



National Science Foundation
Engineering Research Centers (ERC)

Engineering Research Centers (ERC) Program Overview



May 21, 2018

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ENG/ERC Program Directors



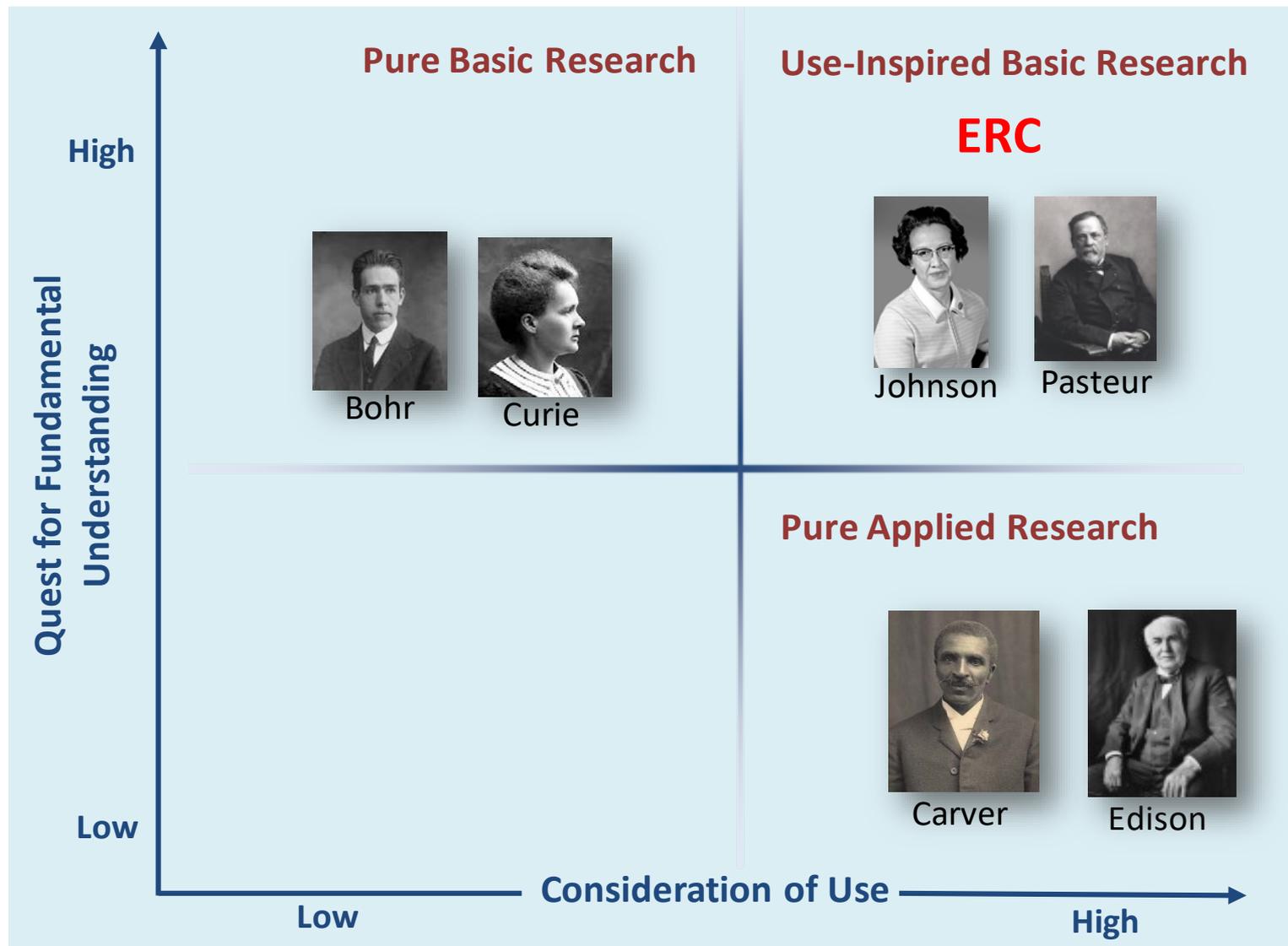
Integrated ERC Program Goals

ERC: Engineering large centers program;
has been supported at \$4M/year for up to 10 years



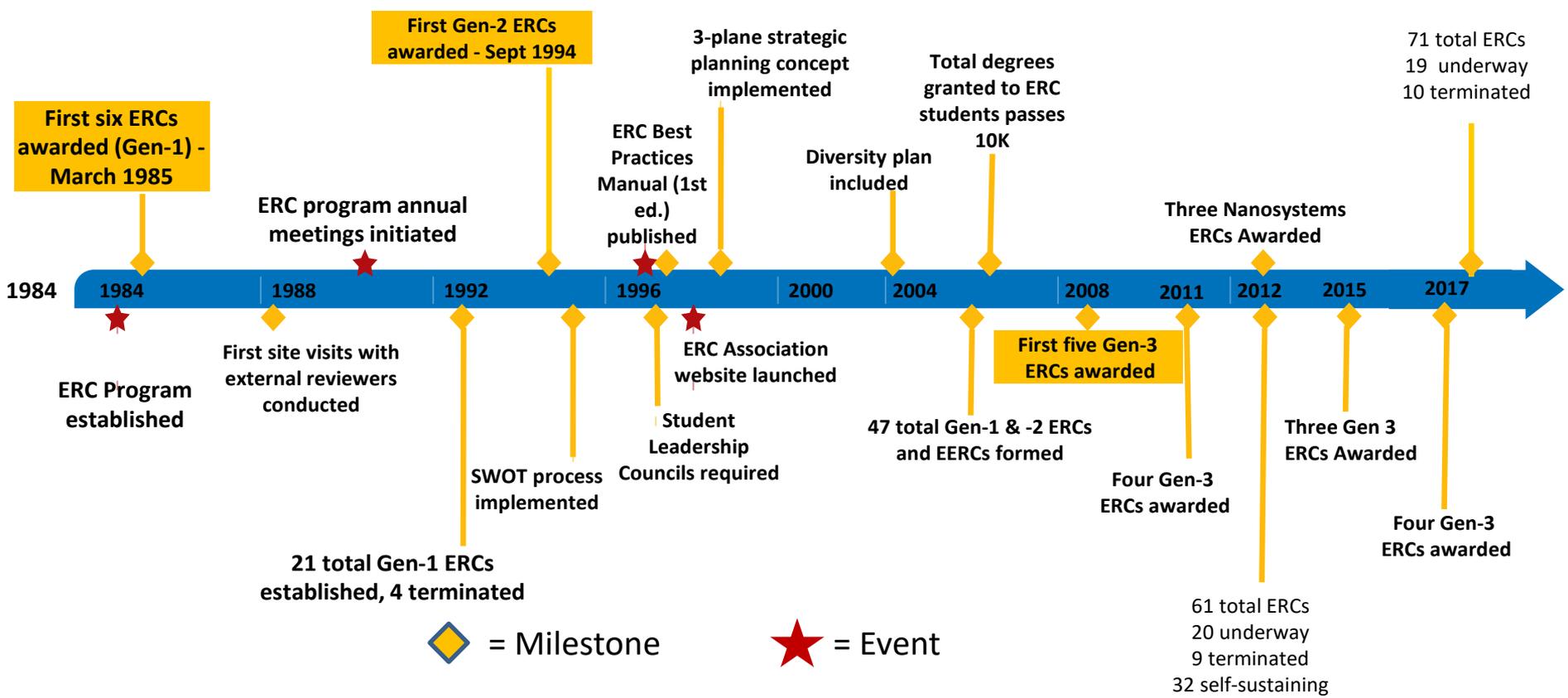


ERC: Use-Inspired System Driven Center Vision, Mission and Goals



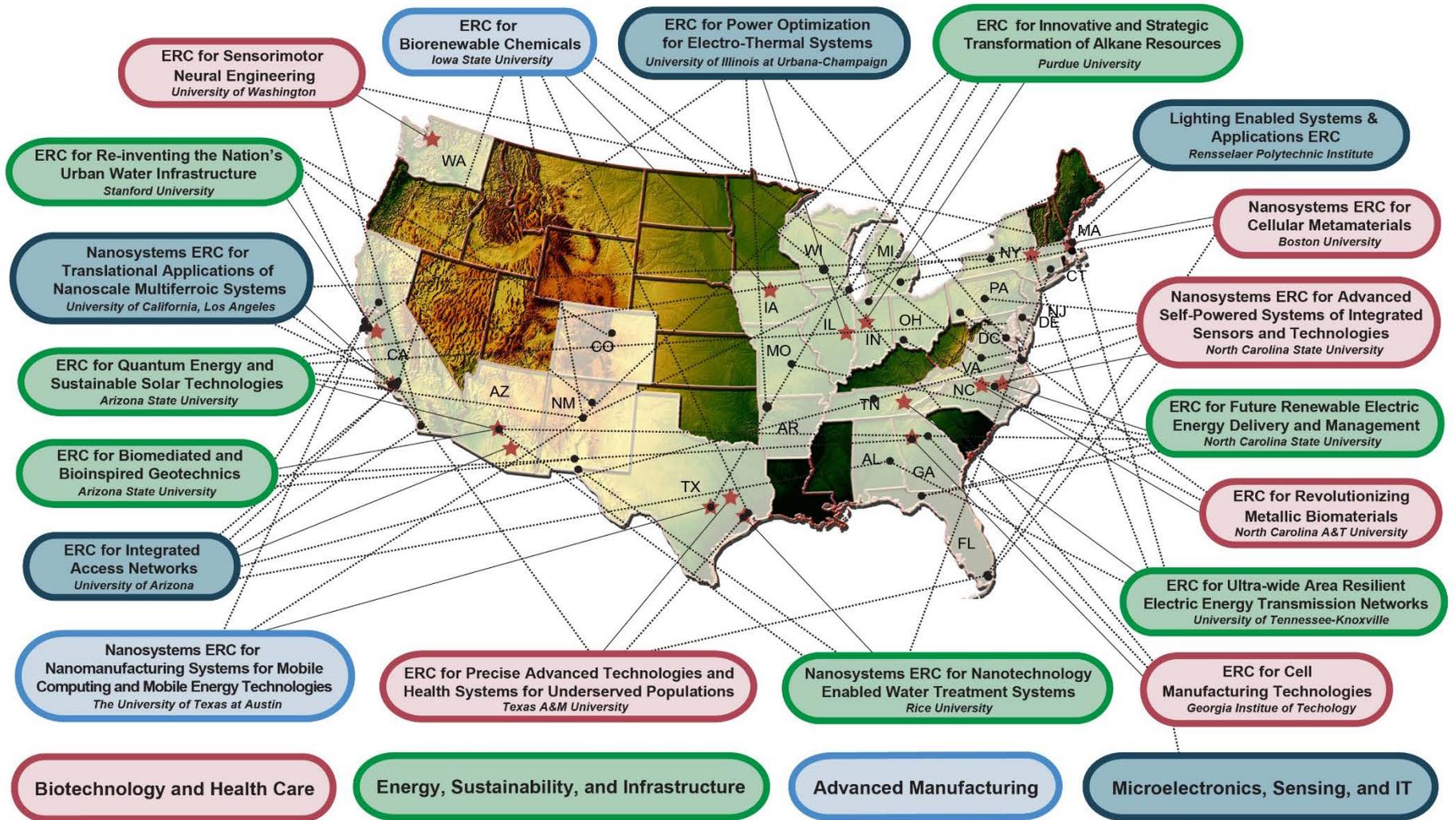


ERC Evolution Timeline





NSF's FY 2017 Engineering Research Centers (Lead institutions ★ and core partners)

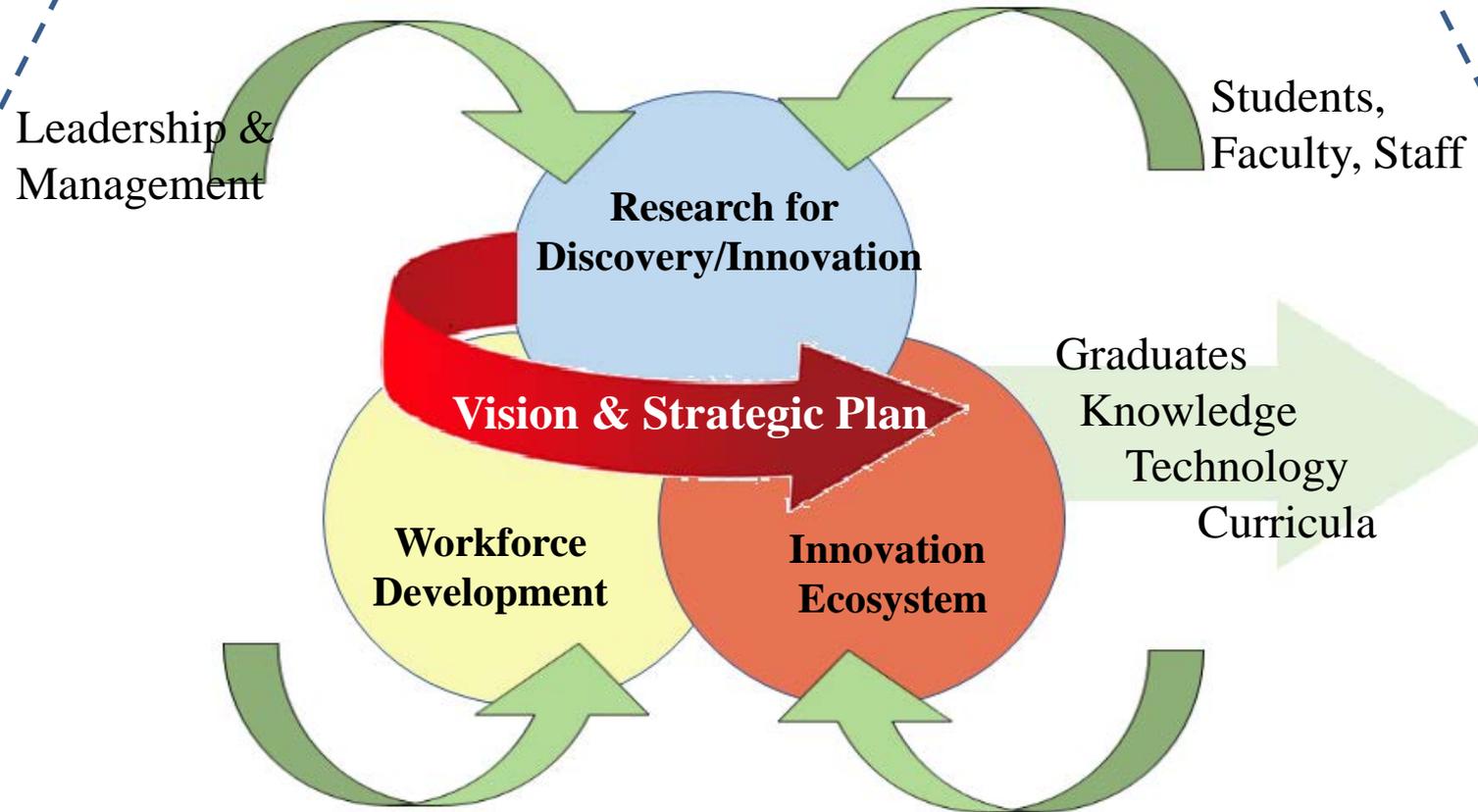


Note: All centers are multi-university partnerships; university shown is lead institution.

University of Puerto Rico-Mayaguez



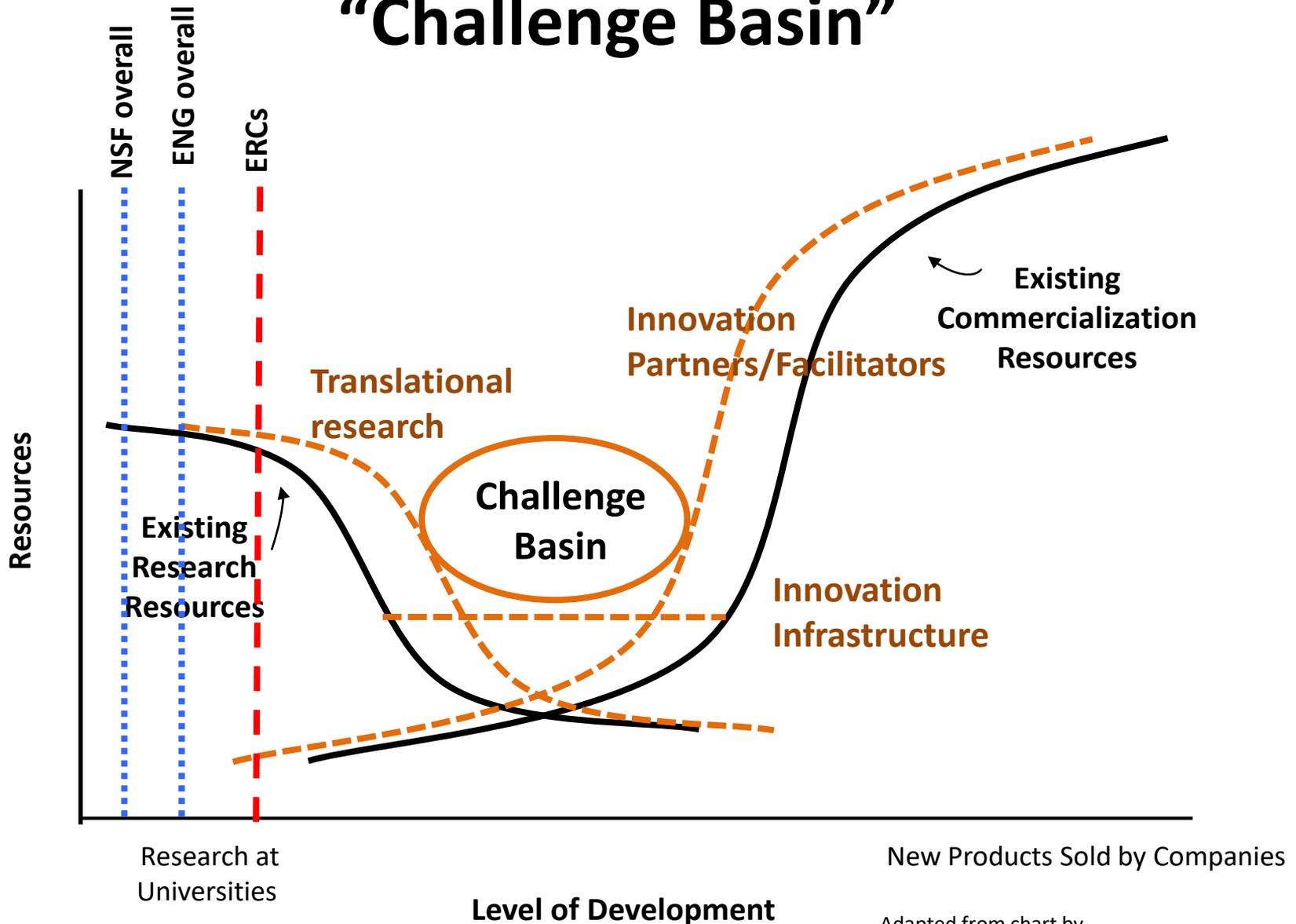
NSF ERC: A Complex, Interdependent System



Culture of Inclusion



ERCs Convert “Valley of Death” into “Challenge Basin”





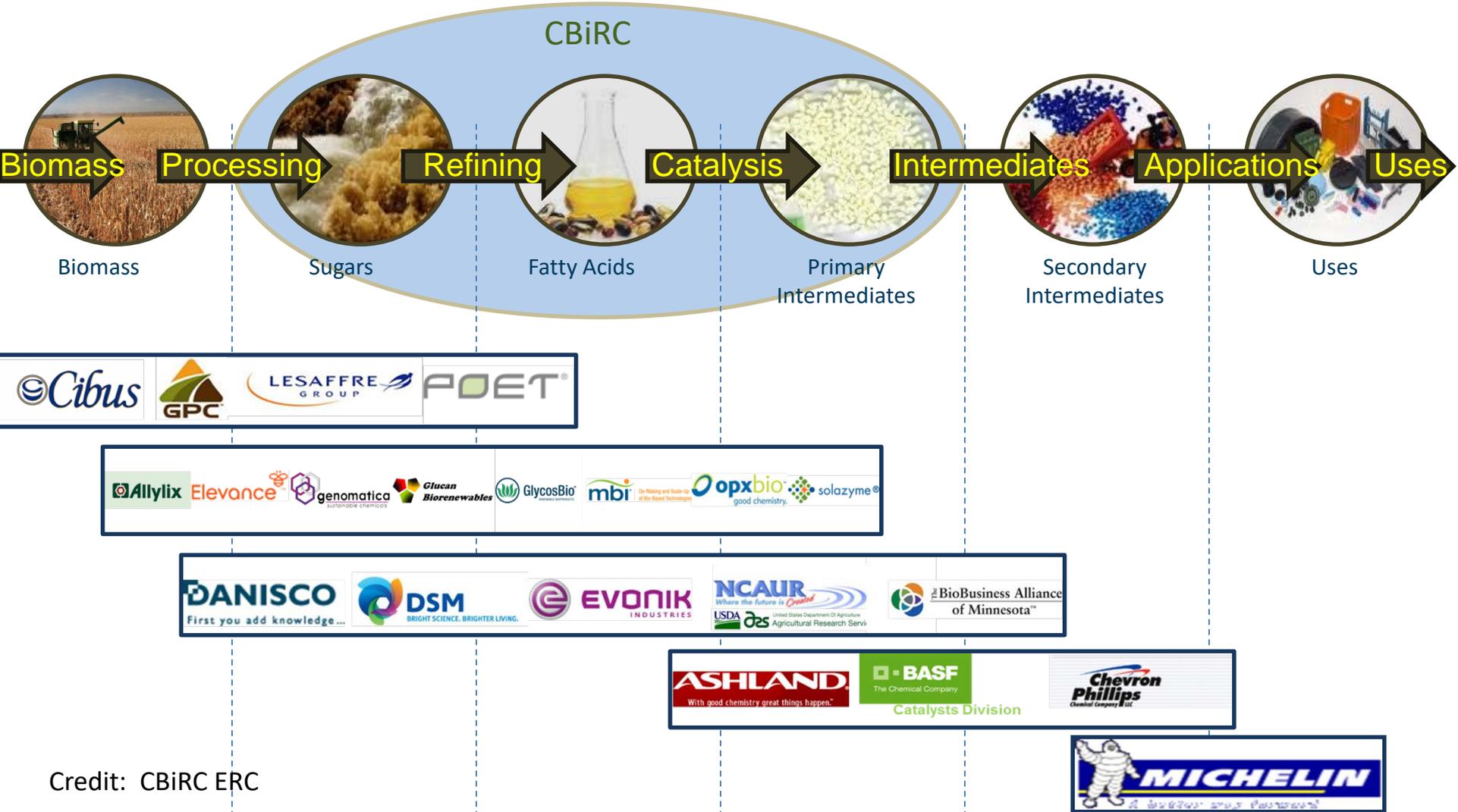
Expectations: ERC Innovation Ecosystem

- Strategic partnerships with core industrial/practitioner stakeholders; engage all stakeholders
- Accelerate translation of research into new processes and products
- Optimal utilization of ERC' s knowledge/ technology advances
- Foster entrepreneurial culture by engaging ERC students in all phases of the innovation process



Center for BioRenewable Chemicals –

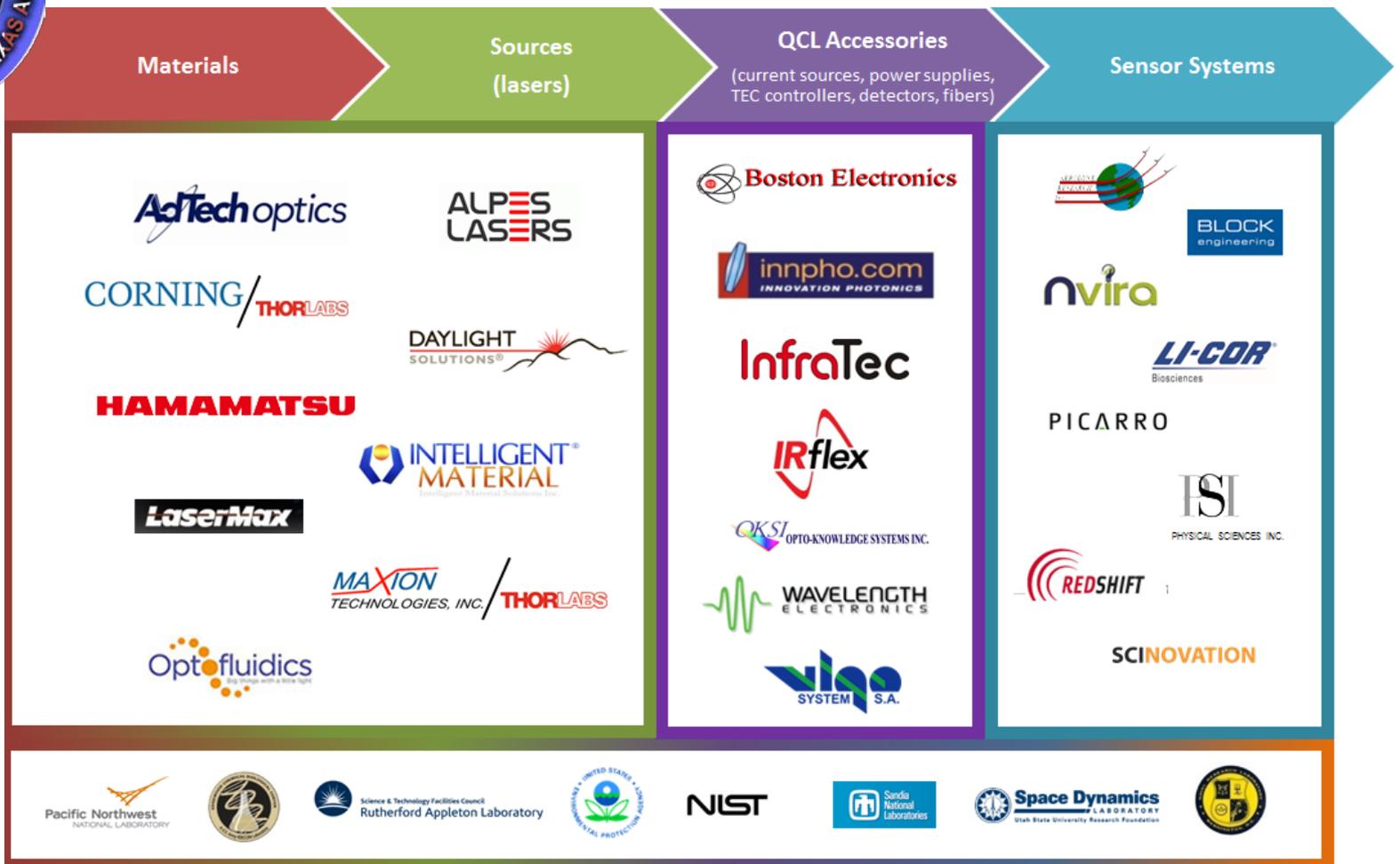
Members' Positions in Value Chain



Credit: CBiRC ERC



Members in MIRTHE's Industry Value Chain



Small/large Companies (R&Ds)

National Laboratories – early adopters



Examples of Leaders in Academia/Industry from ERCs



Kristina Johnson
Chancellor, SUNY

Former ERC Director
Optoelectronic
Computing Systems
Center



Anna Hagen
Director, MERCK



**Inventor: Process
to purify Hepatitis A
Vaccine**

Former ERC Student
BioProcess
Engineering Center



Rafael Reif
President, MIT

*Former ERC Deputy
Director*
SRC ERC for
Environmentally
Benign
Semiconductor
Manufacture



Michael McCorquodale
CEO:

Cortera Neurotechnologies
e-SENS
Mobius Microsystems

**Inventor: All-Si spread-
spectrum clock generator**

Former ERC Student
ERC for Wireless Integrated
Microsensing & Systems



Engineering Research Centers by the Numbers (2016)

67 ERCs funded since 1985 (71 with 4 new ERCs)	790 Patents awarded
19 ERCs currently supported	1,345 Licenses issued
\$10M Congressional budget appropriation for ERCs in 1985	51 New full-degree college/university programs based on ERC research
\$68.4M Appropriations for ERCs in 2015	170 New textbooks based on ERC research
\$3.6M average ERC award per year	4,171 ERC students awarded BS degrees
28 Number of States	4,064 ERC students awarded MS degrees
33 Average # of corporate members per ERC	4,644 ERC students awarded PhDs
206 Spinoff companies	61% of ERC graduates working in industry
1,333 Spinoff companies total employees	34% of ERC graduates working in academia
2,305 Inventions disclosed	5% of ERC graduates working in government



ERC Association Website

<http://erc-assoc.org/>

The screenshot shows the homepage of the ERC Association website. The header features the NSF logo on the left, the text "Engineering Research Centers LINKING DISCOVERY TO INNOVATION" in the center, and a search bar on the right. Below the header is a navigation menu with links for HOME, ERC PROGRAM, CENTERS, ACHIEVEMENTS, RESEARCH, INNOVATION ECOSYSTEM, EDUCATION PROGRAMS, and BEST PRACTICES MANUAL. Two main content areas are highlighted: "HIGH-IMPACT ACHIEVEMENTS" and "ADDRESSING NATIONAL PRIORITIES". The "HIGH-IMPACT ACHIEVEMENTS" section features a video player with a thumbnail image of a water treatment facility. The video title is "Changing the Way We Manage Urban Water" and there is a "Full Story" button. Below the video player is a "Click here to pause" link and a series of seven dots indicating the video's progress.



NASEM Study on ERC





ERC Planning Grants

Program Solicitation NSF 18-549

Planning Grants for Engineering Research Centers (ERC)

PROGRAM SOLICITATION

NSF 18-549



National Science Foundation

Directorate for Engineering
Engineering Education and Centers

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

June 06, 2018



ERC Planning Grant

Seed quality ERC teams/proposals; support: \$100K/award

**Societal impact
Convergence**



ERC PROPOSAL

Team formation

**Effective leadership/management
stakeholder communities**



Questions?

