

# *Innovation Ecosystem Module 1: ILO/SPI Role within an ERC*

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2017 ERC →

2009 ERC →

1981 Industry →

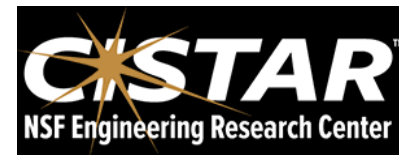


**syngenta**

AstraZeneca 

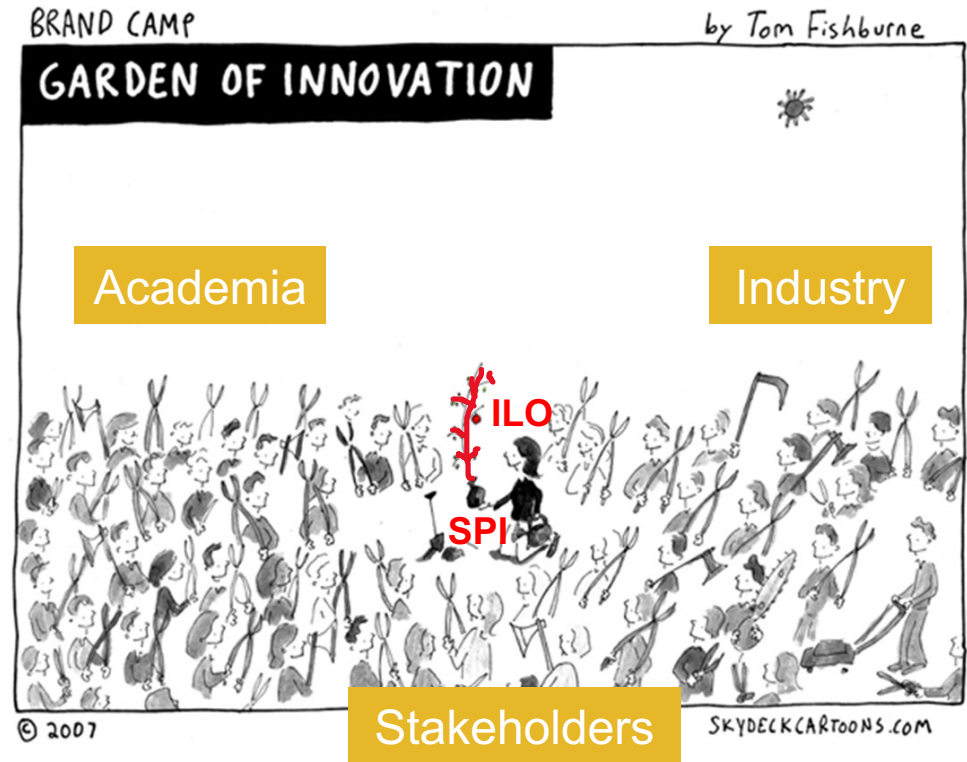


ExSeed



# ILO/SPI Role within an ERC

- ▶ INFINITE
- ▶ A JOURNEY
- ▶ DIFFERENT ACROSS ERCs
- ▶ RECRUIT / RETAIN / EVOLVE
- ▶ SPI ADDS ANOTHER DIMENSION



**RESPONSIBILITY:** Create the strategic plan for nurturing the ERC's innovation ecosystem. Under that umbrella, the SPI Director defines the organization, reporting structure, and processes needed to complete the following three functions:

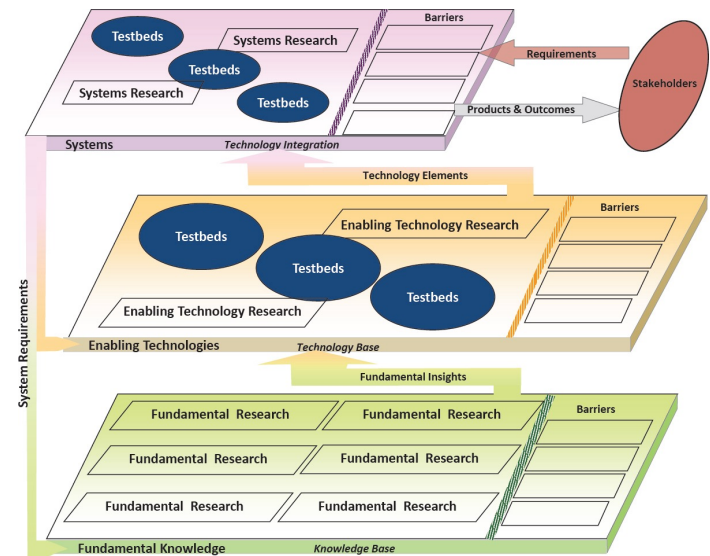
- Manage industry partner relations
- Nurture innovation ecosystem
- Engage stakeholders

# Innovation Ecosystem

## Four Pillars & Institutions



## Industry & Stakeholders



## **ILO - Industrial Liaison Officer (Gen 1, 2, 3 ERCs)**

*Gen-3 ERCs are titled Innovation Ecosystem Director, Industry/Innovation Director, or Industrial Collaboration and Innovation Director*

## **SPI – Strategic Partner & Innovation Director (Gen 4 ERCs)**

# You are Not Alone

- ▶ Training/Mentoring/Consultants
- ▶ ILO/SPI Meetings (twice per year)
- ▶ ILO/SPI Contacts / NSF Contacts
- ▶ NSF Bimonthly Meetings (more impactful to meet in-person)
- ▶ NSF Annual Meeting (now Biennial)
- ▶ NSF-ERC ASSOCIATION (<https://erc-assoc.org/content/welcome-erc-program>)
  - ▶ [ILO RESOURCES](#) (Various Presentations)
  - ▶ [BEST PRACTICES MANUAL](#) (Chapter 5)
  - ▶ [AGENTS OF CHANGE: NSF'S ENGINEERING RESEARCH CENTERS – A HISTORY](#)



# NSF Core Competencies



## Technology

- Domain working knowledge
- University tech transfer & IP
- Innovation methods/processes
- Tech startups/entrepreneurship



## Communications

- Marketing/promotions
- PPT presentations
- Written communication/reporting



## Partnerships

- Recruiting
- Networking
- Relationship management
- Business development



## Administration

- Advisory board management
- Project management
- Research administration
- Legal agreements
- Accounting/finance operations

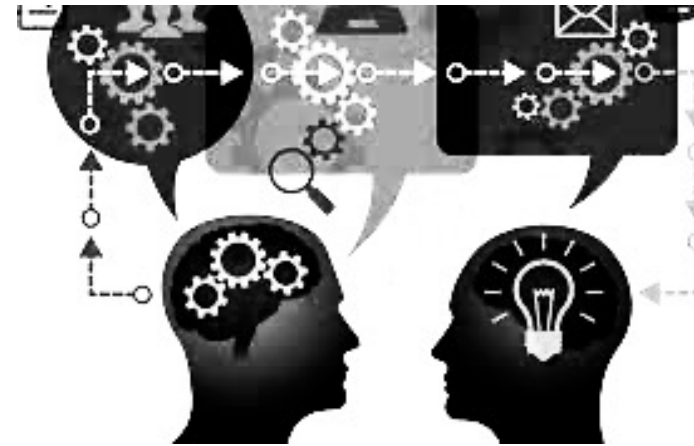
# Qualifications & Experience

- ▶ **MINIMUM EDUCATION:** Professional Degree (Specify)
- ▶ **EDUCATION:** Professional degree required, such as MBA or other sufficiently deep technical and business education base. A detailed understanding of principles of post-graduate level R&D. A combination of education and relevant experience is required.
- ▶ **EXPERIENCE:** Business and technology management, experience with grant writing, IP prosecution, experience reviewing legal documents and agreements, experience with technology development, technology transfer, entrepreneurship and start-ups, experience mentoring and teaching students and young professionals required.



# Knowledge & Skills

- ▶ Extensive knowledge of business, ethics, entrepreneurship, leadership, management, R&D and IP practices.
- ▶ Proven leader with established reputation in engineering/business disciplines.
- ▶ Excellent written and oral communication, problem solving ability, and interpersonal skills.
- ▶ Must be a demonstrated self-starter with the ability to interact effectively at a senior level with industry, university faculty, students and staff.
- ▶ Must possess a professional and ethical attitude of service to the center and its partners.
- ▶ Must be a team player and have demonstrated the ability to work effectively in a multi-disciplinary team.





# Essential Functions & Competencies

## 1. Industrial Liaison X%

- ▶ Direct the implementation of the membership agreement for Industrial Practitioner Advisory Board (IPAB) participation.....

## 2. Business Development X%

- ▶ Direct a process to identify prospective IPAB members, engage and convert them to members.....

## 3. Innovation Ecosystem X%

- ▶ Direct a process to define the breadth and range of intra/entrepreneurial efforts in the center.....

## 4. Miscellaneous X%

- ▶ Perform miscellaneous duties related to the ERC to ensure the success of the center.....

## 5. Stakeholder Engagement X%

- ▶ SPI Role Gen 4 ERCs



*"In five years, I see myself with the same job title, about the same salary, and significantly more responsibilities."*

# Strategic Partnership and Innovation - Gen-4 ERC

- ▶ Gen-4 broadening to SPI concept warranted
  - ▶ Increase connectedness
  - ▶ Increased multi-disciplinary approach
  - ▶ Appropriate attention to ethical and social issues
  - ▶ Public expectations on responsible innovation
- ▶ Implications
  - ▶ Transactional still critical – get cash paying members
  - ▶ Relationships and conceptual buy-in important
- ▶ ***Broader stakeholder engagement***

**Money isn't  
everything,  
but  
everything  
needs money.**  
Zig Ziglar

# Strategic Partnership and Innovation - Gen-4 ERC

## ▶ Stakeholders

### ▶ Evolving definitions

- ▶ SEIC working group

### ▶ Aspirational

- ▶ Technologies developed in ERCs have impacts on citizens of the world - engage everyone under the sun



## ▶ Implications

### ▶ Stakeholder group is broader

- ▶ Non-profits, economic development groups, citizen groups, special interest groups, patients

### ▶ Risk assessment is different

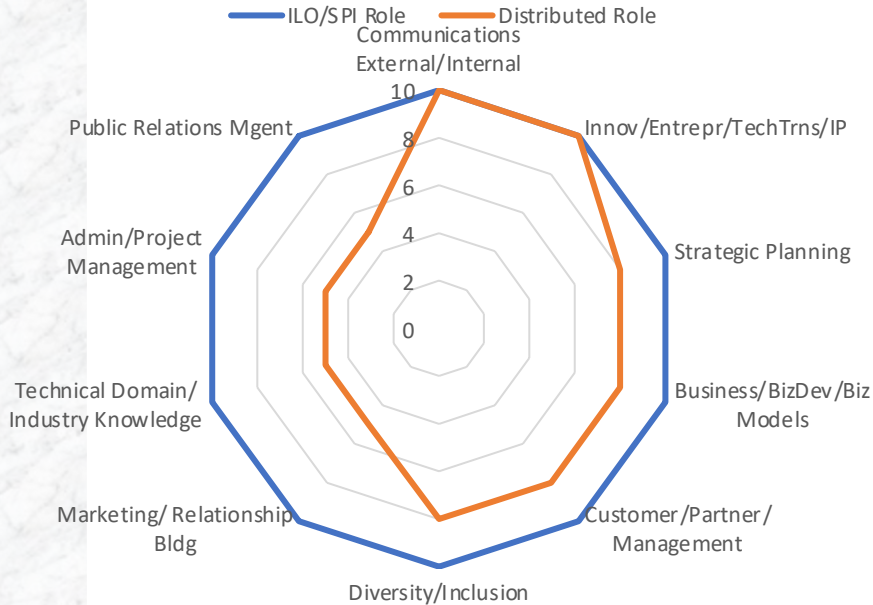
- ▶ Broader participation

### ▶ Adoption of Corporate Social Responsibility concept

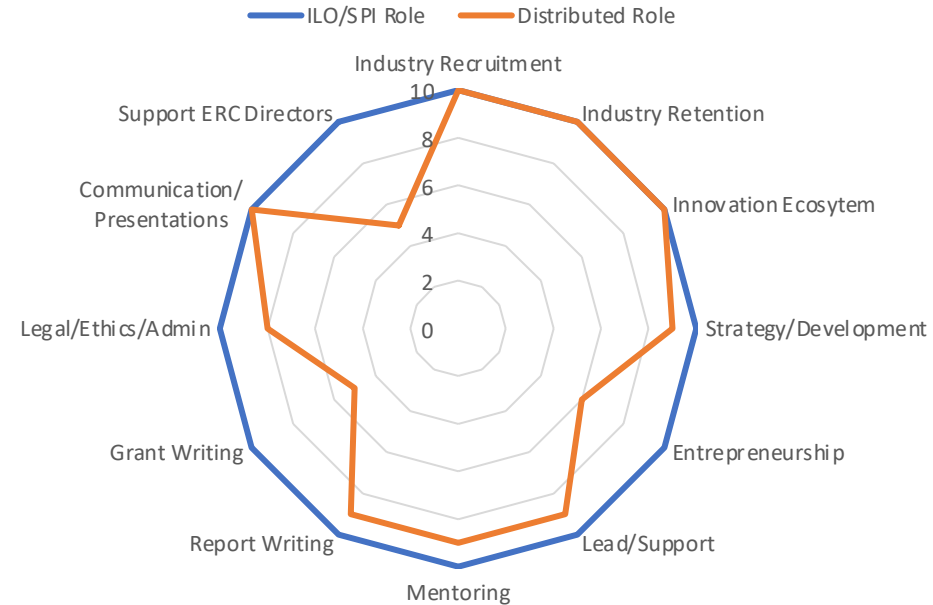
# Dimensions

Direct and Implement strategies to develop the Industrial Membership and Innovation Ecosystem Program in the Center.....

## Management & Communications



## Membership & Innovation



# MEMBERSHIP

## All Members:

- **Industry Advisory Board (IAB)**
- **Sponsor Research (Outside Core)**
- **Privileged Information**
  - One-Way NDA Protection
  - Annual Meetings & Webinars
  - Reports & Posters
  - Intranet, Newsletters & Emails
  - Listen, Evolve & Build Relationships
- **Privileged Access**
  - Faculty & Students,
  - Research & Innovations
  - Other members
  - Workforce & Diversity
  - Mentoring & Internships

## Gold Members:

- **IP Rights**
  - 1<sup>st</sup> Rights to IP (240-day Option)
  - 2<sup>nd</sup> Option to IP
  - Most favored licensee

## Description

**Large Entities** (500 or more employees)

**Medium Entities** (10 or more employees, but less than 500)

**Small Entities** (less than 10 employees)

**Silver Members**

USD \$30,000

USD \$15,000

USD \$5,000

**Gold Members**

USD \$60,000

USD \$30,000

USD \$10,000

**CISTAR**  
NSF Engineering Research Center  
Center for Innovative and Strategic Transformation of Alkane Resources

A National Science Foundation Engineering Research Center  
ESTABLISHED 2017

## Industrial Membership Program

**Partners in revitalizing the U.S. petrochemical and fuels industries:**  
Basic research aimed at sustainable development of America's light hydrocarbon resources

www.cistar.us

PURDUE UNIVERSITY | THE UNIVERSITY OF NEW MEXICO | Northwestern University | UNIVERSITY OF NOTRE DAME | TEXAS

### Membership Benefits

- Intellectual Property (IP):** Access to CISTAR novel catalytic and separation breakthroughs and innovations in chemical reactor designs with right to recommend IP filings.
- Licensing:** Priority notification of IP filings. Exclusive rights to review claims. First option to negotiate a commercial use license. Final rights as "most favored licensee."
- Confidential Information:** Right to request confidential information (requires NDA) on CISTAR research, technology, and inventions for internal research and evaluation purposes.
- Advisory Board:** Exclusive seat on the CISTAR Industrial Practitioner Advisory Board (IPAB) and invitation to attend biennial meetings and interact with CISTAR leadership team, as well as NSF representatives.
- Research Sponsorship:** Sponsor individual research programs outside the CISTAR Core, in areas related but not overlapping with the research funded by NSF, university cost-share, and industry membership fees. Submit joint proposals to other federal sponsors.
- Research Findings:** Exclusive access to CISTAR research findings, insider knowledge, and industry trends for R&D technology transfer, policy, and environmental aspects through biennial meetings, webinars, and quarterly newsletters.
- Networking:** Access to CISTAR experts in catalysis, separations, reactor design, and engineering economic analysis; professional interactions with a wide range of academia and industry leaders, and companies from the entire alkane transformation value chain.
- Recruiting:** Preferential access to talented, diverse, and highly trained undergraduates, graduate students, and post-doctoral researchers.
- Promoting:** High visibility branding with all CISTAR university partners, NSF, and other affiliated professional organizations.
- Education:** Contribute to the education programs and workforce development of new generations of engineers through internships, seminars, speakers, and mentorship.

**Silver Members**

**Gold Members**

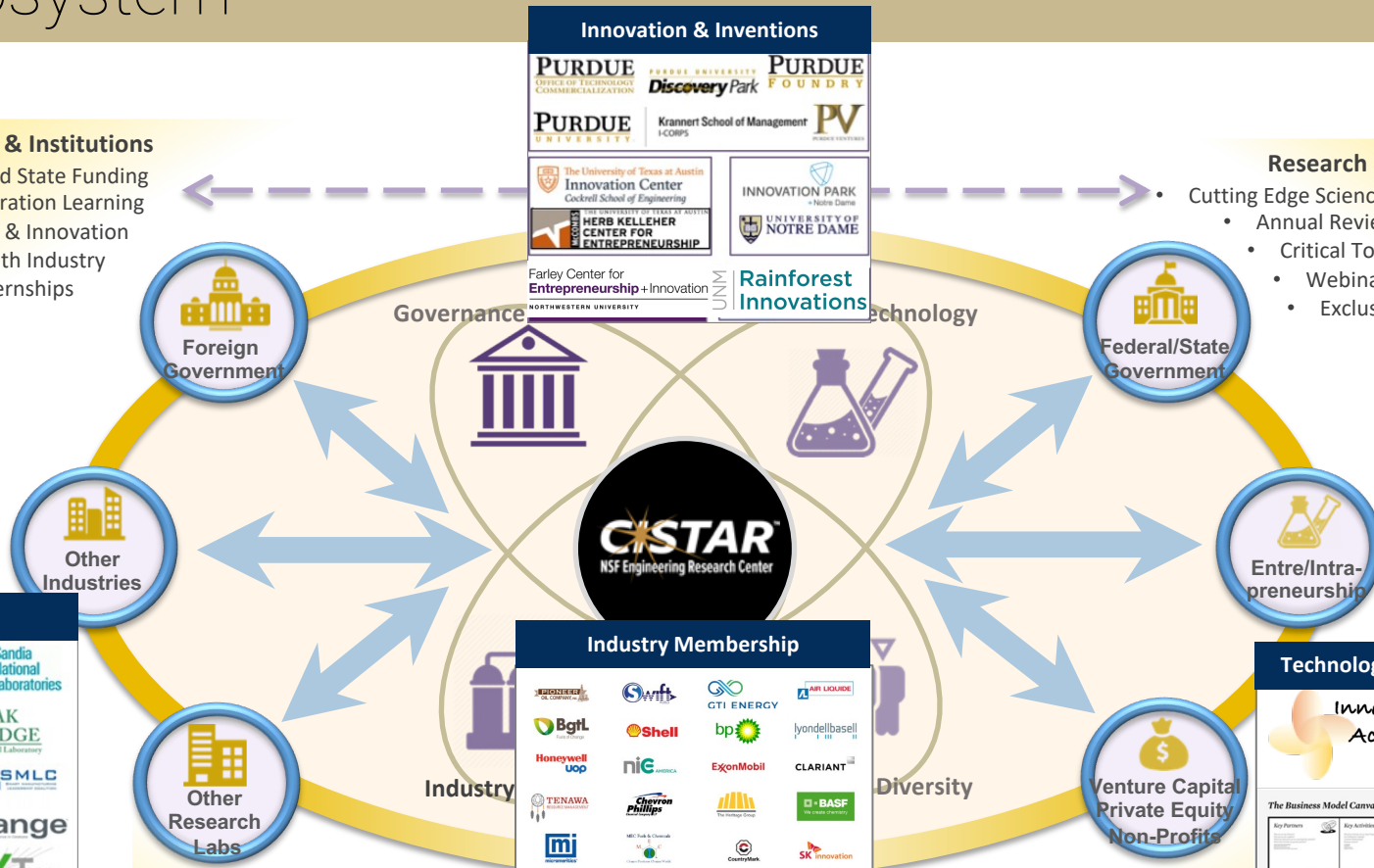
# Ecosystem

## Governance & Institutions

- Federal and State Funding
- Next Generation Learning
- Inventions & Innovation
- Interact with Industry
- Jobs & Internships

## Research & Technology

- Cutting Edge Science & Technology
- Annual Reviews & Meetings
- Critical Tools & Knowhow
- Webinars & Discussion
- Exclusive Access to IP



**Innovation & Inventions**

PURDUE OFFICE OF TECHNOLOGY COMMERCIALIZATION  
 PURDUE UNIVERSITY  
 Discovery Park  
 FOUNDRY  
 Krannert School of Management  
 PV  
 PURDUE UNIVERSITY  
 I-CORPS

The University of Texas at Austin  
 Innovation Center  
 Cockrell School of Engineering

HERB KELLEHER CENTER FOR ENTREPRENEURSHIP  
 UNIVERSITY OF NOTRE DAME

Farley Center for Entrepreneurship + Innovation  
 NORTHWESTERN UNIVERSITY

Rainforest Innovations

**Partnerships**

Argonne NATIONAL LABORATORY  
 Sandia National Laboratories  
 NATIONAL ENERGY TECHNOLOGY LABORATORY  
 OAK RIDGE National Laboratory  
 Pacific Northwest NATIONAL LABORATORY  
 SMLC  
 change  
 CERCAS  
 SXT  
 UCL  
 SHALEXENVIRONMENT EUROPEAN CONSORTIUM  
 CINE  
 Agency for Science, Technology and Research SINGAPORE  
 Research Centre For Gas Innovation  
 CREATING GROWTH, ENHANCING LIVES  
 Clean energy for a sustainable future

**Industry Membership**

ARGONNE NATIONAL LABORATORY  
 BgTL  
 Honeywell UOP  
 TETAWA  
 mi  
 RAPID  
 ADI Analytics  
 J.M. Johnson Matthey  
 HOLLOR TOPSIDE  
 Braskem  
 CORTEVA  
 EVONIK  
 Shell  
 niE  
 Chevron Phillips  
 ILS  
 TOTAL  
 GTI ENERGY  
 bp  
 ExxonMobil  
 CLARIANT  
 BASF  
 SK Innovation  
 HP  
 Endress+Hauser  
 DOW  
 AIR LIQUIDE  
 lyondellbasell  
 SABIC

- Industry & Innovation**
- IAB and Network
  - Sponsored Projects
  - Advice and Guidance
  - Real World Innovations
  - Partnering Academia/iCorps

- Workforce & Diversity**
- Jobs and Internships
  - Experienced Mentors
  - Pitch Contests/Seminars
  - Interactions with Industry
  - Partnering Education & Diversity

**Technology-Led Entrepreneurship**

Innovation Academy

The Business Model Canvas

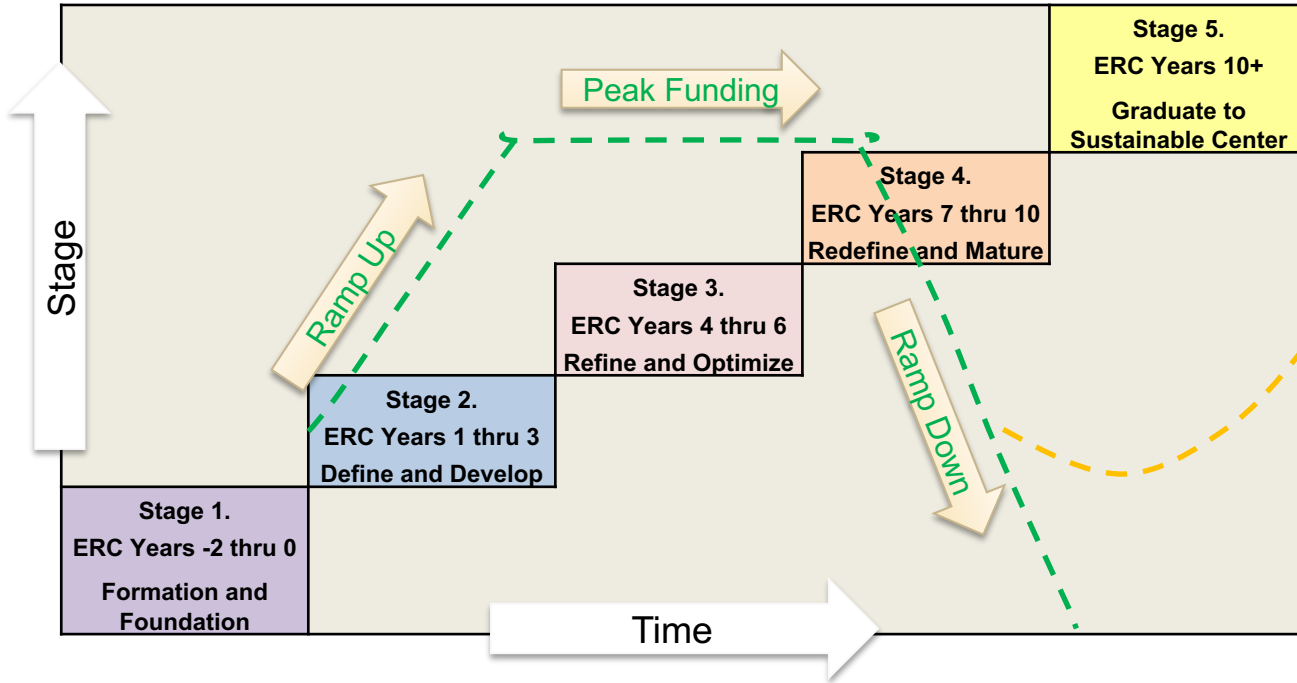
Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
How?	What?	For Whom?		
Key Partners	Key Activities	Key Resources	Channels	
Expenses?			Revenue Streams	Income?

# Distribution of Core Needs & Expectations

- ▶ **Job #1 = Grow Membership**
- ▶ **Job #2 = Retain Members**
- ▶ **Job #3 = Get Organized (CRM)**
- ▶ **Job #4 = Technology Development**
- ▶ **Job #5 = Support other Pillars**
- ▶ **Job #6 = Don't Drop the Ball**

- ▶ **Full / Part time / Distributed?**
- ▶ **What does NSF Expect?**
- ▶ **What does ERC Need?**
- ▶ **What does Director Want?**
- ▶ **What do you Want?**

# Role/Dimensions Change over Time



ERC STAGES & YEARS	CONCEPT
	Ideation and Formation
Member Recruitment	
Member Retention	
Commercialization of IP	
Intellectual Property	
Innovation Strategy	
Education Programs	
Sustainability Planning	



# Role/Dimensions Change over Time

ERC STAGES & YEARS CONCEPT	Stage 1. ERC Years -2 thru 0 Formation and Foundation	Stage 2. ERC Years 1 thru 3 Define and Develop	Stage 3. ERC Years 4 thru 6 Refine and Optimize	Stage 4. ERC Years 7 thru 10 Redefine and Mature	Stage 5. ERC Years 10+ Graduate to Sustainable Center
Ideation and Formation	Work closely with ERC Founders and University advisors to develop ideas within context of NSF ERC Guidelines. Help define ERC opportunity.	Define and develop ERC concept working closely with ERC Management Team.	Refine ERC concept working closely with ERC Management Team.	Redefine Center concept based around a vision of future sustainability.	Review and define new sustainability strategy
Member Recruitment	Secure letters of Intent from future industry members. Identify key individuals to work with.	Develop active outreach process through business connections, technical summits, outreach presentations, fliers and brochures. Tiered membership structure based on company size, varying benefits. What is a realistic IAB size.	Refine recruitment efforts with a greater emphasis on maximizing ability to retain key members.	Redefine recruitment and retention around a future sustainability strategy.	Develop connections to forge the best path into Sustainability.
Member Retention	Begin to define strategy to retain members through engagement in center activities including newsletters, websites and other informational tools.	Develop company interaction and benefits. Develop ideas around joint projects, testbeds, and other ERC opportunities.	Maximize ERC / company interaction and benefits. Cultivate interest in joint projects, involvement in testbeds, and other ERC opportunities. Value and mechanisms of establishing multiple points of contact in firms.	Redefine recruitment and retention around a future sustainability strategy.	Develop retained connections to forge the best path into sustainability planning.
Commercialization of IP	Begin to define testbeds and cross project integration alongside a strategy for commercialization.	Develop Industry R&D needs alongside ERC needs in testbeds, Integrate industrial input from project inception, using project management tools (timelines, go/no-go points, cross project integration, etc.). Strategies for increasing sponsored research projects with industry.	Meet Industry R&D needs alongside ERC needs in testbeds, Integrate industrial input from project inception, using project management tools (timelines, go/no-go points, cross project integration, etc.). Strategies for increasing sponsored research projects with industry.	Redefine commercialization strategy around a future sustainability strategy.	Refine commercialization strategy in light of sustainability plans.
Intellectual Property	Begin to define strategy for IP management and technology transfer.	Develop processes for management and strategy, Technology Transfer and the Invention Disclosure. Start to identify key technology transfer staff for ERC IP management (invention disclosures, patent processing, IP marketing, etc.), the licensing process and what is really valuable to the membership.	Refine management and strategy, Technology Transfer and the Invention Disclosure process. Realistic chances of "big-hit" from IP generated revenue. Cultivate connections to key technology transfer staff for ERC IP management (invention disclosures, patent processing, IP marketing, etc.), the licensing process and what is really valuable to the membership.	Redefine intellectual property strategy around a future sustainability strategy.	Refine IP strategy in light of sustainability plans.
Innovation Strategy	Begin to identify key local innovation partners and infrastructure	Develop paths to entrepreneurship activities in the ERC and University, connecting to local, state, and regional economic development and incentive programs and role of investment groups such as Angels, VCs.	Cultivate entrepreneurship activities in the ERC and University, connecting to local, state, and regional economic development and incentive programs and role of investment groups such as Angels, VCs.	Redefine innovation strategy around a future sustainability strategy.	Refine innovation strategy in light of sustainability plans.
Education Programs	Begin to identify strategy to develop valuable education programs	Start student mentoring programs, short courses and workshops for industry, Certificate programs and distance learning models, Faculty and student exchange, Active promotion of industrial recruitment of graduates.	Refine student mentoring programs, short courses and workshops for industry, Certificate programs and distance learning models, Faculty and student exchange, Active promotion of industrial recruitment of graduates.	Redefine education strategy around a future sustainability strategy.	Redefine education strategy in light of sustainability plans.
Sustainability Planning	Begin to recognize that sustainability planning is just a few years away.	Start being aware of need for planning and evaluating options. Be aware of how other ERCs evolve their plans.	Define options and strategies around a future sustainability plan.	Redefine entire strategy and options around a future sustainability plan.	Redefine entire strategy in light of sustainability plans.

# Closing Advice – Keep it Simple

FRANK AND ERNEST

by Bob Thaves

