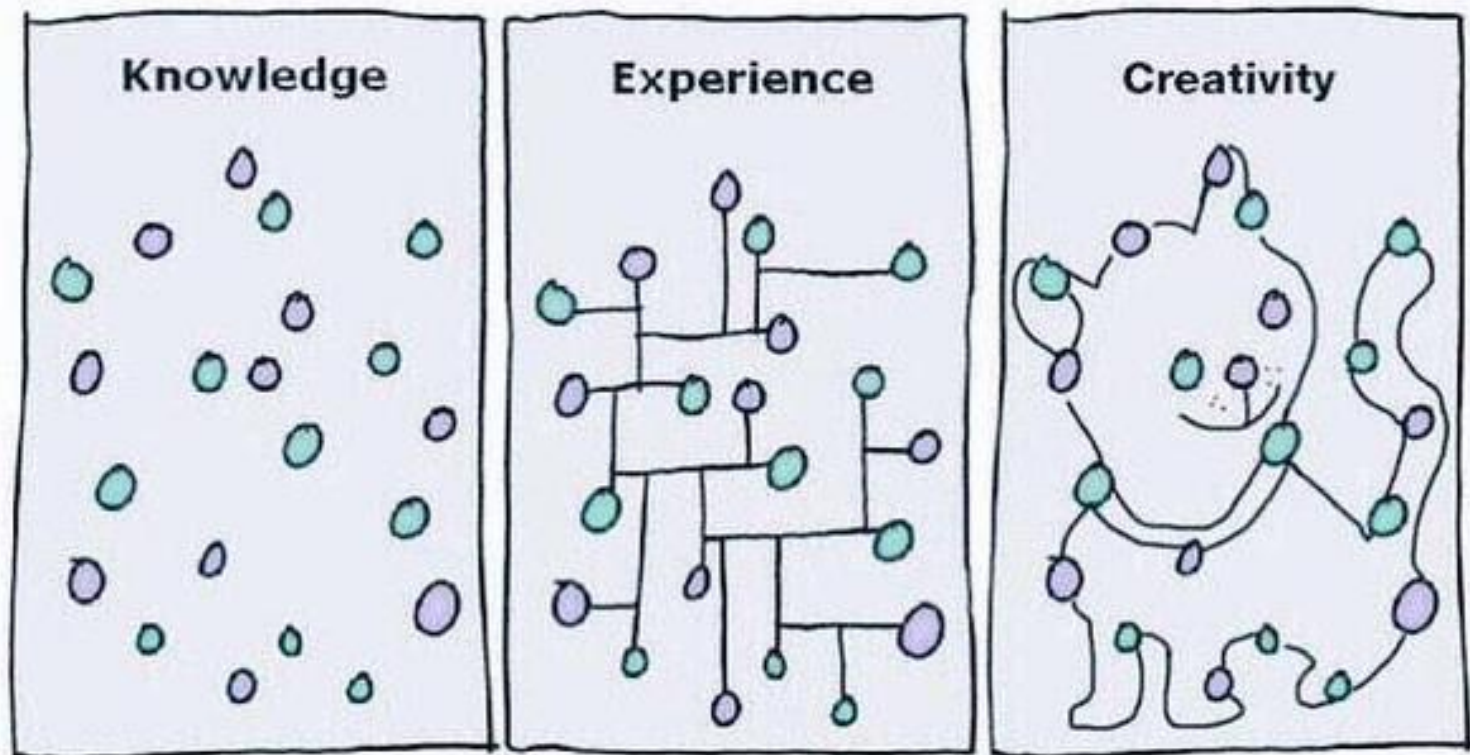


Improving Undergraduate STEM Education: Pathways into Geoscience (IUSE: GEOPATHS)



Brandon Jones, Program Director – Education & Diversity

NSF/GEO

GSA - September 2016

Outline

IUSE - General Context

Origins & goals of IUSE

IUSE: GEOPATHS

Program goals

EXTRA & IMPACT tracks

Highlights

EXTRA

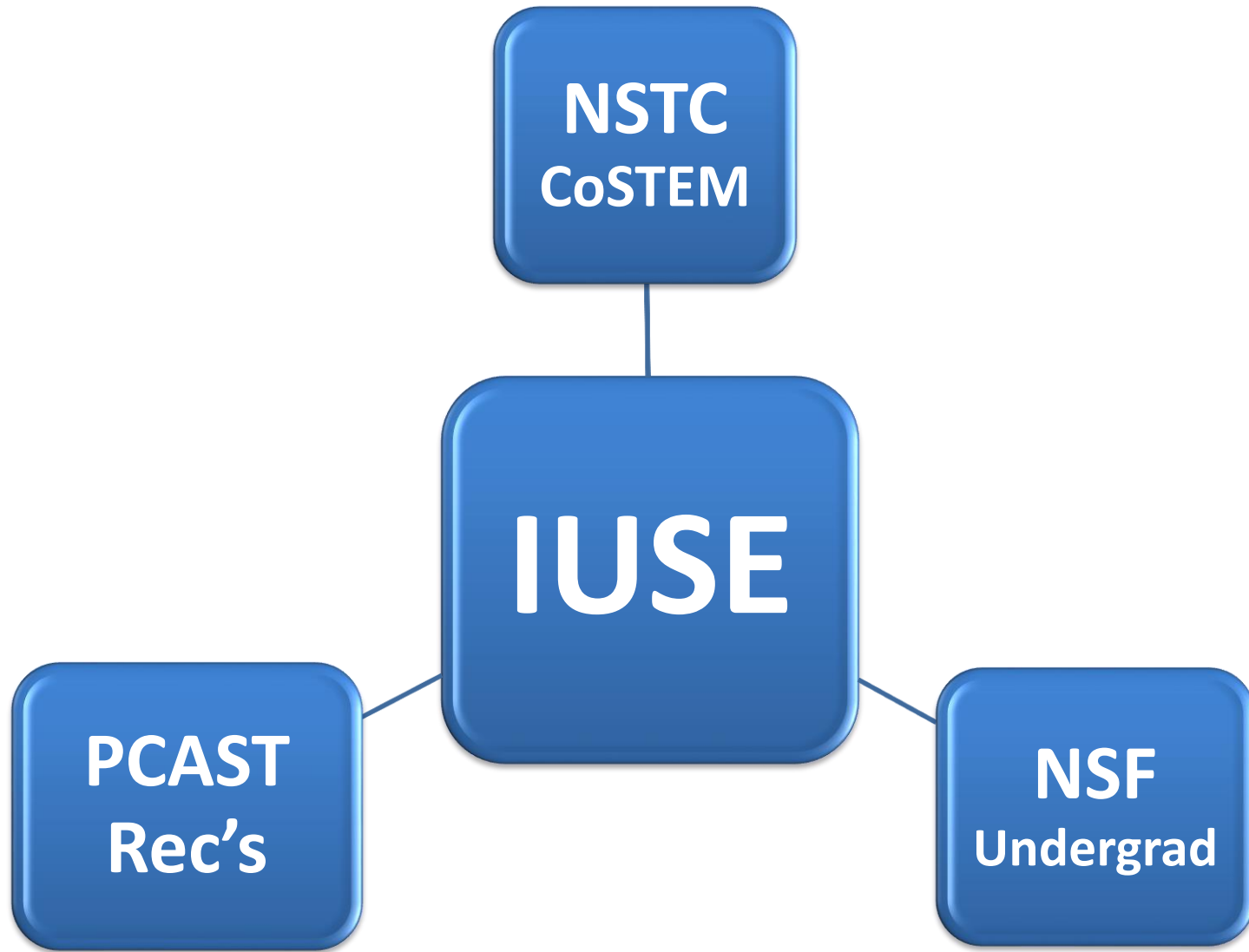
IMPACT

1

2

3

IUSE is NSF Wide (2014)

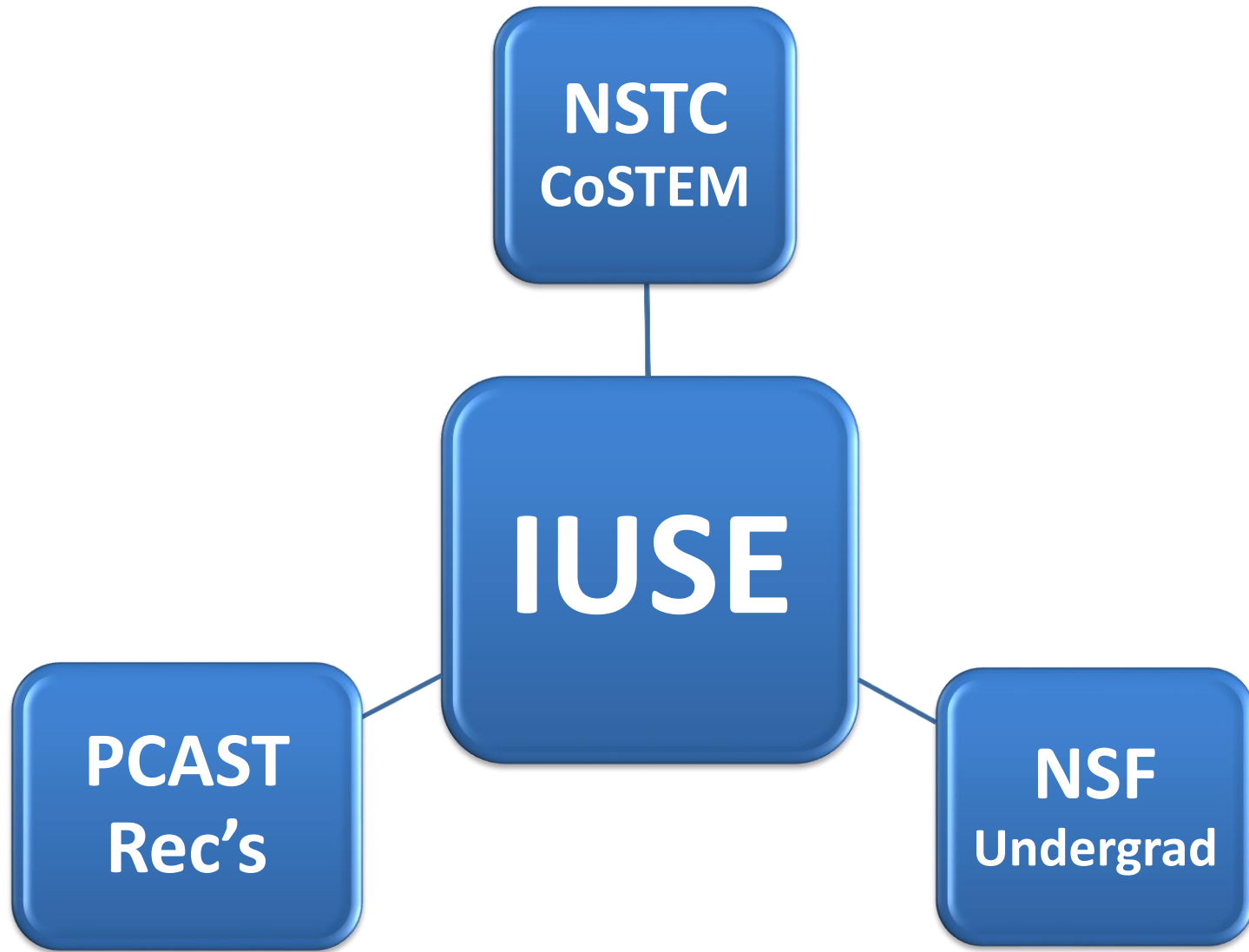


NSTC's 2013 Strategic Plan

Goal 3

Enhance STEM Experiences of Undergraduate Students: *Graduate one million additional students with degrees in STEM fields over the next 10 years*

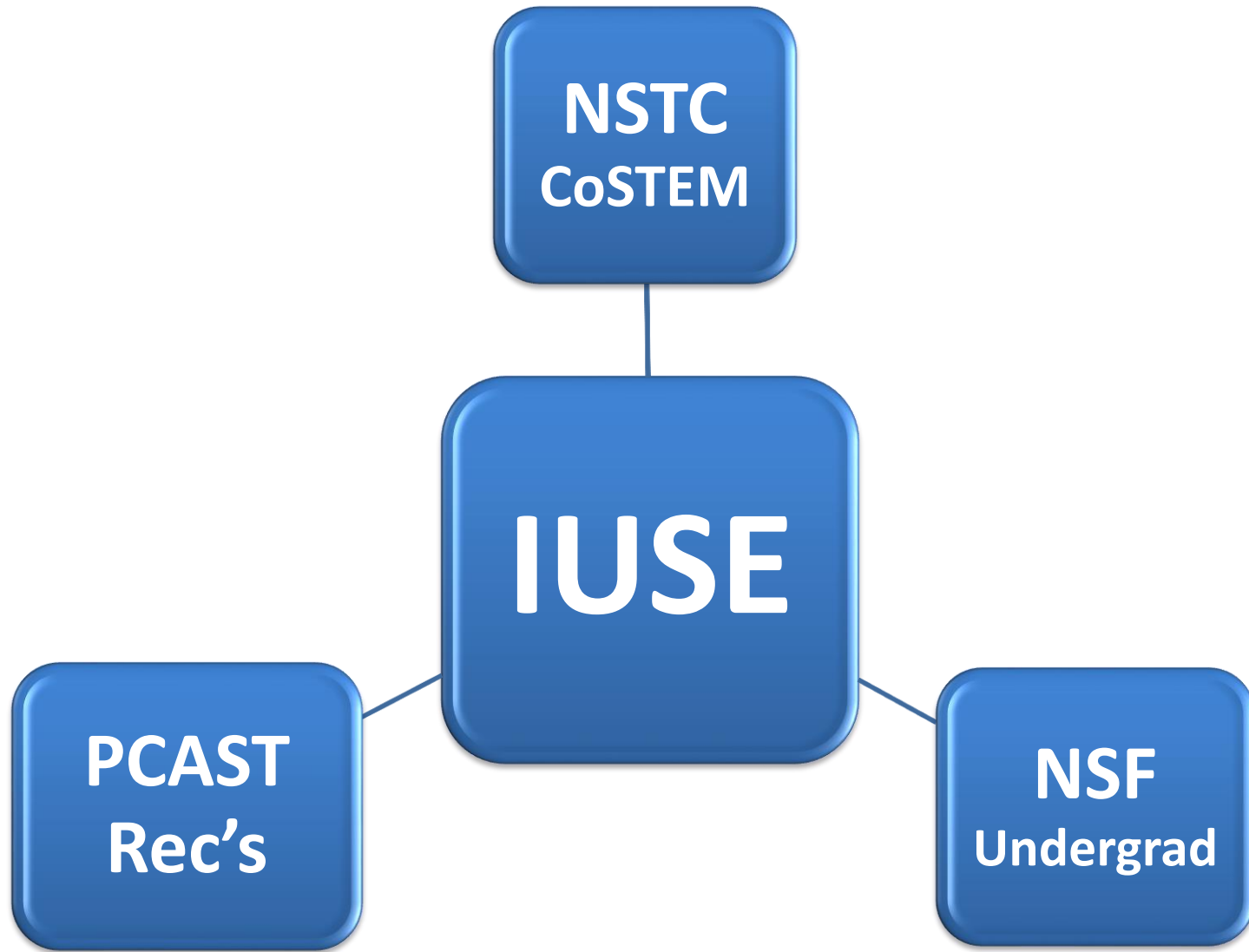
IUSE is NSF Wide (2014)



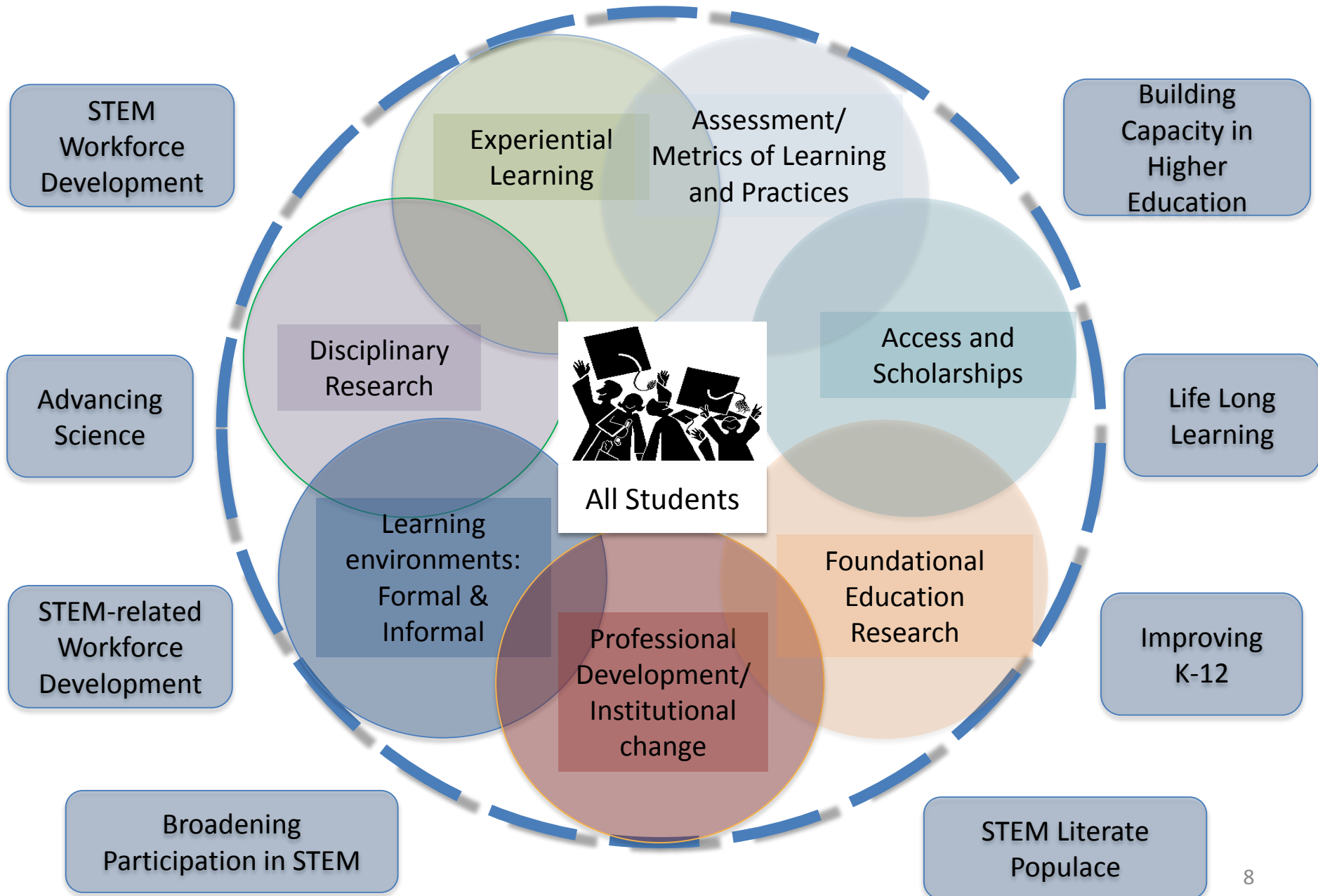
PCAST Recommendations...

- Identify & broaden **implementation of evidence-based practices**/establish architecture to document resulting outcomes
- Improve 2-yr to 4-yr **transitions**
- Foster university-industry-federal **partnerships** to provide authentic experiences
- Address failure rates in **mathematics**

IUSE is NSF Wide (2014)



IUSE Design Team Building Blocks: Scope of the Portfolio



IUSE Pillars: Long-Term Goals



Improve STEM Learning & Learning Environments

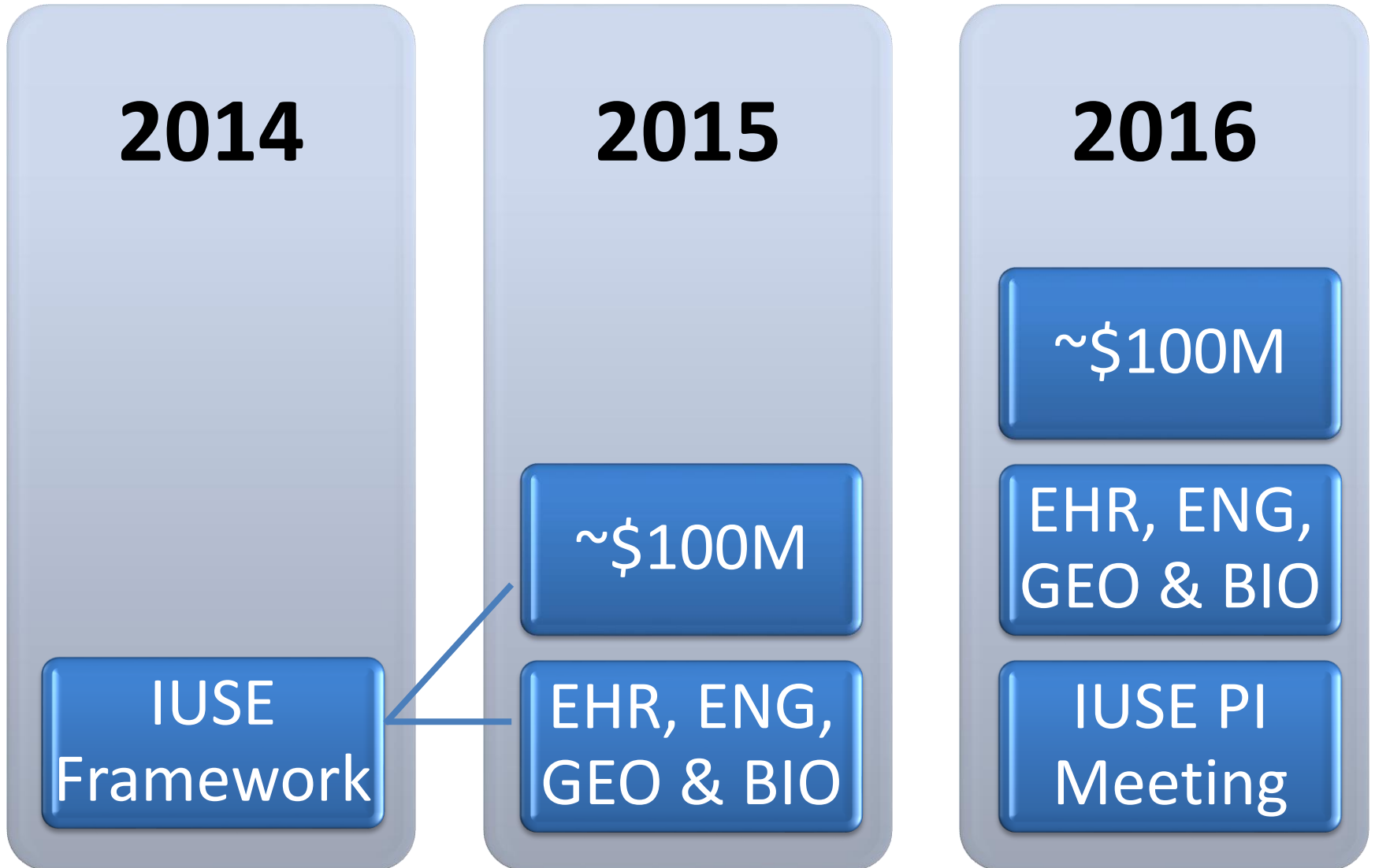


Broaden Participation & Institutional Capacity for STEM Learning



Build the STEM Professional Workforce for Tomorrow

IUSE Initiative Milestones





**Student Learning;
Institutional Transformation**



**Preparing Future
Engineers (PFE)**



**RCN - Undergraduate
Biology Education (UBE)**



GEOPATHS

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EXTRA

IMPACT

1

2

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IUSE: GEOPATHS

GOALS

Increase the number and diversity of students

Prepare students for any geoscience career

Build on & contribute to the evidence base

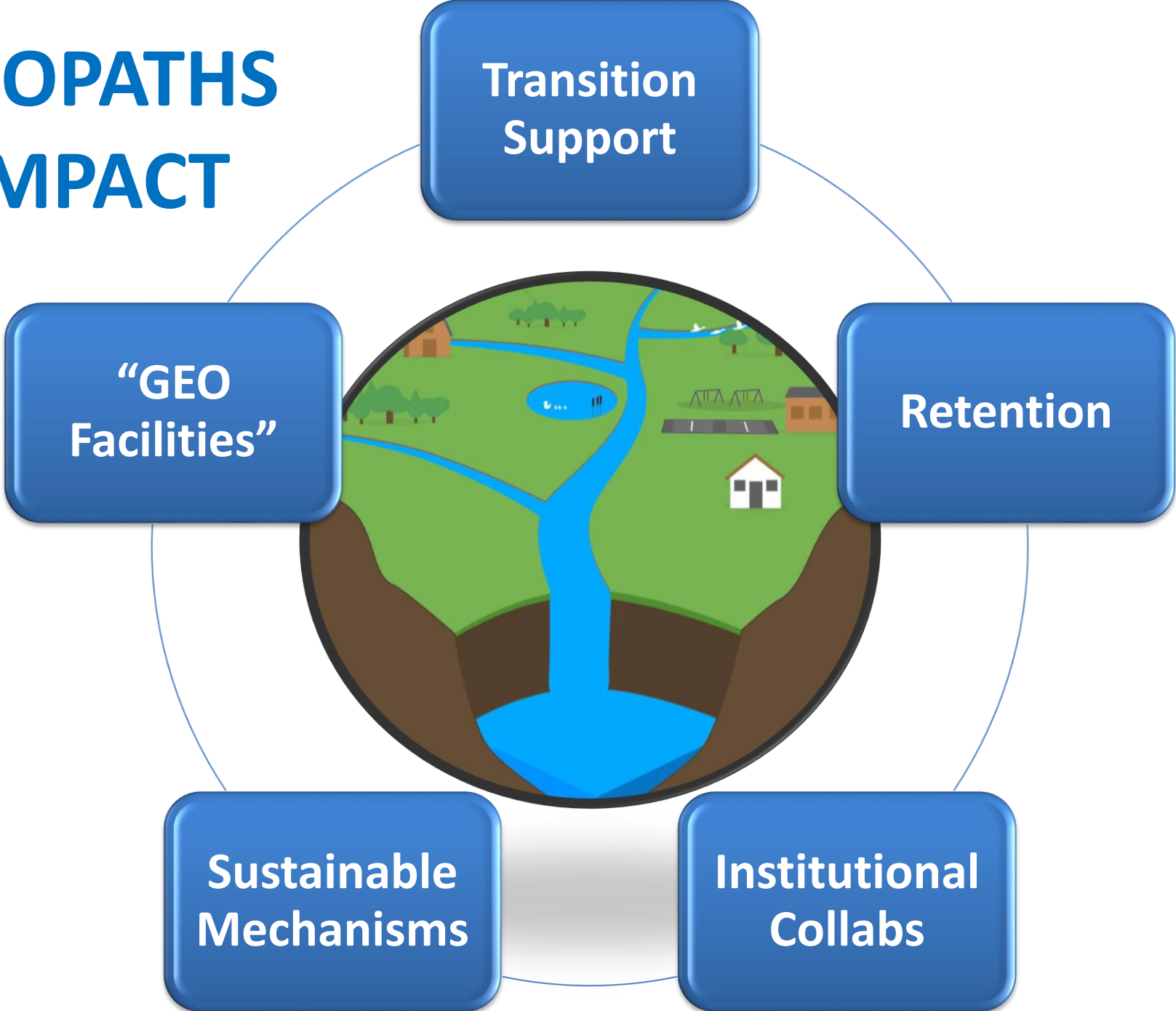
IUSE: GEOPATHS Solicitation

- **NSF 16-584 program solicitation (FY17)**
 - LOIs were due 8/16/16
 - Proposals are due 10/11/16
- **Budget: Average total funding range \$300K - \$350K**
- **~ 20 awards**
- **Project duration: Up to 3 years**
- **Two funding tracks**
 - *GEOPATHS-EXTRA*
 - *GEOPATHS-IMPACT*

GEOPATHS EXTRA



GEOPATHS IMPACT



Eligibility Limitations

- Lead institution must be a U.S. accredited university or 2-year or 4-year college (**and same as in LOI**)
- All eligible organizations identified in NSF Proposal and Award Policies and Procedures Guide (PAPPG) can collaborate as “non-lead”
- ***GEOPATHS-EXTRA*** track has additional limits:
 - Lead institution cannot be a very high research activity university (R1), as defined in Carnegie Classifications.

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EXTRA

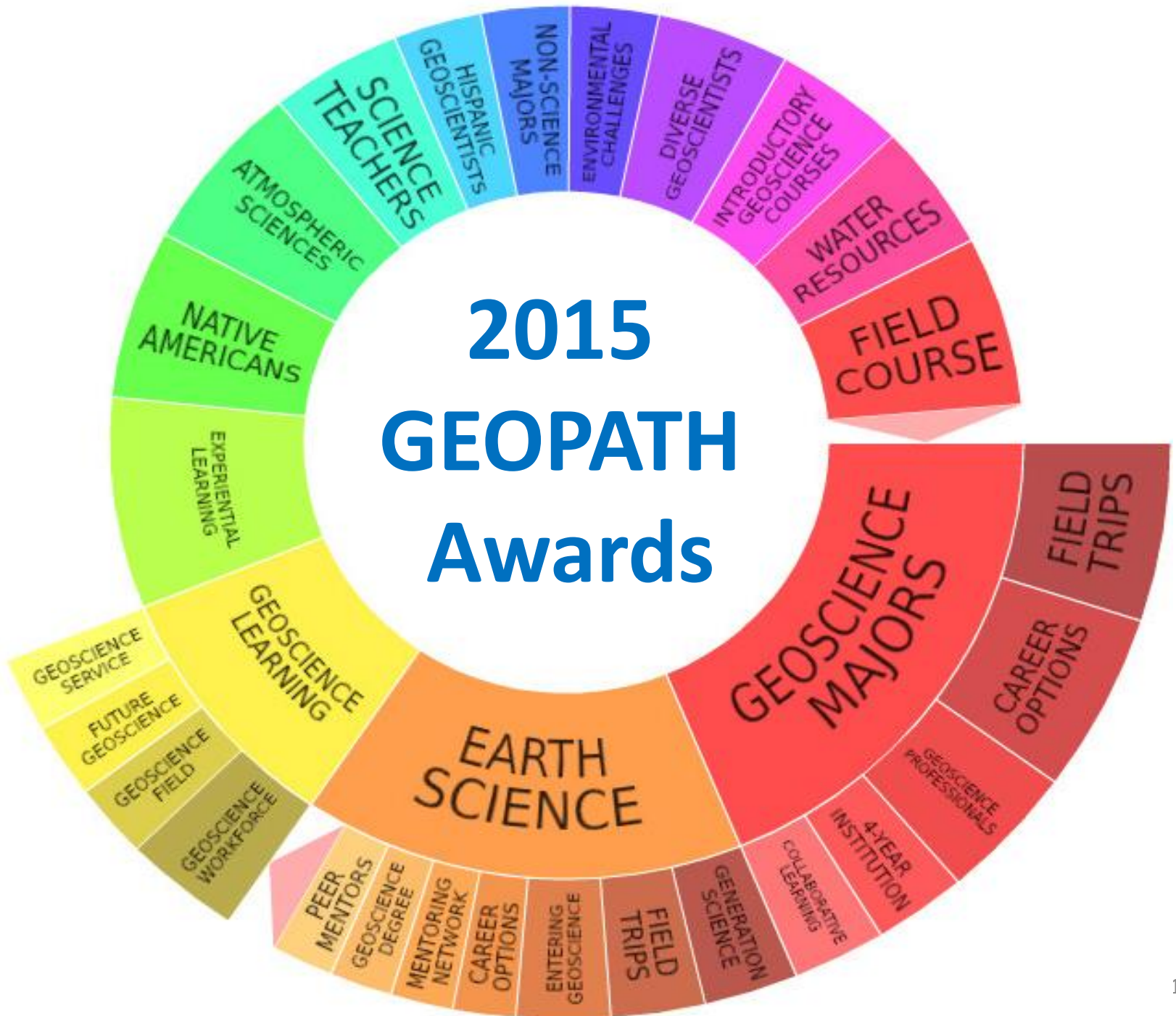
IMPACT

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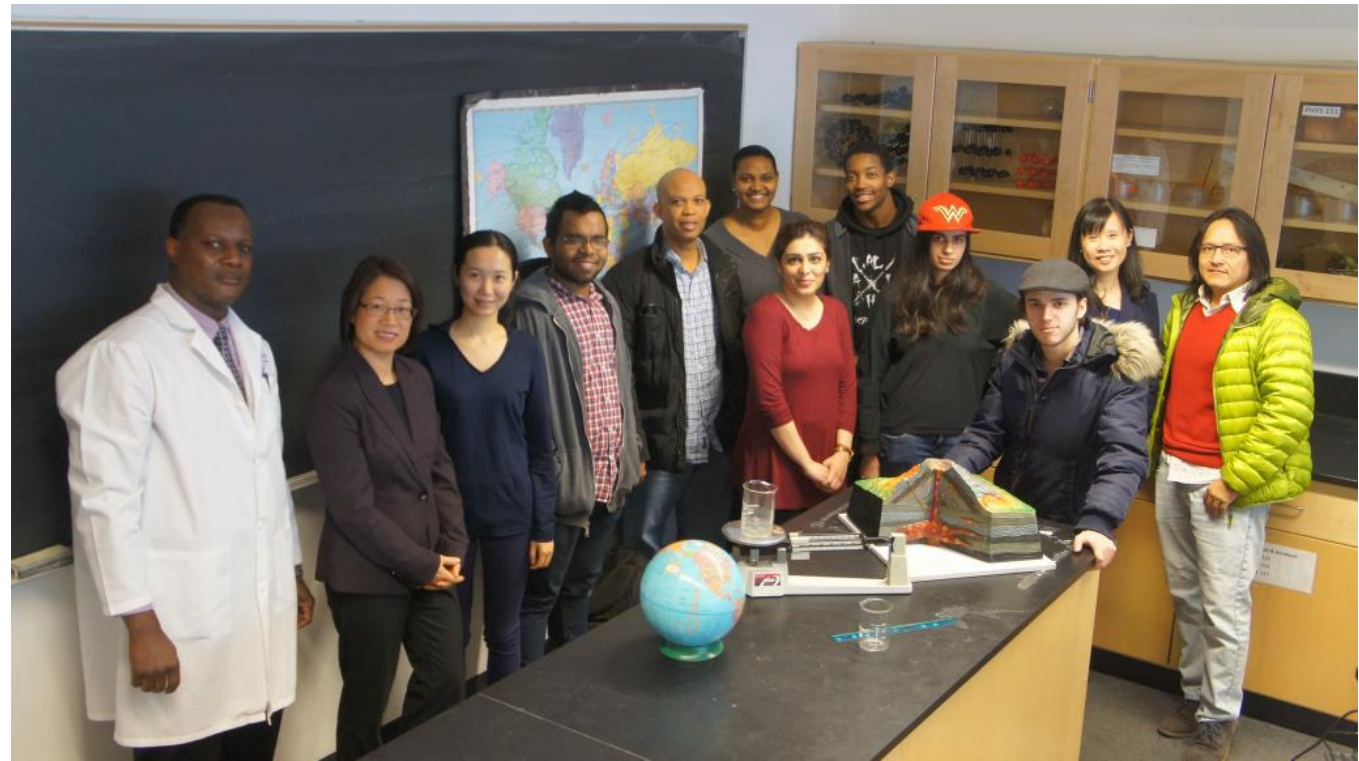
2

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2015 GEOPATH Awards



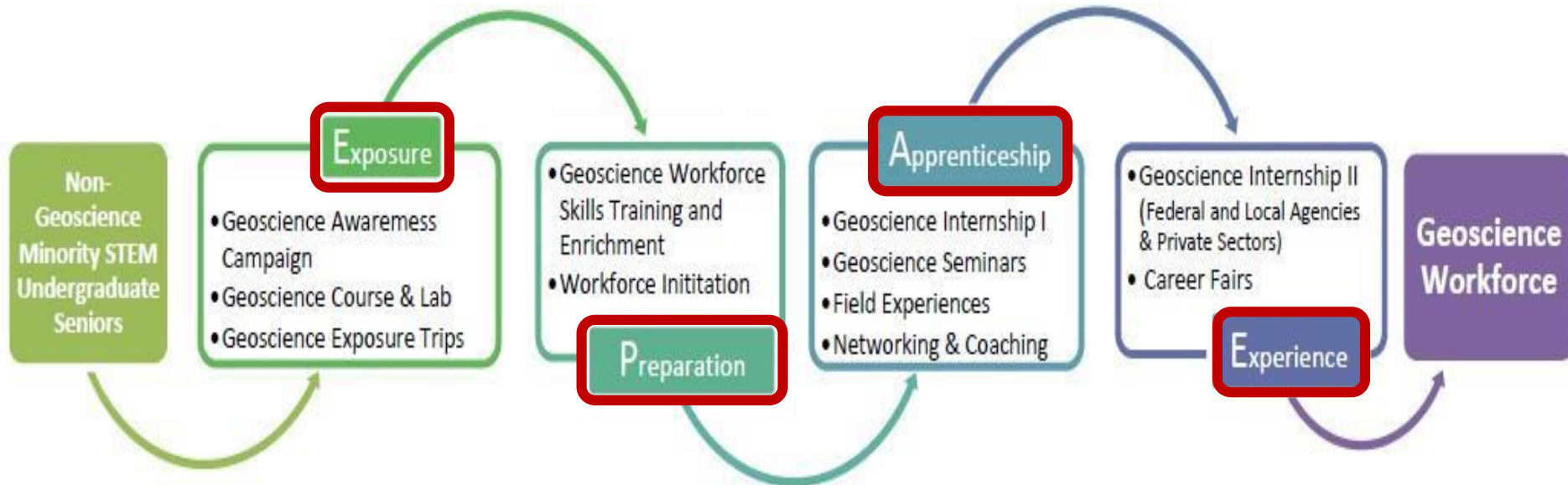
FY15 EXTRA: Recruiting and Retaining Non-geoscience Minority STEM Majors for the Geoscience Workforce – PI = R. Blake



GOALS

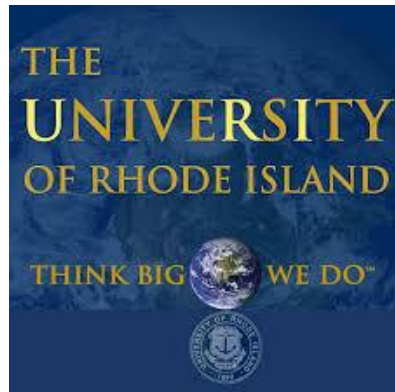
EPA-E Model

- create a geoscience workforce pathway for non-geoscience minority STEM majors
- develop geoscience career-aligned collaboration via mentoring



FY 15 IMPACT: Improving Geoscience Education Pathways through Engaging Scientific and Career Experiences

PI = K Savage



GOALS

- **Improve transfer rate from CCRI to URI**
- **Increase # and diversity of geo grads**
- **Enhance student training**
- **Contribute to evidence base**

ACTIVITIES

- **GEO 200 course**
- **Joint field trips**
- **Cohort building efforts**
- **Creation of formal mentoring**
- **Sharing of internal and external research opp.**



Send email to geopaths@nsf.gov or contact one of the following program officers:

- Brandon Jones (GEO/OAD) - mbjones@nsf.gov
- Manda Adams (GEO/AGS) - amadams@nsf.gov
- Lina Patino (GEO/EAR) - lpatino@nsf.gov
- Lisa Rom (GEO/OCE & GEO/PLR) - elrom@nsf.gov
- Marilyn Suiter (EHR/HRD) - msuiter@nsf.gov
- Keith Sverdrup (EHR/DUE) - ksverdru@nsf.gov

For more information about the IUSE: EHR program, contact:

- Keith Sverdrup (ksverdru@nsf.gov)

Caveats

- **IUSE: GEOPATHS proposals should not duplicate activities that can be achieved through:**
 - IUSE: EHR program
 - Research Experiences for Undergraduates (REU) Sites or Supplements program
 - Advanced Technological Education (ATE) program
 - Tribal Colleges and Universities Program (TCUP) *Partnerships for Geoscience (PAGE)* track

Caveat about Geospatial Methods

- **GIS/GPS and remote sensing are common tools used within the geosciences professional community, but...**
- **NSF has a separate Geography program in the SBE directorate, so GEO does not like to use its funds to support training in GIS/GPS or remote sensing methods unless students are **also** getting significant exposure to scientific content relevant to the geosciences (e.g., using these tools to investigate geoscience research questions)**

Eligibility Limitations

- Lead institution must be a U.S. accredited university or 2-year or 4-year college (**and same as in LOI**)
- All eligible organizations identified in NSF Grant Proposal Guide (GPG) can collaborate as “non-lead”
- **GEOPATHS-EXTRA** track has additional limits:
 - Lead institution cannot be a very high research activity university, as defined in Carnegie Classifications
- Organization limits: only 1 proposal per competition as sole-submitting or lead institution; no limit as non-lead
- PI limits: only 1 proposal per competition if from the sole or lead institution; no limit as non-lead participant