

Systems change evaluation and network analysis

Webinar presentation for Innovation and Impact (IIN) grantees

Drew Koleros and Russell Cole

May 2, 2022, 2-3PM ET



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Agenda

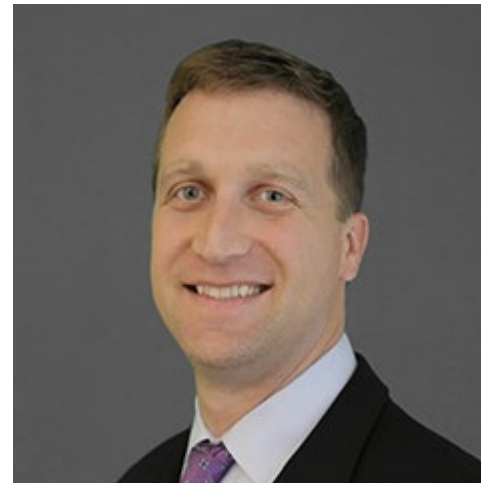
- Introductions & objectives
- Methods and principles for measuring change in complex systems
 - Conditions for systems change
 - ✓ Mural activity about measuring conditions
 - Network analysis
 - Summary of approach for IIN
- Q&A

Today's Speakers



**Drew
Koleros**

Senior
Researcher



**Russell
Cole**

Principal
Researcher

Objectives

- Introduce systems change and system change evaluation
- Describe approaches to frame, measure, analyze (including social network analysis) and disseminate system change evaluation findings
- Acknowledge benefits of and limitations of traditional system change evaluation efforts, to complement other aspects of IIN dissemination

Note: Conducting a formal system change evaluation is optional

- Purpose of IIN grants is to establish, coordinate, and support a network of partners to develop, test, and refine innovative interventions
- Systems thinking and system change evaluation can offer a way to formally document the change process and its results
- Conducting a formal systems change evaluation
 - is not a requirement/expectation of the IIN grant program; you may be doing pieces of this already!
 - but may be an opportunity to disseminate information about the merits of your transformative project

Methods and principles for measuring change in complex systems



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Why are we here talking about systems change?

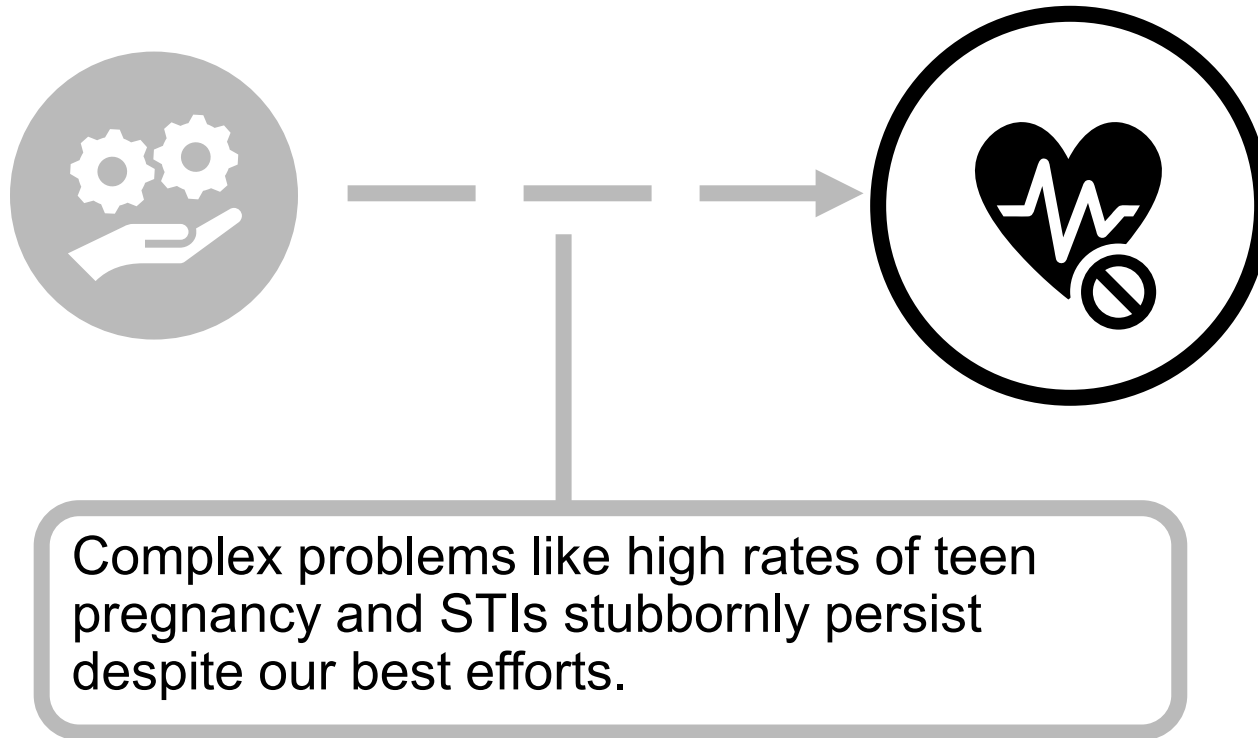


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A nagging question

Why is the depth and breadth of public health support not leading to optimal health outcomes for all?



“Systems change” is attracting the attention of people interested in dealing with the root causes of complex social problems.

- A lens for understanding complex social problems
- An approach to addressing these social problems
- a frame for evaluating interventions aimed at catalyzing systems change



Defining a few terms



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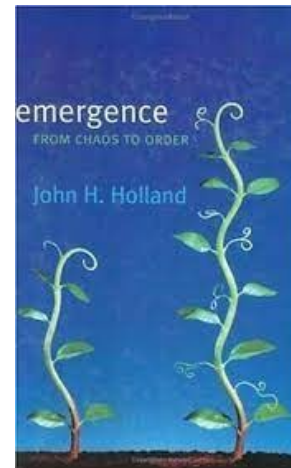
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What is a system?



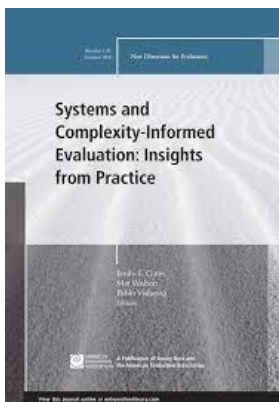
“An interconnected set of elements that is coherently organized in a way that achieves something (function or purpose).”

- Donella Meadows



“A configuration of interaction, interdependent parts that are connected through a web of relationships, forming a whole that is greater than the sum of its parts.”

- Tom Holland



“A set of interrelated elements that interact to achieve a purpose. Purposes can be inherent or ascribed.”

- Gates, Walton & Vidueira



Albert-Laszlo Barabasi

Read by Henry Leyva

“Systems are overlapping, nested, and networked;

They have subsystems and operate within broader systems.”

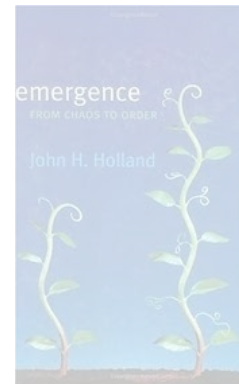
- A. Barabasi

What is a system?



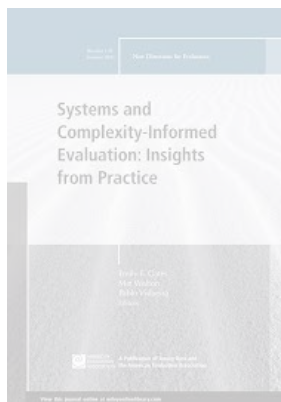
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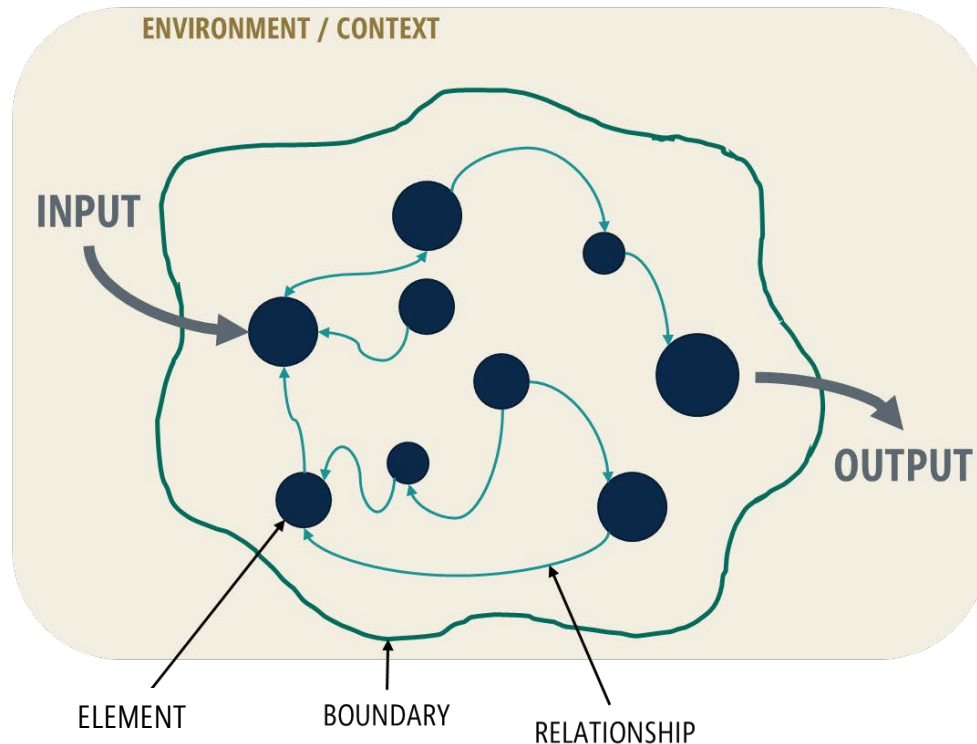
- A. Barabasi

What is a system?

The system's function or purpose is achieved through the actions and interactions of its elements.

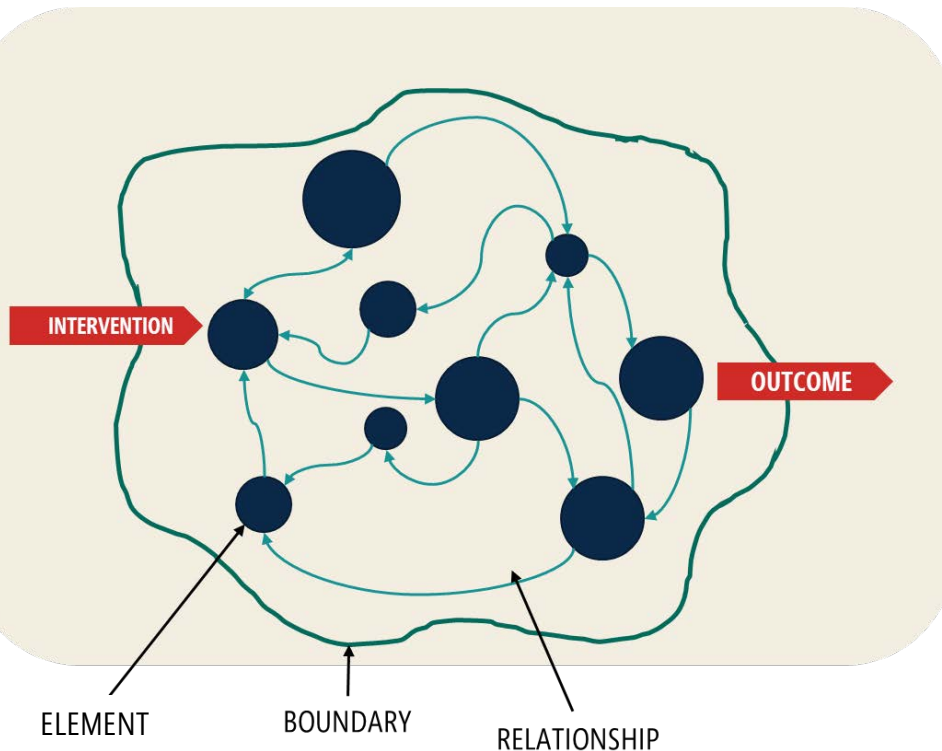


Characteristics of systems



- Exist in an environment
- Have boundaries
- Multiple elements of different types
 - **tangible and intangible**
- Made up actions and interactions of these elements (causes and effects)

Systems change



An intentional process designed to alter a system by shifting its function through purposeful interventions.

How we intervene to change a system is dependent on many inter-related factors

Where we draw the boundaries on the system

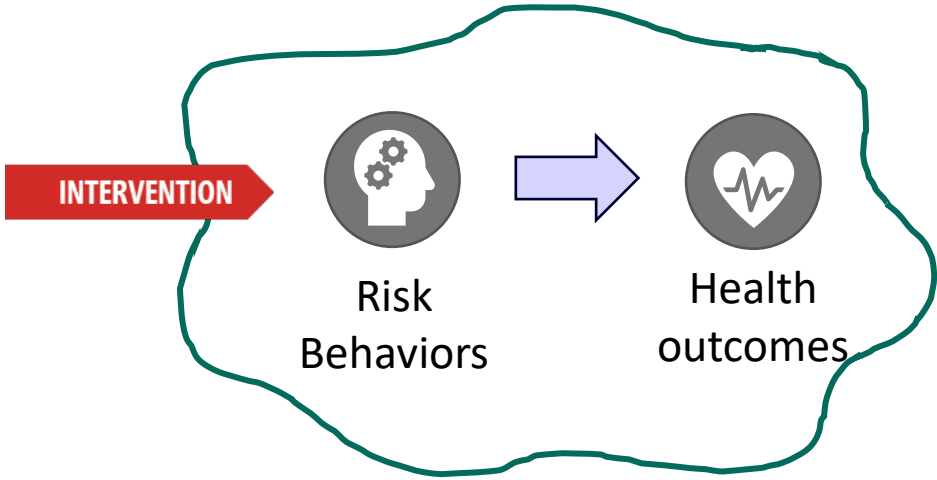
- System boundaries are both necessary and arbitrary

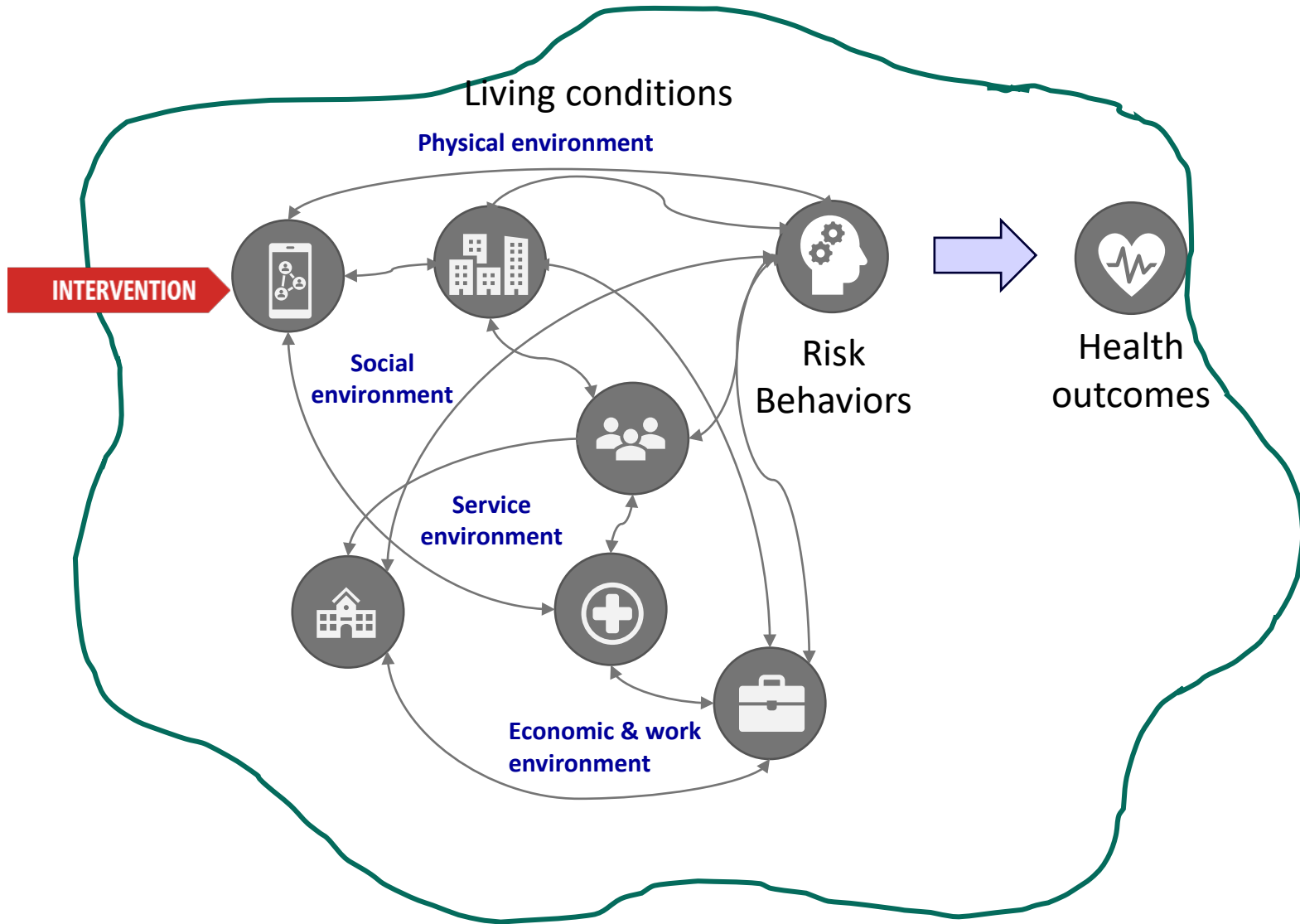
How the system is organized (*system dynamics*)

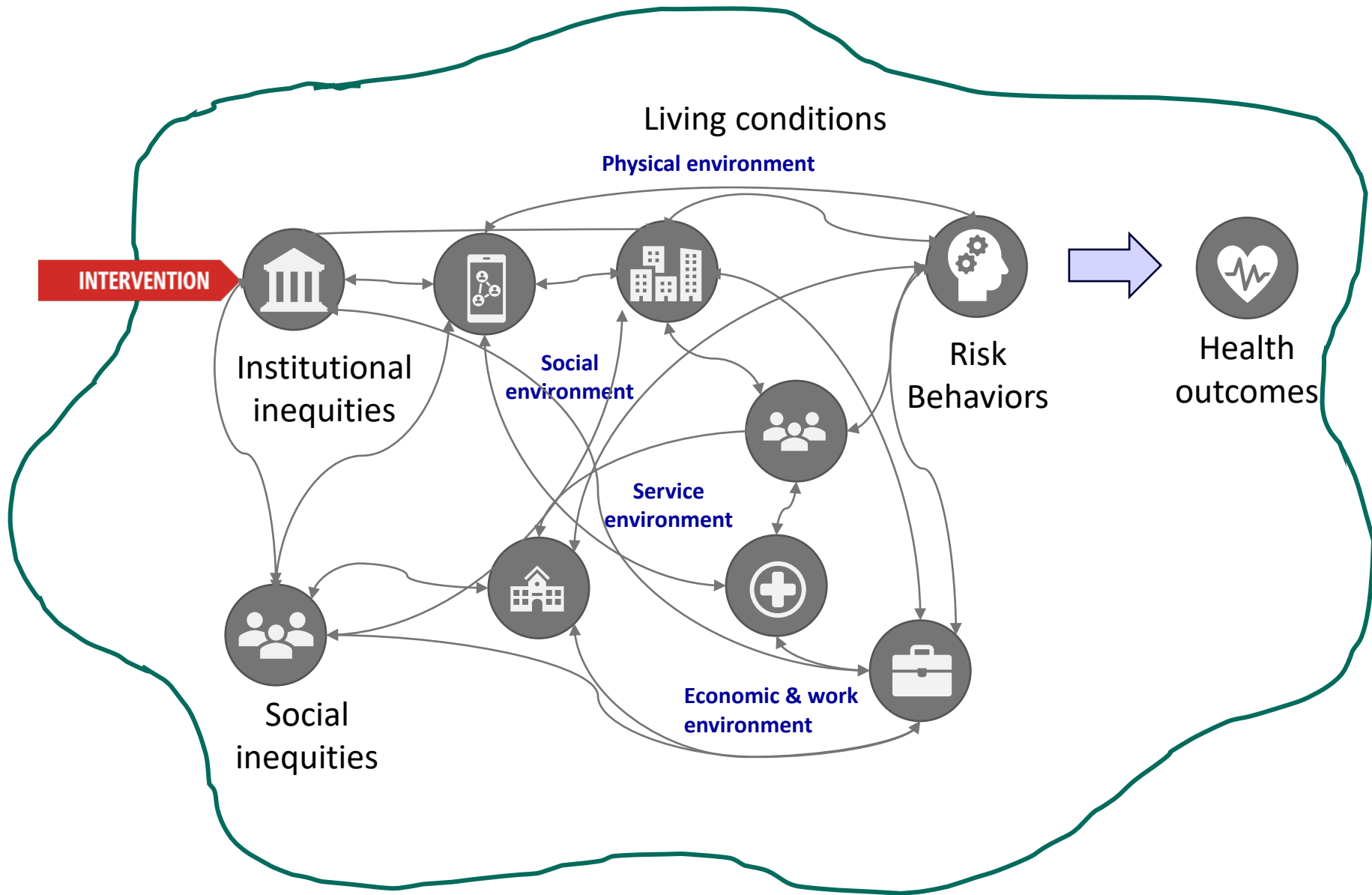
- How well we understand the cause-and-effect relationships between the system components

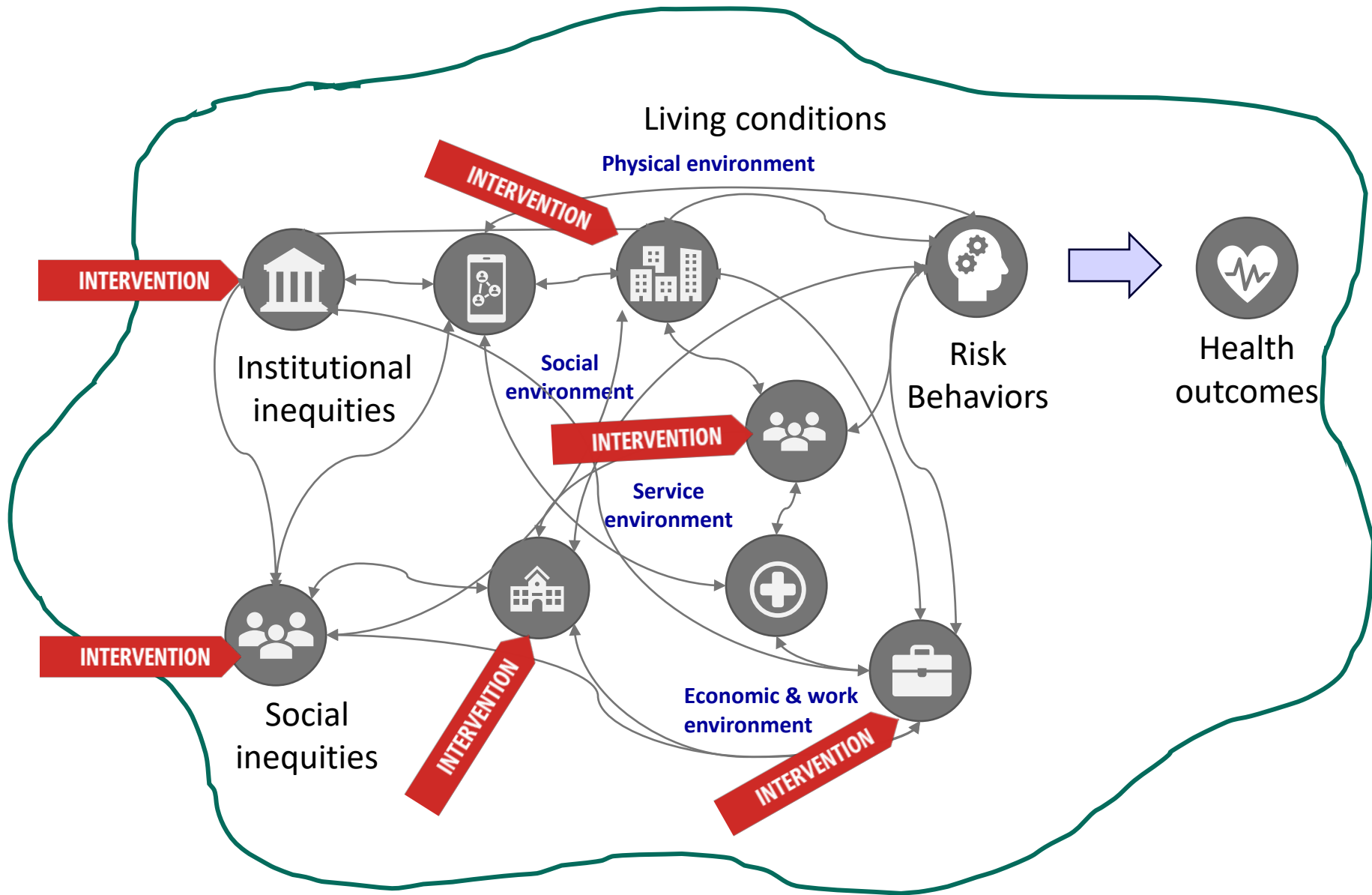
Interplay between these factors

- People with different perspectives will define the system differently and hence how to intervene







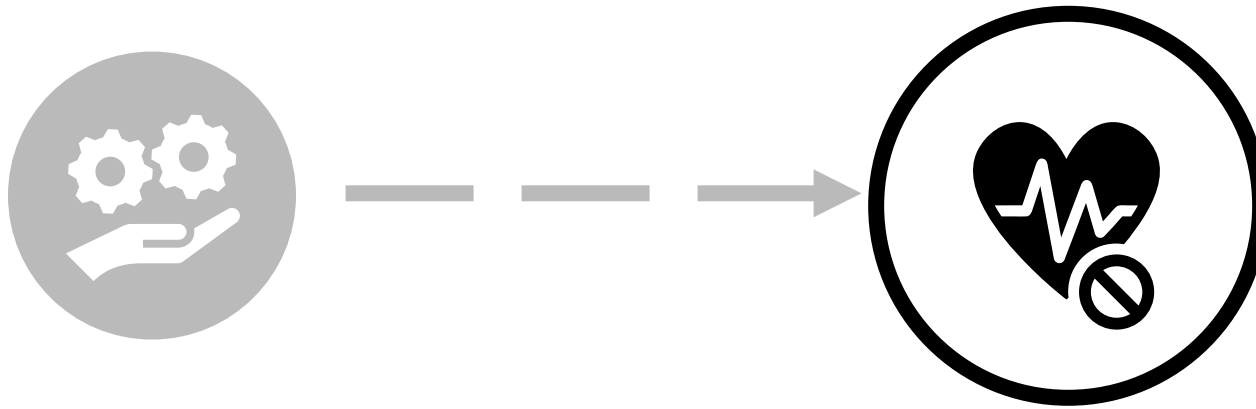


In the social sector thinking about systems is of thinking about complex problems

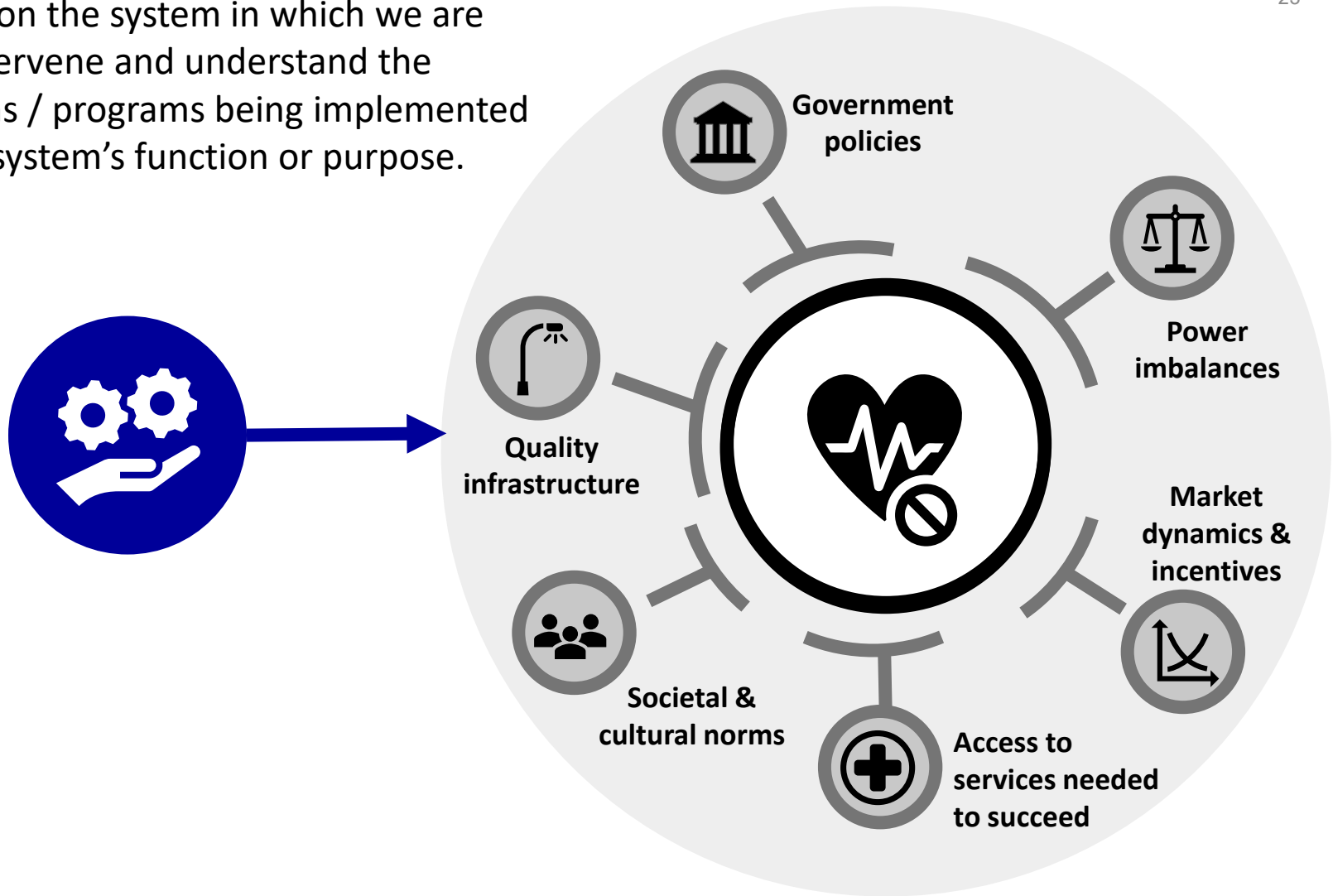


A nagging question

Why is the depth and breadth of public health support not leading to optimal health outcomes for all?



Systems mapping to define the boundaries on the system in which we are trying to intervene and understand the interventions / programs being implemented to shift the system's function or purpose.

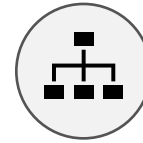


Six conditions of Systems Change

Policies

Practices

Resource flows

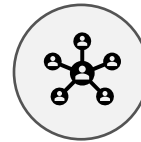


Structural changes

Changes in policies, practices and resource flows

Relationships & connections

Power dynamics



Relational changes

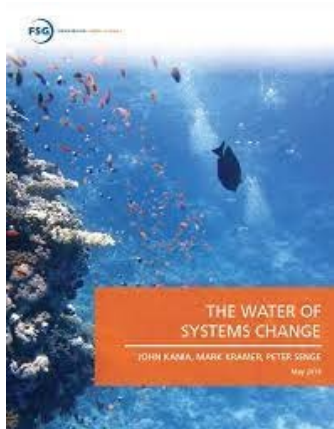
Relationships, connections and power dynamics

Mental models



Transformational changes

Changes in deeply-held beliefs and assumptions that prevent systems changes



Six conditions of Systems Change

Policies

Practices

Resource
flows

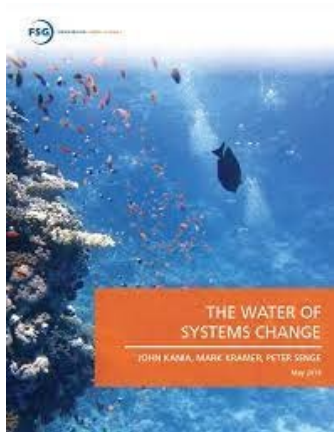
Relationships
& connections

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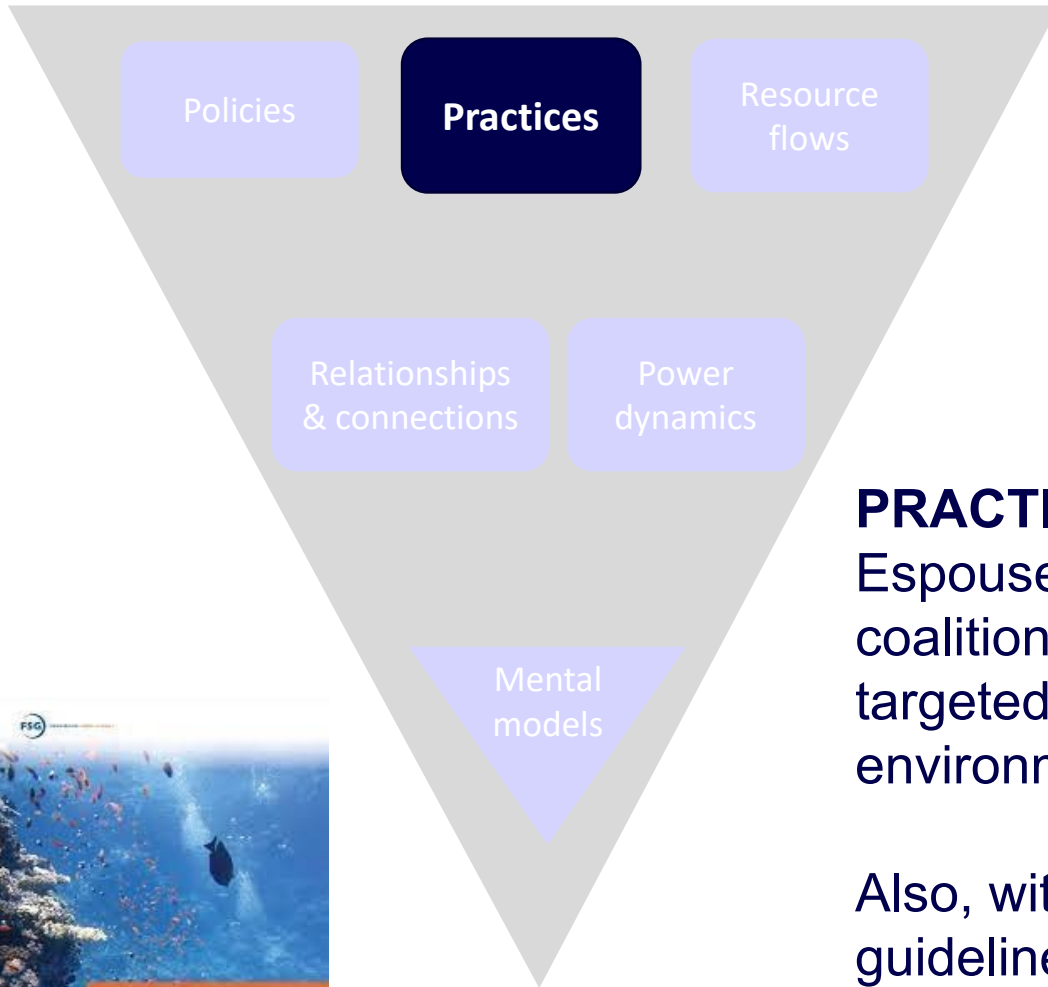
Mental
models

POLICIES:

Government, institutional and organizational rules, regulations, and priorities that guide the entity's own and others' actions.



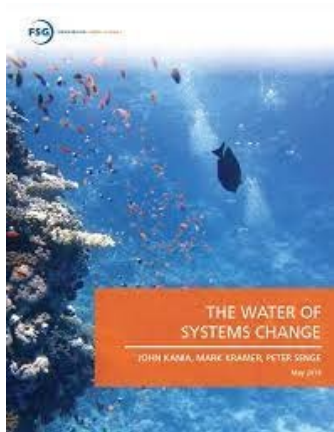
Six conditions of Systems Change



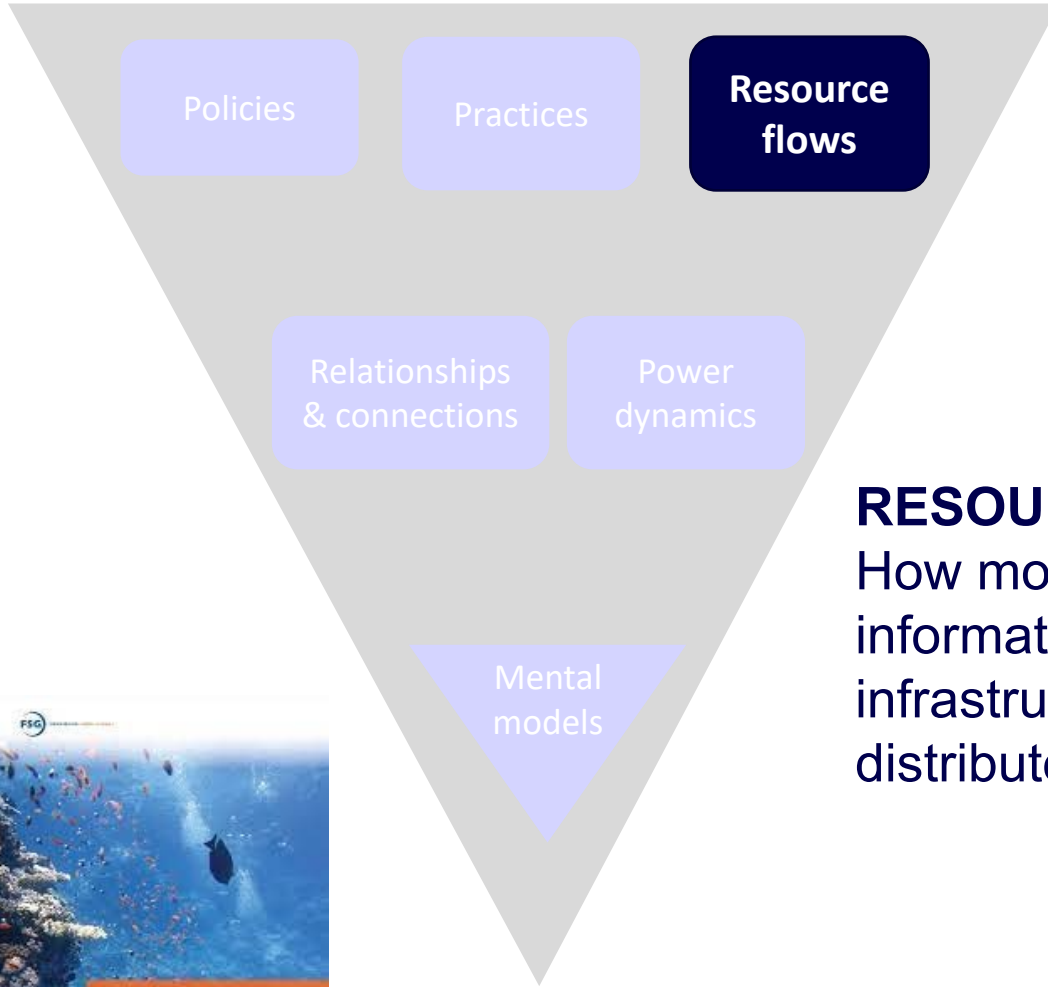
PRACTICES:

Espoused activities of institutions, coalitions, networks, and other entities targeted to improving social and environmental progress.

Also, within the entity, the procedures, guidelines, or informal shared habits that comprise their work.

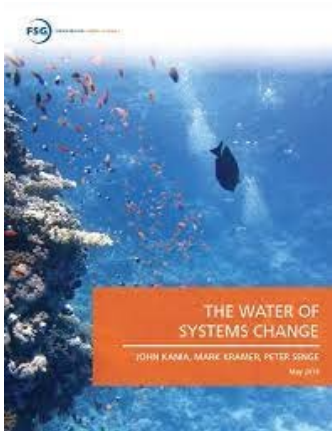


Six conditions of Systems Change



RESOURCE FLOWS:

How money, people, knowledge, information, and other assets such as infrastructure are allocated and distributed.



Six conditions of Systems Change

Policies

Practices

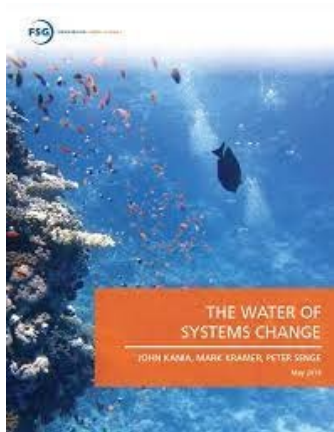
Resource
flows

**Relationships
&
connections**

Power
dynamics

Mental
models

RELATIONSHIPS & CONNECTIONS:
Quality of connections and
communication occurring among actors
in the system, especially among those
with differing histories and viewpoints.



Six conditions of Systems Change

Policies

Practices

Resource
flows

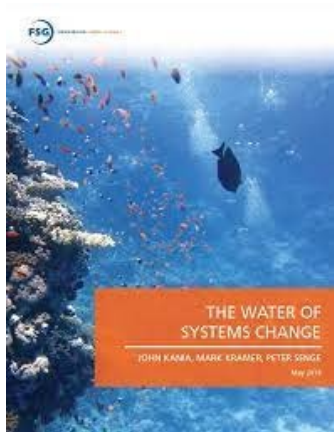
Relationships
& connections

**Power
dynamics**

Mental
models

POWER DYNAMICS:

The distribution of decision-making power, authority, and both formal and informal influence among individuals and organizations.



Six conditions of Systems Change

Policies

Practices

Resource
flows

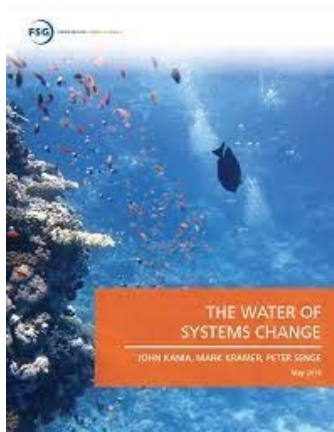
Relationships
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**Mental
models**

MENTAL MODELS:

Habits of thought—deeply held beliefs and assumptions and taken for-granted ways of operating that influence how we think, what we do, and how we talk.



Selecting complexity-aware methods appropriate to measure system-level changes

	Structural changes	Relational changes	Transformational changes
Program and administrative data			
Key informant interviews and focus groups			
Document reviews, secondary analysis and literature reviews			
Environmental and landscape scans			
Systems mapping approaches			
Social network analysis			
Political economy analysis / power analysis			
Participatory approaches (e.g., appreciative inquiry, reflective practices, etc.)			
Media tracking / social media analytics			

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GROUP EXERCISE: Measuring changes in the six conditions

- Access the Mural Board at the link [here](#)
- Reflect on what data you have now and what data you could collect this year to inform a systems change evaluation

	What data do you have now that might help you understand how systems are changing?	What data could you collect this year?
PROGRAM AND ADMINISTRATIVE DATA		
KEY INFORMANT INTERVIEWS & FOCUS GROUPS		
DOCUMENT REVIEWS, SECONDARY ANALYSES, LIT REVIEWS		

See an idea that you like?
Please drag over a "thumbs up" and drop it on the sticky note!

Social network analysis



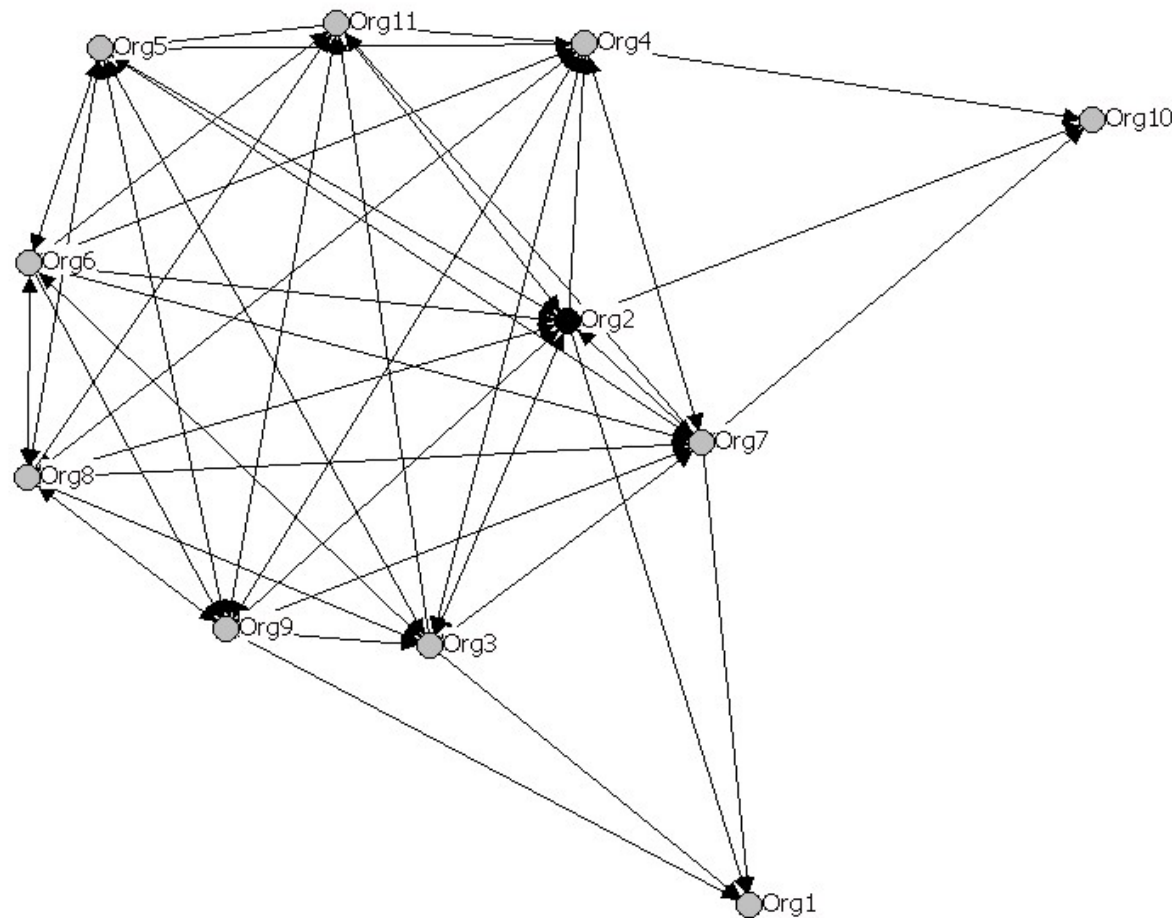
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Social network analysis (SNA)

- A methodological approach for measuring and mapping relationships
 - Nodes/Vertices = individuals or organizations
 - Links/Edges = relationships or interactions between nodes
- Network data can be presented visually and quantified, to enable researchers to describe relationship networks
- SNA is often used as part of a systems evaluation
 - Boundaries of system
 - Relationships among agents within system
 - Changes over time and across types of relationships

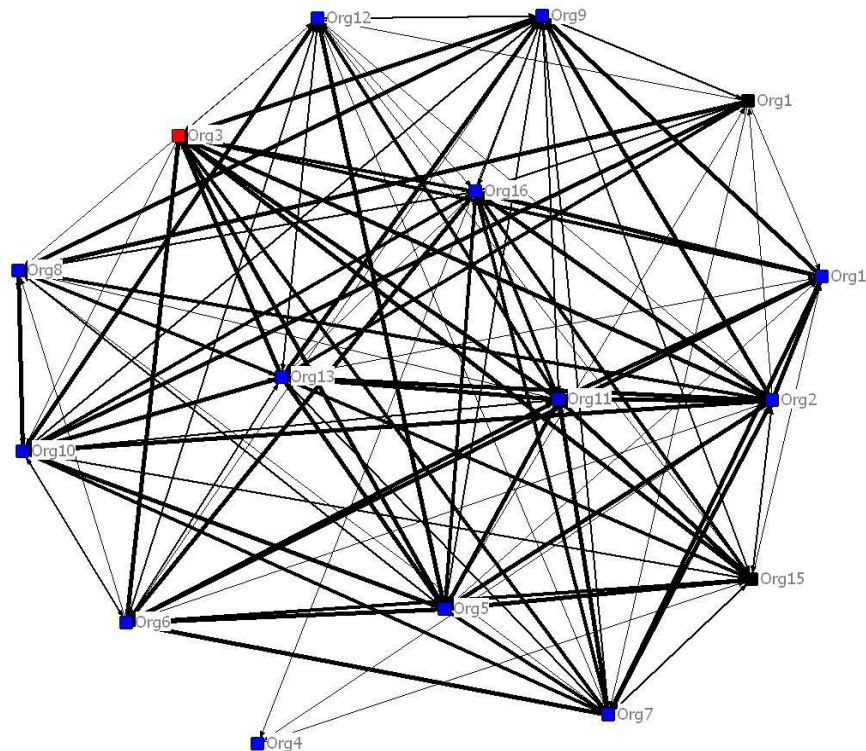
Illustrative well-connected *strategic planning network*



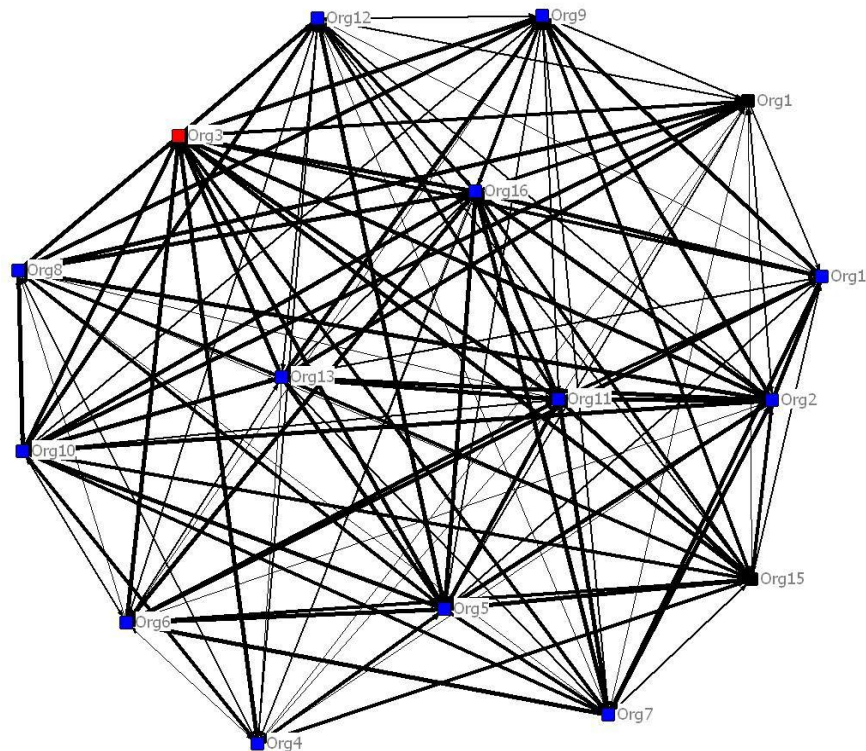
Quantifying activity in the network

- Network Size – Number of nodes in the diagram
- Isolates – Number of organizations completely disconnected from the network
- Density – Degree to which nodes are connected to each other within the network
- Lots more...
- *How do these statistics vary across different types of relationship networks? How do they change over time?*

Closeness of collaboration among Detroit partners at baseline



Closeness of collaboration among Detroit partners ~18 months later



Common approach for obtaining network data for systems evaluation

1. Determine the unit of analysis (often organization or department within large organization)
2. Create a list of the units that make up the system (initial boundary)
3. Identify a respondent for each unit
4. Survey or interview respondents about their relationships:
 - a. Planning activity
 - b. Innovation development activity
 - c. Evaluation activity
 - d. ...

Illustrative survey item

Organizations involved in the [GRANTEE PROJECT NAME] work together on different kinds of activities. For each organization listed, please indicate which activities you have worked with them on in relation to the [GRANTEE PROJECT NAME] in the past 12 months?

Organizations / Organizational Units	Strategic planning or other program development activities	
	Yes	No
[ROSTER OF ORGANIZATIONS]	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

How to approach SNA in year 3?

- Is this feasible?
- Consider retrospective survey (or interviews)
 - Who do you have relationships with now?
 - Who did you have relationships with at the start of the grant?
- Having two snapshots of the relationships will allow you to document how communication changed over time

SNA summary

- SNA can be used to
 - Quantify aspects about system boundaries and relationships
 - Show this information visually
 - Document changes across networks and over time
- Typically, additional data are needed to present a more complete picture for a systems change evaluation

Note: Preparing and analyzing network data can be complex – please reach out to your Eval TA Liaison for support!

Summary of system change approach for IIN grants



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Benefits of system change evaluation

- Systems change evaluations provide information about
 - Who was involved
 - Structural changes
 - Relational changes
 - Transformational changes

Appropriate reporting of system change evaluation

- Most systems change evaluations do not include a counterfactual (e.g., measurement of organizations/individuals not engaged in the systems change approach)
- As a result, any changes/improvement in the system should be considered as descriptive evidence, rather than causal evidence that a systems change approach is effective or successful

Additional ways to show the merit of an IIN systems change approach

- Document the innovative interventions that were developed through the grant
- Highlight the promise of one or more interventions, in terms of innovativeness, addressing needs/gaps, acceptability
 - Ideally, showing foundational information of its promise through improvement of outcomes in logic model
- Make the argument one of the many expected outputs of the system change process is the development and documentation of one or more promising interventions!

Reminder about Evaluation TA

- Your Evaluation TA Liaison is a resource!
 - Review and provide feedback on system change evaluation plans
 - Provided suggestions on measures to use
- Upcoming activities:
 - System change evaluation office hours – June 1 @3PM ET
 - Forthcoming brief on system change evaluation
 - Core components webinar – June 8 @2PM ET

Thank you!!!

- Russell Cole: rcole@mathematica-mpr.com
- Drew Koleros: dkoleros@mathematica-mpr.com



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Q & A

Resources

Introductory/high-level resources on systems change

- [Harries, E., Wharton, R., & Abercrombie, R. \(2015\). Systems change: A guide to what it is and how to do it. London, UK: NPC](#)
- Meadows, D. H. (2009). Thinking in Systems: A Primer. London; Sterling, VA: Earthscan
- Williams, B. & van't Hof, S. (2014). Wicked Solutions: A systems approach to complex problems. Self-published.
- [Kania, J., Kramer, M. & Senge, P. \(2018\). The water of systems change. FSG.](#)

Evaluating systems change initiatives

- [Coffman, J. \(2007\). A Framework for Evaluating Systems Initiatives. Build Evaluation Symposium.](#)
- [Hargreaves, M. \(2010\). "Evaluating System Change: A Planning Guide." Mathematica Methods Brief](#)
- [Honeycutt, T. \(2009\). "Making Connections: Using Social Network Analysis for Program Evaluation." Mathematica Trends in Research Methods Issue Brief](#)
- [Koball, H., Zaveri, H., Boller, K., Daro, D., Knab, J., Paulsell, D., Hargreaves, M., Strong, D., Malone, P., Del Grosso, P., and Xue, Y. \(2009\) "Cross-Site Evaluation of the Supporting Evidence-Based Home Visiting Grantee Cluster: Evaluation Design Volume 1." Children's Bureau, Administration for Children and, Princeton, NJ.](#)
- [Latham, N. \(2014\). "A Practical Guide to Evaluating Systems Change in a Human Services System Context" Learning for Action](#)
- [Whaites, A. \(2017\). The Beginner's Guide to Political Economy Analysis \(PEA\). National School of Government International. London; UK.](#)
- [Appreciative Inquiry \(AI\) Commons](#) online resources

System change resources from RHNTC

- <https://rhntc.org/resources/putting-systems-thinking-practice-toolkit>
- <https://rhntc.org/resources/reinforcing-loops-systems-change-tpp-programs-webinar>
- <https://rhntc.org/resources/mental-models-creating-systems-change-webinar>
- <https://rhntc.org/resources/putting-systems-thinking-practice-tpp-programs-webinar>