INTEGRATED APPROACHES TO DIVERSITY IN STEM

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CRITICAL QUESTION

How do we take a *situation* deemed *hopeless*, and make it *otherwise*?

Inequities in training, degree attainment and recruitment and/or retention (Moreno et al., 2006; Leboy and Madden, 2012; Whittaker and Montgomery, 2012; Whittaker and Montgomery, 2014)

Established environmental culture(s) and traditions (Hurtado et al., 1998; Girves et al., 2005; Sethna, 2011; Harper, 2012; Moss-Rascusin et al., 2012; Zambrana et al., 2015)

Disparities in research grant support (Ginther et al., 2011; National Science Foundation, 2012)

Limited or inadequate integrations into academic communities and/or isolation (Laden and Hagedorn, 2000; Tillman, 2001; Cawyer et al., 2002; Smith and Calasanti, 2005; Turner et al., 2008; Zambrana et al., 2015)

Levels or perceptions of environmental support or lack thereof (Crowley et al., 2004)

Negative stereotypes about underrepresented minorities (Figueroa and Hurtado, 2013)

Implicit bias (Turner, 2002; Moody, 2004)

Lack of will or understanding on the part of institutional leaders/leadership (Price et al., 2005)

WE MUST

✓Think differently;

✓Consider alternatives;

✓Be open to diverse views; and,

✓Retain an ability to function and thrive.

WHERE THE RUBBER MEETS THE ROAD

We can talk about
DIVERSITY......

- Counting the numbers.
- Differences and similarities that define the students, faculty and communities in which we operate.
- Diversity of thought and approach within and outside the academic setting.

But the real issue is how we focus on
INCLUSION.........

- Making the numbers count.
- Creating academic environments that benefit from the diversity of ideas, knowledge, and experience.
- Creating an academic ecosystem that engages everyone and seeks equitable contributions and opportunities for all.

TECTONIC SHIFTS IN STEM

- Global Economic Changes in Investments

- Funding; Resource allocation

- Digital Technology; Open Source Utility

- Rise in Entrepreneurial Approach to Research

- Era of Uncertainty

- Leadership concerns

- Drive towards Co-creation and Interdisciplinary Work

- Loss Aversion; Fixation on Rules

"CREATIVITY TAKES COURAGE"
– HENRI MATISSE

To manage the complexity, pace of change, and the "adaptive challenges" facing higher education (Heifetz & Linsky, 2002; Sanaghan & Jurow, 2011; Sanaghan & Lohndorf, 2015), presidents will need all the creativity they can generate. Senior leaders, especially presidents, will need to do two important things:

1. Nurture and build their own creativity
2. Build the "*Creative Capital*" of the leaders throughout their campuses

GETTING FROM WHERE WE ARE TO WHERE WE NEED TO BE

Where we are

Transition Process

Where we need to be

SHIFTING THE CURRENT PARADIGM

- We say we value diversity, but …
- We say that our doors are open to under-represented groups, but…….
- We say diversity of thought is encouraged, but……..
- We say that we actively engage diverse stakeholder groups, but ……
- We say that we want to achieve positive outcomes and make progress with D&I in STEM , but …….

DESIGN THINKING PROCESS

Empathize → Define → Ideate → Prototype → Test
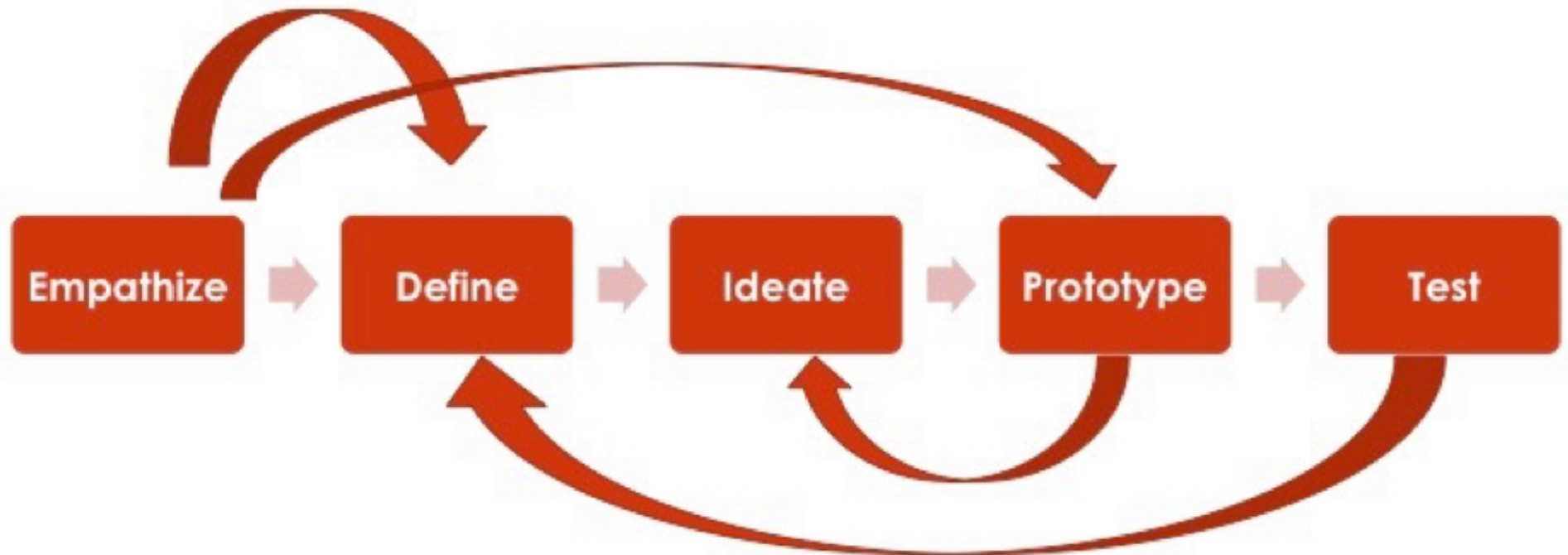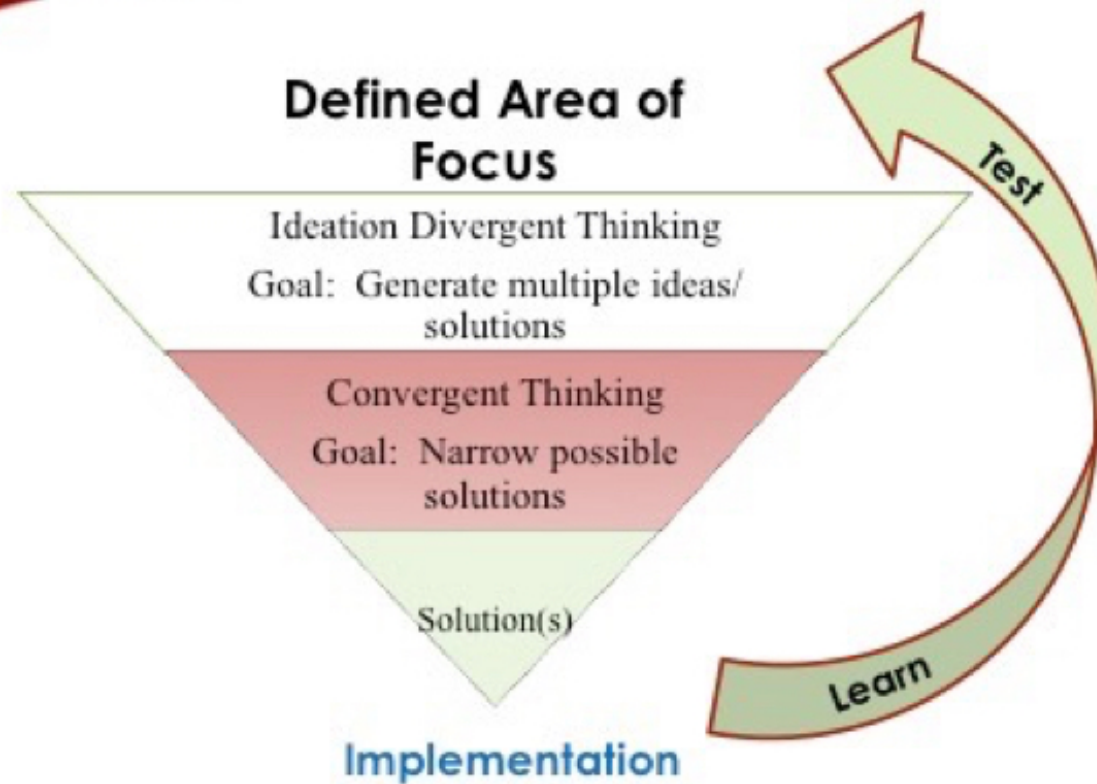
STEM DESIGN
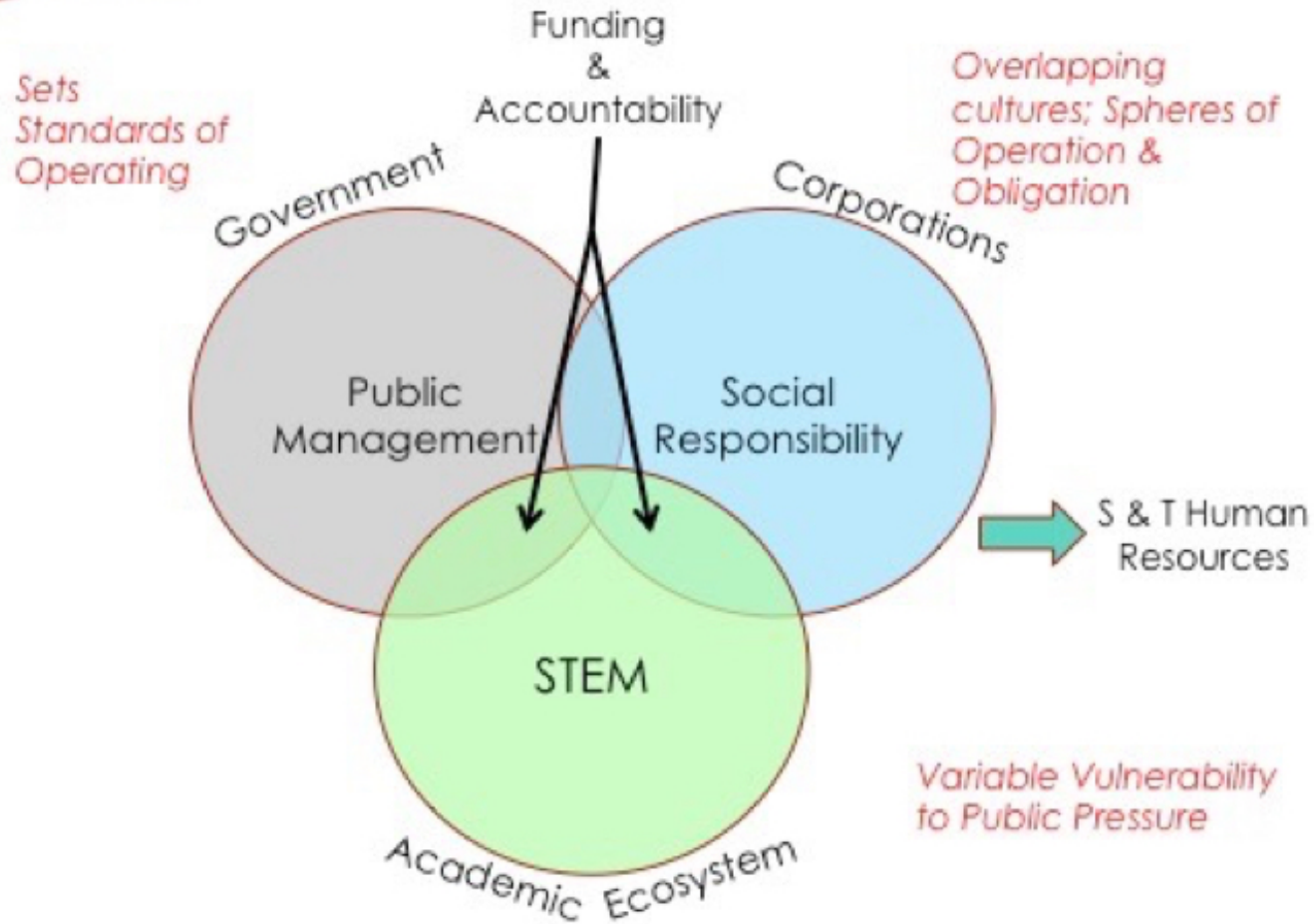
ECOSYSTEM INTERDEPENDENCE

- Corporations often create vision for driving innovation & legislation (at times with academic partners;

- Public management sector develops policies, drives community engagement as well as R&D;

- R&D activities advance STEM programs, capacity development & global competitiveness.

OPPORTUNITIES

- Building consensus & collaboration in areas of complementary focus & desired outcomes;

- Sharing "Best Practices" to facilitate adaptation & efficient use of human and financial resources;

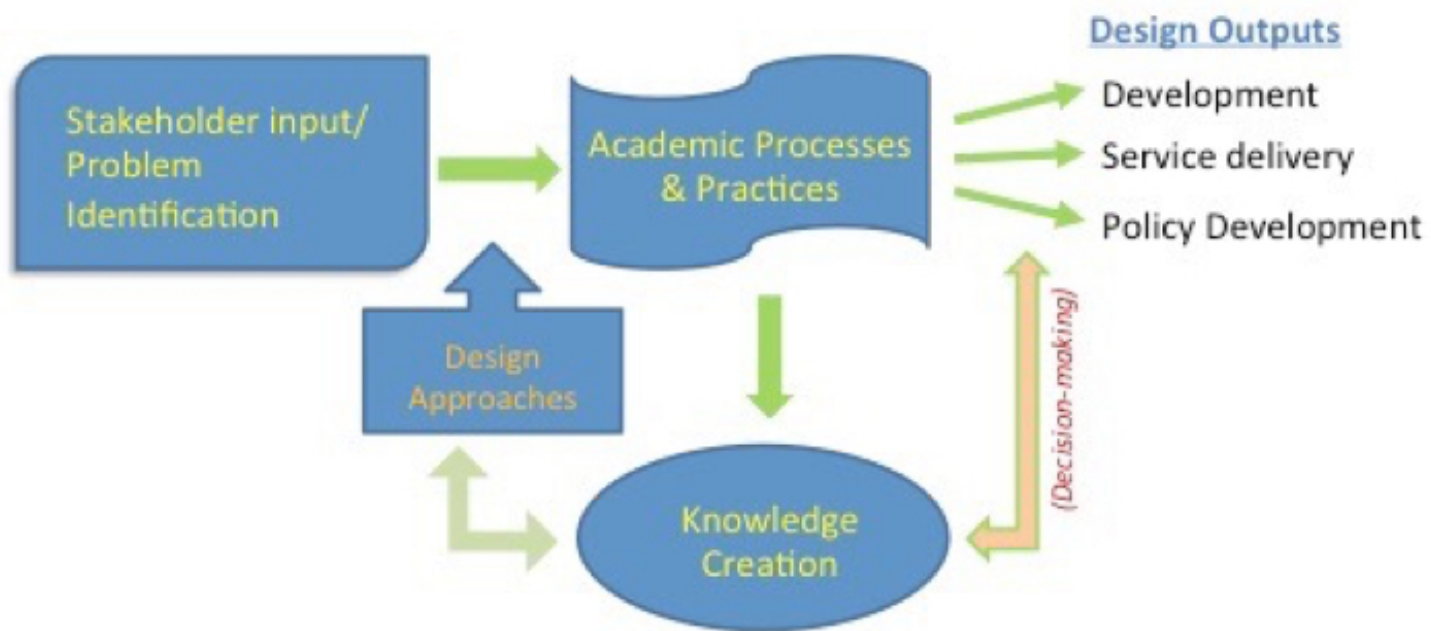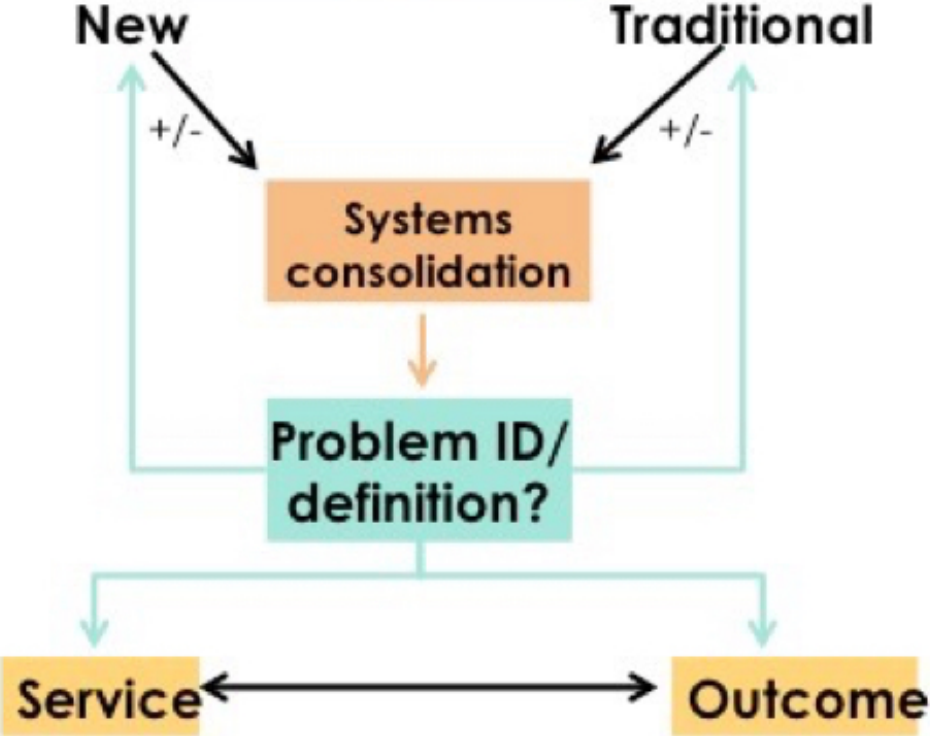- Establish conditions to drive creativity & innovation;

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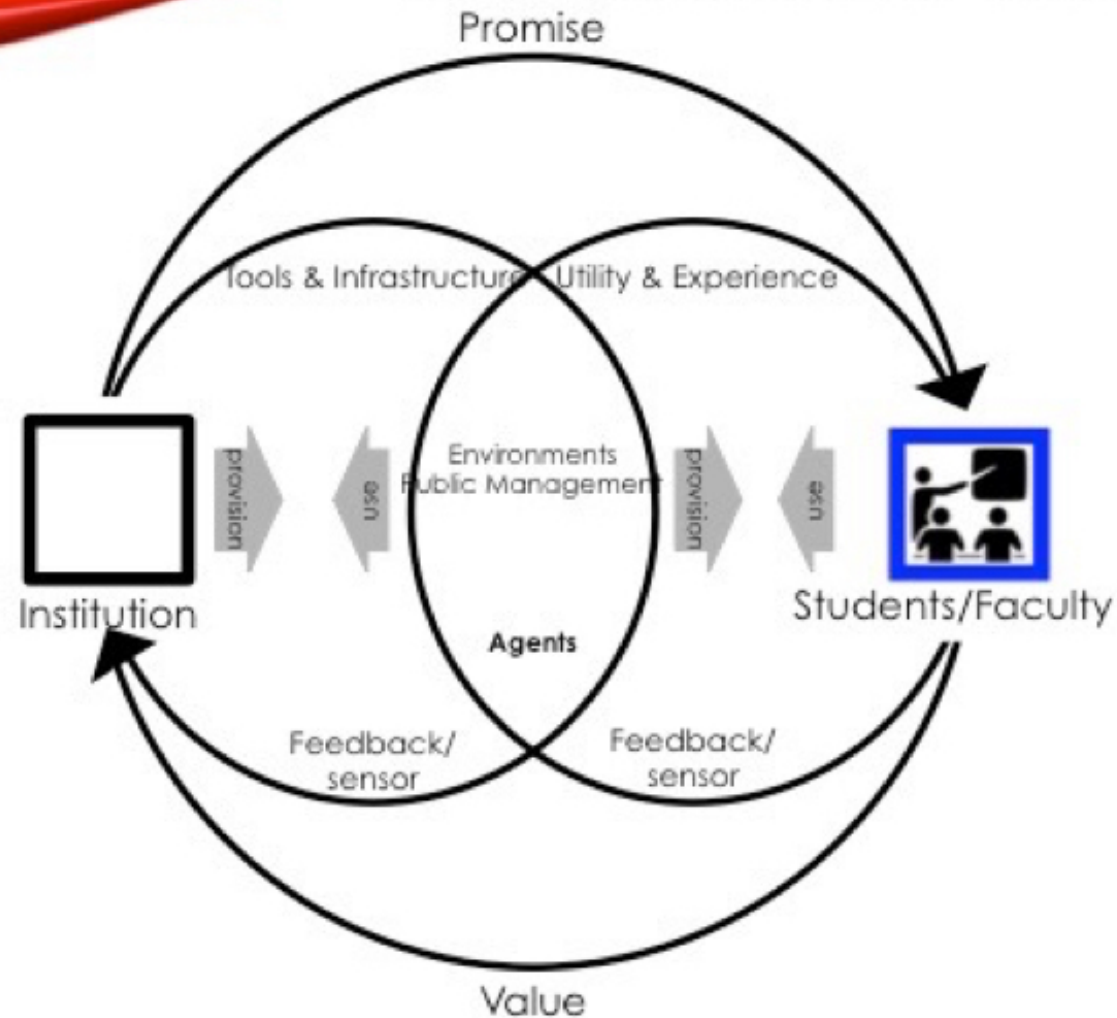
Finding Synergy

Innov High Educ (2014) 39:263–275

Research-Teaching Integration
- Scholarship of teaching and learning that promotes the success of a diverse student and faculty constituency or uses diversity to promote learning
- Scholarly efforts to understand successful evidence-based initiatives for teaching a diverse student population

Research-Service Integration
- Scholarly efforts or collaboration to understand successful methods or evidence-based outreach and service initiatives for promoting the success of a diverse student population or faculty constituency
- Research in collaboration with a faculty colleague at an institution serving individuals underrepresented in STEM

diversity

Research

diversity

Teaching

Service

diversity

Teaching-Service Integration
- Teaching in collaboration with an institution serving underrepresented individuals in STEM
- Service-learning with diverse local communities to build institution-community bridges

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STEM Service Relationships

Adapted from Polaine, Løvlie, and Reason, *Service Design: From Insight to Implementation*, 2013

SUMMARY

- **Limited scales of progress**
  - ➤ Limited or poor integration
  - ➤ Lack of synergy
  - ➤ Lack of accountability

- **Design approach needed to facilitate**
  - ➤ Enhanced outcomes
  - ➤ Student placement
  - ➤ Experiential learning

SUMMARY

- **Leader's role in STEM ecosystem:**
  - Brings commitment to process for building accountability framework

  - Identification of stakeholders who are under-resourced (critical step)

  - Adds network value (with right leadership) by
    - Engaging strengths of URM communities
    - Driving partnerships and collaborations

Questions?

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