CEMLA – FIGI - WorldBank
Financial Sector Cyber Resilience Workshop
Session VII - Enhancing financial sector resilience—exercising, mapping and collaboration

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Exercise Experience

- Participated or lead countless continuity exercises for various systems / processes such as CLS, LVPS, Continuity of Operations, Telecom failures, etc.

- Designed and lead texts of manual contingency capability assessments

- Played an integral role in the design and execution of Canada’s largest critical-finance sector systemic-level operational resilience exercise which focused on escalation, coordination, and communication within the financial sector.

- Design-team member on the G7 Cyber Expert Group – Cross Boarder Contingency Exercise

- Adviser on the Bank of Canada’s “Resiliency in the Wholesale Payments System” Project
Personal Learnings from Designing Exercises
Defining the Objective
Environment Scan: Canadian Wholesale Payment Context

Sending FI

Receive Payment Instructions

Collateral Allocation

Collateral Pledging

Payment Risk Controls

Receiving FI

Payor

Payee
Environment Scan: Canadian Wholesale Payment Context
Environment System Scan: Canadian Wholesale Payment Context

Sending FI

Payor

Collateral Pledging

Collateral Allocation

Collateral Valuation

Payment Instructions

Receiving FI

Payee

Collateral Management / Bilateral agreements

Payment Risk Controls

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# Environment Stakeholder Scan: Canadian Context – Federal Level

<table>
<thead>
<tr>
<th>Investors</th>
<th>Boards</th>
<th>Committees</th>
<th>Associations</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="FMI" /></td>
<td><img src="image" alt="FI" /></td>
<td><img src="image" alt="Clients / Consumers" /></td>
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</tbody>
</table>

- **FMI**
- **FI**
- **Clients / Consumers**
- **Associations**
- **Stakeholders**

**Bank of Canada**

**OSFI**

**CDIC**

**Department of Finance Canada**

**Office of the Privacy Commissioner of Canada**

**Commissionat à la protection de la vie privée du Canada**

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Environment Process Scan:

Processes with the system

- **Technical**
  - Prevention and recovery of computer systems

- **Operations**
  - Continuity and manual processing

- **Crisis Coordination**
  - Information exchange, resource deployment

- **Communications**
  - Call trees, Coordinated Public Messaging

- **Tail-end**
  - Post mortem, regulatory changes, legal actions
Environment Threat Scan:

- Attack Vectors
- Capabilities
- Threat Actors
- Targets
Conducting Exercises: Design
Objectives not Scenario

**THIS**

Environment scan shows:
Manual contingency capacities are inconsistent among participants.
Uncertain long term viability of manual operations.

**Objective:**
Test RTGS participants ability to send / receive 100% of payment volumes after a SIB has been disabled by a destructive cyber attack and has implemented manual contingency. Recovery times anticipated to be 48 hours.

**NOT THIS**

**Objective:**
Test the wholesale payments environment to a destructive cyber attack.
Audience / Participants / Design Team

Audience
Receives the exercise after action reports

Participants
Receives engage with the exercise, respond to injects

Design Team
Design the exercise with objectives, audience, and participants in mind
Type of Exercise

- Seminar
- Functional
- Survey
- Table Top
- Live
Size and Scope Changes

Don’t
Move away from Pass / Fail

Focus on Areas for Improvement
Risk Factors

- Human nature
- Resource constraints
- Objectives are too ambiguous
- Have not dealt with the previous exercise lessons learned
- Suspension of disbelief
- Halo effect from past success / performance
- Failing to get stakeholder buy-in
- Budget constraints
- External coordination
Thank you