

STEM Thinking Applied to STEM Networks

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David J. Ferrero, Ed.D. Senior Program Director, STEM
Bill & Melinda Gates Foundation

Rich Rosen, Corporate Vice President, Education
Battelle Memorial Institute

Battelle
The Business of Innovation

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GATES *foundation*

National STEM Initiative: Working Definition

“STEM Education” refers to the teaching and learning of the STEM disciplines, usually in an integrated, intensive and applied fashion, to a level of rigor at least sufficient for college-readiness without remediation.

National STEM Initiative: Intended Outcomes

- **College-Ready**
- **Equity**
- **Economic Competitiveness**
- **Knowledge Capture & Transfer**
- **“Real Science” for Students**

We want to leverage the current surge of national attention to STEM education to support the foundation’s college-readiness goals, especially for low-income minority youth.

STEM knowledge and skills are a core subset of college-readiness. All the challenges to reaching college-ready-for-all goals are that much more acutely encountered in STEM.

National STEM Strategy: Strategic Relevance

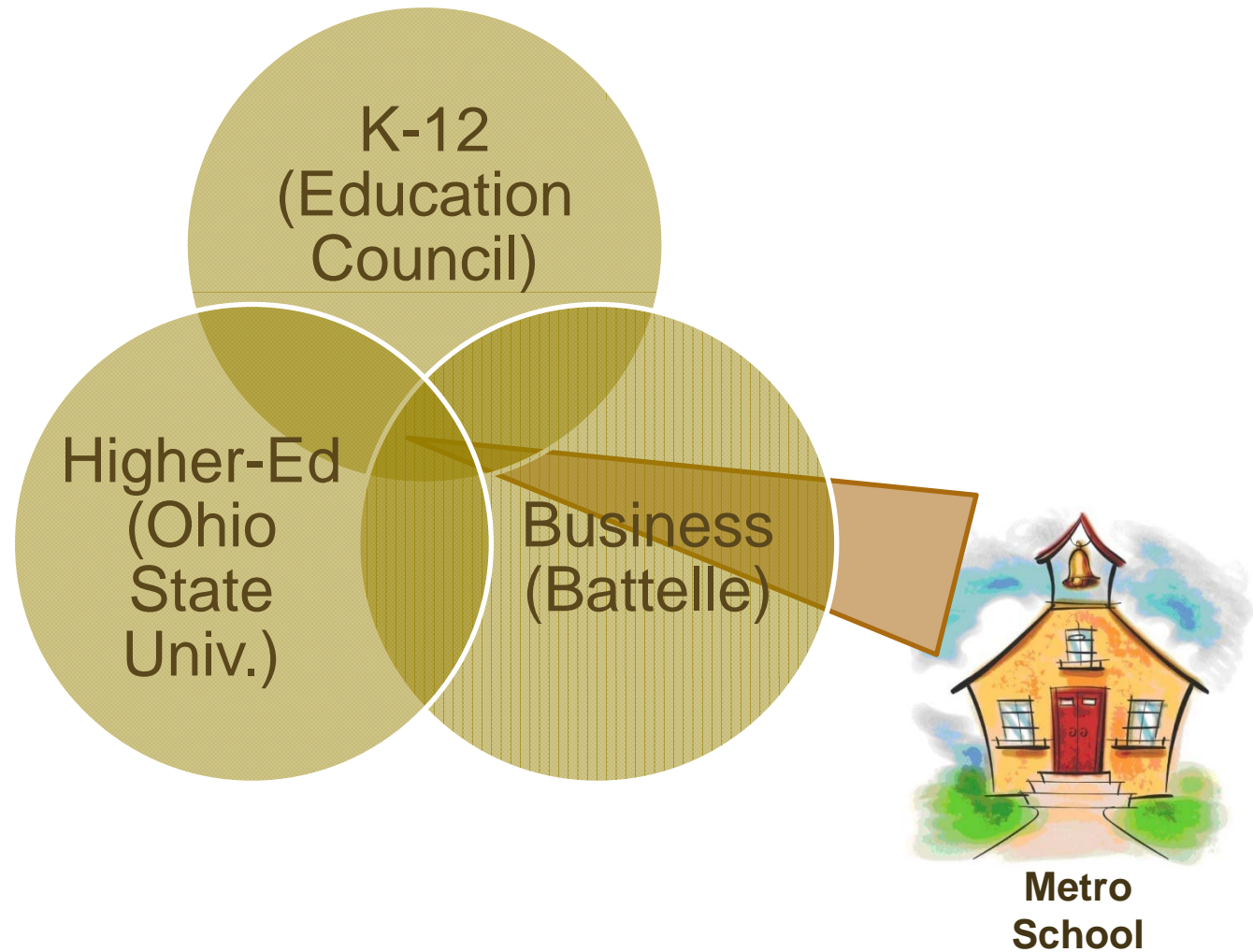
STEM is a platform for:

- **College-ready advocacy and equity focus**
- **Clearer, fewer, higher standards**
- **Developing new curriculum and instructional approaches**
- **Developing robust intra- and interstate networks**
- **Developing an infrastructure to support scale and learning**
- **New supports for students and teachers**
- **(Re)defining what a “teacher” is**
- **Source and a testing ground for innovation**

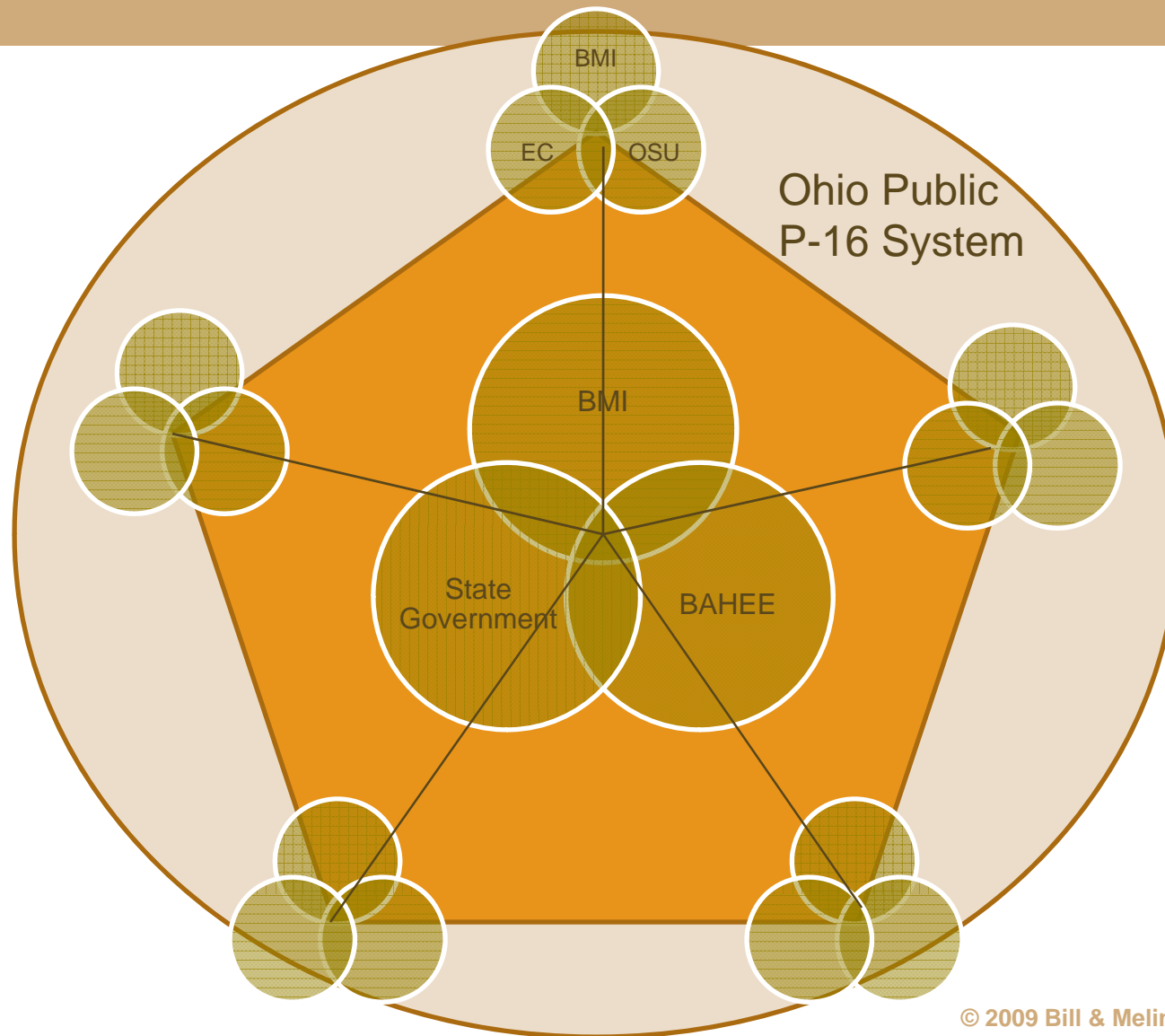
Ohio STEM Learning Network Prototype “HUB” Model

Partnership Responsible for:

- Design
- Governance
- Financial and In-Kind Resources



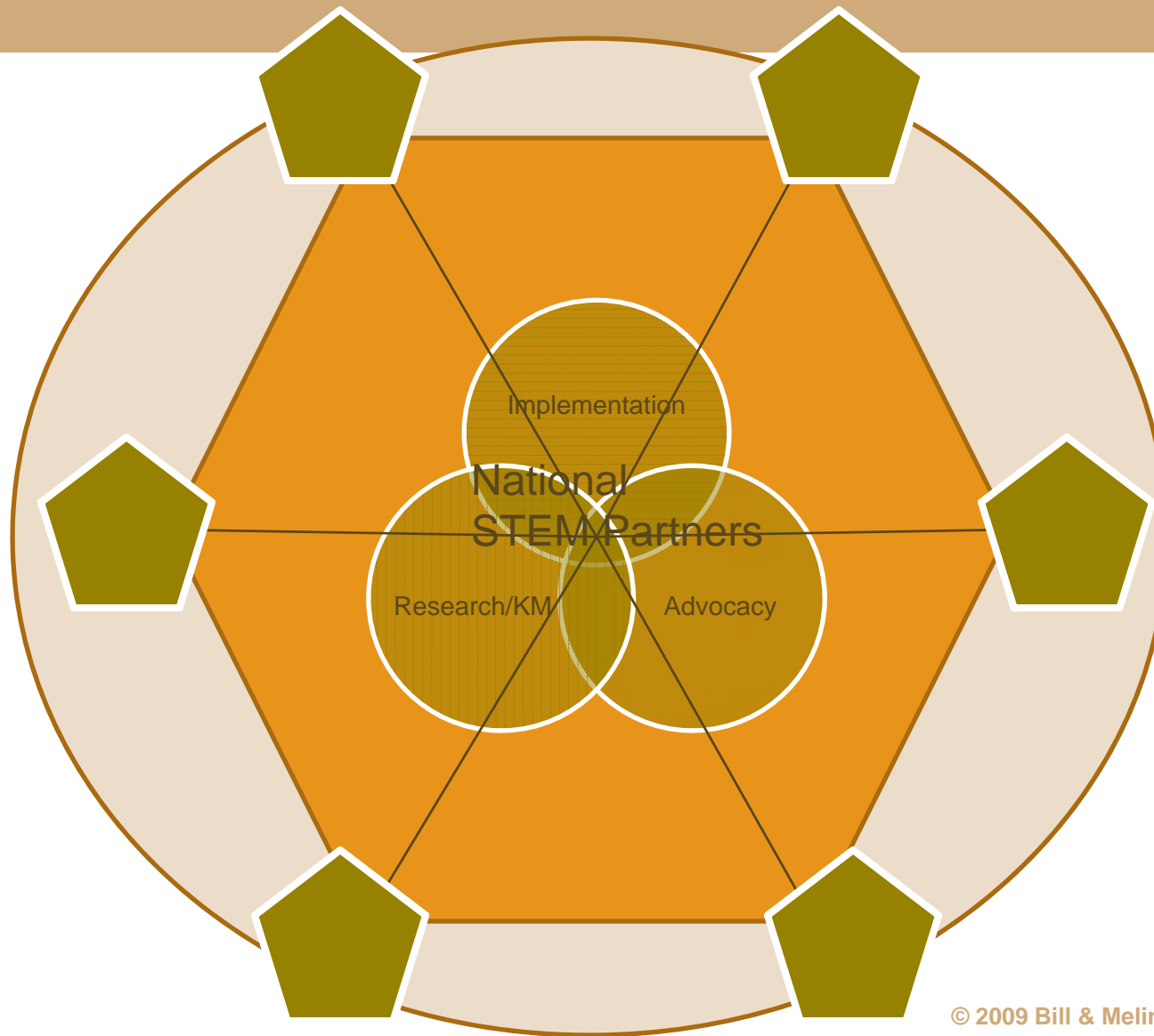
OLSN Network Structure



“Thick” Network

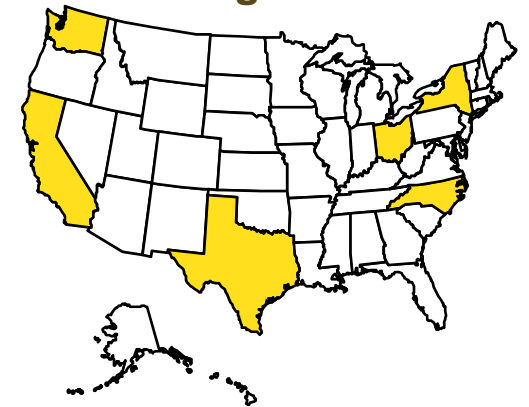
- Robust “HUB” Partnerships
- Robust Public-Private Partnerships
- Robust KM within network and between HUB and its region

Proposed National STEM Initiative



Current and Proposed States & Partners

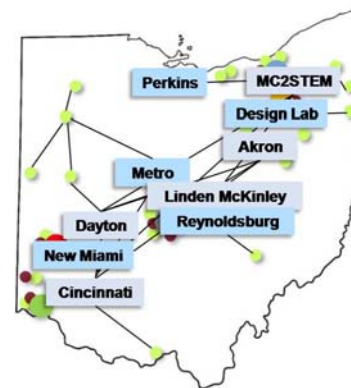
- Texas
- Ohio
- North Carolina
- New York
- California
- Washington



A View from the Ground in Ohio

- North Carolina is not Ohio.
- Applying systems and design engineering to scale innovation in STEM education
- What happened?
 - The narrative in Ohio and the natural phases

Ohio STEM Learning Network



Concept Generation

- **Assembled champions**
 - Small, committed, policy and implementers
 - Battelle, Gates Foundation, Ohio Business Roundtable, TIES, State of Ohio
- **Articulated the concept of a network**
 - What it could do
 - How it would work
 - How it would be constructed (tools, behaviors, systems)
- **Concluded with core design principles**



“Launch” Ohio STEM Learning Network

- **Launched using design principles**
- **Socialized with stakeholders in context of State of Ohio Education Policy (e.g., House Bill 119 – STEM Education circa 2007)**
- **Assisted in responding to regional partnerships aligned with HB 119**
- **Concluded with awarding of first 5 STEM platform schools**
 - **Each included the required 3-way public/private partnership**



Adapt

- **Tested design principles against reality**
 - Meet each region where they are
 - Modify technical assistance based on gaps
- **Integrated policy expertise with OSLN project managers and regional participants**
- **Embedded local capacity in regions that focus on network value-added functions**
- **Concluded as conversation shifted from *“What is the network?”* to *“Does anybody have a solution for my [need]?”***



Implement

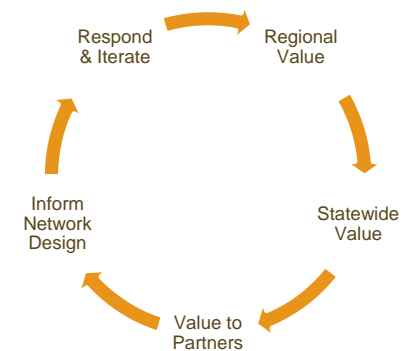
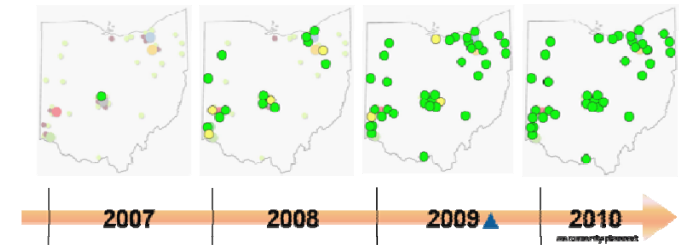
1. Statewide

- Rapidly mobilize/align common voice of network members on advocacy and STEM policy support
- Regional Access resources from across the state to accelerate local solutions

2. Calling question: “Does the existence of a network accelerate the rate of STEM innovation in the regions?”

- Modify network approach & return to #1 above

3. Respond to budget challenges, changing operating environment for OSLN partners; 2009 HB 1



Takeaways – Networking does not equal Network

- **Managing and engineering interfaces have become one of the most important tasks of the “network”**
 - **Between partners, between regions, among like-minded groups; new members**
- **Disruption of status quo triggers a strong immune response**
 - **Tie action to well-developed design principles**
- **Select agility over uniformity, especially in the start-up phase**
 - **Leverage the best of what the public and private partners have to offer**

