

BACKGROUND

- Implementing interventions in health systems requires a nuanced understanding of complexity thinking, which views systems as wholes greater than their parts.
- This holistic approach recognizes the interconnectedness of various contextual elements (Figure 1).
- Complexity is not absolute but relative; scaling with the number of components within the system, the number of agents, the disclosed and undisclosed relationships among them, their entanglement, the ability of system to learn and self-organize, and the power and impact of broader social, policy and strategic influences on relationships (Figure 2).
- Complexity thinking helps formulate adaptive strategies in response to emergent contextual challenges.

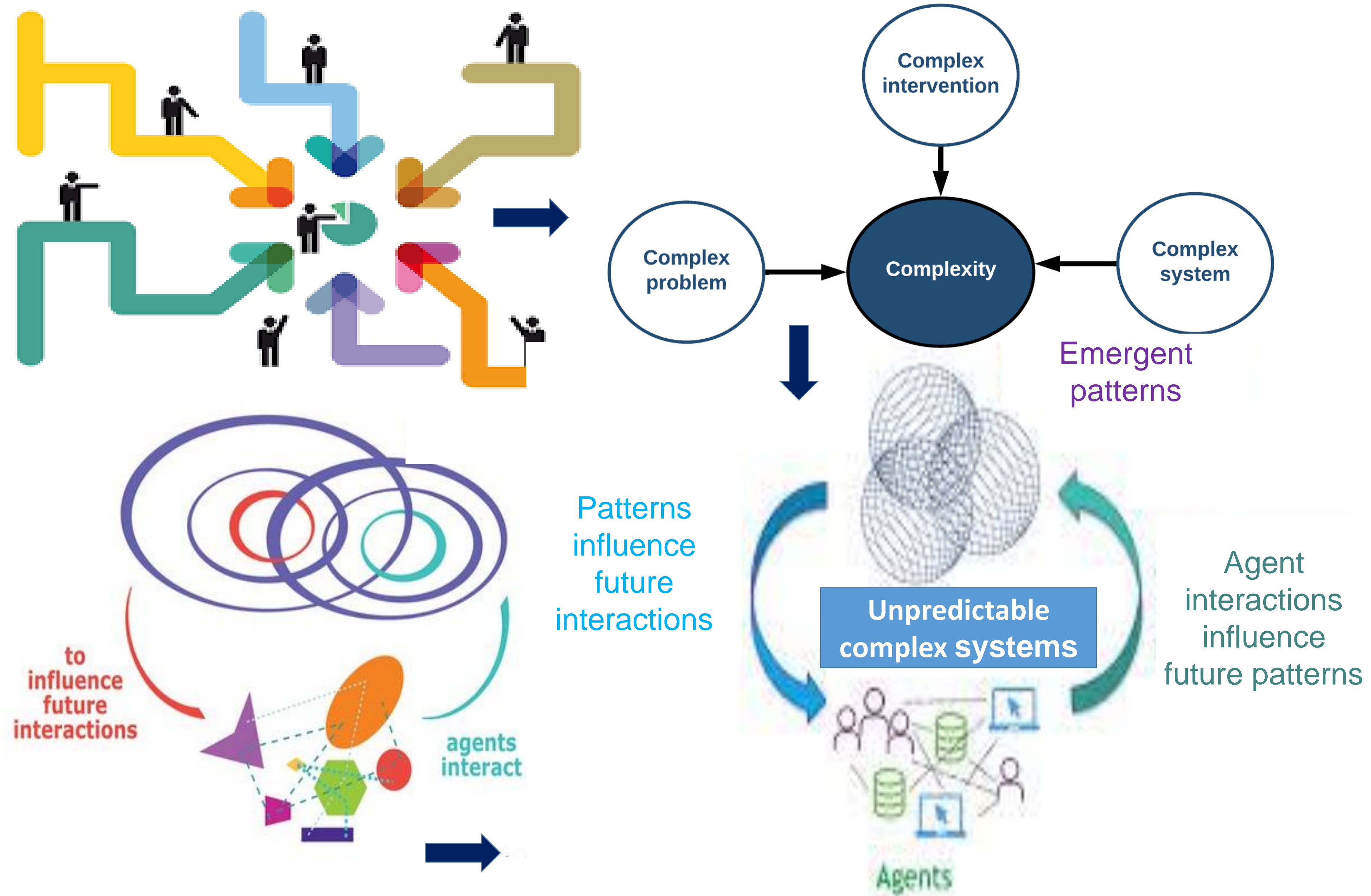


Figure 1: Complexity in systems (an unpredictable interplay of object, subject, time, place and experience). Uncertainties in dynamic implementation contexts coupled with complex pathways spanning multiple agents, settings and specialties- can add to complexity

CIRRHOSIS CARE ALBERTA TRIAL

- Cirrhosis Care Alberta (CCAB) trial involved implementing the order set to improve care for cirrhosis patients across 9 Alberta hospitals.
- A pre-implementation strategy was devised in collaboration with key stakeholders.
- During the implementation of the CCAB trial, multiple unexpected 'sentinel events' e.g. implementation investigators leaving, delays in getting order set into sites for use, Covid-19 pandemic and other parallel quality improvement projects emerged as threats to the fidelity of the implementation plan.
- Study investigators used complexity thinking to understand and navigate ongoing, continuous emerging threats.

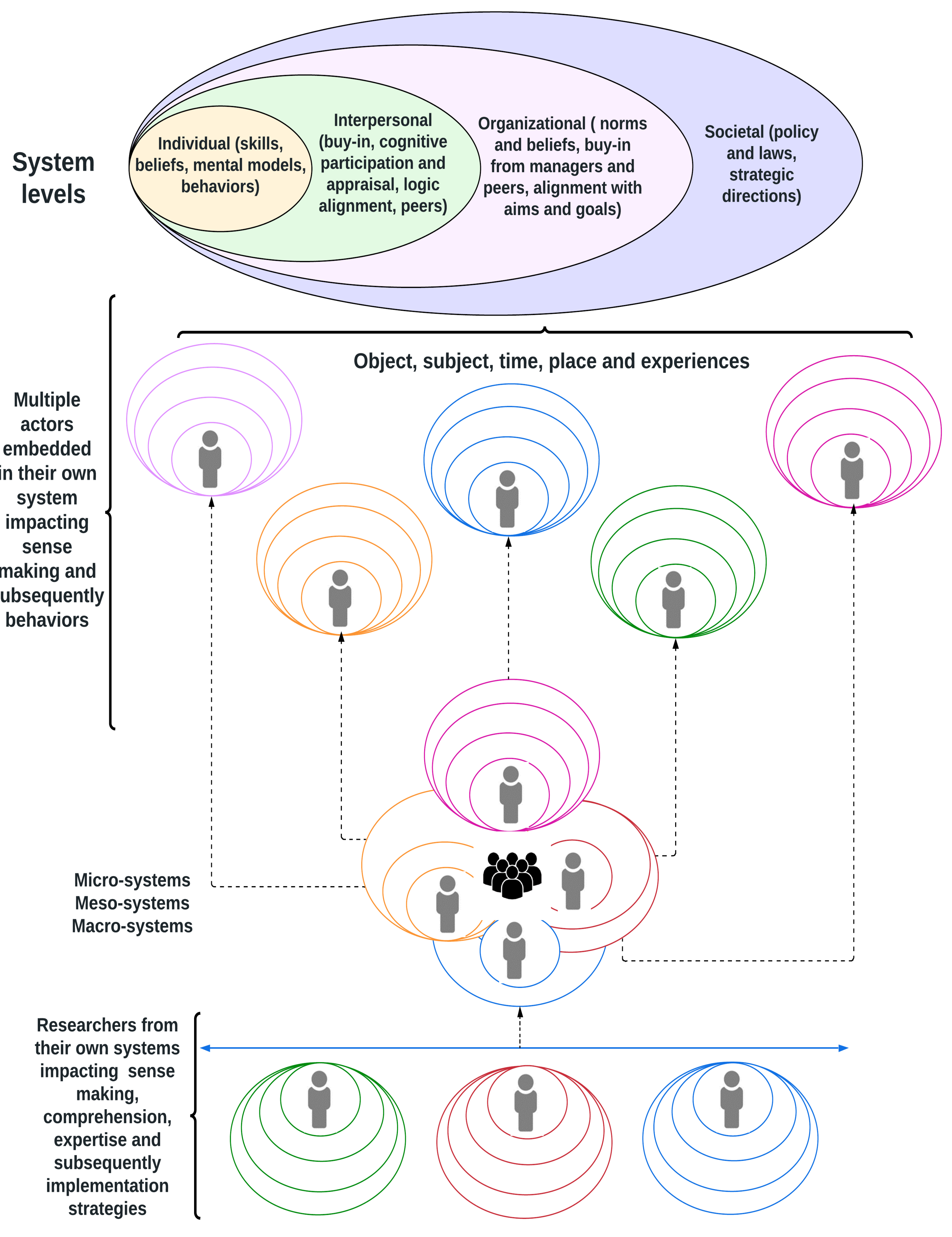


Figure 2: A graphical representation of what, how and why contributed to complexity within the CCAB project implementation. Depending on time, space and developing sentinel events- complexity varied with number of interacting components in the system and how they connected (densely or sparsely) and impacted each other and overall implementation

IMPACT

- In the CCAB project, embracing complexity thinking empowered study investigators to practice adaptive management within intricate, unpredictable, and continuously evolving contexts (Figure 2).
- A complexity thinking approach facilitated understanding emerging threats to the implementation plan and adjusting efforts to new constraints and opportunities.
- Utilizing complexity-informed approaches enabled implementation investigators to engage in real-time sensemaking, coordination, and planning, drawing from information across multiple levels and diverse actors (Figure 2).
- Complexity thinking informed real-time pragmatic adaptations to the implementation strategies in real time.

CONCLUSIONS

- Augmenting traditional research designs with complexity thinking can enhance the implementation adoption, fidelity and sustainability of interventions in complex spaces.