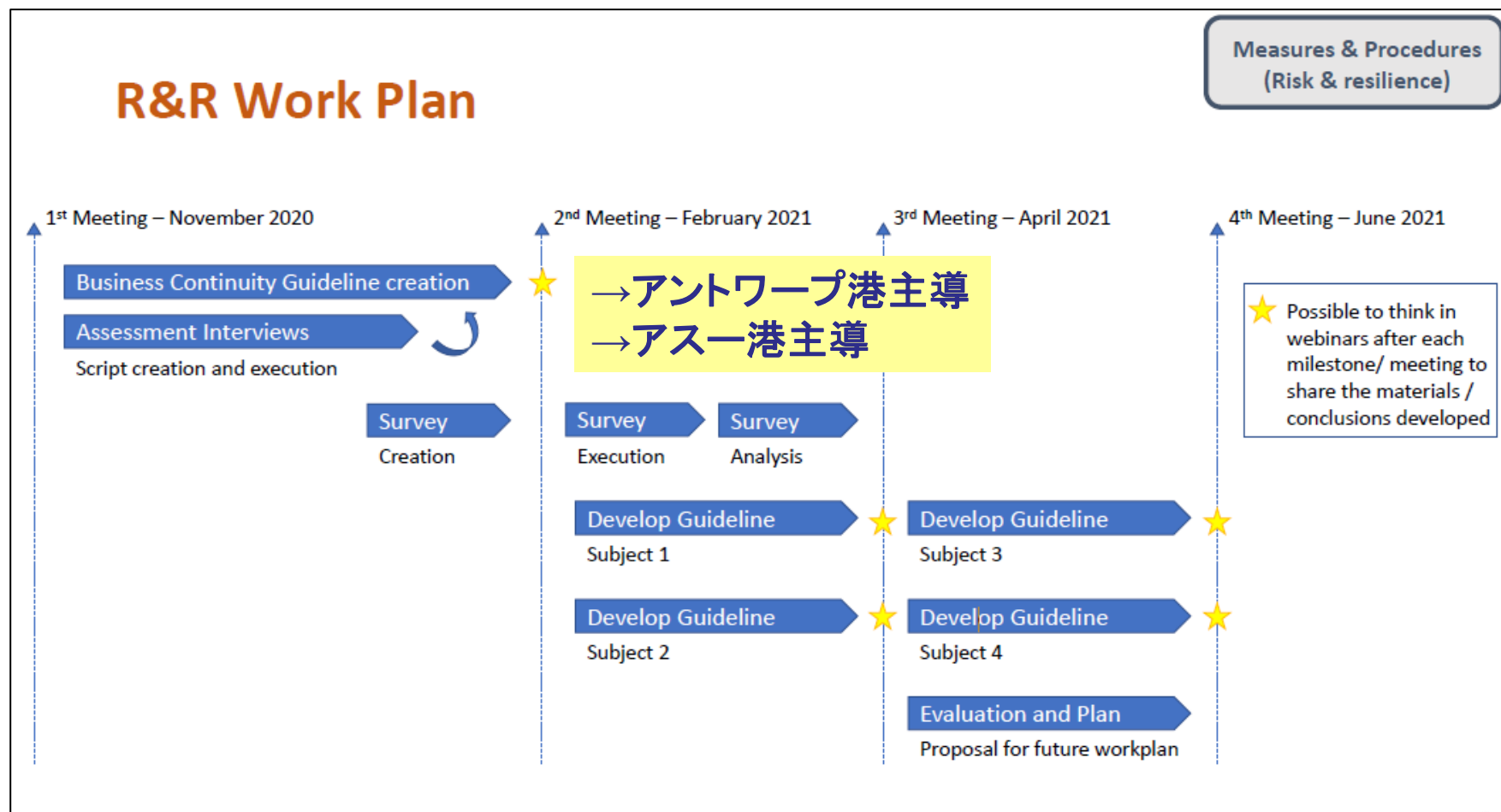
2021年　2月25日　　第2回委員会

2021年　4月22日　　第3回委員会

2021年　6月22日　　IAPHオンライン総会

　　　　　　　　　　　　　Risk & Resilienceセッション

2021年　7月　7日　　第4回委員会

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Business continuity policy and risk preparedness

第1回（2020.11.10）資料より

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4 Individual Topics:

◆ **COVID-19**

　　WPSP COVID-19 GUIDANCE DOCUMENT FOR PORTS の報告

◆ **Anti-corruption**

　　Maritime Anti-Corruption Network (MACN) との連携

◆ **Extreme weather**

　　PIANC Navigating a Changing Climate project との連携

◆ **Dangerous goods**

　　ICHCA との連携 （ベイルートでの事案を踏まえ）

Two-layer approach for the Survey:

〇 詳細なインタビュー。
　　 対象は、地理的多様性とリスク特性を考慮して選定。

〇 ハイレベル調査 ➡ Climate and Energy TC及び
　　　　　　　　　　　　　 Data Collaboration TC と連携し、
　　　　　　　　　　　　　 「IAPH Dashboard」を構築

Welcome to the IAPH Risk and Resilience survey. Our aim is to find out how your port proactively plans coordination and response to coordinately in **disruptive** risks / events that could threat business continuity and/or stop operations (such as natural disasters, pandemic situations, large scale explosions, cyberattacks, an others)

We would like to separate this from operational risks (such as security, compliance, environmental impacts, etc) which is monitored and controlled internally, and related to improving management and operational procedures. Business Continuity analysis is defined in this case as the ability to identify, to monitor, to anticipate, to respond and to learn.

To help identify resilient performance when adverse conditions prevail, we request your collaboration by answering the following questions to help us form a picture worldwide on how well ports are prepared for future crises.

Short Survey (Online Promotion) - status of ports and business continuity plans:

1. Does your port document a structured process to identify and evaluate Business Continuity related risks and opportunities? (Yes or No)
2. Which of those plans do you currently address / consider? (multiple options - crisis management, emergency management, disaster recovery, risk management; Business Continuity Plan, BIA (Business Impact Analysis – main activities), climate change adaptation plan others/specify, none)
3. What are the main issues/opportunities considered on your company (top 5)? (infectious diseases, corruption, extreme weather, dangerous goods, livelihood crises, cybersecurity, digital inequality, prolonged stagnation, terrorist attacks, youth disillusionment, social cohesion erosion, human environmental damages, asset bubble

インタビュー調査の構成案

第2回（2021.2.25）資料より

Guidelines on risk & resilience

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- Purpose: provide generic guidelines on risk and resilience to provide members with a starting point.
    - not focussed on specific national/regional requirements
    - From risk to mitigating measures to resilience

- Intro: About IAPH / Table of contents / Foreword / Summary
- Chapter 1: Risk and Resilience
    - Introduction with examples of disruptions: Mumbai, R'dam, Houston,...
    - Risk: ISO 31000 based / environment of the port / external & internal factors
    - Disruptive events: types
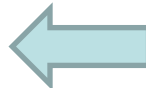   - Resilience (next)

第2回（2021.2.25）資料より

Organizational resilience model (Duchek, 2019)

第2回（2021.2.25）資料より

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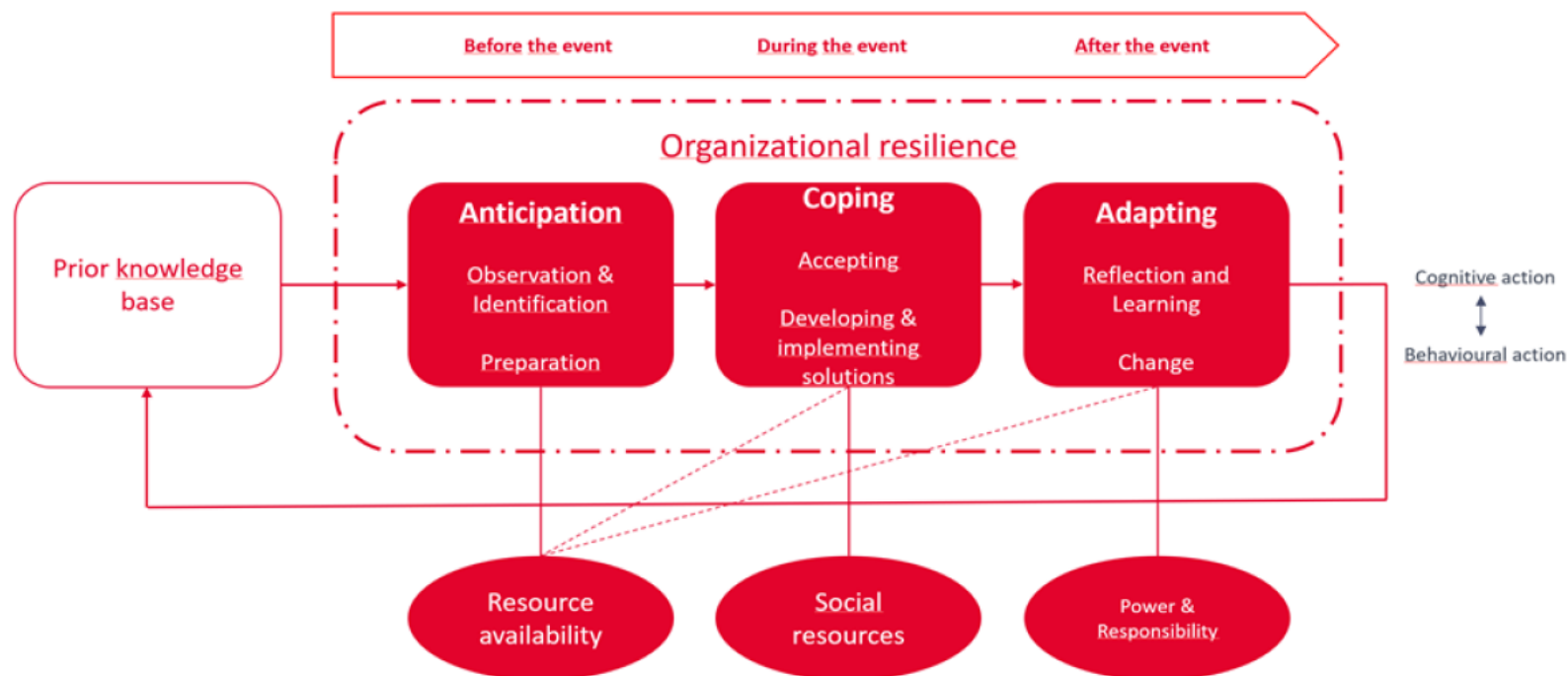
Guidelines on risk & resilience – Content Ch.2

第2回（2021.2.25）資料より

IAPH Global Port Tracker

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- traditional port performance metrics, such as cargo turnover, vessel calls etc. ⬅ IHS Markit
- sustainability performance indicators, corresponding to the three strategic focus areas of IAPH (risk and resilience, climate and energy, data collaboration)

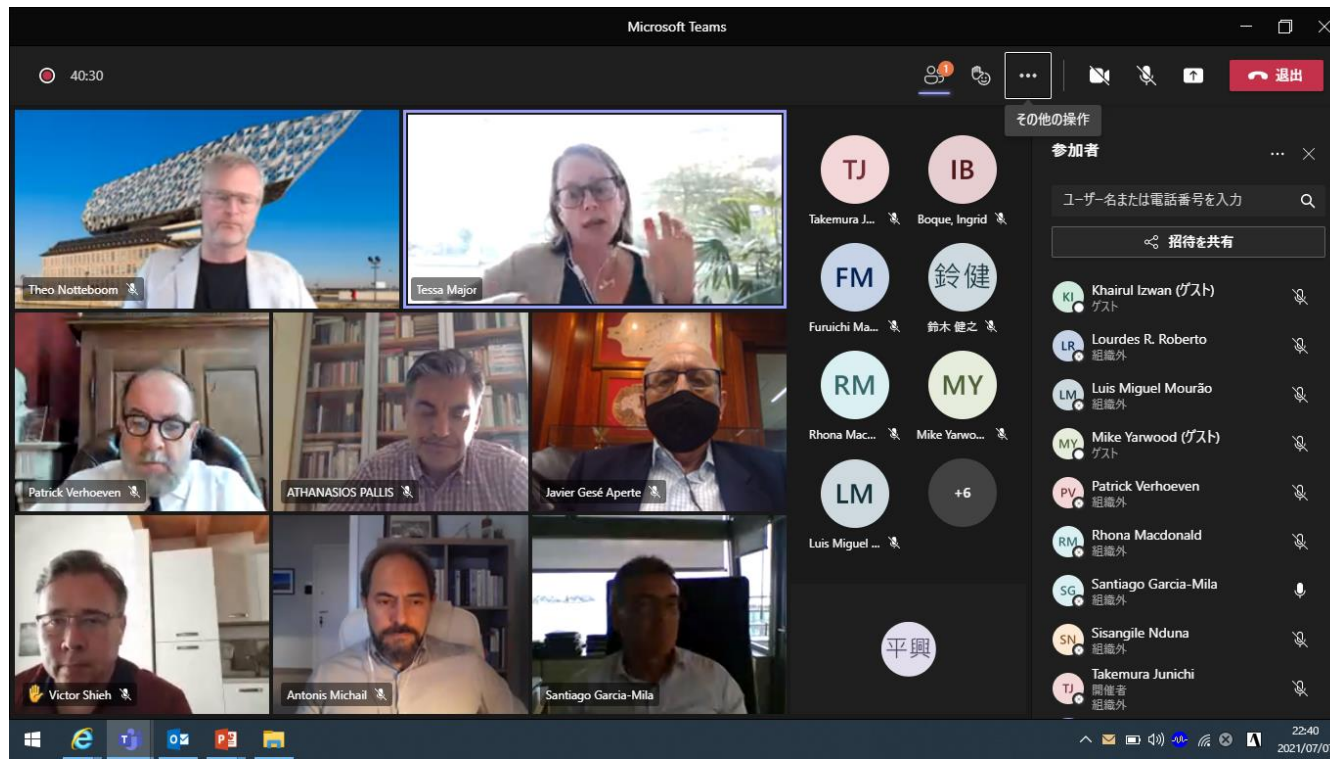IAPH Dashboard on port performance   *Draft content outline, Version 1.0*

	Potential Questions	Type of answer
Climate and Energy	Monitoring Carbon Footprint?	Port Authority level / Port Area level / No
	Carbon reduction and/or neutrality targets?	Port authority / Port area / No
	Production and use of renewable/green energy in the port	Solar / Wind / Tidal / Hydrogen / Other
	Carbon capture and storage	No action / Design / Implementation / Operational
	Provision of high voltage OPS for commercial vessels	No action / Design / Implementation / Operational
	Provision of incentives to best performing vessels	ESI / Other / No
	Low and zero carbon fuels available in the port	List of fuels to select from, for each: No action / Design / Implementation / Operational
	Pilot projects on JIT and Port Call Optimization	No action / Design / Implementation / Operational
Data Collaboration	Conformity with the FAL requirement for electronic data exchange	No action / Design / Implementation / Operational
	Implemented Port Community System	No action / Design / Implementation / Operational
	Implemented National Maritime Single Window	No action / Design / Implementation / Operational
	Implemented Port Management System	No action / Design / Implementation / Operational
	Current application of smart port technologies in the port	IoT / Blockchain / 5G / Artificial Intelligence / Digital twins
	Cyber security measures	No action / Design / Implementation / Operational
Risk and Resilience	Structured process to identify and evaluate Business Continuity related risks and opportunities	Yes/ No
	Plans and processes currently applied	Risk Management / Emergency Response / Crisis Management Plan / Business Continuity Plan
	Main risk topics / priorities	Select from a list / Other
	Risk and Resilience preparedness	No action / Design / Implementation / Operational
Governance and ethics	Regular sustainability reporting	Separate sustainability report / Sustainability section on port annual report / No
	Integration of UN SDGs	Reference / Systematic follow-up / No
	Percentage of women in managerial PA positions	0-10 / 10-20 / 20-30 / 30-40 / 40-50 / 50+ %
	Percentage of women in operational positions	0-10 / 10-20 / 20-30 / 30-40 / 40-50 / 50+ %

第3回（2021.4.22）資料より

1. Risk & Resilience Research

2. Business Continuity Management
　　-Experience from the Port of Antwerp-

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Question from IAPH Technical committee on Risk & Resilience

- IAPH aims to develop a dashboard-like tool to check how members are doing in terms of resilience management
- Pre-test a survey through qualitative interviews
- Get an idea what the challenges are

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The research team

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The process

Conceptual framework on resilience

Interviews with 12 ports (in 6 regions) **実際には10港**

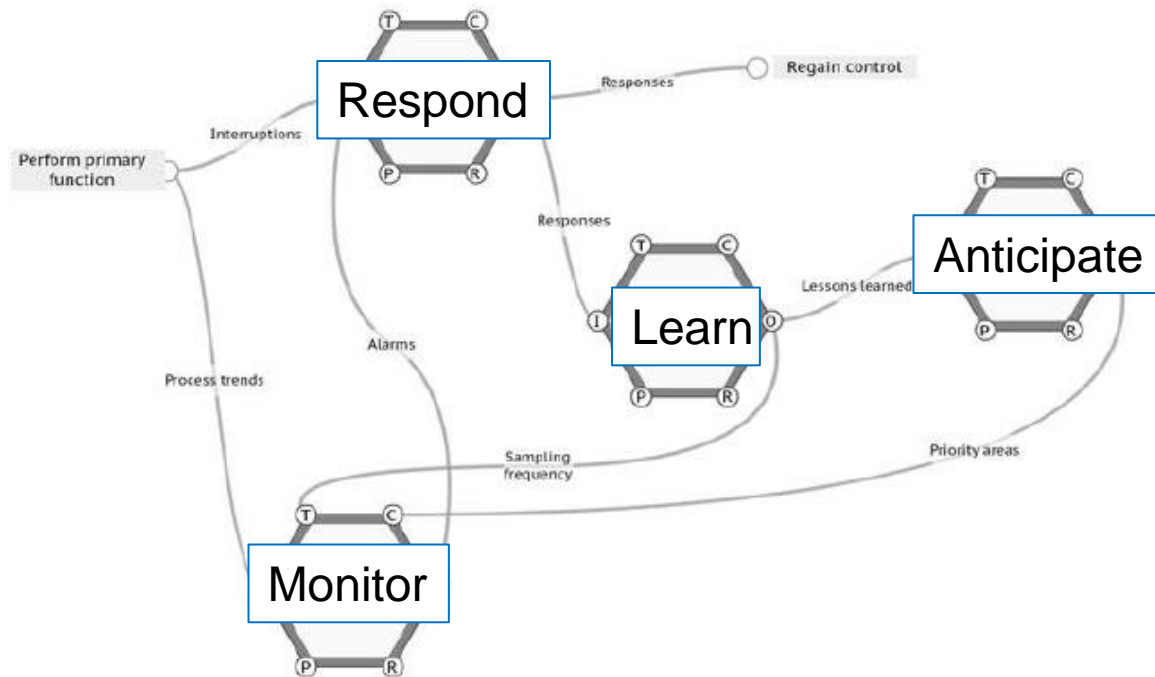Gauge appetite and level of awareness for resilience

Based on analysis, findings will be presented

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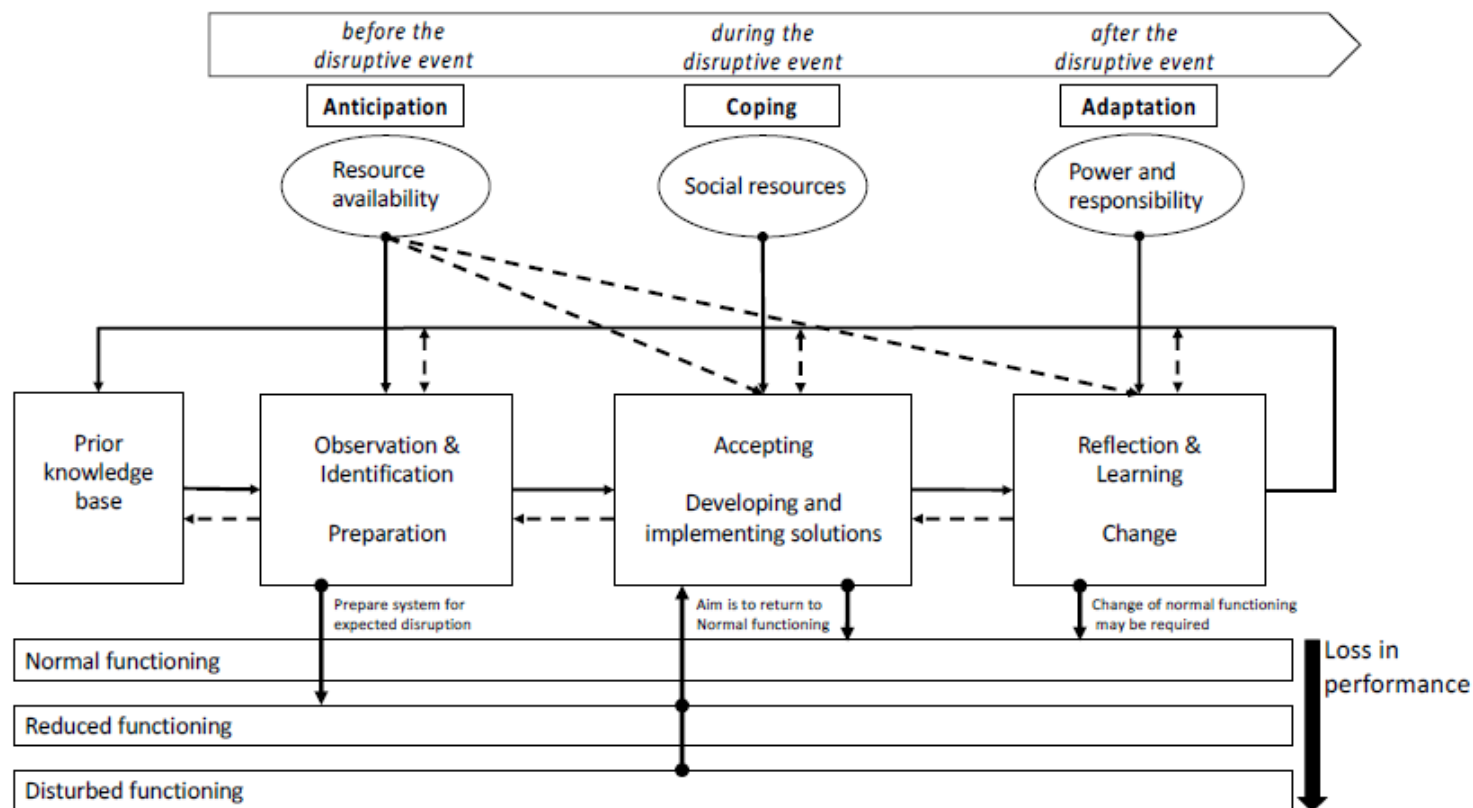
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What is resilience?

Respond

Anticipate

Learn

Monitor

Regain control

Responses

Perform primary function

Interruptions

Responses

Lessons learned

Alarms

Process trends

Sampling frequency

Priority areas

Erik Hollnagel, 2016; p. 86

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Based on Duchek, 2020

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Findings – overall remarks

- No two ports are the same!
  - Variations in operations, climate conditions, capacity, ownership, etc.
- All ports experienced consequences of COVID-19 pandemic
- 'Temporariness of operations' has a varying impact on the actual risks in every port
- As critical infrastructures, ports should have a central resilient position in the supply chain
- Resilience is often seen as something operational and for safety & risk department, not strategic and organization wide

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Results: Anticipation (1/2)

- Some disruptions, leading to delays, may be foreseen
- Regulatory, financial & operational challenges
- Climate (change) and natural disasters as a challenge for business continuity
- Operational hazards (fire, spills, obstruction of port entrance, etc.)
- Security, terrorism, IT, etc.

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Results: Anticipation (2/2)

- Early identification of risks and threats

- Risk assessment

- Collaboration (navy, other ports, national weather service)

- Maintain buffer capacity for critical operations
  - Some ports had a solid business continuity planning during the pandemic

- Own fire service vs. relying on external services

- Plans and procedures *(though no plan could have solved the pandemic...)*

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Results: Coping

- How to deal with disruptions causing incidents, emergencies or crisis?
- Operational command teams dealing with incident management
- Tactical level: including stakeholders to solve the problem
- Strategic level: crisis management for mitigating impact on the whole port activity & links with authorities

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Results: Adapting

- Integrate lessons learned
  - Review processes in place & external investigation
- Seize opportunities
- After action reviews can lead to positive change initiatives
- Share the learnings: multiple initiatives
  - However, not structured, not within the IAPH, fear for loss of reputation

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What's next?

- Small and not representative sample
  - Due to time pressure
  - Data saturation after approx. 25 interviews
  - Recommendable to run a second round of interviews with 12-15 ports
  - Expand the number of interviews (with various actors in the port)
- Raise attention to C-suite level
- Share best practices through shared learning activities
- Development and pre-testing of a resilience survey

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Content

1. Why BCM?
2. Threats
3. BCM in the port of Antwerp
4. Increasing the resilience potential
5. Research: PoA in the pandemic

Port of Antwerp

Why BCM?

- An increasingly complex world

- Unprecedented globalisation:

  - Increases trade

  - Requires more reliable supply chains

  - Brings institutional distance from key stakeholders

⇨ New Risks

  - Increase in scale

  - Climate change

  - Interdependence

Port of
Antwerp

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Why BCM?

- Moral obligation to society

- Responsibility of care to our stakeholders

- Competitive advantage & Reputation

- Compliance

Port of Antwerp

General threats to ports

Figure 6: Possible threats to continued port operations
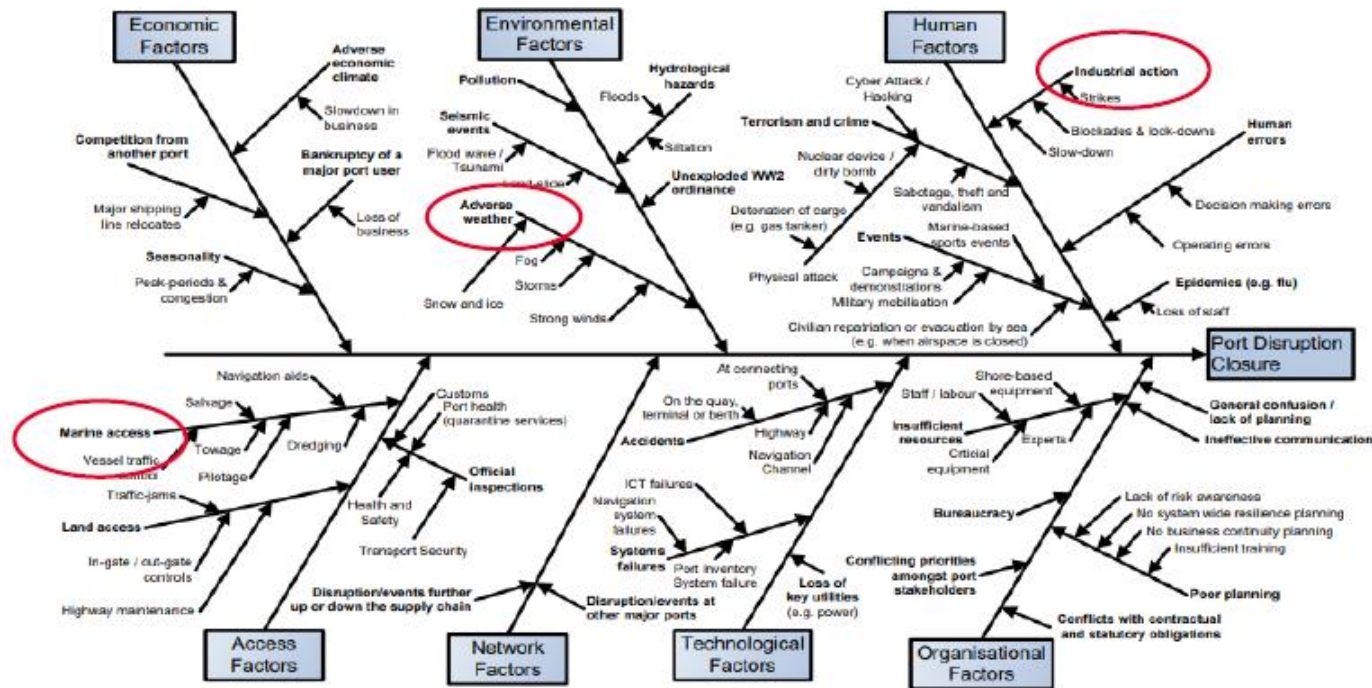
Top 3 disruptions in Asian ports:
- Natural disasters
- Navigational disruption
- Strike

(Lam & Su, 2015)

(Source: adapted from Mansouri et al. (2010) by drawing on findings made in interviews with the UK port sector and in consultation with policy makers at the UK's Department for Transport)

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Local scale:

- Dangerous Goods
- Traffic incidents (water, rail, road)
- Fire
- Oil Spills
- (River) Cruise ships
- ...

Known risks

- Incidents with:
  - Rail
  - Inland navigation
- Unknown production methods & techniques
- Increase of scale

Known Unknowns

?

Unknown Unknowns

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Business Continuity Management (ISO 22301:2019)

Business Continuity

The requirements to plan, establish, implement, operate, monitor, review, maintain and continually improve a documented management system to protect against, reduce the likelihood of occurrence, prepare for, respond to, and recover from disruptive incidents when they arise.

Business Continuity Management

Holistic management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability of an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities

Key points

Company wide ↔ Port wide?

Threat based ↔ Quid unknowns?

Organizational resilience – How?

Effective Response

Stakeholders

Reputation

Value Creation

Port of Antwerp

BCM in the Port of Antwerp: a culture!

Human Resources and Responsibilities	BC Planning and Process	Communication & Structure	Attitudes & Ownership
•Resilience focussed vision •Empowerment of personnel •Learning culture •Active role in community building on different levels	•Formal connectivity with stakeholders through designated departments •Planning and resource management embedded in the departments •BCM taskforce •Critical processes mapping	•Strong internal communications and (HR) development departments •Specific funtions for High Risk activities and threats: CybOff, SHEQ, BCM Op, IMO, … •BCM taskforce consisting of various department managers	•Strong leadership commitment •High focus on changing trends and developments: •High level: climate, technology, … •Operational level: customer focus, partnerships,… •Improvisation

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Increasing resilience potential
(E. Hollnagel, 2012)

The capacity to:

Monitor
- Understanding what is going on around us
- The situational awareness
- Short term

Anticipate
- Understanding what is going to come
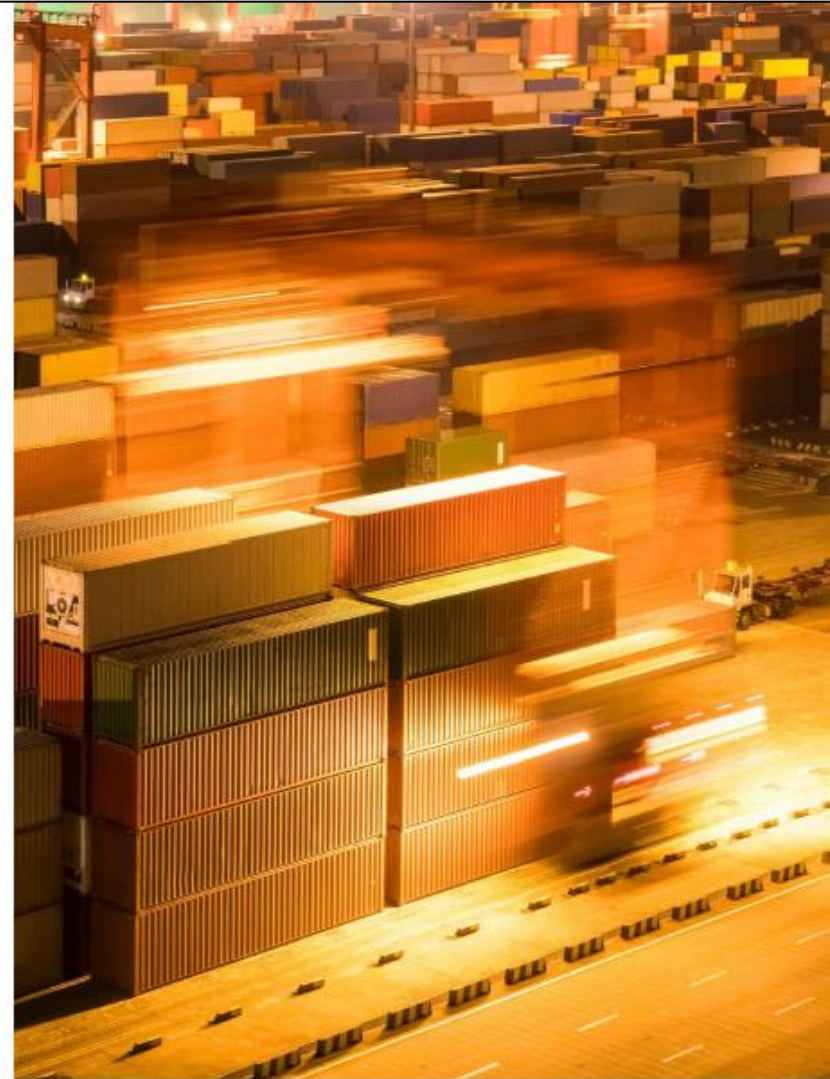- Imagining the possibilities
- Long term

Learn
- Learning from inside and outside
- First order learning
- Second order learning

Respond
- Relevant and Effective
- Timely but only when necessary
- Competencies and resources

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In our four roles
Actieve rol as community builder

landlord

regulator | community builder

operator

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Our network – our social resources

- Business Continuity Management is active on three levels and over the 5 strategic priorities*:

  - Risks and incidents occur on the operational domain, but have an impact on the economical domain and on the Policy domain (i.e. our license to operate)
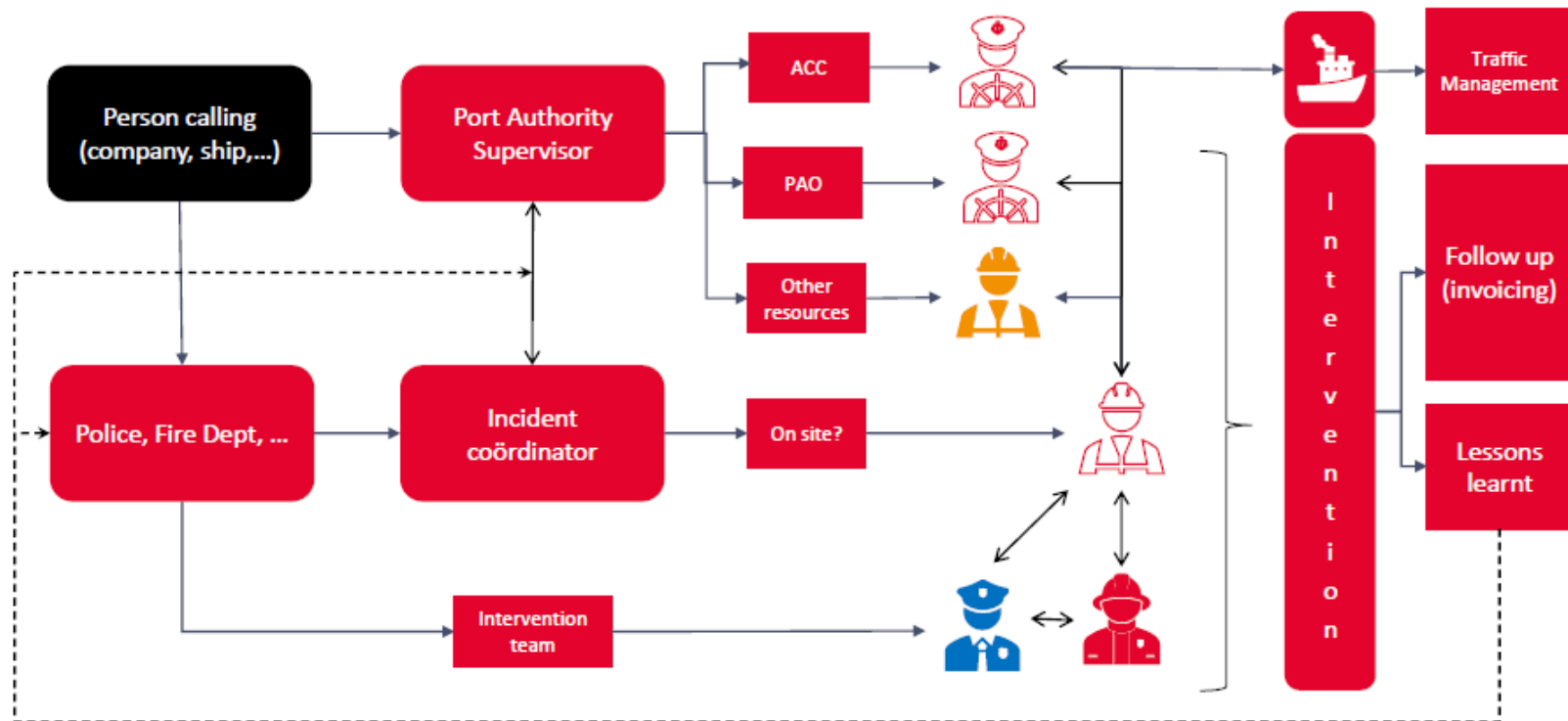
  - Connection in and outside of PoA ensures a strong network to build on.

* mobility, sustainability, operational excellence, safety and security, transition

Port of Antwerp
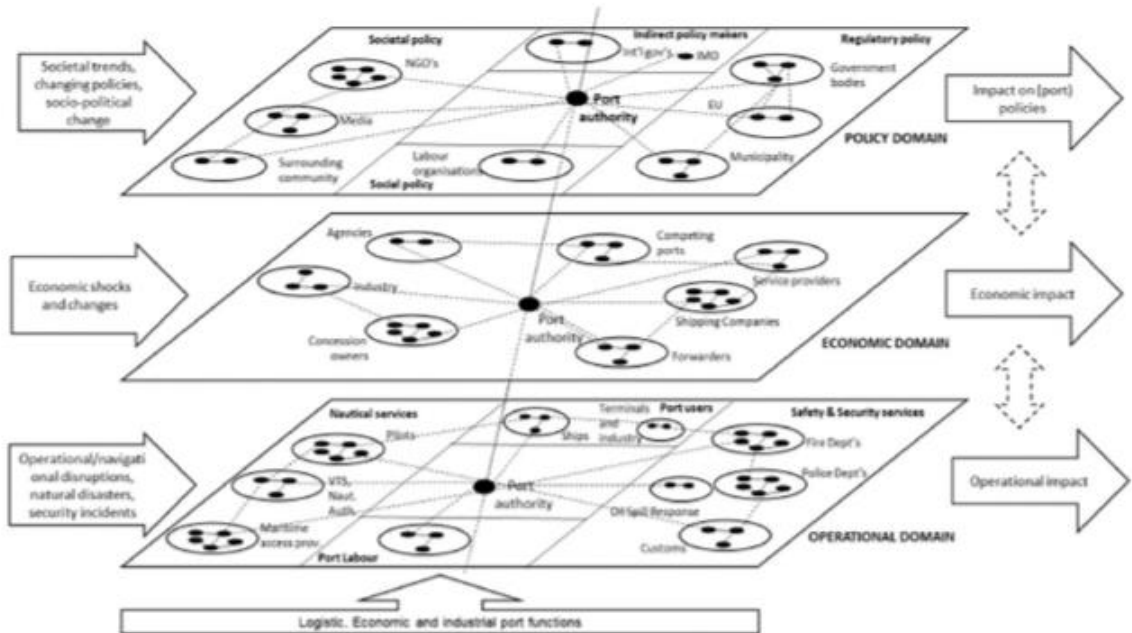
Adapted from Padgett & Powell, 2012

Response: Incident management

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## Research: in four phases through the Covid pandemic (Van den Oord et al., 2020)

- Network of Poa
- Phase 1:
  - Business as Usual, trying to understanding the problem -> main focus on employees
- Phase 2:
  - Core = Crisis Management Team
  - Gathering information, ensuring operations, setting up task force with key stakeholders
- Phase 3:
  - Selective integration into the network
  - Tsunami of information brokered by PoA
  - Principe based lead network – PoA beats the drum
- Phase 4:
  - New normal – flows and participation stabilize
  - Restart is being prepared
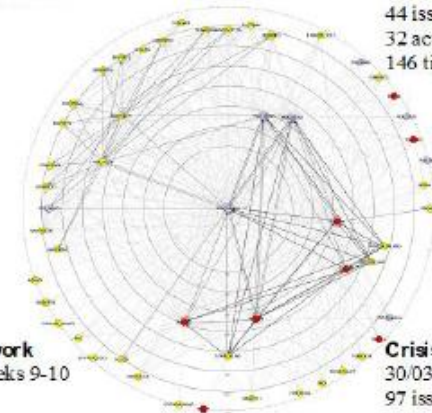 - Separate network around port access

Port of Antwerp
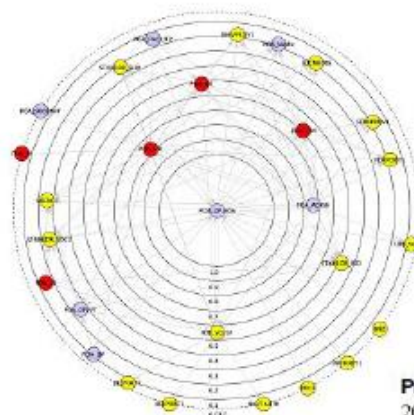
Pre crisis network
20/01-01/03 | weeks 1-6
17 issues
28 actors
89 ties
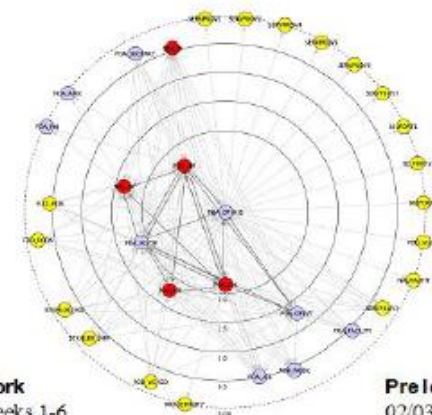
Pre lock down network
02/03-15/03 | weeks 7-8
44 issues
32 actors
146 ties
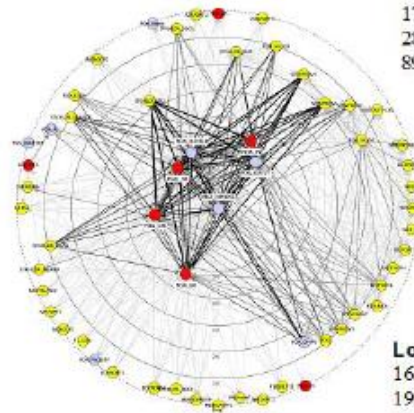
Lock down network
16/03-29/03 | weeks 9-10
195 issues
57 actors
482 ties

Crisis network
30/03-12/04 | weeks 11-12
97 issues
53 actors
416 ties

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Conclusions (1)

- The Port Authority plays a central role in a very complex network with many actors

- PoA was the organization that connects other actors within the network (lead network)

- Selective integration of actors, allowed:

  - Catching more (weak) signals

  - Gaining support and leverage

Port of Antwerp
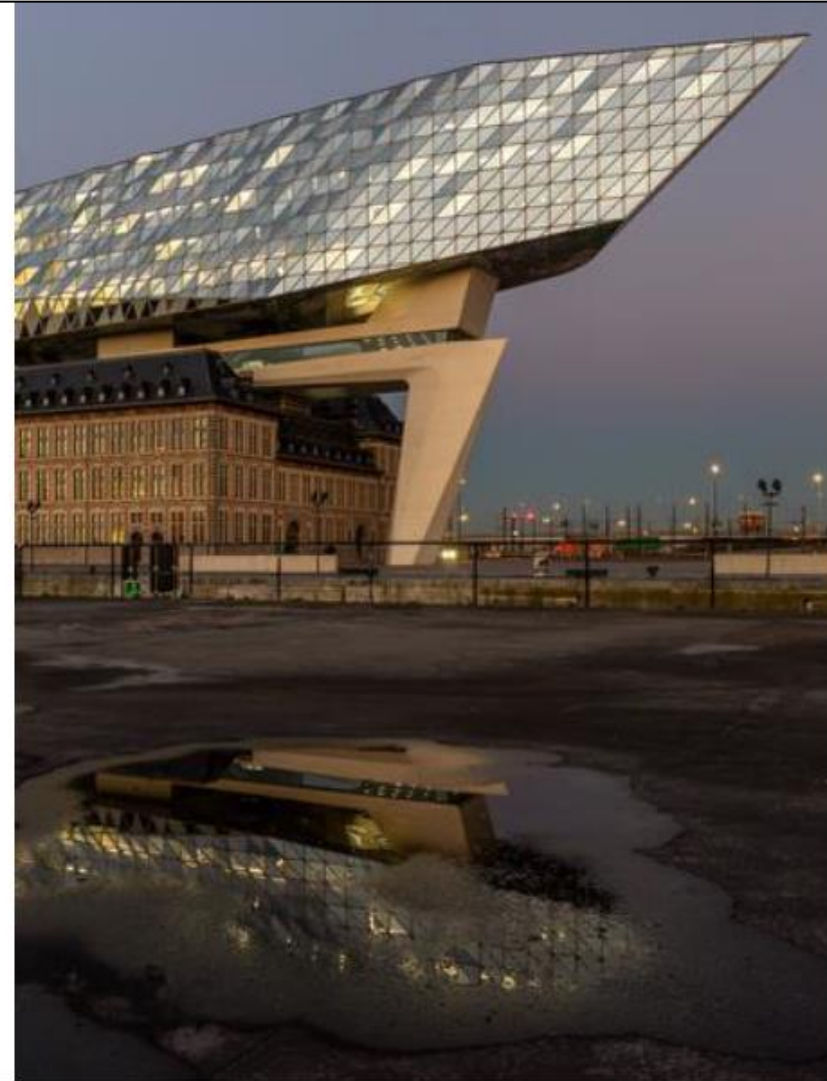
Conclusions (2)

By integrating, re-distributing and branding information and through the organisation of e.g. webinars we were able to deliver a consisted and focussed message to our stakeholders and the wider public throughout the pandemic:

" **The port is 100% operational**"

Port of Antwerp