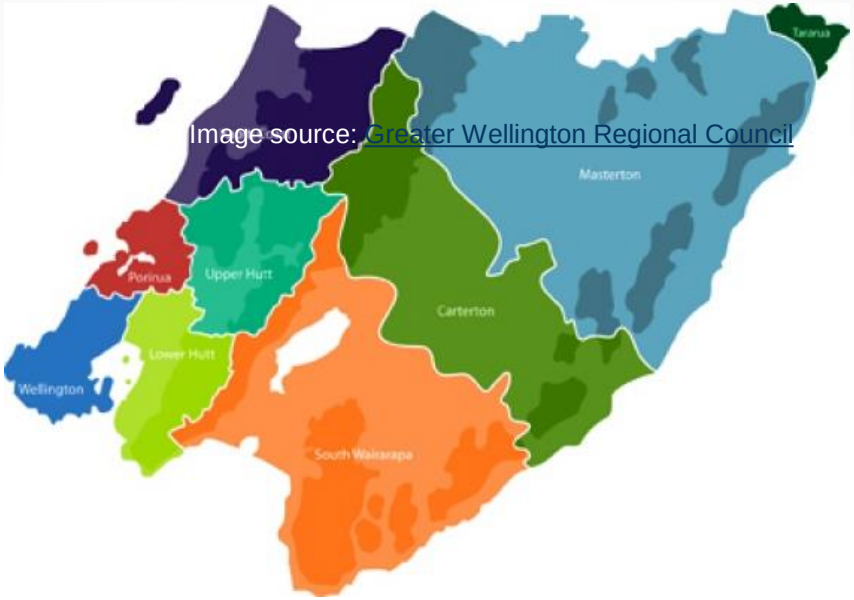


An introduction to systems thinking and tools for systems thinking –

Talking about and solving real-world challenges together

Will Allen & Margaret Kilvington
(April 2018)

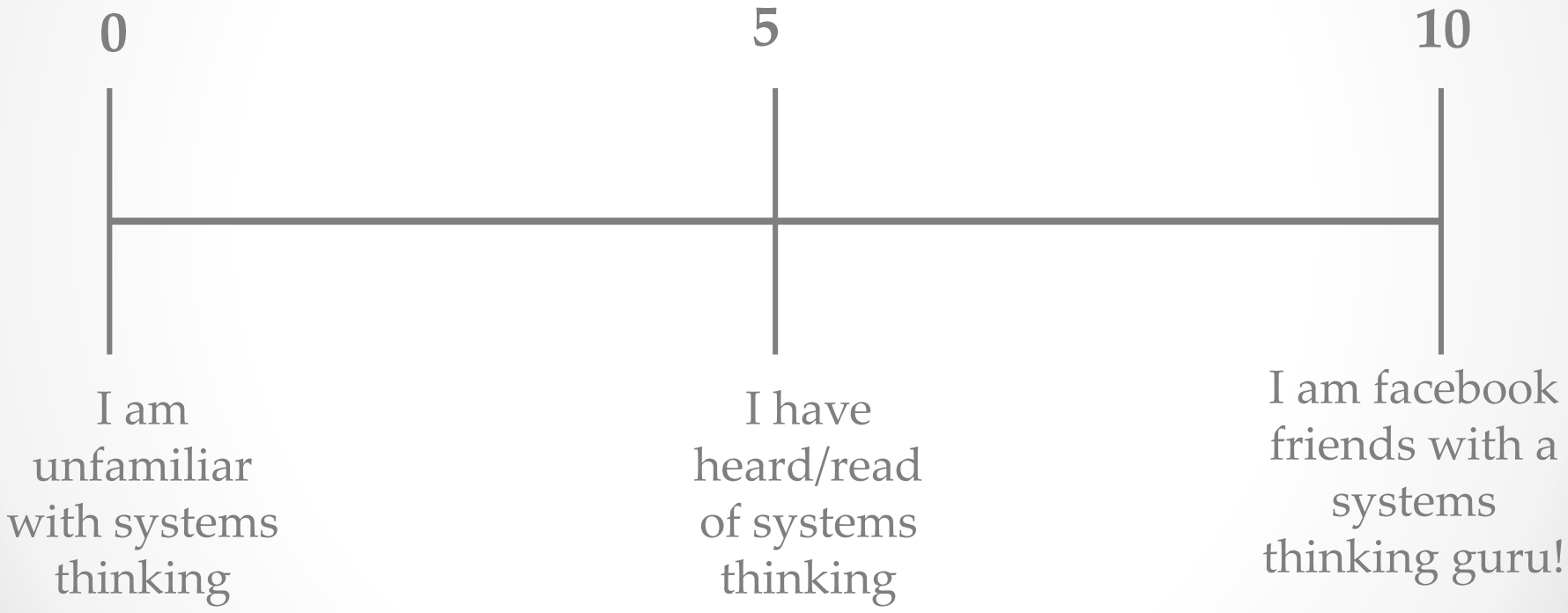
Presentation and workshop outline

1. Welcome and introductions
2. Basics of systems thinking & 'taking a systems approach'
3. Introduction to range of tools/methods that support systems thinking and systemic design in practice
4. Nurturing & supporting systems thinking in your practice
5. Close

Reference as: Allen & Kilvington (2018) An introduction to systems thinking and tools for systems thinking (Presentation). Based on material for a Greater Wellington Regional Council introductory systems thinking workshop, Wellington, New Zealand. Available online http://learningforsustainability.net/wp-content/uploads/2018/04/Intro-systems-thinking-and-tools-for-systems-thinking-20180417.pdf

1. Welcome and introductions

Thinking about your knowledge and experience?



Group exercise: Let's think about it!

In your tables:

1. One thing about why systems thinking is important
2. One systems thinking tool/approach you know about or already use?
3. Ideas you associate with systems thinking

Jigsaw image: Clker-Free-Vector-Images

2. Basics of Systems thinking and 'taking a systems approach'

Systems thinking enables us to:

- **Change our thinking** to match the interconnected, dynamic complexity of communities and their environments
- **Communicate with others** and create new ways of thinking and seeing - and develop shared understanding
- **Change our behaviour** to work with the complex forces in the system (instead of against them) to realize our vision
- **Identify and test** a wider variety of **possible actions**
- Be aware of the potential for unintended consequences of our actions
- **Expand the choices available to us** and identify those choices where we can **develop significant leverage**

Of course, not all systems are the same!

There are different kinds of systems

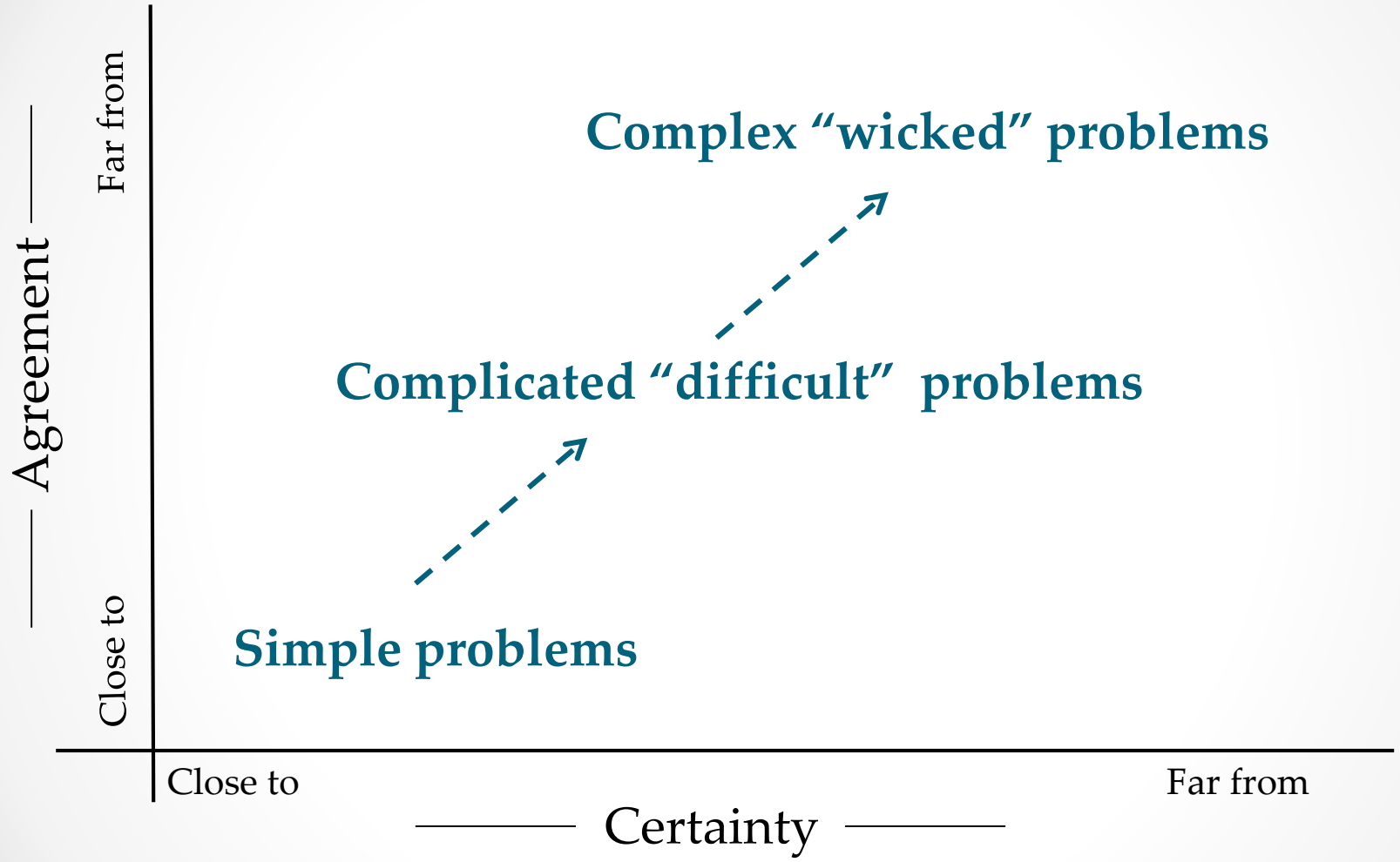
- Simple / complicated
- Complex and adaptive

Need to understand them

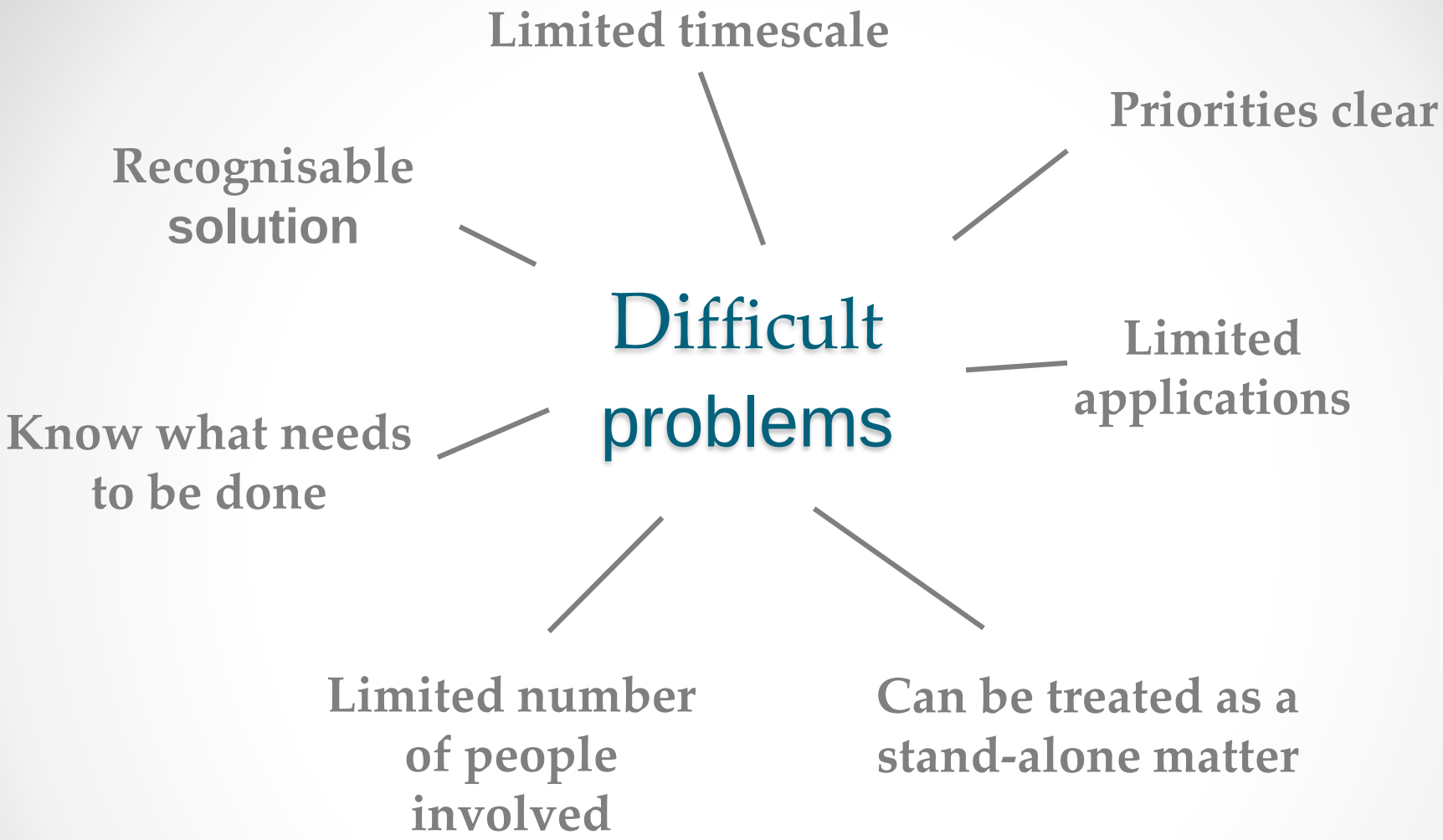
And use different management styles for each

Image: Land Information New Zealand

Recognising a typology of problem situations



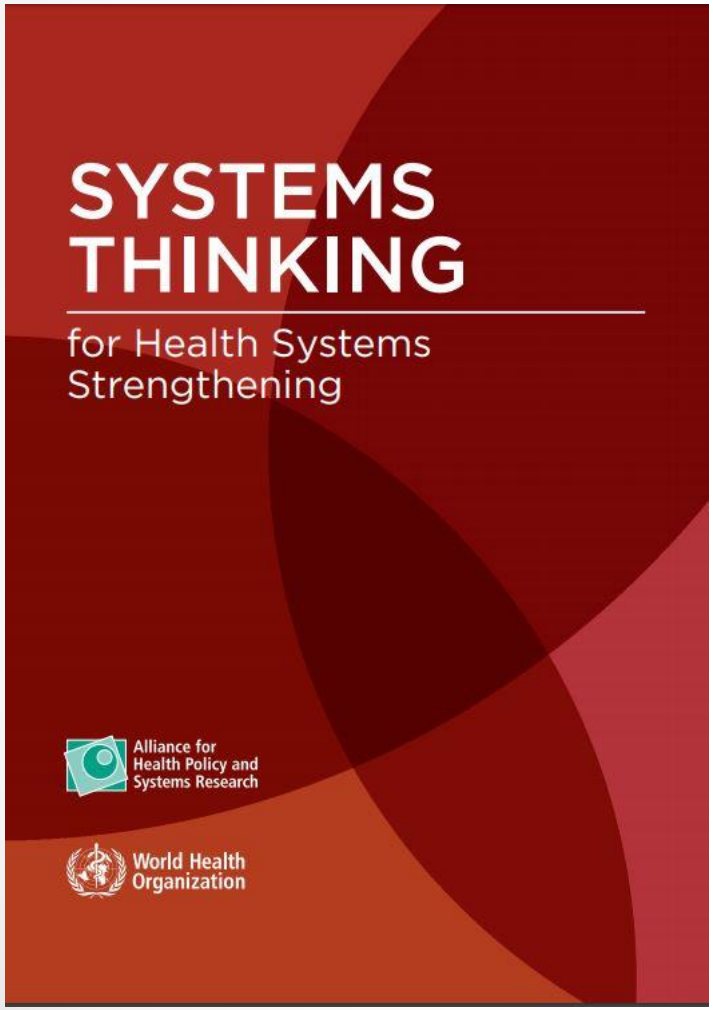
Modified from frameworks by Ralph D. Stacey and Dave Snowden

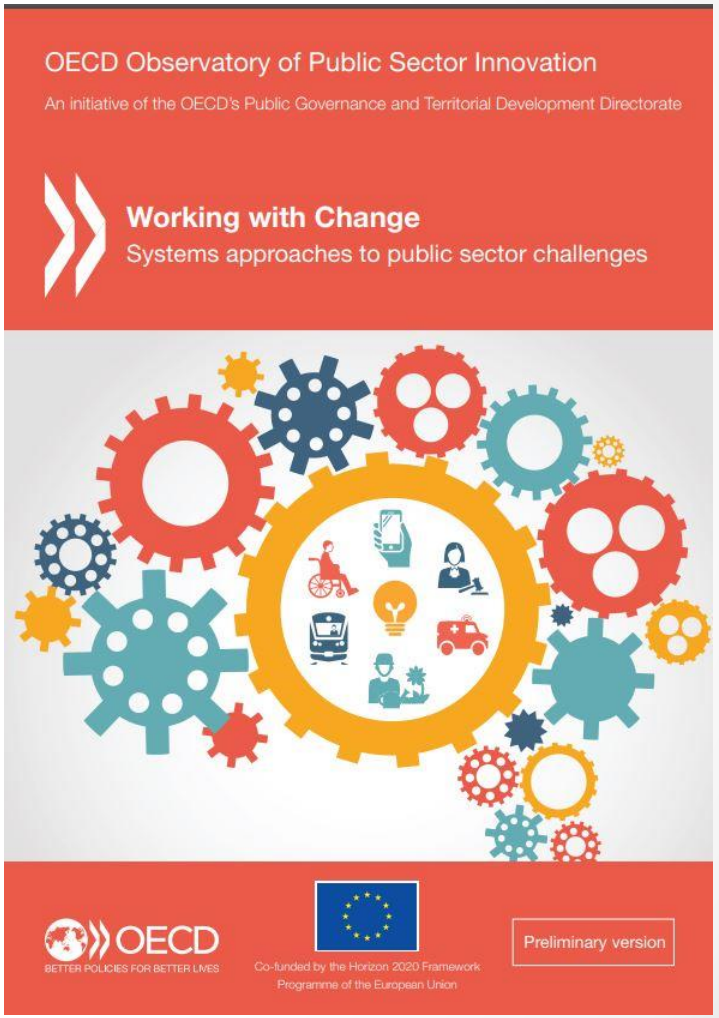


are characteristically smaller-scale and well-defined

are characteristically bigger and poorly-defined

International agencies and public sector organisations are moving towards systems thinking …..





International agencies and public sector organisations are moving towards systems thinking …..

… to deal with complex or 'wicked' problems which

- **Go beyond range of any one organization to manage them**
- **Often disagreement about causes, and how to tackle them**
- **Need to change behaviour or practice at multiple levels and scales (individuals to organizations)**
- **Require innovative solutions that can be adapted in the light of experience and feedback**

Different systems require different management

Managing a complicated system

- Develop explicit plans
- Plan then act
- Look for agreement & clear outcome
- Limit types of approaches & actions
- Set targets
- Drive implementation

Managing a complex adaptive system

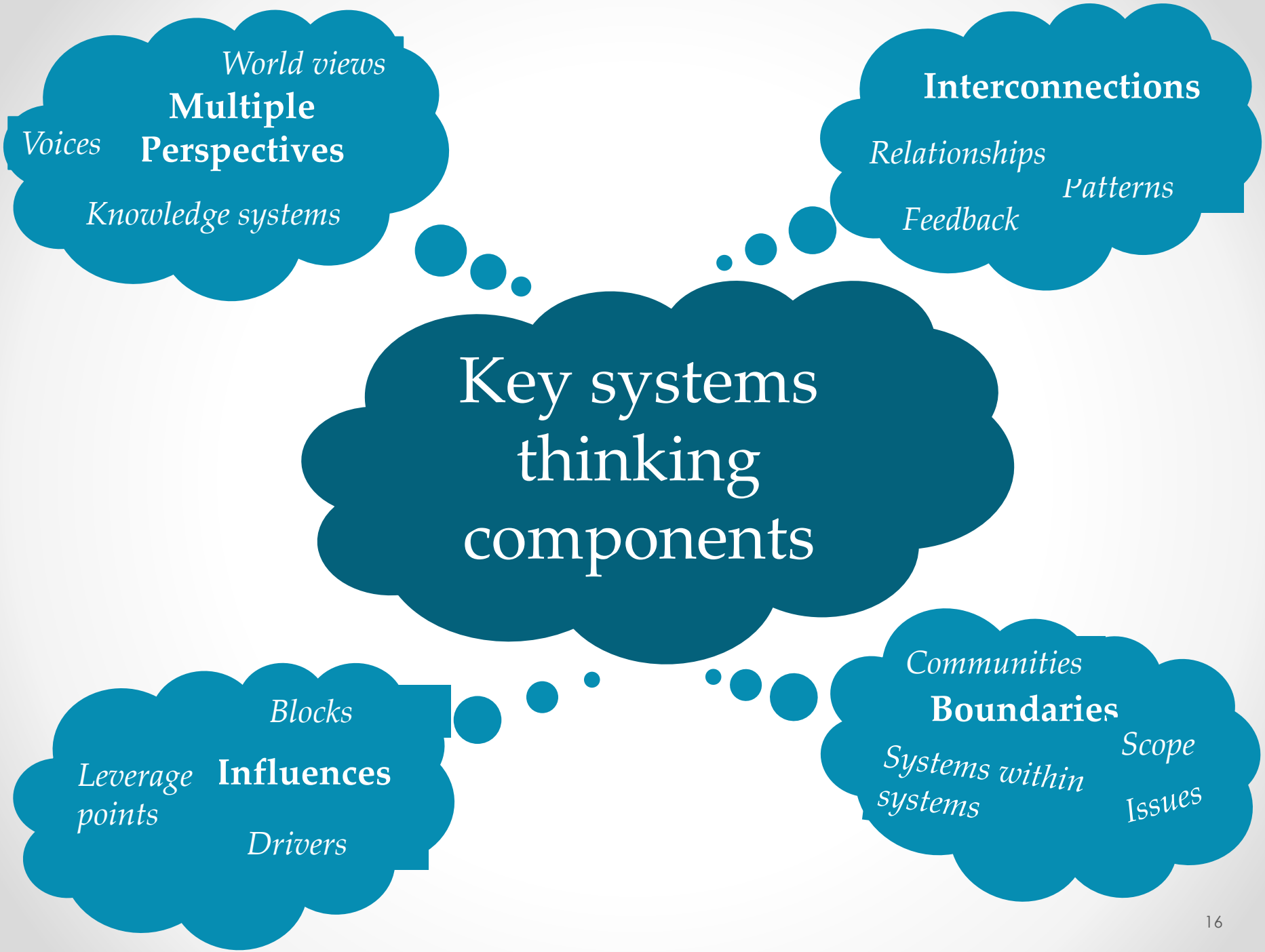
- Look for divergence
- Act, learn, and plan at the same time
- Use minimum specifications
- Work on multiple leverage points
- Be creative with opportunities at the boundaries
- Build on what emerges and grows

From: learning for sustainability supporting collaboration and adaptation Complicated or complex – knowing the difference is important

Group discussion

- Think of examples of ‘difficult’ (complicated) vs ‘wicked’ (complex adaptive) problems in your workplace

- How easy is it to tell the difference?


World views
Multiple Perspectives
Voices
Knowledge systems
Interconnections
Relationships
Patterns
Feedback
Key systems thinking components
Blocks
Leverage points
Influences
Drivers
Communities
Boundaries
Scope
Systems within systems
Issues

Multiple Perspectives

- Who or what are the key stakeholders in this situation?
- What stakes (individual values and motivations) do they have?
- What are the different ways in which the situation can be framed or understood – by whom?
- How do these different framings affect the way in which stakeholders act – when things go their way/when things don't go their way?

Interconnections

- How do the elements within the situation (components, stakeholders, knowledge, etc.) interconnect?
- What is the nature of the relationships between them (e.g. strong/weak, fast/slow, collaborative, direct, indirect, etc.)?
- What patterns emerge from these relationships in action - with what consequences, and for whom?

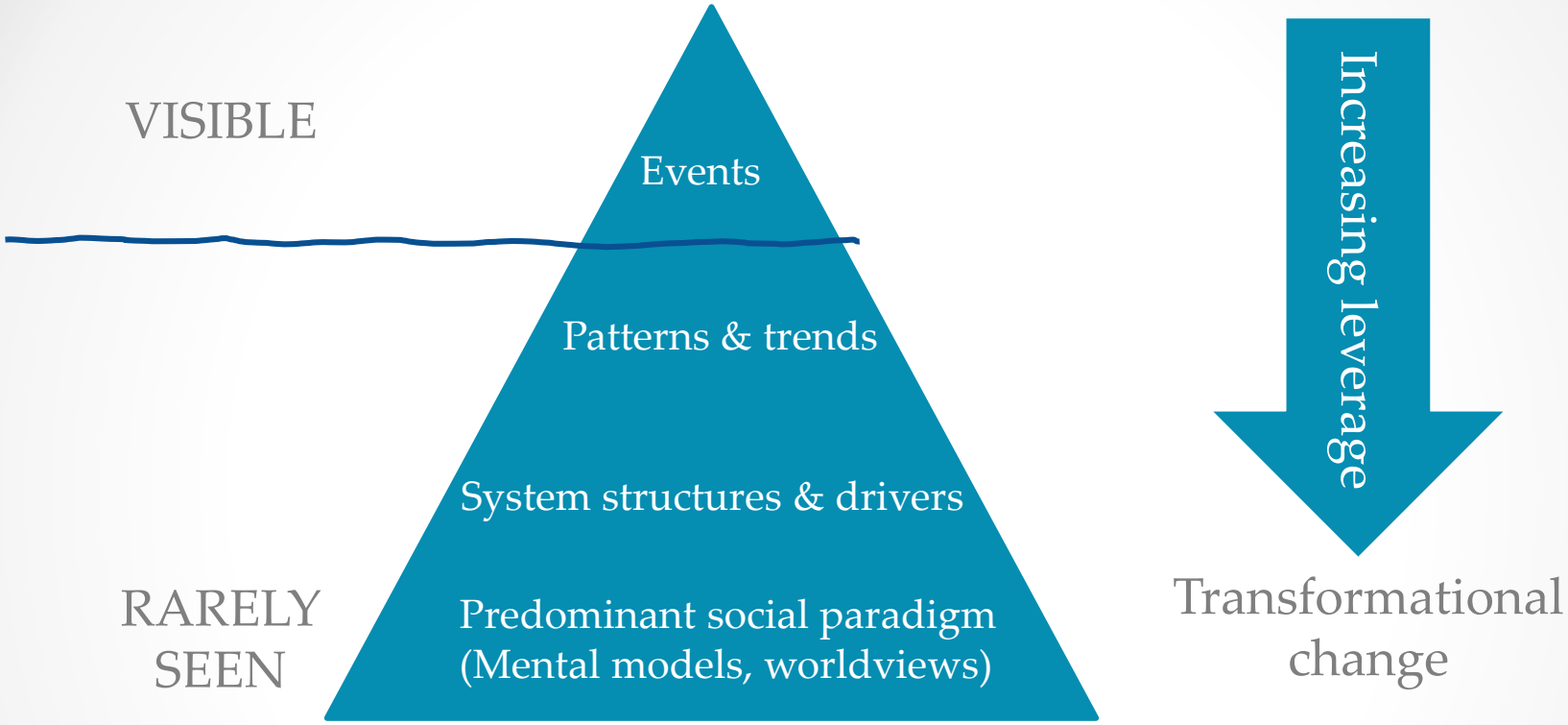
Boundaries

- Define scope and scale (and from what/whose perspective is this developed.)
- Are other boundaries possible – and feasible?
- Agree on how to structure the problem situation
- Discuss what constitutes an improvement – and how this might be different for different stakeholders?

Influences

- What drives the systems in question in particular directions
- Identify …. drivers, trends, enablers, blocks, leverage points
- Leverage points are seen as key points with which to intervene in complex systems

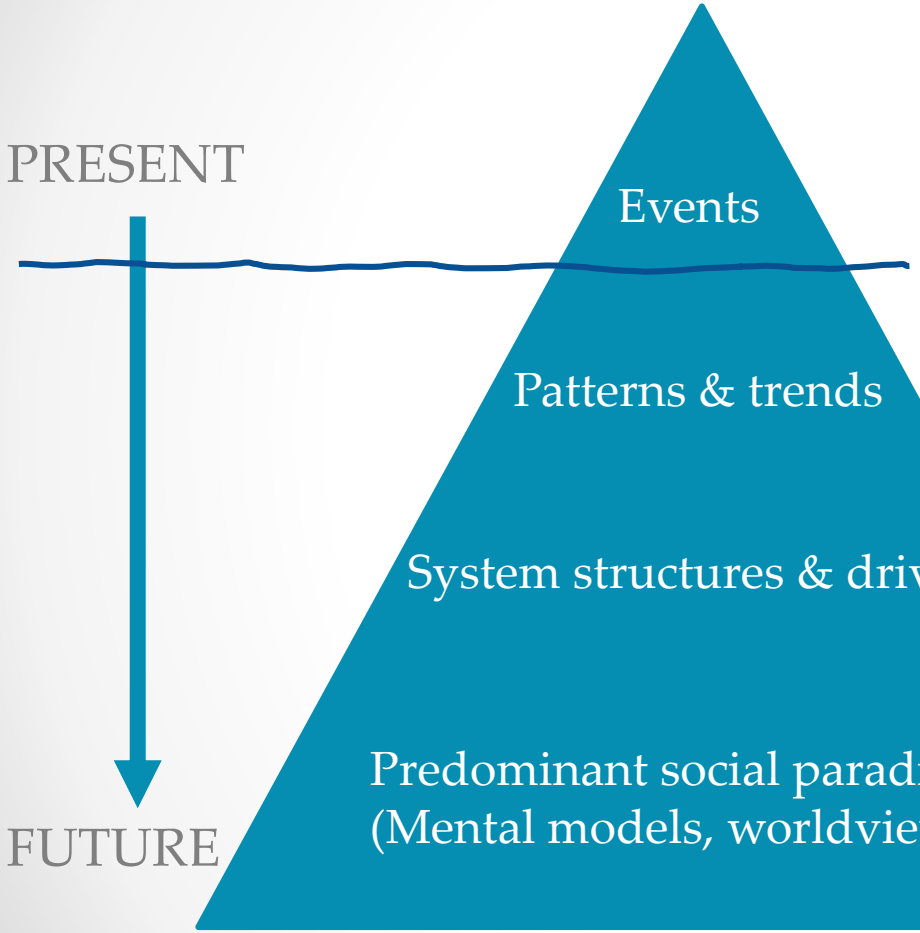
The iceberg model for systems thinking



The iceberg model is a systems thinking tool designed to help an individual or group discover the patterns of behaviour, supporting structures, and mental models that underlie a particular event.

From: Systems thinking: what, why when, where and how ~ by Michael Goodman 1997

Some questions to help unpack the system



What is the fastest way to react to this event NOW?

What trends and/or patterns are occuring?

What mental/organizational structures create the patterns?

What are the stated/unstated visions that generate this structure?

Donella Meadows' 12 leverage points: places to intervene in a system

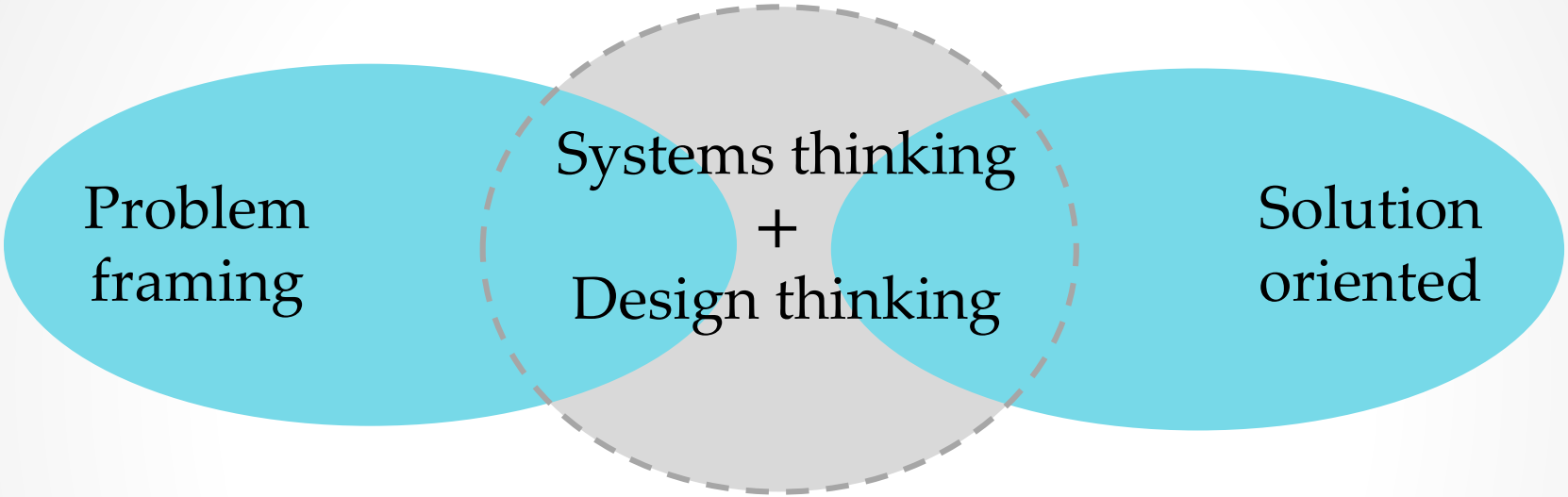
- Numbers
- Buffers
- Stock and flow structures
- Delays
- Balancing feedback loops
- Reinforcing feedback loops
- Information flows
- Rules
- Self-organization
- Goals
- Paradigms
- Transcending Paradigms

From: Leverage points – places to intervene in a system by Donella Meadows

Group exercise: How does the iceberg model relate to your work?

Picture source: Flickr - César Henrique de Santis Nascimento

Linking systems thinking and design



Systemic design - integrating the mindsets and toolsets of systems thinking and design thinking to encourage learning and innovative systems change

For more information: learning for sustainability Systemic design

Systemic design

These frameworks link together to support collaborative decision-making. For example key functions in a typical adaptive management/policy setting process may include:

- [Systems thinking] Involving participants in understanding issue and wider context (recognizing different perspectives/problem structuring, potential leverage points)
- [Design thinking] Jointly develop action plans (identify activities, outcomes, and assumptions) and M&E plans
- [Reflective thinking] Learn and refine (adaptive management)

For more information: learning for sustainability supporting collaboration and adaptation Systemic design

Tools/methods for systems thinking and systemic design can be grouped by function

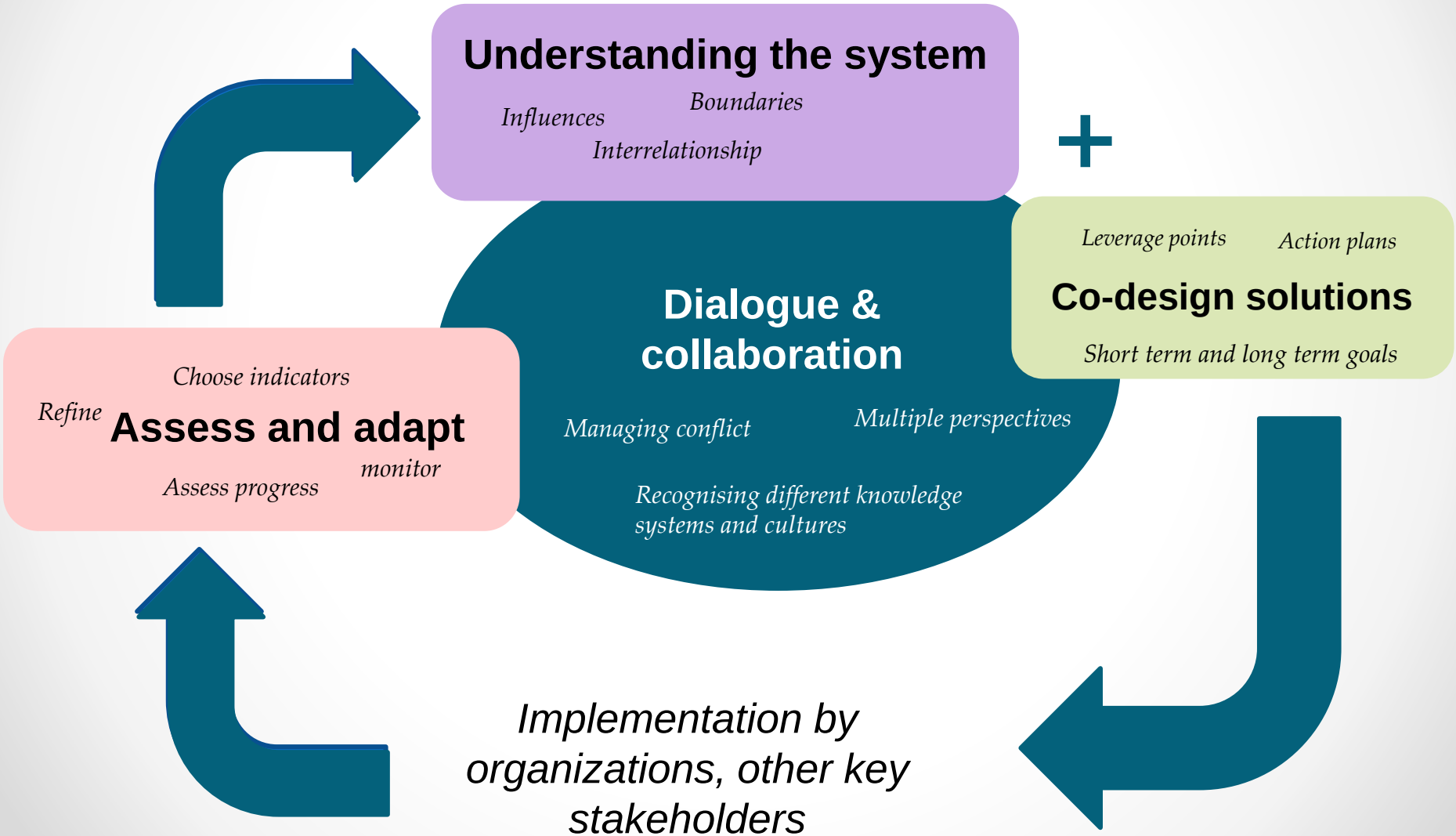
- Understanding the system
- Co-designing solutions
- Monitor, reflect and adapt

- Dialogue and collaboration

The first three functions essentially can be seen as linked elements in an iterative and experiential learning cycle – in a systems approach each is best carried out using tools that support dialogue and collaboration among the stakeholder groups involved.

Tools/methods for systemic design

- supporting an experiential learning cycle



3. Tools and methods for systems thinking and systems design

There are so many!

"All tools are wrong. Some tools are useful."

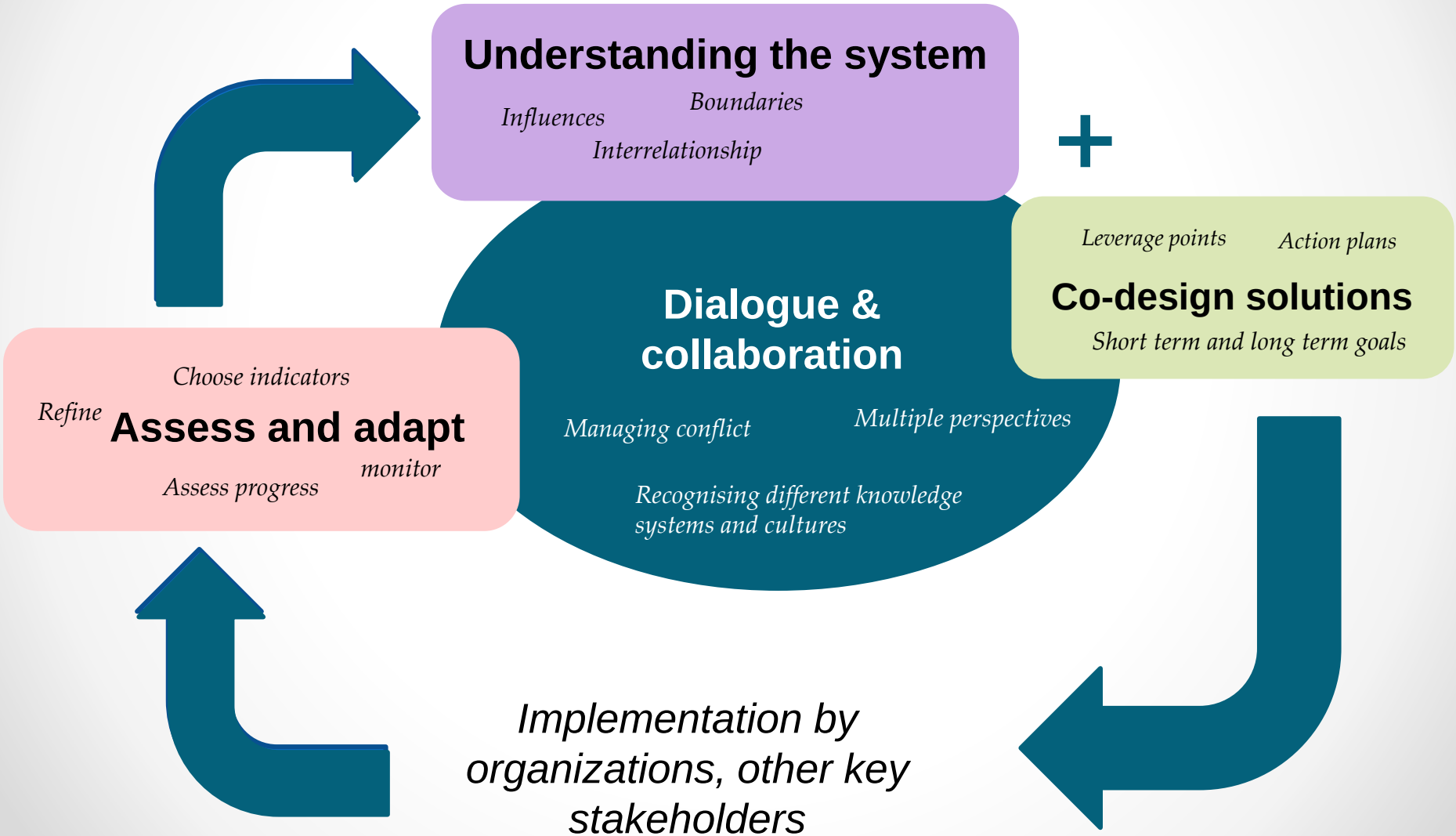
"Over the years, I've found that starting with methods, whether causal loop diagrams or Soft Systems Methodology or Social Network Analysis, often confuses or exasperates novices ….

… furthermore, no single method will equip them with the power of the systems field."

~ Bob Williams

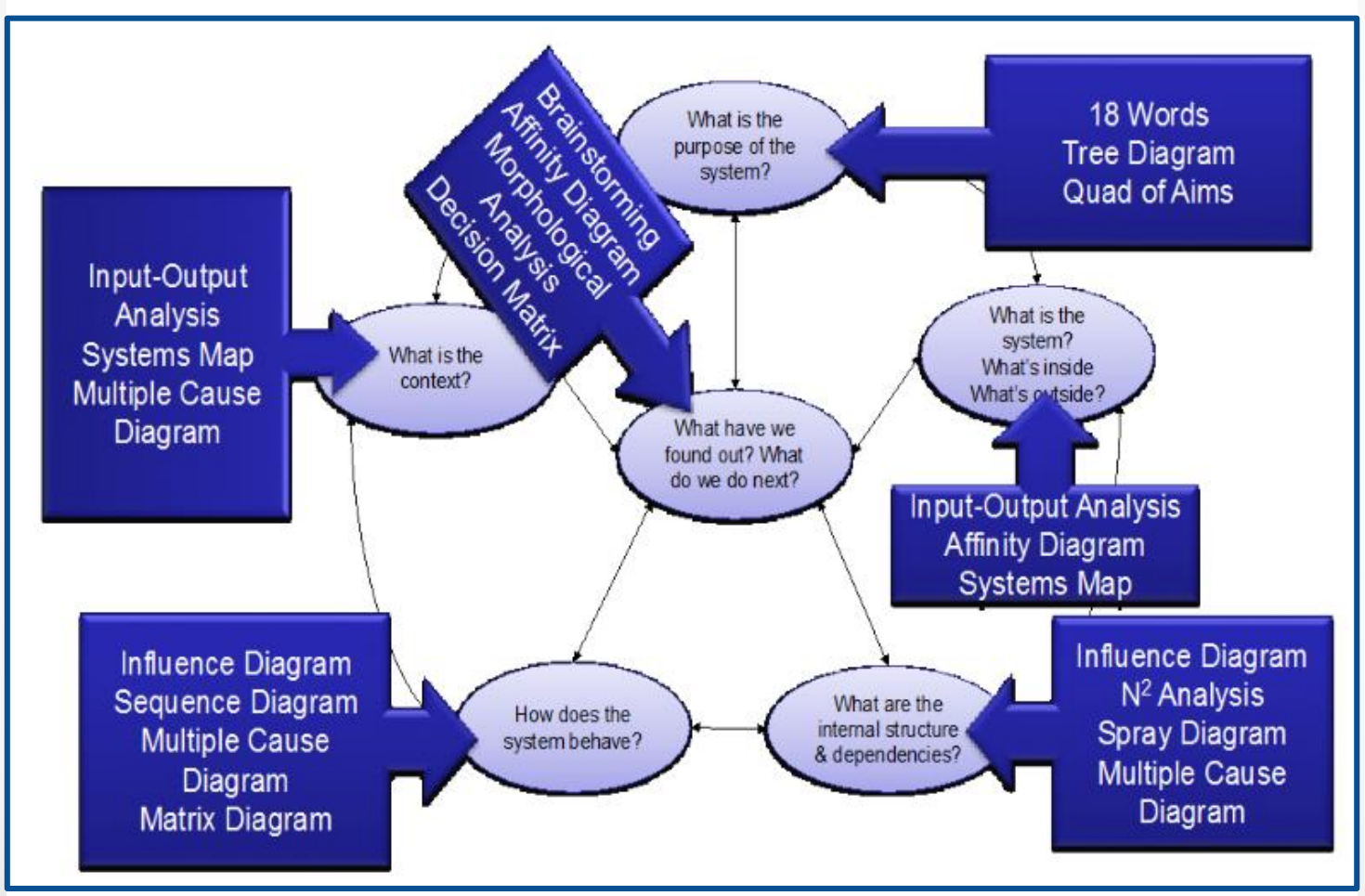
https://thesystemsthinker.com/%EF%BB%BFall-methods-are-wrong-some-methods-are-useful/

Important to see how tools/methods fit in the bigger process in which they are used



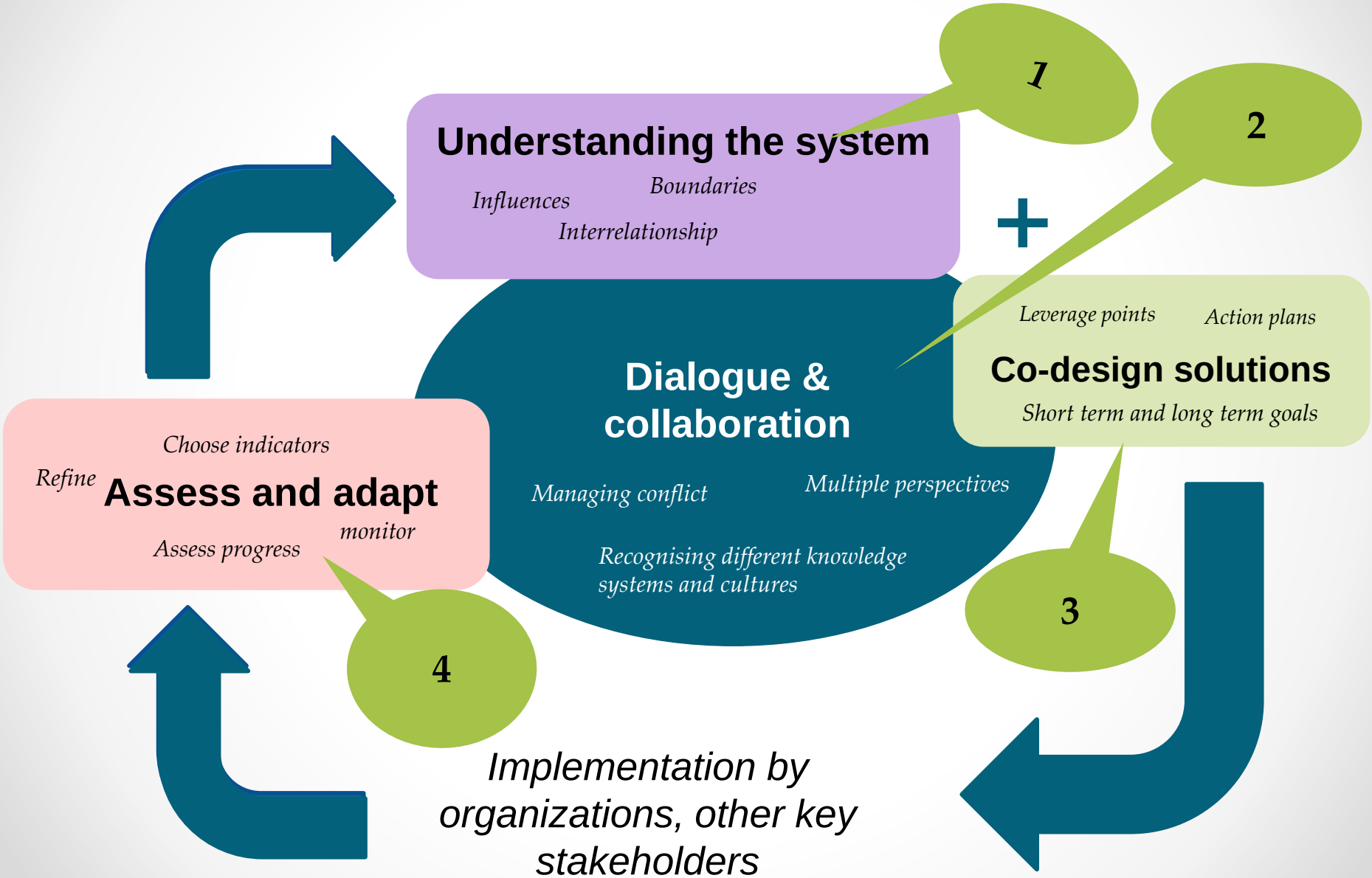
And there are many other ways of mapping systems thinking tools

e.g. this one from UK based firm - Burge Hughes Walsh

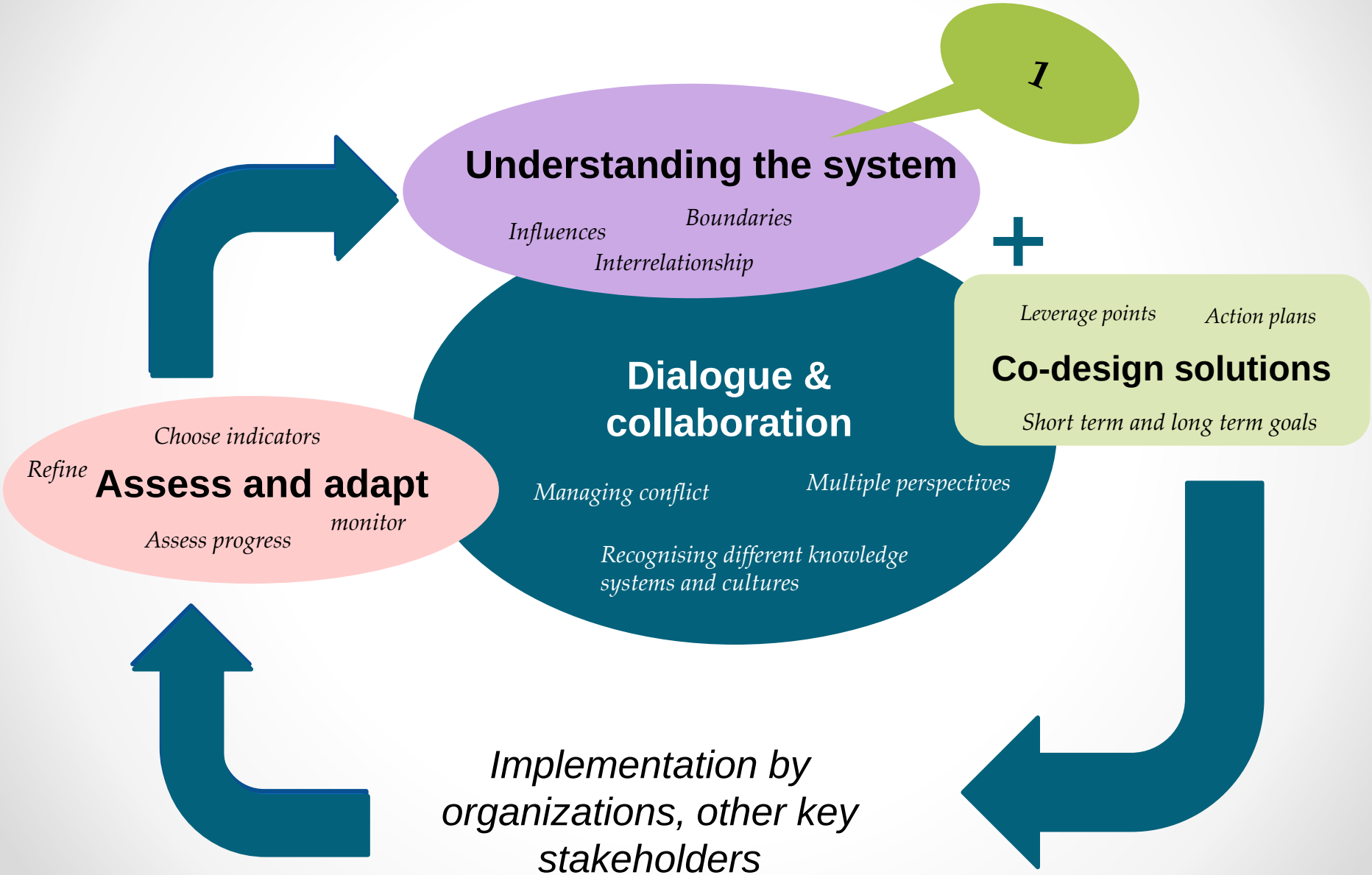


Source: http://www.burgehugheswalsh.co.uk/systems-thinking/tools.aspx

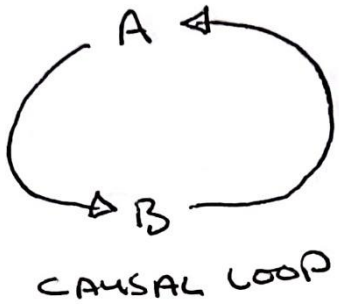
Groups of tools/methods for each function



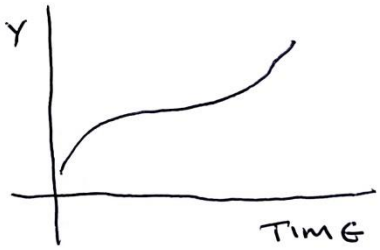
1. Tools for understanding the system



Understanding the system - tools for seeing things



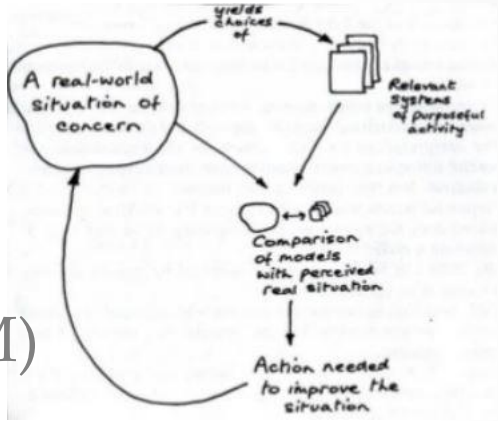
- Timelines
- Trend analysis
- System archetypes
- Rich pictures
- Cynefin framework/Stacey diagram
- Concept mapping
- Social network analysis
- Causal loop diagrams
- Bayesian belief networks
- Computer models
- etc

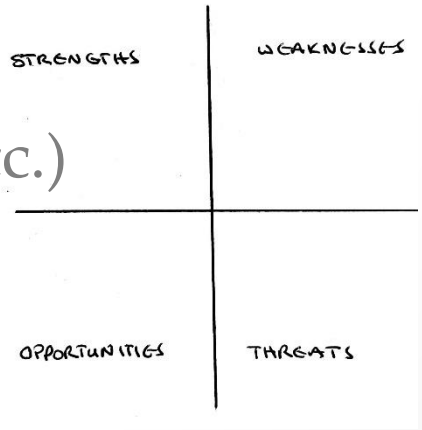


For more information: learning for sustainability — supporting collaboration and adaptation — Systems methods and tools

Understanding the system - tools for thinking strategically

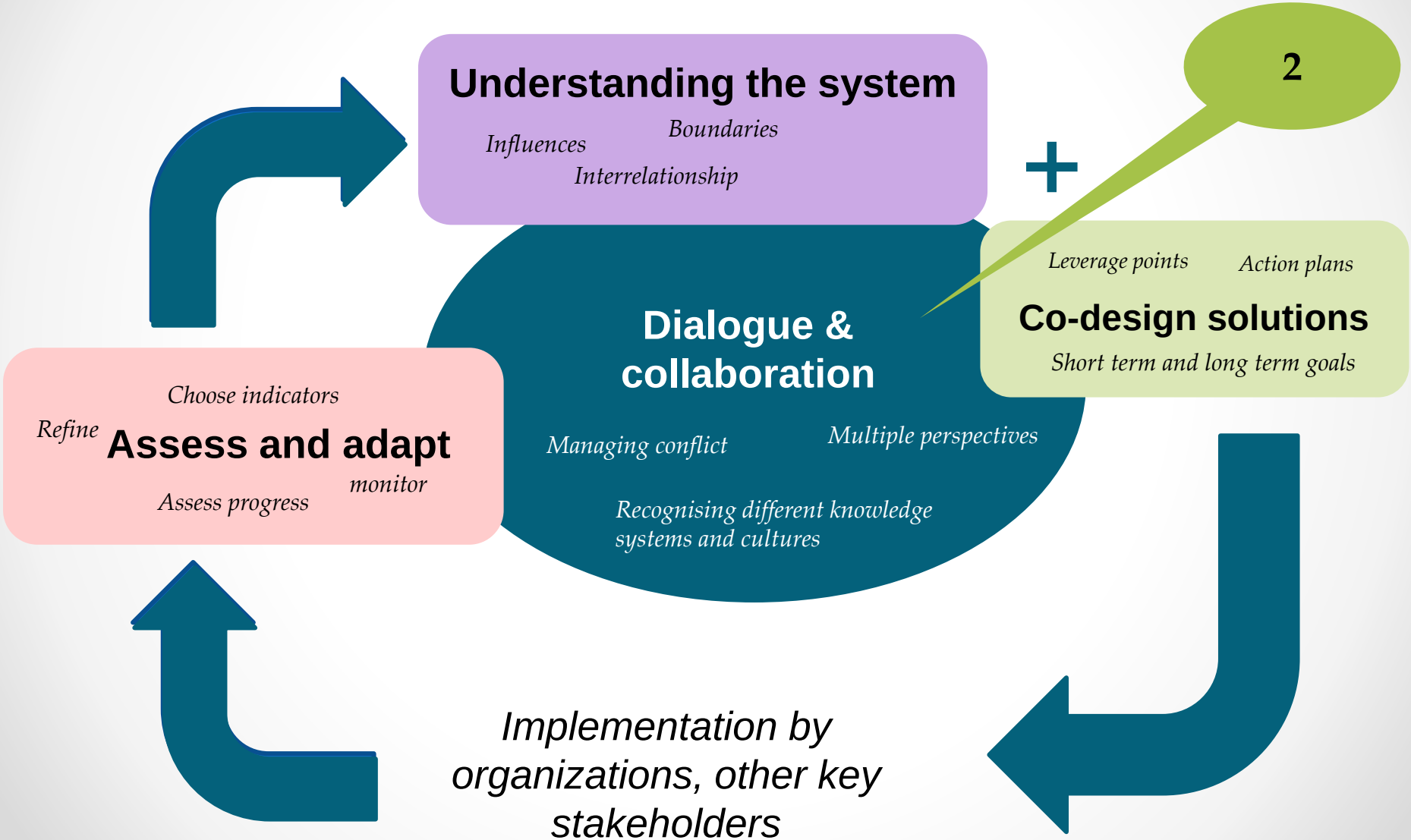
- CATWOE
- Iceberg model
- System archetypes
- Soft Systems Methodology (SSM)
- Scenarios and visioning
- Problem structuring methods
- SWOT/TOWS analysis
- STEEP (PEST, PESTLE, STEP, etc.)
- etc





For more information: learning for sustainability supporting collaboration and adaptation Strategy tools and approaches

2. Tools for dialogue and collaboration



Dialogue & collaboration – tools for involving the right people include:

Not just who you could get to come at the time
Source: http://weird-vintage.com

- Stakeholder analysis
- Engagement planning
- Networking
- Relationship building & management

For more information: learning for sustainability Stakeholder mapping and analysis

Dialogue & collaboration – tools for working together

Use multiple methods and always have a plan. Tools include:

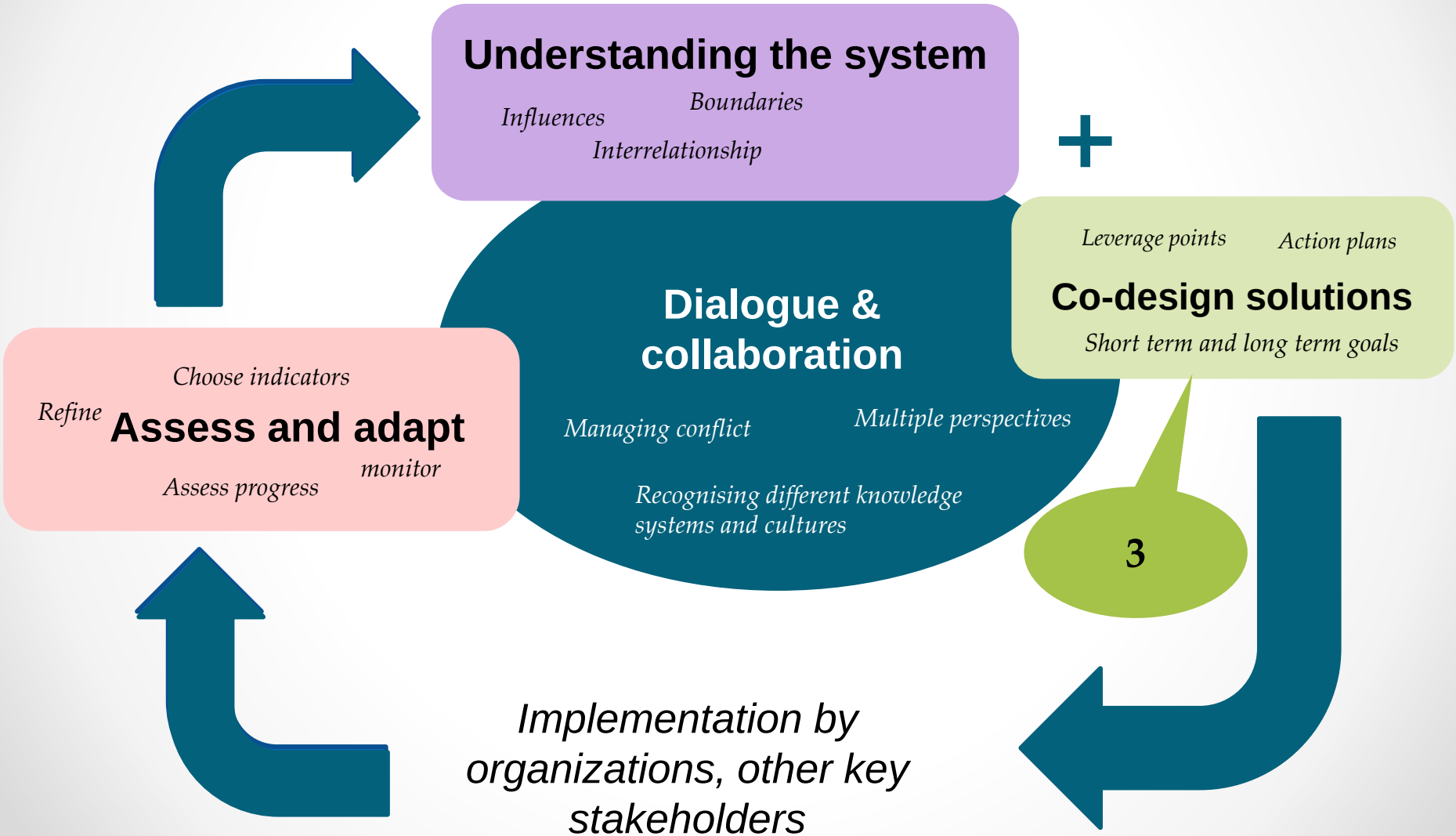
- Facilitation
- Kitchen workshops and meetings
- Informal conversations
- Networks
- Social media
- Active listening, appreciative inquiry ...

Don't travel the same road every time

Source: www.pexels.com

For more information: learning for sustainability Using dialogue and negotiation

3. Tools for co-designing solutions

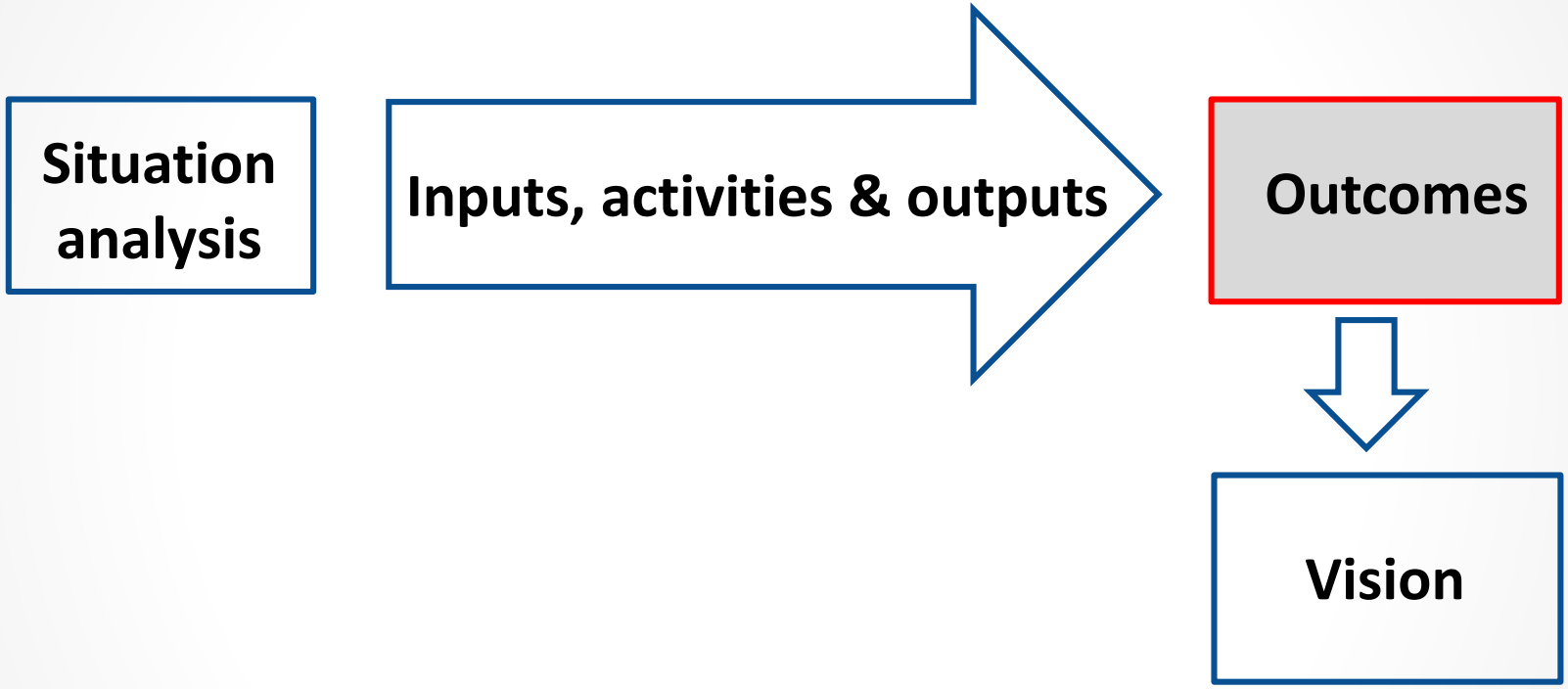


Tools for co-design – finding desirable solutions

Usually both a product and a process. Approaches include:

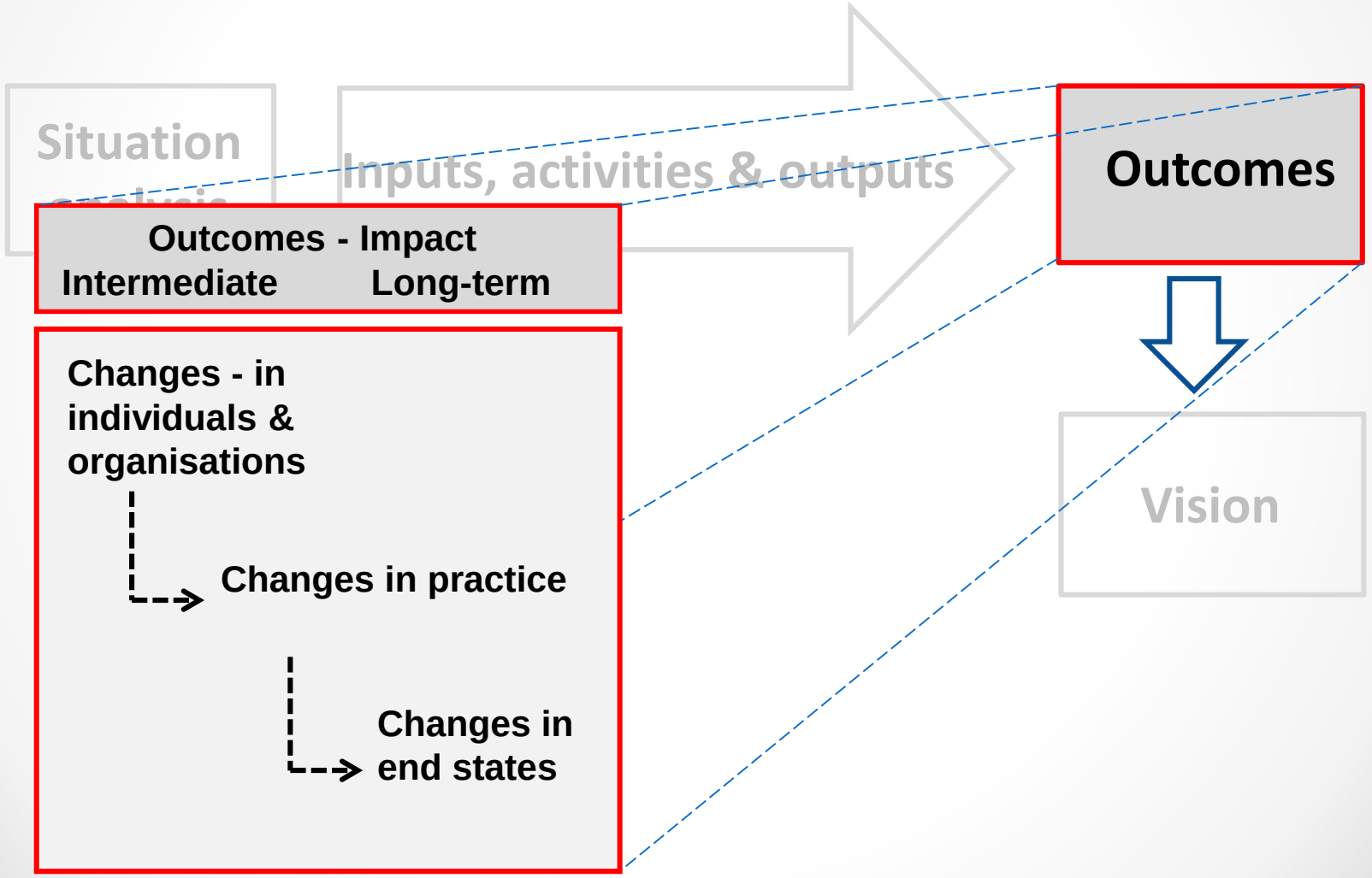
- Agile planning (scrums & sprints) …. as opposed to waterfalls
- The five stages of Design Thinking (Empathise, Define – the problem, Ideate, Prototype, and Test)
- Along with a whole host of methods …. problem structuring methods (PSMs), conceptual models, scenario development, (participatory) system dynamic modelling and simulation, etc.

Tools for co-design – outcomes modelling [Theory of Change (ToC) and logic models]

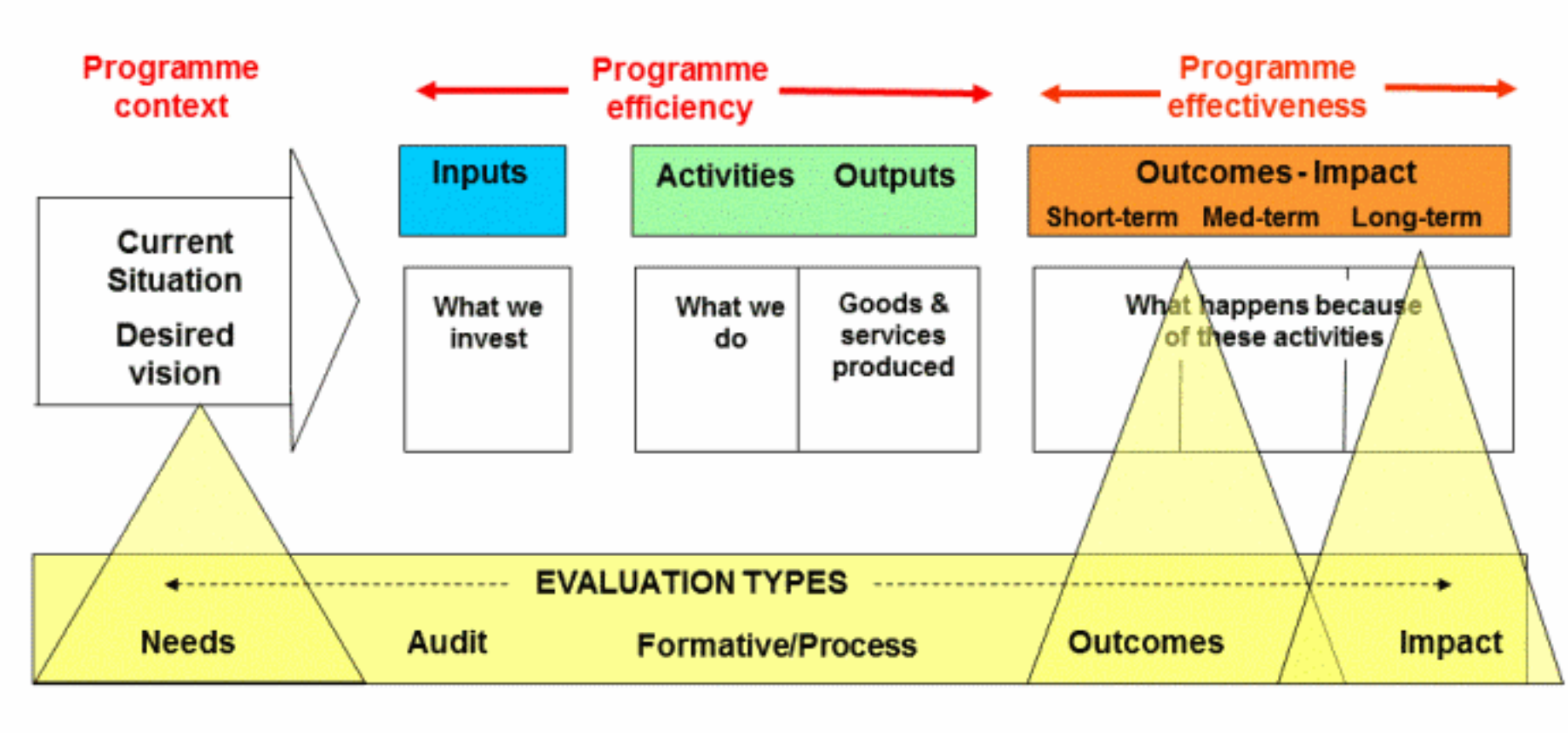


For more information: Theory of Change and logic models

… can account for acknowledgement that people and organisations need to change first

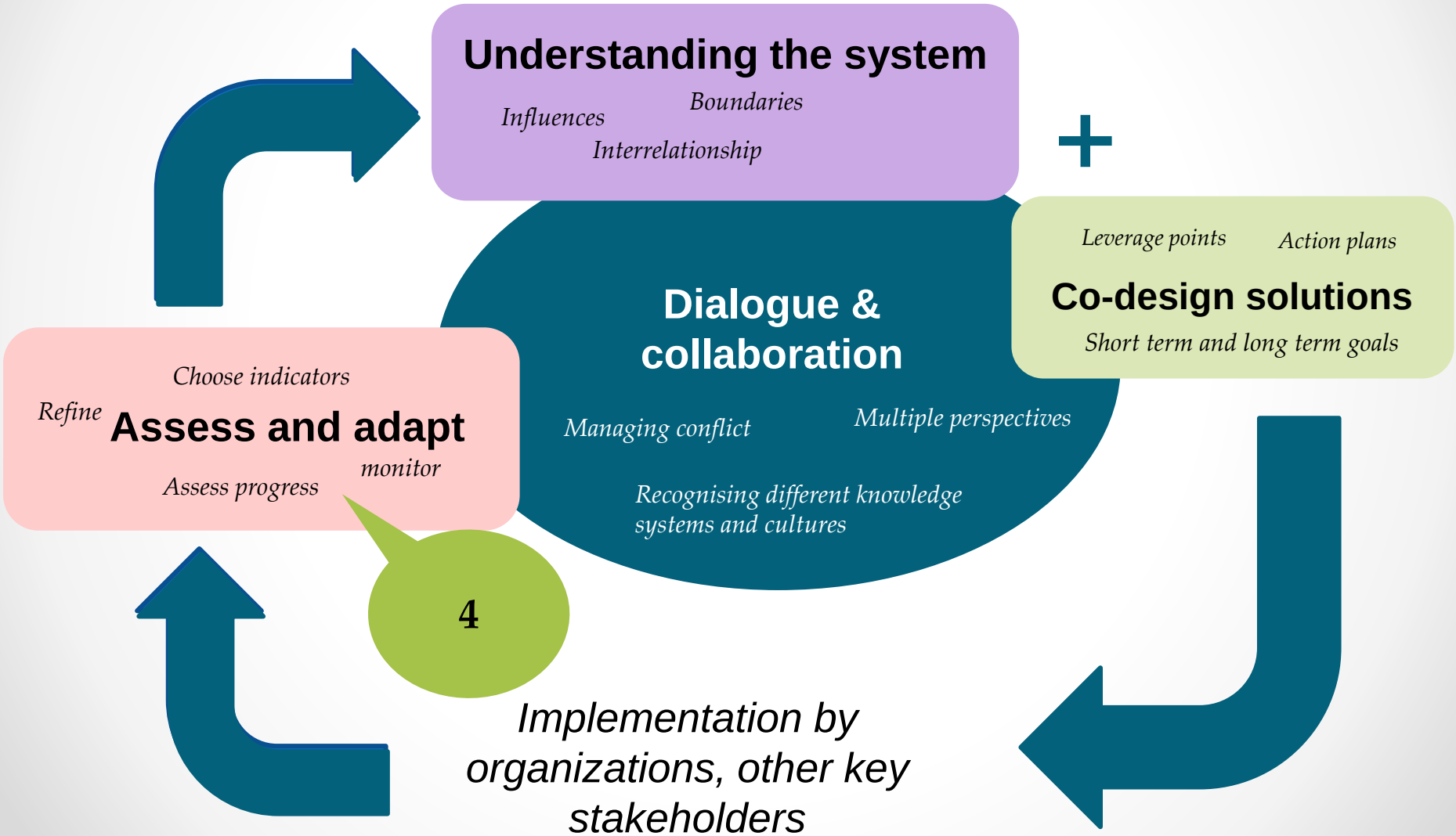


… and helps develop monitoring and evaluation plans along with activity plans



For more information: learning for sustainability supporting collaboration and adaptation [Planning, monitoring & evaluation – closing the loop]

4. Tools/methods for assessing progress



Tools for assessing and adapting include:

- Theory of change and accompanying logic models
- Complexity-aware monitoring (outcomes mapping, MSC, etc.)
- Using rubrics to assess complex tasks and behaviours (intermediate outcomes)
- Facilitating reflective practice (After Action Reviews – AARs and Strategic Learning Debriefs

For more information: learning for sustainability supporting collaboration and adaptation Planning, monitoring & evaluation – closing the loop

Group discussion: Using Tools

In your tables discuss:

- What areas of tools do you/organisation most commonly look to build capacity in?
- What are of tools would you most like to expand your use of?
- When might you need an independent practitioner/expert – for what sort of tools?

4. Embedding systems thinking in practice

It is important to create a learning organisation where:

- *people continually expand their capacity to create the results they truly desire*
- *new and expansive patterns of thinking are nurtured*
- *collective aspiration is set free … and*
- *people are continually learning to see the whole together.*

~ Peter Senge 1990 – The Fifth Discipline

Common challenges that often have to be faced include

- The perception that learning (collaboration and dialog) takes too long
- Too few people with the skillsets and resources required to follow through
- Exploring one's personality and goals in a group can sometimes seem threatening and daunting
- A lack of safe spaces for groups to work in this different way
- A lack of formal commitment to the process from organisational leadership

Senge: the five core disciplines required for a successful learning organization

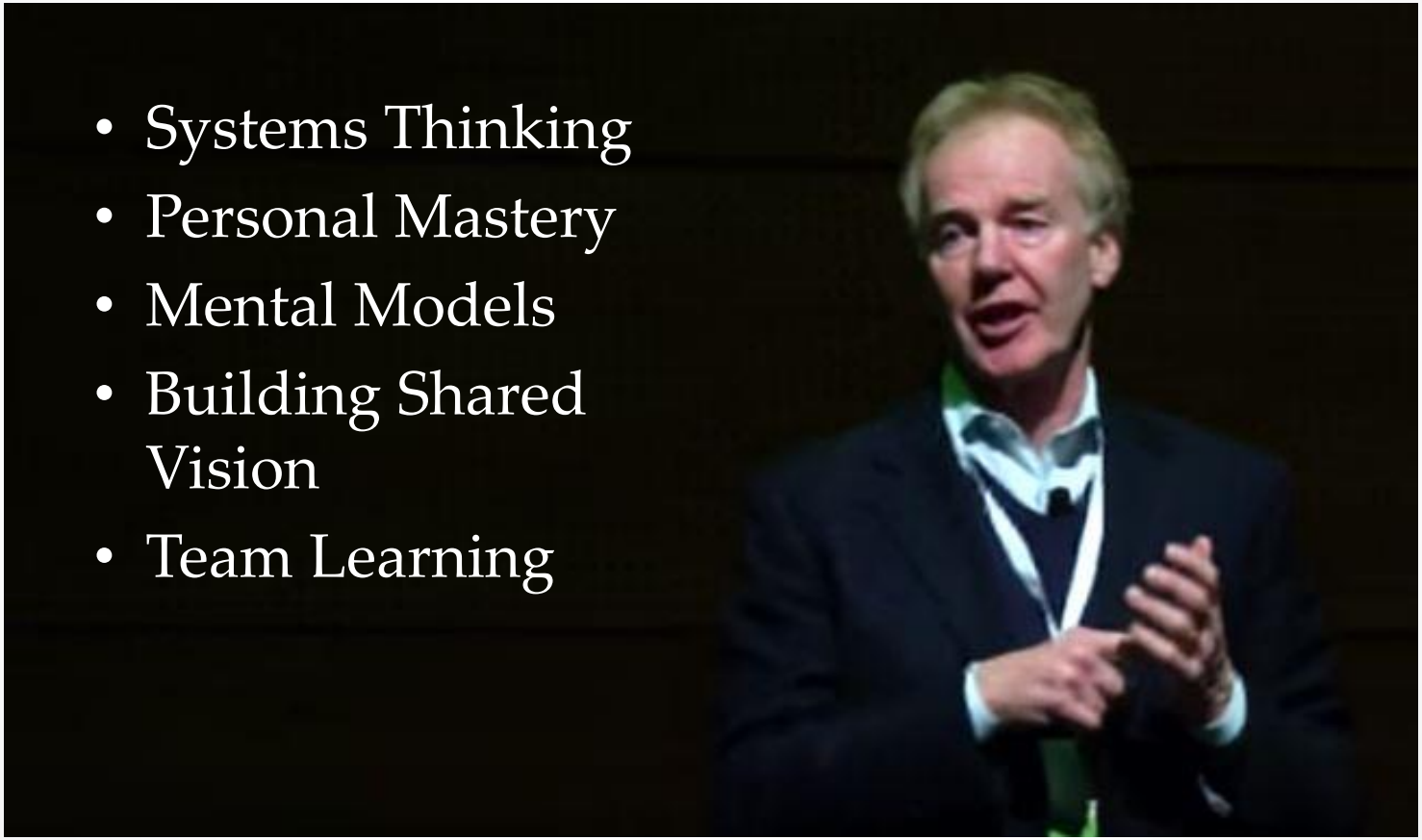


Image source: Peter Senge Systems Thinking

Group discussion

- Think of one or two tools or processes that you might want to employ:
- Think about any challenges you might encounter
- Think about what you would need to make your chosen tools or processes to work – and who else could help you
- Make a realistic commitment

learning for sustainability
supporting collaboration and adaptation

Search ... Search

Home | Social learning | PM&E | Collaboration/Engagement | Supporting change | Research | Sustainable development | Blog | Publications

Learning for Sustainability

The Learning for Sustainability (LfS) site began in 1998, and has been operating under its current name since 2006! It provides a reference guide to on-line resources for those working to support social learning and constructive action. The material referenced here can be used, or adapted for use, in any number of fields.

It operates as a portal – highlighting the wide range of social skills and processes that are needed to support constructive learning-based collaboration. The site has just been redeveloped to improve both content and structure. Occasional updates are sent out to the more than 1700 site subscribers as new resources and pages are added. If you are not already on the list feel free to join up here:

Subscribe to LfS update

... recently updated topics

Systems thinking. A set of annotated links that provide an introduction to systems thinking and how to manage and facilitate it. ★★★

Systemic design. Links systems and design thinking to bring social-centred design to complex, multi-stakeholder service systems. New!

Systems thinking tools. Links to sites providing toolkits and tools to support systems thinking. New!

Complexity-aware PM&E. Links to approaches that can aid in tracking a fuller range of outcomes, causal factors, and pathways. New!

The site brings a wide range of annotated on-line resources from different sectors and geographic areas together in one easy to access place. It is largely sourced through material developed in the sustainable development, natural resource management, public health and agricultural sectors. The textboxes below highlight other recently updated posts and topics.

For more information visit: http://learningforsustainability.net

For more information

- Will Allen – willallennz@gmail.com
  - Will Allen & Associates / Learning for Sustainability
- Margaret Kilvington – margaret.kilvington@gmail.com
  - Independent Social Research, Evaluation & Facilitation
- Annotated links to a wide range of related on-line material can be found via the Learning for Sustainability clearinghouse - http://learningforsustainability.net/

Reference as: Allen & Kilvington (2018) An introduction to systems thinking and tools for systems thinking (Presentation). Based on material for a Greater Wellington Regional Council introductory systems thinking workshop, Wellington, New Zealand. Available online http://learningforsustainability.net/wp-content/uploads/2018/04/Intro-systems-thinking-and-tools-for-systems-thinking-20180417.pdf