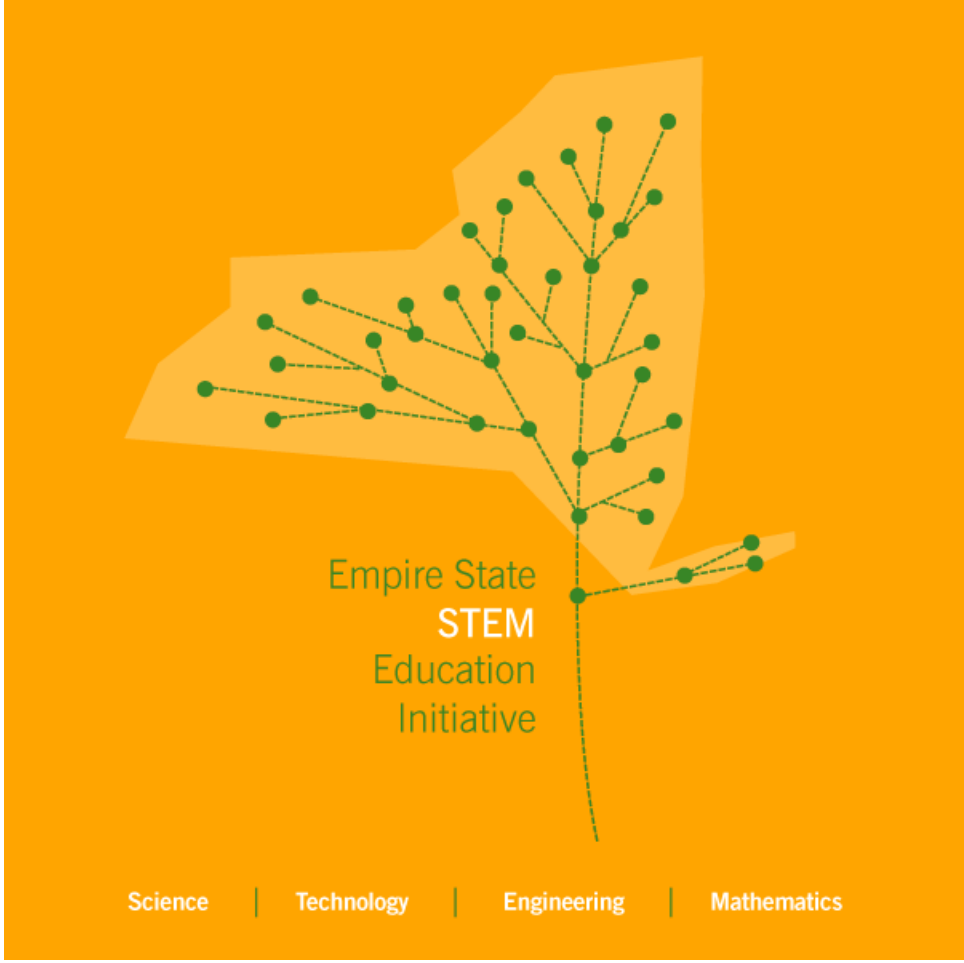
Progressive Dialogue Update

Yonkers Community

February 3, 2010
9:00 a.m. – 10:00 a.m.



Hosted by: Margaret Ashida
Project Director
Empire State STEM Education Initiative
Rensselaer Polytechnic Institute

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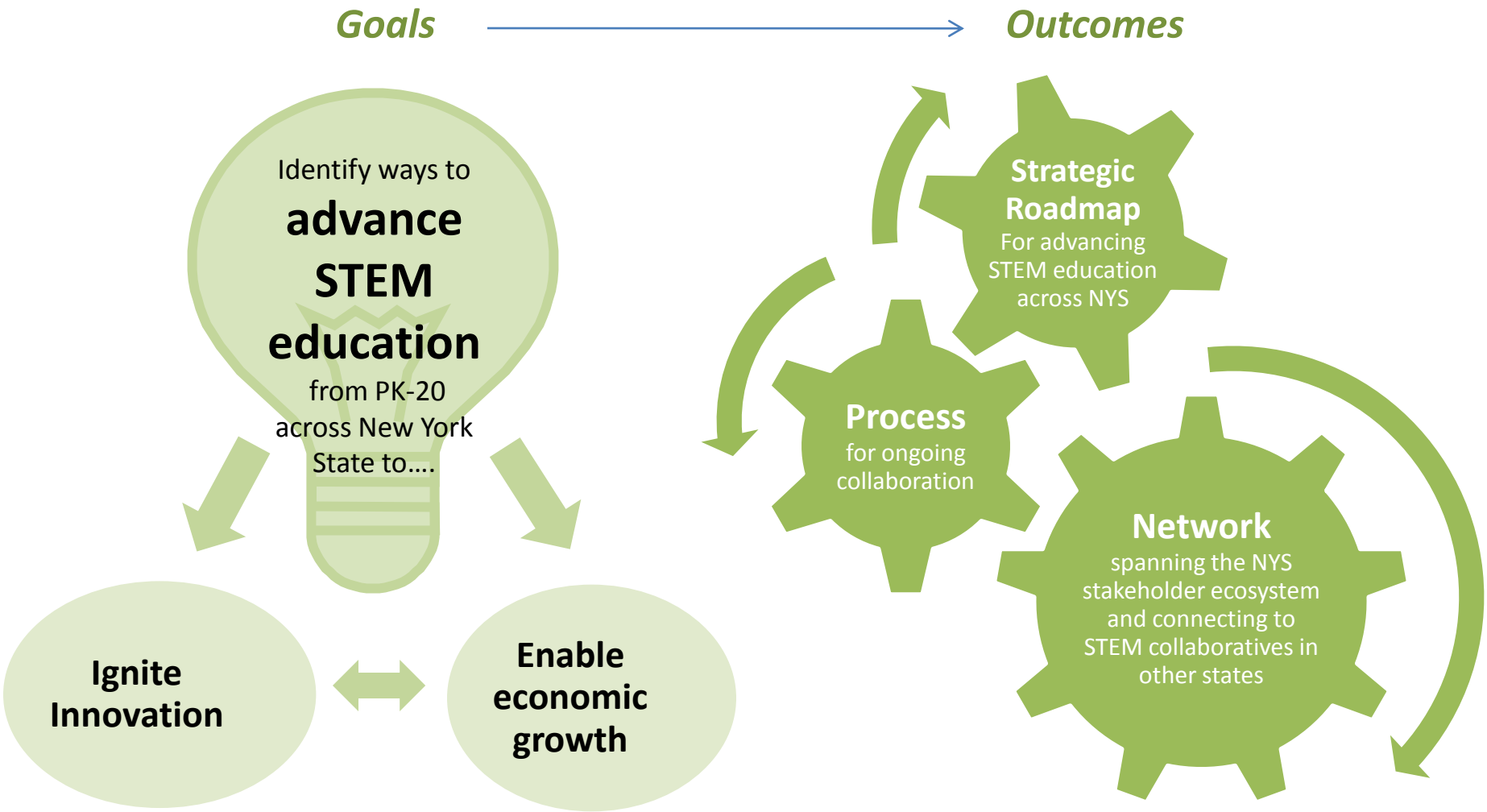
Agenda

- Background
- Findings
- Actions underway
- Next steps

Progressive Dialogue Overview

	June 09	Oct –early Dec 09	Dec 09	1Q 2010
Events	June 25-26 Inaugural Progressive Dialogue	Regional Progressive Dialogue (Long Island); Regional Progressive Dialogue (Syracuse); Regional Progressive Dialogue (Capital Region); Regional Progressive Dialogue (Yonkers); Regional Progressive Dialogue (Buffalo); Regional Progressive Dialogue (Rochester); Regional Progressive Dialogue (Southern Tier); Regional Progressive Dialogue (NYC)		Culminating Progressive Dialogue TBD
Activities	Insights, Themes, Networks *Convened over 100 stakeholder leaders to launch the dialogue at the state level*	Patterns, Options, Platforms *Convened over 400 additional stakeholders in a series of regional sessions across NYS*	Draft Strategic Roadmap *Prepare and review strategic roadmap*	
Outputs	1. Establish mutual understanding of the issues, challenges and obstacles related to current STEM education 2. Understand, evaluate and begin to flesh out a strategic roadmap to advance STEM education in New York state 3. Articulate the role(s) each constituent can play in the success of STEM education - and agree to collaborate 4. Develop specific recommendations and timelines for action	1. Develop mutual understanding of regional issues, challenges and obstacles related to current STEM education 2. Understand existing regional initiatives and partnerships for advancing STEM education 3. Provide a forum for teachers, principals, parents , higher education, business, and community leaders to engage in the design of the strategic roadmap	1. Integrate findings from progressive dialogues into a strategic roadmap for action 2. Collaborate with the network of engaged and influential stakeholders across the state on strategy and execution	

Progressive Dialogue Goals and Outcomes



Regional Dialogue Hosts

Syracuse
✓ Date: November 2, 2009
- Hosts: Syracuse University, Syracuse Public School District, Say Yes to Education, JP Morgan Chase, US Air Force Rome Lab
- Venue: The Warehouse, Syracuse University

Rochester
✓ Date: November 4, 2009
- Host: University of Rochester (U of R), Regent Cofield, Regent Norwood
- Venue: Memorial Art Gallery, U of R

Capital region
✓ Date: November 17, 2009
- Hosts: Hudson Valley Community College; Regent Bowman; Regent Dawson
- Venue: Bulmer Telecommunications Center, Hudson Valley Community College, Troy NY

Increased from 5 dialogues to 8 in response to demand

Buffalo
✓ Date: October 27, 2009
- Hosts: Regent Bennett; Hauptman-Woodward Medical Research Institute; Buffalo Niagara Medical Campus; University at Buffalo (SUNY)
- Venue: Hauptman-Woodward Institute

Yonkers / Lower Hudson Valley
✓ Date: December 2, 2009
- Hosts: Yonkers Public Schools; Westchester Community College; Regent Phillips; IBM
- Venue: Royal Regency Hotel, Yonkers NY

Corning/Southern Tier
✓ Date: November 18, 2009
- Hosts: Corning Incorporated; MST Connect (Math, Science, Technology); SUNY Business & Education Cooperative of the Southern Tier (SUNY BEST – Binghamton University)
- Venue: Corning International HQ

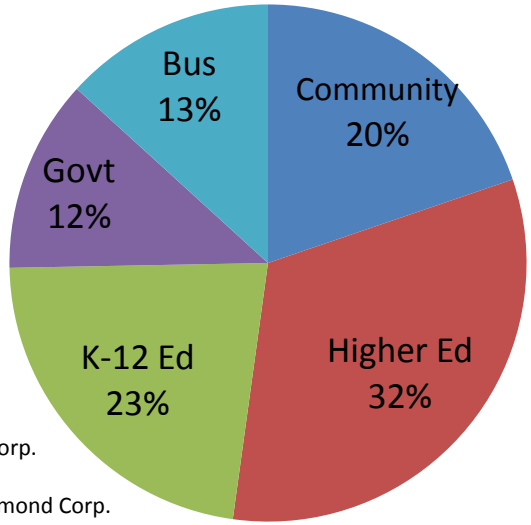
New York City
✓ Date: December 3, 2009
- Hosts: American Museum of Natural History; City University of New York (CUNY); The New York Academy of Sciences; State University of New York (SUNY)
- Venue: Shepard Hall, City College of New York, CUNY

Long Island
✓ Date: October 21, 2009
- Hosts: The Long Island Association; Long Island Works Coalition / Goodwill Greater New York & Northern New Jersey
- Venue: Offices of the Long Island Association, Melville NY

Rensselaer gratefully acknowledges the in-kind support provided by the Regional Dialogue hosts

Progressive Dialogue Participant Profile

Over 500 stakeholders



Business/Industry:

- Accenture, LLP
- Anaren, Inc.
- Assured Information Security, Inc.
- AT&T
- Battelle Memorial Institute
- Buffalo Niagara Partnership
- Business Council of New York State, Inc.
- CA, Inc.
- Cameron Manufacturing & Design
- Con Edison
- Corning Inc
- C&S Companies
- eInstruction
- ExxonMobil Corporation
- Fidelity Investments
- Gates Automotive Center
- Global Foundries, Inc.
- Global Imagination
- Hauptman Woodward Medical Research Institute
- IBM
- Infotonics
- JPMorgan Chase & Co.
- King & King Architects, LLP
- Klein Steel
- KPMG LLP
- Krieger Solutions
- Landow and Landow Architects
- Leviton
- Lockheed Martin
- Long Island Association
- Manufacturers' Assoc. of Central New York
- MedTech
- Moog, Inc.
- Motorola
- Niagara Transformer Corporation
- Opus Scientific
- Partnership for New York City
- Portnoy, Messinger, Pearl & Associates
- Raytheon
- Roswell Park Cancer Institute
- Sage Rutty
- Sensis Corp.
- SRC
- The Raymond Corp.
- The Tech Garden
- Time Warner Cable
- Welch Allyn
- Winthrop University Hospital
- World Kitchen LLC

Community participants:

- Foundations: AT&T; Bill & Melinda Gates; Corning Inc.; Ford Motor Company; Srivastava Family; SUNY; Westchester Community College; Woodrow Wilson National Fellowship
- American Museum of Natural History; Buffalo & Erie Public Library; Buffalo Museum of Science; Long Island Science Center; Milton J. Rubenstein Museum of Science & Technology; NYSCI New York Hall of Science; Rensselaer Children's Museum of Science & Technology; Rochester Museum & Science Center; Science & Discovery Center; The New York Academy of Sciences; University of Albany Art Museum; Wings of Eagles Discovery Center
- Public TV: Thirteen/WNET; WCNY, WMHT; WNED; WXXI
- Career Development Council, Inc.; Clean Tech Rocks; Edaccess; Education First; Goodwill Industries of Greater NY & NNJ, Inc.; H2M; Harlem Children's Zone; Hillside Work-Scholarship Connection; Invent Now® Kids; Long Island Works Coalition; Math for America; NACME; On Point for Jobs; Project Lead the Way; Say Yes to Education; Sierra Club; the NYS Society of Professional Engineers, Inc.; U.S. Satellite; United Way of Long Island; Workforce Consortium; World Science Festival
- Parents, PTA members, students
- Ohio STEM Learning Network; Public Strategies LLC; PAST Foundation; TIES (Teaching Institute for Excellence in STEM)

Government:

- The Governor of New York State
- NYS Deputy Secretary for Education
- NYS Senators, NYS Assemblypersons, U.S. Senator's office, Mayors' offices
- NYS Education Commissioner, NYS Regents, and NY State Education Dept. staff
- NYC Chancellor and Dept. of Education
- NYS Dept. of Labor; Industry Development Agencies; Workforce Investment Boards
- NYSTAR; National Labs
- NASA; National Science Foundation; FAA

K-12:

- BOCES (11 districts)
- Charter Schools (5)
- Big 5 Districts + 22 other districts
- Faith-based schools (19)
- NYSUT
- Single Gender School (Emma Willard)
- NYS Teachers' Associations (Math; Science; Technology Education)
- Teacher Centers (5)
- School Boards/Associations

Higher Education:

- City University of New York, City College of New York
- State University of New York: SUNY system; Community Colleges (Corning, Erie, Hudson Valley, Mohawk Valley, Monroe, Onondaga, Schenectady, Suffolk County, Westchester); Universities (Albany, Binghamton, Buffalo, Stony Brook); Colleges (Buffalo State, Empire State, ESF, Farmingdale, Fredonia, Geneseo, Morrisville, Old Westbury, Oswego)
- Private Colleges (Bard, Dowling, Iona, Ithaca, LeMoyne, Nazareth, Roberts Wesleyan, St. John Fisher, the Sage Colleges, Union)
- Private Universities (Adelphi, Colgate, Columbia, Cornell, Fordham, New York Institute of Technology, NYU, Niagara, Rensselaer Polytechnic Institute, Rockefeller, Rochester, Syracuse)

Preliminary Results – Barriers and Challenges

Constraints

1. State and federal regulatory boundaries are rigid and constrain local scale educational reform.
2. The STEM education concept is not commonly understood, and the values and benefits associated with STEM education are not well known in education, business and industry nor by the general public.
3. The current system of incentives does not motivate key outcomes (ex., education funding tied to enrollment, not to student performance or teaching quality).
4. There are shortages of STEM-qualified teachers and a lack of professional development in STEM (both pre-service and in-service), needed at the elementary, middle and high school levels. There is no STEM-specific certification at the state level.
5. Current assessments do not measure mastery in project- and problem-based learning, and assessment innovation is limited by the Adequate Yearly Progress indicator.
6. Time segments used in education – school year, school day, and class period – constrain classroom innovations that would be conducive to STEM learning. For example, the class period constrains project-based learning opportunities; seat-time requirements do the same.
7. Use of technology in the classroom is 15-25 years out of sync with the real world, bound by traditional reliance on textbooks and other outdated classroom resources, and by lack of capital investment.
8. The K-20 system is not structured to support STEM; university faculty and administrators are not prepared for or willing to undertake joint program development with K-12 educators.
9. Union contracts have established rules and practices that must be addressed to achieve certain STEM reforms.

Challenges to Transition

- Engage stakeholders across a broad spectrum of interests, expertise and capacities to contribute to the transition to STEM
- Education must be cradle to grave to go beyond K-20
- Effective education must break with current practices that deliver siloed instruction in order to link with real world interests and needs that are meaningful to students who must achieve multiple literacies
- Education must become more entrepreneurial if it is to achieve long-term sustainability

Preliminary Results – By Locus of Control

Regents/SED Actions

- ❑ Address STEM teacher needs:
  - STEM teacher rewards/award system/enhance pay
  - Allow industry/business adjunct teachers
  - Require elementary school teacher STEM certification, with increased emphasis on the early grades
  - Expand opportunities for informal STEM teacher learning (museums, libraries, etc)
  - Change certification requirements to require STEM knowledge
  - Provide a range of STEM PD opportunities: externships, residencies, peer supports
  - Scholarships/STEM "GI Bill" to expand the pool of STEM teachers
  - Create summer STEM teacher internships
  - Change teacher certification rules to allow alternate paths to teaching
  - "Charter schools" for STEM teacher education

Through partnerships with business and industry

- ❑ Engage students in STEM:
  - Create a statewide Regents STEM competition/award to promote STEM/award excellence
  - Allow alternative student education models:
    - Internships
    - Apprenticeships
    - Project-based learning
    - Competency-based school credits
  - Reassess approaches to STEM education through the lens of relevance/interest to students

Through partnerships with business and industry

Preliminary Results – By Locus of Control

Regents/SED Actions (continued)

- ❑ Integrate STEM into the curriculum and assessments:
  - Enhance STEM standards and align with higher education in seamless, vertically integrated model
  - Enhance opportunities for project-based learning/experiential learning at all grades
  - Eliminate seat time requirement linked to credit to facilitate alternative learning models (see above)
  - Revamp assessments to be aligned with the multidisciplinary nature of STEM mastery and alternative methods/modes of teaching

- ❑ Integrate/expand the use of technology throughout the learning environment:
  - Expand STEM content access via a curriculum clearinghouse
  - Allow open source content
  - Leverage "virtual worlds", distance learning, and mobile labs

Discussion: Equity in access to technology is still a real issue in some schools / districts

Through partnerships with business and industry

- ❑ Pursue new models for action:
  - Create regional STEM schools to incubate ideas and support regional innovations and regional framework for teacher professional development
  - Look at career academies/modern CTE models as a platform for change

- ❑ Engage parents in STEM education

And further leverage existing effective models and prototypes

Preliminary Results – By Locus of Control

State Government Administrative Structures:

- ❑ Integrate education and economic development activities to eliminate silos/acknowledge links between all disciplines

Community Initiatives:

- ❑ Develop partnerships involving business, schools, higher education to ensure education outcomes resonate with local economy and community needs
- ❑ Access available resources to reshape schools, address teaching deficiencies
- ❑ Create alternative/creative STEM learning experiences for students
- ❑ Engage state policymakers/regulators to remove regulatory/legal barriers to change

Challenge: How to accomplish this with shrinking resources

Preliminary Results – STEM network for New York State

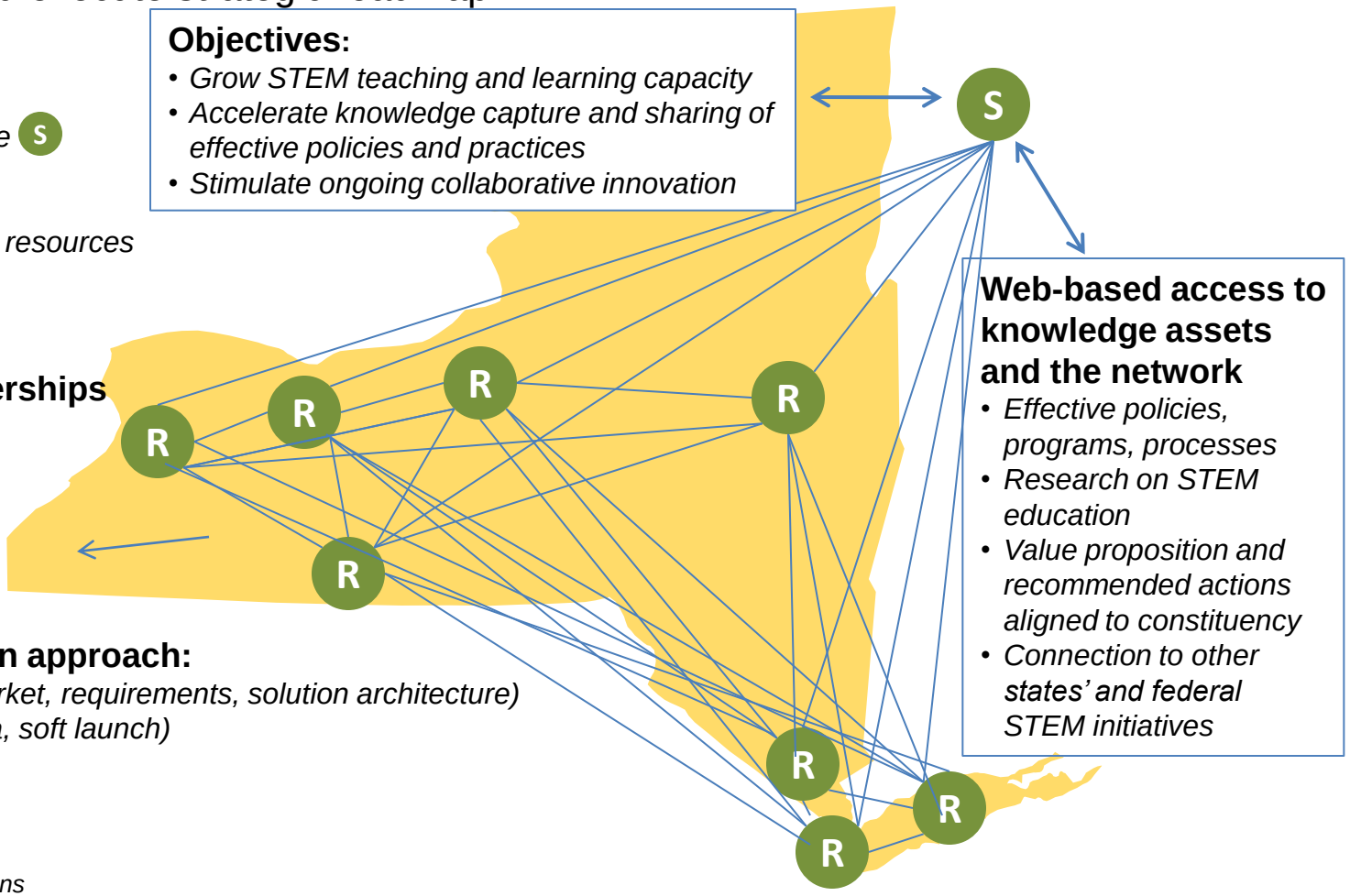
State-wide system of multi-dimensional, interdisciplinary public/private partnerships to manage and execute strategic roadmap

Objectives:
- *Grow STEM teaching and learning capacity*
- *Accelerate knowledge capture and sharing of effective policies and practices*
- *Stimulate ongoing collaborative innovation*

Multi-dimensional:
- *State-wide project office* (S)
- *Regional hubs* (R)
- *Local innovation teams*
- *Connections to national resources*

Interdisciplinary, public/private partnerships
- *Business*
- *Education (PK-20+)*
- *Parents*
- *NGOs**
- *Government*

Agile systems design approach:
- *Concept (define the market, requirements, solution architecture)*
- *Prototype (develop beta, soft launch)*
- *Adapt (refine)*
- *Implementation (scale)*



Web-based access to knowledge assets and the network
- *Effective policies, programs, processes*
- *Research on STEM education*
- *Value proposition and recommended actions aligned to constituency*
- *Connection to other states' and federal STEM initiatives*

**Non-government organizations*

Momentum is increasing

www.osln.org

www.ristem.org

www.partnership4learning.org/stem

www.pasteminitiative.org

www.coloradostemeducation.com

Beginning to develop state networks

Race to the Top
American Graduation Initiative
"Educate to Innovate" Campaign
www.ed.gov/programs/**racetothetop**/
www.whitehouse.gov/issues/education/educate-innovate

www.tstem.org

www.ncstem.org

Actions underway - national

1. Race to the Top
   - STEM Resource Conference held December 11 in Baltimore
   - New York was one of 40 states that submitted Phase 1 applications yesterday, January 19
   - Winners for Phase 1 to be announced in April with feedback to those who do not win
   - Phase 2 will provide another opportunity to apply (June – September)

   http://www.ed.gov/programs/racetothetop/index.html

2. Educate to Innovate
   - White House announced public-private partnerships on November 23

     http://www.whitehouse.gov/issues/education/educate-innovate
   - One Million Minds Campaign

     http://connectamillionminds.com/
   - National Lab Day

     http://www.nationallabday.org/

3. Proposed "Engineering Education for Innovation Act" ("E2 for Innovation Act")

   http://www.sconyc-ny.org/WebPages/Fulle2.html

4. Investing in Innovation Fund ("i3 grants")

   http://www.ed.gov/programs/innovation/factsheet.html

Actions underway – New York State

1. Race to the Top application
   http://usny.nysed.gov/rttt/

2. Regents' STEM-related policy update
   http://www.regents.nysed.gov/meetings/2010Meetings/January2010/0110monthmat.html
   (Refer to "Proposed Regents 2010 State and Federal legislative Priorities" item)

3. Governor's Task Force on Industry-Higher Education Partnerships final report
   http://www.ny.gov/governor/reports/pdf/IHETF_Report_FINAL.pdf

4. Governor's budget / STEM
   www.budget.state.ny.us

Community Initiative Examples

NYS professional associations' STEM education collaborative:

- NYSTEA (NYS Technology Education Association)
- AMTNYS (Association of Math Teachers of NYS)
- STANYS (Science Teachers Association of NYS)
- ASEE (American Society of Engineering Education)
- NYSSPE (NYS Society of Professional Engineers, Inc.)

STEM Institute planned for August 2010 in Oswego

Rochester: Collaborations among businesses, higher education and school districts to support project-based learning in the community, expeditionary learning, mentors, apprenticeships, and more

Say Yes Syracuse: Collaboration among the Syracuse City School District, Syracuse University, and the Say Yes to Education Foundation to increase high school and college graduation rates

SUNY STEM Conference: Connection of STEM pipeline program leaders across the SUNY system

Tech Valley High School: Collaboration among K-12 public schools, higher education, business, organized labor and government in the Capital region

The Buffalo Niagara Medical Campus: public/private partnership to promote knowledge-based transformation of Western New York – clinical care, research, education, entrepreneurship - in the biomedical field

MST Connect (Math, Science, Technology): Network of business, education, and community leaders hosted by Corning Inc. which is designing a STEM strategy for the Greater Southern Tier region

Summer Enrichment Program: STEM partnership between Yonkers Public Schools and universities to engage middle school students in STEM learning experiences on college campuses

Career Academies on Long Island: Partnership between the Ford Motor Company Fund, Long Island Works Coalition, and participating school districts to link economic and workforce development with education

Columbia Summer Research Program for Science Teachers: University/K-12 collaboration to provide hands-on scientific research experience to teachers, proven to improve outcomes for participating teachers' students

NYSCI Science Career Ladder: New York Hall of Science education and employment program to attract and develop future science teachers in collaboration with CCNY and CUNY Graduate Center

Share additional examples!

Other examples of actions to advance STEM education discussed on update calls so far:

1. Niagara Falls STEM initiative K-12, 2-yr effort – curriculum, integrate "STEM learning, professional development ... (contact to be provided)
2. PBS programming, partnership w/NASA on teacher course (June 2010), and 10 free online teach PD modules STEM-related (more information to be provided)
3. NSF letter for PIs with programs in STEM / energy, incenting w/supplemental funding for SULI, faculty/student teams, CCI, pre-service teacher internships. Expand opportunities in R&D for teachers.
4. New initiative among schools, higher ed (Syracuse University) and business (JP Morgan Chase, IBM) to hold a STEM summer camp focusing on girls
5. Collaboration between business and BOCES to develop collateral to help educate parents and others on the STEM value proposition (Capital region)
6. Regional STEM Expo at Ballston Spa on March 26 to bring exposure to STEM concepts and business interests; registration opens Monday January 25
   www.bscsd.org
7. Collaboration among the 3 community colleges in the Capital region, SUNY Cobleskill, BOCES to build career pipelines and awareness on nanotechnology, biotechnology, 21st century skills, and others

Share additional examples!

Other examples of actions to advance STEM education discussed on update calls so far:

8. Tech Valley High is developing its capacity to enable shadowing, provide professional development in project-based learning, and other means to serve as a resource to the region and state, in conjunction with both BOCES in the region

9. Recommendation to further leverage TIES (Teaching Institute for Excellence in STEM) work on school-wide adoption of STEM as a way to develop habits of mind
   www.tiesteach.org

10. Collaborative effort has been launched to develop a Long Island STEM strategy. Cheryl Davidson (Long Island Works Coalition) and Mark Grossman (NYS Department of Labor) have kicked off planning for an environmental scan as a foundation for this work. Some focus areas they used as examples include:
    - Professional development in STEM for guidance counselors
    - Advocacy with legislature on funding
    - Understanding root causes for student success in Intel competitions so as to leverage elsewhere
    - Career academies and use of industry experts

11. SUNY Farmingdale is partnering with Amityville with a 21st Century grant to develop a project-based learning program, and with PS247 in Brooklyn where have just delivered lessons incorporating science at the kindergarten level

12. FAA is partnering with NASA on Long Island and in New York City to promote Smart Skies
    www.smartskies.nasa.gov

Share additional examples!

Other examples of actions to advance STEM education discussed on update calls so far:

13. A Teachers' Center Board member made the team aware of grants from the EPA through a "Green Funds Initiative" that could potentially be leveraged for STEM learning

14. FYI – USA Science and Engineering Festival is being planned for October, on the National Mall

    www.usasciencefestival.org

15. Rochester Area Colleges Center for Excellence in Math and Science collaborations and resources including Rochester Area Excellence in STEM Teaching Award; STEM Teaching Institutes; mentoring programs

    www.raccems.org

16. St. Lawrence County Math & STEM partnership among Clarkson University, 18 school districts, BOCES; planning to expand into Jefferson County

    www.clarkson.edu/highschool/math

17. Nazareth College and Rochester Institute of Technology (RIT) articulation agreement to enable RIT seniors to begin graduate work at Nazareth College in their senior year in obtaining teacher certification in STEM fields.

    http://www.rit.edu/news/?r=46781

18. Rochester Museum and Science Center and RIT have received a grant from NASA to enable work to engage families of kids in 5^{th}-7^{th} grades in 5 school districts

    http://www.rit.edu/news/?v=47283

Share additional examples!

Other examples of actions to advance STEM education discussed on update calls so far:

19. ?

20. ?

Design Team Concept - Draft

- Concept: Create 3-5 cross-functional design teams to move forward on top STEM-centric recommendations from the Progressive Dialogue
- Approach: Apply agile systems design approach with decision checkpoints at each phase:
  - Concept phase (define the market, requirements, and solution architecture)
  - Prototype phase (develop beta, soft launch)
  - Adapt phase (refine)
  - Implementation phase (scale)
- Potential teams:
  - Empire State STEM education community Web 3.0 (statewide)
  - STEM learning standards and assessments (statewide)
  - STEM community collaboratives (local or regional, interconnected)

Discussion: broad communication about what already exists or is underway is vitally important, as is communication within and among design teams that might be formed.

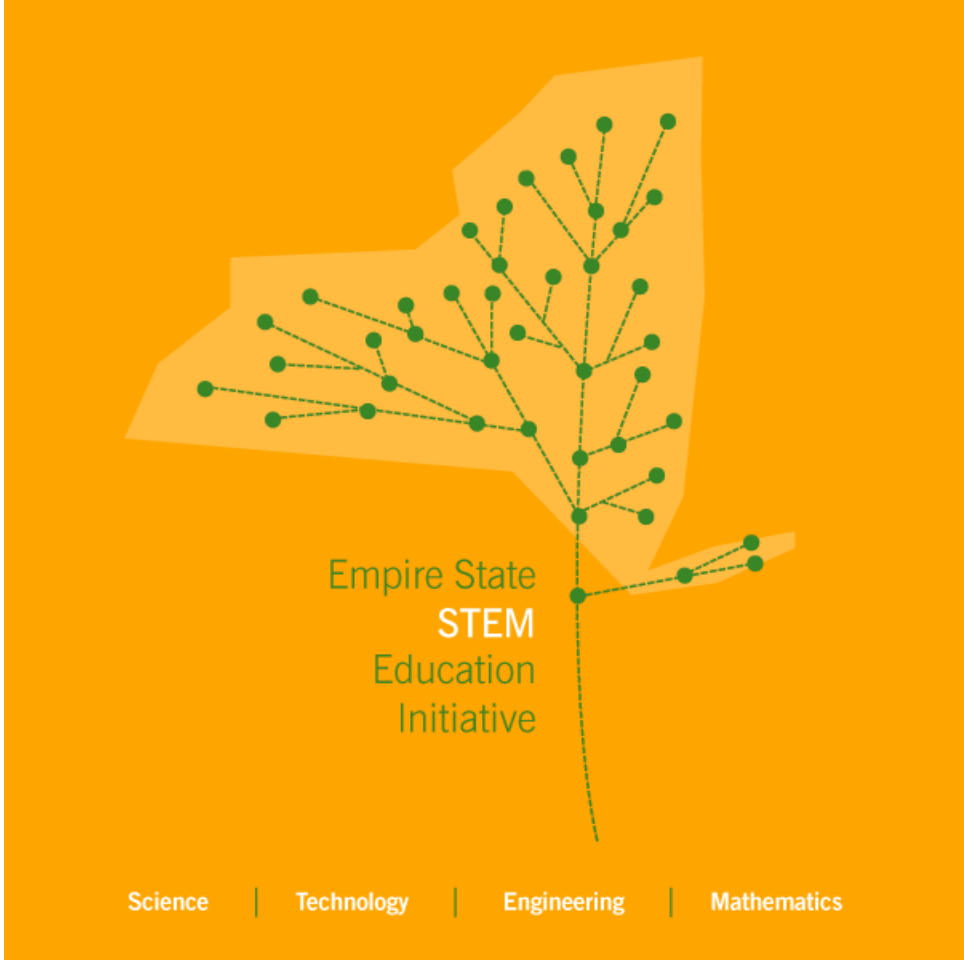
Discussion: Further engage people in the regions in synthesis / detailing the strategic roadmap

Next Steps

- Complete the draft roadmap
- Secure partners in moving from dialogue to action
- Convene a culminating dialogue to launch roadmap execution

Who will be the future

- **inventors and innovators?**
- **educators?**
- **citizens prepared for work and life?**



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