# GETTING BETTER AT GETTING BETTER: THE ROLE OF NETWORKS

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IS ISEA ABOUT INFORMAL SCIENCE EDUCATION?

OR

ABOUT GETTING BETTER AT INFORMAL SCIENCE EDUCATION?

OR

ABOUT GETTING BETTER AT GETTING BETTER AT SCIENCE EDUCATION?

# Getting Better

# Getting Better at Something is Different Than Doing Something

- Sports
- Eating
- Medicine
- Education

# Getting Better Requires

- Different focus
- Different activities
- Different expertise
- Different mindset

# The Anatomy of Getting Better

# The Anatomy of Getting Better

1) Motivation – the desire and intent to get better

***Types of motivation***

- Dissatisfaction with the current status
- Inspiration

***Sources of motivation***

- Internal Motives and/or Barriers
- External Incentives and/or Penalties

# The Anatomy of Getting Better

2) Ongoing access to expertise and support

- Experts who are good at the endeavor
- Experts who are good at helping others improve (e.g., instructors, coaches, teachers)

# The Anatomy of Getting Better

3) Priority and resources to do the work of improvement

- Making improvement a priority
- “Release” time devoted to improvement
- Financial resources to support improvement efforts
- Knowledge, strategies, techniques for improvement
- Tools, aides, instructional materials

# The Anatomy of Getting Better

4) Practice and feedback

- Opportunity for informed practice
- Diagnostic feedback
- Positive feedback
- (Success← →Encouragement)
- “Safe space” to experiment, practice and fail

# The Anatomy of Getting Better

5) Support for the integration of practice and everyday operation

- “Bring practice to the course”
- Integrate new into the old
- Sustain new behaviors under pressure

# The Anatomy of Getting Better

6) Continuing support and rewards

- Confirmation and acknowledgement for improvements
- Continuing support to maintain, sustain and continue improvements

# The Anatomy of Improvement

- Motivation
- Ongoing access to expertise and support
- Priority and resources to improve
- Practice and feedback
- Support for the integration of practice and everyday operation
- Continuing support and rewards

# Getting Better at Science Education

# The Status of Science Education in Schools (K-12)

- Dissatisfaction with outcomes (e.g., TIMSS, PISA)
- Dissatisfaction with quantity of education (especially elementary)
- Dissatisfaction with nature and quality of instruction (all grades, especially high school)
- Dissatisfaction with the equitability of the opportunity to learn science

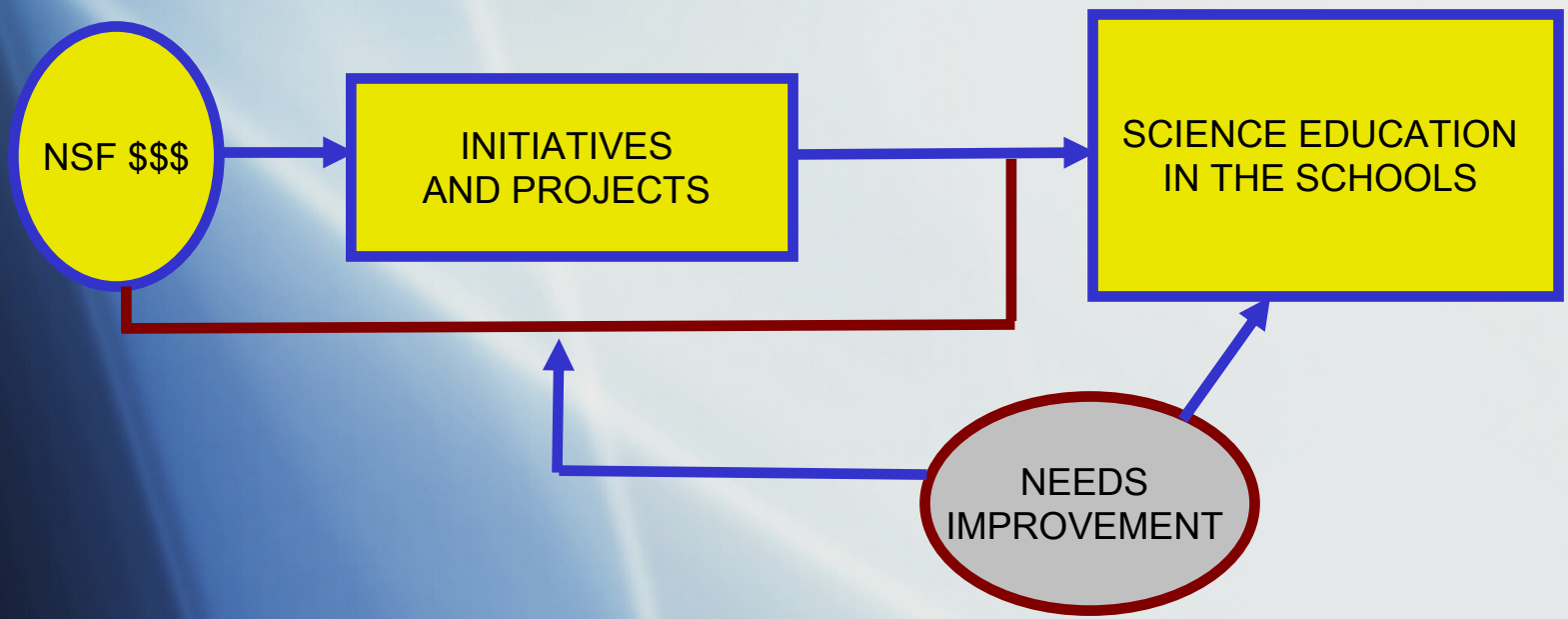
# Multiple Efforts to Improve Science Education in Schools

- Standards
- Assessments and accountability
- Increased course requirements
- Professional development
- Curriculum development and implementation
- Systemic change efforts

# The Status of the Efforts to Improve Science Education in Schools

- General disappointment with rate of progress
- Inadequate resources
- Instability: Short-term and episodic efforts with ever changing foci
- Lack of integration of improvement efforts and everyday system operations
- Lack of “institutionalization,” “replication” or generalization of funded projects

# CONCLUSION:
# Efforts to Improve Science Education need Improvement



In Formal Science Education:

We need to get better
at getting better

# What About Informal Science Education?

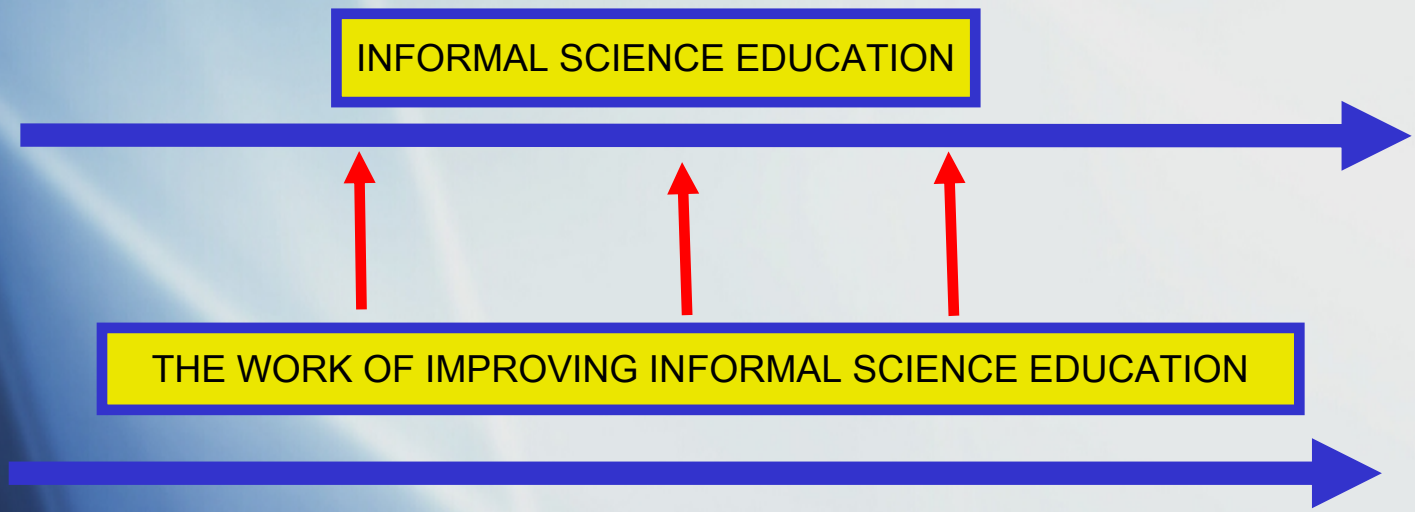
- What is the current status of informal science education?
- What is the nature and status of the efforts to improve informal science education?
- Does informal science education need to get better at getting better?

# Getting Better at Informal Science Education

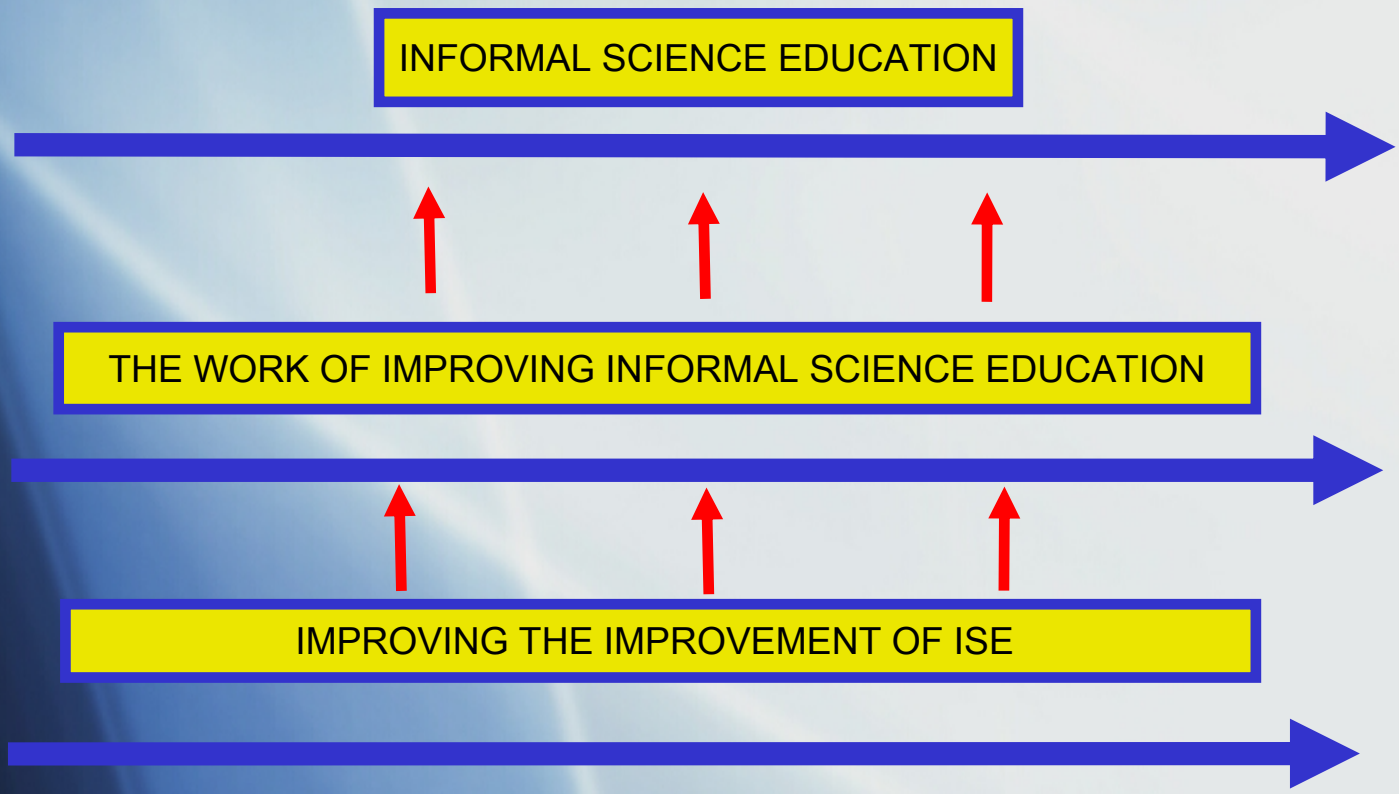
- The anatomy of improvement at the *individual* level: Which of these factors are now in place ?
  - Motivation
  - Ongoing access to expertise and support
  - Priority and resources to do the work of improvement
  - Practice and feedback
  - Support for the integration of practice and everyday operation
  - Continuing support and rewards
- The anatomy of improvement at the *institutional* level: Which of these factors are now in place?

# Getting Better at Informal Science Education

# The Need to Maintain Ongoing Improvement



# The Need to Maintain Ongoing Improvement

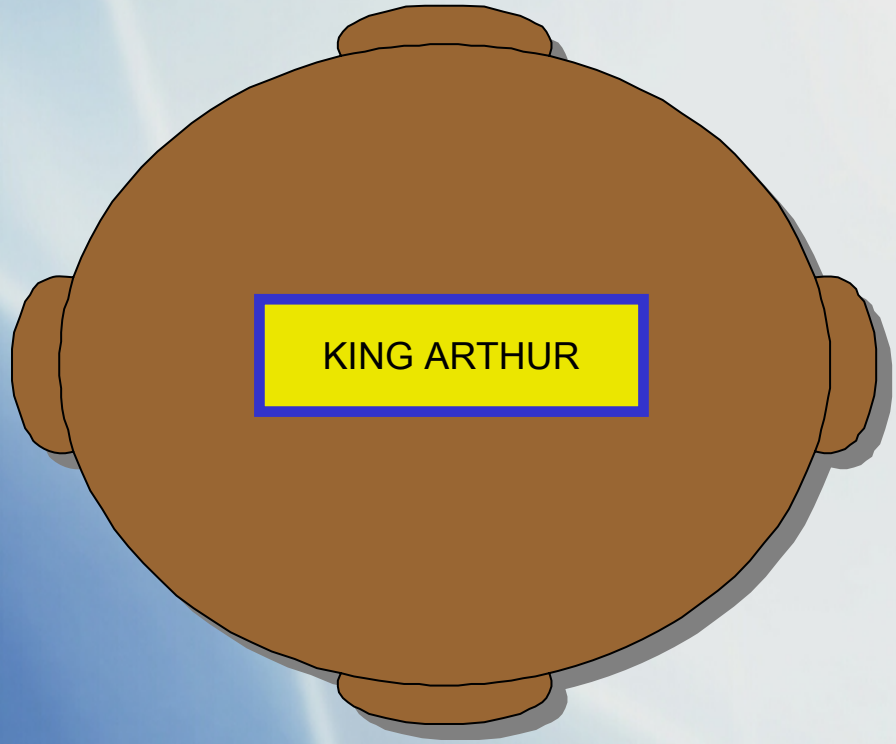


# The Role of Networks in Getting Better at Getting Better

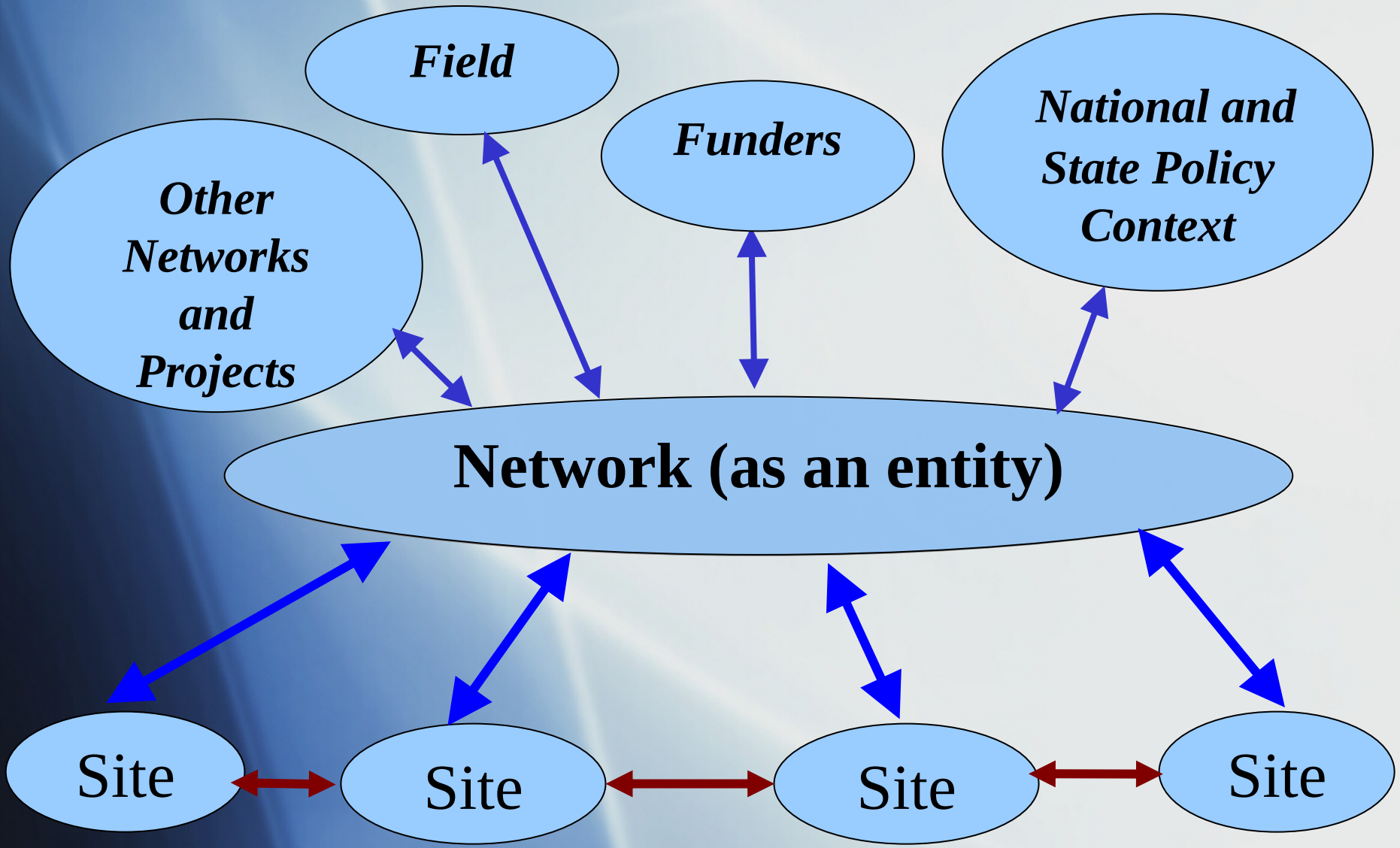
# What is a Network?

# The Original Network

***One for all and all for one!***



# The Functions of Networks: A Model



# Functions – Site to Site

***Examples*:**

- Sites assist one another by sharing ideas
- Sites engage in common experiences to strengthen relationships between them
- Sites collaborate on projects
- Sites pool and share resources
- Sites examine areas of overlap
- Sites help other sites, mentor new sites

# Functions – Site to Network, and Network to Site

***Examples*:**

- Sites contribute special expertise to the network
- Sites contribute knowledge of context to the network and to other sites
- Sites agree to participate in special state initiatives that allow state network to serve the state

# Functions – Site to Network, and Network to Site

***Examples*:**

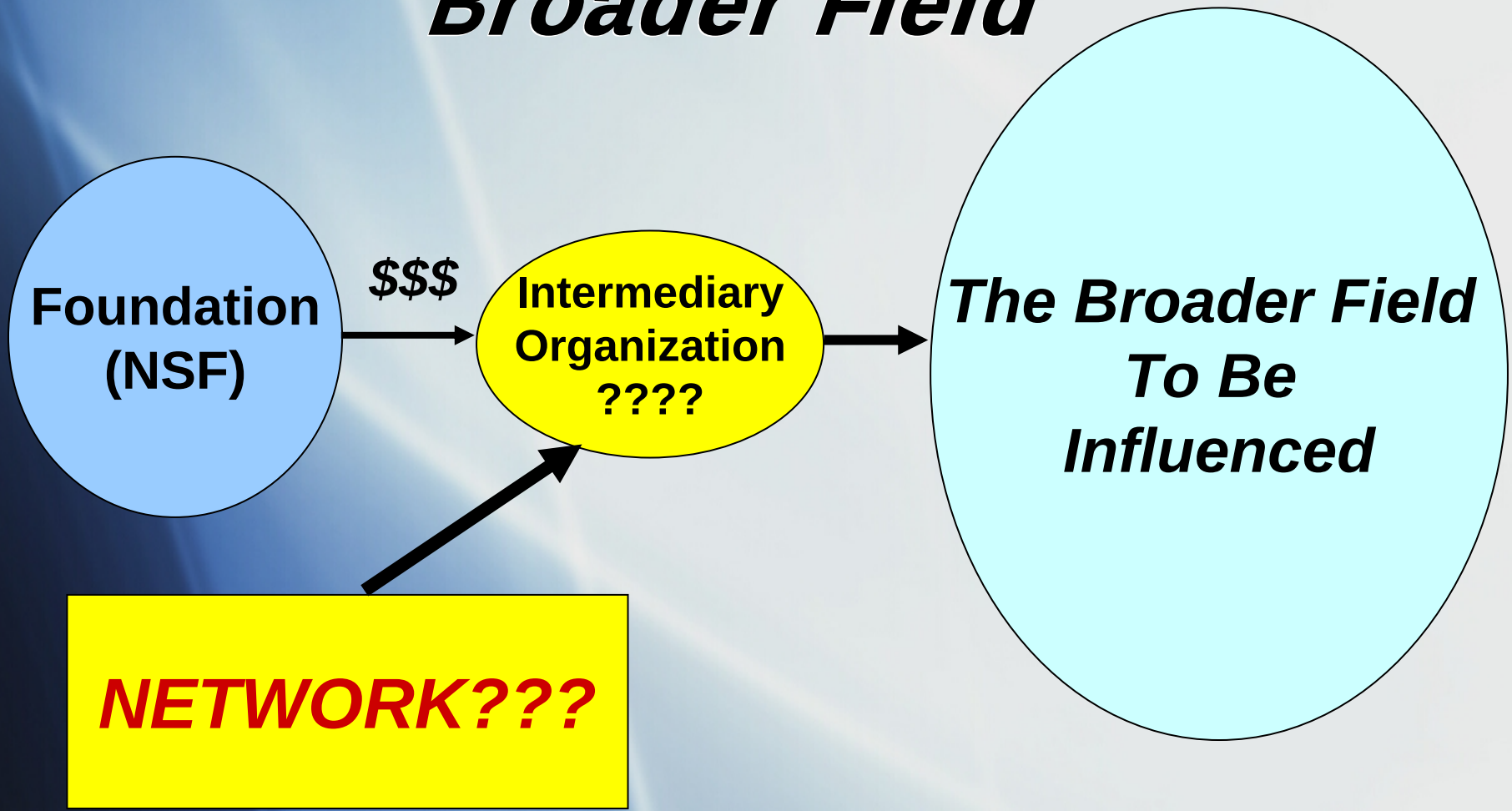
- Network creates leadership opportunities
- Network offers advanced professional development
- Network convenes site leaders to develop shared programs to meet site and national priorities
- Network conducts and collects research beneficial to all sites
- Network gathers and disseminates publications, resource books, websites, listservs, etc.
- Network communicates and interprets key policies, events, changes to sites

# Functions: Network to External World

***Examples*:**

- Networks can cultivate relationships with research communities, professional associations, legislators, etc.
- Network serves as unitary entity that is able to represent the sites collectively to the broader field, funders, etc.
- Network can work to make the mission of the network visible and important on a national and/or state level
- Network  can collaborate with other national organizations, agencies to co-sponsor conferences, strategize on responding to state initiatives, etc.
- Networks can apply for federal and/or private funding
- Networks can contribute research to the field
- Networks can connect to other networks, projects and initiatives

# *The Network As a Vehicle For Investing in a Broader Field*



# APPLYING THE NETWORK MODEL TO ISEA AND OTHER ISE STATE NETWORKS

# The Defining Features of Effective Networks

A network works well when members of the network:

- have a shared sense of purpose
- have a collective and shared identity
- do work together
- have knowledge of each other
- develop leadership in a collective and distributed fashion
- assume shared responsibility for the mission of the network
- contribute to and use the collective knowledge of the network

# The Anatomy of Improvement: How can ISEA better help provide…

- Motivation?
- Ongoing access to expertise and support?
- Priority and resources to work on improvement?
- Practice and feedback?
- Support for the integration of practice and everyday operation?
- Continuing support and rewards?

# Sample Criteria for Evaluating the Health of a Network

- Clarity of mission and shared vision
- Network strategic leadership
- Win-win, symbiotic relationships
- Value-added contributions
- Communication
- Accessibility, equity
- Supportive of diversity of members, modes of engagement, levels of participation
- Mutual respect and trust
- Cumulative, self-sustaining

# Doug Engelbart and the Improvement Infrastructure

*Englebart argues that we… are still focused around projects and task forces with short-term expectations and short-term life cycles… the most important activity we can do is to develop the* improvement infrastructure… *and to encourage and fund cross-functional* "infrastructure communities" *whose members work on common challenges to explicitly improve improvement… and then that community itself thus becomes a knowledge accelerator. In essence, the human network… is the way to get better at getting better.*

–From "The 21st Century Intranet,"
by Jennifer Stone Gonzalez

END