

# Systems Thinking for Wicked Problems

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*This is the century of complexity*     Stephen Hawking  
*Today's problems are yesterday's solutions*     Peter Senge, MIT

Systems Thinking is a scientific methodology using conceptual and modelling tools for understanding complexity and decision making in multi-agency, multi-stakeholder situations. Complexity arises from the interaction of multiple elements and entities (agencies, departments, decision makers and stakeholders) — each driven by own objectives, agendas and mental models. Security, climate change, biodiversity, environmental degradation, natural resource depletion, population and economic growth are complex (wicked) problems which cannot be understood and 'solved' by a single agency, discipline or science. Systems Thinking enables deep understanding and insights into how complex systems' elements interact through feedback loops. It allows foreseeing the intended outcomes as well as unintended consequences of decisions, policies and interventions.

## **Objectives**

This two-day course and workshop will introduce Systems Thinking and provides its tools and case studies in an interactive environment. The aim is for the participants to use the new learning and skills to deal with wicked challenges and endemic problems in their organisation.

## **COURSE OUTLINE- DAY1**

### ***AM: Introduction to Systems Thinking Concepts & Methodology***

- Four Levels of Thinking: The Iceberg Model
- Causal Loop Modelling (Systems Mapping)
- Feedback Loops – they are everywhere, how do they affect our world?
- Hands-on Exercises
- NZ and International case studies

### ***PM: Systems Thinking Workshop***

- Group Model Building (real issues/challenges to be identified by the participants prior to or at the session)
- How to phrase and structure a complex, multi-layered problem?
- How to identify systemic issues and key priorities?
- How to construct systems maps for wicked problems?
- How to 'read' and interpret a systems map?
- Presentation and discussion of groups' systems maps/projects
- Implications for management and decision-making
- Debrief

## DAY2

### AM: Recurring Systems Patterns and Leverage Points

- *Systems Archetypes*: generic models for quick, high-level view of complex issues and systemic structures
- Systems Archetypes in policy and daily life
- *Unintended consequences*: How to identify and prevent adverse side effects of decisions and policies?
- Where to intervene in a complex system? Twelve areas of leverage
- How to identify and break endemic problems and vicious cycles in your organisation?

### PM: Systems Mapping Software & Company Projects

- In this session we use a specialised software to create professional systems maps for creating consensus and reporting within your organisation
- In-company projects review and feedback: participants will discuss their individual or team projects and receive assistance and feedback.

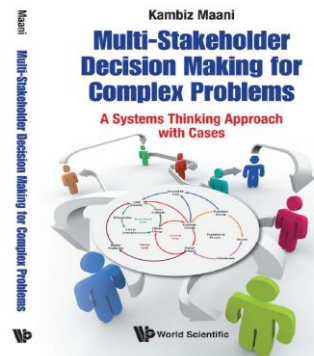
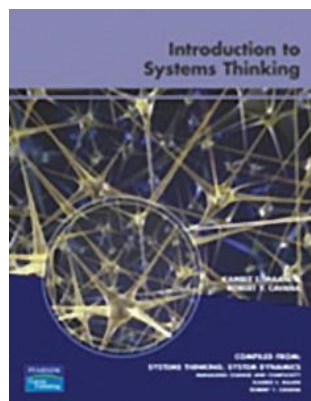
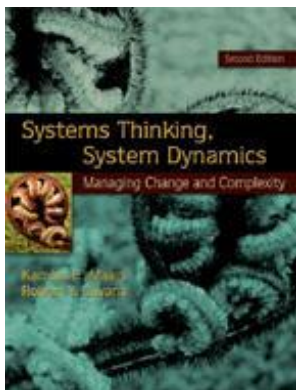
**Course Book** (not included in course fee)

Introduction to Systems Thinking

<http://www.pearsoned.co.nz/products/?sq=systems+thinking>

Multi-Stakeholder Decision Making for Complex Problems: A Systems Thinking Approach with Cases

<http://www.worldscientific.com/worldscibooks/10.1142/9294>



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