Financial Protection of Public Assets
Master Class

Session 2
Data (End-to-End Systems and Valuation)

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Supported by WORLD BANK GROUP
Objectives

What is an end-to-end system?

Purpose and value

Potential Capabilities

Enabling Requirements

Development Approaches
Meeting the Challenge

- Vulnerability and exposure of assets and communities is increasing
- Growth in hazardous locations without adequate controls
- Government balance sheets attract undefined liabilities
- Climate-related impacts are growing
- Insurance markets are moving to more granular risk-based pricing
- Reinsurance capacity is constrained
Data Systems Support Key Decisions

**Before a crisis**
- Asset data collection
- Modelling hazard exposure and frequency
- Visualization of risk information
- Risk mitigation and prevention
- Financial risk assessment
- Financial Product Design

**During a crisis**
- Damage and impact forecasting
- Rapid triggers for financial instruments
- Response coordination

**After a crisis**
- Insurance claim settlement
- Damage and loss estimation
- Monitoring of social impacts through recovery
- Build back better

- Digital data capture enables
  - Better land-use
  - Better design
  - Better building
  - Better models
Data Systems Support Business Needs

- Business Needs
- Policy / Strategy/ Legal
- Admin Processes
- Standards / Procedures
- Data Structure, Models, Workflows
- Enabling Tools and Knowledge
Common System Components

- Data Collection
- Damage Reporting
- Asset Registry
- Analysis
- Financial Risk Management
- Compensation and Claims Handling
- Risk Modelling
- Reporting and Strategy/Planning
Some Questions

01. How much uncertainty do we tolerate?
   - Is it one risk factor or many?
   - How likely are these events?
   - How could they interact?

02. How much uncertainty do we tolerate?

03. What kind of investment should we make?

04. How much risk do we want to manage ahead of time?

05. When do we have to pay?
    - Now, or in the future?

06. How much risk are we prepared to manage after an event?

07. If we can’t afford to treat a risk comprehensively now, can we agree on a post crisis action plan with adaptation options?
Financial Risks

New Zealand Earthquake Government Liabilities

EQC (44%)

Central City Rebuild (7%)

Land Zoning (7%)

Crown Assets (13%)

Other Costs (7%)

Southern Response (5%)

Local Infrastructure (11%)

Other SOE and CE’s (4%)

Governments’ financial risks can be highly correlated for natural hazards.

Governments also face risks from non-correlated events, e.g., pandemic, global instability.

Risk financing mechanisms protect capital and support community recovery.

Source: The Treasury, adapted from the 2015 Budget
Use System Knowledge to Guide Risk Treatment

- **AVOID** Reduce exposure
- **CONTROL** Mitigate physical impact
- **TRANSFER** Limit financial loss and aid recovery
- **ACCEPT** Adaptive response arrangements

Consider multiple possible futures, where risk(s) change with time

**Assumed Event Frequency**
- 25 yr
- 100 yr
- 500 yr
- 2500 yr
Make Each Step Count!

1. Build Data and Knowledge
   Identifying and filling data, information and knowledge gaps

2. Translate and Transform
   Create meaning and new insights by translating ideas and interpreting science

3. Uptake and Implement
   Influencing uptake and implementation into building and land-use practice

USEFUL

USEABLE

USED
Getting Started

Clarify the status of current systems used to support crisis risk assessment and decision making

Establish expectations of a future information system

Identify whose support is needed to align improvements

Clarify roles and responsibilities and sources of technical expertise

Secure necessary authorizations and budgets to calibrate the scope of the Project or initial phase

Agree on the language of the enterprise among all with whom you work
Thinking Ahead

How will the performance of the system be judged?

Ensure some gains can be delivered on short timeframes as well as longer term.

Is your plan adaptable? What if new needs or priorities emerge? What if expected benefits are slower to realise, more difficult to measure, or too remote from individual accountabilities to ensure delivery?

What level of readiness describes those who will be needed to help build and operate an end-to-end system?
Planning

Do available budgets and authorization rules allow for delivery?

Who will sponsor and invest in the System?

Have lead roles been assigned?

Will those promoting the System be responsible for its delivery?

Has the design approach been decided?

Who will actually assemble and direct the expertise required to design, build, and operate a system?
A Staged Approach

Sequencing the design of a system will allow different elements to be piloted before expanding the scope.

Modularize development to reduce complexity. This approach will help make updates possible as knowledge grows or new needs emerge.

Be realistic about the investment or time that may be needed to enhance the system, so that priorities can be set.
Fit for Purpose

Ensure that changes to work practices, governance rules, values and assumptions can be addressed collaboratively by those affected. People generally support what they create.

If data for certain purposes are lacking, focus on what is available to understand the key gains in decision quality desired. This will encourage creativity and reduce preoccupation with obstacles that can stifle progress.

Try to differentiate the information sets that affect Precision from those which affect Accuracy. Most decisions will benefit more from accuracy than precision.
Useful, Useable and Used

When considering automation and real-time processes, consider how much faster tools will improve decision quality.

Differentiate the capabilities needed for fast outputs from those requiring periodic, but reliable extracts of information. For example, resilience planning may require detailed data and knowledge, but rarely at short notice. Some insurance products, and emergency management may require rapid alerts from earth sensing networks and damage reports from affected areas.

An end-to-end system can support both Urgent and Important needs, but development pathways and their operational frameworks may differ.
Plan for Special Needs

Where Earth sensing and mapping are intrinsic to the system, access to specialist knowledge, underpinned by data and science will be needed.

Clarify the capability requirements for technical support as part of imagining the operation of the data system, especially the relationships needed to sustain it.

Early discussion of the necessary skill-sets will help anticipate resource constraints, ways to manage around them, and opportunities to collaborate productively.
Success Indicators

- **Decision Quality:** Where will decisions benefit most from a System?
- **Leading Change:** What will the introduction of a System mean for existing work practices and coordination. How will this play out?
- **Trust and Confidence:** The quality of the information available to System users is more important than whether it is served at the ‘click of a button’. How will this be known?
- **Agile and Flexible:** Not everything has to be available simultaneously to be useful. Emerging issues may reveal new demands.
- **Modular and Sustainable:** Agree on a framework to administer the System, which allows for improvements and maintains the confidence of users.
Where to Begin?

**What?**
What insights are needed?

**Why?**
Why are the decisions needed? (Hazard, Risk, Uncertainty)

**When?**
What priority or speed?

**How?**
How to lead, govern and sustain to deliver value?

**Who?**
Who is involved?

**What?**
Which information systems and services?

**With?**
Funding and mandate for operation and stewardship?

**When?**
How much time given?