

Glossary of terms

This glossary gives definitions of frequently used terms in the programme resources. The glossary does not intend to provide a comprehensive list of terms used in systems thinking.

Term	Definition	Related term(s)
Actionable complexity	Ensuring that the use of systems tools and methods allow for action to be taken, rather than creating confusion and adding to complexity.	Manageable complexity
Adaptation	The process of adjusting a process to new conditions or with new information.	Iteration, change
Boundaries	A distinction made by individuals or stakeholders which creates a border between the system and the system environment. Boundaries might be set according to what is of interest to a group of stakeholders or where they can have influence.	
Complex challenges	Situations or issues which are difficult to pin down and there are diverse perspectives on the nature of the challenge and how to resolve it. Complex challenges contain a high degree of uncertainty and where interventions have intended and unintended consequences.	Wicked issues, messes
Emergence	A system is more than the sum of its parts. The overall system behaviour cannot be understood by looking at how individual parts relate to each other.	
Factors	These are the parts that make up a system.	Nodes, elements, variables, actors

Term	Definition	Related term(s)
Feedback loops	A circular cause and effect chain of factors in a system. Feedback loops can be negative (compensatory or balancing) or positive (exaggerating or reinforcing).	Causal loops, stock and flow
Hierarchy	The location of a defined system with a continuum of levels of organisation. This means any defined system can be at the same time a subsystem of a wider system and it itself a wider system to its subsystems.	
Intended and unintended consequences	All interventions in a system have consequences to the system dynamics. Some of these are planned but other cannot be predicted. Unintended consequences can be positive and negative.	
Learning system	<p>A group of people who come together with the purpose of learning about a situation or issue through undertaking structured activities. From this, decisions can be made about making improvements.</p> <p>Learning systems, or social learning systems have the properties of emergence and feedback.</p>	Systemic inquiry
Participatory systems mapping	A type of systems mapping approach which involves bringing together stakeholders, often with diverse perspectives, to develop a model of defined system using the collective knowledge of the group. Maps can be annotated with relevant information (e.g. interventions or policies, system vulnerabilities or opportunities for change) and can be used to develop submaps and narratives.	

Term	Definition	Related term(s)
Points of leverage	Places to intervene within a system where you might create the greatest amount of change in your system-of-interest	Points of intervention
Subsystems	Within a hierarchy, systems can be subdivided into smaller systems which have a purpose which relates to the overall system	
System dynamics	A systems thinking approach which is concerned with understanding, modelling and analysing change within a defined system over time	
System environment	Within a hierarchy the wider environment a defined system sits in	Metasystem, suprasystem
Systematic thinking	A type of thinking which looks at individual parts in a system in isolation without looking at the relationships between the parts.	Linear thinking, reductionist thinking
Systemic thinking	A type of thinking which looks at how parts of a system interact to form a whole.	Big picture thinking, holism, holistic thinking
System-of-interest	By drawing boundaries, a group of stakeholders can differentiate between what is of direct interest to them and begin to explore the system-of-interest as part of a learning system	
System	A set of things (parts) which form an integrated whole. The properties of the whole arise through the relationships between the parts.	

Term	Definition	Related term(s)
Systems approaches	Umbrella term for a range of tools, methods and ways of working which draw from systems thinking and complexity sciences	
Systems literacy	Knowledge of tools and methods in systems thinking	
Systems mapping	An umbrella term for a range of approaches which seek to represent a model of a defined system using diagramming techniques. Systems maps contain factors and connections (lines or arrows). These connections show causal relationships between factors	
Systems thinking	A type of thinking which involves thinking systemically and systematically. A systems thinking approach also involves considering diverse perspectives (known as pluralism) on a situation or issue and making boundary judgements.	
Systems thinking in practice	The application of systems thinking and associated tools and methods by a practitioner within a specific context to make changes which are systemically desirable and culturally feasible.	Applied systems thinking approach
Uncertainty	Where future outcomes in a systems or issue are not totally predictable from our current knowledge and understanding	

Traditions in systems science

The programme is informed by three traditions in systems science which are also reflected in the terms defined in the glossary.

Developing models is a core feature of systems science and is a way of making things explicit to increase understanding and facilitate change.

Hard systems - in these approaches a problem can be easily defined. Models are seen as simplified versions of reality and evidence is sought to assess their validity. Hard systems approaches focus on a tangible outcome or product.

Soft systems - in these approaches defining the problem is seen as difficult and will depend on how people frame a situation. There are likely to be diverse perspectives on both the nature of the problem and how to respond to it. Models in soft systems approaches are seen as devices for people to consider their own perspective and to engage in debate about possible action. Soft systems approaches emphasise an ongoing process of inquiry and learning.

Critical systems - focuses on the role of the systems practitioner and the use of theory to underpin action but also for practice to test theory. Using a range of systems tools and methods, critical systems practice asks the question who benefits from the knowledge and insights gleaned - it is therefore concerned with ethical issues.

Sources

The definitions for the terms used in this glossary and the traditions in systems sciences are drawn and adapted from the following sources:

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