Systems Curriculum virtual event series
Principles and practical applications of systems thinking in the investment industry
Primer | 8 May 2024 | Pre-reading slides

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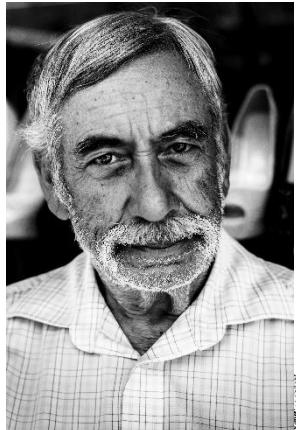
Systems curriculum: understanding the power and practice of systems thinking
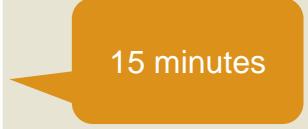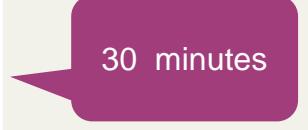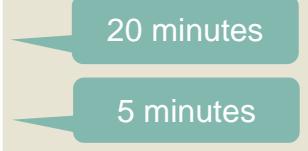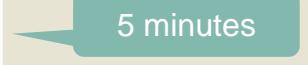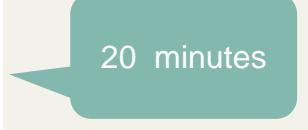
0. Primer – 8 May 2024

- The key features of systems thinking and systems design
- The different lenses to see systems through
- The applications to better decisions
- Case studies

- Pre-reading
- 90-minute virtual meeting
- Includes expert inputs
- Includes Q&A

1. Systemic risk – *the use of systemic risk models and systemic risk scenarios* is particularly valuable in assessing systematic risks

2. Systems leadership – *the use of systems leadership models* which recontextualise problems as shared problems and use systems thinking to explore and solve the problem

3. Beliefs – *the use of system patterns* to understand the present landscape and plan for the future

4. Sustainability – *the use of systems-level investing* in which the three dimensions of risk, return and impact are integrated

5. Measurement - *the use of balanced scorecards* in which measuring and incentivisation is addressed more holistically and systemically

Source: TAI Systems Curriculum: June – December 2024

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Agenda

Items	Slides	Videos	Guide times
1. Preface *Marisa Hall*	4-9	Will Martindale (investment ecosystem)	15 minutes
2. Five lenses on the investment ecosystem *Roger Urwin*	10-18	Tim Hodgson (ecosystem animation)	30 minutes
3. Decision making, summary & 'wisdom' *Roger Urwin*	19-32	Luba Nikulina (organisation-as-a-system)	20 minutes 5 minutes
4. Q&A *Tim Hodgson & TAI team*			20 minutes

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1. Preface – 15 mins

    Overview of what 'systems' mean to us

    Defining the terms

    Framing the concept through a mental model

    Conversation: Will Martindale

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Systems and systems thinking

Define your terms

Connecting dots - *seeing wholes as inter-connected not isolated parts*

Recognising patterns - *seeing moving patterns not static pictures*

Socialising solutions - *seeing solutions through a collective not individual effort*

The definition of systems thinking in Arnold & Wade (2015)

Systems thinking is a set of synergistic analytic skills used to improve the capability of identifying and understanding systems, predicting their behaviours, and devising modifications to them in order to produce desired effects.

The system is defined as a collection of elements that are inter-connected and fulfil a certain purpose or function.

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Preface: Investment industry era change – thinking, framework and regime

Change on multiple fronts. A new mental model

Alpha era – 2000s/2010s

New era – 2020s

Thinking: MPT & technical efficiency; shareholder-centric

Framework: SAA, benchmarks and alpha; 2D investing

Regime: lower for longer; ESG, growing externalities

Thinking: systems & organisational resilience; multiple stakeholders

Framework: TPA & scorecards; 3D investing

Regime: end of cheap money; sustainability & Net Zero
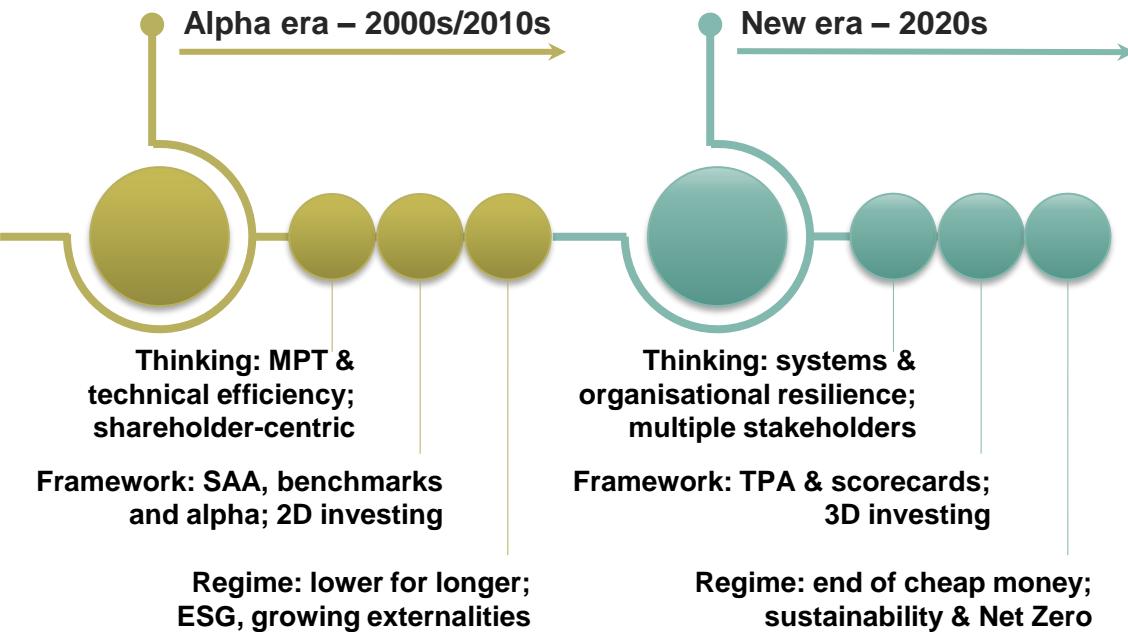
- **Thinking**. We seem to be moving into a paradigm shift. Notably are we at a major inflexion point in terms of how the world operates? **The world has several crises** to wrestle with. It has geopolitics, it has climate change and the issues of inequality that could collectively challenge capitalism as we know it
- **Multiple stakeholders**. All asset owners retain complex operating models using many third parties. They have always had **multiple stakeholders,** but the reality is that stakeholder management has got harder with more pressure being brought to bear by sponsors
- **SAA and TPA** – SAA very much belongs to the previous era
- **Regime.** Very different investment macro. Very different investment paradigm from net zero and double materiality

Changes occurring in the mental model settings

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Copernican turn

A compelling trio of <u>engaging story</u> – <u>intriguing theory</u> – <u>significant figures</u>

- Ptolemus theory had the sun revolving around the Earth, visually plausible, but more accurate measurements by Copernicus disproved the theory and changed our understanding of the cosmos

- This was part of a shift in scientific progress, and a deeper exploration of our cognitive processes and was the start of a large paradigm shift

- Is systems thinking something similar? The change here is a smaller, and it's more evolutionary because we are building on top of a narrower paradigm (MPT) which is not so much wrong as incomplete

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The evolution of investment theory towards systems thinking
Some marked differences at the high level, but possible to build from MPT

	From MPT	To systems thinking
▪ **Theory**	▪ SAA ▪ Maximising return relative to benchmark return ▪ Maximising alpha	▪ TPA ▪ Maximising absolute return relative to total portfolio goals ▪ Maximising total portfolio returns
	▪ Assumptions required including one view of risk = volatility, stable linear distributions, rational expectations, risk is endogenous, efficient markets	▪ No fundamental assumptions of this sort are required
	▪ Accepting the market and the system as an unchangeable exogenous factor ▪ Beta as a given	▪ Working on the system to improve financial and real-world outcomes ▪ Building better beta
▪ **Methods**	▪ Modelling from past data where the issues are with its relevance ▪ Reliance on quantitative modelling	▪ Modelling from future thinking and data where the issues are with its reliability ▪ Quantitative models and qualitative scenario analysis
	▪ Investing portfolios under MPT precepts	▪ Investing and stewarding more systemically
▪ **Outcomes**	▪ Alpha is in total a zero sum	▪ Outcomes can be positive sum with better beta
	▪ No clear net positives to society given externalities are not managed	▪ Potential to achieve a net positive for society given real world outcomes are addressed

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Industry Conversation – Will Martindale

Why systems may have a big future in investing and sustainability
The future of MPT and staying Sharpe
Systemic Stewardship & Universal Ownership

Will Martindale

Co-founder and Managing Director,
Canbury Insights

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2. The multiple lenses of systems thinking

Why use multiple lenses?

Five lenses for our ecosystem

Investment ecosystem – the movie: Tim Hodgson

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Multiple lenses – dragonfly eyes

- The challenge is to build better perspectives and take better decisions by reducing blind spots and enhancing the accuracy of our vision

- The best way to reduce our blind spots is to change our perspective

- Think of each new perspective as a model and a lens through which you can see the world

- Models simplify the world into useable chunks
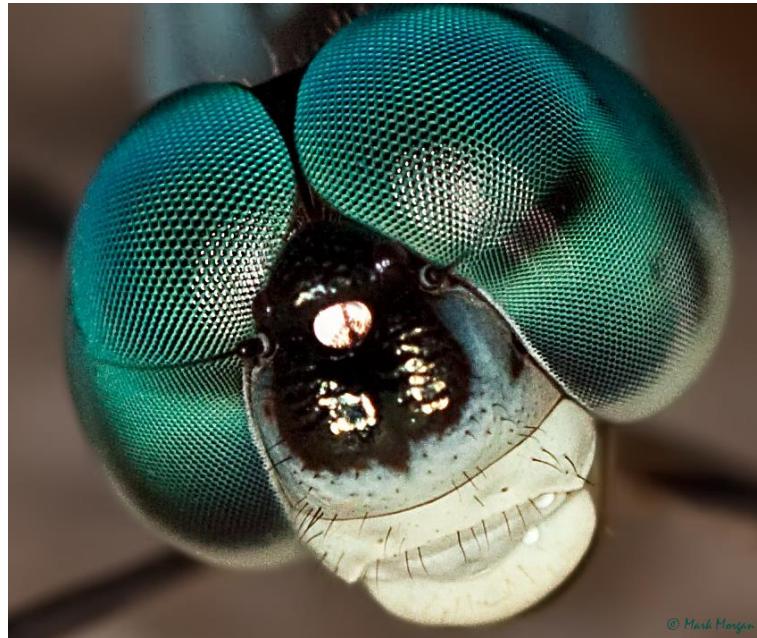
Dragonfly eyes have 30,000 lenses

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Lens 1. The basic parts of a system – elements, interconnections, purpose & function

1	• Each system has its **elements** – participants and technologies; and its **purpose** or **function** and associated goals • The elements in the systems and the systems themselves are linked through various **inter-connections**, some of which are intended and some of which are not
2	• There is no single system, there are multiple systems of which we are a part • These systems overlap and often have a hierarchy • We can zoom in or zoom out on different systems of interest • Some systems contain other systems
3	• Systems are always changing – they add new elements, lose old elements, change their inter-connections and evolve different functions • These systems are complex adaptive systems – they are always adapting to changing circumstances in complex, multi-faceted ways

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Lens 2. Purpose. The purpose(s) of the investment industry

Fundamental purpose

Contributing to society through increases in societal wealth and well-being

Intrinsic purpose

Mobilising the sourcing and allocation of capital

Core purpose

Providing wealth management and risk management for end savers

Collateral purpose

Providing opportunities and rewards for investment professionals and organisations

Purpose

Fundamental

Intrinsic

Core

Collateral

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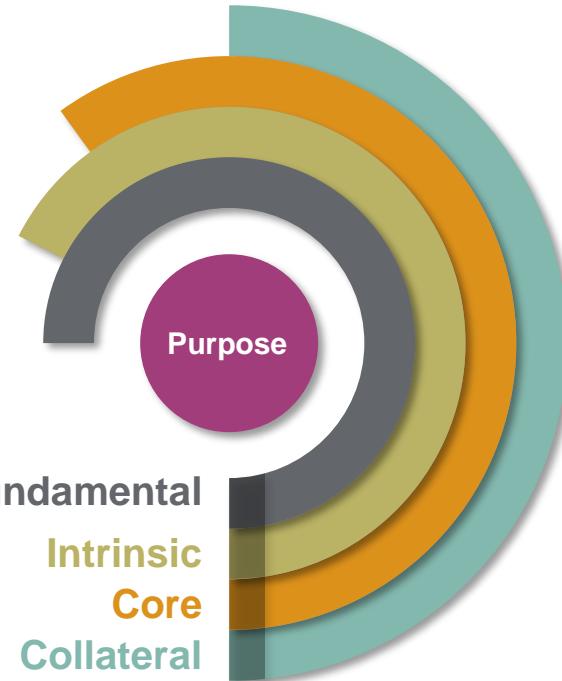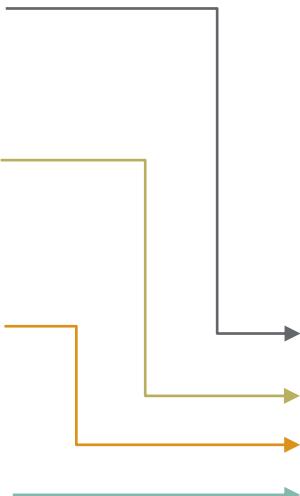
The investment industry is defined as a 'natural' ecosystem

- 'Natural' ecosystems contrast with 'designed'. Here groups of connected participants pursue a self-interested even selfish mode of exploiting their (local) roles – i.e., responding to a local demand/opportunity
- There is some attempt by regulators and other influential parties to impose some elements of design on the system to harness selfishness for some wider good (enlightened self-interest) as captured in 'rules of the game' that define behavioral norms
- This natural system has various properties in common with other natural systems:
    - Evolves over time with continual adding and subtracting elements (participants)
    - Tend to be stable through time having survived and evolved their stabilising features
    - Most players are selfish, and this helps them maintain stability through their emergent properties
    - They do not directly 'try' to achieve anything; but there will be indirect goals of the industry
- Lessons from other systems
    - Efficiency tends to suggest fragility, resilience tends to suggest anti-fragility; but under competition, one of these get compromised, efficiency and resilience are in a trade-off
    - Co-operation trumps competition in this system
    - We need a broad search of the ecosystem (exploration) and intensity of focus within the ecosystem for it to flourish (exploitation), but under competition, one of these gets compromised
    - A multiplicity of stakeholders is good. If left to one entity alone, the evolution of the system will be optimal for that entity, and sub-optimal for the other participants

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Lens 3. Focus on participants and technologies as the key elements of the investment ecosystem

Participants
- Asset owners, asset managers, providers & stakeholders
- End savers
- Regulators

Technologies
- Social technologies & physical technologies
- Governance
- Theory & practice
- Regulation

Markets
- Investment markets
- Marketplaces for people, services and products

- Connections increase
- More tipping points may be reached
- Social and physical technologies 'clash'
- Adapting becomes more critical

The investment ecosystem = elements (participants + technologies + markets) + interconnections + purpose & function

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Lens 3b. The investment ecosystem as part of a larger system

Assets

Well-being

Wealth

Asset managers

Dynamic materiality

Asset owners

Licence to operate

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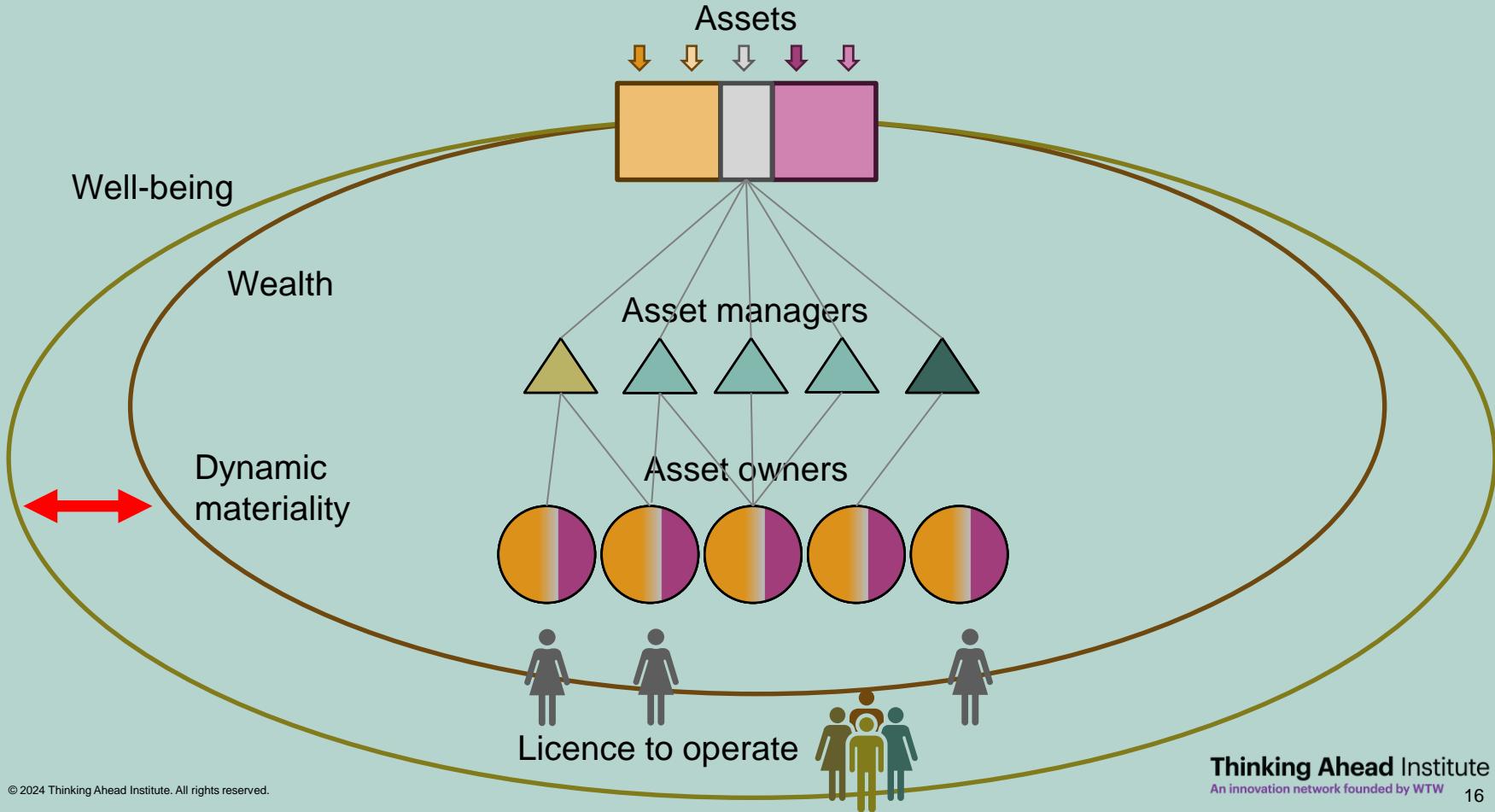
Lens 4: The investment organisation is a 'designed' ecosystem

- 'Designed' contrasts with 'Natural'. Here groups of connected participants pursue a self-organising mode of working with norms of behaviour and operation – i.e., responding to a designed opportunity
- Designed= groups of connected players organised around (collaborating on) a shared challenge. The challenge is captured in vision, mission and goals
- The organisation's behaviours are actions performed by purposeful and coordinated agents (1) to do something worthwhile and meaningful; (2) to create value for a segment of society; (3) in a defined space or gap; (4) in a vision that resonates within the organisation; (5) and in areas they are uniquely good at
- There is a playing field defined by regulators and other influential parties to guide the organisation in a way of operating consistent with a social license to operate that is net positive and does not involve undue externalities
- This designed system has various properties in common with other designed systems:
  - It evolves over time
  - Participant stability reflects the degree of creative destruction
  - The most unstable organisations tend to vanish. The survivors have better design and are more stable
- Lessons from systems theory
  - Creative destruction (Source: Schumpeter)
  - Efficiency tends to suggest fragility, resilience tends to suggest anti-fragility;
    but under competition, one of these get compromised, efficiency and resilience are in a trade-off
  - Competition tends to trump co-operation for the organisation
  - A multiplicity of competitors is good for the system but bad for the organisation

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Lens 5 – The use of mental models to understand systems

Complicate to understand, simplify to act

- A mental model is a compression of how something works capturing key information concentrated into understandable and useable chunks
- These models opposite are qualitative and simplified versions of the key components of the whole asset owner system and its inter-connections which we can configure as versions of best practices.
- This is a representation of the asset owner organisation as a system with its elements, inter-connections and goals*
  *balancing risk and return affordably, securely, sustainably and systemically

The asset owner system

Sustainable Rightsizing
Total Portfolio
Soft Stuff
Alts Systems
Regime Change

Business model
Governance model
People model
Investment model
Systems model

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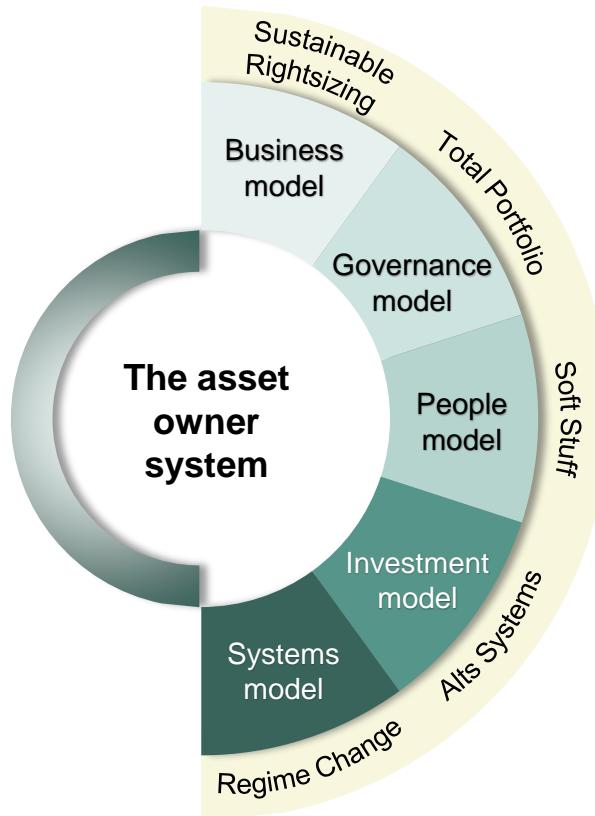
3. Using systems thinking to frame and take better decisions

Luba Nikulina on the organisation-as-a-system

Framing

Thinking

Teaming

Leading

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Conversation about the organisation as a system – Luba Nikulina

Why systems may have a big future in investment organisations

Systems in the investment organisation

Taking better decisions and addressing change

Luba Nikulina

Chief Strategy Officer, IFM Investors

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Better decisions

Framing – Thinking – Teaming - Leading
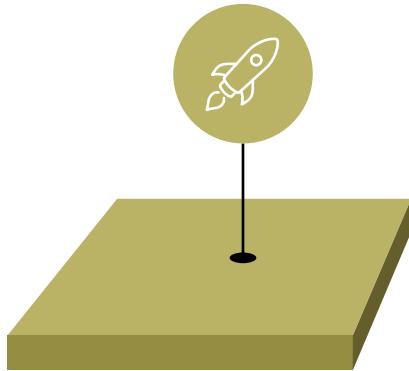
1. Framing. An organizing framework to address challenges
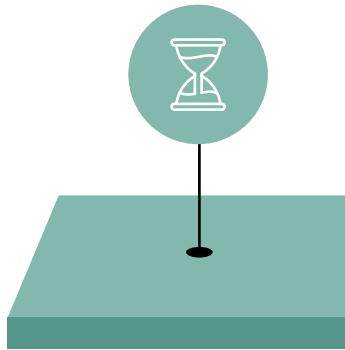
2. Thinking. Applying systems thinking and critical thinking
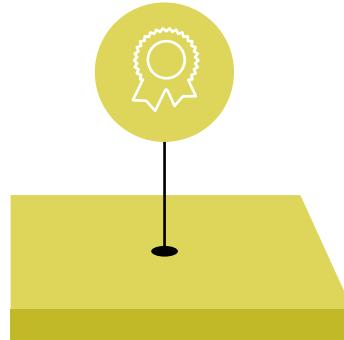
3. Teaming. Setting teams up to perform at the highest level
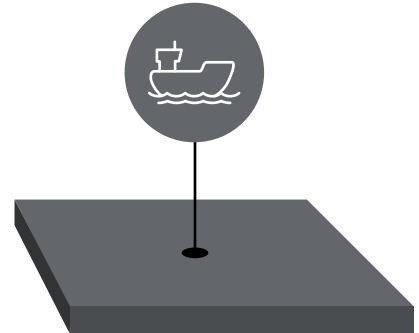
4. Leading. Applying systems leadership to difficult challenges

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1. Framing: The learning organisation

Double-loop learning entails the modification of goals or decision rules in the light of experience. The first loop uses the goals or decision-making rules, the second loop enables their modification, hence "double-loop".

Framing

Beliefs

We use beliefs and principles
They need to evolve over time

Deciding

We make errors

We need to learn from errors

2nd loop

We need systems thinking & critical thinking

1st loop

Thinking

We use fast and slow thinking

We filter
We simplify

Feedback

We get slow and ambiguous feedback

We need to loop back at times

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Framing. The iceberg model. Systems thinking in practice in net zero investing

		Iceberg model elements
Visible	**Events**	The outcomes, situations and events relevant to one particular ecosystem of interest, that are visible manifestations of the ecosystem in a complex adaptive way
Not visible	**Patterns**	The trends or patterns of related events and situations that guide our understanding of past and future events
	Structures	The ways that a system works which keep producing the trends or patterns, such as policies, processes, and practices
	Mental model	The shared beliefs, mindsets, attitudes, and values that created the system and how it operates – a compression of how something works and can concentrate the ecosystem into understandable and useable chunks

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Case study application. The innovation and evolution of net zero investing

- Systems theory uses the S-curve to describe the usual shape of innovation growth

- Investment industry innovation maturity splices the faster moving physical technologies (like fintech and AI) with the slower moving social technologies (like governance)

- AO net zero adoption (purple line) moved extremely quickly in the run-up to COP26 (A→ B) but has then slackened (B→C) with the challenge in finding the political capital and governance budget needed to implement it

* Reference Section has systems pattern lists

Net zero investing evolution

The systems patterns* at work here include:

- people respond to incentives
- long-term thinking is a double bind
- cause and effect are not closely related in time and space
- there's always a cost and a value; but it's often soft and can't be measured

Market penetration %

A

B

C

Innovators | Early adopters | Early majority | Late majority | Laggards

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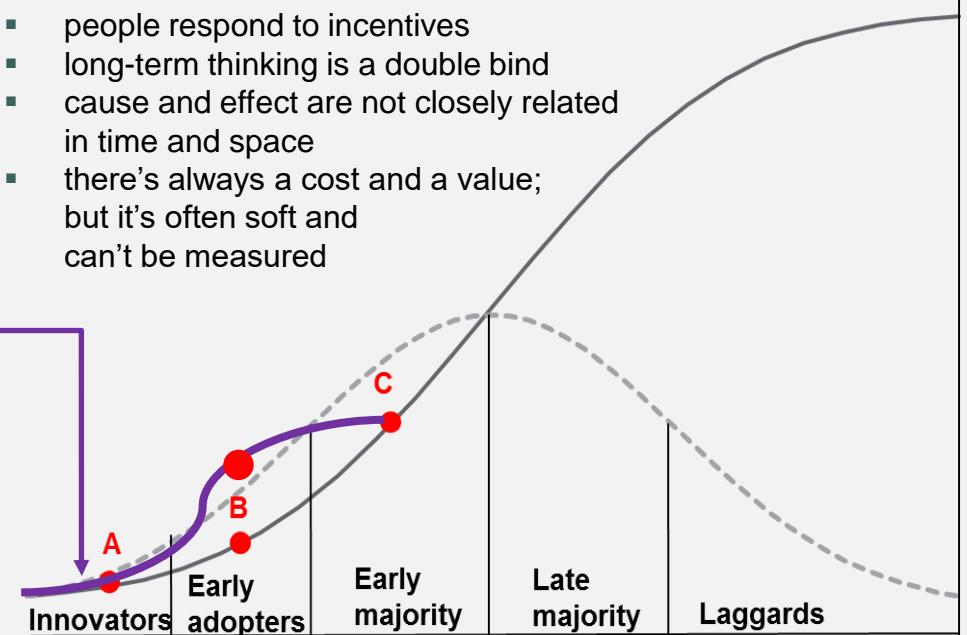
2. Critical thinking and systems thinking

Critical thinking evaluates individual thoughts, while systems thinking considers the broader context and interdependencies within a system. Both approaches contribute to problem-solving in different ways

Critical Thinking:
1. **Definition**: Critical thinking involves examining and challenging thoughts, ideas, or beliefs. It relies heavily on logic and reasoning and includes assessing the quality and integrity of information in its decision-useful form.
2. **Skills Involved**:
   1. Developing concise, objective questions that challenge traditional modes of thought
   2. Gathering and investigating information to support or challenge thoughts and questions
   3. Using empathy to relate to other modes of thought or beliefs
   4. Focusing on clear communication to solve problems
   5. Overcoming personal biases to create a comprehensive view of the world

Systems Thinking:
1. **Definition**: Systems thinking examines the relationship between systems (such as the individual, organisation, economy, or environment) and their impact on each other. It takes a holistic view, considering interconnectedness.
2. **Skills involved**:
   1. Understanding how actions or ideas affect the entire system
   2. Understanding patterns that may have been at work in the past and may recur in future
   3. Applying collective problem-solving

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# Thinking. Case Study. How systemic climate risk is easy to underestimate

How we are wired considerably hinders our understanding and assessment of climate change

- We are not joined-up in our thinking across the social, environmental, economic systems
- Many biases are heuristics where we over-simplify to conserve energy, many are emotional stress responses where we delude ourselves for our own personal protection
- This clash of systems here pits economic beliefs against human values with inevitable trade-offs and conflicts

Patterns	Scientific system reality	Social system reality
Long-term bind	Climate change is a very long-term problem	People are most interested in the present and don't think so much about the long-term – we are unimaginative
Boiling frog	Climate change effects emerge with a long lag	People extrapolate and expect the good times to continue – without good data we lack judgement
Inaccessible truth	Climate change has a highly complex scientific explanation	People have simpler stereotypes for climate change that miss the scientific realities – we are inaccurate thinkers
Inconvenient truth	Climate change has a complex solution with extremely unattractive shorter-term elements	People can live in an echo chamber in which the truth is distorted – we have feelings that trump our rationality
Change hurts	Climate change is beyond our individual agency to control or influence	People lose their motivation in the face of the challenge's size -- we see plenty of evidence, but we don't see the crime

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3. The team

- The main difference between group and team is that the **members of a group share common characteristics whereas members of a team share a common goal or purpose**. A team is a group, but not every group is a team.

- **The team is a system** – it has elements, inter-connections and a purpose

- **Teams** are the primary unit of value creation in investment organisations

- There is a natural interest in identifying what features makes exceptional teams and how exceptional teams work

The team …possesses one or more common goals

Combines two or more individuals each with specific roles

Possesses certain shared principles of getting work done

Collaborates on tasks while subject to interdependencies

Socially interacts through relationships and social capital

Has links to and boundaries with wider systems

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The Superteam – what is it?
Best practice principles for teams

- **Culture.** Strong values of inclusion, trust and fairness driving the organisation to promote its goals and behave according to aligned norms in a 'system'

- **Cognitive Diversity.** Adding talent together via diverse competencies, perspectives and experiences including around creating a diverse workforce, equity in its workforce practices, inclusion in workforce culture and system

- **Collective Intelligence.** Combined effectiveness through how team members interact and collaborate as a system applying culture, governance and technology and **Inclusion. Trust. Frameworks. Rigour. Socialisation. Innovation.**

Culture
- Mostly about inclusion, trust and fairness
- Requires leadership

Cognitive Diversity
- Mostly about competencies
- Requires demographic diversity

Collective Intelligence
- Mostly about combination
- Requires governance & technology

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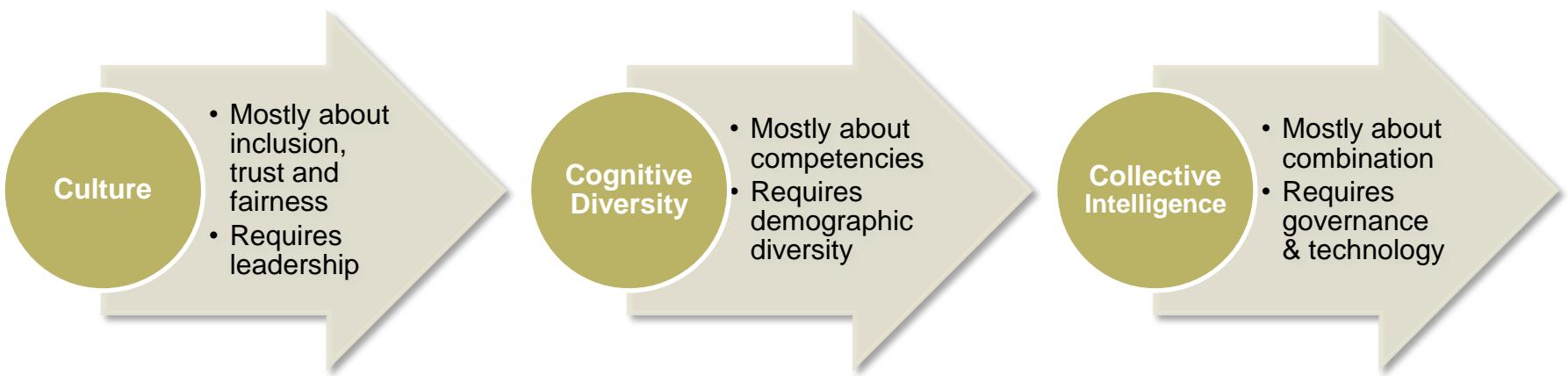
4. The principles of systems leadership

Skills and capacities to catalyse, enable and support the process of systems-level change.

The belief that an organisation's success depends on co-creating wellbeing within the system that they belong to
... by applying systems-thinking over a longer time horizon in a coalition for greater-good outcomes
... producing public benefits to the system and private benefits to you as part of the system

Leadership skills

- Collaborative leadership & coalition-building
- Systems insight to mobilize innovation and action

Co-creation

- Work together as one coalition that co-creates content by agreeing the recontextualised problem

Deep thinking

- This is complex with many factors and uncertainties – systems thinking critical

Engage-ment

- The best answers are joint ones that engaged partners feel they own

Solutions

- Innovations
- Longer term strategic solutions
- Greater-good gains and private gains

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Close

Basics covered

Key takeaways

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In summary: the systems-savvy professional

The system is like this…	This should make professionals, teams and organisations respond like this…
▪ Flux is everywhere – with evolution, discontinuity and emergent behaviours	▪ Think ahead. Look around corners. Use imagination
▪ Everything connects but nothing adds up	▪ Lead through logic and coherence
▪ Data is messy - deal with the soft stuff	▪ Socialise the subjective. Narrate the tacit
▪ Combinations are critical	▪ Apply structural design ahead of fixing symptoms
▪ Behaviours matter	▪ Understand others point of view and the reflexivity involved
▪ Associations not causations	▪ Recognise and distinguish influence and consequence

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Takeaways –'Wisdom'

	BaU – Business-as-Usual	BbU – Business-beyond-Usual
1	Look out for systems angles – the mindset change	Starts with socialising and learning new thinking. Systems Curriculum, et al
2	Systems leadership is a system of leadership that can be widely applied starting now	Undertake beliefs work

* 'WISDOM' = What I should do on Monday

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4. Q&A & Polling

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Summary of systems patterns

Sources: Senge and Meadows

Archetypes (A) Boltholes (B)	Alternative term
Reinforcing & balancing patterns	
Fix that fails (-) A	Whack a mole
Frog-boil (-) A	Delay
Race to the bottom/ Arms race (-) A	Limits to growth.
Race to the top (+) A	Winner takes all
Tragedy of the commons (-) A	Freeriding
T-shaped (+) A	Joined-up/ combinatorial benefits
People respond to incentives	
Gaming (-) B	What's measured gets managed
Greenwashing (-) B	Overclaiming
Siloes (-) B	Not joined up
Shy of change (-) B	Inertia-prone
Skimpy thinking (-) B	Shallow thinking
Storifying (-) B	Politics

Other common patterns in investment context

- Long-term thinking is a double bind
- Cause and effect are not closely related in time and space
- There's always a cost & a value but often it's not measurable
- People respond to incentives
- Faster is slower. The easy way out leads back in
- Progression (and regression) are hard to see
- Today's problems come from yesterday's solutions

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