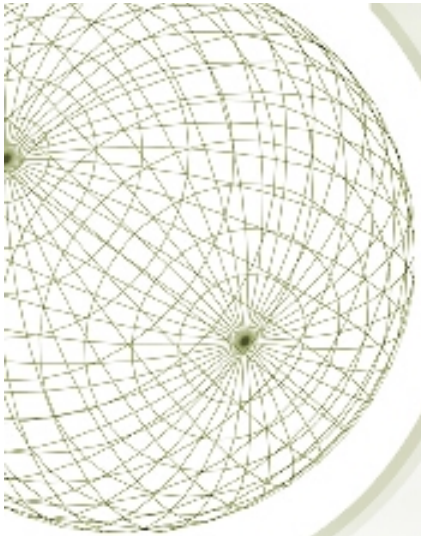


The State of the State STEM Plan

A Report to MassCUE/MASS

Isa Kaftal Zimmerman

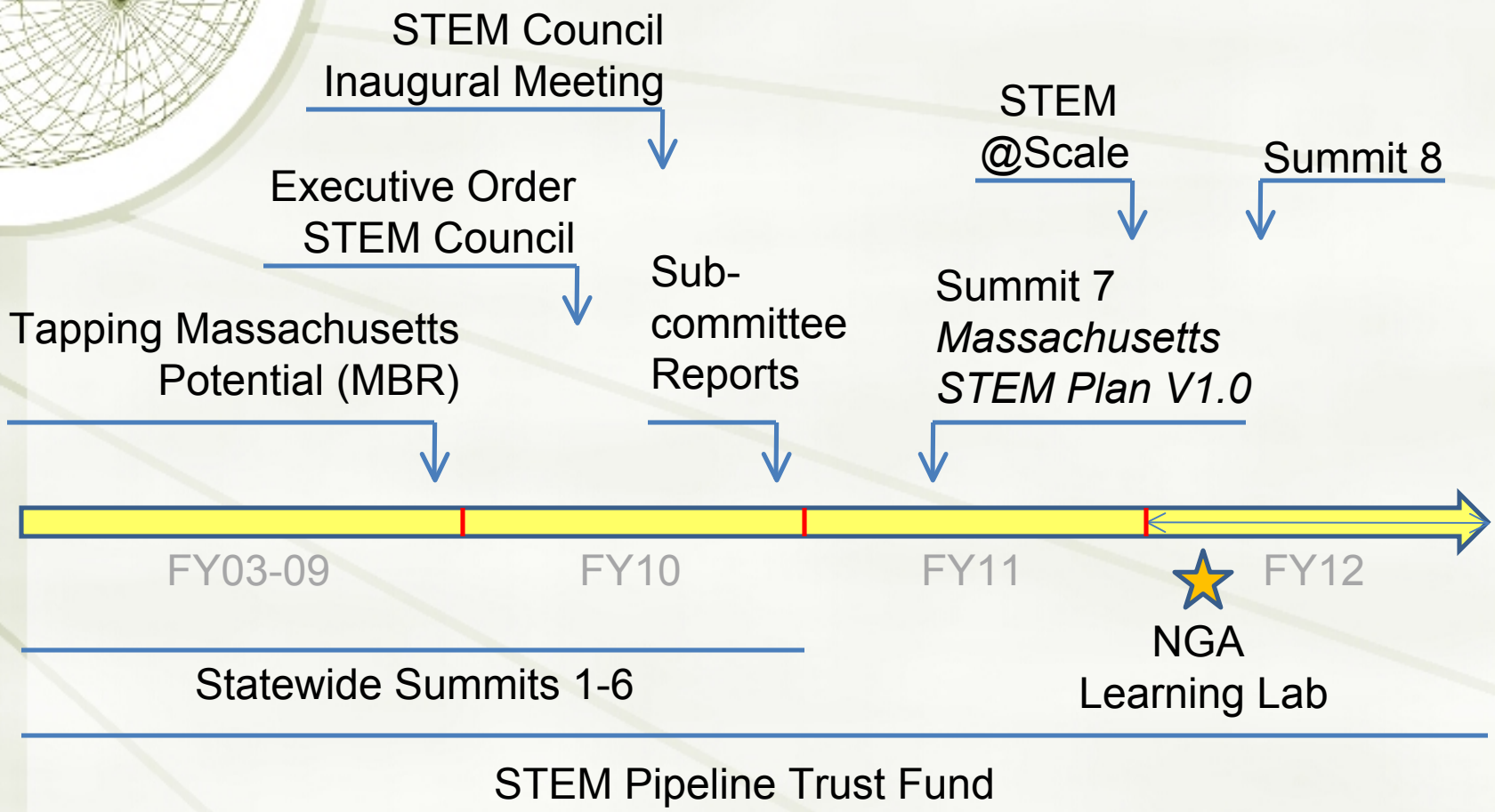
October 2011

A Foundation for the Future: Massachusetts' Plan for Excellence in STEM Education

Building the pipeline of STEM professionals to fuel Massachusetts 21st century innovation economy

Patrick-Murray Administration

Timeline



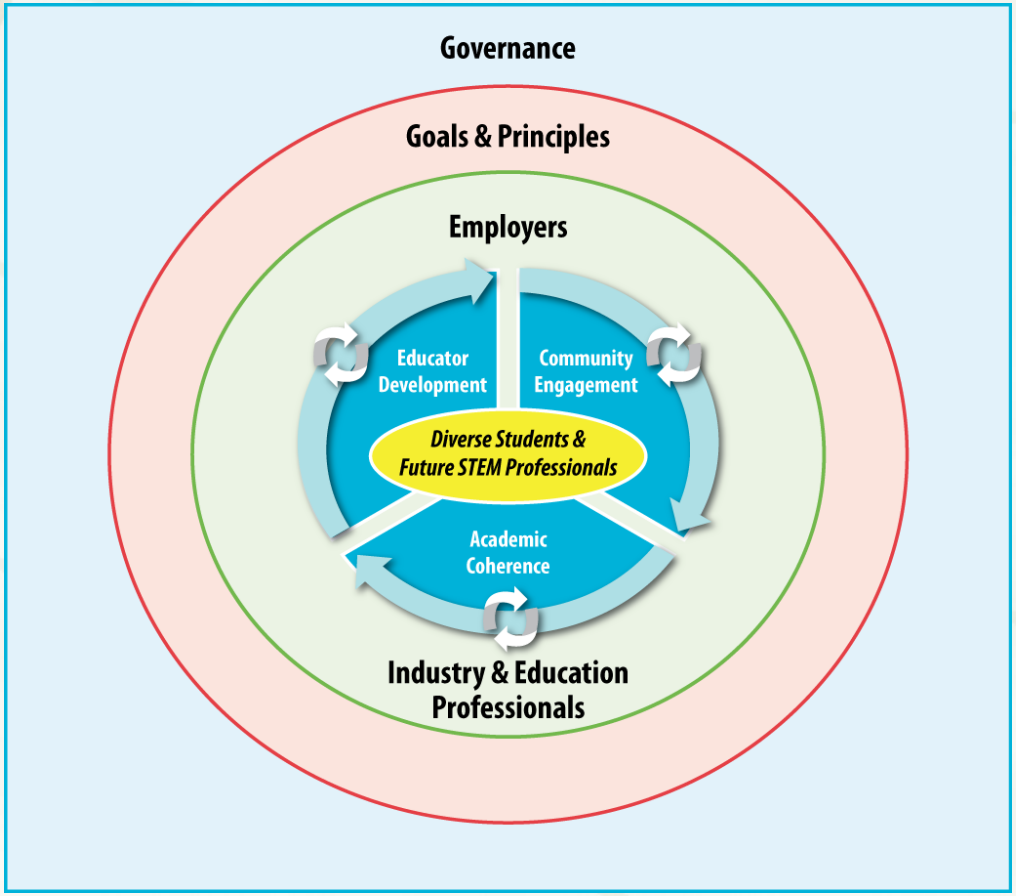
STEM Summit VIII.1
Advancing the STEM Agenda Locally & Nationally

- Attendance of both Governor/Lt. Gov
- $500K for STEM from supp budget
- Boston area STEM Region (7)
- Support from business (Raytheon, Change the Equation)

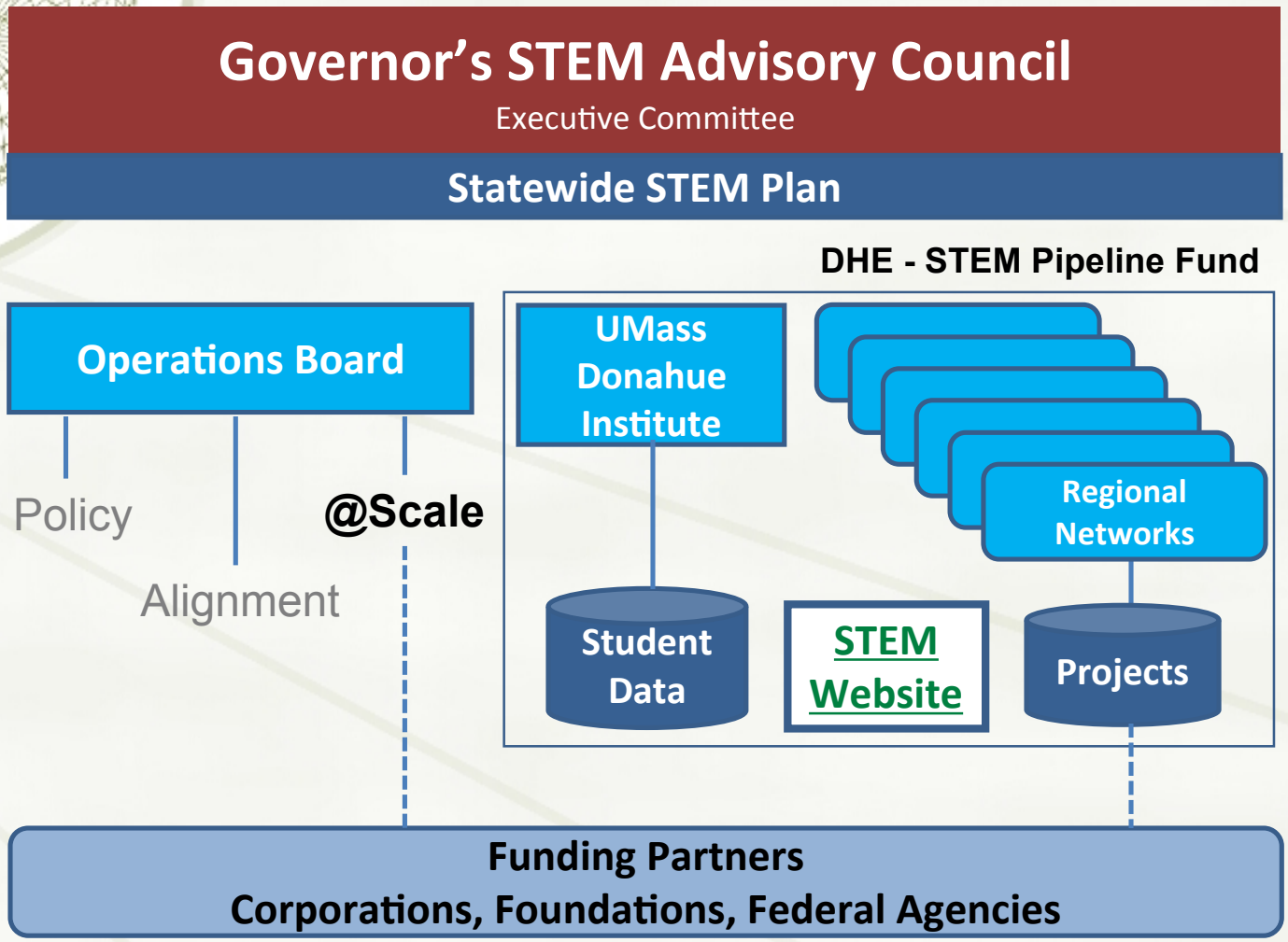
STEM Summit VIII.2
Strands

- **Business & Industry**
- **National Groups**
- **NSF Projects**
- **Data & Research***
- **Early Education***
- **K-12 Education**
- **Higher Education**
- **Career Pathways**

STEM Plan
Theory of Action



Governance Model



http://www.mass.edu/currentinit/currentinitPipeline.asp

http://www.mass.edu/forinstitutions/prek16/pipeline.asp

http://www.mass.gov/ **(search for STEM Council)**

Goals

- Student Interest
- Student Achievement
- Student Readiness
  - STEM post-secondary majors
- Graduation Rates
  - STEM post-secondary majors
- Educator Effectiveness

Student Interest and Readiness

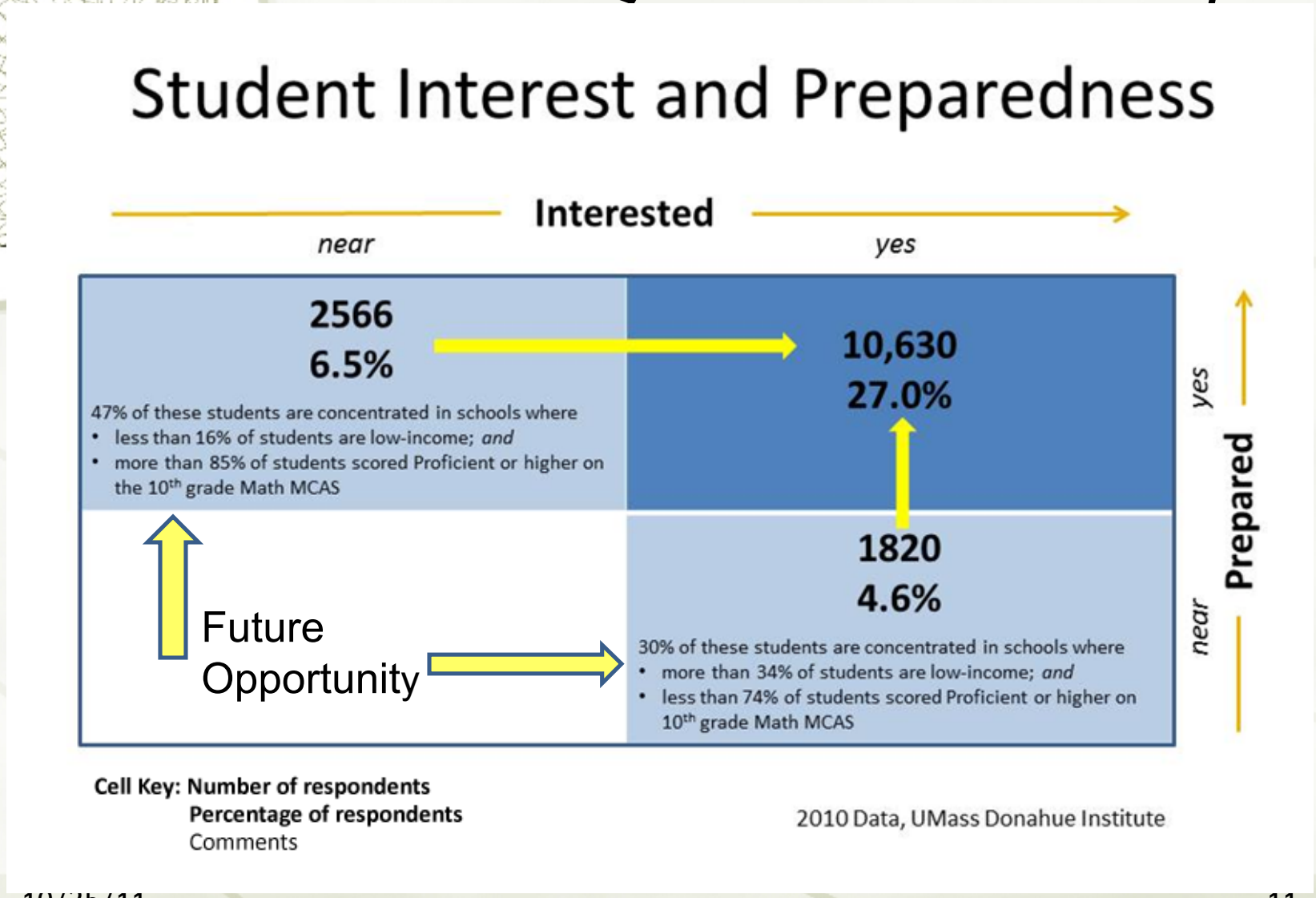
STEM post-secondary interest, MassCORE readiness guidelines

Interested

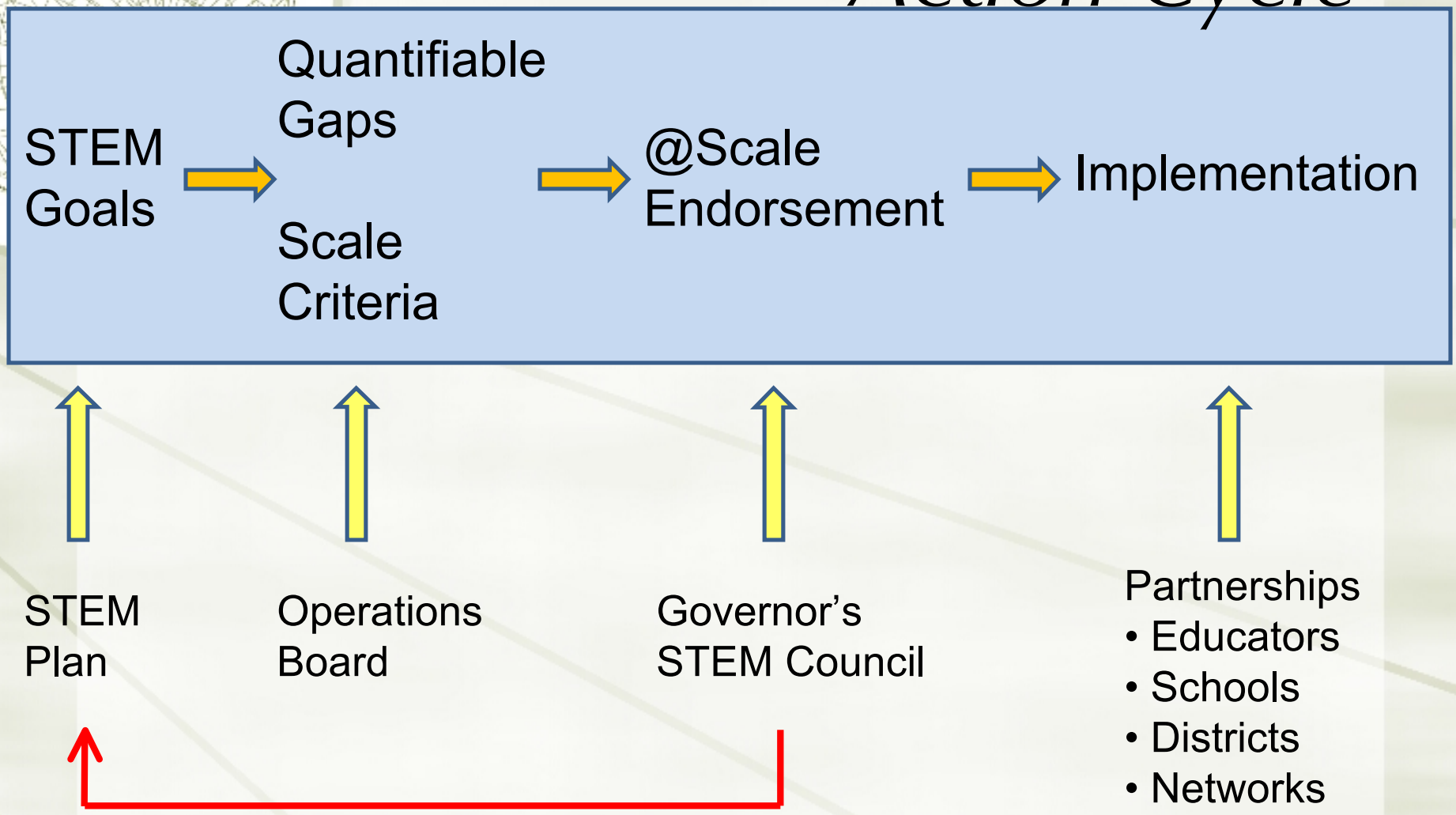
Major is a STEM Field					
No Choice	Other Choice	2nd Choice	1st Choice		
11,400	100	1,700	8,700	3 Years of Science 4 Years of Math	MassCORE
3100	200	400	1,700	Need 1 more year of Coursework	
100	--	--	100	Need 2 more years of Coursework	

Ready

Quantifiable Gaps



Action Cycle



MassCore.1

The MA High School Program of Studies:

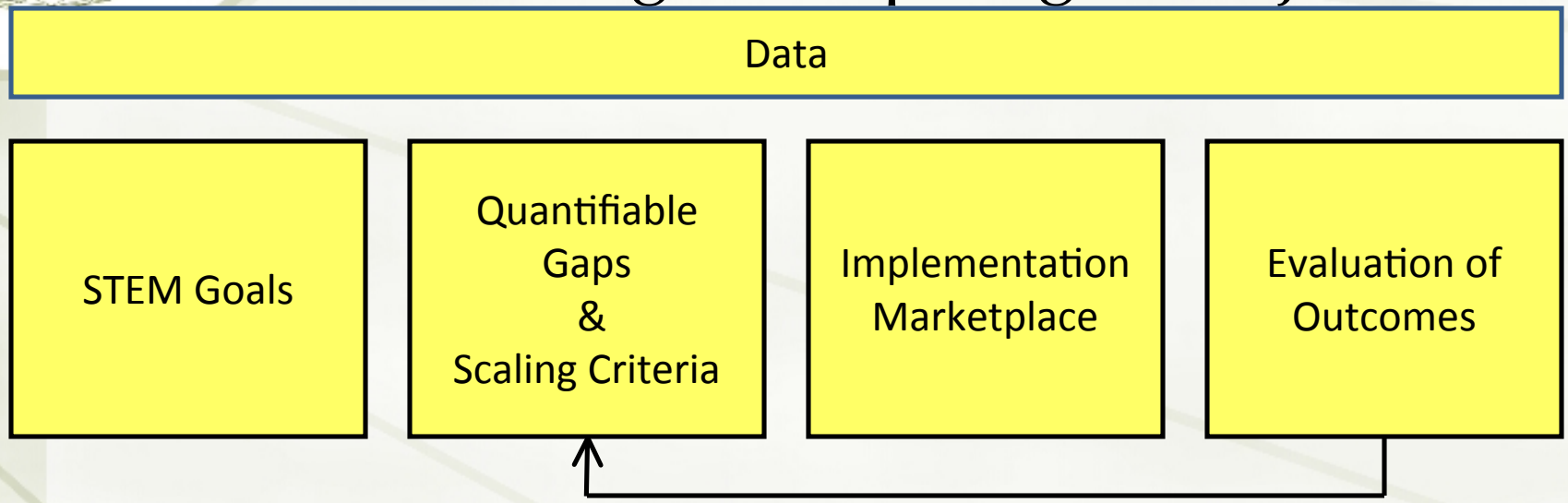
- help MA high school graduates arrive at collegeor the workplace well prepared & reduce the number of students taking remedial courses in college.
- recommends completion before graduating from HS:

MassCore.2

- 4 years of English
- 4 years of Math
- 3 years of a lab-based Science (CS)
- 3 years of history, 2 years of the same foreign language
- 1 year of an arts program
- 5 + "core" courses, e.g. business education, health, &/or technology
- Also AP classes, dual enrollment, senior project, online courses for HS or college credit & service or work-based learning.

@ Scale Initiative

- 1K Points of Light to Spotlight Projects



@Scale Endorsement Process

- Operations Board Selection
  - Address quantifiable targets of opportunity
  - Incorporate scale-up criteria in design
  - Demonstrated prior success
  - Significant student impact, near term
- STEM Council Endorsement Approval

What Happened Next

- Six projects selected
- Provide feedback to all "deferred" projects
- Reflect on and review @Scale process
  - What worked? What didn't work?
  - Improve & Refine

@Scale Projects

- ***Advanced Robotics***
  Quinsigamond CC

- ***Project Lead the Way***
  WPI

- ***Science Transfer Initiative***

- ***BioTeach***
  Mass Bio Ed Foundation

- ***DIGITS***
  DIGITS Project

- ***MMSI***
  Mass Insight Education

- **BioTeach** www.massbioed.org

- **Science Transfer Initiative** (Massasoit Community College) www.massasoit.mass.edu

- **Mass Math + Science Initiative** (MassInsight) www.massinsight.org/mmsi

- **The DIGITS Project** digits.us.com

- **Advanced Robotics Intensive** (Quinsigamond Community College) www.qcc.edu/pages/Home.html

- **Project Lead The Way** www.pltw.org

Educator Effectiveness

- ✓ Preparation
- ✓ Licensure
- ✓ Recruitment & Retention
- ✓ Equitable Distribution
- ✓ Educator Evaluation
- ✓ Professional Development
- ✓ *(Missing:sufficient resources)*

Massachusetts' strategy

- Ensure students are prepared for success after high school (**college & career readiness**)
- Attract, develop, & retain an effective, academically capable, diverse, & culturally proficient **educator workforce**
- Provide **curricular & instructional resources** to support student achievement (standards based)
- Concentrate great instruction & supports in our **lowest performing schools** & districts

Effective teachers & leaders matter

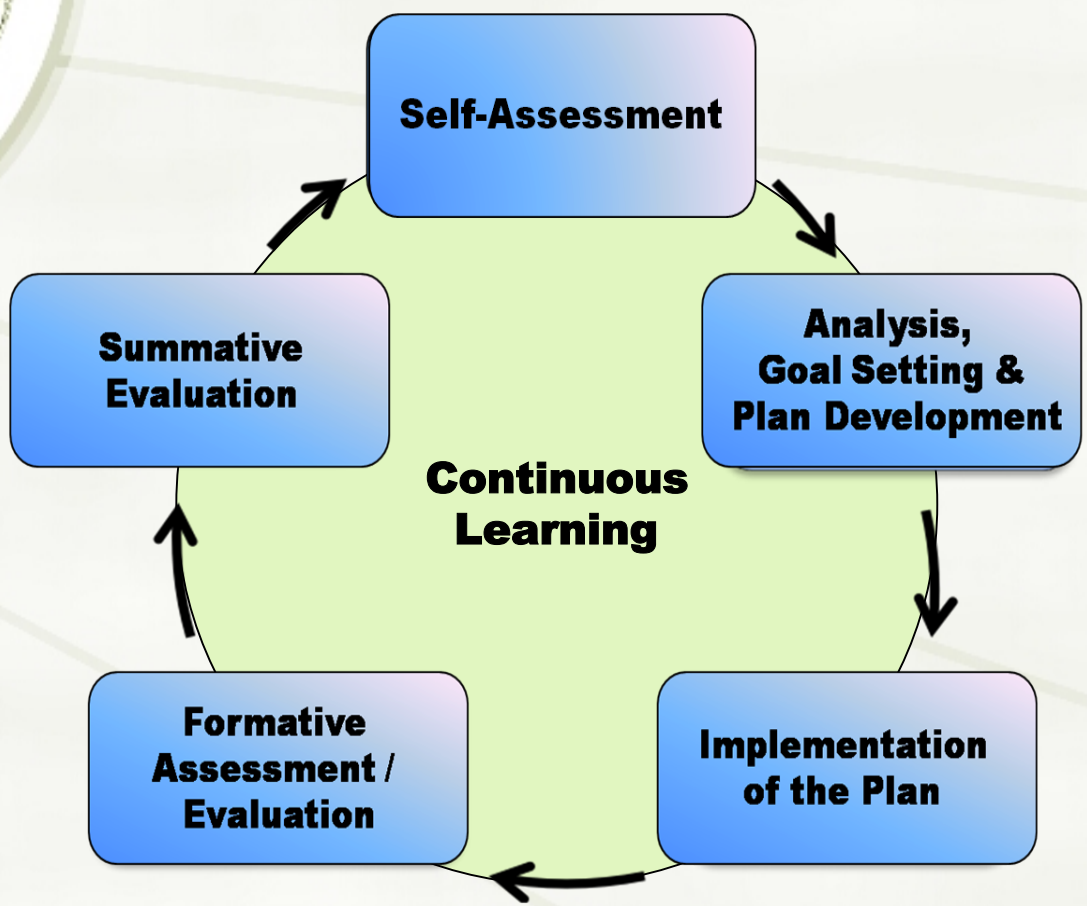
- **No other school-based factor has as great an influence on student achievement as an effective teacher.**
- **Effective leaders create the conditions that enable powerful teaching & learning to occur.**

Therefore,

- **Ensuring that every child is taught by effective teachers & attends a school that is led by an effective leader is key to addressing the achievement gap.**

Attracting, developing & retaining an effective, academically capable, diverse & culturally proficient educator workforce is essential.

The evaluation process supports continuous learning for all educators



Regional Networks

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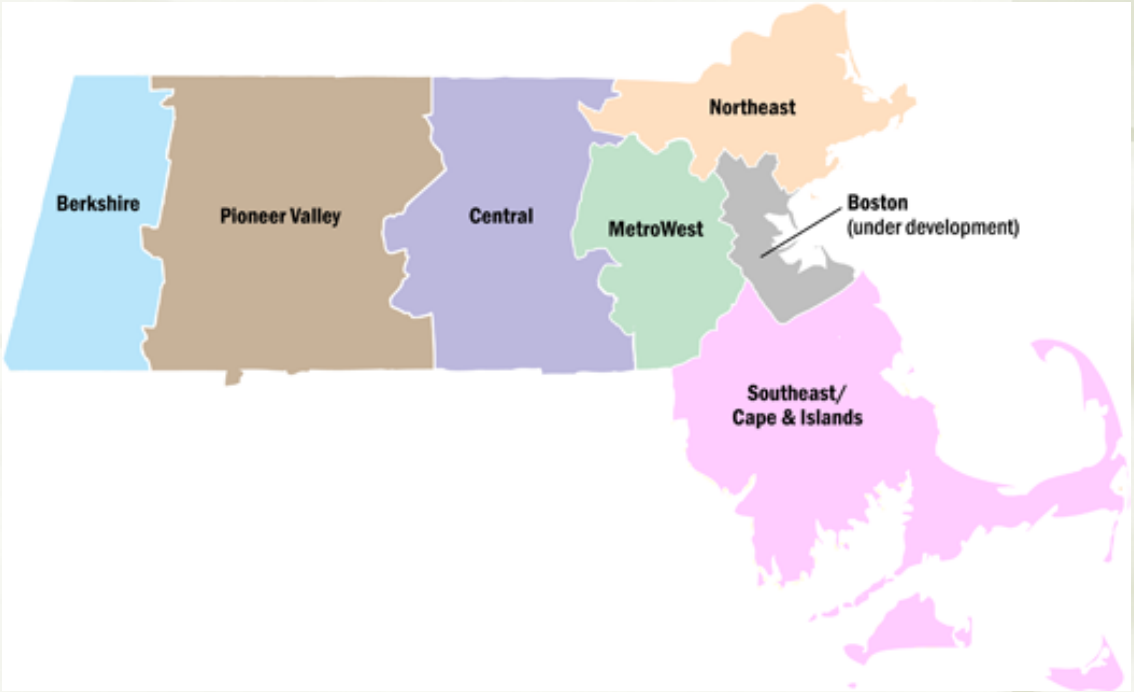
Pioneer Valley Network- Kathy Baker
kbaker918@aol.com

Central Network- Sandra H. Mayrand
sandra.mayrand@umassmed.edu

MetroWest Network- Kevin Thurston
kthurston1@framingham.edu

Northeast Network - Judith Boccia
Judith_boccia@uml.edu

Southeast/Cape & Islands Network- Kathleen Kirby
Kathleen.Kirby@CONNECTsemass.org



These slides are derived from PP presentations made by:

David Cedrone, Executive Director, STEM Advisory Council, Associate Commissioner, Department of Higher Education

David Haselkorn, Associate Commissioner,

Educator Effectiveness Policy, Department of Elementary and Secondary Education

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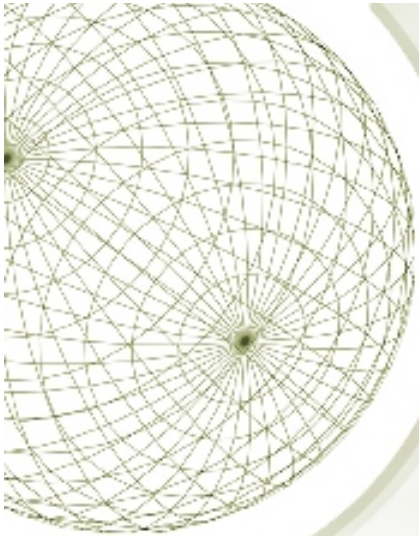
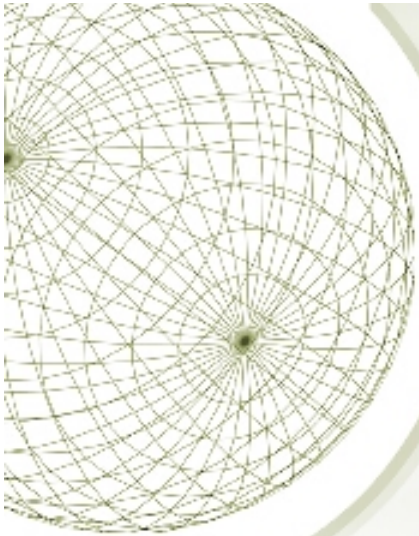




Goal of @Scale Initiative

- **Identify existing STEM projects**
  - Demonstrate a history of success addressing either of two ***specific gaps***
    - identified through data analysis conducted by UMass Donahue Institute
    - consistent with goals of Massachusetts STEM Plan
  - Incorporate research-based characteristics for successful project replication or ***scale-up***
  - Scale-up could have measurable impact in the ***near term***
- **Approval by Governor's Advisory Council for @Scale Endorsement**

Two-Phase Application Process

Phase 1 review

22 applications submitted

Phase 1 Application

- *Abstract*
- Alignment to g*oals of STEM Plan*
- Evidence of *scalability*
- Overview of *evaluation process*

Rubric as initial filter

1. Addresses either or both of two
   identified gaps
2. Demonstrates *capability to scale*

(May 18-23)

Two-Phase Application Process

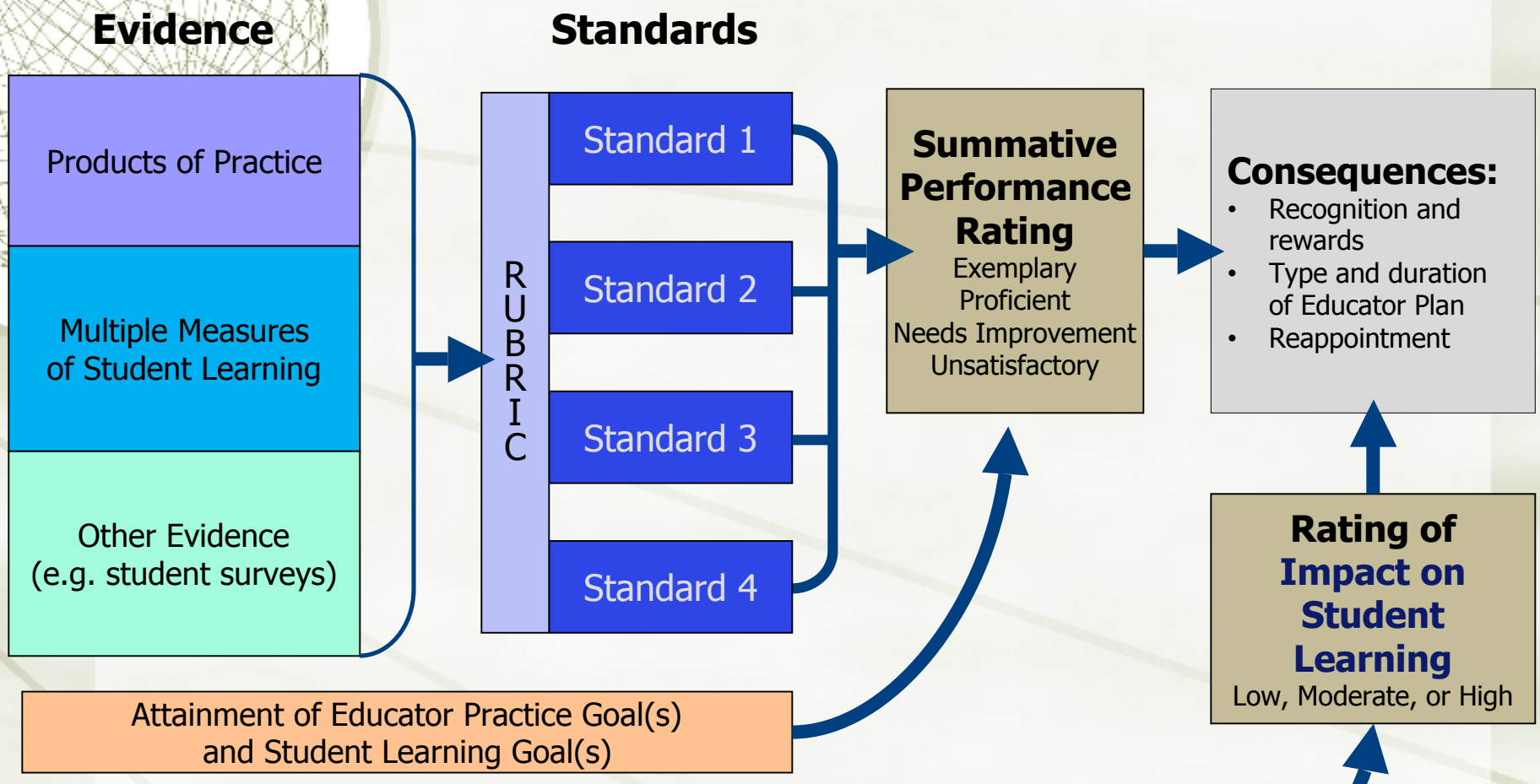
13 applications invited

Phase 2 Application

- Evidence of systemic changes resulting from implementation of project
- Detailed evaluation process and data
- Basis of project
- Project history at initial site
- Quantitative scaling data

12 applications submitted (Jun 6)

Multiple sources of evidence inform the evaluation



There is a consistent approach for incorporating student learning into the evaluation process