Implementing an integrated and transformative agenda at the regional and national levels

Identifying Leverage Points - a systems thinking perspective and approach

Robert Steele

Senior Associate of AtKisson Group

Systainability Asia, Chiang Mai, Thailand

www.systainabilityasia.com



Two primary messages

- 1. A systems thinking perspective and approach is key to effective roadmap integration and action.
- 2. We should think in terms location and type of system 'Leverage Points' when we think of sustainable intervention and action.

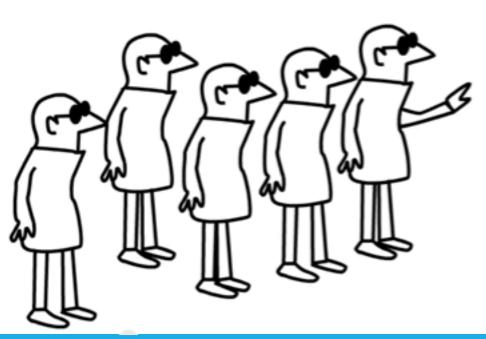


Key Principle to Remember!

A system is a set of elements whose interconnections determine their behavior and the behavior of the entire system.



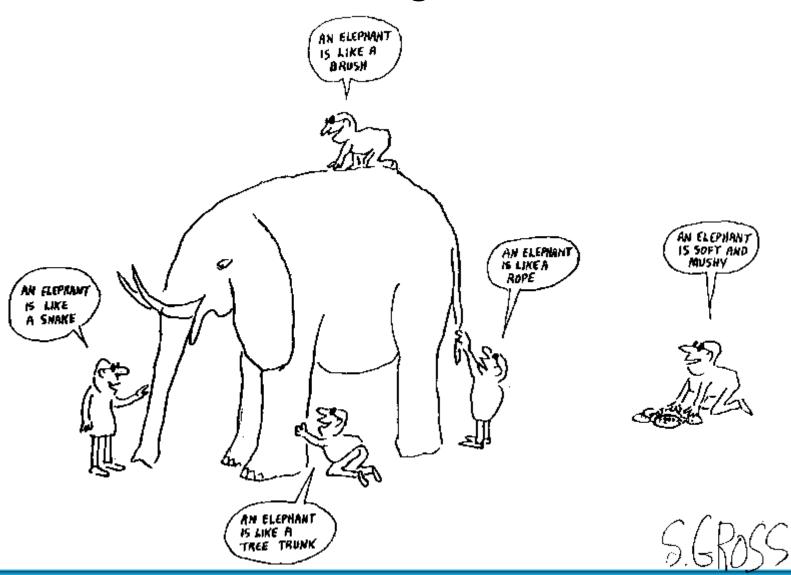
What is a Systems Perspective?





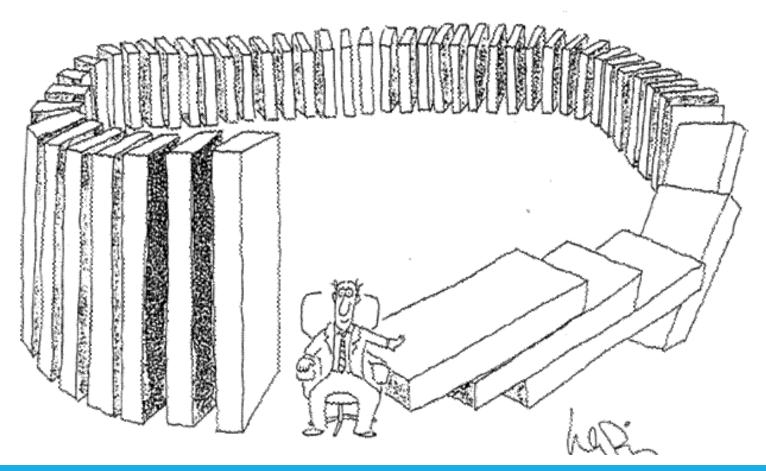


By fixating on the parts of a system, we miss understanding the whole



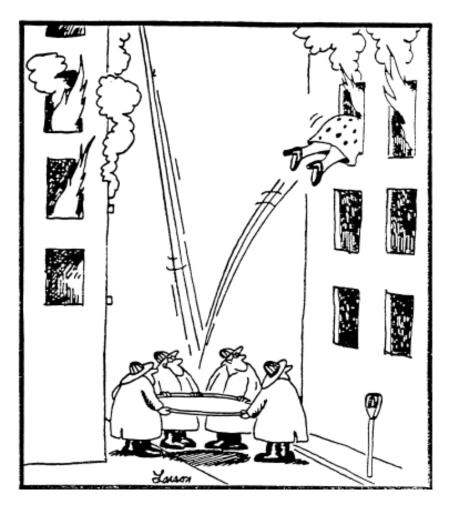


One action can cause a cascading effect over time, and surprise us later on when we don't expect





The Warning.... A solution to one problem can lead to a new and bigger problem later on or somewhere else in the system

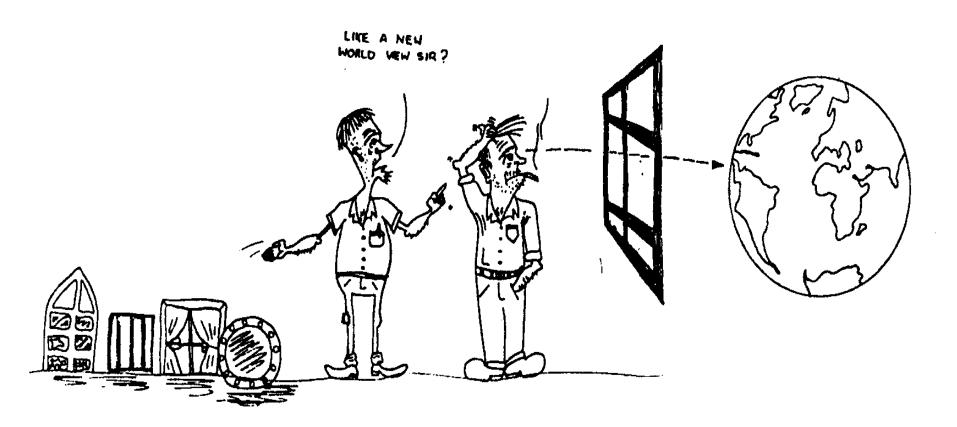


Artist: Gary Larson

"unintended consequences"



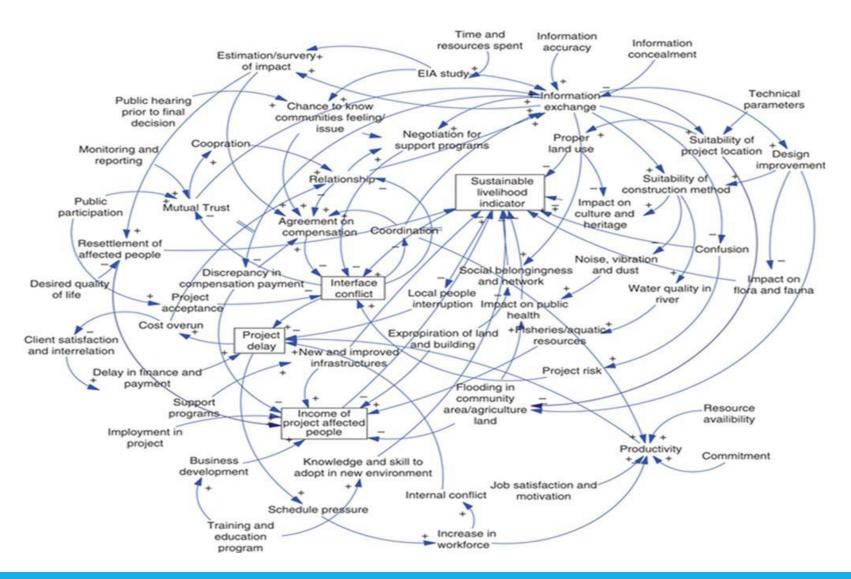
We must learn to see and understand the world as a whole system not a collection of individual parts.



We all have a different 'window' on the world!

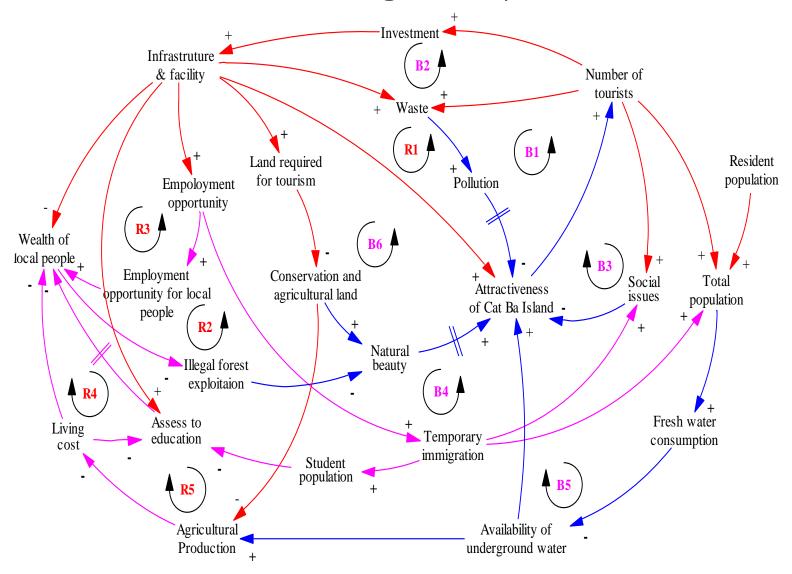
Source: John Gerber, Systems Thinking Introduction, 2007

The World is non-linear and complex



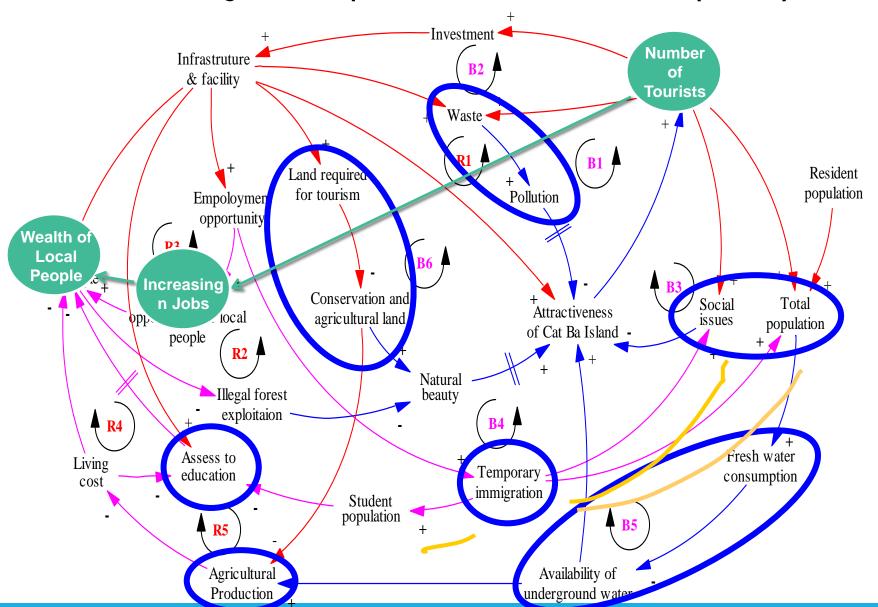


Example: Promoting Sustainable livelihoods in Vietnam... where to act without creating future problems?



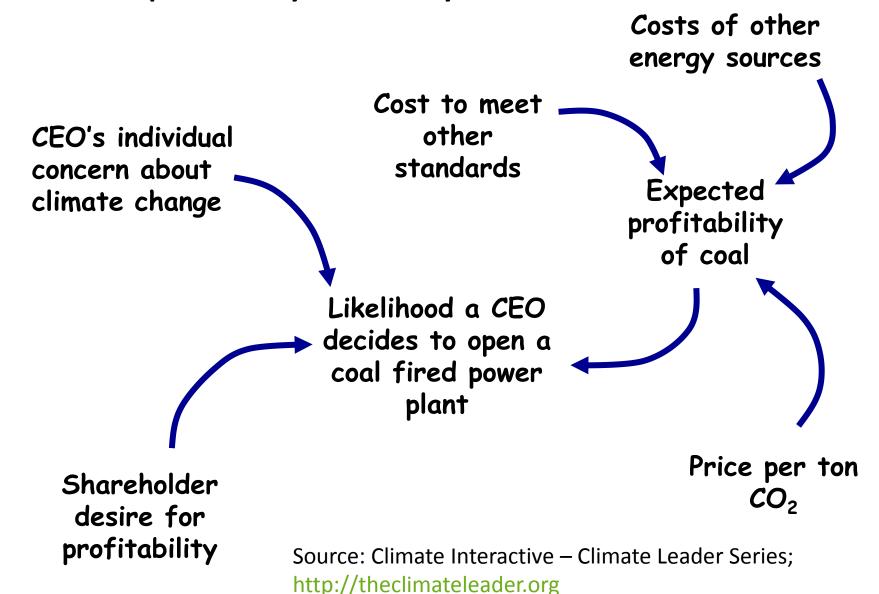


Looking for simple answers inside Complexity





An example of system dynamics...





Would a new decision maker placed in the same system make a different decision?



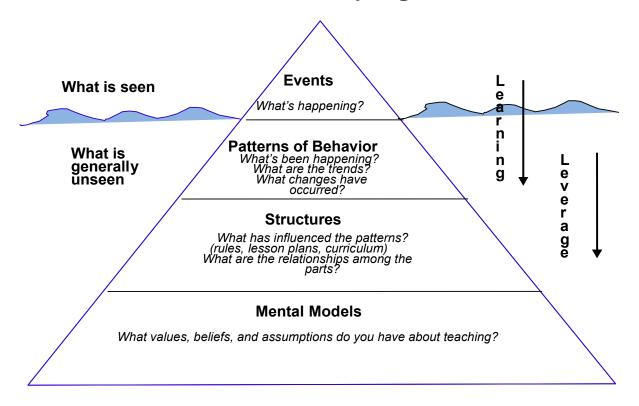
A systems approach is to . . .

- Identify a system Some systems are simple and predictable, while others are complex and dynamic. Most human social systems are the latter.
- 2. Explain the behavior or properties of the whole system This focus on the whole system is the process of synthesis. Analysis looks into things while synthesis looks out of things.
- 3. <u>Explain the behavior or properties</u> of the thing to be explained in terms of the role(s) or function(s) of the whole system.



Systems Thinking helps us to . . .

■... move the focus away from events and patterns of behavior (which are symptoms of problems) and toward systemic structure and the underlying mental models

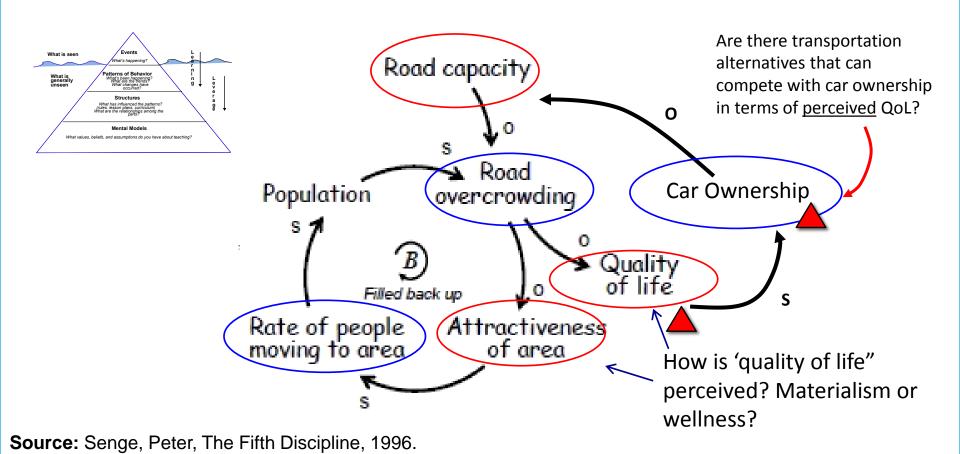


Source: Senge, Peter, The Fifth Discipline, 1996.



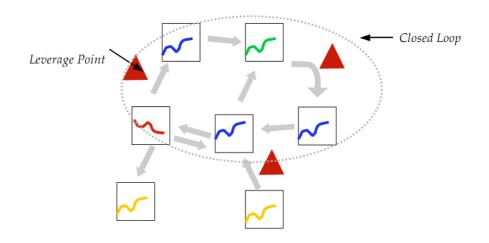
Systems Thinking helps us to . . .

☐... To find the most important places for intervention to change the long-term behaviour of a system.





Leverage Points

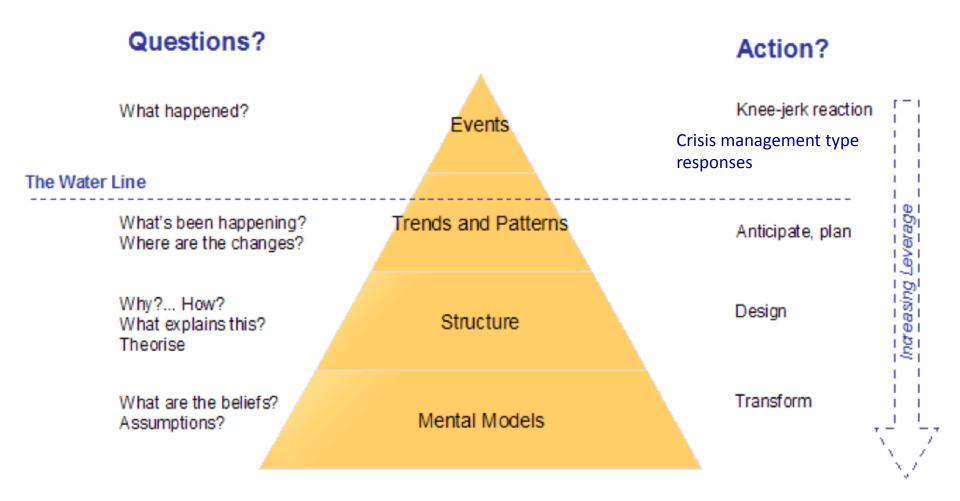


Leverage points are "places within a complex system..." — be it a company, an economy, a living body, a city, an ecosystem, or even a galaxy for that matter — "...where a small shift in one thing can produce big changes in everything." They are, therefore, of immense interest to anyone seeking to affect change within our interconnected ecological, social and economic systems.

- Donella Meadows, Leverage Points

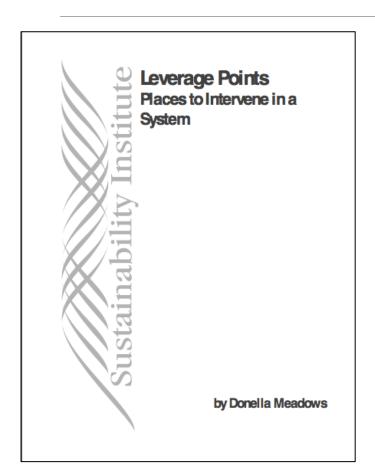


We can use systems thinking tools such as the Iceberg to help ask the right questions towards understanding the best places to "leverage change" in a system.





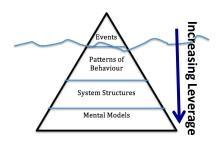
Donella Meadows . . . Ways to Intervene in a System



T	T	1	
LEVERAGE POINT	TYPE	LEVER	AIM
12	Physical	Constants, parameters and numbers	Change the flow rates of system inputs and outputs, whether material, energetic or otherwise
11		The sizes of buffers, and other stabilising stocks, relative to their flows	Optimise stock/buffer size to maximise system resilience and efficiency
10		The structure of material stocks and flows, and nodes of intersection	Build the system right, rebuild it, or understand the system limits and don't exceed them
9	Informational	The lengths of delays, relative to the rate of system changes	Change the rate of system responses
8		The strength of negative feedback loops, relative to the impacts they are trying to correct against	Change the stabilising potential in the system (negative feedback loops, broadly speaking, are stabilising or corrective)
7		The gain around driving positive feedback loops	Change the gain (destabilisation or reinforcing potential) in the system
6		The structure of information flows	Explore and alter who has access to what information.
5	Social	The rules of the system	Understand and change what the rules are and who has power over them. Natural laws, constitutions and social agreements all fall into this category
4		The power to add, change, evolve or self-organise system structure	Nurture innovation, flexibility, variation, culture, creativity, collaboration: the adaptive capacity of the system
3		The goals of the system	Create and/or remove selection pressures on the system
2	Conscious	The mindset or paradigm out of which the system arises	Challenge the assumptions and values we hold to be true. Self-reflection, cultural variation, activism: it is from our paradigms about the nature of the world that our goals arise
1		The power to transcend paradigms	Recognise the limitations of our understanding and utilise this as a source of eternal flexibility, humility and learning



Leverage Points Iceberg Insights

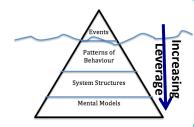


<u>Changes in Form – Physical (Events level)</u>

- 12. Constants, parameters, numbers (such as subsidies, taxes, standards) Example: Raising (or lowering) the minimum wage; increasing or decreasing the level of subsidy;
- 11. The sizes of buffers and other stabilizing stocks, relative to their flows. Example: Spending lots of time, money and energy on breeding program for rhinos or pandas; increasing the number of dams and water reservoirs, or the amount of water in the existing reservoirs (you can see some buffers are *very* hard to change).
- 10. The structure of material stocks and flows (such as transport networks, population age structures). Example: Building new roads or removing old ones; implementing or dropping a 1 child policy; adding high speed rail between Bangkok and the Chiang Mai (changes can be very high leverage, but are incredibly difficult to enact the leverage is in proper initial design).



Leverage Points Iceberg Insights



Changes in Information Flow - (Pattern of Behavior Level)

- 9. The lengths of delays, relative to the rate of system change. Example: Time to build new housing relative to changes in demand; reducing information delays in the stock market (warning: delays are not often easily changeable, hence their low ranking)
- 8. The strength of balancing feedback loops, relative to the impacts they are trying to correct against. Example: reducing the risk and uncertainty for business from disruption of production from raw materials and supply chain.
- 7. The gain around driving reinforcing feedback loops. Example: Reducing the birth rate; lowering the influence of the wealthy on the political system (reducing the gain of reinforcing feedback loops gives the balancing loops time to work their magic).



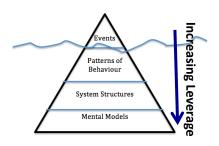
Leverage Point Iceberg Insights

<u>Changes in Variable Interrelations / Social Leverage at the System Structure Level)</u>

- 6. The structure of information flows (who does and does not have access to information). Example: Creating a "nudge" to water and electricity usage by connecting households to information about their usage; opening access to government data to increase accountability (i.e. an outcome based results dashboard of KPIs for development planning implementation).
- 5. The rules of the system (such as incentives, punishments, constraints). Example: Imposing strict rules on water usage and charging premium rates for overages; requiring all stock exchange listed companies to produce vetted sustainability reports.
- **4.** The power to add, change, evolve, or self-organize system structure. Example: the use of flat, non-hierarchical organisation structures, creating and supporting sharing collaborative economy.
- 3. **The goals of the system.** Example: Changing the national goal and key measure of development to Gross National Happiness instead of GDP (Bhutan); Setting goal to be 100% zero waste company by 2020 (Interface Flor)



Leverage Point Iceberg Insights



Changes in Consciousness and Thinking - (Mental Model Level)

- The mindset or paradigm out of which the system its goals, structure, rules, delays, parameters — arises. Example: Modeling a system and seeing it in a new way; shifting a country's aspiration from gross domestic product (GDP) to gross national happiness (GNH).
- 1. The power to transcend paradigms. Example: Mastering the art of engaging multiple perspectives and mapping systems; profoundly and madly letting go of our beliefs and notions of how the world should work; Recognise the limitations of our understanding and utilise this as a source of flexibility, humility and learning.



Some Key Questions when identifying leverage

- Where are factors in flux? Systems resist change. When you find areas that are already moving, it's a sign that you might be able to move the area significantly.
- Where are the bright spots in the system? Are there surprising areas of positive deviance? What might these hint at in terms of creative ways to intervene?
- Where are the attractors? Are there certain factors that have a surprising "gravitational pull"? Are there common states a system seems to end up back in regardless of the intervention?
- Are there factors that have opposite impacts in different loops? When one factor has an
 opposite impact in two loops, a powerful intervention can be to amplify the positive impact
 while finding a way to dampen, or eliminate the negative impact.
- Are there factors with higher potential for ripple effects? Which factors, if changed, would ripple throughout the system based on causal links and reinforcing loops?
- What strikes you as especially prevalent? Which factors are you seeing appear over and over again, across loops, conversations, and analyses?
- Which factors don't show up everywhere, but are especially powerful when they are present? Are there factors that are rarely mentioned, but when you see them are surprisingly powerful?

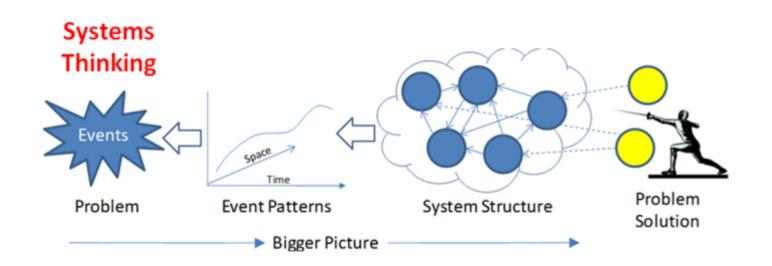


Summary of System Thinking

Non-Systems Thinking



Today's solutions tomorrow's problems





Thank you for your kind attention!



Contact us at:

Systainability / AtKisson Asia robert@atkisson.com www.systainabilityasia.com www.AtKisson.com