NSF INCLUDES
Coordination Hub
RESEARCH

Mapping the Common Collaborative Change Models to the NSF INCLUDES Five Elements of Collaborative Infrastructure

## Background: What Is the Issue and Why Is It Important?

How do the NSF INCLUDES five design elements of collaborative infrastructure map on to commonly used approaches to collaborating and achieving larger multi-organizational effects? Collaborative change strategies are frameworks used to address deep-rooted, multifaceted problems like broadening participation in STEM (NSF, 2018). Understanding the alignment and overlap of such approaches may provide opportunities for collaboration across organizations using different models and could help alleviate challenges that projects encounter in integrating a given design element of collaborative infrastructure. As the Network grows, other models could emerge which use similar components and offer new approaches to collaboration.

About this Brief

This brief identifies and articulates the features of common network and partnership approaches used by projects throughout the NSF INCLUDES Network and aligns these features with the NSF INCLUDES' five design elements of collaborative infrastructure outlined below (NSF, 2020; 2018):

1. **Shared Vision:** Creating a common understanding, agenda, and future in addressing the challenges of broadening participation.

2. **Partnership:** Forming relationships with one another and with new organizations through connections made at PI meetings, NSF INCLUDES-sponsored conferences, and beyond.

3. **Goals and Metrics:** Allowing for robust data that facilitate evidence-based decision making.

4. **Leadership and Communication:** Building capacity for leadership and communication among organizations and individuals to create opportunities in STEM education and careers.

5. **Expansion, Sustainability, and Scale:** Collaborative infrastructure leads to increases in partners, connections, and collaborations.

We have reviewed four alternative models for network-building and collaboration in order to see how their concepts align with the NSF INCLUDES five design elements of collaborative infrastructure. Two of the four models are used by multiple organizations in the NSF INCLUDES Network: **collective impact** (Kania & Kramer, 2011) and **network improvement communities** (Bryk et al., 2011). The other two models, **network function models** (Hearn & Mendizabal, 2011) and **network capacities** (Collective Mind, 2019), have been presented in the INCLUDES online community as viable tools. We found that in most cases all four of the models make use of elements that align with the five elements of collaborative infrastructure. The table on the following page outlines the concepts of these models within the context of the five design elements.
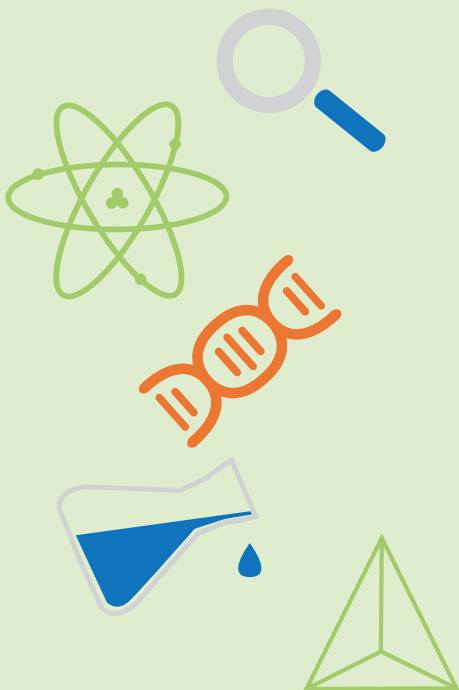
Overlap of Elements of Collaborative Infrastructure and Network Model Distinctions

Elements of Collaborative Infrastructure	Collective Impact (Kania & Kramer, 2011)	Network Improvement Communities (Bryk, Gomez, & Grunow, 2011)	Network Functions (Hearn & Mendizabal, 2011)	Network Capacities (Collective Mind, 2019)
Vision: Creating a common understanding, agenda, and future in addressing the challenges of broadening participation.	**Common Agenda:** Collective impact requires all participants to have a shared vision for change, one that includes a common understanding of the problem and a joint approach to solving it through agreed upon actions.	**Forming a Shared Language Community:** A common language is organized for the diverse efforts occurring within a design and development community. Highly independent activities may occur across time and space, but the overall endeavor now coheres.	**Community Building:** Enables networks to build shared visions among diverse stakeholders, play a role in building cohesive, mutually supportive communities characterized by strong ties, set and diffuse norms and standards and encourage participation by increasing trust among members.	**Shared Purpose:** The visionary goal around which strategies are defined, people are mobilized, and activities are established and harmonized. **Culture:** The network's operating philosophy including shared values, norms, attitudes, and practices of both individuals and groups.
Partnership: Forming relationships with one another and with new organizations through connections made at PI meetings, NSF INCLUDES-sponsored conferences, and beyond.	**Mutually Reinforcing Activities:** Collective impact models depend on a diverse group of stakeholders working together, not by requiring that all participants do the same thing, but by encouraging each participant to undertake the specific set of activities at which it excels in a way that supports and is coordinated with the actions of others.	**Coordinating Efforts Across Diverse Individuals and Organizations:** Participants, both individuals and firms, are not autonomous actors operating within a disconnected marketplace. Rather they form a densely connected network of peers who share a focused interest in common regions.	**Community Building:** Enables networks to build shared visions among diverse stakeholders, play a role in building cohesive, mutually supportive communities characterized by strong ties, set and diffuse norms and standards and encourage participation by increasing trust among members. **Convening:** Heterogeneous groups provide a bridge between groups who would not normally meet, fostering consensus among groups who would normally disagree, generating coherence through organization and developing connections between supply and demand.	**Membership:** The people and organizations that belong to the network contribute to the shared purpose. **Infrastructure:** The structural design and components of the network including structures and processes for core operations such as governance, member engagement, project implementation, management, and administration, etc.

(continues)

Goals and Metrics:	Shared Measurement Systems:	Common Targets and Measurable Ambitious Goals:		Measurement:
Allowing for robust data that facilitate evidence-based decision making.	Collecting data and measuring results consistently on a short list of indicators at the community level and across all participating organizations not only ensures that all efforts remain aligned, it also enables the participants to hold each other accountable and learn from each other's successes and failures.	Participants in a NIC endorse shared, precise, measurable targets. Participants agree to use what is learned, from working toward meeting the targets, to setting new targets aimed at ever more ambitious goals. In this regard, shared measurable targets help a community stay focused on what matters, from the community's perspective.	N/A	The tools and processes for monitoring and assessing the network's efficiency, effectiveness, and impacts.
Leadership and Communication:	Continuous Communication:	Ongoing Vetting Processes:	Knowledge Management:	Leadership:
Building capacity for leadership and communication among organizations and individuals to create opportunities in STEM education and careers.	Participants need several years of regular meetings to build up enough experience with each other to recognize and appreciate the common motivation behind their different efforts. They need time to see that their own interests will be treated fairly, and that decisions will be made on the basis of objective evidence and the best possible solution to the problem, not to favor the priorities of one organization over another.	The act of setting common targets in network improvement communities is a way for community members to vet goals and sharpen shared understandings. The process draws people into regular conversations that develop into distinct communication forms that then structure behavior.	Functions refer to the ability of networks to acquire, filter, exchange and disseminate knowledge. **Resource Mobilization:** Networks mobilize resources to manage resource dependencies, provide an efficient channel for aggregated funding and provide funding and services to enhance the work of members through, for example, capacity development.	The function of guiding, directing, and facilitating the network and its members.

(continues)

Expansion, Sustainability, and Scale

Collaborative infrastructure leads to increases in partners, connections, and collaborations.

Backbone Support Organizations:

The backbone organization requires a dedicated staff separate from the participating organizations who can plan, manage, and support the model through ongoing facilitation, technology and communications support, data collection and reporting, and handling the myriad logistical and administrative details needed for the model to function smoothly.

Emerging Governance:

New structures must emerge to maintain collective agreements and sustain coherent future action. Over time, initiating structures likely will require multiple iterations of refinement and possible larger changes to accommodate network growth and movement toward becoming self-sustaining.

Amplification and Advocacy:

Functions help networks place issues on the global agenda, amplify the voices of their members or constituents, put pressure on stakeholders and enhance members' legitimacy and status.

Resource Mobilization:

Networks mobilize resources to manage resource dependencies, provide an efficient channel for aggregated funding and provide funding and services to enhance the work of members through, for example, capacity development.

Resources:

Contributions, financial and otherwise, that ensure the network's functionality and the business model through which those contributions are received and used.

Key Takeaways:

There are clear parallels between these four network models and between them and the NSF INCLUDES five elements of collaborative infrastructure. NSF INCLUDES Network members can use the brief to review the elements of other network and partnership approaches to see how they align with the collaborative infrastructure's five elements. Additional takeaways include:

- No one model is better than another, the choice to use a particular model is based on project needs and what works within that project's context, resources, and constraints.

- Even though some NSF INCLUDES-funded projects may be using different models, the ultimate goal for all is to advance the vision of NSF INCLUDES for broadening participation at scale.

- With a better understanding of the various models of collaboration, as well as their nuances, project teams could use this brief to facilitate discussion with other projects using different approaches and potentially find commonalities and opportunities for future collaboration.

- This brief may also be useful for new members in applying for an NSF INCLUDES grant to see how their existing network model fits with the five elements of collaborative infrastructure or absent an existing model, to make an informed choice that best fits their approach and needs.

Next Steps:

We would like to continue a discussion about network models and NSF's five elements of collaborative infrastructure through online discussion posts at www.includesnetwork.org. We want to hear about the network model or models you are using in your research and how you are incorporating the five elements of collaborative infrastructure. Here are a few questions to start the conversation:

1. How have the five elements of collaborative infrastructure guided your work? Are there elements that are harder or easier to incorporate? How does your initiative assess progress in addressing the five elements?

2. How does your network and partnership approach work in practice?

3. How can the Hub help provide resources or tools that strengthen your collaborative change strategies?

References:

Bryk, A. S., Gomez, L. M., & Grunow, A. (2011). Getting ideas into action: Building networked improvement communities in education. In M. Hallinan (Ed.), Frontiers in sociology of education (pp. 127–162). New York, NY: Springer.

Collective Mind (2019). What capacities do networks need to succeed? Available URL: https://medium.com/@collectivemind/what-capacities-do-networks-need-to-succeed-940c9b19b683

Hearn, S., & Mendizabal, E. (2011). Not everything that connects is a network. Overseas Development Institute.

Kania, J. & Kramer, M. (2011). Collective Impact. Stanford Social Innovation Review. Stanford, CA: Stanford University.

NSF (2018). Frequently Asked Questions (FAQs) for NSF INCLUDES Dear Colleague Letter (NSF 17-111): Announcement of an Effort to Expand the NSF INCLUDES National Network. https://www.nsf.gov/pubs/2018/nsf18027/nsf18027.pdf.

NSF INCLUDES (2020). Report to the Nation. National Science Foundation. Arlington, VA. https://www.nsf.gov/pubs/2020/nsf20099/nsf20099.pdf.

NSF INCLUDES (2018). Report to the Nation. National Science Foundation. Arlington, VA. https://www.nsf.gov/news/special_reports/nsfincludes/pdfs/INCLUDES_report_to_the_Nation.pdf.

To access this and other resources to support your diversity, equity, and inclusion (DEI) and collaboration efforts, please join the INCLUDES National Network at
www.includesnetwork.org

Suggested citation:
NSF INCLUDES Coordination Hub. (2020). Mapping the Common Collaborative Change Models to the NSF INCLUDES Five Elements of Collaborative Infrastructure (Research Brief No. 3).