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Deputy Division Director

Division of Engineering Education and Centers (ENG/EEC)

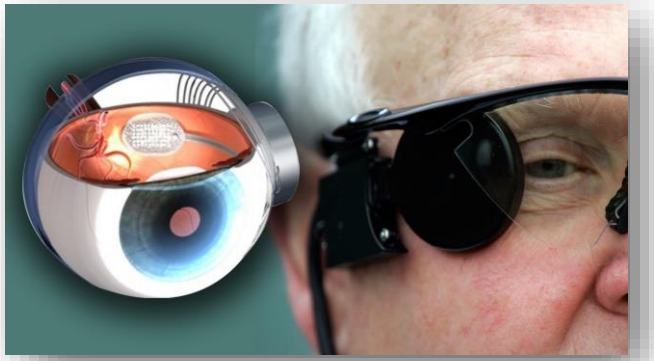
Inspiration…

Engineering...

What is the impact?

Engineering R&D

- Improves the quality of life
- Enables people to accomplish more, with less...
  - Effort
  - Consumption of resources, environmental impact
  - Energy
  - Cost
- Makes the world a better place



Why ERCs...

- For > 30 years, ERCs have addressed a variety of technological challenges as they pursue transformational and interwoven research, workforce development and innovation outcomes
- We now face more complex challenges affecting people's lives and prosperity -- *that require center-scale, deep integration of scientific/engineering knowledge and methods to solve*

Why ERC Planning Grants?

- We want to ensure ERCs can continue to address key challenges and generate benefits for the nation
- Hope to foster new collaborations that lead to societal impacts through innovative approaches for:
  - team formation,
  - diversity/inclusion,
  - stakeholder engagement, and
  - convergent R&D (one of NSF's Big Ideas)

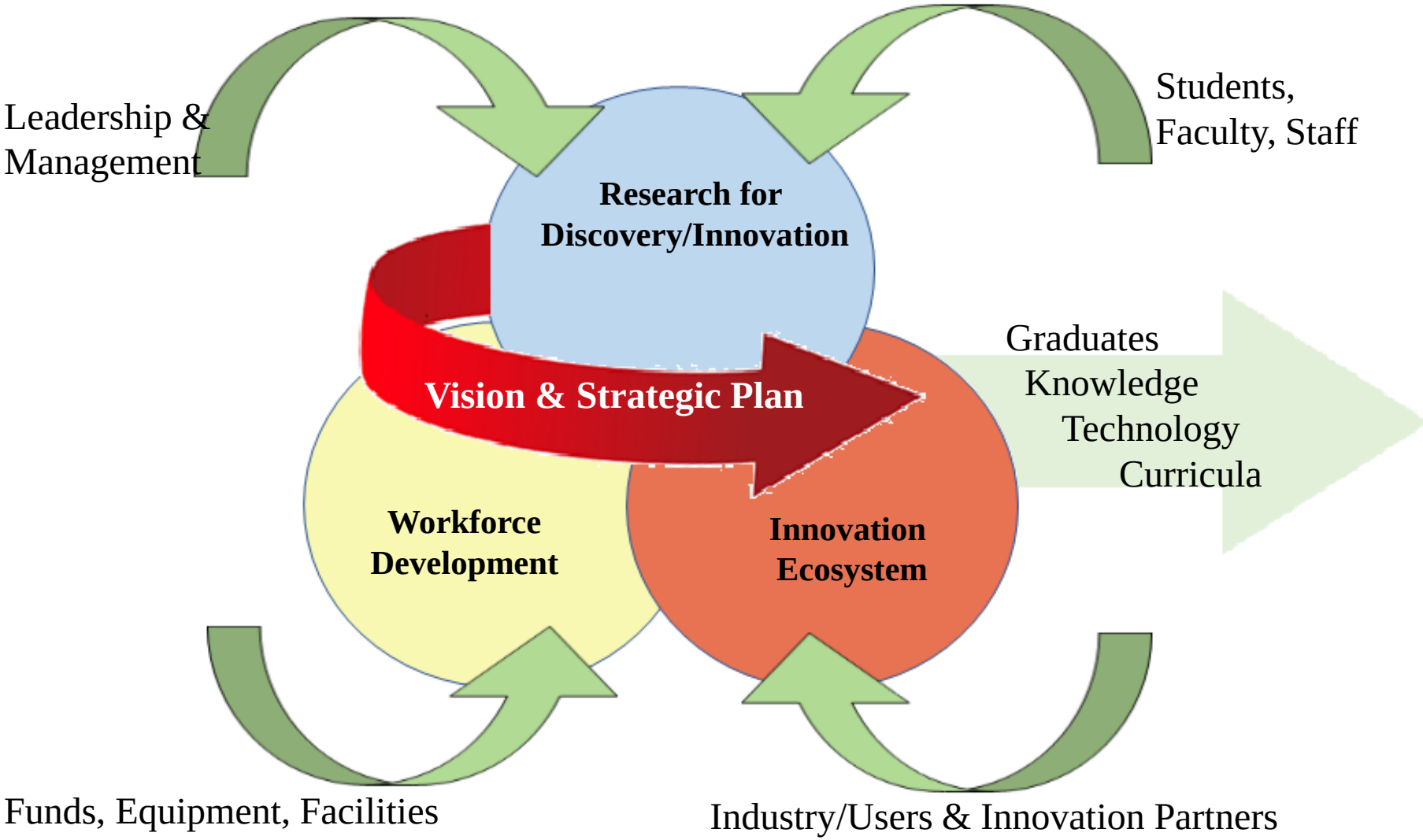
An example...

2007


2007
iPod
Phone
Internet


Steve Jobs Keynote Macworld 2007 SF
2007
9:41
1:42:53 / 1:43:27

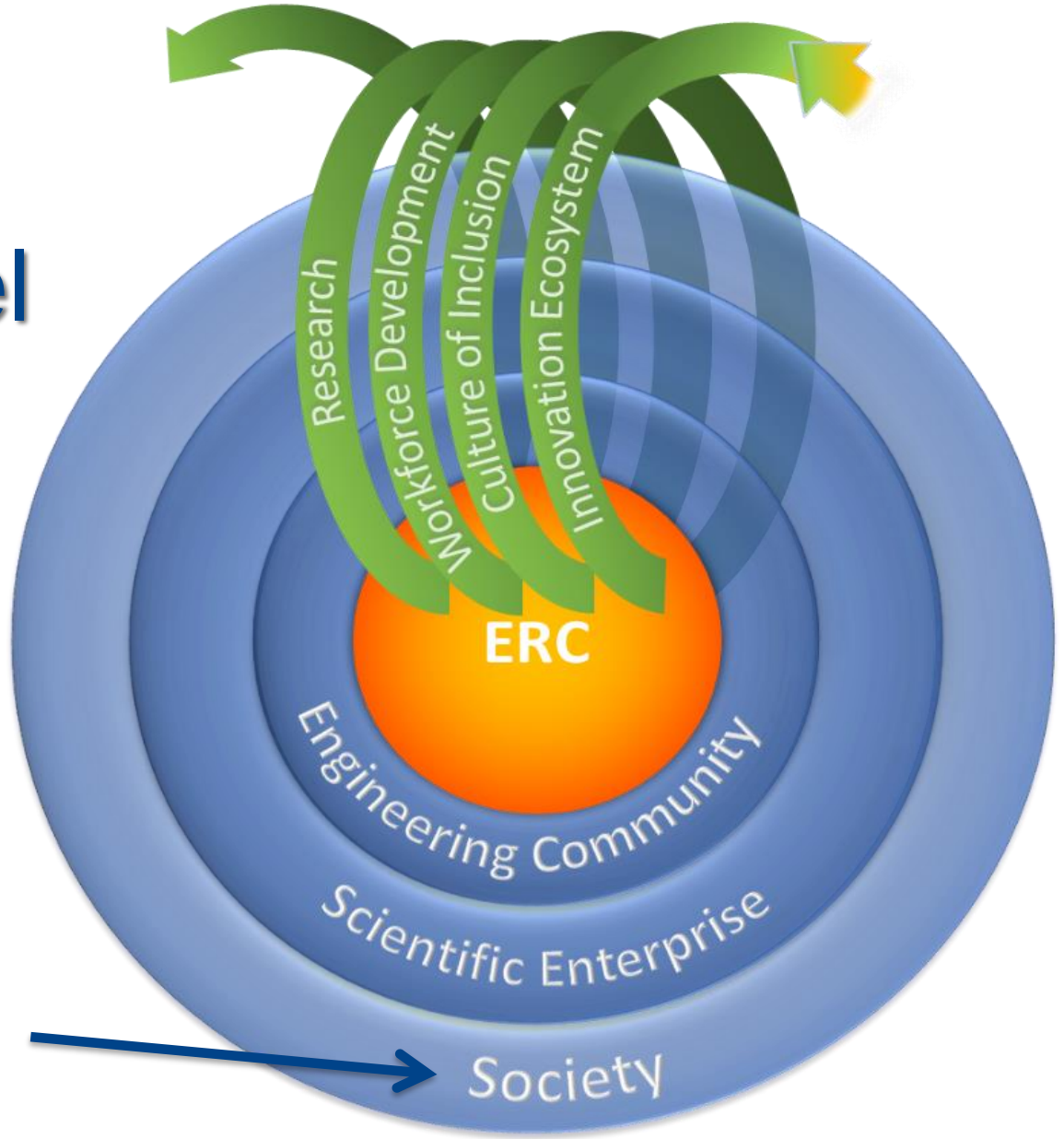
2007


Leadership &
Management
Students,
Faculty, Staff
Research for
Discovery/Innovation
Vision & Strategic Plan
Graduates
Knowledge
Technology
Curricula
Workforce
Development
Innovation
Ecosystem
Funds, Equipment, Facilities
Industry/Users & Innovation Partners

2018

Gen-4 ERC Program Model

- Four interconnected (binding) **foundational components**
- Strategic tools:
  - ✓ 3-plane chart
  - ✓ Continuous feedback
  - ✓ Logic model
- Increasing spheres of **impact**



We're very excited about this!

Change the world…

Engineering Education and Centers (EEC)

Centers and Networks

- Discover and launch ubiquitous future technologies (ERC, NCN)
- Prepare next generation innovation leaders (ERC)

Image Credit:
BMES ERC Website

Engineering Education

- Fundamental research in the formation of engineers (RFE, RIEF)
- Translation of fundamental research into practice (RED)

Broadening Participation

- Improve preparation, increase participation, and ensure contributions of underrepresented groups (BPE)
- **NSF INCLUDES**

Workforce Development

- Builds human capital through research experiences
- Focus on undergraduates (REU), teachers (RET), veterans (REV)

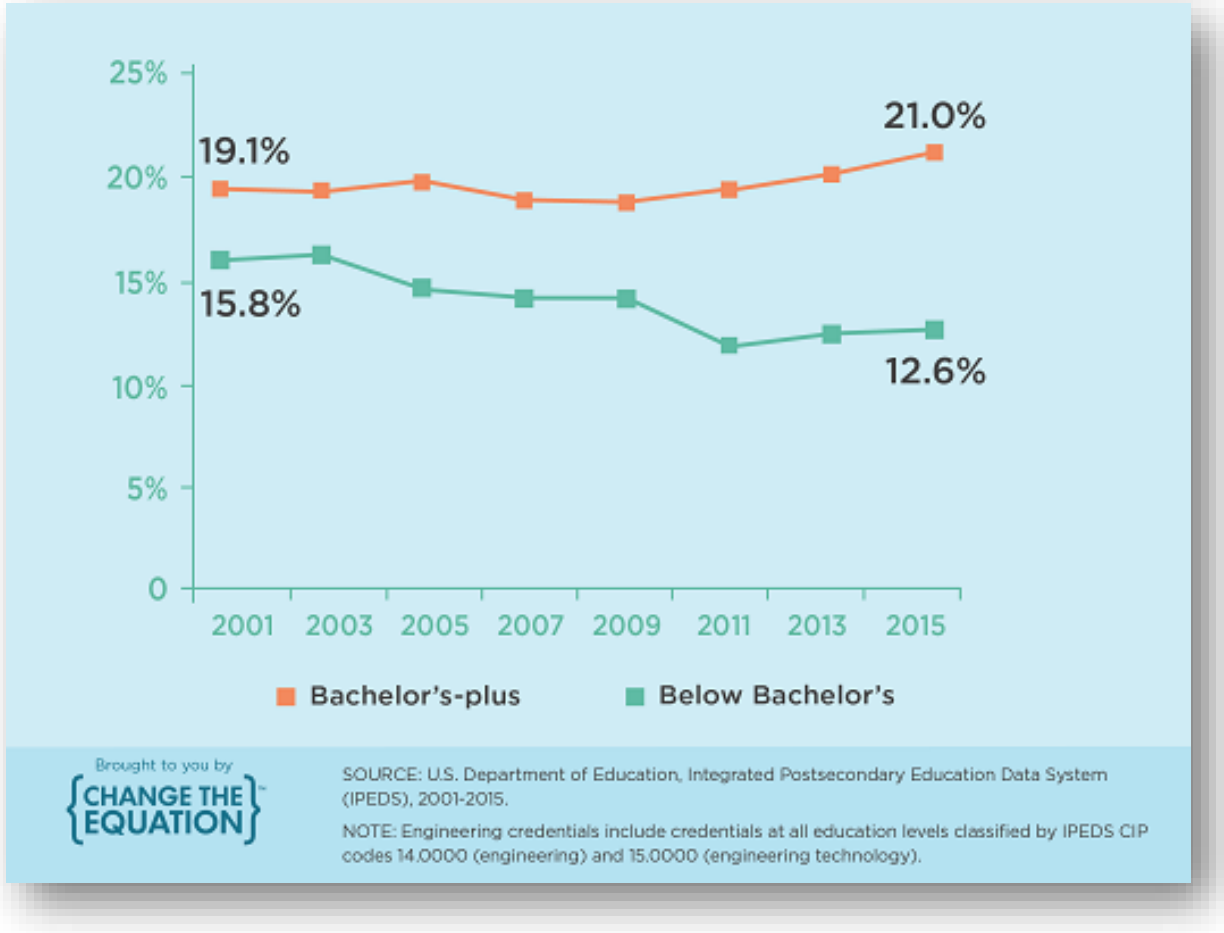
TEACHENGINEERING
curriculum for k-12 teachers

Investing to address societal grand challenges, promote innovation, and benefit society

One Challenge:

Double the % of women in Engineering

*(20% → **40%** in 5-10yrs)*



Suggestions

- Build upon prior work – take advantage of best practices (e.g., *use/search nsf.gov*)
- Ideas w/out strategy + actions ≠ change
- Be realistic, identify where and how all can best contribute
- Grow/sustain a community of practice
- Meet new people, be open to new collaborations – engage the best team

Change the Culture...

- To understand how something works, figure out how to break it
- Create a belief statement *(w/passion, magnetism)*
- Practice effective communication
- Risk takers never complain, they do.

In Closing…

Science | Engineering

- Scientists investigate the world we have...
- Engineers create the world we want.

Adapted from: Theodore von Kármán
*(mathematician, mathematician, **aerospace engineer,** and physicist)*

So…

Create the world **you** want.

Thank you.