System Thinking Glossary

CHAPTER	TERM	DEFINITION
1.1 SYSTEM THINKING	System	A set of interrelated entities which perform a function, whose functionality is greater than the sum of the parts
1.1 SYSTEM THINKING	System thinking	Thinking of things as systems
1.1 SYSTEM THINKING	Entities	The subdivision of the system. They can also be called modules, elements or chunks that are distinct and otherwise independent
1.2 EMERGENCE	Emergence	The function of a system is more powerful than the sum of the function of the parts. It occurs in the functional domain
1.2 EMERGENCE	Performance	An emergent property of a system
1.2 EMERGENCE	"Ilities"	Non-functional attributes of a system
1.2 EMERGENCE	Emergency	Emergence that we do not what to happen
1.3 FUNCTION	Function	what the system DOES. It's the activities, operations and transformations that cause or contribute to performance
1.4 FORM	Form	What the system IS. It's the physical or informational embodiment of the system. It involves the material, configuration, text and instructions of the system
1.4 FORM	Value	Benefit at cost. It depends on function (drives benefit) and form (drives cost)
1.4 FORM	Abstraction	A technique that helps make systems appear simple by hiding un-needed details; every system and entity can be thought of as an abstraction.
1.5 IDENTIFYING ENTITIES	Decomposition	Breaking the problem up into small problems aka divide and conquer. Also known as top-down flow
1.5 IDENTIFYING ENTITIES	Composition	Building up a system based on existing parts. Also known as bottom-up flow.
1.6 SYSTEM BOUNDARIES	System boundary	Helps the establish the entities inside the system, and the ones outside the system.
1.6 SYSTEM BOUNDARIES	Context	Entities outside system boundaries

1.6 SYSTEM BOUNDARIES	Holism	Holistic thinking: looking far and wide for issues that may be important to the system
1.6 SYSTEM BOUNDARIES	Focus	Determine what can be temporarily suppressed to identify the minimum set of essential entities
1.7 FUNCTION RELATIONSHIPS	Relationship	Functional or formal connection between entities
1.7 FUNCTION RELATIONSHIPS	Function relationships	How things interact, i.e. interactions among the entities within the system or the entities outside the system in the context
1.8 FORMAL RELATIONSHIPS	Formal relationships	How things are connected (also known as “structure”)
1.8 FORMAL RELATIONSHIPS	Structure	The formal relationships between entities. It enables interaction
3.1 SYSTEM DYNAMICS METHOD FOR SYSTEM THINKING	Policy resistance	A phenomenon where when well-intentioned people receive sufficient support and implement the policies that they believe are best suited to address the pressing challenges that they face, it doesn't work, or more commonly and more insidiously, it works locally right now, but then the problem comes back often worse later.
3.2 SYSTEM DYNAMICS ON PROJECT MANAGEMENT	LEW	Late, Expensive (over budget), and Wrong (fail to meet customer requirements, low quality)
3.5 PROJECT MANAGEMENT: WRAP UP	Liar’s club	Concealing known rework requirements from managers and colleagues
3.5 PROJECT MANAGEMENT: WRAP UP	90% Syndrome	The 90-Percent-Done Syndrome shows an overly positive assessment of the degree of completion of an activity, with the real remainder being significantly higher than the apparently necessary 10%
5.1.3 QUEUING SYSTEMS AND NETWORKS	Queue	An abstraction for modelling systems where you have constrained or limited resources and obtaining insights on the performance of these systems
5.1.3 QUEUING SYSTEMS AND NETWORKS	Network	An abstraction for representing interconnected systems where the nodes represent entities
5.1.3 QUEUING SYSTEMS AND NETWORKS	Bullwhip effect	A distribution channel phenomenon in which demand forecasts yield supply chain inefficiencies. It refers to increasing swings in inventory in response to shifts in consumer demand as one moves further up the supply chain.
5.2.2 CASE STUDY: THE LEGGED ROBOT	Complier	A compiler takes a high-level specification and delivers a working system