Introduction and Basics of SYSTEMIC DESIGN

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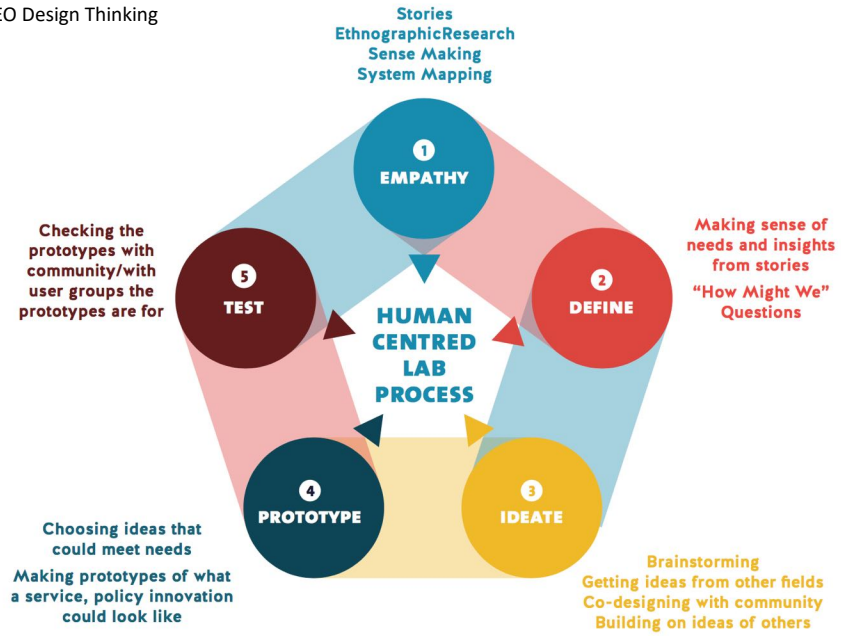
IDEO Design Thinking



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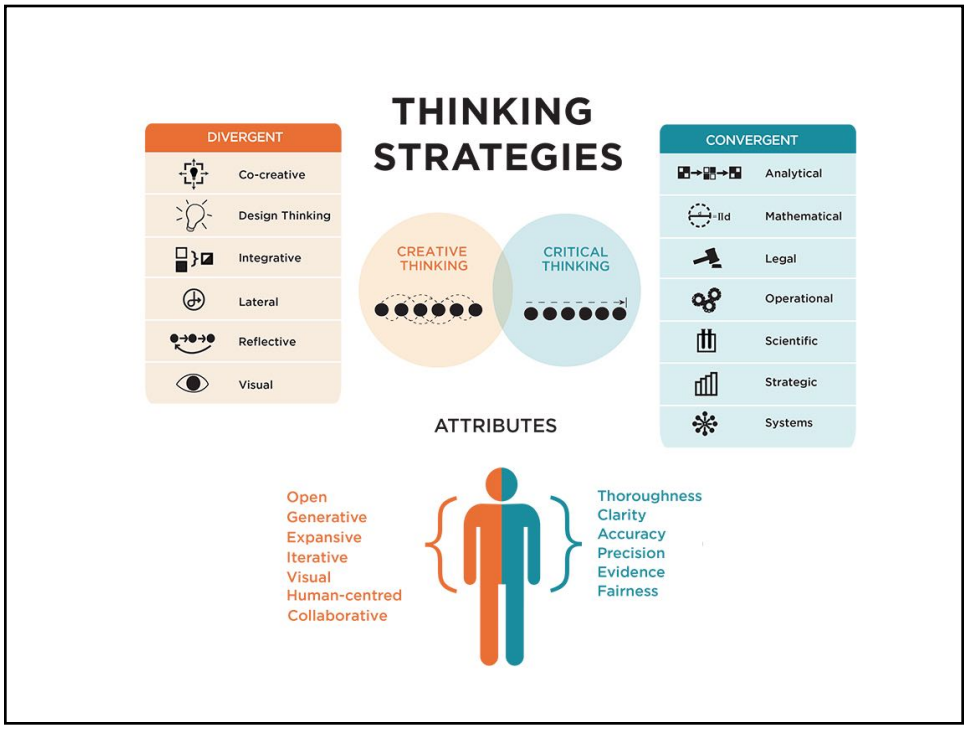

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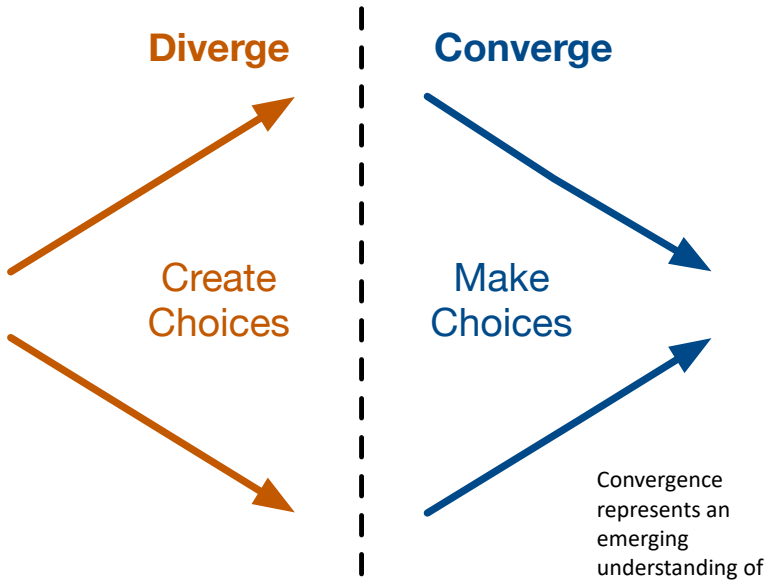
IDEO Design Thinking



Convergence represents an emerging understanding of the challenge.

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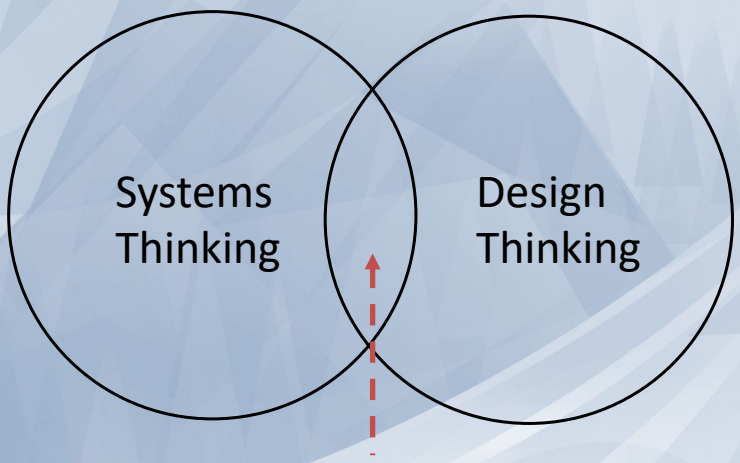
Systems Thinking + Design Thinking =



[CoLab 2016]

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From Strat Planning… To Systemic Design

Traditional Strategic Planning	Systemic Design
One answer	Multiple Related Answers
Finding Problems/Solutions	Finding Meaning, Root Causes, and Insights
Analysis	Analysis + Synthesis
Simplifying for Understanding	Embracing Complexity for Shared Understanding

[CoLab 2016]

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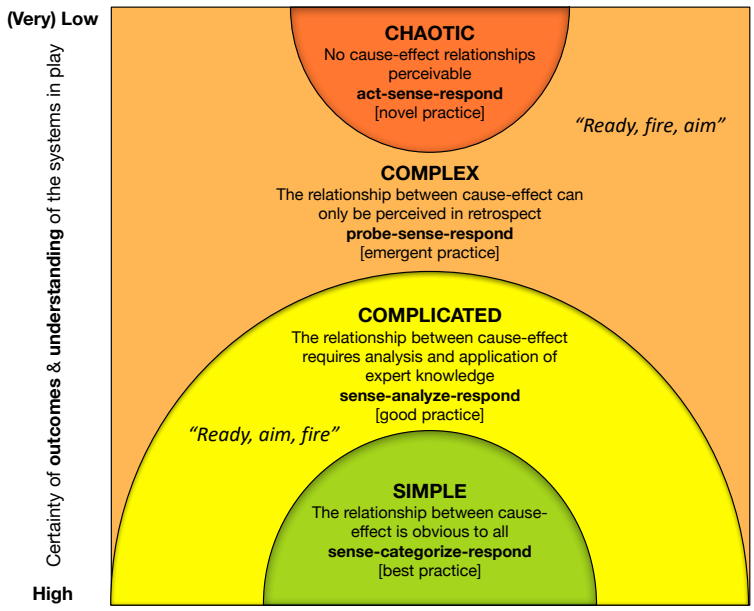

David J. Snowden and Mary E. Boone, A Leader's Framework for Decision Making, Harvard Business Review, November 2007

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Adapted from Sanders, E. B.-N., & Stappers, P. J. (2012). Convivial design toolbox: Generative research for the front end of design. Amsterdam: BIS.

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Systemic Design Mindset

- Creative confidence
- Make it
- Learn from failure
- Empathy
- Embrace ambiguity
- Optimism
- Iterate, iterate, iterate

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Reflecting on User Experience

Building empathy

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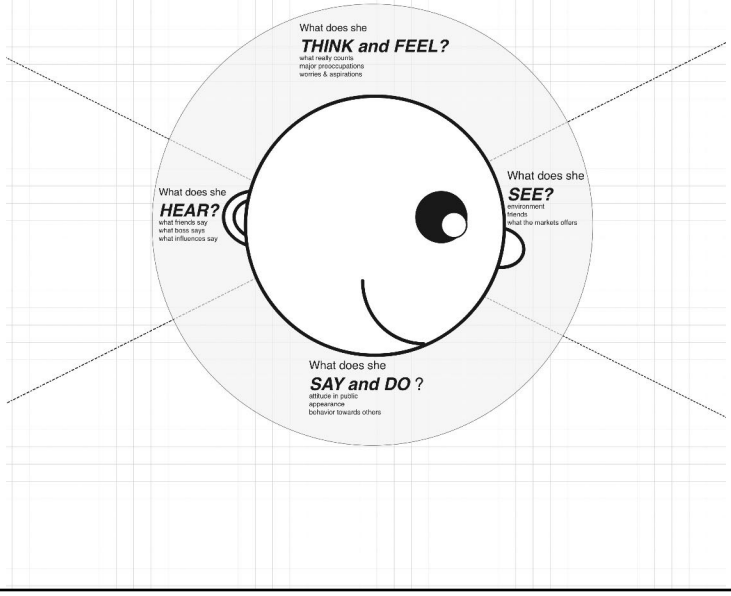
Charting user experience



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What people **say**
What people **do**
What people **say they do**

are entirely different things.

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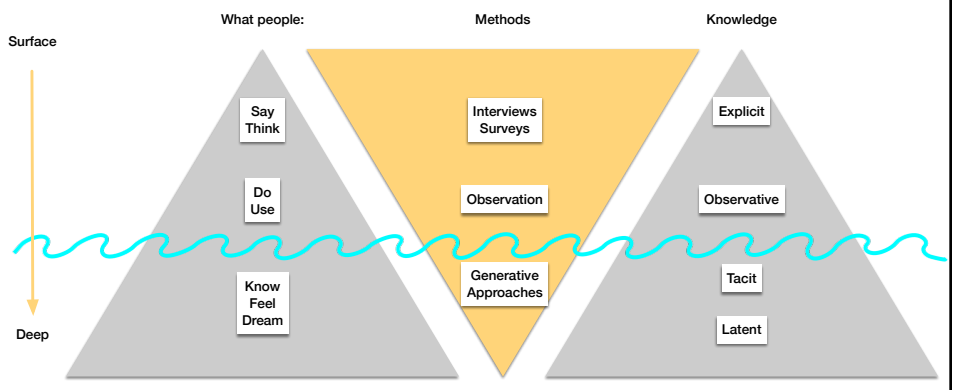

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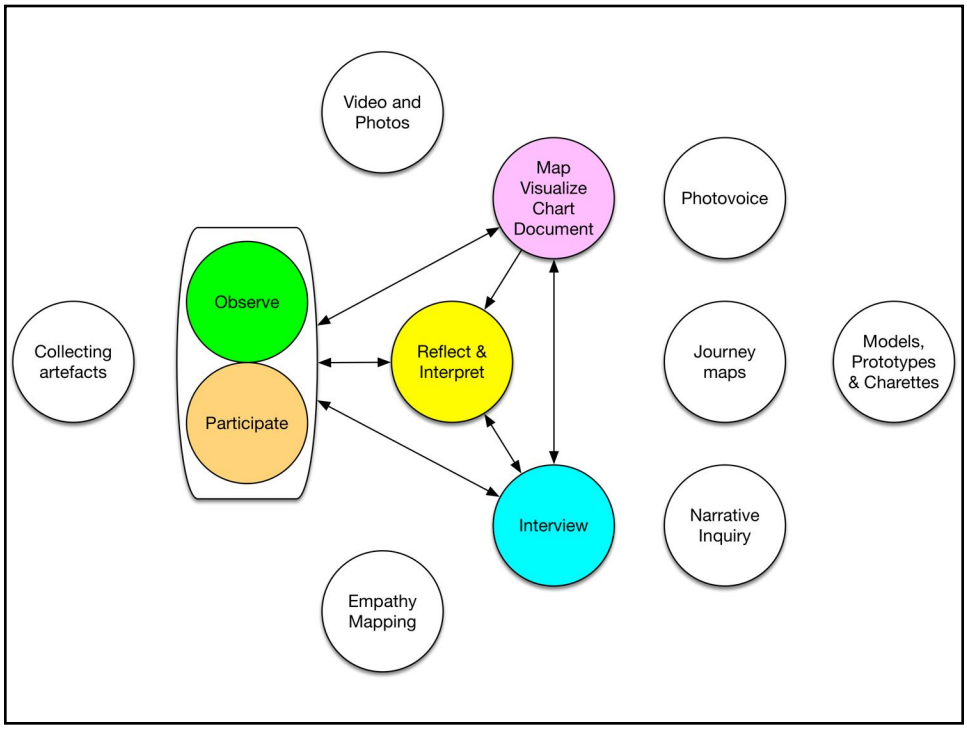
Video and Photos
Map Visualize Chart Document
Photovoice
Observe
Collecting artefacts
Reflect & Interpret
Journey maps
Models, Prototypes & Charettes
Participate
Interview
Narrative Inquiry
Empathy Mapping

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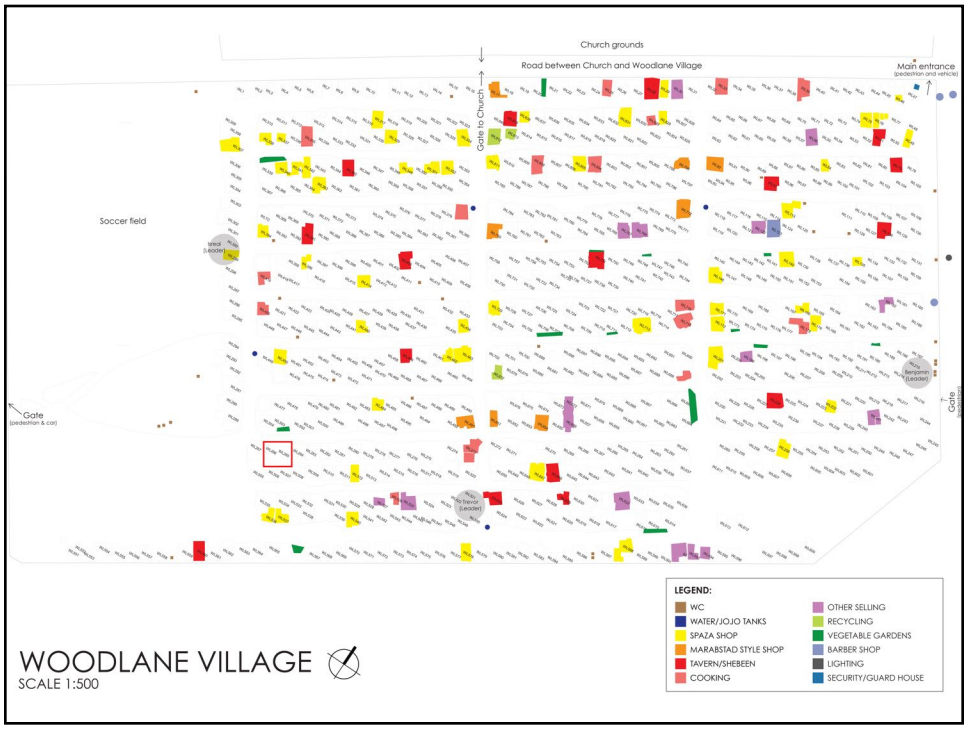

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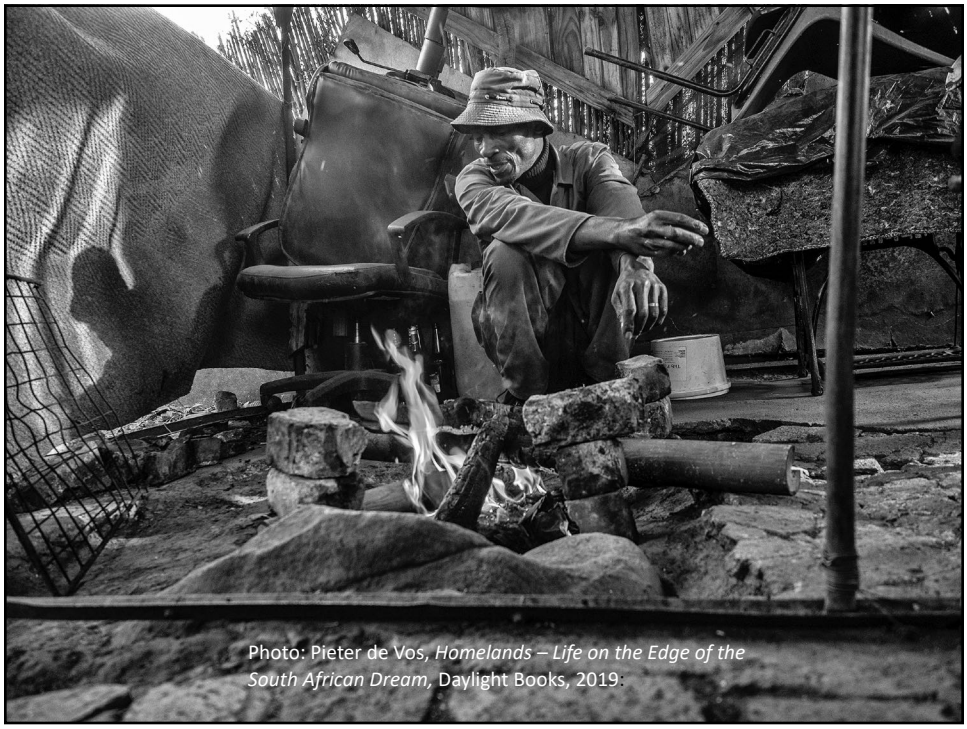

Photo: Pieter de Vos, *Homelands – Life on the Edge of the South African Dream*, Daylight Books, 2019:

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MILLIE

Age: 85 **Gender**: F
Community: FOREST LAWN, SE CALGARY
Occupation: RETIRED GROCERY CASHIER
Income: $17K/YEAR, CANADIAN PENSION PLAN/OLD AGE SECURITY/GUARANTEED INCOME SUPPORT
Education: GRADE 8
Ethnicity/Background: CAUCASIAN, FIRST GENERATION GERMAN

Health Needs: Colles fracture from recent fall, Congestive Heart Failure, Chronic Kidney Disease, Type 2 Diabetes, Hypertension, Falls risk

MILLIE's STORY: Millie came to Canada at age 19 after marrying her high school sweetheart. He worked as a furniture maker in Germany and was hoping to open his own business in Canada. When they moved to Calgary, her husband found work in a local warehouse and she worked as a grocery cashier. She had 2 boys who grew up and moved to Ontario for work. They have had very little contact as they have their own families. She misses them and their grandchildren.

When her husband became sick 10 years ago, her doctor set up home care services. She found them frustrating as she often would have to wait for them, they spoke very little English and there were so many of them that it became very overwhelming for her. Her husband was eventually sent to long term care. She was not happy with the care provided as he developed bedsores and repeated pneumonias. It was hard to see her husband lose his vibrancy within 2 years.

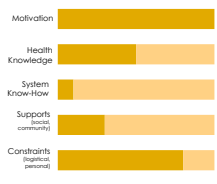
Millie's doctor retired 9 years ago and she used a walk in clinic near her home. There was always a new doctor and she had to repeated her story to the point that she just told them what they want to hear.

She recently transferred to FCC, as one her friends goes there. When she arrived she was amazed at all the services and that she had a consistent doctor. She enjoyed her new doctor but often found that she was referred to other providers. At every visit they pushed to move from her home. She no longer wanted to attend and would cancel or no show. This would be an issue as she would run of her prescriptions since they no longer renew by fax. She worries about falling during winter while visiting the doctor.

She wonders if anyone is really listening to what she wants. She certainly doesn't want the help they offered her husband. The only thing that she wants is to live in the home that she shared with her husband. They are so many beautiful things in the home. He made every piece furniture. She could not bear to part these memories.

Millie's Health Goals

Short Term: Get cast removed and be able to resume independence
Long Term: Maintain independent living



Supports:
- Motivated to change because she wants to avoid moving to a nursing home

Frustrations/Pain Points:
- Having a cast own has made it very difficult to do her personal care, cook, clean and carry groceries
- Everyone is asking her to move to a lodge and she doesn't want to give up her plants and independence
- Feels socially isolated since her family lives in Ontario and she has limited contact with them and her husband has passed away
- Worried about falling when she is alone – most of her friends have died
- Frequent medical appointments where she doesn't feel listened to

Healthcare Journey So Far:
- Frequent appointments (Primary Care Provider, Nurse, Dietitian, Physiotherapist, General Internal Medicine)

"I doesn't want anyone to find out that I'm is struggling to get through the day because I know that I will get a lecture that I am a falls risk and need to move into a nursing home."

"I wondered if my doctors' office thinks that I have nothing to do all day but to be at the clinic."

"People assume that because I'm 85 I need help. I love living on my home and being around my beautiful things. I will do anything to stay independent as long as I can."

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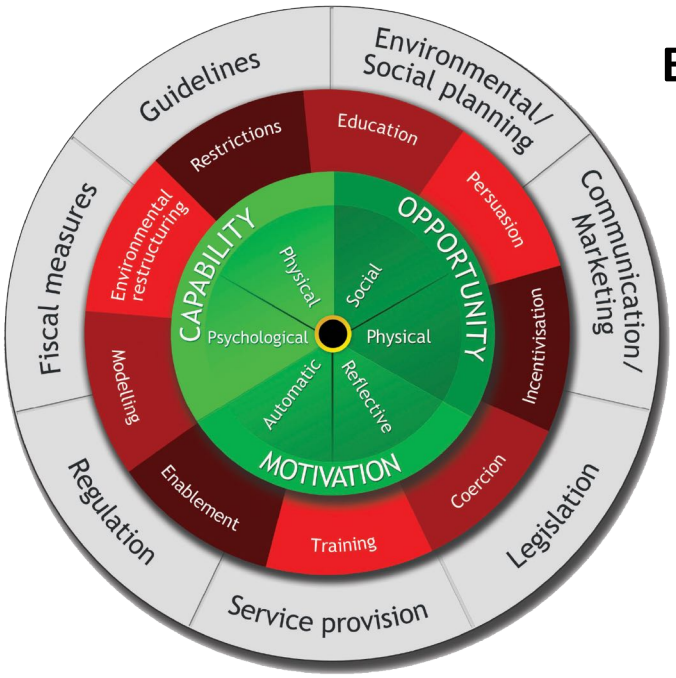

Behaviour Change Wheel

Sources of Behaviour

Intervention Functions

Policy Categories

Michie et al. Implementation Science 2011, 6:42

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Systems Thinking

Properties of Systems

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What is a System?

"A system is an interconnected set of elements that is coherently organized in a way that achieves something. … a system must consist of three kinds of things: *elements, interconnections*, and a *function* or *purpose*".

Meadows, D. H., & Wright, D. (2008). *Thinking in systems: a primer*. White River Junction, VT: Chelsea Green Publishing

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Properties of Systems

A complex system has a purpose and constituent parts, these parts are interrelated, and the relationships between the parts create the behaviour of the system

Systems also have the following properties:

- Self-Organisation
- Emergence
- Hierarchy
- Resilience

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1. Self-Organisation

- Self-organisation is the capacity to create new structures or patterns of order out of disorder (entropy) – such as can be seen in the flocking formations of birds or schooling patterns of fish.

- https://vimeo.com/98351279

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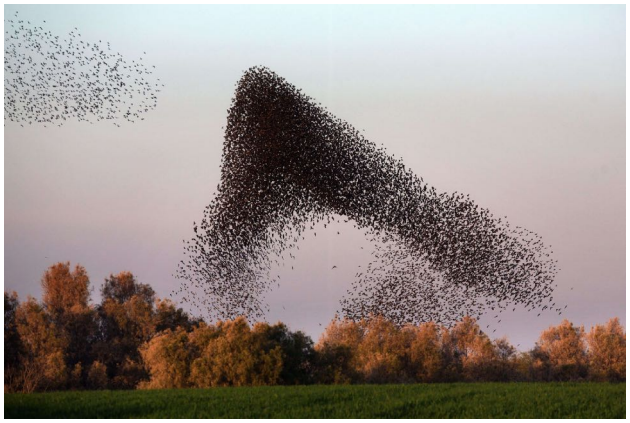

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Birds of a feather flock together

There is no single bird managing the flock — no central command and control. There is instead continual reorganising based on feedback from the environment and a few simple rules.

The simple rules guiding flocking behaviour in birds are:

1. **Collision Avoidance**: Avoid collisions with nearby flock mates;
2. **Velocity Matching**: Match speed with nearby flock mates; and
3. **Flock Centering**: Attempt to stay close to nearby flock mates**.**

Reynolds, C. W. (1987). *Flocks, Herds, and Schools: A Distributed Behavioral Model*. Published in *Computer Graphics*, 21(4), July, pp. 25-34.

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2. Emergence

- Emergence is the presence of a new behaviour, pattern or structure that results from the interactions between the elements of the system.
- In other words, the whole cannot be explained through the study of the parts.

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"…dividing the cow in half does not give you two smaller cows. You may end up with a lot of hamburger, but the essential nature of "cow" — a living system capable, among other things, of turning grass into milk — then would be lost. This is what we mean when we say a system functions as a "whole". Its behavior depends on its entire structure and not just on adding up the behavior of its different pieces." — *Kauffman, 1980, p2*

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3. Hierarchy

- Hierarchy tells us that a system evolves from the bottom up – from simple to complex.
- As the system grows, subsystems emerge.

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4. Resilience

- Resilience is the ability of a system to recover and adapt following a disruption.
- In the context of social change, “we need innovative solutions that take into account the complexity of the problems and then foster solutions that permit our systems to learn, adapt, and occasionally transform without collapsing.”

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Leverage Points

- Leverage points “are places within a complex system … where a small shift in one thing can produce big changes in everything”.

For example, wolves... [4 min]

- https://youtu.be/ysa5OBhXz-Q

Meadows, D. (1999). Leverage Points: Places to Intervene in a System. The Sustainability Institute, Hartland VT.

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Mapping Systems

Patterns, Frames, Relationships

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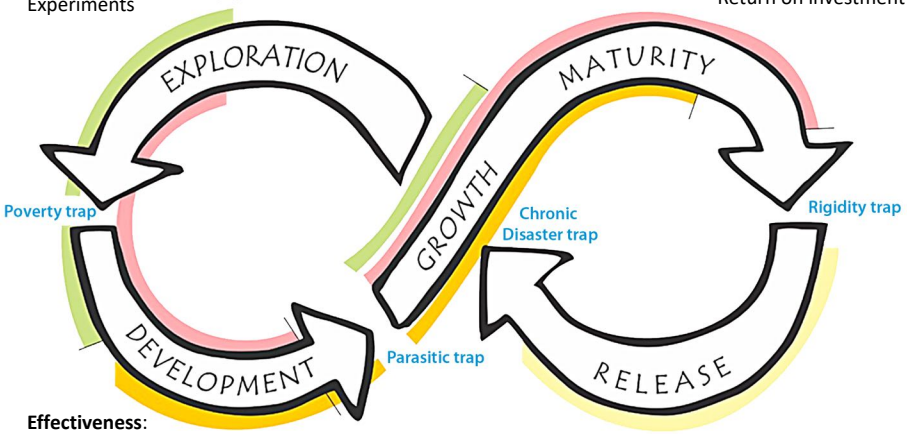
Adaptive Cycle & Innovation

New Ideas * Creative * Messy * Uncertain* Multiple Perspectives * Probes & Little Experiments

Productivity: *Stability *Specialisation * Standardisation * Low Risk Tolerance * Return on investment



Effectiveness: Entrepreneurial * Adaptive structure *Prototypes & Pilot Projects * Risk-taking

[adapted from Mark Cabaj, here2there.ca]

Vision: * New Energy & Urgency * Chaotic * Loss, Anger, Conflict * Little structure

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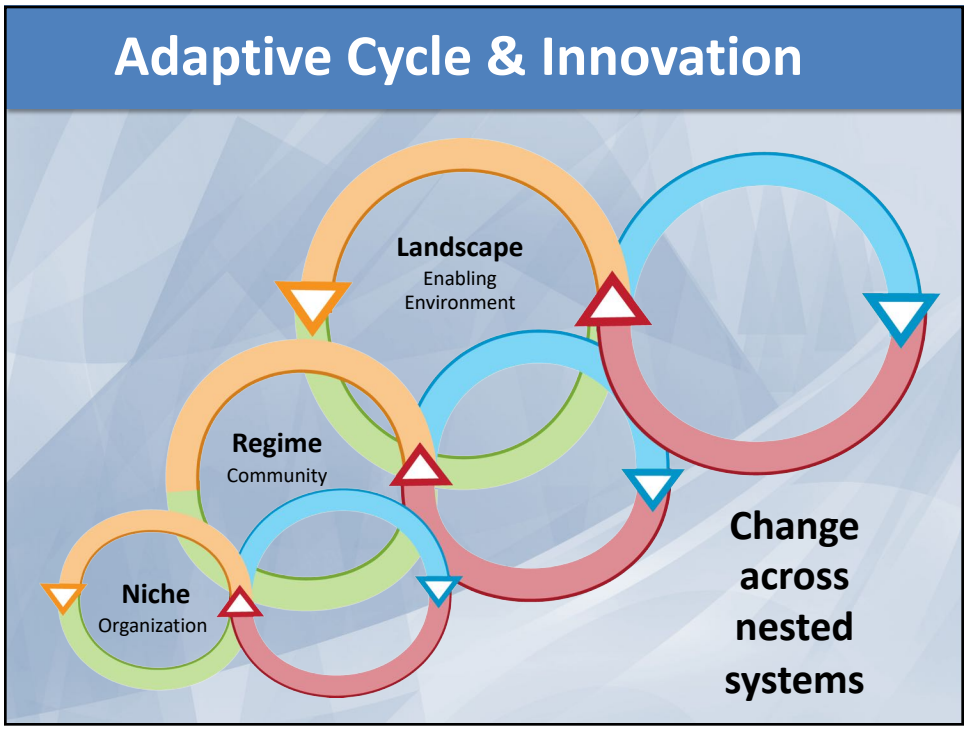
Adaptive Cycle & Innovation
Landscape
Enabling
Environment
Regime
Community
Niche
Organization
Change
across
nested
systems

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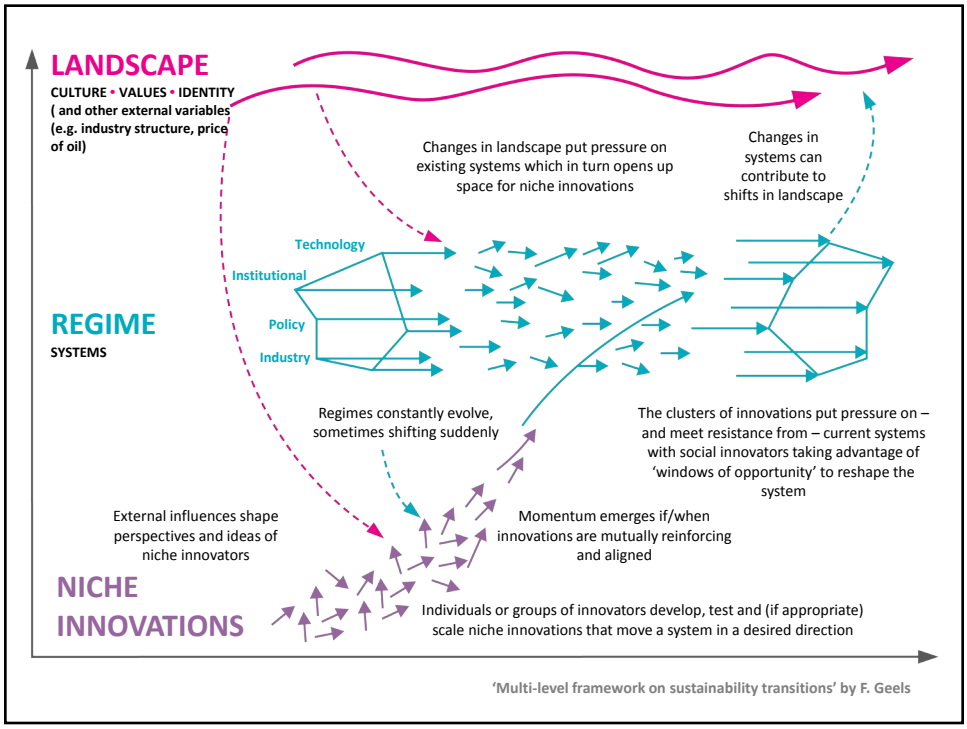
LANDSCAPE
CULTURE • VALUES • IDENTITY
(and other external variables
(e.g. industry structure, price
of oil)
Changes in landscape put pressure on existing systems which in turn opens up space for niche innovations
Changes in systems can contribute to shifts in landscape
Technology
Institutional
Policy
Industry
REGIME
SYSTEMS
Regimes constantly evolve, sometimes shifting suddenly
The clusters of innovations put pressure on – and meet resistance from – current systems with social innovators taking advantage of 'windows of opportunity' to reshape the system
External influences shape perspectives and ideas of niche innovators
Momentum emerges if/when innovations are mutually reinforcing and aligned
NICHE
INNOVATIONS
Individuals or groups of innovators develop, test and (if appropriate) scale niche innovations that move a system in a desired direction
'Multi-level framework on sustainability transitions' by F. Geels

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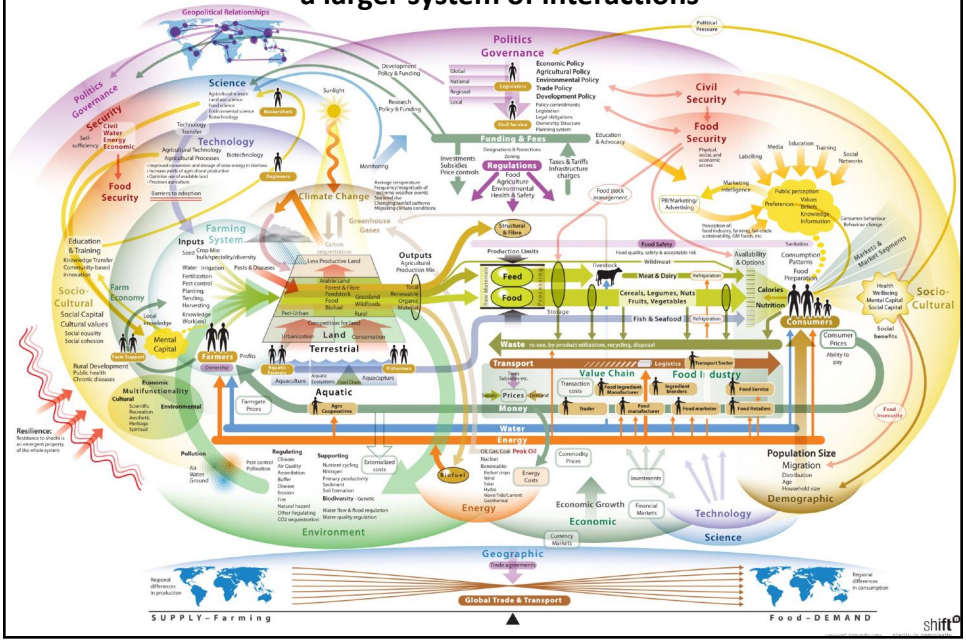
Every intervention is embedded in a larger system of interactions



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Mapping Tools

Approaches, methods

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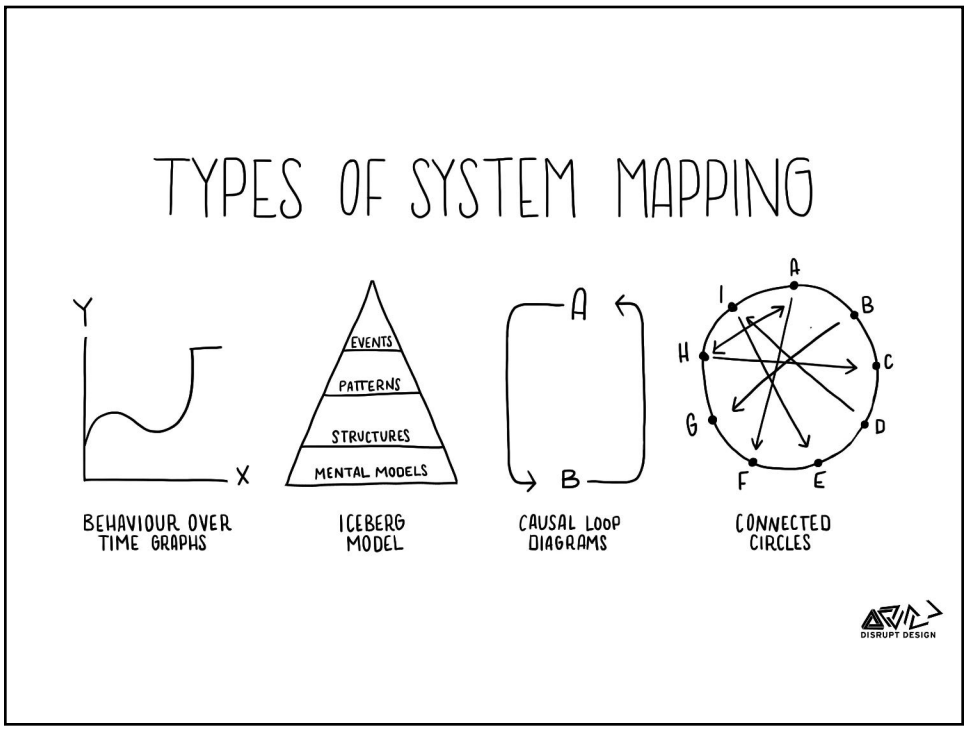

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“The map is not the territory.”

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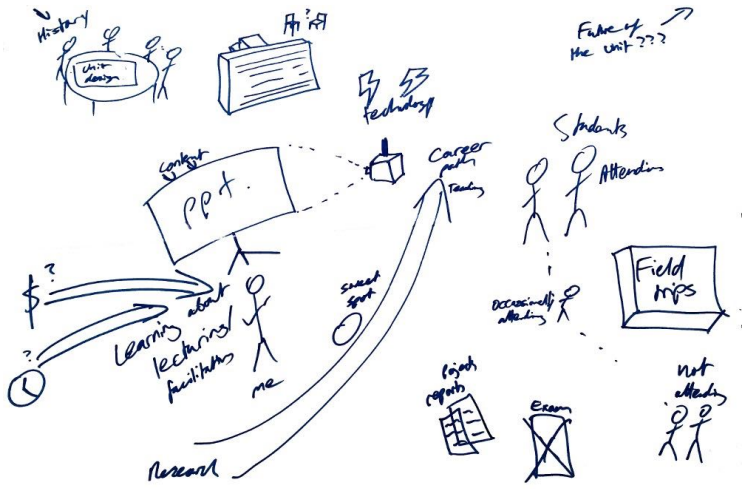
Rich picture



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Reverse Thinking

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Applying reverse thinking

Design a system where…

- individuals reliably experience social isolation and loneliness
- What would you build into this system?

[Each team – Flip-charts – 30 min]

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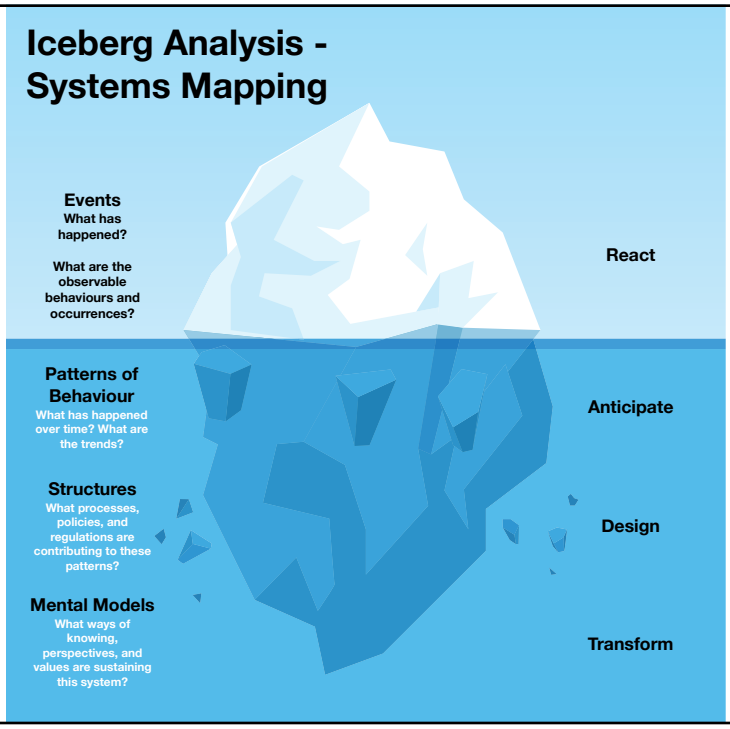

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Identifying Drivers & Root Causes

- What **structural factors** might be contributing to these patterns?
- What **beliefs** or **mental models** might be holding this system in place?

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Some ways forward…

1. Embrace the complexity
2. Suspend the need to solve
3. The easy way out often leads back in
4. Look for the non-obvious leverage points
5. Small, well-placed interventions can have big impacts
6. Understand the level you are intervening at
7. Work within your sphere of influence
8. Account for delays
9. Avoid unintended consequences, but anticipate them
10. 'Failure' is discovery in disguise

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"We are largely devoted to
doing the wrong thing wrong."

Dr. Russell Ackoff

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Prototyping

pro-to-type

1. A preliminary model of something from which other forms are developed
2. A representation of a design idea used to generate learnings

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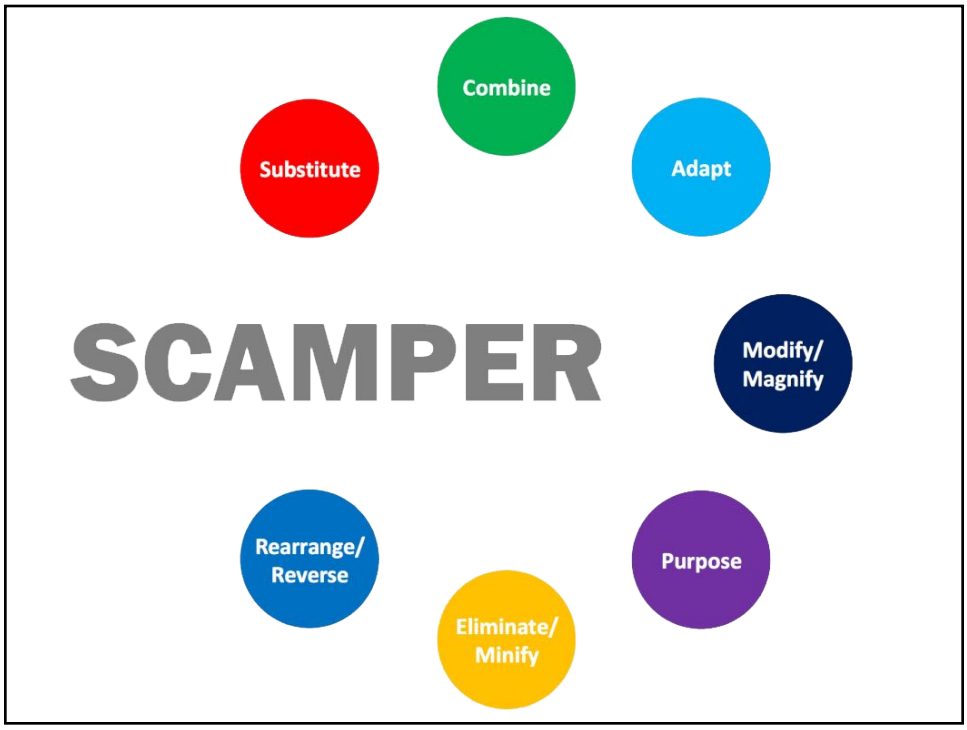

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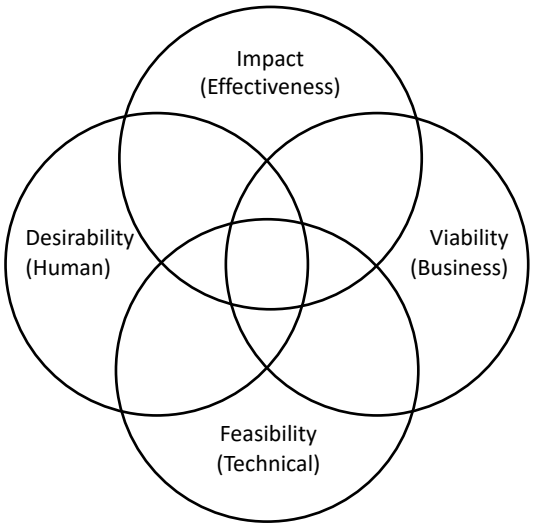
4 Evaluative Lenses



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Thank you & Safe Travels!

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